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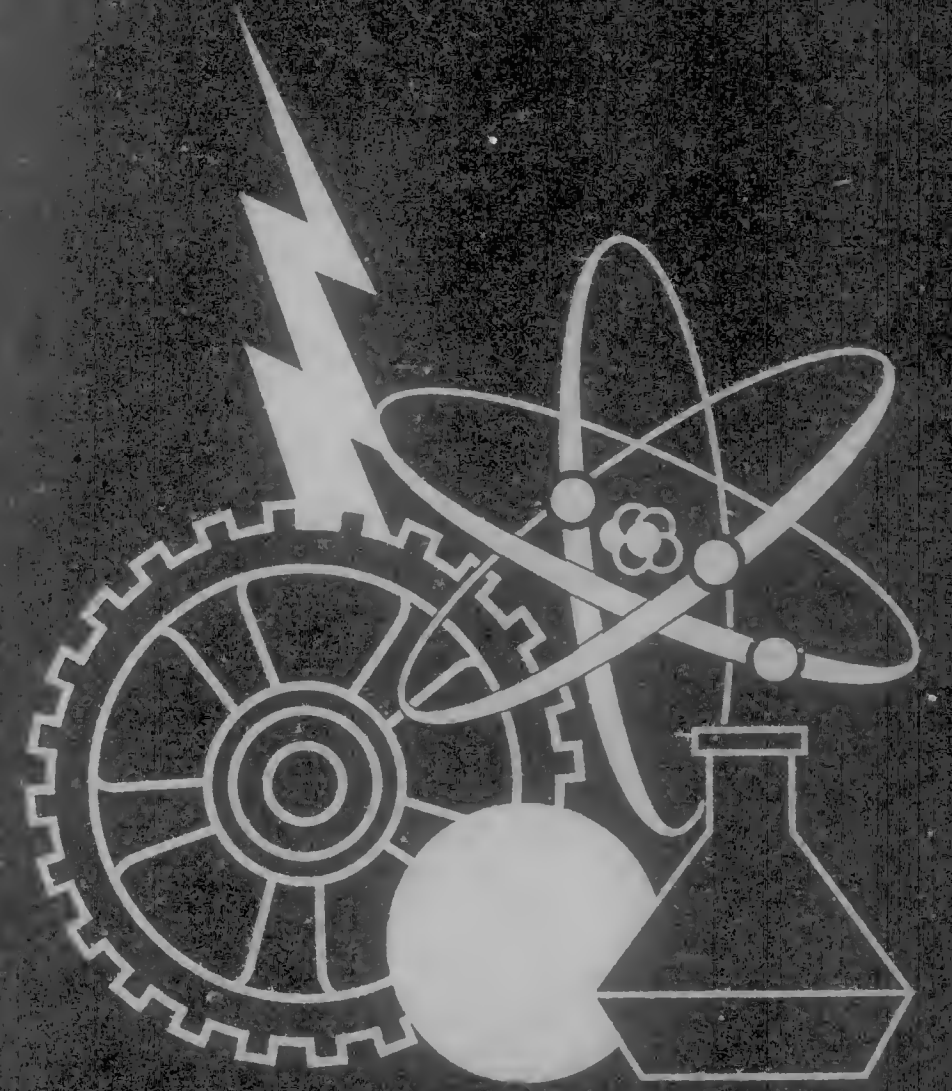
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Vol. 1170 Number 1

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS
January 3, 1995



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
January 3, 1995 Volume 1170 Number 1

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CONSOLIDATED LISTING OF OFFICIAL GAZETTE NOTICES
RE PATENT AND TRADEMARK OFFICE
PRACTICES AND PROCEDURES
PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the Official Gazette from July 1, 1964 through December 31, 1994. These notices and rule changes are currently in effect unless otherwise noted.

Attention to these details will improve the efficiency and reduce the time necessary to process incoming mail.

Nov. 23, 1983 THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1037 OG 25]

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INFORMATION AND CORRESPONDENCE

(1) Official Patent Office Mailing Address
Remains Washington, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of any communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay of mail, telegrams, etc.

Feb. 20, 1969 C. A. KALK
Director of Administration

(Office name change per Public Law 93-596, Jan. 2, 1975)

[860 O.G. 662]

(2) Group Number on all Communications Going
to the Examining Groups

Applicants and their attorneys or agents are reminded that the Group number should be typed on amendments and other communications relating to matters handled in the examining groups in order to expedite the processing of mail. The number of the Group should be placed on right-hand side, opposite the serial number or name of the applicant.

This reminder does not apply to notices and reasons of appeal to the United States Court of Appeals for the Federal Circuit.

These communications should be sent to the Solicitor at the address below:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

(3) Mailing of Papers to the PTO in
Patent Interference Proceedings

Effective immediately, attorneys and agents are requested to address all papers mailed to the Patent and Trademark Office in connection with an interference proceeding, and any patent or application involved in an interference proceeding, as follows:

BOX INTERFERENCE
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Use of this address*will considerably assist the Board in its administration of patent interference proceedings.

Nov. 28, 1983 DONALD J. QUIGG
Deputy Commissioner of
Patents and Trademarks

[1037 OG 25]

(4) Establishment of a Special Box for
Expedited Processing of Issue Fees

Effective immediately, the Patent and Trademark Office has established a special box designator for issue fees to allow expedited processing of the Issue Fee Transmittal (PTOL Form 85), and the order for advance copies.

In order to take advantage of this new service, the envelope should be addressed:

Box Issue Fees
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Only the Issue Fee Transmittal (PTOL Form 85), advance copy orders and the fees associated with these two services are to be placed in the envelope. Including documents other than those specified will delay their reaching the area for which they were intended.

PLEASE USE THE NEW ISSUE FEE BOX.

Mar. 4, 1988 THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1088 OG 41]

(5) Establishment of Three Special Boxes
for Expedited Processing

The Patent and Trademark Office has established three additional special boxes to allow expedited processing of non-fee amendments to patent applications, petitions for filing date and/or serial number information for patent applications, and issue fees.

In order to take advantage of these new expedited services, the envelope must be addressed:

For non-fee amendments to patent applications:

Box Non-Fee Amendments (Pats)
Commissioner of Patents and Trademarks
Washington, D.C. 20231

For petitions under 37 CFR 1.182 and associated fees for obtaining filing date and/or serial number information for patent applications prior to receipt of the official "Filing Receipt", "Notice to File Missing Parts", or "Notice of Incomplete Application".

Box SN
Commissioner of Patents and Trademarks
Washington, D.C. 20231

For Issue Fee Transmittals (PTOL Form 85) and associated fees and corrected drawings:

Box Issue Fees
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Only those documents specified for the special box are to be placed in the envelope addressed to that special box. Placing extraneous documents in an envelope marked for any special box will significantly delay their reaching the area for which they were intended.

Mar. 22, 1988

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1089 OG 45]

(6) **Changes in How Papers May be Filed
in the Patent and Trademark Office**

Beginning April 21, 1992, an improved service will be offered to people who wish to file papers directly with the Patent and Trademark Office (PTO) by extending the hours of operation for the Attorneys' Window located in Room 1B03 of Crystal Plaza Building 2, Arlington, Virginia. The current hours of operation are from 8:30 a.m. to 5:00 p.m., Monday through Friday, except Federal holidays within the District of Columbia. The change will extend the hours of operation until 12:00 midnight on Monday through Friday, except holidays, on a trial basis. If, after six months, usage does not warrant retaining operations until midnight, the hours of operation will be reduced.

This change will provide walk-up, personalized service to firms and individuals who are filing documents with the PTO. The PTO will continue to stamp postcard-type receipts to acknowledge the receipt of papers filed at the Attorneys' Window.

Also, effective on April 21, 1992, the PTO is discontinuing the use of drop boxes in the lobby of Crystal Plaza Building 3, Arlington, Virginia, and at the main entrance of the Department of Commerce Building, Washington, D.C. (37 CFR 1.6(c)) as means for receiving papers.

These changes will provide improved services with respect to receipt and processing of documents while, at the same time, overcoming problems with the present arrangement.

Problems encountered with the present arrangement for the drop boxes have occasionally made it difficult to determine the dates of actual deposit of papers. For example, there have been many incidents of papers being found outside of the drop boxes (e.g., on the floor of the main lobby of the Department of Commerce Building, on the guard's desk, on a nearby table, etc.). On occasion, the PTO and/or filers have been denied access to the drop box at the Department of Commerce by building security guards due to a special event taking place in the lobby.

Provisions are also available for filing papers through the use of the certificate of mailing (37 CFR 1.8) and the Express Mail (37 CFR 1.10) procedures.

March 17, 1992

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1137 OG 7]

(7) **DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 2, and 10
[Docket No. 921061-2261]
[RIN 0651-AA50]**

Electronic Filing of Patent and Trademark Applications

Agency: Patent and Trademark Office Commerce
Action: Advance Notice of Proposed Rulemaking

Summary: This advance notice of proposed rulemaking is to inform the public that the Patent and Trademark Office (PTO) is considering amending its rules of practice: (1) to allow for electronic filing of patent applications and trademark applications; and (2) to require applications filed in paper form to follow a prescribed order and format.

The PTO anticipates that permitting electronic filing of applications will improve the accuracy of the information relied upon in the examination of patent and trademark applications, eliminate delays caused by mailing and data entry, and, as a first step toward a fully-automated processing system, ultimately provide considerable cost savings. The cost savings realized could be used to help reduce the need for future fee adjustments and/or fund improvements in the delivery of services. Requiring applications filed on paper to follow a prescribed order and format will enable the PTO to convert these applications to electronic format.

The purposes of this notice are to: (1) invite interested parties to participate in pilot programs involving electronic filing of patent and trademark applications; and (2) encourage comments on this topic, in the form of responses to the questions posed in this notice, from industry, the patent and trademark bars, and members of the public.

Dates: Comments should be received on or before Feb. 28, 1993.

Addresses: Written comments should be addressed, if sent by mail, to the attention of Edward R. Kazenske, Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, c/o Commissioner of Patents and Trademarks, Washington, D.C. 20231. If delivered by hand, comments should be brought to the Office of the Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, Room 906, Crystal Park 2, 2121 Crystal Drive, Arlington, Va. For further information contact: Edward R. Kazenske, Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, (703) 305-8600.

SUPPLEMENTARY INFORMATION:

1. Pilot Programs

Currently, the PTO accepts patent and trademark applications delivered by mail or in person. These applications are in paper form or, in the case of patent applications for nucleotide sequences, a combination of computer-readable (see 37 CFR 1.821-1.825) and paper form.

The PTO is initiating a pilot program that would permit electronic filing of patent and trademark applications, using software now under consideration by the PTO. Initially, it is anticipated that participants in the pilot program would be required to use the PTO software to create a diskette, which would then be mailed to the PTO along with the paper application generated by the diskette. The diskette would serve the limited function of eliminating the initial data entry of applications into the PTO databases.

As part of a second pilot program, a separate group of participants is being solicited to file paper applications following a prescribed order and format. The paper applications would then be scanned and converted to electronic format. Data collected from the pilot programs will be evaluated to determine whether requiring submission of a paper application in a certain order and format facilitates data entry; whether any modifications to the electronic filing software are required; and more fundamentally, whether electronic filing is a feasible, cost-effective alternative to filing in paper form.

2. Paper Applications

The PTO contemplates that paper applications will be required to follow the order and format of the data elements (e.g., inventor, foreign priority information, in the case of a patent application; applicant, mark, in the case of a trademark application) entered in the electronic filing system. This would enable the PTO to scan and convert paper applications to electronic applications upon receipt at the PTO. Once the paper application is converted into electronic form, processing of the application will be done in a purely electronic format. The electronic form of the application would become the official file.

3. Electronic Filing

The PTO contemplates that applicants filing by electronic means would be required to use an "Authoring Program" developed by the PTO, which will be available to facilitate the preparation of an electronic submission and record the submission on electronic media. This "Authoring Program" will include a validation feature so that applicants, themselves, can test whether an electronic submission complies with all requirements.

The "Authoring Program" software under consideration by the PTO will be designed to be compatible with computers capable of creating files of standard ASCII (American Standard Code for Information interchange) text within one or more of the major operating systems environments (e.g., DOS, Windows, Unix, and Apple Macintosh).

The format for text in patent applications will specify a set of mandatory data elements, similar to those required under the Patent Cooperation Treaty. The format for text in trademark applications will specify a set of mandatory data elements, similar to those required of a "written application" under 15 U.S.C. 1051. In both the patent and trademark software, specific formats will be required for non-textual elements, such as drawings, formulas, tables and specimens. These non-textual elements would be submitted in separate computer files called "Presentations," similar to the presentation of nucleotide sequence information in accordance with 37 CFR 1.821-1.825.

The PTO also contemplates that certain individuals be designated by the agency as qualified "electronic application transmitters." Upon application to the PTO, unlimited parties meeting specified requirements may be issued Personal Identification Numbers to enable them to transmit applications in electronic form on behalf of themselves or other individuals.

In an effort to facilitate public comment to the questions set forth below, the following background information is provided:

4. Background Specific to Electronic Patent Applications

Signature

Under 35 U.S.C. 111, a patent application must include an oath by the applicant. 35 U.S.C. 25 permits a declaration in lieu of oath. The applicant's signed oath or declaration is not required for receipt of a filing date, but may be submitted, upon payment of a surcharge, within a prescribed period.

Certified Copy of Foreign Patent Application

Under 35 U.S.C. 119, a U.S. patent application may be based on a foreign patent application, thus, potentially, conferring the benefit of the earlier foreign patent application's filing date. A certified copy of the foreign patent application is required to be filed in the PTO before the patent is granted.

5. Background Specific to Electronic Trademark Applications

Signature

Under 15 U.S.C. 1051, a trademark application must be verified by the applicant. Prior to implementation of the Trademark Law Revision Act of 1988 (TLRA) on Nov. 16, 1989, the PTO permitted verification of the application to be provided at any time during the examination process. With implementation of the TLRA, the PTO amended its regulations with respect to the verification of an application. 37 CFR 2.21, which sets forth the minimum requirements for an application to receive a filing date, was amended to require that the application be signed by the applicant at the time of filing.

Specimen

Under 15 U.S.C. 1051, a trademark application based on "use in commerce" must include specimens or facsimiles of the mark as used. 37 CFR 2.21(a)(5) requires at least one specimen or facsimile to be included with the "use" application in order to receive a filing date. Applications filed based upon a "bona fide" intention to use the mark in commerce, under 15 U.S.C. 1051(b), must be supplemented with specimens or facsimiles before the registration issues. In order to meet the minimum requirements for filing an amendment to allege use or statement of use, one specimen or facsimile must be submitted. 37 CFR 2.76(e)(2) and 2.88(e)(2).

Certification or Certified Copy of Foreign Registration

Under 15 U.S.C. 1126(e), "an application [based on a foreign registration] shall be accompanied by a certification or a certified copy of the registration of the country of origin of the applicant." 37 CFR 2.21(a)(5) requires the certification or certified copy to be included with the application in order to receive a filing date.

6. Comments on the following Questions and Any Other Related Matters Are Solicited

Questions Common to Patent and Trademark Applications

- What benefits do you foresee for the applicant if electronic filing is adopted? What disadvantages do you foresee?
- Should the PTO require paper applications to be filed in a specific order and format to facilitate conversion to electronic format? What advantages and disadvantages do you foresee?
- Should the electronic file become the official agency file?
- Should electronic filing be expanded to encompass amendments and other submissions to the PTO?
- Should paper or electronic application filings receive a filing date only if they meet order and format requirements, or should compliance be subject to a surcharge?
- Should the PTO accept electronic filing by diskette, online, or both?
- Should applications filed in paper form be converted to electronic form by the PTO? Should the PTO charge a fee for this service?
- If paper applications are converted to electronic form by the PTO, should the PTO destroy or retain the paper applications?
- Should fees be processed electronically?
- Should the PTO create a registry of "electronic application transmitters" capable of transmitting patent and trademark applications for others? If so, what, if any, criteria should be established before one could be "registered" as an "electronic application transmitter?"

Questions Related Solely to Patent Issues

- Should the PTO require the oath or declaration to an electronically filed patent application be filed on paper to authenticate that applicants believe themselves to be original and first inventors of the subject matter of the electronically filed application?

If not, how should the filing of the oath or declaration be accomplished?

1. How should the filing of certified copies of foreign patent applications be accomplished for an electronically filed patent application?

Questions Related Solely to Trademark Issues

m. Should the PTO require electronically filed applications to include a scanned, signed declaration in order to receive a filing date? Should the PTO accept declarations in electronic form with some type of electronic signature?

If not, should 37 CFR 2.21 be amended to permit unverified applications to be accorded a filing date? If so, within what time period must an unverified application be ratified by the submission of a signed declaration?

How long should the PTO retain the signed declaration after it has been scanned and merged into the electronic file?

n. Should "use" applications submitted without a specimen be given a filing date?

If so, within what time period after filing must the specimens be submitted? Should the number of required specimens be reduced?

How long should the PTO keep the specimens after they are scanned and merged into the electronic file?

o. Should Section 44(e) of the Trademark Act (15 U.S.C. 1126(e)) be amended to permit applicants to submit a facsimile of the certification or certified copy of the foreign registration?

Alternatively, should the statute be amended to permit Section 44(e) applicants to obtain a filing date absent a certification or certified copy of the foreign registration? If so, within what time period must a Section 44(e) application be supplemented with a certificate or certified copy of the foreign registration?

How long should the PTO retain the certification or certified copy after it has been scanned and merged into the electronic application?

7. Candidates for the Pilot Programs

Any person interested in participating in one of the pilot programs identified above is requested to contact Edward R. Kazenske, Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, c/o Commissioner of Patents and Trademarks, Washington, D.C. 20231. If delivered by hand, written statements of interest should be brought to Suite 906, Crystal Park 2, 2121 Crystal Drive, Arlington, Va. 22202. Telephone: (703) 305-8600. Please indicate which pilot program you wish to participate in and please be certain to include a telephone number where you may be reached.

Nov. 23, 1992

DOUGLAS B. COMER
*Acting Assistant Secretary
and Acting Commissioner
of Patents and Trademarks*

[1145 OG 378]

(8) Identifying Application Correspondence With Issue Batch Number

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example: "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch

Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

Jan. 16, 1976

RICHARD J. SHAKMAN
*Assistant Commissioner
for Administration*

[943 O.G. 519]

(9) Post Card Receipt Reminder

Applicants and the agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for each document for which a receipt is desired.

Nov. 21, 1968

RICHARD A. WAHL
Assistant Commissioner

[857 O.G. 667]

(10) Acknowledgement of Receipt of a Patent or Trademark Application

When early notification of the serial number of newly filed application papers is desired, a *stamped, self-addressed post card* should be submitted with each application. Immediately after the mail has been opened in the Patent and Trademark Office, the post card will be stamped with both the receipt date and the serial number, and then returned to the addressee.

Within recent months, hundreds of cards could not be successfully returned because of insufficient postage or incomplete or nonexistent forwarding addresses. Accurate and complete addresses, including ZIP codes, are necessary to ensure prompt acknowledgement of the receipt of patent and trademark applications.

To assist in easy identification once the post card has been returned, it is suggested that the post card include applicant's names and title of invention.

When more than one set of application papers is filed under one cover, a return post card should be attached to each set of papers for which a receipt is desired.

July 19, 1982

THERESA A. BRELSFORD
*Acting Assistant Commissioner
for Administration*

[1021 O.G. 96]

(11) Inclusion of Preliminary Classification on Filing Receipts

In response to a request from a patent attorney, we will print the preliminary classification assigned to an application on the filing receipt. It will show the class only and will be labeled "PRELIMINARY CLASS:". The new field will appear on the filing receipt shortly. We will not accept requests to correct

the filing receipt for errors in or changes to the preliminary class.

Feb. 18, 1987

THERESA A. BRELSFORD
*Assistant Commissioner
for Administration*

[1076 OG 25]

(12) Handling of Status Inquiries

This notice is intended to supplement the discussion set forth in the *Official Gazette* Notice published at 893 *Official Gazette* 810 entitled "Status Inquiries" (Dec. 21, 1971).

It has come to the attention of the Patent and Trademark Office (PTO) that its employees may have improperly released confidential information concerning pending applications. Specifically, issue date and patent number information assigned to pending applications may have been improperly released.

No information concerning pending or abandoned patent applications (except reissue applications and reexamination proceedings) may be given to the public by the PTO without the authorization of the applicant or the assignee or attorney or agent of record. 35 USC § 122 and 37 CFR § 1.14. Other exceptions are specified at 37 CFR § 1.14.

However, PTO employees will release information on the status of patent applications to the applicant or assignee or attorney or agent of record if the identity of the requestor can be adequately verified as set forth below.

Telephonic status inquiries should continue to be directed to the PTO clerical personnel. The PTO clerical personnel will obtain the caller's full name, the application serial number and the caller's telephone number. The PTO clerical personnel will ask the caller if there is an attorney or agent of record.

If there is an attorney or agent of record, the PTO clerical personnel will ask for his/her registration number. If the registration number is not known, the PTO clerical personnel will ask for the name of the attorney or agent of record. The PTO clerical personnel will inform the caller that an attorney or agent of record will be called after verification of his/her identity and that the requested status information concerning the application will be released to that attorney or agent.

If there is no attorney or agent of record, the PTO clerical personnel will ask the caller why he/she is entitled to information concerning the application. If the caller identifies himself/ herself as an applicant or an authorized representative of the assignee of record, the PTO clerical personnel will ask for the correspondence address of record. Then, the PTO clerical personnel will inform caller that his/her association with the application must be verified before any information concerning the application can be released, and that he/she will be called back. If the caller indicates that he/she is not an applicant or an authorized representative of the assignee of record, the PTO clerical personnel will inform caller that no information concerning that application will be released.

The PTO clerical personnel will then verify the identity of any caller claiming to be associated with the application by checking the Patent Application Locating and Monitoring (PALM) system or the application file.

If an attorney or agent is of record in the application, the PTO clerical personnel will release the status information concerning the application by calling the attorney's or agent's telephone number obtained from PALM or the application file.

If the applicant or an authorized representative of the assignee of record requests information, and there is no attorney or agent of record and the correspondence of record has been verified, the PTO clerical personnel will release the status information to the caller using the telephone number given by the caller. If the caller's association with the application cannot be verified, no information concerning the application will be released. However, the caller should be informed that the caller's association with the application could not be verified.

In handling an in-person status request, PTO clerical personnel will ask the requester to wait while verifying their identification as set forth above.

May 14, 1990

HARRY F. MANBECK, Jr.
*Assistant Secretary and Commissioner
of Patents and Trademarks*

[1115 O.G. 17]

(13) Change in Legal Holidays

The Commissioner's Notice of Sept. 25, 1979, "Change in Legal Holidays," is hereby rescinded, in view of Public Law 98-144, enacted Nov. 2, 1983, which amended the listing of legal public holidays in 5 USC § 6103. That amendment took effect in 1986 and added a new legal holiday relating to the birthday of Martin Luther King, Jr. This new holiday is designated for the third Mon. in Jan.

Section 6103, as amended, reads as follows:

New Year's Day, Jan. 1.
Birthday of Martin Luther King, Jr., the third Mon. in Jan.
Washington's Birthday, the third Mon. in Feb.
Memorial Day, the last Mon. in May.
Independence Day, July 4.
Labor Day, the first Mon. in Sept.
Columbus Day, the second Mon. in Oct.
Veterans Day, Nov. 11.
Thanksgiving Day, the fourth Thurs. in Nov.
Christmas Day, Dec. 25.

Each of the holidays enumerated will constitute a "Federal holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code. In accordance with 37 CFR 1.6(a) and 1.10(a), the Patent and Trademark Office will not receive papers on these holidays. Actions required to be taken on such days may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

July 15, 1986

DONALD J. QUIGG
*Assistant Secretary and
Commissioner of Patents
and Trademarks*

[1069 OG 12]

(14) Closing of Patent and Trademark Office on Monday, Jan. 26, 1987

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on Jan. 26, 1987, the Patent and Trademark Office will consider Jan. 26, 1987, a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due that day will be considered as timely for the purpose of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on Jan. 27, 1987.

Jan. 28, 1987

DONALD W. PETERSON
*Acting Assistant Secretary
and Commissioner of Patents
and Trademarks*

[1075 OG 29]

(15) Closing of Patent and Trademark Office on Monday, Feb. 23, 1987

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on

Feb. 23, 1987, the Patent and Trademark Office will consider Feb. 23, 1987, a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on Feb. 24, 1987.

Feb. 27, 1987

DONALD J. QUIGG
*Assistant Secretary and
Commissioner of Patents
and Trademarks*

[1098 OG 548]

(16) **Closing of the Patent and Trademark Office
on Friday, Jan. 20, 1989**

In view of the fact that Federal and District of Columbia government offices in Washington, D.C. metropolitan area, including the Patent and Trademark Office were officially closed on Jan. 20, 1989, the Patent and Trademark Office will consider Jan. 20, 1989, a "holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on Jan. 23, 1989. Papers deposited in U.S. Department of Commerce District Offices on Jan. 20, 1989, will similarly be considered timely for the purposes of 35 U.S.C. §§ 119, 133 and 151.

Jan. 6, 1989

DONALD J. QUIGG
*Assistant Secretary and
Commissioner of Patents
and Trademarks*

[1098 OG 548]

(17) **Closing of Patent and Trademark Office
on Thursday, January 20, 1994
and Friday, February 11, 1994**

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on January 20, 1994 and February 11, 1994, the Patent and Trademark Office will consider each of those days a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due on either of those days will be considered as timely for the purpose of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on the next succeeding business day on which the Patent and Trademark Office was open (i.e., Friday, January 21, 1994, and Monday, February 14, 1994, respectively).

March 10, 1994

BRUCE A. LEHMAN
*Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks*

[1161 OG 12]

(18) **Filing of Papers During Unscheduled Closings
of the Patent and Trademark Office**

When the Patent and Trademark Office is officially closed by Executive Order of the President or by the Office of Personnel Management for an entire day because of some unscheduled event, such as adverse weather conditions, the Patent and Trademark Office will consider that day as a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on the next succeeding business day on which the Patent and Trademark Office is open.

When the Patent and Trademark Office is open for business during any part of a business day between 8:30 a.m. and 5:00 p.m., papers are due on that day even though the Office may be officially closed for some period of time during the business day because of an unscheduled event. The procedures of 37 CFR 1.8 or 1.10 may be used, as appropriate, for the filing of papers. On any day the Office is open for at least part of the day, papers may also be deposited up to midnight in any boxes which are provided by the Patent and Trademark Office under 37 CFR 1.6(c).

Information regarding whether or not the Office is officially closed on any particular day may be obtained by calling (703) 557-INFO.

Nov. 18, 1988

DONALD J. QUIGG
*Assistant Secretary and
Commissioner of Patents
and Trademarks*

[1097 OG 53]

(19) **Iraqi Sanctions Regulations**

On January 18, 1991, the Department of the Treasury, Office of Foreign Assets Control (OFAC), published the Iraqi Sanctions Regulations (Regulations) (31 CFR Part 575). 56 Fed. Reg. 2112. The regulations implement Executive Orders 12722 (August 2, 1990) and 12724 (August 9, 1990) relating to certain property and transactions in which the Government of Iraq and persons in Iraq may have an interest.

It appears that the provisions of the Executive Orders and Regulations prohibit transactions relating to the filing or prosecution of applications for patents or for registration of trademarks, where an Iraqi interest is involved. The prohibited transactions, however, may be authorized by a specific license issued pursuant to the procedures described in Section 575.801 of Subpart H of the Regulations.

This notice is intended to alert practitioners and applicants to the prohibitions which may apply to matters before the Patent and Trademark Office (PTO) if Iraqi interests are involved. This notice is further intended to advise that where such interests or potential interests come to the attention of the PTO, an appropriate specific license from OFAC may be required.

Jan. 29, 1991

HARRY F. MANBECK, Jr.
*Commissioner of Patents
and Trademarks*

[1123 OG 37]

(20) **United States Postal Service Interruption and
Emergency in South Florida**

The United States Postal Service (USPS) has informed the Patent and Trademark Office (PTO) that an interruption in its service in South Florida was caused by Hurricane Andrew. Normal postal delivery and collection operations of the USPS were impacted by Hurricane Andrew throughout South Florida to varying degrees from Aug. 23, 1992, through Sept. 12, 1992. By Sept. 12, 1992, the USPS restored delivery and collection operations to all of South Florida with the exception of Homestead.

The PTO is designating the interruption in the service of the USPS in South Florida and the overall destruction caused by Hurricane Andrew as a postal service interruption and an emergency within the meaning of 35 U.S.C. 21(a). Any request to accept a paper or fee delayed by the Hurricane Andrew emergency should be directed to Jeffrey V. Nase, Director, Office of Petitions, (703) 305-9285, PK2-913, for patent-related mat-

ters and to Lynne G. Beresford, Trademark Legal Administrator, (703) 305-9464, PK2-910, for trademark-related matters.

Oct. 7, 1992

DOUGLAS B. COMER
*Acting Assistant Secretary and Acting
Commissioner of Patents and Trademarks*

[1144 OG 8]

(21) **UNITED STATES POSTAL SERVICE
INTERRUPTION and EMERGENCY IN LOS ANGELES**

The January 17, 1994, Los Angeles earthquake has caused a service interruption in United States Postal Service (USPS) in the greater Los Angeles area. Normal postal delivery and collection operations of the USPS were impacted by the earthquake throughout the greater Los Angeles area to varying degrees from January 17, 1994, through January 21, 1994.

The Patent and Trademark Office (PTO) is designating the interruption in the service of the USPS in the greater Los Angeles area and the overall destruction caused by the earthquake as a postal service interruption and an emergency within the meaning of 35 U.S.C. 21(a). Any request to accept a paper or fee delayed by this emergency should be directed to Jeffrey V. Nase, Director, Office of Petitions, (703) 305-9285, PK3-704, for patent-related matters, and to Lynne G. Beresford, Trademark Legal Administrator, (703) 305-9464, PK2-910, for trademark-related matters.

February 9, 1994

BRUCE A. LEHMAN
*Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks*

[1160 OG 39]

(22) **Rules Concerning Conduct on Patent
and Trademark Premises**

1. *Applicability*

These rules apply to all premises under the charge and control of the U.S. Patent and Trademark Office (PTO) through the General Services Administration and to all persons entering such premises.

2. *Admission to Property*

Patent and Trademark Office facilities are closed to the public outside of normal working hours. During normal working hours, a valid User Pass is required to enter PTO premises.

The individual's User Pass must be displayed at all times while on PTO premises.

3. *Preservation of Property/Conduct on PTO Premises*

The following activities are prohibited on PTO premises:

a. Improperly disposing of rubbish; willfully destroying or damaging property; theft of property; creating a hazard to persons or things; and placing Government documents or materials in storage lockers.

b. The willful and unlawful concealment, removal, mutilation, obliteration or destruction, or attempts to do so, or, with intent to do so, or taking and carrying away of any record, book, paper, document, or other things from the facilities shall result in a fine of not more than \$2,000 or imprisonment of not more than 3 years, or both. See 18 U.S.C. § 2071.

c. Removal of papers, materials, or other Government property from designated areas. Within a designated area, papers or other Government property must be returned to its proper location after use, unless otherwise posted.

d. Using PTO premises and facilities as a place of business. It is prohibited to reserve work areas, use PTO as a mailing

address, use PTO stationery, or a PTO telephone number as a personal telephone number.

4. *Inspection*

Packages, briefcases, storage lockers and other containers in the possession of visitors, employees, or other persons arriving at, working at, visiting, or departing from the PTO are subject to inspection. See 41 CFR § 101-20.301.

5. *Disturbances*

Disorderly conduct or other conduct which creates a loud or unusual noise or a nuisance which impedes or disrupts the performance of official duties by Government employees or which prevents the public from obtaining the administrative services provided on the property in a timely manner is prohibited. See 41 CFR § 101-20.305.

6. *Conformity with signs and directions*

Persons on the PTO premises shall at all times comply with the official signs of a prohibitory, regulatory or directory nature and with the lawful direction of PTO employees.

No rude or abusive conduct to PTO employees and fellow users.

No food or beverages are permitted.

No smoking except in designated areas.

No mechanical or electronic equipment such as radios, televisions, typewriters, computers, or photographic equipment may be used without prior permission from the Assistant Commissioner for Administration.

No use of PTO telephone and office equipment, except as specifically designated for public use.

7. *Penalties and other laws.*

Nothing in these rules shall be construed to abrogate any other Federal laws or regulations or any State and local laws and regulations applicable to any area in which property under the charge and control of the PTO through the U.S. General Services Administration is situated. See 40 U.S.C. §§ 318(c) and 486(c).

41 CFR § 101-20.315 provides that whoever is found guilty of violating the rules of conduct on Federal property contained in 41 CFR § 101-20.3 while on any property under the charge and control of the U.S. General Services Administration is subject to a fine of not more than \$50, imprisonment of not more than 30 days, or both. See 40 U.S.C. § 318c.

Failure to follow these rules may result in immediate removal from the premises, suspension of user privileges, and/or enforcement of any criminal sanctions that may apply.

Aug. 30, 1991

THERSA A. BRELSFORD
*Assistant Commissioner for
Administration*

[1131 OG 7]

(23) **Filing of a Notice of Appeal to the Court of
Appeals for the Federal Circuit in the Patent
And Trademark Office**

This notice supersedes a notice entitled Filing of a Notice of Appeal to the Federal Circuit and Service of Court Papers on the Commissioner of Patents and Trademarks published at 1079 Off. Gaz. Office 72 (June 30, 1987).

A notice of appeal to the Court of Appeals for the Federal Circuit may be filed in the Patent and Trademark Office in any one of the following ways:

A. By first-class mail addressed as follows, in which case the notice of appeal must actually reach the Patent and Trademark Office by the due date:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

B. By "Express Mail" (U.S. Postal Service only) under 37 CFR § 1.10 addressed as follows, in which case the notice of appeal is deemed filed on the date of the Express Mail certificate:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

C. By hand (on or before the due date) to the Office of the Solicitor. The Office of the Solicitor is located at:
Crystal Park II
Suite 918
2121 Crystal Drive
Arlington, Va.

D. By facsimile transmission to the Office of the Solicitor. The telephone number for accessing the Office of the Solicitor facsimile machine is (703) 557-9373. A notice of appeal will be deemed timely filed on the date the facsimile transmission is received by the Office of the Solicitor, provided an original notice of appeal is subsequently received in either of the following ways:

(1) An original, signed copy of the notice of appeal is actually received in the Office of the Solicitor within five calendar days of the facsimile transmission; or,

(2) An original, signed copy of the notice of appeal is mailed by "Express Mail" (U.S. Postal Service only) under 37 CFR § 1.10 on the day of the facsimile transmission.

The facsimile machine for receiving a notice of appeal is located in the Office of the Solicitor and is staffed during the business hours of 8:30 a.m. to 5:00 p.m., Monday through Friday, excluding holidays. Due to possible equipment failure or maintenance requirements, precautions must be taken when relying on the availability of this service near the end of the time for filing a notice of appeal.

Mar. 22, 1990

FRED E. McKELVEY
Solicitor

[1113 O.G. 27]

(24) Service of Court Papers on the Commissioner of Patents and Trademarks

Court papers other than a notice of appeal to the U.S. Court of Appeals for the Federal Circuit may be served on the Commissioner in either of the following ways:

A. By hand between 8:30 a.m. and 5:00 p.m. at the Office of the Solicitor, located in Crystal Park II, Suite 918, 2121 Crystal Drive, Arlington, Va.

B. By mail in an envelope addressed as follows:
Office of the Solicitor
P.O. Box 15667
Arlington, Va. 22215

While the above mail service address may be supplemented to include the name of the particular attorney assigned to the court case, it must not be supplemented to refer to either the Commissioner of Patents and Trademarks or the U.S. Patent and Trademark Office (PTO).

Court papers mailed to an address other than the above mail service address and court papers delivered by hand are deemed to have been served on the Commissioner when actually received in the Office of the Solicitor.

Papers which are not court papers and are intended to be filed in the PTO in connection with an application or other proceeding pending in the Office shall not be mailed to the Solicitor's mail service address. Any such papers which are mailed to the Solicitor's mail service address will not be considered to have been filed in the PTO. Instead, all such papers will be returned. No exceptions will be made to this policy.

Mar. 22, 1990

FRED E. McKELVEY
Solicitor

[1113 O.G. 28]

(25) Appeals to the Federal Circuit

Patent applicants should designate as appellants all named inventors in any notice of appeal to the U. S. Court of Appeals for the Federal Circuit when appealing a decision of the Board of Patent Appeals and Interferences.

In a recent unpublished opinion in *In re Deckert*, Appeal No. 89-1386 (Fed. Cir. Nov. 29, 1989), the Federal Circuit notes:

Deckert's co-inventors Couble and Bonnetti are not parties to this appeal because they were not specifically named in the notice of appeal. Fed. R. App. P. 15(a). See *Torres v. Oakland Scavenger Co.*, 108 S. Ct. 2405, 2409 (1988) (construing similar requirement of Fed. R. App. P. 3(c)).

Dec. 14, 1989

FRED E. McKELVEY
Solicitor

[1110 O.G. 620]

(26) Department of Commerce Patent and Trademark Office 37 CFR Parts 1 and 2

[Docket No. 80480]
Communications with the Office of the Solicitor

Agency: Patent and Trademark Office, Commerce.
Action: Final rule; technical amendments.

Summary: On Mar. 24, 1987, final rules regarding the address of certain communications to the Patent and Trademark Office were issued. (52 FR 9394, Mar. 24, 1987.) Also, on Mar. 7, 1985 and Aug. 11, 1986, final rules regarding the court review of decisions by the Patent and Trademark Office Board of Patent Appeals and Interferences and the Trademark Trial and Appeal Board, respectively, were issued. (50 FR 9383, Mar. 7, 1985 and 51 FR 28710, Aug. 11, 1987.)

This notice makes technical corrections to §1.1, 1.302 and 2.145(b) by specifying the address to which correspondence should be sent to the Office of the Solicitor. The change reflects existing practice consistent with rules of court governing service of court papers on the Solicitor. The change also will expedite the processing of other non-court communications with the Office of the Solicitor.

Effective Date: June 9, 1988

For Further Information Contact: John H. Raubitschek by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office (PTO) finds for good cause that because the technical changes made by this rule will have no substantive effect, it is unnecessary to seek prior public comment of this rule under 5 U.S.C. 553. Because a notice of proposed rulemaking and an opportunity for public comment is not required for this technical amendment, this rule is also exempt from the provisions of the Regulatory Flexibility Act requiring a regulatory flexibility analysis. The PTO has determined that this rule is not a major rule within the meaning of section 1(b) of Executive Order 12291. The PTO has also determined that this rule has no federalism implications affecting the relationship between the national government and the States as outlined in Executive

Order 12612. This rule does not contain a collection of information for purposes of the Paperwork Reduction Act.

List of subjects:

Administrative practice and procedure, Courts, Inventions and patents, Trademarks

For the reasons set forth above, 37 CFR Parts 1 and 2 are amended as follows:

Part 1-Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.1 [Amended]

Section 1.1 is amended by adding new paragraph (g)

(g) All communications relating to pending litigation which are required by the Federal Rules of Civil or Appellate Procedure or by a rule or order of a court to be served on the Solicitor shall be hand-delivered to the Office of the Solicitor or shall be mailed to: Office of the Solicitor, P.O. Box 15667, Arlington, Va. 22215 or such other address as may be designated in writing in the litigation. All other communications to the Office of the Solicitor should be addressed to: Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Any communication which does not involve pending litigation which is received at P.O. Box 15667 will not be filed in the Office but will be returned. See § 1.302(c) and 2.145(b)(3) for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit.

3. Section 1.302 [Amended]

Section 1.302 is amended by adding new paragraph (c)

(c) A notice of appeal, if mailed to the Office, shall be addressed as follows: Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Part 2-Rules of Practice in Trademark Cases

4. The authority citation for 37 CFR Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

5. Section 2.145(b) [Amended]

Section 2.145(b) is amended by adding new paragraph(b)(3).

(b)(3) The notice, if mailed to the Office, shall be addressed as follows: Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

May 3, 1988

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents
and Trademarks

[1090 O.G. 72]

(27) Appeals to the Federal Circuit from PTO

This notice was originally prepared by the Solicitor and Associate Solicitor Richard E. Schafer for presentation at the Eighth Annual Judicial Conference of the U.S. Court of Appeals for the Federal Circuit. The notice discusses litigation philosophy of the Office of the Solicitor of the Patent and Trademark Office and other matters which may be helpful to appellants and others seeking judicial review of PTO decisions in the U.S. Court of Appeals for the Federal Circuit.

October 5, 1990

FRED E. McKELVEY
Solicitor

1. Introduction

This notice discusses the philosophy of the Office of the Solicitor when representing the Commissioner before the Federal Circuit and other courts. The notice is also designed to assist appellants and others seeking judicial review of Patent and Trademark Office (PTO) decisions in the Federal Circuit. Much of what is said in the notice is also applicable to those instances where judicial review is sought of PTO decisions in a district court.

11. Solicitor's litigation philosophy

The Office of the Solicitor and its attorneys start with the proposition that justice is done when the right result is reached. The Solicitor is not an advocate who needs to win to be satisfied. Rather, the public interest is served when:

- (1) a patent issues on a patentable invention;
 - (2) a patent is refused on an unpatentable invention;
 - (3) a trademark is registered if entitled to registration under Title 15;
 - (4) a trademark is refused registration if not entitled to registration under Title 15; or
 - (5) PTO rules are properly applied within PTO and by reviewing courts.
- Our litigation philosophy is expressed in *Berger v. United States*, 295 U.S. 78, 88 (1935):

The . . . [Government attorney] is the representative not of an ordinary party to a controversy, but of a sovereignty whose obligation to govern impartially is as compelling as its obligation to govern at all; and whose interest . . . is not that it shall win a case, but that justice shall be done. As such, he is in a peculiar and very definite sense the servant of the law, the two-fold aim of which is that guilt shall not escape or innocence suffer.

The Office of the Solicitor does more than simply "defend" an appeal. Rather, it will determine whether:

- (a) appeals are ripe for judicial consideration;
- (b) there are steps a party might take in PTO to obviate the appeal, e.g., amendments which might be made to claims to conform an argument to the subject matter being claimed - we often find that arguments in a brief are based on limitations which do not appear in the claims;
- (c) there is material not in the record which might provide a full answer to an argument - particularly a new one - made in a brief; and/or
- (d) the deciding official or board should be approached to see if it wishes to reevaluate its decision in view of a change in the law, a credible argument that the decision may not be correct, or a matter which may have been overlooked.

Most of the time, it takes more effort to implement this philosophy than it would take simply to brief and argue a matter.

Generally, in a Federal Circuit matter, the Office of the Solicitor - apart from designating an appendix - does not "get deeply into" a case until appellant's brief is filed. Exceptions occur, i.e., *inter partes* patent and trademark cases where the board opinion is reviewed to see if an *amicus* brief might be appropriate to assist the Federal Circuit with PTO

practice.¹ This is not to say that an appellant should not feel free to discuss an appeal with an attorney in the Solicitor's Office. But, ordinarily in an *ex parte* case, we do not spend time until we see appellant's brief. The reason is that a large number of appeals are simply dismissed without the need for us to do much, if any, work.

Table 1, below, shows the disposition of appeals from October 1985 through April 1990. About 23%, i.e., 146, of the cases were dismissed with little, if any, work having been done by the Office of the Solicitor on the appeal. If we conducted a review of *all* appeals when filed, our Federal Circuit "workload" would increase about 23%. We do not have the resources to effectively carry on 23% more work.

We find a lot of cases are not ripe or otherwise ready for judicial review. When we determine that more work needs to be done before the Federal Circuit should consider a case, we generally move to remand. Fed. Cir. R. 27(c) provides that a remand generally should be requested prior to briefing. However, since we generally cannot efficiently take up cases until appellant's brief is filed, we now file motions to remand along with our brief. A merits panel is then in a position to evaluate whether it should hear the case on the merits or order a remand.

There are a variety of reasons why we seek remands.

Table 1
Disposition of cases in the Courts of Appeals
in which the Solicitor has appeared
October 1985 through September 1990

	Pat	TM	Total
Disposed cases:			
Affirmed	300	47	347
Modified	10	0	10
Reversed	47	17	64
Remanded ²	40	8	48
Dismissed	120	26	146
Amicus/intervene	7	2	9
Examiner testimony	1	0	1
Transfer	6 ¹	0	6
Mandamus granted	0	0	0
	Pat	TM	Total
Mandamus granted-in-Part	1	0	1
Mandamus denied	6	2	8
Mandamus dismissed	3	0	3
Totals:	541	102	643

A.

An appellant may argue that a certain feature of a claim is not shown in the prior art. Such an argument may prompt us to determine whether the feature is known. If we find the feature, we will probably ask for a remand for the purpose of making an additional rejection.⁴ In like manner, based on our respective backgrounds or other cases handled by the Office of the Solicitor, we may know of prior art which strengthens a rejection.⁵

¹See e.g., *Fujite v. Verhagen*, Fed. Cir. No. 89-1126; *Hahn v. Wong*, 13 USPQ2d 1211 (Bd. Pat. App. & Int.), aff'd, 892 F.2d 1028, 13 USPQ2d 1313 (Fed. Cir. 1989); *Perkins v. Kwon*, 886 F.2d 325, 12 USPQ2d 1308 (Fed. Cir. 1989); and *Winkler v. Guglielmino*, Fed. Cir. No. 89-1571. See also *Copelands' Enterprises, Inc. v. CNV, Inc.*, 887 F.2d 1065, 12 USPQ2d 1562 (Fed. Cir. 1989) (en banc) and *Kellogg Co. v. Pack'em Enterprises, Inc.*, Fed. Cir. No. 90-1336.

²Approximately 80% of the remands were ordered based on motions to remand filed by the Office of the Solicitor. See the discussion on remands, *infra*.

³All transfers were from a regional court of appeals to the Federal Circuit.

⁴*In re Yashuhara*, Fed. Cir. No. 85-889. The reference added on remand was relied upon by the Federal Circuit in a later decision affirming the rejection made on remand. *In re Yoshuhara*, Fed. Cir. No. 86-1634. See also *In re Merz*, Fed. Cir. No. 86-615, and *R. D. Werner Co. v. Quigg*, Civil Action No. 85-0945 (D.D.C.).

⁵See e.g., *In re Trogan*, Fed. Cir. No. 85-2724; *Flexiwatt v. Quigg*, Civil Action No. 86-2666 (D.D.C.); *In re Nilssen*, Fed. Cir. No. 87-1349; *In re Nilssen*, Fed. Cir. No. 87-1392, and *Hepar Chimie v. Mossinghoff*, Civil Action No. 85-1912 (D.D.C.).

B.

Similarly, an appellant may argue that a certain fact is true. Upon looking into the matter, we have found literature from the appellant's assignee or other evidence which, in our opinion, demonstrates that the argument may not be factually correct. "Since the literature or other evidence is not part of the record, we have asked for a remand so that the case may be fully developed before a merits panel is required to consider the case. We have also filed a brief on the merits asking the Federal Circuit to take judicial notice of a fact while concurrently filing a contingent motion to remand in the event the merits panel believes that judicial notice is not appropriate."⁷

C.

We have had cases where the sole issue is whether a Rule 131, 37 CFR § 1.131, affidavit is sufficient to antedate a reference. When the sufficiency of a Rule 131 affidavit is in issue, we search for a foreign or other equivalent statutory bar. When an equivalent statutory bar is found, we move to remand suggesting that the issue on appeal may well be moot.⁸

D.

In re Steele, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), suggests that indefiniteness should be taken care of prior to considering obviousness. There have been cases in which the claims are so indefinite that judicial review of an obviousness issue simply would not make sense. Remands, over appellant's objection, have been ordered.⁹

E.

There have been occasions where the Board, TTAB, or the Commissioner decides to change or reconsider a decision. A change of decision can occur, *inter alia*, due to:

1. new "law" as announced in a court or administrative decision,¹⁰ or
2. a deciding official or tribunal determines that:
 - (a) a decision may not be correct,
 - (b) a matter was overlooked,¹¹ or
 - (c) a decision otherwise needs to be reconsidered.¹²

F.

There have been cases where, although not argued by the appellant, it did not make sense to apply existing law in a particular context. We have moved to remand. In one instance, the Board reconsidered its position, established new law, and granted relief.¹³

G.

In its opinion, the Board — without entering a new ground of rejection under Rule 196(b), 37 CFR § 1.196 — may suggest that if there is to be further prosecution, an examiner may wish to look into several possible rejections. Generally in such a case the appellant will abandon or refile under 35 U.S.C. § 120. On occasion, however, an appellant will seek judicial review. Ordinarily, we seek remands in such a case in order to avoid piecemeal judicial review.¹⁴

H.

We had one case in which an appellant "dropped" an appeal as to all but a dependent claim — only the independent claim had been discussed in appellant's brief to the Board and the Board discussed only the independent claim. We sought a remand — after the appellant's brief had been filed — so that PTO could articulate a rationale as to the sole claim left in the

⁶*In re Weitz*, Fed. Cir. No. 85-879; *In re Lowrance Electronics, Inc.*, Fed. Cir. No. 88-1180.

⁷*In re Klang*, Fed. Cir. No. 85-2825.

⁸*In re Lockner*, Fed. Cir. No. 86-1269.

⁹*In re Jacobs*, Fed. Cir. No. 85-2210.

¹⁰*In re Easton*, Fed. Cir. No. 90-1439.

¹¹*In re Giordano*, Fed. Cir. No. 87-1029; *In re Raleigh Stores Corp.*, Fed. Cir. No. 87-1183; *In re Whaleco*, Fed. Cir. No. 87-1522.

¹²*In re Brown*, Fed. Cir. No. 86-617; *Groz v. Quigg*, Civil Action No. 87-1340 (D.D.C.); *London Laboratories v. Commissioner*, Civil Action No. 86-0914 (D.D.C.); *Hashimoto v. Quigg*, Civil Action No. 86-1595 (D.D.C.); and *Katrapat AG v. Quigg*, Civil Action No. 87-0250 (D.D.C.).

¹³*Papst-Motoren GmbH & Co. v. Quigg*, Civil Action No. 86-1168 (D.D.C.). The Board's decision on remand is published, *Ex Parte Papst-Motoren*, 1 USPQ2d 1655 (Bd. Pat. App. & Int. 1986).

¹⁴See *Tofe v. Winchell*, 645 F.2d 58, 63 [headnote 6], 209 USPQ 379, 384 (CCPA 1981). See also *Poradis v. Quigg*, Civil Action No. 87-1486 (D.D.C.) and *Clough v. Quigg*, Civil Action No. 87-2304 (D.D.C.).

appeal.¹⁵ Alternatively, we could have argued the appeal on the basis of the independent claim. However, in the context of the particular case, that alternative did not make sense.

I.

We had a case where the application on appeal was deemed to be abandoned. We moved to remand to clarify the status of the application.¹⁶ We also had a trademark appeal in which registration in the United States could not occur until registration took place abroad.¹⁷ Obviously, there was no reason to proceed in the Federal Circuit until registration occurred in the foreign country. When an appeal is taken in a trademark case, we always check to be sure that the registration relied upon is "alive." Appellant also should be sure that the registration has not expired. In one trademark appeal, the likelihood of confusion issue became moot on appeal when we discovered that the registration cited against the appellant expired without being renewed.

Most attorneys representing appellants will agree to a remand when approached by an attorney in the Office of the Solicitor — regardless of the time a suggestion to remand is made. A remand saves appellant, the Federal Circuit and our office time and money and in the long run contributes to the effective administration of justice within PTO and the Federal Circuit. In some cases, our motions to remand have been opposed. In one published opinion, an opposed motion was granted notwithstanding appellant has filed its principal brief,¹⁸ in another opinion, relief was denied.¹⁹ It appears the Federal Circuit has adopted, as a general rule, the latter opinion. See Fed. Cir. R. 27(c).

We will not attempt to reconcile Fed. Cir. R. 27(c) with what we regard to be the better policy expressed in *In re Gould*. We will point out, however, that if an appeal proceeds in the face of a motion to remand,

(a) an appellant will have to spend money to have its attorney appear for oral argument,

(b) the merits panel will have to spend time preparing for oral argument, holding oral argument, and writing an opinion,

(c) PTO will have to expend resources preparing for and presenting oral argument, and

(d) prosecution on the merits may be reopened after a mandate is entered if a viable rejection remains to be considered. It is possible, of course, that we might prevail on the merits, thereby obviating any need for a remand. However, if we do not prevail, PTO can — and often does — reopen prosecution of the application upon entry of the Federal Circuit's mandate to consider the matter raised by a motion to remand.²⁰

Sometimes an appellant will decide to file a second application, i.e., a continuation application or another trademark application, and simultaneously pursue the appeal. We believe appellant has a responsibility to call our attention to the fact that a second application has been filed. Knowledge of the second application is material to steps we might take.

First, perhaps any appeal (or civil action) should be suspended pending outcome of proceedings on the second application or dismissed without prejudice to another appeal in the event a final adverse Board decision is entered in the second application. In effect, by filing a second application, appellant admits that there are available administrative remedies and that those remedies have not been exhausted.

Second, it is in PTO's best interest that the examiner handling the second application be aware of the existence of an appeal. The examiner may ask our office for assistance, as may the Board, during prosecution of the second application.

III. Notice of appeal

¹⁵*In re Hvatt*, Fed. Cir. No. 85-2224.

¹⁶*In re Goodman*, Fed. Cir. No. 87-1056. The Commissioner's decision reviving the application is reported, *In re Goodman*, 3 USPQ2d 1866 (Comm'r Pat. 1987). See also *In re Greven*, Fed. Cir. No. 87-2341.

¹⁷*In re Matsushita Electric*, Fed. Cir. No. 89-1526.

¹⁸*In re Gould*, 673 F.2d 1385, 213 USPQ 628 (CCPA 1982). Relief in this case was ultimately granted in PTO. *Ex parte Gould*, 6 USPQ2d 1680 (Bd. Pat. App. & Int. 1987).

¹⁹*In re Hester*, 838 F.2d 1193, 5 USPQ2d 1832 (Fed. Cir. 1988). Relief on the merits was ultimately granted by the Federal Circuit in an unpublished opinion.

²⁰*In re Ruschig*, 379 F.2d 990, 154 USPQ 118 (CCPA 1967); *In re Fisher*, 448 F.2d 1406, 171 USPQ 292 (CCPA 1971).

Recent amendments have been made to conform PTO practice as much as possible to Fed. R. App. 4. See 54 Fed. Reg. 29548 (July 13, 1989), reprinted in, 1105 Off. Gaz. Pat. Office 5 (Aug. 1, 1989).

A. Time for appeal

If an appeal from a PTO decision to the Federal Circuit is authorized by law, the time for filing a notice of appeal in PTO was changed in August 1989 to two (2) months or 60 days, whichever is longer. The time for seeking judicial review by civil action under 35 U.S.C. §§ 145 or 146 is also two (2) months or 60 days, whichever is longer.

The filing of a request for reconsideration in PTO tolls the time for filing a notice of appeal. After a decision on reconsideration is entered in PTO, the two month period begins to run.

The time for appeal to the Federal Circuit is set by the Commissioner. 35 U.S.C. § 142; 15 U.S.C. § 1071(a)(2). The period for appeal must be at least 60 days. A notice of final rule was effective in August 1989 setting the time for appeal to two months or 60 days — whichever is longer. The dichotomy which used to exist between the 60-day period for initial decisions and the 30-day period for decisions on reconsideration²¹ no longer exists.

B. Cross appeals

In *inter partes* cases, a cross-appeal may be filed within fourteen (14) days of service of an appeal or two months after the PTO decision being appealed, whichever is later.

C. Requests to extend time to appeal

A request for an extension of time to file a notice of appeal before the appeal period expires can be granted by the Commissioner upon a showing of good cause.

A request after the appeal period expires must establish excusable neglect. The "excusable neglect" standard applied by PTO is the same as that applied by the courts of appeals.

All requests for an extension of time to appeal should be directed to the attention of the Office of the Solicitor.

D. Where to file a notice of appeal

The original notice must be filed in PTO — filing only in the Federal Circuit does not perfect an appeal. However, a copy must also be filed in the Federal Circuit. Fed. Cir. R. 15. A copy of the decision being appealed, and any decision on reconsideration, should be attached to the copy of the notice of appeal filed in PTO and with the Federal Circuit.

The original notice may be filed in any of the following ways:

1. By hand-delivery to the Office of the Solicitor between 8:30 a.m. and 5:00 p.m. at:
Office of the Solicitor
2121 Crystal Drive
Suite 918
Arlington, Virginia

2. By first-class mail addressed to:
Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

3. By Express Mail under 37 CFR § 1.10 addressed to:
Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

A certificate of mailing under 37 CFR § 1.8 cannot be used to file a notice of appeal. A notice of appeal filed in PTO using a certificate of mailing under 37 CFR § 1.8 is deemed filed when received in PTO. *In re Thrifty Corp.*, 231 USPQ 560 (Comm'r Pat. 1986).

²¹37 CFR § 1.304(a) (1989); 37 CFR § 2.145(d) (1989).

A notice of appeal mailed to the Solicitor's Postal Box in Arlington, Virginia is deemed filed when received in the Office of the Solicitor.

E. Content of notice of appeal

A notice of appeal should identify all parties appealing. Fed. R. App. P. 15(a). See *Torres v. Oakland Scavenger Co.*, 487 U.S. 312, 317 (1988) [construing similar requirement of Fed. R. App. P. 3(c)].

Thus, in a case where there are joint inventors, the notice of appeal should identify all inventors. The notice of appeal should not identify John Doe et al. as appellants; rather, it should identify as appellants all named inventors, i.e., "John Doe and Richard Roe appeal . . ."

A notice of appeal need simply state that:

John Doe and Richard Roe appeal to the U.S. Court of Appeals for the Federal Circuit from a final decision entered by the Board of Patent Appeals and Interferences on June 15, 1990, and from a decision on reconsideration entered by the Board on July 15, 1990.

There is no need to give reasons in the notice of appeal. See 37 CFR §§ 1.4 and 1.5 for material which should appear in the "heading" of the notice of appeal.

IV. Transmittal of certified list

After a notice of appeal is received, a determination is made whether the notice was timely filed.

Appellant will be advised if the appeal is untimely. Fed. Cir. R. 15(b)(1) governs proceedings when a notice of appeal is not timely filed:

If the Commissioner notifies the clerk that the notice of appeal was not timely, the clerk shall order the appellant to show cause why the appeal should not be dismissed, and thereupon refer the response to the court.

In order to properly respond to the Federal Circuit, an appellant may wish to file a request for an extension of time, which should be filed in the Office of the Solicitor, and establish that the untimely filing of the notice of appeal was a result of excusable neglect. Any decision on the request will be copied to the Clerk of the Federal Circuit for such action as may be appropriate. A decision by the Commissioner granting a request to extend the time for filing the notice of appeal will discharge the show cause order entered by the Clerk.

A certified list, consisting of the contents of the application, interference, opposition, cancellation, or other proceeding is copied and forwarded to the Federal Circuit with a statement indicating whether the notice of appeal was considered timely filed. In *ex parte* patent appeals the certified list usually does not include the contents to any "parent" applications unless the application involved in the appeal is a "file wrapper continuation" under 37 CFR § 1.62.

A copy of the certified list is mailed to the appellant or, in the case of an *inter partes* proceeding, all parties.

In *ex parte* patent or trademark appeals, an attorney in the Office of the Solicitor is assigned to the appeal at the time the certified list is forwarded to the Federal Circuit. Counsel for appellant should initiate a discussion with the Solicitor's Office attorney assigned to the case to determine the contents of the appendix.

Upon receipt of the certified list, the appeal will be docketed by the Federal Circuit. An appeal number is assigned to each appeal by the Federal Circuit. Appellant's 60-day period for filing a brief runs from the later of the date the appeal is docketed by the Federal Circuit or the certified list is served. Fed. Cir. R. 31(a). Since the appeal is docketed after the certified list is served in the case of PTO appeals, the 60-day period almost always runs from the date the appeal is docketed.

V. Service of court papers on the Solicitor

The mail service address for the Solicitor is:

Office of the Solicitor
P. O. Box 15667
Arlington, Virginia 22215

Only litigation papers should be mailed to the Post Office box address. Other papers intended for filing in PTO should be addressed as specified in 37 CFR § 1.1. Non-litigation papers will be returned and will not be forwarded to the Mail Room.

Litigation papers not served by hand must be mailed to our Post Office box. Litigation papers mailed or delivered to the

Mail Room of PTO, left in PTO's night deposit box, or left with a PTO employee in an office other than the Office of the Solicitor, are deemed served when received in the Office of the Solicitor.

The Office of the Solicitor is open from 8:30 a.m. to 5:00 p.m. Litigation papers served by hand must be delivered between 8:30 a.m. and 5:00 p.m. to:

Office of the Solicitor
2121 Crystal Drive
Suite 918

Arlington, Virginia

Unless permitted by court rules or order, delivery does not include facsimile transmission.

VI. Motions

Motions are inevitable in Federal Circuit and other court practice. Before a motion is filed, appellant should contact the Solicitor's Office to see if there is agreement on the requested relief and the proposed order. If there is no opposition to a procedural order, it can be entered by the Clerk, thereby obtaining prompt relief and obviating the need for a judge or motions panel to consider the matter.

VII. Appendix

A. Designation

The Office of the Solicitor typically designates the following items for inclusion in the appendix in addition to the mandatory items specified in Fed. Cir. R. 30.

In *ex parte* patent cases, we generally designate:

- (1) the specification;
- (2) any drawings;
- (3) the prior art supporting the rejection;
- (4) the final rejection and any Office action referenced in the final rejection;
- (5) the examiner's answer; and
- (6) any evidence submitted to support patentability.

In *ex parte* trademark cases, we generally designate:

- (1) the trademark application, including the drawing;
- (2) specimens;
- (3) the trademark examining attorney's statement; and
- (4) registrations supporting the refusal and any other evidence relied upon by the examining attorney the TTAB.

It should be noted that Fed. Cir. R. 30(a)(2)(iii) prohibits the inclusion of briefs filed by an applicant in PTO without leave of the court. However, the examiner's answer and examining attorney's statement may be designated and included without leave. Fed. Cir. R. 30(a)(2).

While the items in the appendix differ from case to case, a typical appendix in an *ex parte* patent appeal contains the following items in the following order:

- (1) table of contents;
- (2) the initial decision of the Board;
- (3) any decision on reconsideration;
- (4) a copy of the certified list, which corresponds to the docket entries mentioned in Fed. R. App. P. 29(a)(1);
- (5) the specification;
- (6) the final rejection;
- (7) the examiner's answer;
- (8) any prior art relied upon by PTO;
- (9) any rebuttal evidence, e.g., affidavits under Rule 131, 37 CFR § 1.131, or Rule 132, 37 CFR § 1.132; and
- (10) a copy of the rejected claims.

With respect to the last item, Fed. Cir. R. 30(a)(3) provides:

In appeals from . . . [PTO], the appendix shall, unless the parties mutually agree to the contrary, include a copy of all rejected claims in an *ex parte* patent appeal, a copy of all counts in a patent interference appeal, and both a copy of the trademark sought to be registered or cancelled and a copy of any registration relied upon to refuse or oppose registration or to seek cancellation of a registered mark in an *ex parte* or an *inter partes* trademark appeal.

If the material designated as the appendix exceeds 100 pages, a draft copy of the appendix, with page numbers, should be sent to the Office of the Solicitor. Upon receipt, if we see any problem with the appendix, including any failure to comply

with Federal Circuit rules, we promptly advise appellant. Preparation of a draft appendix will also insure that all briefs properly refer to pages of the appendix.

B. Page numbering

Fed. Cir. R. 30(c)(2) requires that page numbers be centered in the bottom margin of each page and that other pagination marks be redacted if necessary to avoid confusion. Numbering the appendix pages with a format such as "0001" generally avoids confusion with other page numbers.

If the designated appendix is less than 100 pages (which should be copied on both the front and back), the appendix is bound with appellant's principal brief. If the designated appendix is more than 100 pages, the appendix is filed separately within seven (7) days of the date the last reply brief is filed. Fed. Cir. R. 30(a)(4).

C. Legible materials

An appendix will often contain copies of materials which are illegible. In cases where counsel for an appellant does not have legible copies of materials which are available in PTO, contact the Office of the Solicitor and we will arrange to send a legible copy.

Handwritten notes in the margin of counsel's copy of Office actions should be removed. The proper place to argue a case is in a brief - not in notes in the margin.

VIII. Briefs

A. Statement of the facts

Fed. R. App. P. 28(a)(3) requires that an appellant file a statement of facts relevant to the issues presented for review. Fed. Cir. R. 28(b) provides that the appellee's statement of the case should be limited to the specific areas of disagreement with those of the appellant. Absent disagreement the appellee shall not include a statement of the case in his brief. *Id.* In our view these rules place the responsibility to provide a complete and neutral statement of facts on the appellant. Appellant should remember that it *lost* below. Hence, the "facts" are not those the appellant would like them to be; rather, the "facts" are those found by the Board. The statement of the facts in a brief is not the place to argue that the Board was clearly erroneous in making a finding of fact.

In our experience, appellants' statement of the facts invariably include argument; fail to describe all the facts relevant to the issues; state the facts in a light most favorable to appellant despite contrary findings below; or state conclusions - often without citation to the appendix. As a result, we typically find it necessary to include a detailed and, we believe, a complete and neutral statement of facts - with full citations to the appendix.

We particularly note that when "new" counsel is retained to handle the Federal Circuit appeal, the arguments on appeal often bear no resemblance to the arguments made to the Board. As a matter of logic, it would seem that the Board could not possibly have erred below on the basis of an argument made for the first time in the Federal Circuit. See *Keebler Co. v. Murray Bakery Products*, 866 F.2d 1386, 9 USPQ2d 1736 (Fed. Cir. 1989) (since Keebler failed to tell the TTAB it was interested in Murray's "intent," it could not use intent as a basis for showing "error" by the TTAB; prescience is not a required characteristic of the board and the board need not divine all possible afterthoughts of counsel that might be asserted for the first time on appeal).

B. References in brief to the appendix

All factual assertions made in the brief should be supported with citation to the appendix. How the Federal Circuit is supposed to know that an assertion is correct, when no reference is made to the appendix in support of the assertion, is something we have not been able to figure out. The Federal Circuit has often noted, with apparent disapproval, the absence of a citation to the appendix in support of a party's position.²² Failure to cite to the appendix may affect an attorney's credibility before the Federal Circuit and diminish the impact of otherwise meritorious arguments. If counsel feels that it is necessary to make factual assertions and cannot point to the specific portion of

the appendix supporting the assertion, consideration should be given to refiling the application. Argument which depends on factual assertions not supported by the record cannot have any relevance to any error in the decision under review.

Moreover, to the extent that we have influence within PTO to bring about a favorable result by way of settlement, we need to be convinced. Allegations, not supported by references to the appendix, are not likely to convince any attorney in the Office of the Solicitor of the merits of an appellant's position.

IX. Oral argument

A. When we appear

An attorney from the Solicitor's Office will appear and present argument in cases in which the appellant intends to present oral argument. We will submit on the briefs only (1) where appellant submits on brief and (2) no reply brief has been filed or we conclude that the reply brief does not require comment at the oral hearing. On the other hand, if a reply brief raises a substantial issue, particularly a "new" issue, we will appear even if appellant waives oral argument.

B. Discussing the [alleged] error

An appellant has a burden of showing that the Board erred in its decision.²³ Factual findings below must be shown to be clearly erroneous,²⁴ while legal conclusions are reviewed for correctness or error as a matter of law.²⁵ Having only a short time for oral hearing, typically fifteen minutes, appellants should direct their remarks to the purported errors in the Board's decision. Based upon the 60 to 80 cases we argue annually, we can assure appellants that Federal Circuit merits panels are familiar with the record and the proceedings under review. Counsel may not want to use part of the 15 minutes normally allocated for oral argument by:

(1) explaining that the case is an appeal from the Patent and Trademark Office (the merits panel already knows that because the briefs have been read);

(2) identifying the appellant or assignee (because it is essentially irrelevant);

(3) reviewing the facts of the case, etc.

However, counsel should be thoroughly familiar with the record and be prepared to identify the portions which support their arguments.

We suggest oral argument by an appellant should start by saying "The error below was . . ." and here's why.

C. Visual aids

Fed. Cir. R. 34(c) encourages the use of visual aids. If the visual aid was not used during the administrative proceeding, written notice of the proposed use must be given at least 15 days prior to the hearing. Any written objections must be filed at least 5 days before the hearing. The rule also provides that counsel may agree on the use of visual aids.

Whether or not we will agree depends on the particular facts. We ordinarily do not disagree with enlargements ("blow-ups") of portions of the record. Where the proposed visual aid is not part of the record, we will not agree until we have had an opportunity to see the visual aid.

X. Petitions for rehearing

Petitions for rehearing can be useful if properly used. But, in our experience, petitions for rehearing filed by appellants simply reargue the case. We do not believe this is a proper function of a petition for rehearing.

Generally we will file a petition for rehearing only when (a) we believe the merits panel has made a genuine mistake - not merely a "judgment" call which happens to differ from our judgment, or (b) even where the result is correct, an opinion contains language which we believe will seriously and adversely affect PTO's ability to properly and effectively

²²In *re Durden*, 763 F.2d 1406, 1409, 226 USPQ 359, 361 (Fed. Cir. 1985) (The burden is on appellant to persuade the court that the Board was wrong).

²³*Stock Pot Restaurant v. Stockpot, Inc.*, 737 F.2d 1576, 1578, 222 USPQ 665, 667 (Fed. Cir. 1984) (findings of fact of the TTAB are reviewed under the clearly erroneous standard); *In re Caveney*, 761 F.2d 671, 674, 225 USPQ 1, 3 (Fed. Cir. 1985) (findings of fact by the Board of Patent Appeals and Interferences are reviewed under the clearly erroneous standard).

²⁴In *re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

²⁵See e.g., *Datascope Corp. v. SMEC, Inc.*, 879 F.2d 820, 827, 11 USPQ2d 1321, 1325 (Fed. Cir. 1989), cert. denied, 110 S.Ct. 729 (1990).

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administer the patent or trademark laws. See Markey, "Semantic Antics in Patent Cases," 88 F.R.D. 103, 108 (1980) (suggesting rehearing should be requested to modify opinion language which confuses the law of patents).

We suggest, and do not believe, that there is such a thing as a "routine" petition for rehearing. A truly extraordinary situation must exist before a petition for rehearing can be deemed proper.²⁶ The Office of the Solicitor has been relatively successful with petitions for rehearing. In a 20-year period before the CCPA and Federal Circuit, we can recall filing approximately 12 petitions for rehearing. Some form of relief has been granted in nine, i.e., claims found patentable in the original decision were found unpatentable on rehearing.²⁷ Language was changed in the opinion,²⁸ relief was granted in part,²⁹ etc.

XI. Issuance of mandates/termination of proceedings

As provided in Fed. R. App. P. 41(a), the Court's mandate usually issues 21 days after the entry of its decision. A request for rehearing stays the mandate until seven days after an order by the merits panel denying rehearing. Unless there are allowable claims or the Court's decision requires further proceedings by the Office, the receipt of the mandate by PTO "terminates the proceedings" for purposes of continuity under 35 U.S.C. § 120. 37 CFR § 1.197(c), 54 Fed. Reg. 29548, 29552 (July 13, 1989) *reprinted in*, 1105 Off. Gaz. Pat. Office 5, 9 (Aug. 1, 1989). If an appellant contemplates filing a "continuing" application, it should be filed prior to the receipt of the mandate by PTO to preserve the benefit of the filing date of the parent application. Proceedings terminate on receipt of the mandate, not upon the expiration of the period for applying for certiorari to the Supreme Court.³⁰

XII. Costs

In *ex parte* patent and trademark appeals from PTO, costs are not awarded for or against the Commissioner. See Fed. Cir. Practice Note to Fed. Cir. R. 39.³¹ Hence, we do not file bills of costs in *ex parte* cases.

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(28) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 2 and 3
[Docket No. 910246-2140]
RIN 0651-AA43

Changes in Patent and Trademark Assignment Practice

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.

Summary: The Patent and Trademark Office (Office) is amending the rules of practice regarding assignments in patent and trademark cases to improve and clarify the rules, to codify

changes in practice and to consolidate the rules. The Office has combined the assignment rules currently in Parts 1 and 2 into a new Part 3 directed to assignments.

Effective Date: Sept. 4, 1992. These rules will be applicable to all documents filed with the Office on or after the effective date.

For Further Information Contact: Trademark related matters: Lynne Beresford by telephone at (703) 305-9464 or by mail marked to her attention addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Patent related matters: Jeffrey V. Nase by telephone at (703) 305-9282 or by mail marked to his attention and addressed to Commissioner of Patents and Trademarks, Box DAC, Washington, D.C. 20231.

Supplementary Information: In a Notice of Proposed Rulemaking published in the Federal Register on May 10, 1991 at 56 FR 21641 and in the Patent and Trademark Office "Official Gazette" of June 4, 1991 at 1127 O.G. 8-16, the Office proposed to amend the rules of practice in patent and trademark cases to revise, simplify, remove, or clarify existing assignment rules or to codify certain practices currently in effect. Changes were proposed for rules relating to the documents that will be recorded, to the requirements for recording a document, to the effect of recording, to new cover sheet requirements, to the appointment of domestic representatives; and to prosecution by assignees and issuance to assignees. While the existing rules do not require a cover sheet to accompany each document submitted for recording, typically a cover letter is submitted to ensure proper processing of the document.

The Office has encouraged the public to use a cover letter containing specific information concerning the document being submitted with each document submitted for recording. See "Helpful Hints", 1114 Official Gazette 77 (May 29, 1990). The public has adopted the suggested procedure to such an extent that most documents now submitted for recordation are accompanied by a cover letter which contains the suggested data. Documents submitted with these cover letters have enabled the Office to greatly improve the quality and efficiency of the recording process. To better ensure that the correct data is captured in recordation and recorded promptly, the Office is making a cover sheet mandatory. The cover sheet will contain all the information necessary for the Assignment Branch to properly and promptly process the document.

Written comments were submitted by 12 firms, 2 individuals, 4 corporations and 1 organization. No one testified at the oral hearing held on July 17, 1991.

The following includes a brief discussion of the rules being changed and the reasons for those changes, a detailed section-by-section analysis of the final rules, and an analysis of the comments received in response to the notice of proposed rulemaking.

Specific Rules to be Deleted or Added: The existing rules of practice in Parts 1 and 2 of Title 37 of the Code of Federal Regulations which are deleted are §§ 1.32, 1.331, 1.332, 1.333, 1.334, 2.185, 2.186 and 2.187. These rules are deleted in their entirety and rewritten and renumbered under a new Part 3. Table 1 is provided to assist readers in correlating previous rules with the new rules.

TABLE 1

Old Section	New Section
1.32	3.71 & 3.73
1.331(a)	3.11
1.331(b)	3.26
1.331(c)	3.21
1.332	3.51
1.333	3.56
1.334	3.81
2.185(a)	3.11
2.185(a)(1)	3.31
2.185(a)(2)	3.26
2.185(a)(3)	3.41
2.185(a)(4)	3.61
2.185(b)	3.31(b)
2.185(C)	3.51
2.186	3.71 & 3.73
2.187	3.85

Consideration was given to moving § 1.12 (Assignment records open to public inspection.) to Part 3. However, since this section primarily relates to records maintained by the Office and procedures for accessing those records, and no comments were received regarding the placement of § 1.12, this section remains under the general heading "Records and Files" of the Patent and Trademark Office.

Discussion of Specific Rules to be Changed or Added: Section 1.12(a) is revised to reflect the fact that all assignment records related to pre-1955 trademark records and pre-1957 patent records were transferred to the National Archives and Records Administration (NARA) during 1990. All assignments recorded on or after January 1, 1955, for trademarks and May 1, 1957, for patents continue to be maintained by the Office. The pre-1955/1957 records have been transferred to NARA to allow for greater accessibility to the public, improvement of file integrity for the older records, and preservation of these materials. The pre-1955/1957 assignment cards, digest books, and libers were stored in four locations: the Assignment Search Room (ASR) at the Office, the Federal Records Center in Suitland, Maryland, the National Archives in downtown Washington, D.C., and the National Archives location in Alexandria, Virginia. Storage of information in these various locations made searching of old assignment records difficult. The materials located at the Federal Records Center could be ordered from the ASR. However, many times it took months to receive the materials.

All assignment records from 1837 to December 31, 1954, for trademarks and from 1837 to April 30, 1957, for patents are now maintained and are open for public inspection in the National Archives Research Room located at the Washington National Records Center Building, 4205 Suitland Road, Suitland, Maryland 20746. Assignments recorded before 1837 are maintained at the National Archives and Records Administration, 841 South Pickett Street, Alexandria, Virginia 22304.

All requests for abstracts of title continue to be provided by the Office upon request and payment of fees set forth in §§ 1.19 and 2.6. Requests for copies and certified copies of the pre-1955 records for trademarks and pre-1957 records for patents should be directed to NARA since those records are not maintained by the Office. Since these records are maintained by NARA, it is more expeditious to request copies directly from NARA, rather than the Office, which would then have to route the requests to NARA. Payment of the fees required by NARA should accompany all requests for copies.

Another change makes clear that separate assignment records are kept for patents and trademarks, and that an extra charge will be imposed by the Office on requests for copies of recorded assignments if the correct reel and frame number are not identified.

Sections 1.17 and 1.46 are amended to make reference to § 3.81, which replaces § 1.334, and delete reference to § 1.334. The amount of the fee for recording a document is not affected by this rule change.

Section 1.104(e) is amended to make reference to Part 3, which replaces § 1.331, and delete reference to § 1.331.

Section 3.1 is added to set out definitions of terms used in Part 3. Terms which are defined include "application," "assignment," "document," "Office" (meaning Patent and Trademark Office), "recorded document," and "registration." Definitions are provided to make clear the intended meanings of the terms used in Part 3. These definitions are intended to be applicable only to Part 3. For example, the term "application" is defined, for the purpose of Part 3, to mean a national application for patent, an international application for patent that designates the United States of America, or an application to register a trademark, unless otherwise indicated.

Section 3.11 replaces and modifies the practice set forth in § 1.331(a) and 2.185(a), which specify the documents the Office will record. This section specifies that assignments of patents and registrations will be recorded, as well as other documents which affect title to applications, registrations and patents. Section 3.11 requires that a completed cover sheet as specified in §§ 3.28 and 3.31 be submitted with the document to be recorded.

Section 3.16 is added to incorporate the limitation set out in 15 U.S.C. § 1060 proscribing the assignment of an intent-to-use trademark application prior to the filing of a statement of use, except as a part of the sale of an on-going business.

Because the rules in Part 3 are intended to address all rules relating to assignments, it is appropriate to refer to the statutory requirements of an assignment of an intent-to-use trademark application.

Section 3.21 replaces and modifies the practice of § 1.331(c). Section 3.21 sets forth requirements for the identification of patents or patent applications in documents submitted for recording. An assignment relating to a patent must identify the patent by number. The name of the inventor, the issue date, and title of the invention as stated in the patent may also be given in the assignment to provide additional information on the patent being assigned. An assignment relating to a national patent application must identify the national patent application by application number (consisting of the series code and the serial number, e.g., 07/123,456) or serial number and filing date. An assignment relating to an international patent application which designates the United States of America must identify the international application number (e.g., PCT/US90/01234). The name of the inventor, date of filing, and title of the invention as stated in the patent application may also be given in the assignment. If an assignment is executed concurrently with, or subsequent to, the execution of the patent application, but before the patent application is filed, it must identify the patent application by its date of execution, name of each inventor, and title of the invention so that there can be no mistake as to the patent application intended. Assignments submitted for recording that do not identify the patent or patent application as required by this section will not be recorded, but will be returned to the correspondence address that is required to be provided on the cover sheet by § 3.31(e).

Section 3.24 is added to set out formal document requirements to facilitate and expedite the recording process. This section requires that documents, either the original or a true copy of the original, submitted for recording be legible, using only one side of each page. The paper used should be flexible, white, durable, and preferably no larger than 21.6 x 33.1 cm. (8 x 14 inches), with a 2.5 cm. (one-inch) margin on all sides. Documents submitted in this form are camera-ready and can be recorded expeditiously with little additional handling required. Documents that fail to meet the legibility and single-sided paper requirements of this section will be returned as set forth in § 3.51.

Section 3.26 replaces and modifies the practice of §§ 1.331(b) and 2.185(a)(2). Section 3.26 provides that the Office will accept and record non-English documents provided they are accompanied by a verified English translation signed by the translator. Documents submitted that fail to meet the requirements of this section will be returned as set forth in § 3.51.

Section 3.27 is added to set out how documents submitted for recording should be addressed to the Office. To ensure prompt and proper processing, documents and their cover sheets should be addressed to the Commissioner of Patents and Trademarks, Box Assignments, Washington, D.C. 20231, unless they are filed together with new applications or with a petition under § 3.81(b). Petitions under § 3.81(b) should be addressed to the Commissioner of Patents and Trademarks, Box DAC, Washington, D.C. 20231. New applications and other petitions should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Section 3.28 is added to set out the requirement that all documents submitted to the Office for recording be accompanied by at least one coversheet referring either to the patent applications and patents or to the trademark applications and registrations against which the document is to be recorded. Only one set of documents and cover sheets to be recorded should be filed. If a document to be recorded includes interests in, or transactions involving, both patents and trademarks, separate patent and trademark coversheets must be submitted. If a document to be recorded is not accompanied by a completed cover sheet, the document and any incomplete cover sheet will be returned to the correspondence address for proper completion of the cover sheet and resubmission of the cover sheet and document. While the previous rules did not require a cover sheet to accompany each document submitted for recording, typically a cover letter is submitted to ensure proper processing of the document. The Office is making a cover sheet mandatory in order to better ensure prompt and proper processing of all documents submitted for recording. The cover sheet contains

all the information necessary for the Office to process the document.

Section 3.31 is added to set out the formal requirements of the cover sheet. Section 3.31 requires that each patent or trademark cover sheet must contain (1) the name of the party conveying the interest; (2) the name and address of the party receiving the interest; (3) a brief description of the interest conveyed or transaction to be recorded (e.g., assignment, license, change of name, merger, security agreement, etc.); (4) each application number, patent number or registration number against which the document is to be recorded, or an indication that the document is filed together with a patent application; (5) the name and address of the party to whom correspondence concerning the document to be recorded should be mailed; (6) the number of applications, patents or registrations identified in the cover sheet and the total fee; (7) the date the document was executed; (8) an indication that the assignee of a trademark application or registration who is not domiciled in the United States has designated a domestic representative; (9) a statement by the party submitting the document that to the best of the person's knowledge and belief, the information contained on the cover sheet is true and correct, and (10) the signature of the party submitting the document. The term "party" as used in this rule means the person whose name appears on the documents to be recorded, that person's attorney or registered agent, or a corporate officer where a corporation's name appears on the document. Sample cover sheets for patent documents and for trademark documents are shown in Appendices A and B.

Section 3.34 is added to set out the procedure to correct obvious errors in a recorded cover sheet. This section requires that if a recorded cover sheet contains an error that is apparent when the cover sheet is compared with the recorded document, the error will be corrected only if a corrected cover sheet is filed for recordation. The corrected cover sheet must be accompanied by the originally-recorded document or a copy of the originally-recorded document and by a new assignment recording fee in the appropriate amount.

Section 3.41 replaces and consolidates practice under §§ 1.331(a) and 2.185(a)(3) regarding recording fees. Section 3.41 requires that all requests to record documents be accompanied by the appropriate fee. A fee is charged for each application, patent and registration identified in the cover sheet. The recording fee for patents and patent applications is specified in § 1.21(h). The recording fee for trademark registrations and applications is specified in § 2.6(q).

Section 3.51 replaces and modifies the practice of §§ 1.332 and 2.185(c). Section 3.51 sets the date of recording of a document as the date the document meeting the requirements for recording set forth in this Part is filed in the Office. A document which does not comply with the identification requirements of § 3.21 will not be recorded. For documents not accepted for recording, parties can petition under 37 CFR §§ 1.181 and 2.146(a). Other documents not meeting the requirements for recording, for example, a document submitted without a completed cover sheet, without the required fee, or without any required translation, will be returned for correction to the sender when a return address is available. The returned papers, stamped with the official date of receipt in the Office, will be accompanied by a letter indicating that if the returned papers are corrected and resubmitted to the Office within time specified in the letter, the Office will consider the original date of filing of the papers as the date of recording of the papers. Submitters can use the certificate procedure under either § 1.8 or § 1.10 for resubmissions of returned papers if they desire to have the benefit of the date of deposit in the United States Postal Service. If the returned papers are not corrected and resubmitted within the specified period, the date of filing of the corrected papers will be considered to be the date of recording of the papers. Extensions of time will not be available to extend the specified period to resubmit the returned papers.

Section 3.54 is added to set out the effect of recording a document. This section states that the recording of a document is not a determination by the Office of the validity of the document or the effect that document has on the title to an application, a patent, or a registration. The Office will determine, when necessary, what effect a document has, including whether a party has the authority to take an action in a matter pending before the Office. Examples of when the Office will

need to determine whether a party has the authority to take an action in a matter pending before the Office include: (1) prosecution by the assignee as in § 3.71; (2) consent of an assignee to the filing of a reissue application as provided in § 1.172; and (3) execution of a disclaimer under § 1.321 by an assignee.

Section 3.56 replaces and modifies the practice of § 1.333. Section 3.56 provides that an assignment, which at the time of its execution is conditional on a given act or event, will be treated by the Office as an absolute assignment. This section serves as notification as to how a conditional assignment will be treated by the Office in any proceeding requiring a determination of the owner of an application, patent or registration. Since the Office will not determine whether a condition has been fulfilled, the Office will treat the submission of such an assignment for recordation as signifying that the act or event has occurred.

Section 3.61 replaces and modifies the practice of § 2.185(a)(4). Section 3.61 sets forth that an assignee of a trademark application or registration not domiciled in the United States must designate a domestic representative in writing to the Office. Assignees of patent applications or patents may designate domestic representatives if the assignee is not residing in the United States. 35 U.S.C. § 293. The designation is required to state the name and address of a person residing within the United States on whom may be served process or notice of proceedings affecting the application, patent or registration or rights thereunder.

Section 3.71 replaces and modifies the practice of §§ 1.32 and 2.186. Section 3.71 sets forth that the assignee of record of the entire right, title and interest in an application for patent is entitled to conduct the prosecution of the patent application to the exclusion of the named inventor. Similarly, the assignee of an application for registration is entitled to conduct the prosecution of the trademark application to the exclusion of the applicant.

Section 3.73 is added to set out the procedure by which an assignee can establish the right to take action in an application, patent or registration. The inventor is presumed to be the original owner of a patent application and any patent that may issue therefrom, unless there is an assignment. The original applicant is presumed to be the original owner of a trademark application and any registration that may issue therefrom, unless there is an assignment. Any action before the Office with respect to an assigned patent application, patent, or reexamination may be taken by the assignee of the entire right, title, and interest, provided ownership is established to the satisfaction of the Commissioner. The assignee may establish ownership by submitting to the Office documentary evidence of a chain of title from the original owner to the assignee or by specifying (e.g., reel and frame number, etc.) where such evidence is recorded in the Office. Additionally, when a patent assignee is not represented by an attorney or registered agent, a statement signed by the assignee must also be submitted stating the evidence has been reviewed and certifying that, to the best of the party's knowledge and belief, title is in the party seeking to take the action. Documents submitted to establish ownership may be required to be recorded in the Office as a condition to permitting the requesting party to take action in a matter pending before the Office. Any action before the Office with respect to an assigned trademark registration, application or post-registration matter, may be taken by the assignee provided ownership is established to the satisfaction of the Commissioner by recording an assignment to the assignee or by submitting other proof of the assignment.

Section 3.81 replaces and modifies the practice of § 1.334. Section 3.81 sets forth the procedure for issuance of a patent to an assignee. If an assignment of the entire right, title, and interest is recorded before the issue fee is paid for a patent application, the patent may issue in the name of the assignee. If the assignee holds an undivided part interest, the patent may issue jointly to the inventor and the assignee. At the time the issue fee is paid, the name of the assignee must be provided if the patent is to issue solely or jointly to that assignee. If the assignment is submitted for recording after the date of payment of the issue fee, but prior to issuance of the patent, the assignee may petition that the patent issue to the assignee. Any such petition must be accompanied by the fee set forth in § 1.17(i)(1).

Section 3.85 replaces and modifies the practice of § 2.187. Section 3.85 sets forth the procedure for issuance of a registration to an assignee. The certificate of registration may be issued to the assignee of the applicant, or in a new name of the applicant, provided that the party files a written request in the trademark application record by the time the application is being prepared for issuance of the certificate of registration, and an appropriate document is recorded in the Office. If the assignment or name change document has not been recorded in the Office, then the written request must state that the document has been filed for recordation. The address of the assignee must be made of record in the trademark application file.

Response to Comments on the Rules

The comments received in response to the notice of proposed rulemaking have been given careful consideration and a number of the suggested modifications have been adopted. The comments and responses are discussed below.

In this discussion, "Patent and Trademark Office" is abbreviated as "Office" or "PTO".

Comment: Two comments were received addressed to the overall rule package. One comment expressed concern over the potential confusion of instituting a new Part 3. It was suggested that Parts 1 and 2 be amended to contain the necessary changes. Another comment was concerned that the rules and specifically the new cover sheet requirement would impede promptness and accuracy of the recordation process.

Response: The Office has determined that the new rules will result in greater efficiency and accuracy in the recordation process and improve the integrity of the records maintained by the PTO. Further, the PTO believes that a new Part 3, containing all rules relating to assignments, will be beneficial to the majority of patent and trademark system users.

Comment: Section 3.1 was proposed to define "application" as an application for patent or an application to register a trademark. One comment questioned whether international applications filed under the Patent Cooperation Treaty were included in the definition of the word "application."

Two comments were received concerning the definition of "assignment." As proposed, § 3.1 defines "assignment" of a trademark in terms of a "trademark application" or "registration." The comments suggested that because Section 10 of the Trademark Act, 15 U.S.C. § 1060, speaks in terms of a "registered mark" or a "mark for which application to register has been filed," which was reflected in previous trademark rule 2.186, the different terminology may be construed to permit assignment of a trademark without assignment of the underlying goodwill.

Response: The wording of § 3.1 has been changed to include both national applications for patent and international applications that designate the United States in the term "application."

Also to avoid any potential confusion over the definition of a trademark assignment, the Office adopted the suggestion to reflect Section 10 of the Trademark Act and to refer to a "registered mark" or a "mark for which application to register has been filed" in its definition of assignment.

Comment: As proposed, § 3.16 provides that an application to register a mark under 15 U.S.C. § 1051(b) cannot be assigned before a statement of use is filed except to a successor to an ongoing business of the original applicant. One comment suggested § 3.16 be further amended to correct a legislative oversight and permit assignment of the application after an amendment to allege use is filed.

One other comment suggested the PTO define the statutory language "successor to the business of the applicant."

Response: As proposed, Rule 3.16 merely restates the statute. To permit the filing of an assignment to a successor to an ongoing business before an amendment to allege use has been filed would make the rule inconsistent with the statute.

As to the definition of "successor to the business of the applicant," it has been determined that in the absence of any statutory definition, it is better left to case law to establish the meaning. A business, or portion thereof, can be transferred or assigned in a variety of ways, and the question of valid ownership might arise in a variety of circumstances. For the PTO to define what constitutes a successor may be duly restrictive.

Accordingly, the suggested modifications have not been adopted.

Comment: Section 3.21, as proposed, provides that an assignment of a patent or patent application must be identified by number. One comment requested a further amendment to allow the filing of a patent assignment after filing an application for patent but before knowing the application number by allowing identification by the execution date, inventors and title of the invention instead of the application number.

Another comment suggested that assignments relating to trademark applications and registrations should also be required to have the identifying serial and registration numbers within the body of the assignment document.

One comment questioned whether the patent identification number was required in the document or whether the number could just appear on the cover sheet.

Response: Providing the identifying number in the assignment document allows for greater efficiency and accuracy in recording assignments. However, unlike patents, trademarks can have an indefinite life. Assignments may be recorded years after an assignment has occurred to clear up the chain of title. It may not be possible to execute a new assignment to include identifying numbers in the document years later. Accordingly, it is preferable for the PTO to be more flexible in recording trademark assignments which may contain the identifying number in the cover sheet rather than in the document itself. Because of the nature of a patent, less flexibility is permitted. Patent rights, unlike trademark rights, do not exist apart from the issued patent. Accordingly, when an interest in a patent is transferred, the patent identifying number must be in the assignment document. This requirement only applies to assignments, not to documents other than assignments.

The PTO makes every effort to provide applicants with the application numbers for newly-filed patent applications as soon as possible. It is suggested, however, that assignment documents may be written to allow entry of the identifying number after the execution of the assignment. An example of acceptable wording is: "I hereby authorize and request my attorney, (Insert name), of (Insert address), to insert here in parentheses (Application number _____, filed _____) the filing date and application number of said application when known."

Accordingly, the suggested modifications have not been adopted.

Comment: Section 3.24, as proposed, provides the formal requirements for the documents which are to be recorded and the cover sheet. Three comments stated that the one-side only requirement was unreasonable in light of PTO's issuance of two-sided patent and trademark copies and of the practices of other governments and corporations over which the submitter would have no control.

One comment requested clarification of "bond weight paper" and suggested the language used in the rules setting out drawing requirements be adopted.

One comment stated that the document size requirements should only pertain to documents prepared and executed by parties who wish to convey title.

Two comments questioned whether the PTO would permit the filing of copies or true copies in lieu of the original documents for recording.

Response: The formal requirements set out in § 3.24 are related to PTO's ability to capture on film papers filed with the PTO. The requirements are not related to the other printing or photocopying services PTO provides. Micrographics reproduction requires that only one side of each page be used for efficiency. If the original document is two-sided or the wrong size, the practitioner can comply with this requirement by providing a true copy of the original document using only one side of each page on the correct size paper. The language in § 3.24 has been changed to clarify that true copies or originals are acceptable. Further, the language describing the type of paper to be used has been changed to be consistent with the drawing requirement rules.

Comment: Section 3.28, as proposed, provides that all requests to record a document must be accompanied by the document to be recorded and at least one cover sheet. One comment expressed confusion over whether the document must be accompanied by a cover letter as well as a request for recording. One comment stated the requirement for a cover sheet did not help the PTO with the documents which are filed with applications and the commenter did not see the need

for an additional paper included among the papers for a new application.

Response: The first sentence has been rewritten to clarify that only the document and a cover sheet(s) must be submitted. A separate request for recording is not required or needed. Because the cover sheet provides all pertinent information in one place, it will greatly assist the processing of assignments by the PTO. For those applications which are filed with an assignment, the additional cover sheet required for the assignment aids the processing of the assignment.

Comment: Numerous comments were received on the proposed cover sheet requirements of § 3.31. One comment questions whether the form or the contents of the form are being required and cautioned that the cover sheet should not become a technical obstacle to recordation.

Two comments claimed the cover sheet requirement would be burdensome and the documents recorded should speak for themselves.

Two comments objected to the requirement for the characterization of the interest being conveyed. One of the commentators indicated it was not the best evidence of what the interest is and may be misleading while the second comment or was concerned practitioners would be subject to malpractice claims and be made parties to litigation involving the transfer.

One comment stated that requiring the assignee's address was burdensome and excessive. Three comments questioned the lack of consistency between proposed subsections (a) and (b) of § 3.31 which requires only the name of the conveyor but both the name and address of the receiver.

Two comments stated that the language of the rule was unclear as to whether the list of properties within the assignment document should be retyped on the cover sheet, which would be burdensome and fraught with potential errors.

One comment was received suggesting that properties be identified with as much information as possible (i.e., serial number, patent number, filing date, inventors, etc.).

Four comments stated that the requirement for an execution date of the document is excessive and burdensome. One of the comments stated that the execution date may not be as important as the effective date of the document. One suggested the effective date would be more accurate and another suggested the document should speak for itself. One additional comment stated that a nunc pro tunc assignment of the substantive rights of an assignee or assignor may be unduly affected by the requirement for recitation of the execution date.

Nine comments were received objecting to the language of the proposed verification. Some comments recommended that the verification statement be deleted. Other comments recommended that the verification statement be based on "information and belief." The comments indicated (1) practitioners did not want to be held responsible for the information entered on the cover sheet, (2) there was no purpose served by signing the cover sheet because the documents should speak for themselves and (3) under 37 C.F.R. § 10.18, a registered practitioner's signature indicates that the filing is correct.

One comment suggested that proposed § 3.31(i) does not recognize the right of some non-lawyers to practice in trademark matters before the PTO.

Additionally, many comments and suggestions were received on the layout of the sample cover sheets.

Response: The proposed purpose of the cover sheet is to provide a synopsis of the vital information contained in a recorded document. The cover sheet form itself is not required, only the information outlined in § 3.31 is required. Use of the sample cover sheet formats appearing as Appendices A and B to the rule package is encouraged. The Office will make paper copies of the sample cover sheets available for customer use. Persons wishing to obtain paper copies of the sample cover sheets should contact the Public Service Center at (703) 305-HELP. Questions regarding the sample cover sheets should be directed to the Assignment and Certification Services Division at (703) 308-9700.

As indicated in the proposed rule package, a majority of documents presently filed for recording are accompanied by a cover letter containing much of the information required in § 3.31. The PTO does not believe standardization of the information submitted is an undue burden. Standardization ensures easy reference to all critical information. Further, the parties or their representatives are in a better position to know or

ascertain the nature of the interest involved than the PTO. The document will always speak for itself. However, a characterization assists in putting others on notice as to the nature of the transaction.

It was determined that a verification is not required. The language has been changed to a statement on the cover sheet based on "information and belief." Further, § 3.31(i) has been divided into two paragraphs, one for the statement that is required and one for the signature.

The address of the assignee or receiving party is vital information for maintaining complete assignment records. The original owner is the applicant, for which the Office has the address of record. Each subsequent assignee address is then obtained under this requirement and is of record if the PTO or public needs to contact the present assignee. The execution date is required to determine whether an assignment has been recorded within three months provided in 35 U.S.C. § 261 and 15 U.S.C. § 1060.

When there is a listing of properties contained within a document, any listing may be copied and attached to the cover sheet to reduce the amount of typing necessary. A notation of this attachment can be made in lieu of entering every property identification number on the cover sheet. Should submitters provide information in addition to that required by § 3.31, it is always welcome, but not required.

The comments received on the layout of the sample cover sheets have all been considered and some modifications have been made. However, the sample cover sheet is not required and it is not part of the rules.

Comment: Section 3.34, as proposed, provides for correction of errors in a recorded cover sheet when the error is apparent by comparing the information on the cover sheet with the recorded document itself. One comment received expressed confusion regarding the correction procedure. Another comment suggested that corrections should not be limited to apparent errors.

Response: The PTO will not compare the cover sheet with the original documents during the recording process except to assure that application and patent numbers are present in patent assignments. Otherwise, it will only check to see that the cover sheet is complete. When a submitter discovers an obvious error on the recorded cover sheet, the PTO will consider a request to correct it when it receives: (1) the original recorded document (or a copy); (2) a corrected cover sheet; and (3) the appropriate fee for each property to be corrected. The PTO will then compare the cover sheet with the document to determine whether the error is apparent on its face. If the error is obvious, the corrected cover sheet will be recorded and the respective Office records corrected. If the error is not obvious, the procedure set forth in the Manual of Patent Examining Procedure, MPEP § 323 will govern for patents and the procedure set forth in *In re Abacab International Computers Ltd.* (Assignee of IHEC, Ltd.), 21 USPQ2d 1078 (Comm'r Pats. 1987), *on reconsideration*, 21 USPQ2d 1079 (Comm'r Pats. 1988) will govern for trademarks. Submitters may also petition under § 1.833 or § 2.146 for other corrections. Typographical errors made by the Office will be corrected without charge when brought to our attention.

Accordingly, the suggested modification has not been adopted. The rule has only been changed to correct a cross reference.

Comment: As proposed, § 3.51 provides that the date of recording is the date all of the required information is filed in the Office. Incomplete documents will be returned. If the returned documents are resubmitted timely, the document will retain the date on which it was received as incomplete. Two comments were received regarding the time period to be set by the PTO. One comment indicated that any delay may affect the requirements of 15 U.S.C. § 1060. It was therefore recommended that the PTO make some type of "conditional entry" in the records indicating an assignment has been submitted so interested members of the public could ascertain that there may be an effective recording date. The other comment suggested the time period for resubmission be long enough to allow communication with foreign parties, but it should be no longer than six months.

Response: After a review of the proposed rule, it was determined that the language of § 3.51 should be clarified to reflect that the originally-submitted papers with the official Office date stamp indicating the original receipt date in the Office

must be returned in order to retain the original date. It is the intent of the PTO to set the time for response at one month from the date of mailing of the returned documents from the PTO. It is believed that most correctable errors will involve an incomplete cover sheet or the amount of the fee submitted, both of which can be corrected within one month.

Further, it is the policy of the PTO to make of record only those documents which meet the requirements for recording. It is not beneficial to cloud title to properties with potential transfers.

Comment: Section 3.56, as proposed, is a restatement of former § 1.333 and is made applicable to trademarks. It provides that an assignment which is made conditional upon a condition subsequent will be regarded by the Office as an absolute assignment. One comment was received inquiring as to whether § 3.56 applied to security interests, another was received requesting a reference in the rules to recording of security agreements.

Response: Section 3.56 is applicable only to assignments, as they are defined by § 3.1, that is, a transfer of right, title and interest in a patent or a trademark. A security interest or a security agreement is in the nature of a lien, not an assignment. Accordingly, § 3.56 would not apply to security interests or security agreements which are also recordable. It applies to conditional assignments because the Office has no way of determining whether and when conditions are satisfied and therefore must address this type of assignment in a uniform manner. The reference to the recordability of security agreements is referred to here in the final rule package.

Comment: The second sentence of § 3.71, as proposed, provides: "[t]he assignee of record of the entire right title and interest in a trademark application or registration is entitled to conduct the prosecution of the trademark application or registration to the exclusion of the original applicant or previous assignee." One comment suggested, as had been recommended for the definitions in § 3.1, that language be adopted consistent with Section 10 of the Trademark Act, 15 U.S.C. § 1060, so there be no confusion as to what can be assigned in the trademark area and further, that the language requiring "entire right, title and interest" be deleted.

Response: As was the case with the PTO's review of § 3.1, the language in § 3.71 has also been modified to eliminate any confusion. Accordingly, § 3.71 now provides for assignments of registered marks or a mark for which an application for registration has been filed, making it consistent with § 3.1. While this change cannot prevent assignments from being made without the underlying goodwill, it may eliminate some confusion.

Comment: Section 3.73, as proposed, provided that a full assignee could take any action before the Office with respect to the assigned application, patent, or registration provide ownership is established to the satisfaction of the Commissioner. The rule further provided that ownership could be established by providing documentary evidence of the chain of title to the assignee. The assignee was also required to submit a verified statement stating the evidence had been reviewed and certifying to the best of the party's belief, title is in the party seeking to take the action. The Office reserved the right to require recordation of any ownership documents. One comment suggested the procedure was too "elaborate" and "confusing" to permit the submitting party to act rapidly. Another comment suggested the Office use the language of former § 2.186 which only required "the assignment has been recorded or that proof of the assignment has been submitted" to enable action by the assignee.

Another comment suggested that a simple statement identifying the documents thought to place ownership in a party should be sufficient. It was believed that no additional benefit, accrued by having the party state that they believed they were entitled to take the action because whether or not a party can act is a determination the PTO must make.

Two comments suggested that a literal reading of the rule would require every paper filed on behalf of an assignee be accompanied by a proof of ownership. One comment suggested it was too harsh to preclude a party from taking action in a trademark matter until proof of ownership is established to the satisfaction of the Commissioner. Rather, it was suggested that a party be permitted to take action once documents establishing ownership are filed.

One comment received pointed to the proposed language of § 3.73 providing the statement must be signed by the party or its attorney or agent of record which was a greater requirement than § 1.34(a), if that was intended.

Another comment suggested that the proposed language be changed by deleting the provision that ownership must be established to the satisfaction of the Commissioner and substituting therefore "provided the assignee is owner of the entire right, title, and interest in the patent application, patent, registered-mark or mark for which an application for registration has been filed."

One final comment suggested that § 3.73 be changed to specifically set forth that it applied to secure Office acceptance of a Section 8 or 15 affidavit or a Section 9 application, 15 U.S.C. §§ 1058, 1059, for trademark filings, and requested examples of the types of documents necessary to establish ownership.

Response: Ownership need only be established the first time the new party wants to act in patent and trademark cases, provided the appropriate documents are recorded. Section 3.73(b) is modified to provide that a statement of ownership need only be provided when a patent assignee wishes to act on a matter. For patents, the PTO believes it is appropriate for the patent assignee to review the documents it believes establishes its ownership prior to filing a paper signed by that assignee. Additionally, the statement will certify that to the best of the assignee's knowledge and belief, title is in that assignee. This will establish, to the satisfaction of the Commissioner, that the assignee knows of no other document establishing title in someone other than the assignee. The PTO will still make the determination of whether the assignee is entitled to take action after a review of the documents.

For trademarks the action sought to be taken can be submitted simultaneously by the party. The action will be examined as will the claim of ownership and the party will be notified whether it is satisfactory. As in the past, "any action" refers to post-registration documents as well.

Other Considerations

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to require that a cover sheet accompany each document submitted for recording. The rule change includes no additional or increased fees. Substantive rights to use trademarks and patents are not adversely affected.

The Office has determined that these rule changes are not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. Because most of the changes reduce procedural burdens, there will be no major increase in costs or prices for consumers; individual industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, or innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

These rule changes contain a collection-of-information requirement subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The rule changes add a requirement for a cover sheet to be submitted with each document to be recorded that will expedite the recording process and improve quality. This collection of information requirement is cleared under OMB Control No. 0651-0011. The public reporting burden for this requirement is estimated to be one-half hour per filing, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collections of information.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and record-keeping requirement.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

37 CFR Part 3

Administrative practice and procedure, Inventions and patents, Trademarks, Reporting and recordkeeping requirement.

For the reasons set out in the preamble and pursuant to the authority contained in 15 U.S.C. 1123 and 35 U.S.C. 6, parts 1, 2 and 3 of title 37 of the Code of Federal Regulations are amended as set forth below.

PART I - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.12 paragraphs (a) and (d) are revised to read as follows:

§ 1.12 Assignment records open to public inspection.

(a) (1) Separate assignment records are maintained in the Patent and Trademark Office for patents and trademarks. The assignment records, relating to original or reissue patents, including digests and indexes, for assignments recorded on or after May 1, 1957, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, for assignments recorded on or after January 1, 1955, are open to public inspection at the Patent and Trademark Office, and copies of those assignment records may be obtained upon request and payment of the fee set forth in §§ 1.19 and 2.6 of this Chapter.

(2) All records of assignments of patents recorded before May 1, 1957, and all records of trademark assignments recorded before January 1, 1955, are maintained by the National Archives and Records Administration (NARA). The records are open to public inspection. Certified and uncertified copies of those assignment records are provided by NARA upon request and payment of the fees required by NARA.

(d) An order for a copy of an assignment or other document should identify the reel and frame number where the assignment or document is recorded. If a document is identified without specifying its correct reel and frame, an extra charge as set forth in § 1.21(j) will be made for the time consumed in making a search for such assignment.

3. Section 1.17 is amended by revising paragraph (i)(1) to read as follows:

§ 1.17 Patent application processing fees.

(i)(1) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph.....\$130.00

- § 1.12 — for access to an assignment record.
- § 1.14 — for access to an application.
- § 1.53 — to accord a filing date.
- § 1.55 — for entry of late priority papers.

- § 1.60 — to accord a filing date.
- § 1.62 — to accord a filing date.
- § 1.103 — to suspend action in application.
- § 1.177 — for divisional reissues to issue separately.
- § 1.312 — for amendment after payment of issue fee.
- § 1.313 — to withdraw an application from issue.
- § 1.314 — to defer issuance of a patent.
- § 1.666(b) — for access to interference settlement agreement.
- § 3.81 — for patent to issue to assignee, assignment submitted after payment of the issue fee.

4. Section 1.32 is removed and reserved.

1.32 [Reserved]

5. Section 1.46 is revised to read as follows:

§ 1.46 Assigned inventions and patents.

In case the whole or a part interest in the invention or in the patent to be issued is assigned, the application must still be made or authorized to be made, and an oath or declaration signed, by the inventor or one of the persons mentioned in §§ 1.42, 1.43, or 1.47. However, the patent may be issued to the assignee or jointly to the inventor and the assignee as provided in § 3.81.

6. Section 1.104 is amended by revising paragraph (e) to read as follows:

§ 1.104 Nature of examination; examiner's action.

(e) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if:

(1) the application files refer to assignments recorded in the Patent and Trademark Office in accordance with Part 3 of this chapter which convey the entire rights in the applications to the same person or organization; or

(2) copies of unrecorded assignments which convey the entire rights in the applications to the same person or organization are filed in each of the applications; or

(3) an affidavit or declaration by the common owner is filed which states that there is common ownership and states facts which explain why the affiant or declarant believes there is common ownership; or

(4) other evidence is submitted which establishes common ownership of the applications.

In circumstances where the common owner is a corporation or other organization, an affidavit or declaration may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.

7. The undesignated center head above § 1.331 is revised to read as follows:

Arbitration Awards

8. Sections 1.331 through 1.334 are removed and reserved.

§§ 1.331- 1.334 [Reserved]

Part 2 - RULES OF PRACTICE IN TRADEMARK CASES

9. The authority citation for 37 CFR Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

10. The undesignated center head § 2.185 is removed.

11. Sections 2.185 through 2.187 are removed and reserved.

§§ 2.185-2.187 [Reserved]

12. Part 3 is added to read as follows:

Part 3 - ASSIGNMENT, RECORDING AND RIGHTS OF ASSIGNEE

Sec.

3.1 Definitions

DOCUMENTS ELIGIBLE FOR RECORDING

3.11 Documents which will be recorded.

3.16 Assignability of trademarks prior to filing of use statements.

REQUIREMENTS FOR RECORDING

3.21 Identification of patents and patent applications.

3.24 Formal requirements for documents and cover sheets.

3.26 English language requirement.

3.27 Mailing address for submitting documents to be recorded.

3.28 Requests for recording.

COVER SHEET REQUIREMENTS

3.31 Cover sheet content.

3.34 Correction of cover sheet errors.

FEES

3.41 Recording fees.

DATE AND EFFECT OF RECORDING

3.51 Recording date.

3.54 Effect of recording.

3.56 Conditional assignments.

DOMESTIC REPRESENTATIVE

3.61 Domestic representative.

PROSECUTION BY ASSIGNEE

3.71 Prosecution by assignee.

3.73 Establishing right of assignee to prosecute.

ISSUANCE TO ASSIGNEE

3.81 Issue of patent to assignee.

3.85 Issue of registration to assignee.

Authority: 15 U.S.C. 1123; 35 U.S.C. 6.

§ 3.1 Definitions.

For purposes of this part, the following definitions shall apply:

- Application means a national application for patent, an international application that designates the United States of America, or an application to register a trademark unless otherwise indicated.

Assignment means a transfer by a party of all or part of its right, title and interest in a patent or patent application, or a transfer of its entire right, title and interest in a registered mark or a mark for which an application to register has been filed.

Document means a document which a party requests to be recorded in the Office pursuant to § 3.11 and which affects some interest in an application, patent, or registration.

Office means the Patent and Trademark Office.

Recorded document means a document which has been recorded in the Office pursuant to § 3.11.

Registration means a trademark registration issued by the Office.

DOCUMENTS ELIGIBLE FOR RECORDING

§ 3.11 Documents which will be recorded.

Assignments of applications, patents, and registrations, accompanied by completed cover sheets as specified in §§ 3.28 and 3.31, will be recorded in the Office. Other documents, accompanied by completed cover sheets as specified in §§ 3.28 and 3.31, affecting title to applications, patents, or registrations, will be recorded as provided in this Part or at the discretion of the Commissioner.

§ 3.16 Assignability of trademark prior to filing of use statement.

No application to register a mark under 15 U.S.C. 1051(b) is assignable prior to the filing of the verified statement of use under 15 U.S.C. 1051(d) except to a successor to the business of the applicant, or portion thereof, to which the mark pertains, if that business is ongoing and existing.

REQUIREMENTS FOR RECORDING

§ 3.21 Identification of patents and patent applications.

An assignment relating to a patent must identify the patent by the patent number. An assignment relating to a national patent application must identify the national patent application by the application number (consisting of the series code and the serial number, e.g., 07/123,456) or the serial number and filing date. An assignment relating to an international patent application which designates the United States of America must identify the international application by the international application number (e.g., PCT/US90/01234). If an assignment is executed concurrently with, or subsequent to, the execution of the patent application, but before the patent application is filed, it must identify the patent application by its date of execution, name of each inventor, and title of the invention so that there can be no mistake as to the patent application intended.

§ 3.24 Formal requirements for documents and cover sheets.

The document and cover sheet must be legible. Either the original document or a true copy of the original document, may be submitted for recording. Only one side of each page shall be used. The paper used should be flexible, strong, white, non-shiny, durable, and preferably no larger than 21.6 x 33.1 cm. (8 1/4 x 14 inches) with a 2.5 cm. (one-inch) margin on all sides.

§ 3.26 English language requirement.

The Office will accept and record non-English language documents only if accompanied by a verified English translation signed by the individual making the translation.

§ 3.27 Mailing address for submitting documents to be recorded.

Documents and cover sheets to be recorded should be addressed to the Commissioner of Patents and Trademarks, Box Assignments, Washington, D.C. 20231, unless they are filed together with new applications or with a petition under 3.81(b).

§ 3.28 Requests for recording.

Each document submitted to the Office for recording must be accompanied by at least one cover sheet as specified in § 3.31 referring either to those patent applications and patents, or to those trademark applications and registrations, against which the document is to be recorded. If a document to be recorded includes interests in, or transactions involving, both patents and trademarks, separate patent and trademark cover

sheets must be submitted. Only one set of documents and cover sheets to be recorded should be filed. If a document to be recorded is not accompanied by a completed cover sheet, the document and any incomplete cover sheet will be returned pursuant to § 3.51 for proper completion of a cover sheet and resubmission of the document and a completed cover sheet.

COVER SHEET REQUIREMENTS

§ 3.31 Cover sheet content.

(a) Each patent or trademark cover sheet required by § 3.28 must contain:

- (1) the name of the party conveying the interest;
 - (2) the name and address of the party receiving the interest;
 - (3) a description of the interest conveyed or transaction to be recorded;
 - (4) each application number, patent number or registration number against which the document is to be recorded, or an indication that the document is filed together with a patent application;
 - (5) the name and address of the party to whom correspondence concerning the request to record the document should be mailed;
 - (6) the number of applications, patents or registrations identified in the cover sheet and the total fee;
 - (7) the date the document was executed;
 - (8) an indication that the assignee of a trademark application or registration who is not domiciled in the United States has designated a domestic representative (see § 3.61); and
 - (9) a statement by the party submitting the document that to the best of the person's knowledge and belief, the information contained on the cover sheet is true and correct and any copy submitted is a true copy of the original document; and
 - (10) the signature of the party submitting the document.
- (b) A cover sheet may not refer to both patents and trademarks.

§ 3.34 Correction of cover sheet errors.

(a) An error in a cover sheet recorded pursuant to 3.11 will be corrected only if:

- (1) the error is apparent when the cover sheet is compared with the recorded document to which it pertains and
- (2) a corrected cover sheet is filed for recordation.

(b) The corrected cover sheet must be accompanied by the originally recorded document or a copy of the originally recorded document and by the recording fee as set forth in § 3.41.

FEES

§ 3.41 Recording fees.

All requests to record documents must be accompanied by the appropriate fee. A fee is required for each application, patent and registration against which the document is recorded as identified in the cover sheet. The recording fee is set in § 1.21(h) of this Chapter for patents and in § 2.6(q) of this Chapter for trademarks.

DATE AND EFFECT OF RECORDING

§ 3.51 Recording date.

The date of recording of a document is the date the document meeting the requirements for recording set forth in this Part is filed in the Office. A document which does not comply with the identification requirements of § 3.21 will not be recorded. Documents not meeting the other requirements for recording, for example, a document submitted without a completed cover sheet or without the required fee, will be returned for correction to the sender where a correspondence address is available. The returned papers, stamped with the original date of receipt by the Office, will be accompanied by a letter which will indicate that if the returned papers are corrected and resubmitted to the Office within the time specified in the letter, the Office will consider the original date of filing of the papers as the date of

recording of the document. The certification procedure under either § 1.8 or § 1.10 of this Chapter may be used for resubmissions of returned papers to have the benefit of the date of deposit in the United States Postal Service. If the returned patent was not corrected and resubmitted within the specified period, the date of filing of the corrected papers will be considered to be the date of recording of the document. The specified period to resubmit the returned papers will not be extended.

§ 3.54 Effect of recording.

The recording of a document pursuant to § 3.11 is not a determination by the Office of the validity of the document or the effect that document has on the title to an application, a patent, or a registration. When necessary, the Office will determine what effect a document has, including whether a party has the authority to take an action in a matter pending before the Office.

§ 3.56 Conditional assignments.

Assignments which are made conditional on the performance of certain acts or events, such as the payment of money or other condition subsequent, if recorded in the Office, are regarded as absolute assignments for Office purposes until cancelled with the written consent of all parties or by the decree of a court of competent jurisdiction. The Office does not determine whether such conditions have been fulfilled.

DOMESTIC REPRESENTATIVE

§ 3.61 Domestic representative.

If the assignee of a trademark application or registration is not domiciled in the United States, the assignee must designate, in writing to the Office, a domestic representative. An assignee of a patent application or patent may designate a domestic representative if the assignee is not residing in the United States. The designation shall state the name and address of a person residing within the United States on whom may be served process or notice of proceedings affecting the application, patent or registration or rights thereunder.

PROSECUTION BY ASSIGNEE

§ 3.71 Prosecution by assignee.

The assignee of record of the entire right, title and interest in an application for patent is entitled to conduct the prosecution of the patent application to the exclusion of the named inventor or previous assignee. The assignee of a registered trademark or a trademark for which an application to register has been filed is entitled to conduct the prosecution of the trademark application or registration to the exclusion of the original applicant or previous assignee.

§ 3.73 Establishing right of assignee to prosecute.

(a) The inventor is presumed to be the owner of a patent application, and any patent that may issue therefrom, unless there is an assignment. The original applicant is presumed to be the owner of a trademark application unless there is an assignment.

(b) When the assignee of the entire right, title and interest seeks to take action in a matter before the Office with respect to a patent application, trademark application, patent, registration, or reexamination proceeding, the assignee must establish its ownership of the property to the satisfaction of the Commissioner. Ownership is established by submitting to the Office documentary evidence of a chain of title from the original owner to the assignee or by specifying (e.g. reel and frame number, etc.) where such evidence is recorded in the Office. Documents submitted to establish ownership may be required to be recorded as a condition to permitting the assignee to take action in a matter pending before the Office. In addition, the assignee of a patent application or patent must submit a statement specifying that the evidentiary documents have been reviewed and certifying that, to the best of assignee's knowl-

edge and belief, title is in the assignee seeking to take the action.

ISSUANCE TO ASSIGNEE

§ 3.81 Issue of patent to assignee.

(a) For a patent application, if an assignment of the entire right, title, and interest is recorded before the issue fee is paid, the patent may issue in the name of the assignee. If the assignee holds an undivided part interest, the patent may issue jointly to the inventor and the assignee. At the time the issue fee is paid, the name of the assignee must be provided if the patent is to issue solely or jointly to that assignee.

(b) If the assignment is submitted for recording after the date of payment of the issue fee, but prior to issuance of the patent, the assignee may petition that the patent issue to the assignee. Any such petition must be accompanied by the fee set forth in 1.17(i)(1) of this Chapter.

§ 3.85 Issue of registration to assignee.

The certificate of registration may be issued to the assignee of the applicant, or in a new name of the applicant, provided that the party files a written request in the trademark application by the time the application is being prepared for issuance of the certificate of registration, and the appropriate document is recorded in the Office. If the assignment or name change document has not been recorded in the Office, then the written request must state that the document has been filed for recordation. The address of the assignee must be made of record in the application file.

June 24, 1992

DOUGLAS B. COMER
Acting Assistant Secretary and
Acting Commissioner of Patents
and Trademarks

[1140 OG 53]

(29) Issuance of a Patent to an Assignee

The purpose of this notice is to clarify the procedures to have a patent issue to an assignee. See 37 CFR 3.81 and Manual of Patent Examining Procedure § 307.

Section 3.81(a) permits a patent to issue to an assignee, provided that at the time the issue fee is paid, the assignment has been submitted for recordation and the name of the assignee is provided. The name of the assignee is usually provided in item 5 of the Issue Fee Transmittal form (PTOL-85B).

Section 3.81(b) permits a patent to issue to an assignee when the assignment is submitted for recording after the date of payment of the issue fee, but prior to issuance of the patent, provided a petition and fee are filed requesting that the patent issue to the newly recorded assignee.

When the correct name of the assignee was not provided in accordance with either section 3.81(a) or (b) (i.e., either no name or an incorrect name was provided in item 5 of the Issue Fee Transmittal when the assignment had been recorded or submitted for recordation at the time the issue fee was paid, or an incorrect name was provided in the petition required by section 3.81(b) when the assignment is submitted for recording after the date of payment of the issue fee, but prior to issuance of the patent), a correction can be made by filing a petition under 37 CFR 1.183 requesting that the requirements of 37 CFR 3.871 be waived. This procedure is required at any time after the issue fee is paid, including after issuance of the patent. A petition under 37 CFR 1.183 should include: (1) the petition fee set forth in 37 CFR 1.17(h) (currently \$130); (2) the correct name of the assignee; and (3) the reel and frame number where the assignment is recorded or proof of the date the assignment was submitted for recordation.

If the petition under 37 CFR 1.183 is filed and granted prior to issuance of the patent, the patent will either: (1) be printed with the correct assignee's name; or (2) be printed without the correct assignee's name. In the latter case, patentee would be

entitled to a certificate of correction under 37 CFR 1.322 to correct an Office mistake in not correctly printing the assignee's name on the patent.

If the petition under 37 CFR 1.183 is filed and/or granted after issuance of the patent, the patent would be printed without the correct assignee's name. However, if the petition is granted, patentee would be entitled to a certificate of correction under 37 CFR 1.323 due to the mistake in not complying with 37 CFR 3.81.

March 16, 1994

CHARLES E. VAN HORN
Patent Policy and Projects Administrator
Office of the Assistant Commissioner for Patents

[1161 OG 293]

(30) DEPARTMENT OF COMMERCE Patent and Trademark Office 37 CFR Parts 1, 2 & 3

[Docket No. 910246-2140]
RIN 0651-AA43

Changes in Patent and Trademark Assignment Practice

Agency: Patent and Trademark Office, Commerce

Action: Final Rule; correction.

Summary: The Patent and Trademark Office (Office) amended the rules of practice regarding assignments in patent and trademark cases to improve and clarify the rules, to codify changes in practice and to consolidate the rules into a new Part 3 directed to assignments. In the final assignment rules a fee change promulgated in January 1992 was inadvertently omitted from the § 1.17(i)(1) listing.

Effective Date: September 4, 1992.

For Further Information Contact: Jeffery V. Nase by telephone at (703) 305-9282 or by mail marked to his attention and addressed to Commissioner of Patents and Trademarks, Box DAC, Washington, D.C. 20231.

Supplementary Information: The amended assignment rules first appeared in a notice of proposed rulemaking published in the *Federal Register* on May 10, 1991, at 56 FR 21641, and the Patent and Trademark Office *Official Gazette* of June 4, 1991, at 1127 OG 8-16. The final rules appeared in the *Federal Register* on July 6, 1992, at 57 FR 29634. Between the time the proposed and final rules were published, 37 CFR § 1.97(d) was amended, effective March 16, 1992, by a final rule which appeared in the *Federal Register* of January 17, 1992, 57 FR 2021, relating to the duty of disclosure. The amendment provided for a new petition fee which was referenced in 37 CFR § 1.17, patent application processing fees. The reproduction of § 1.17 in the final assignment rule package neglected to add the reference to the new petition under § 1.97(d).

Section 1.17(i)(1) is reproduced in its entirety to include the reference to § 1.97(d) which was inadvertently omitted. The amount of the fee for considering an information disclosure statement is not affected by this rule change.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents.

For the reasons set out in the preamble and pursuant to the authority contained in 35 U.S.C. 6, part 1 of title 37 of the Code of Federal Regulations has been amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

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1170 OG 26
(31)

OFFICIAL GAZETTE

JANUARY 3, 1995

2. Section 1.17 is amended by revising paragraph (i)(1) to read as follows:

§ 1.17 Patent application processing fees.

(i)(1) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph.....\$130.00

- § 1.12 - for access to an assignment record.
- § 1.14 - for access to an application.
- § 1.53 - to accord a filing date.
- § 1.55 - for entry of late priority papers.
- § 1.60 - to accord a filing date.
- § 1.62 - to accord a filing date.
- § 1.97(d) - to consider an information disclosure statement.
- § 1.103 - to suspend action in application.
- § 1.177 - for divisional reissues to issue separately.
- § 1.312 - for amendment after payment of issue fee.
- § 1.313 - to withdraw an application from issue.
- § 1.314 - to defer issuance of a patent.
- § 1.666(b) - for access to interference settlement agreement.
- § 3.81 - for patent to issue to assignee, assignment submitted after payment of the issue fee.

July 17, 1992

DOUGLAS B. COMER
Assistant Secretary & Acting
Commissioner of Patents
and Trademarks

[1141 OG 38]

(31) Taking Action in a Patent Matter Before the Office by the Assignee under 37 CFR 3.73.

When the assignee of the entire right, title and interest first seeks to take action in a matter before the Office with respect to a patent application, patent or reexamination proceeding, the assignee must establish its ownership of the property to the satisfaction of the Commissioner. 37 CFR 3.73(b). The assignee's ownership may be established either 1) by submitting to the Office copies of the documentary evidence of a chain of title from the original inventor to the assignee, or 2) by specifying, by reel and frame number, for example, where such documentary evidence is recorded in the Office. In addition to the establishment of ownership, there is further requirement that the assignee submit a statement specifying that the evidentiary documents have been reviewed and certifying that, to the best of the assignee's knowledge and belief, title is in the assignee seeking to take action. Once 37 CFR 3.73(b) is complied with by an assignee, that assignee may continue to take action in that application, patent or reexamination proceeding without filing a 37 CFR 3.73(b) statement each time, provided that ownership has not changed.

When an assignee files a continuation or divisional application (under 37 CFR 1.53, 1.60 or 1.62), reference may be made to a statement filed under 37 CFR 3.73(b) in the parent application or a copy of that statement may be filed. A newly executed statement under 37 CFR 3.73(b) must be filed when a continuation-in-part application is filed by an assignee.

The statement under 37 CFR 3.73(b) may be signed on behalf of the assignee in the following two manners if the assignee is an organization (e.g., corporation, partnership, university, government agency, etc.):

(1) The statement may be signed by a person in the organization having apparent authority to sign on behalf of the organization. An officer (president, vice-president, secretary, or treasurer) is presumed to have authority to sign on behalf of the organization. The signature of the chairman of the board of directors is acceptable, but not the signature of an individual director. A person having a title (manager, director, administrator, general counsel) that does not clearly set forth that person as an officer of the assignee is not presumed to be an officer of the assignee or to have authority to sign the statement on

behalf of the assignee. A power of attorney from the inventors in an organization to a practitioner to prosecute a patent application does not make the practitioner an official of an assignee or empower the practitioner to sign the statement on behalf of the assignee.

(2) The statement may be signed by any person, if the statement includes an averment that the person is empowered to sign the statement on behalf of the assignee and, if not signed by a registered practitioner, the statement must be in oath or declaration form. Where a statement does not include such an averment, and the person signing does not hold a position in the organization that would give rise to a presumption that the person is empowered to sign the statement on behalf of the assignee, evidence of the person's authority to sign will be required.

Examples of situations where ownership must be established and the statement under 37 CFR 3.73(b) must be submitted are when the assignee: signs a request for status of an application or gives a power to inspect an application; acquiesces to express abandonment of an application; appoints its own legal representative; signs a terminal disclaimer; consents to the filing of a reissue application; consents to the correction of inventorship; files an application under 37 CFR 1.47(b) or 37 CFR 1.475; signs an Issue Fee Transmittal (PTOL-85B); or signs a response to an Office action.

Examples of situations where ownership need not be established and a statement under 37 CFR 3.73(b) is not required to be submitted are when the assignee: signs a small entity declaration; signs an affidavit or declaration of common ownership of two inventions; signs a NASA or DOE property rights statement; signs an affidavit under 37 CFR 1.131 where the inventor is unavailable; signs a Certificate of Mailing under 37 CFR 1.8; or files a request for reexamination of a patent under 37 CFR 1.510.

An acceptable certification under 37 CFR 3.73(b) is attached to this notice.

For further information related to actions taken by an assignee in patent matters, contact Jeffrey V. Nase at (703) 305-9282.

Apr. 30, 1993

CHARLES E. VAN HORN
Patent Policy and Projects Administrator
Office of the Assistant Commissioner
for Patents

[1150 OG 62]

(32) Submission of Uniform Assignee Names on the Issue Fee Payment Form PTOL-85b

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL-85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL-85b should ensure that the same company name form is used for all patents issuing to a particular company.

Nov. 17, 1977

RICHARD J. SHAKMAN
Assistant Commissioner
for Administration

[965 O.G. 8]

(33) Indexing Against a Recorded Assignment

It has been the practice of the Patent and Trademark Office (PTO) to process requests for indexing against a recorded document by adding the newly requested property to the data base

JANUARY 3, 1995

U.S. PATENT AND TRADEMARK OFFICE

1170 OG 27
(34)

record for the previously recorded document, except if the previously recorded document was an assignment. The PTO only required a transmittal letter with the recording fee and not a copy of the previously recorded document to process the indexing request. While indexing the additional properties resulted in the assignment data base being updated, the indexing request itself was never microfilmed to become part of the official record.

Effective immediately, the PTO will no longer process such indexing requests. Such indexing requests do not comply with 37 CFR 3.11, 3.28, and 3.31 which require that each request for recordation include the document to be recorded and a cover sheet. Instead of filing an indexing request, a party should submit a cover sheet in conformance with 37 CFR 3.31, a true copy of the document, and the recording fee. PTO will assign a new recording date to that submission, update the assignment data base, and microfilm the cover sheet and document to become part of the official record.

Nov. 3, 1993

THERESA A. BRELSFORD
Assistant Commissioner for
Public Services and
Administration

[1157 OG 12]

(34) Recordability of Foreclosures for Assignment Purposes

It has been the practice of the Assignment Branch to record security agreements between a secured party and a debtor which refer specifically to a patent or a patent application and which are signed by the debtor. However, foreclosures by the secured party were not recorded because they were not signed by the debtor. Accordingly, before recording a foreclosure not signed by a debtor, the Assignment Branch required a Court order. This requirement forced the secured party to bring action in a court of law where otherwise Court action might not have been necessary.

To facilitate recording of foreclosures not signed by a debtor and avoid unnecessary court proceedings, the Office will record foreclosures which comply with all of the following criteria:

- (1) Submission of the foreclosure document with original endorsement by the secured party, or a verified copy thereof;
- (2) Identification of the patent by patent number or the patent application by serial number, or other acceptable identifier(s) as specified in 37 CFR 1.331(c), in the body of the foreclosure document itself or any addenda incorporated by reference;
- (3) Reference to the security agreement recorded under 37 CFR 1.331; and
- (4) Submission of a verified statement by a representative of the secured party stating that the patent or the patent application has been legally foreclosed on based upon the applicable state laws.

A foreclosure document complying with the above criteria will be deemed to be a recordable instrument in accordance with 37 CFR 1.331.

March 14, 1988

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1089 OG 35]

(35) DEPARTMENT OF COMMERCE
Billing Code: 3510-16M

Patent and Trademark Office
37 CFR Parts 1 and 2

[Docket No. 920401-2194]
RIN 0651-AA54

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce

Action: Final Rule.

Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in patent and trademark cases, Parts 1 and 2 of title 37, Code of Federal Regulations, to adjust certain patent and trademark fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation. The PTO is also establishing fees for providing public access to APS-Text in Patent and Trademark Depository Libraries (PTDLs), and for dividing a trademark application. In response to comments received from the Libraries in which they expressed their concerns about the administrative burdens of collecting fees from the public for use of APS-Text, the Commissioner is immediately suspending collection of that fee to provide additional time for the PTO to solicit input from the private sector on alternative collection methods, and other options for accessing patent search and retrieval in the Libraries.

Dates: Effective Date: October 1, 1992. Rule 1.21(p) will take effect on October 1, 1992 but will immediately be suspended by the Commissioner. Comment Date: The PTO will accept comments on alternative collection methods, and other options for accessing patent search and retrieval in the PTDLs (37 CFR 1.21(p)) until January 4, 1993. The Office will provide written notice in the Federal Register and the Official Gazette of the United States Patent and Trademark Office thirty days before starting to collect fees for accessing APS-Text in the PTDLs. Addresses: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Frances Michalkewicz, Suite 507, Crystal Park 1, or by FAX to (703) 305-8436.

For Further Information Contact: Frances Michalkewicz by telephone at (703) 305-8510 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rule change is designed to adjust the Patent and Trademark Office fees in accordance with the applicable provisions of title 35, United States Code, section 31 of the Trademark (Lanham) Act of 1946 (15 U.S.C. 1113), and section 10101 of the Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508), all as amended by the Patent and Trademark Office Authorization Act of 1991 (Public Law 102-204).

Background:

Statutory Provisions: Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. A 50 percent reduction in the fees paid under 35 U.S.C. 41(a) and 41(b) by independent inventors, small business concerns, and nonprofit organizations who meet prescribed definitions is authorized by 35 U.S.C. 41(h).

Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be adjusted on October 1, 1992, and every year thereafter, to reflect fluctuations in the Consumer Price Index (CPI) over the previous 12 months.

Section 10101 of the Omnibus Budget Reconciliation Act of 1990 (Pub. L. 101-508) provides that there shall be a surcharge on all fees established under 35 U.S.C. 41(a) and 41(b) to collect \$99 million in fiscal year 1993.

Subsection 41(d) of title 35, United States Code, authorizes the Commissioner to establish fees for all other processing, services, or materials related to patents to recover the average cost of providing these services or materials, except for the fees for recording a document affecting title, for each photocopy, and for each black and white copy of a patent.

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty.

Subsection 41(g) of title 35, United States Code, provides that new fee amounts established by the Commissioner under section 41 may take effect thirty days after notice in the Federal Register and the Official Gazette of the Patent and Trademark Office.

Subsection 41(i)(3) of title 35, United States Code, authorizes the Commissioner to establish reasonable fees for access to automated search systems of the PTO.

Section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113), authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for all

other services and materials furnished by the PTO relating to trademarks and other marks.

Section 31(a) of the Trademark (Lanham) Act of 1946 (15 U.S.C. 1113(a)), as amended, allows trademark fees to be adjusted once each year to reflect, in the aggregate, any fluctuations during the preceding 12 months in the CPI.

Section 31 also allows new fee amounts to take effect thirty days after notice in the Federal Registration and the Official Gazette of the Patent and Trademark Office.

Recovery Level Determination: Fees have been adjusted for a planned recovery of \$486,000,000 in fiscal year 1993, as proposed in the Administration's budget request to the Congress.

Fees established by 35 U.S.C. 41(a) and 41(b) (patent statutory fees) may be adjusted on October 1, 1992, to reflect any fluctuations occurring during the previous 12 months in the CPI. The Office of Management and Budget (OMB) has determined that the PTO should use Consumer Price Index-U to adjust patent statutory fees. The Department of Labor's Consumer Price Index is made public approximately 21 days after the end of the month being calculated. The patent statutory fees are being adjusted by 3.3 percent, which reflects the Administration's projected Consumer Price Index-U for the 12-month period beginning October 1, 1991.

The patent statutory fees established by rule (56 FR 65142) on December 13, 1991, are being adjusted by the projected changes in the CPI of 3.3 percent. Amounts were rounded by applying standard arithmetic rules so that the amounts rounded would be convenient to the user. Fees of \$100 or more were rounded to the nearest \$10. Fees between \$2 and \$99 were rounded to an even number so that the comparable small entity fee would be a whole number.

Patent statutory fees also are subject to the provisions of the Omnibus Budget Reconciliation Act of 1990, as amended by Public Law 102-204. These provisions require that \$99 million be collected in fiscal year 1993 for deficit reduction purposes in lieu of seeking general taxpayer funds from the U.S. Treasury. The \$99 million is deposited in a special account in the U.S. Treasury, and is reserved exclusively for use by the PTO, and is made available to the PTO through the appropriation process.

In establishing the 1993 patent statutory fees, the PTO applied the projected Consumer Price Index-U rate of 3.3 percent to the 1992 fees. The 1993 fees were rounded as explained above. Of the total amount of section 41(a) and (b) income expected to be collected in 1993, \$99 million must be deposited to the Fee Surcharge Fund.

Non-statutory patent service fees established under section 41(d) of title 35, United States Code, as amended, and PCT processing fees are being adjusted to recover planned costs in 1993, except in the case of three patent service fees set by statute. The three fees are assignment recording fees, printed patent copy fees and photocopy charge fees.

Trademark fees are being adjusted in fiscal year 1993, in the aggregate, to reflect changes over the prior 12 months in the CPI. The OMB has determined that the PTO should use Consumer Price Index-U to adjust trademark fees, which is made public by the Department of Labor approximately 21 days after the end of the month being calculated. The trademark fees are being adjusted, in the aggregate, by 3.3 percent, which reflects the Administration's projected Consumer Price Index-U for the 12 month period beginning October 1, 1991. The PTO is adjusting only two trademark fees in 1993: for filing an application (37 CFR § 2.6(a)(1)) and for assignment records, abstract of title and certification (37 CFR § 2.6(b)(7)). One new fee is being set for dividing an application (37 CFR 2.6(a)(19)). No other trademark fees are changing in 1993. The net effect of these changes is to increase trademark fees, in the aggregate, by 3.3 percent, the expected Consumer Price Index-U rate for the prior 12 month period.

Workload Projections: Determination of workloads varies by fee. Principal workload projection techniques are as follows:

Patent and trademark application workloads are projected from statistical regression models using recent application filing trends. Patent issues are projected from an inhouse patent production model and reflect examiner production achievements

and goals. Patent maintenance fee workloads utilize patents issued 3.5, 7.5 and 11.5 years prior to payment and assume payment rates of 75 percent, 50 percent and 25 percent, respectively. Trademark affidavit projections are based on filing trends for marks registered five to six years prior to 1993. Trademark renewal projections are based on marks registered 20 years prior to 1993. Service fee workloads follow linear trends from prior year activities.

Public Access to Automated Systems: In April 1989, the PTO began providing access to APS-Text in the Patent Search Room at its facilities in Arlington, Virginia. On February 12, 1990, the PTO began charging a fee for access to APS-Text in the Patent Search Room. In September 1991, the PTO began providing, without charge, APS-Text to 14 Patent and Trademark Depository Libraries (PTDLs) as a pilot test program. APS-Text provides users of the patent search files with a value added search tool that enables them to conduct more comprehensive searches.

Although many PTDLs believe that government information should be available to the public free of charge, the PTO's fiscal year 1993 budget does not include any general taxpayer funds, but requires that all of the expenses of the PTO be recovered through user fees. These expenses include the cost of providing APS-Text to the public, both in the Patent Search Room in Virginia and at the PTDLs. Continuation of this service in the PTDLs, without direct charge to the users of the automated system, would require support from all other customers who pay for products and services from the PTO.

A second issue raised by many PTDLs concerns the method that PTO would use to collect fees from the users of APS-Text in the PTDLs. Users of APS-Text in the Patent Search Room pay for use of the system directly to the PTO. PTDLs have commented that collecting fees would be an administrative burden for many, while some are legally precluded from collecting fees.

The PTO has a strong interest in expanding access to APS-Text to all PTDLs that wish to participate, but considers allocating user fees paid for other products and services to subsidize this effort to be inappropriate. Therefore, PTO concludes that establishment of a fees for access to APS-Text is necessary.

At the same time, PTO wants to limit the administrative burden imposed on the PTDLs to collect user fees. Therefore, PTO intends to enter into an agreement establishing a service bureau arrangement for administering the collection of fees at participating PTDLs. This arrangement provides one alternative for providing administrative services, but PTO is seeking others. Therefore, through this rulemaking notice, the PTO is soliciting alternatives from other organizations, including the libraries themselves, for providing the administrative services associated with APS-Text. Likewise, the Office would like to consider other options for accessing patent search and retrieval in the PTDLs. The PTO will accept comments on alternative collection methods, and other options for accessing patent search and retrieval in the PTDLs until January 4, 1993.

In rule 1.21(p), the PTO is establishing a \$70 per connect hour fee to recover the cost of providing APS-Text services in participating PTDLs, but the Commissioner is immediately suspending collection of that fee until alternative methods of collecting the fee from users of APS-Text in the PTDLs are identified. Although access to the 14 pilot PTDLs will continue for further evaluation purposes, the PTO will not extend access to additional PTDLs until a fee collection arrangement is established. Section 41(i)(3) of 35 U.S.C. states that if PTO establishes fees for access to the automated search system "a limited amount of free access shall be made available to users of the systems for purposes of education and training."

The \$70 per connect hour fee amount established by this rule is based on a calculation of the costs of PTO services, and preliminary cost estimates that were provided by a potential service bureau contractor. The cost elements for PTO include training; training software for personal computers (to be developed); manuals and documentation; additional mainframe CPU; and additional staff time for client support. The cost elements for services provided by the service bureau include billing, account administration, and user support; telecommunication costs to the network; and the Messenger Software enhancement fee.

After PTO has evaluated other options for a service bureau arrangement, a notice will be published in the Federal Register

tion and the Official Gazette of the Patent and Trademark Office. At that time, PTO will provide administrative procedures for public use of APS-Text in the PTDLs. Depending on responses to the solicitation for alternatives for providing the administrative services associated with APS-Text, the fee amount could be reduced at that time.

General Procedures: Any fee amount that is paid on or after October 1, 1992, would be subject to the new fees then in effect. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the PTO. A "Certificate of Mailing under Section 1.8" is not "proper" for items which are specifically excluded from the provisions of § 1.8. Section 1.8 should be consulted for those items for which a Certificate of Mailing is not "proper." Such items include, inter alia, the filing of national and international applications for patents and the filing of trademark applications. However, the provisions of 37 CFR 1.10 relating to filing papers and fees with an "Express Mail" certificate do apply to any paper or fee (including patent and trademark applications) to be filed in the PTO. If an application or fee is filed by "Express Mail" with a proper certificate dated on or after the effective date of the rules, as amended, the amount of the fee to be paid would be the fee established by the amended rules.

A comparison of existing and revised fee amounts is included as an Appendix to this final rule.

In order to ensure clarity in the implementation of the revised fees, a discussion of specific sections is set forth below.

DISCUSSION OF SPECIFIC RULES

37 CFR 1.16 National application filing fees.

Section 1.16, paragraphs (a)-(d) and (f)-(j), is revised to adjust patent application filing fees to reflect fluctuations in the CPI.

37 CFR 1.17 Patent application processing fees.

Section 1.17, paragraphs (b)-(g), and (m), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Section 1.17, paragraphs (j), (n) and (o), is revised to adjust fees established therein to recover costs.

37 CFR 1.18 Patent issue fees.

Section 1.18, paragraphs (a)-(c), is revised to adjust the issue fee for each original or reissue patent to reflect fluctuations in the CPI.

37 CFR 1.19 Document supply fees.

Section 1.19, subparagraph (b)(4) and paragraphs (f) and (h), is revised to adjust fees established therein to recover costs.

37 CFR 1.20 Post-issuance fees.

Section 1.20, paragraphs (a), (c) and (i), is revised to adjust fees established therein to recover costs.

Section 1.20, paragraphs (e)-(g), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21, subparagraphs (a)(1), (a)(5), (a)(6), (b)(2), (b)(3), and paragraphs (e) and (i), is revised to adjust fees established therein to recover costs.

Section 1.21, paragraph (p), is added to establish the fee for providing public access to the Automated Patent System full-text search (APS-Text) capability in Patent and Trademark Depository Libraries. The \$70.00 per connect hour fee would recover the marginal cost of providing the service to the public,

including the cost for a service bureau to handle billing, account administration, and user support.

37 CFR 1.26 Refunds.

Section 1.26, paragraph (a), is revised to increase the minimum amount of a refund, without a request, from one dollar to twenty-five dollars in accordance with the Treasury Fiscal Manual, Volume One, Part Six, Chapter 3000.

Section 1.26, paragraph (c), is revised to provide for a refund of \$1,690 if the Commissioner decides not to institute reexamination proceedings. The \$1,690 refund would apply to those instances where the reexamination fee of \$2,250 under 37 CFR 1.20(c) was paid. The current \$1,635 refund would be made in those cases where the current \$2,180 reexamination fee was paid.

37 CFR 1.445 International application filing, processing, and search fees.

Section 1.445, is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.482 International preliminary examination fees.

Section 1.482, subparagraphs (a)(1), and (a)(2)(ii), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.492 National stage fees.

Section 1.492, subparagraphs (a)(1)-(a)(3), and paragraphs (b)-(d), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Section 1.492, subparagraph (a)(5), is revised to adjust the fee authorized by 35 U.S.C. 376 to recover costs.

37 CFR 2.6 Trademark fees.

Section 2.6, subparagraphs (a)(1) and (b)(7), is revised to adjust the fees authorized by the Trademark (Lanham) Act of 1946 to reflect fluctuations in the CPI.

New section 2.6(a)(19), is added to establish a fee for dividing a trademark application in accordance with 37 CFR 2.87. Section 2.6(a)(19) is revised from the proposal by adding the words "file wrapper" to clarify that the fee amount is due for each new file wrapper created.

37 CFR 2.87 Dividing an Application.

Section 2.87, is revised to establish a fee for dividing an application into two or more applications. Currently, no fee is charged for the physical act of dividing an application. Experience to date reveals that the creation of so-called "divisional" applications is labor intensive. For that reason, and because the creation of a divisional application is a significant benefit to an applicant, the PTO will charge a fee for dividing an application. The fee will be due for each new file wrapper created.

Section 2.87, is revised to divide paragraph (a) into paragraphs (a) and (b), and renumber paragraphs (b) and (c) as (c) and (d).

Response to Comments on the Rules: A notice of proposed rulemaking to adjust patent and trademark fees in accordance with the proposed provisions of Public Law 102-204 was published in the Federal Register on May 20, 1992, at 57 FR 21536, and in the Official Gazette on May 26, 1992, at 1138 OG 58. Corrections were published in the Federal Register on June 2, 1992, at 57 FR 23257.

A public hearing was held on June 24, 1992. A total of 28 comments were received: 27 respondents submitted written comments and three people presented oral testimony (two of whom also submitted written comments) at the public hearing. Over half of the comments received represented the views of libraries. All of the written and oral comments were considered in adopting the rules set forth herein.

Comment: Two people claimed that the proposed fees for filing an application under the Patent Cooperation Treaty (PCT) is discriminatory against applicants who file under the PCT route.

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Response: The PTO is undertaking a thorough analysis of all PCT fees. The results of this analysis, and the recommendations concerning PTO's fee structure to be made to the Secretary of Commerce by the Advisory Commission on Patent Law Reform, will be taken into consideration when PTO proposes the fiscal year 1994 fee adjustments.

Comment: One respondent, although not objecting to the proposed 3.3 percent fee increase, suggested that the PTO may be understating its projected income from maintenance fees which could be used to offset inflationary increases and possibly reduce PCT fees.

Response: When maintenance fees first were imposed, the Office looked at historical payment trends experienced by other offices, such as the European Patent Office. The PTO conservatively projected the number of maintenance fees to be paid for two reasons. First, there is not a long history of maintenance fee payments on which to base income projections; for example, second stage maintenance fees only recently have started to come due, and third stage maintenance fees will not become due for many patent owners until 1995. Second, the percentage of patent owners paying second stage maintenance fees in recent months has declined from the renewal rate that was experienced during the first year that second stage maintenance fees were paid. Therefore, PTO is properly conservative in its maintenance fee payment projections. We will conduct a comprehensive analysis of projected maintenance fee payments prior to proposing the fiscal year 1994 fee adjustment.

Comment: Eighteen respondents opposed establishment of fees for the public to access APS-Text at the Patent and Trademark Depository Libraries, primarily because the public has a right to free access to patent information. One person asked about administrative procedures for providing APS-Text in the PTDLS, and suggested that CD-ROM products continue to be made available free of charge and access fees for APS-Text be kept as low as possible.

Response: As a fully fee-funded agency, the costs to the PTO of providing access to APS-Text in the 74 Patent and Trademark Depository Libraries (PTDLs) would have to be borne either by the individual users of the system, or by all users of the patent system (e.g., patent applicants). In June 1988, the PTO published in 53 Federal Register 23677 the results of comments solicited on alternatives for funding access to the PTO's automated systems. In response, the PTO received 21 comments, 12 of which advocated the use of taxpayer revenues, and seven supported at least some reliance on user fees. The latter based their decisions on the reality of budget deficit problems; the inequity of providing taxpayer funds to subsidize on-line searchers who charge fees for their services; and the need to have an equitable fee structure that applies throughout the United States.

The PTO has a strong interest in expanding access to APS-Text to all PTDLS that wish to participate, with the least amount of administrative burden to the PTDLS, but considers allocating user fees paid for other products and services to subsidize this effort to be inappropriate. Therefore, the PTO is establishing a fee of \$70 per connect hour for accessing APS-Text in the PTDLS, which includes the cost of having a service bureau provide billing, account administrative, and user support. However, the Commissioner is immediately suspending collection of that fee to provide additional time to solicit comments through this rulemaking for providing the administrative services associated with APS-Text. Likewise, the Office would like to consider other options for accessing

patent search and retrieval in the PTDLS. The Office will publish a notice in the Federal Register and the Official Gazette of the Patent Trademark Office thirty days before it begins collecting a fee for public access to APS-Text in the PTDLS. **Comment:** One respondent claimed that proposed 37 CFR 1.21(p) is not in accord with the rulemaking provision of 5 U.S.C. 553(b) which requires that the issues involved be described in the notice of proposed rulemaking.

Response: The Notice of Proposed Rulemaking 57 FR 21536, referenced 35 U.S.C. 41(i)(3) which authorizes the Commissioner to establish reasonable fees for access to automated search systems of the PTO. Further in the notice at 57 FR 21537, under the discussion of the proposed revision to 37 CFR § 1.21, it was stated that the proposed \$40.00 fee would recover the PTO's estimated marginal cost of providing the service to the PTDLS. The notice also indicated the PTO was investigating the use of a contract service bureau to provide access in which case the fee would be approximately \$70.00. This fully described the issue involved in the proposed rule change.

Comment: Two respondents commented on the administrative burden caused by a change to the fee structure at this time, particularly in light of prior fee changes and the small amount of the adjustment.

Response: The PTO proposed to adjust its fees because operating costs have increased over the past year. The Commissioner is authorized to adjust patent and trademark fees on October 1, 1992 and every year thereafter to reflect fluctuations in the Consumer Price Index over the prior twelve months. Future charges are expected to occur annually on October 1st. The fee increases that will be implemented on October 1, 1992, are expected to generate \$15.1 million. Without this revenue, PTO would be forced to make cuts in patent and trademark operations that would affect the quality of examination.

Comment: One person expressed concern about the quality and timeliness of services for which new or increased fees are proposed, complaining specifically of the delay in receiving an official filing receipt when a trademark application is divided and in the recording of assignments.

Response: A major objective of the Office is to assure continuous quality improvements throughout all operations. The Office has taken steps to address the areas of concern identified. **Comment:** One organization and one person objected to the PTO's sole reliance on fee income, particularly for funding automation development costs.

Response: The Omnibus Budget Reconciliation Act of 1990 requires that a user fee surcharge on certain patent fees replace taxpayer funds for the five year period 1991-1995. Whether PTO should receive funds from other sources in future fiscal years is beyond the scope of the rule package.

The automation programs, which are funded from user fees, are designed to improve the quality and timeliness of PTO services and products, and to discontinue reliance on manual processes and paper references.

Comment: One person said that small entities do not benefit from the 50 percent reduction to certain patent fees, because many small companies, particularly those in high technology areas, must license their patent rights and thus pay large entity status fees.

Response: The purpose of the small entity subsidy is to ensure that individual inventors, small businesses and non-profit organizations are not barred from using the patent system because of the PTO's fee structure. Once a small entity assigns the rights to a patent application or a patent to a large entity, presumably receiving compensation from the large entity, the reduced fee amounts no longer apply.

Comment: One organization said that trademark fees appear to be justified but PTO must ensure that trademark functions are being discharged in the most efficient and economical manner. For example, the organization questioned whether it is efficient for the Office to continue to maintain a paper search file and to continue to pay the General Services Administration (GSA) for building services.

Response: The Office is committed to ensuring that its trademark functions are being discharged effectively and, as part of its quality improvement program, is currently reviewing various work-related processes. No decision has yet been made as to when the paper search file will be eliminated and no such decision will be made until the public has been given an oppor-

tunity to comment. The Office has asked GSA to review the level of charges assessed in light of current market conditions.

Other Considerations: The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354); Executive Orders 12291 and 12612; and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements relating to patent and trademark fee rules.

The PTO has determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule change would not have a significant adverse impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The rule change increases fees by changes in the CPI as authorized by 35 U.S.C. 41(f). Further, the principal impact of the major patent fees has already been taken into account in 35 U.S.C. 41(h), which provides small entities with a 50-percent reduction in the major patent fees.

The PTO has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy would be less than \$100 million. There would be no major increase in costs or prices for consumers; individual industries; Federal, state, or local government agencies; or geographic regions. There would be no significant adverse effects on competition, employment, investment, productivity, or innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

For the reasons set forth in the preamble, the PTO is amending title 37 of the Code of Federal Regulations, Chapter 1, as set forth below.

Part 1-Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is amended by revising paragraphs (a)-(d), the parenthetical following paragraph (d), paragraphs (f)-(j), and the note at the end of the section to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases:
By a small entity (§ 1.19(f))\$355.00
By other than a small entity\$710.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:
By a small entity (§ 1.9(f))\$37.00
By other than a small entity\$74.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20.
(Note that § 1.75(c) indicates how multiple dependent claims

are considered for fee calculation purposes):

By a small entity (§ 1.9(f))\$11.00
By other than a small entity\$22.00

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s) per application:

By a small entity (§ 1.9(f))\$115.00
By other than a small entity\$230.00

(If the additional fees required by paragraphs (b), (c), and (d) of this section are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(f) For filing each design application:

By a small entity (§ 1.9(f))\$145.00
By other than a small entity\$290.00

(g) Basic fee for filing each plant application:

By a small entity (§ 1.9(f))\$240.00
By other than a small entity\$480.00

(h) Basic fee for filing each reissue application:

By a small entity (§ 1.9(f))\$355.00
By other than a small entity\$710.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§ 1.9(f))\$37.00
By other than a small entity\$74.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent.

(Note that § 1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes):

By a small entity (§ 1.9(f))\$11.00
By other than a small entity\$22.00

(Note: See §§ 1.445, 1.482 and 1.492 for international application filing and processing fees.)

(m)-(o) to read as follows:

§ 1.17 Patent application processing fees.

(b) Extension fee for response within second month pursuant to § 1.136(a):
By a small entity (§ 1.9(f))\$180.00
By other than a small entity\$360.00

(c) Extension fee for response within third month pursuant to § 1.136(a):
By a small entity (§ 1.9(f))\$420.00
By other than a small entity\$840.00

(d) Extension fee for response within fourth month pursuant to § 1.136(a):
By a small entity (§ 1.9(f))\$660.00
By other than a small entity\$1,320.00

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:
By a small entity (§ 1.9(f))\$135.00
By other than a small entity\$270.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:
By a small entity (§ 1.9(f))\$135.00
By other than a small entity\$270.00

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. 134:
By a small entity (§ 1.9(f))\$115.00
By other than a small entity\$230.00

(j) For filing a petition to institute a public use proceeding under § 1.292\$1,350.00

(m) For filing a petition:

(1) For revival of an unintentionally abandoned application, or

(2) For the unintentionally delayed payment of the fee for issuing a patent:
By a small entity (§ 1.9(f)) \$585.00
By other than a small entity \$1,170.00

(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to § 1.104-\$820.00 reduced by the amount of the application basic filing fee paid

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to § 1.104-\$1,640.00 reduced by the amount of the application basic filing fee paid

4. Section 1.18 is amended by revising paragraphs (a)-(c) to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
By a small entity (§ 1.9(f))\$585.00
By other than a small entity\$1,170.00

(b) Issue fee for issuing a design patent:
By a small entity (§ 1.9(f))\$205.00
By other than a small entity\$410.00

(c) Issue fee for issuing a plant patent:
By a small entity (§ 1.9(f))\$295.00
By other than a small entity\$590.00

5. Section 1.19 is amended by revising paragraph (b)(4) and paragraphs (f) and (h) to read as follows:

§ 1.19 Document supply fees:

(b)***

(4) For assignment records, abstract of title and certification, per patent\$25.00

(f) Uncertified copy of a non-United States patent document, per document\$25.00

(h) Additional filing receipts; duplicate; or corrected due to applicant error\$25.00

6. Section 1.20 is amended by revising paragraphs (a), (c), (e)-(g) and (i) to read as follows:
§ 1.20 Post issuance fees.

(a) For providing a certificate of correction for applicant's mistake (§ 1.323)\$100.00

(c) For filing a request for reexamination (§ 1.510(a)) \$2,250.00

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant.

By a small entity (§ 1.9(f))\$465.00
By other than a small entity\$930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant.

By a small entity (§ 1.9(f))\$935.00
By other than a small entity\$1,870.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant.

By a small entity (§ 1.9(f))\$1,410.00
By other than a small entity\$2,820.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable\$620.00

7. Section 1.21 is amended by revising paragraphs (a)(1), (a)(5), (a)(6), (b)(2), (b)(3), (e), and (i) and adding paragraph (p) to read as follows:

§ 1.21 Miscellaneous fees and charges.

(a) ***

(1) For admission to examination for registration to practice, fee payable upon application\$300.00

(5) For review of a decision of the Director of Enrollment and Discipline under § 10.2(c)\$130.00

(6) For requesting regrading of an examination under § 10.7(c)\$130.00

(b) ***

(2) Service charge for each month when the balance at the end of the month is below \$1,000 \$25.00

(3) Service charge for each month when the balance at the end of the month is below \$300.00 for restricted subscription deposit accounts used exclusively for subscription order of patent copies as issued\$25.00

(e) International type search reports: For preparing an international type search report of an international type search made at the time of the first action on the merits in a national patent application\$40.00

(i) Publication in Official Gazette: For publication in the Official Gazette of a notice of the availability of an application or a patent for licensing or sale, each application or pa-

tent\$25.00

(p) Library service: marginal cost for providing to a Patent and Trademark Depository Library access to Automated Patent System (APS) full-text search capability, per hour of terminal session time, including print time\$70.00

8. Section 1.26 is amended by revising paragraphs (a) and (c) to read as follows:

§ 1.26 Refunds.

(a) Money paid in excess will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw an application, an appeal, or a request for oral hearing, will not entitle a party to demand such a return. Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amount; amounts over twenty-five dollars may be returned by check, or if requested, by credit to a deposit account.

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of \$1,690 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

9. Section 1.445 is amended by revising paragraph (a) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a) The following fees and charges for international applications are established by the Commissioner under the authority of 35 U.S.C. 376:

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14)\$200.00

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with basic filing fee has been filed\$620.00

(ii) A corresponding prior United States national application with basic filing fee has been filed\$410.00

(3) A supplemental search fee when required, per additional invention\$170.00

10. Section 1.482 is amended by revising paragraphs (a) introductory text, (a)(1), and (a)(2)(ii) to read as follows:

§ 1.482 International preliminary examination fees.

(a) The following fees and charges for international preliminary examination are established by the Commissioner under the authority of 35 U.S.C. 376:

(1) A preliminary examination fee is due on filing the Demand:

(i) Where an international search fee as set forth in § 1.455(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of\$450.00

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, a preliminary examination fee of\$670.00

(2)***

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office\$230.00

11. Section 1.492 is amended by revising paragraphs (a)(1)-(a)(3), (a)(5), paragraphs (b)-(d), and the parenthetical following paragraph (d) to read as follows:

§ 1.492 National stage fees.

(a) ***

(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f))\$320.00
By other than a small entity\$640.00

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:

By a small entity (§ 1.9(f))\$355.00
By other than a small entity\$710.00

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f))\$475.00
By other than a small entity\$950.00

(5) Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office: By a small entity (§ 1.9(f))\$415.00
By other than a small entity\$830.00

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f))\$37.00
By other than a small entity\$74.00

(c) In addition to the basic national fee, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):
By a small entity (§ 1.9(f))\$11.00
By other than a small entity\$22.00

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f))\$115.00
By other than a small entity\$230.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

Part 2 - Rules of Practice in Trademark Cases

1. The authority citation for Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.6 is amended by revising paragraphs (a)(1) and (b)(7) and adding paragraph (a)(19) to read as follows:

§ 2.6 Trademark fees.

(a) Trademark process fees.

(1) For filing an application, per class.....\$210.00

(19) Dividing an application, per new application (file wrapper) created.....\$100.00

(b) Trademark service fees.

(7) For assignment records, abstract of title and certification, per registration\$25.00

3. Section 2.87 is revised to read as follows:

Section 2.87 Dividing an Application

(a) An application may be physically divided into two or more separate applications upon the payment of a fee for each new application created and submission by the applicant of a request in accordance with paragraph (d) of this section.

(b) In the case of a request to divide out one or more entire classes from an application, only the fee under paragraph (a) of this section will be required. However, in the case of a

Appendix A - Comparison of Existing and Revised Fee Amounts

request to divide out some, but not all, of the goods or services in a class, an application filing fee for each new separate application to be created by the division must be submitted, together with the fee under paragraph (a) of this section. Any outstanding time period for action by the applicant in the original application at the time of the division will be applicable to each new separate application created by the division.

(c) A request to divide an application may be filed at any time between the filing of the application and the date the Trademark Examining Attorney approves the mark for publication or the date of expiration of the six-month response period after issuance of a final action; or during an opposition, upon motion granted by the Trademark Trial and Appeal Board. Additionally, a request to divide an application under section 1(b) of the Act may be filed with a statement of use under § 2.88 or at any time between the filing of a statement of use and the date the Trademark Examining Attorney approves the mark for registration or the date of expiration of the six-month response period after issuance of a final action.

(d) A request to divide an application should be made in a separate paper from any other amendment or response in the application. The title "Request to divide application." should appear at the top of the first page of the paper.

Aug. 17, 1992

DOUGLAS B. COMER
Acting Assistant Secretary
and Acting Commissioner
of Patents and Trademarks

Note.- The following appendix will not appear in the Code of Federal Regulations

37 CFR Sec.	DESCRIPTION	Dec 1991	Oct 1992
1.16(a)	Basic Filing Fee	\$690	\$710
1.16(a)	Basic Filing Fee (Small Entity)	\$345	\$355
1.16(b)	Independent Claims	\$72	\$74
1.16(b)	Independent Claims (Small Entity)	\$36	\$37
1.16(c)	Claims in Excess of 20	\$20	\$22
1.16(c)	Claims in Excess of 20 (Small Entity)	\$10	\$11
1.16(d)	Multiple Dependent Claims	\$220	\$230
1.16(d)	Multiple Dependent Claims (Small Entity)	\$110	\$115
1.16(e)	Surcharge - Late Filing Fee	\$130	\$130
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	\$65	\$65
1.16(f)	Design Filing Fee	\$280	\$290
1.16(f)	Design Filing Fee (Small Entity)	\$140	\$145
1.16(g)	Plant Filing Fee	\$460	\$480
1.16(g)	Plant Filing Fee (Small Entity)	\$230	\$240
1.16(h)	Reissue Filing Fee	\$690	\$710
1.16(h)	Reissue Filing Fee (Small Entity)	\$345	\$355
1.16(i)	Reissue Independent Claims	\$72	\$74
1.16(i)	Reissue Independent Claims (Small Entity)	\$36	\$37
1.16(j)	Reissue Claims in Excess of 20	\$20	\$22
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	\$10	\$11
1.17(a)	Extension - First Month	\$110	\$110
1.17(a)	Extension - First Month (Small Entity)	\$55	\$55
1.17(b)	Extension - Second Month	\$350	\$360
1.17(b)	Extension - Second Month (Small Entity)	\$175	\$180
1.17(c)	Extension - Third Month	\$810	\$840
1.17(c)	Extension - Third Month (Small Entity)	\$405	\$420
1.17(d)	Extension - Fourth Month	\$1,280	\$1,320
1.17(d)	Extension - Fourth Month (Small Entity)	\$640	\$660
1.17(e)	Notice of Appeal	\$260	\$270
1.17(e)	Notice of Appeal (Small Entity)	\$130	\$135
1.17(f)	Filing a Brief	\$260	\$270
1.17(f)	Filing a Brief (Small Entity)	\$130	\$135
1.17(g)	Request for Oral Hearing	\$220	\$230
1.17(g)	Request for Oral Hearing (Small Entity)	\$110	\$115
1.17(h)	Petition - Not All Inventors	\$130	\$130
1.17(h)	Petition - Correction of Inventorship	\$130	\$130
1.17(h)	Petition - Decision on Questions	\$130	\$130
1.17(h)	Petition - Suspend Rules	\$130	\$130
1.17(h)	Petition - Expedited License	\$130	\$130
1.17(h)	Petition - Scope of License	\$130	\$130
1.17(h)	Petition - Retroactive License	\$130	\$130
1.17(h)	Petition - Refusing Maintenance Fee	\$130	\$130
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	\$130	\$13
1.17(h)	Petition - Interference	\$130	\$130

1.17(h)	Petition - Reconsider Interference	\$130	\$130
1.17(h)	Petition - Late Filing of Interference	\$130	\$130
1.20(b)	Petition - Correction of Inventorship	\$130	\$130
1.17(h)	Petition - Refusal of Publish SIR	\$130	\$130
1.17(i)(1)	Petition - For Assignment	\$130	\$130
1.17(i)(1)	Petition - For Application	\$130	\$130
1.17(i)(1)	Petition - Late Priority Papers	\$130	\$130
1.17(i)(1)	Petition - Suspend Action	\$130	\$130
1.17(i)(1)	Petition - Divisional Reissues to Issue Separately	\$130	\$130
1.17(i)(1)	Petition - For Interference Agreement	\$130	\$130
1.17(i)(1)	Petition - Amendment After Issue	\$130	\$130
1.17(i)(1)	Petition - Withdrawal After Issue	\$130	\$130
1.17(i)(1)	Petition - Defer Issue	\$130	\$130
1.17(i)(1)	Petition - Issue to Assignee	\$130	\$130
1.17(i)(1)	Petition - Accord a Filing Date Under § 1.53	\$130	\$130
1.17(i)(1)	Petition - Accord a Filing Date Under § 1.60	\$130	\$130
1.17(i)(1)	Petition - Accord a Filing Date Under § 1.62	\$130	\$130
1.17(i)(2)	Petition - Make Application Special	\$130	\$130
1.17(j)	Petition - Public Use Processing	\$1,310	\$1,350
1.17(k)	Non-English Specification	\$130	\$130
1.17(l)	Petition - Revive Abandoned Appl.	\$110	\$110
1.17(l)	Petition - Revive Abandoned Appl. (Small Entity)	\$55	\$55
1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	\$1,130	\$1,170
1.17(m)	Petition - Revive Unintentionally Abandoned Appl. (Small Entity)	\$565	\$585
1.17(n)	SIR - Prior to Examiner's Action	\$790	\$820
1.17(o)	SIR - After Examiner's Action	\$1,580	\$1,640
1.17(p)	Submission of an Information Disclosure Statement (§ 1.97)	-	\$200
1.18(a)	Issue Fee	\$1,130	\$1,170
1.18(a)	Issue Fee (Small Entity)	\$565	\$585
1.18(b)	Design Issue Fee	\$400	\$410
1.18(b)	Design Issue Fee (Small Entity)	\$200	\$205
1.18(c)	Plant Issue Fee	\$570	\$590
1.18(c)	Plant Issue Fee (Small Entity)	\$285	\$295
1.19(a)(1)(i)	Copy of Patent	\$3	\$3
1.19(a)(1)(ii)	Patent Copy - Expedited Local Service	\$6	\$6
1.19(a)(1)(iii)	Patent Copy Ordered Via EOS - Expedited Service	\$25	\$25
1.19(a)(2)	Plant Patent Copy	\$12	\$12
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	\$24	\$24
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	\$12	\$12
1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	\$24	\$24
1.19(b)(2)	Cert. or Uncert. Copy of Patent- Related File Wrapper/Contents	\$150	\$150
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	\$25	\$25
1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	\$20	\$25
1.19(c)	Library Service	\$50	\$50
1.19(d)	List of Patents in Subclass	\$3	\$3
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	\$10	\$10
1.19(f)	Copy of Non-U.S. Patent Document	\$12	\$25
1.19(g)	Comparing the Certifying Copies, Per Document, Per Copy	\$25	\$25
1.19(h)	Duplicate or Corrected Filing Receipt	\$20	\$25
1.20(a)	Certificate of Correction	\$70	\$100
1.20(c)	Reexamination	\$2,180	\$2,250
1.20(d)	Statutory Disclaimer	\$110	\$110
1.20(d)	Statutory Disclaimer (Small Entity)	\$55	\$55
1.20(e)	Maintenance Fee - 3.5 Years	\$900	\$930
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	\$450	\$465
1.20(f)	Maintenance Fee - 7.5 Years	\$1,810	\$1,870
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	\$905	\$935
1.20(g)	Maintenance Fee - 11.5 Years	\$2,730	\$2,820
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	\$1,365	\$1,410
1.20(h)	Surcharge - Maintenance Fee - 6 Months	\$130	\$130
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	\$65	\$65
1.20(i)	Surcharge - Maintenance After Expiration	\$600	\$620
1.20(j)	Extension of Term of Patent	\$1,000	\$1,000
1.21(a)(1)	Admission to Examination	\$290	\$300
1.21(a)(2)	Registration to Practice	\$100	\$100
1.21(a)(3)	Reinstatement to Practice	\$15	\$15
1.21(a)(4)	Certificate of Good Standing	\$10	\$10
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	\$20	\$20
1.21(a)(5)	Review of Decision of Director, OED	\$120	\$130
1.21(a)(6)	Regrading of Examination	\$120	\$130
1.21(b)(1)	Establish Deposit Account	\$10	\$10
1.21(b)(2)	Service Charge Below Minimum Balance	\$20	\$25
1.21(b)(3)	Service Charge Below Minimum Balance	\$20	\$25
1.21(c)	Filing a Disclosure Document	\$10	\$10
1.21(d)	Box Rental	\$50	\$50
1.21(e)	International Type Search Report	\$35	\$40
1.21(g)	Self-Service Copy Charge	\$0.25	\$0.25
1.21(h)	Recording Patent Property	\$40	\$40
1.21(i)	Publication in the OG	\$20	\$25

1.21(j)	Labor Charges for Services
1.21(k)	Unspecified Other Services
1.21(l)	Retaining Abandoned Application
1.21(m)	Processing Returned Checks
1.21(n)	Handling Fee - Incomplete Application
1.21(o)	Terminal Use APS-Text
1.21(p)	Terminal Use APS-Text by the PTDL's
1.24	Coupons for Patent Copies
1.296	Handling Fee - Withdrawal SIR
1.445(a)(1)	Transmittal Fee
1.445(a)(2)(i)	PCT Search Fee - No U.S. Application
1.445(a)(2)(ii)	PCT Search Fee - Prior U.S. Application
1.445(a)(3)	Supplemental Search
1.482(a)(1)(i)	Preliminary Exam Fee
1.482(a)(1)(ii)	Preliminary Exam Fee
1.482(a)(2)(i)	Additional Invention
1.482(a)(2)(ii)	Additional Invention
1.492(a)(1)	Preliminary Examining Authority
1.492(a)(1)	Preliminary Examining Authority (Small Entity)
1.492(a)(2)	Searching Authority
1.492(a)(2)	Searching Authority (Small Entity)
1.492(a)(3)	PTO Not ISA nor IPEA
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)
1.492(a)(4)	Claims - IPEA
1.492(a)(4)	Claims - IPEA (Small Entity)
1.492(a)(5)	Filing with EPO/JPO Search Report
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)
1.492(b)	Claims - Extra Individual (Over 3)
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)
1.492(c)	Claims - Extra Total (Over 20)
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)
1.492(d)	Claims - Multiple Dependents
1.492(d)	Claims - Multiple Dependents (Small Entity)
1.492(e)	Surcharge
1.492(e)	Surcharge (Small Entity)
1.492(f)	English Translation - After 20 Months
2.6(a)(1)	Application for Registration, Per Class
2.6(a)(2)	Amendment to Allege Use, Per Class
2.6(a)(3)	Statement of Use, Per Class
2.6(a)(4)	Extension for Filing Statement of Use, Per Class
2.6(a)(5)	Application for Renewal, Per Class
2.6(a)(6)	Surcharge for Late Renewal, Per Class
2.6(a)(7)	Publication of Mark Under § 12(a), Per Class
2.6(a)(8)	Issuing New Certificate of Registration
2.6(a)(9)	Certificate of Correction of Registrant's Error
2.6(a)(10)	Filing Disclaimer to Registration
2.6(a)(11)	Filing Amendment to Registration
2.6(a)(12)	Filing Affidavit Under Section 8, Per Class
2.6(a)(13)	Filing Affidavit Under Section 15, Per Class
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class
2.6(a)(15)	Petitions to the Commissioner
2.6(a)(16)	Petition to Cancel, Per Class
2.6(a)(17)	Notice of Opposition, Per Class
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class
2.6(a)(19)	Dividing an Application, Per New Application Created
2.6(b)(1)(i)	Copy of Registered Mark
2.6(b)(1)(ii)	Copy of Registered Mark, Expedited
2.6(b)(1)(iii)	Copy of Registered Mark Ordered Via EOS, Expedited Svc.
2.6(b)(2)(i)	Certified Copy of TM Application as Filed
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Contents
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited
2.6(b)(5)	Certified or Uncertified Copy of TM Records
2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document
2.6(b)(6)	For Second and Subsequent Marks in Same Document
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.
2.6(b)(8)	Terminal Use T-SEARCH
2.6(b)(9)	Self-Service Copy Charge
2.6(b)(10)	Labor Charges for Services
2.6(b)(11)	Unspecified Other Services
1.19(g)	Comparing and Certifying Copies, per Document, per Copy
1.24	Trademark Coupons

\$30	\$30
Actual Cost	Actual Cost
\$130	\$130
\$50	\$50
\$130	\$130
\$40	\$40
-	\$70
\$3	\$3
\$130	\$130
\$190	\$200
\$600	\$620
\$400	\$410
\$160	\$170
\$440	\$450
\$650	\$670
\$140	\$140
\$220	\$230
\$620	\$640
\$310	\$320
\$690	\$710
\$345	\$355
\$920	\$950
\$460	\$475
\$90	\$90
\$45	\$45
\$800	\$830
\$400	\$415
\$72	\$74
\$36	\$37
\$20	\$22
\$10	\$11
\$220	\$230
\$110	\$115
\$130	\$130
\$65	\$65
\$130	\$130
\$200	\$210
\$100	\$100
\$100	\$100
\$100	\$100
\$300	\$300
\$100	\$100
\$100	\$100
\$100	\$100
\$100	\$100
\$100	\$100
\$100	\$100
\$100	\$100
\$200	\$200
\$100	\$100
\$200	\$200
\$200	\$200
\$100	\$100
-	\$100
\$3	\$3
\$6	\$6
\$25	\$25
\$12	\$12
\$24	\$24
\$50	\$50
\$10	\$10
\$20	\$20
\$25	\$25
\$40	\$40
\$25	\$25
\$20	\$25
\$40	\$40
\$0.25	\$0.25
\$30	\$30
Actual Cost	Actual Cost
\$25	\$25
\$3	\$3

(36) DEPARTMENT OF COMMERCE
Billing Code: 3510-16-M
Patent and Trademark Office
37 CFR Part 1
[Docket No. 940415-4212]
RIN 0651-AA68
Revision of Patent Fees

Agency: Patent and Trademark Office, Commerce
Action: Notice of Final Rulemaking and Lifting of Suspension.
Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in patent cases, Part 1 of title 37, Code of Federal Regulations, to adjust certain patent fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation. The PTO also is providing notice that, beginning on October 1, 1994, the suspension of the fee for access to the Automated Patent System's Full Text Search capability (APS-Text) at a Patent and Trademark Depository Library (PTDL) will be lifted. However, the PTO is rescinding this hourly fee, which was established by 37 CFR 1.21(p), and in its place assessing an annual subscription fee on PTDLs providing such service. On October 1, 1994, the PTO also will begin collecting a fee for access to the Automated Patent System's Classified Search and Image Retrieval capability (APS-CSIR) from the search facilities Arlington, Virginia.

Effective Date: October 1, 1994.
For Further Information Contact: Robert Kopson by telephone at (703) 305-8510, fax at (703) 305-8525, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed to adjust PTO fees in accordance with the applicable provisions of title 35, United States Code, and section 10101 of the Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508), all as amended by the Patent and Trademark Office Authorization Act of 1991 (Public Law 102-204).

There are two objectives of this final rule package. The first objective is to adjust certain patent fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation.

The second objective is to provide notice that PTO is lifting the suspension or on the fee for access to APS-Text at a Patent and Trademark Depository Library (PTDL). This was established by rule on October 1, 1992 (published in the Federal Register on August 21, 1992 at 57 FR 38190). Collection of the fee was immediately suspended by the Commissioner to provide additional time for the PTO to solicit input from the private sector on alternative collection methods, and other options for accessing patent search and retrieval in the Libraries. In response to public comments, the PTO will rescind the fee established by 37 CFR 1.21(p), and assess a subscription fee under 37 CFR 1.21(k) on each PTDL that provides its patrons with access to APS-Text. The basis for the subscription amount is less than the fee amount that was established in 37 CFR 1.21(p). Each participating library will be responsible for establishing policies for providing access to their patrons.

The PTO also will begin charging a fee for on-line access to APS-CSIR at the Patent Search and Image Retrieval Facility (PSIRF) in Arlington, Virginia. Free access to APS-CSIR has been offered at the PSIRF since July 12, 1993. The PTO now will begin recovering the cost of providing this on-line access in accordance with 37 CFR 1.21(k).

The PTO will make any necessary adjustments to these automated system fees based upon actual fiscal year 1995 usage. Future adjustments will be made based upon deviations in system costs and/or public usage.

BACKGROUND

Statutory Provisions

Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. A fifty percent reduction in the fees paid under 35 U.S.C. 41(a) and 41(b) by independent inventors, small business concerns, and nonprofit organizations who meet prescribed definitions is required by 35 U.S.C. 41(h).

Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be

adjusted on October 1, 1992, and every year thereafter, to reflect fluctuations in the Consumer Price Index (CPI) over the previous 12 months.

Section 10101 of the Omnibus Budget Reconciliation Act of 1990 (Pub. L. 101-508) provides that there shall be a surcharge on all fees established under 35 U.S.C. 41(a) and 41(b) to collect \$107 million in fiscal year 1995.

Subsection 41(d) of title 35, United States Code, authorizes the Commissioner to establish fees for all other processing, services, or materials related to patents to recover the average cost of providing these services or materials, except for the fees for recording a document affecting title, for each photocopy, and for each black and white copy of a patent.

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty (PCT).

Subsection 41(i)(3) of title 35, United States Code, authorizes the Commissioner to establish reasonable fees for access to automated search systems of the PTO.

Subsection 41(g) of title 35, United States Code, provides that new fee amounts established by the Commissioner under Section 41 may take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office*.

Recovery Level Determinations

This rule adjusts patent fees for a planned recovery of \$571,439,000 in fiscal year 1995, as proposed in the Administration's budget request to the Congress. The fee amounts established for automated access to PTO's data bases will recover reasonable costs of providing these services to the public. The total amount expected to be collected is consistent with the budgeted amount.

The patent statutory fees established by 35 U.S.C. 41(a) and 41(b) are being adjusted on October 1, 1994, to reflect any fluctuations occurring during the previous 12 months in the Consumer Price Index (CPI-U). In calculating these fluctuations, the Office of Management and Budget (OMB) has determined that the PTO should use CPI-U data as determined by the Secretary of Labor. However, the Department of Labor does not make public the CPI-U until approximately 21 days after the end of the month being calculated. Therefore, the latest CPI-U information available is for the month of May 1994. In accordance with previous rulemaking methodology, the PTO uses the Administration's projected CPI-U for the 12-month period ending September 30, 1994, which is 3.0 percent. Based on this projection, patent statutory fees are being adjusted by 3.0 percent. Before the final fee schedule is published, the fees may be slightly adjusted based on actual data available from the Department of Labor.

Certain non-statutory patent processing fees established under 35 U.S.C. 41(d) and PCT processing fees established under 35 U.S.C. 376 are being adjusted up to the three percent fluctuation in the CPI in order to recover their estimated average costs in 1995. Three patent service fees that are set by statute are not adjusted. The three fees that are not being adjusted are assignment recording fees, printed patent copy fees and photocopy charge fees.

The Office calculated unit costs for all fees based on OMB Circular A-25, "User Fees", and OMB Circular A-130, "Management of Federal Information Resources". Costs were determined from the best available records (for example, financial statements of the Office) and included direct and indirect costs to the Office for carrying out the activity, as directed by OMB Circular A-25. The patent statutory fee amounts were rounded by applying standard arithmetic rules so that the amounts rounded would be convenient to the user.

Fees of \$100 or more were rounded to the nearest \$10. Fees between \$2 and \$99 were rounded to an even number so that the comparable small entity fee would be a whole number.

The Office has detailed cost calculation worksheets for each fee amount. These worksheets are available for public inspection in Suite 507 of Crystal Park 1, 2011 Crystal Drive Arlington, Virginia

Workload Projections

Determination of workloads varies by fee. Principal workload projection techniques are as follows:

Patent application workloads are projected from statistical regression models using recent application filing trends. Patent issues are projected from an in-house patent production model and reflect examiner production achievements and goals. Patent maintenance fee workloads utilize patents issued 3.5, 7.5 and 11.5 years prior to payment and assume payment rates of 80 percent, 57 percent and 25 percent, respectively. Service fee workloads follow linear trends from prior years' activities.

Any fee amount that is paid on or after October 1, 1994, would be subject to the new fees then in effect. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing or Transmission, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the PTO. A Certificate of Mailing or Transmission under Section 1.8 is not "proper" for items which are specifically excluded from the provisions of Section 1.8. Section 1.8 should be consulted for those items for which a Certificate of Mailing or Transmission is not "proper." Such items include, *inter alia*, the filing of national and international applications for patents. However, the provisions of 37 CFR 1.10 relating to filing papers and fees with an "Express Mail" certificate do apply to any paper or fee (including patent applications) to be filed in the PTO. If an application or fee is filed by "Express Mail" with a proper certificate dated on or after the effective date of the rules, as amended, the amount of the fee to be paid would be the fee established by the amended rules.

COST CALCULATIONS

APS-Text at a Patent and Trademark Depository Library

(PTDL) The costs for one hour terminal session time on APS-Text at a PTDL include license fees that must be paid to Chemical Abstracts Service (CAS) for its proprietary text and structure search software. Other costs are included for a portion, projected at 3.65 percent, of the lease of a computer mainframe for memory storage purposes; all costs associated with training PTDL staff (equipment rental, materials and time); personnel to provide client support to the PTDLs; and telecommunication costs. A summary of the costs are listed below.

APS-Text Cost of One Hour of Terminal Session Time at a Patent and Trademark Depository Library

Cost Element	Public Share
Client Support Overtime	\$10,203
Additional Mainframe Costs	\$43,216
Software (license fee)	\$273,000
Training Costs	\$10,000
Subtotal	\$336,419
General & Admin. Overhead @ 12.2%	\$40,976
Total Cost	\$377,395
Estimated Annual Usage (hours)	54,600

Unit Cost (per hour)	\$6.91
Telecommunication Costs (per hour)	\$8.00
Total Cost (per hour)	\$14.91
Total Cost (per hour - rounded)	\$15.00

The PTDLs will pay an annual maximum use subscription rate based on one of five tier levels, roughly equivalent to one to five hours of use per day, five days per week. Each PTDL will select a maximum use subscription tier based on its anticipated usage and be responsible for monitoring their own use. The PTDLs will also be responsible for establishing their own policies regarding the provision of APS-Text in their library. If during the year a PTDL is about to exceed its chosen level of maximum use, the PTDL will be allowed to move to a higher tier (and pay the additional subscription rate) or to use up to the subscribed level and cease continued access mid-year.

Tiers	Annual Usage	Annual Subscription Rate
I	0 - 300 hours	\$2,250
II	301 - 600 hours	\$6,750
III	601 - 900 hours	\$11,250

IV	901 - 1200 hours	\$15,750
V	1201 - 1500 hours	\$20,250

The subscription rates were derived using the \$15.00 per hour access charge previously calculated. There will be no additional charges or refunds to each library. For each tier, a discount mechanism is included in the annual subscription calculation. For example, the annual subscription rate of \$2,250 for Tier I is calculated by taking the mean average of the annual usage range (in this case 150 hours is the mean of zero and 300 hours) and multiplying it by the \$15.00 per hour access charge. Therefore, for a PTDL in Tier I, any usage over 150 hours is free to the library. But if a PTDL in Tier I were to not use at least 150 hours, the PTO would not be required to refund the amount of the subscription fee that was not used.

APS-CSIR at the Patent Search and Image Retrieval Facility (PSIRF)

The costs for one hour terminal session time on APS-CSIR at the PSIRF include proprietary text and structure search software. It is estimated that 40 percent of the terminal time license fees that must be paid to Chemical Abstracts Service (CAS) for its will be used for text searching, which requires the search software from CAS.

Other costs are included for a portion, projected at 2.25 percent, of the lease of a computer mainframe for memory storage purposes; additional personnel for the PSIRF and the Office of Computer and Telecommunications Operations; computer acquisition, installation, and maintenance; supplies and equipment dedicated to public use; and general and administrative overhead. A summary of the costs are listed below.

APS-CSIR Cost of One Hour of Terminal Session Time at the Patent Search and Image Retrieval Facility

Cost Element	Total Cost
Compensation and Benefits	\$250,813
Additional Hardware and Mainframe Costs	\$226,792
Software (license fee)	\$25,000
Supply Costs	\$10,512
Installation Costs (amortized)	\$25,366
Subtotal	\$538,483
Space Costs	\$41,759
General & Admin Overhead @ 12.2%	\$65,695
Total Cost	\$645,937
Estimated Annual Usage (hours)	13,000
Unit Cost (per hour)	\$49.68
Rounded Fee Amount (per hour - projected)	\$50.00

A comparison of existing and revised fee amounts is included as an Appendix to this notice of final rulemaking. In order to ensure clarity in the implementation of the revised fees, a discussion of specific sections is set forth below.

Discussion of Specific Rules

37 CFR 1.16 National application filing fees.

Section 1.16, paragraphs (a), (b), (d), and (f)-(i), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.17 Patent application processing fees.

Section 1.17, paragraphs (b)-(g) and (m), is revised to adjust fees established therein to reflect fluctuations in the CPI. Section 1.17, paragraphs (j), and (n)-(p), is revised to adjust fees established therein to recover costs.

37 CFR 1.18 Patent issue fees.

Section 1.18, paragraphs (a)-(c), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.20 Post-issuance fees.

Section 1.20, paragraphs (c), (i)(1), and (j), is revised to adjust fees established therein to recover costs.

Section 1.20, paragraphs (e)-(g), is revised to adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21 is amended to remove paragraph (p).

37 CFR 1.445 International application filing, processing, and search fees.

Section 1.445, paragraph (a), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.482 International preliminary examination fees.

Section 1.482, paragraphs (a)(1) and (a)(2)(i), is revised to adjust the fees authorized by 35 U.S.C. 376 to recover costs.

* 37 CFR 1.492 National stage fees.

Section 1.492, paragraphs (a), (b) and (d), is revised to adjust fees established therein to reflect fluctuations in the CPI.

Response to Comments on the Rules

Patent Fee Increase

A notice of proposed rulemaking to adjust patent fees was published in the *Federal Register* on May 27, 1994, at 59 FR 27519, and in the *Official Gazette* on June 7, 1994, at 1163 OG 14.

A public hearing was held on June 28, 1994. Three comments were received and considered in adopting the rules set forth herein.

Comments: The respondents, although not objecting to the three percent fee increase, strongly oppose any fee increase for the purpose of making up patent fee surcharge money that is being withheld from the PTO. The respondents support the Administration's proposal to ensure that all user fees assessed by the PTO are used exclusively by the PTO.

Response: The Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508) requires the PTO, in fiscal year 1995, to collect \$107 million in patent fee surcharges and to deposit these collections to the Patent and Trademark Office Fee Surcharge Fund. In the past, Congress has only appropriated part of these deposits back to the PTO. Deposits not made available to the Office reside in the Fund. To date, the reserve in the Fund is slightly in excess of \$35 million. For fiscal year 1995, the PTO requested that all patent fees be provided directly to the Office, thereby eliminating reliance on appropriations from the Fee Surcharge Fund. This language will not be enacted. The House of Representatives has recommended that an additional \$18.7 million in patent fee surcharges not be made available to the Office in fiscal year 1995. Final action on the 1995 appropriations bill is pending. The Administration does not propose to increase patent fees in fiscal year 1995 other than the increase that reflects fluctuations in the Consumer Price Index.

Collection of the Fee for Access to APS-Text at the PTDLs

A fee for access to APS-Text at a PTDL was set in the final rule package published in the *Federal Register* on August 21, 1992 (57 FR 38189). The final rule became effective October 1, 1992. On that date, the fee took effect but collection was immediately suspended by the Commissioner to provide additional time to solicit input from the private sector on alternative collection methods, and other options for accessing patent search and retrieval in the Libraries.

The Office received six comments.

Comment: Two respondents stated that many of the PTDLs already have considerable experience in collecting fees for access to on-line patent and trademark services provided by private sector vendors. They suggested that mechanisms already in place could be adapted to the collection of fees for PTO-provided services.

These respondents also suggested that the PTO procure access for the PTDLs to private sector on-line patent and trade-

mark services, using a Federal procurement mechanism, such as Fedlink.

Response: The PTO encourages the PTDLs to provide a variety of patent and trademark services for their patrons. However, the PTDLs are not required to provide access to private sector on-line services, and the PTO can only provide support and training to the PTDLs for products and services it develops.

In the case of APS access, participation on the part of the PTDLs will be voluntary. With respect to other services, the PTDLs will make the decision as to which ones best fit the needs of their user communities. Fedlink, which provides on-line services to Government agencies, cannot extend its charter to include the PTDLs.

Under the proposed subscription method, libraries should develop policies and procedures which best suit their particular circumstances.

Comment: One respondent suggested that the access to APS be expanded beyond the PTDLs, with a small fee for general use, and discounted fees for independent inventors and/or off-peak usage.

Response: At this time, allowing direct access by the public would impact internal PTO operations. Access at PTDLs will ensure usage in a controlled environment, where end-users will have access to knowledge and skills of trained librarians.

Comment: One respondent suggested that the PTO permit voluntary participation by the individual PTDLs.

Response: Participation on the part of the PTDLs will be voluntary. The level of participation by the PTDLs will not affect their relationship with the PTO in any manner.

Comment: One respondent suggested that the PTO provide access to APS-Text on a subscription basis. This method would set a fee for anticipated usage over a determined period of time.

Response: The PTO will provide access to APS-Text to the PTDLs on an annual subscription basis. All of the libraries will have the option of subscribing. Each library that chooses to subscribe will establish a policy for providing the public with access to APS-Text.

Comment: One respondent suggested that the PTO set up a system that allows users to input credit or debit card numbers.

Response: Currently, the PTO is studying this collection option. The current equipment in use does not allow access via a credit or debit card. This option may be feasible in the near future.

Other Considerations

This final rule change is in conformity with the requirements of Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements relating to these patent fee rules. This final rule has been determined to be significant for purposes of Executive Order 12866.

The PTO has determined that this final rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the final rule change would not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The final rule change increases fees by changes in the CPI as authorized by 35 U.S.C. 41(f). The principal impact of the major patent fees has already been taken into account in 35 U.S.C. 41(h), which provides small entities with a 50-percent reduction in the major patent fees.

Lists of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

For the reasons set forth in the preamble, the PTO is amending title 37 of the Code of Federal Regulations, Chapter

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OFFICIAL GAZETTE

JANUARY 3, 1995

1, Part 1, as set forth below.

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is amended by revising paragraphs (a), (b), (d), and (f) through (i) to read as follows:

§ 1.16 National application filing fees.

- (a) Basic fee for filing each application for an original patent, except design or plant cases:
By a small entity (§ 1.9(f))\$65.00
By other than a small entity\$730.00
(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:
By a small entity (§ 1.9(f))\$38.00
By other than a small entity\$76.00

- (d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:
By a small entity (§ 1.9(f))\$120.00
By other than a small entity\$240.00

(If the additional fees required by paragraphs (b), (c), and (d) of this section are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

- (f) For filing each design application:
By a small entity (§ 1.9(f))\$150.00
By other than a small entity\$300.00
(g) Basic fee for filing each plant application:
By a small entity (§ 1.9(f))\$245.00
By other than a small entity\$490.00
(h) Basic fee for filing each reissue application:
By a small entity (§ 1.9(f))\$365.00
By other than a small entity\$730.00
(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:
By a small entity (§ 1.9(f))\$38.00
By other than a small entity\$76.00

3. Section 1.17 is amended by revising paragraphs (b) through (g), (j), and (m) through (p) to read as follows:

§ 1.17 Patent application processing fees.

- (b) Extension fee for response within second month pursuant to 1.136(a):
By a small entity (§ 1.9(f))\$185.00
By other than a small entity\$370.00
(c) Extension fee for response within third month pursuant to 1.136(a):
By a small entity (§ 1.9(f))\$435.00
By other than a small entity\$870.00
(d) Extension fee for response within fourth month pursuant to 1.136(a):
By a small entity (§ 1.9(f))\$680.00
By other than a small entity\$1,360.00
(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

- By a small entity (§ 1.9(f))\$140.00
By other than a small entity\$280.00
(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:
By a small entity (§ 1.9(f))\$140.00
By other than a small entity\$280.00
(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in an appeal under 35 U.S.C. 134:
By a small entity (§ 1.9(f))\$120.00
By other than a small entity\$240.00

- (j) For filing a petition to institute a public use proceeding under 1.292.....\$1,390.00

- (m) For filing a petition:
(1) For revival of an unintentionally abandoned application, or
(2) For the unintentionally delayed payment of the fee for issuing a patent:
By a small entity (§ 1.9(f))\$605.00
By other than a small entity\$1,210.00
(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiners action pursuant to § 1.104-\$840.00 reduced by the amount of the application basic filing fee paid.
(o) For requesting publication of a statutory invention registration after the mailing of the first examiners action pursuant to § 1.104-\$1,690.00 reduced by the amount of the application basic filing fee paid.
(p) For submission of an information disclosure statement under § 1.97(c)\$210.00

4. Section 1.18 is revised to read as follows:

§ 1.18 Patent issue fees.

- (a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
By a small entity (§ 1.9(f))\$605.00
By other than a small entity\$1,210.00
(b) Issue fee for issuing a design patent:
By a small entity (§ 1.9(f))\$210.00
By other than a small entity\$420.00
(c) Issue fee for issuing a plant patent:
By a small entity (§ 1.9(f))\$305.00
By other than a small entity\$610.00

5. Section 1.20 is amended by revising paragraphs (c), (e) through (g), (i)(1), and (j) to read as follows:

§ 1.20 Post issuance fees.

- (c) For filing a request for reexamination (§ 1.510(a)).....\$2,320.00

- (e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant.
By a small entity (§ 1.9(f))\$480.00
By other than a small entity\$960.00
(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant.
By a small entity (§ 1.9(f))\$965.00
By other than a small entity\$1,930.00
(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant

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- By a small entity (§ 1.9(f))\$1,450.00
By other than a small entity\$2,900.00

- (i) ***
(1) unavoidable\$640.00

- (j) For filing an application for extension of the term of a patent (§ 1.740)\$1,030.00

6. Section 1.21 is amended by removing paragraph (p).

7. Section 1.445 is amended by revising paragraph (a) to read as follows:

§ 1.445 International application filing, processing and search fees.

- (a) The following fees and charges for international applications are established by the Commissioner under the authority of 35 U.S.C. 376:
(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14)\$210.00
(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:(i) No corresponding prior United States national application with basic filing fee has been filed.....\$640.00
(ii) A corresponding prior United States national application with basic filing fee has been filed.....\$420.00
(3) A supplemental search fee when required, per additional invention.....\$180.00

8. Section 1.482 is amended by revising paragraphs (a)(1) and (a)(2)(ii) to read as follows:

§ 1.482 International preliminary examination fees.

- (a) ***
(1) A preliminary examination fee is due on filing the Demand:
(i) Where an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of\$460.00
(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, a preliminary examination fee of\$690.00
(2) ***
(i) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office\$240.00

9. Section 1.492 is amended by revising paragraphs (a),(1) through (5), (b), and (d) to read as follows:

§ 1.492 National stage fees.

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Dec 1991	Oct 1992
1.16(a)	Basic Filing Fee	\$690	\$710
1.16(a)	Basic Filing Fee (Small Entity)	\$345	\$355
1.16(b)	Independent Claims	\$72	\$74
1.16(b)	Independent Claims (Small Entity)	\$36	\$37
1.16(c)	Claims in Excess of 20	\$20	\$22
1.16(c)	Claims in Excess of 20 (Small Entity)	\$10	\$11
1.16(d)	Multiple Dependent Claims	\$220	\$230
1.16(d)	Multiple Dependent Claims (Small Entity)	\$110	\$115
1.16(e)	Surcharge - Late Filing Fee	\$130	\$130
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	\$65	\$65
1.16(f)	Design Filing Fee	\$280	\$290
1.16(f)	Design Filing Fee (Small Entity)	\$140	\$145
1.16(g)	Plant Filing Fee	\$460	\$480

(a) ***

- (1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f))\$330.00
By other than a small entity\$660.00

- (2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:
By a small entity (§ 1.9(f))\$365.00
By other than a small entity\$730.00

- (3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f))\$490.00
By other than a small entity\$980.00

- (4) Where an international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33 (1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):

By a small entity (§ 1.9(f))\$46.00
By other than a small entity\$92.00

- (5) Where a search report on the international application has been prepared by the European Patent Office of the Japanese Patent Office:

By a small entity (§ 1.9(f))\$425.00
By other than a small entity\$850.00

- (b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:
By a small entity (§ 1.9(f))\$38.00
By other than a small entity\$76.00

- (d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:
By a small entity (§ 1.9(f))\$120.00
By other than a small entity\$240.00

Aug. 18, 1994

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

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OFFICIAL GAZETTE

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1.16(g)	Plant Filing Fee (Small Entity)	\$230	\$240
1.16(h)	Reissue Filing Fee	\$690	\$710
1.16(h)	Reissue Filing Fee (Small Entity)	\$345	\$355
1.16(i)	Reissue Independent Claims	\$72	\$74
1.16(i)	Reissue Independent Claims (Small Entity)	\$36	\$37
1.16(j)	Reissue Claims in Excess of 20	\$20	\$22
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	\$10	\$11
1.17(a)	Extension - First Month	\$110	\$110
1.17(a)	Extension - First Month (Small Entity)	\$55	\$55
1.17(b)	Extension - Second Month	\$350	\$360
1.17(b)	Extension - Second Month (Small Entity)	\$175	\$180
1.17(c)	Extension - Third Month	\$810	\$840
1.17(c)	Extension - Third Month (Small Entity)	\$405	\$420
1.17(d)	Extension - Fourth Month	\$1,280	\$1,320
1.17(d)	Extension - Fourth Month (Small Entity)	\$640	\$660
1.17(e)	Notice of Appeal	\$260	\$270
1.17(e)	Notice of Appeal (Small Entity)	\$130	\$135
1.17(f)	Filing a Brief	\$260	\$270
1.17(f)	Filing a Brief (Small Entity)	\$130	\$135
1.17(g)	Request for Oral Hearing	\$220	\$230
1.17(g)	Request for Oral Hearing (Small Entity)	\$110	\$115
1.17(h)	Petition - Not All Inventors	\$130	\$130
1.17(h)	Petition - Correction of Inventorship	\$130	\$130
1.17(h)	Petition - Decision on Questions	\$130	\$130
1.17(h)	Petition - Suspend Rules	\$130	\$130
1.17(h)	Petition - Expedited License	\$130	\$130
1.17(h)	Petition - Scope of License	\$130	\$130
1.17(h)	Petition - Retroactive License	\$130	\$130
1.17(h)	Petition - Refusing Maintenance Fee	\$130	\$130
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	\$130	\$13
1.17(h)	Petition - Interference	\$130	\$130
1.17(h)	Petition - Reconsider Interference	\$130	\$130
1.17(h)	Petition - Late Filing of Interference	\$130	\$130
1.20(b)	Petition - Correction of Inventorship	\$130	\$130
1.17(h)	Petition - Refusal of Publish SIR	\$130	\$130
1.17(i)(1)	Petition - For Assignment	\$130	\$130
1.17(i)(1)	Petition - For Application	\$130	\$130
1.17(i)(1)	Petition - Late Priority Papers	\$130	\$130
1.17(i)(1)	Petition - Suspend Action	\$130	\$130
1.17(i)(1)	Petition - Divisional Reissues to Issue Separately	\$130	\$130
1.17(i)(1)	Petition - For Interference Agreement	\$130	\$130
1.17(i)(1)	Petition - Amendment After Issue	\$130	\$130
1.17(i)(1)	Petition - Withdrawal After Issue	\$130	\$130
1.17(i)(1)	Petition - Defer Issue	\$130	\$130
1.17(i)(1)	Petition - Issue to Assignee	\$130	\$130
1.17(i)(1)	Petition - Accord a Filing Date Under § 1.53	\$130	\$130
1.17(i)(1)	Petition - Accord a Filing Date Under § 1.60	\$130	\$130
1.17(i)(1)	Petition - Accord a Filing Date Under § 1.62	\$130	\$130
1.17(i)(2)	Petition - Make Application Special	\$130	\$130
1.17(j)	Petition - Public Use Processing	\$1,310	\$1,350
1.17(k)	Non-English Specification	\$130	\$130
1.17(l)	Petition - Revive Abandoned Appl.	\$110	\$110
1.17(m)	Petition - Revive Abandoned Appl. (Small Entity)	\$55	\$55
1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	\$1,130	\$1,170
1.17(m)	Petition - Revive Unintentionally Abandoned Appl. (Small Entity)	\$565	\$585
1.17(n)	SIR - Prior to Examiner's Action	\$790	\$820
1.17(o)	SIR - After Examiner's Action	\$1,580	\$1,640
1.17(p)	Submission of an Information Disclosure Statement (§ 1.97)	-	\$200
1.18(a)	Issue Fee	\$1,130	\$1,170
1.18(a)	Issue Fee (Small Entity)	\$565	\$585
1.18(b)	Design Issue Fee	\$400	\$410
1.18(b)	Design Issue Fee (Small Entity)	\$200	\$205
1.18(c)	Plant Issue Fee	\$570	\$590
1.18(c)	Plant Issue Fee (Small Entity)	\$285	\$295
1.19(a)(1)(i)	Copy of Patent	\$3	\$3
1.19(a)(1)(ii)	Patent Copy - Expedited Local Service	\$6	\$6
1.19(a)(1)(iii)	Patent Copy Ordered Via EOS - Expedited Service	\$25	\$25
1.19(a)(2)	Plant Patent Copy	\$12	\$12
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	\$24	\$24
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	\$12	\$12
1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	\$24	\$24
1.19(b)(2)	Cert. or Uncert. Copy of Patent- Related File Wrapper/Contents	\$150	\$150
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	\$25	\$25
1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	\$20	\$25
1.19(c)	Library Service	\$50	\$50
1.19(d)	List of Patents in Subclass	\$3	\$3
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	\$10	\$10
1.19(f)	Copy of Non-U.S. Patent Document	\$12	\$25
1.19(g)	Comparing the Certifying Copies, Per Document, Per Copy	\$25	\$25

JANUARY 3, 1995

U.S. PATENT AND TRADEMARK OFFICE

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1.19(h)	Duplicate or Corrected Filing Receipt	\$20	\$25
1.20(a)	Certificate of Correction	\$70	\$100
1.20(c)	Reexamination	\$2,180	\$2,250
1.20(d)	Statutory Disclaimer	\$110	\$110
1.20(d)	Statutory Disclaimer (Small Entity)	\$55	\$55
1.20(e)	Maintenance Fee - 3.5 Years	\$900	\$930
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	\$450	\$465
1.20(f)	Maintenance Fee - 7.5 Years	\$1,810	\$1,870
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	\$905	\$935
1.20(g)	Maintenance Fee - 11.5 Years	\$2,730	\$2,820
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	\$1,365	\$1,410
1.20(h)	Surcharge - Maintenance Fee - 6 Months	\$130	\$130
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	\$65	\$65
1.20(i)	Surcharge - Maintenance After Expiration	\$600	\$620
1.20(j)	Extension of Term of Patent	\$1,000	\$1,000
1.21(a)(1)	Admission to Examination	\$290	\$300
1.21(a)(2)	Registration to Practice	\$100	\$100
1.21(a)(3)	Reinstatement to Practice	\$15	\$15
1.21(a)(4)	Certificate of Good Standing	\$10	\$10
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	\$20	\$20
1.21(a)(5)	Review of Decision of Director, OED	\$120	\$130
1.21(a)(6)	Regrading of Examination	\$120	\$130
1.21(b)(1)	Establish Deposit Account	\$10	\$10
1.21(b)(2)	Service Charge Below Minimum Balance	\$20	\$25
1.21(b)(3)	Service Charge Below Minimum Balance	\$20	\$25
1.21(c)	Filing a Disclosure Document	\$10	\$10
1.21(d)	Box Rental	\$50	\$50
1.21(e)	International Type Search Report	\$35	\$40
1.21(g)	Self-Service Copy Charge	\$0.25	\$0.25
1.21(h)	Recording Patent Property	\$40	\$40
1.21(i)	Publication in the OG	\$20	\$25
1.21(j)	Labor Charges for Services	\$30	\$30
1.21(k)	Unspecified Other Services	Actual Cost	Actual Cost
1.21(l)	Retaining Abandoned Application	\$130	\$130
1.21(m)	Processing Returned Checks	\$50	\$50
1.21(n)	Handling Fee - Incomplete Application	\$130	\$130
1.21(o)	Terminal Use APS-Text	\$40	\$40
1.21(p)	Terminal Use APS-Text by the PTDL's	-	\$70
1.24	Coupons for Patent Copies	\$3	\$3
1.296	Handling Fee - Withdrawal SIR	\$130	\$130
1.445(a)(1)	Transmittal Fee	\$190	\$200
1.445(a)(2)(i)	PCT Search Fee - No U.S. Application	\$600	\$620
1.445(a)(2)(ii)	PCT Search Fee - Prior U.S. Application	\$400	\$410
1.445(a)(3)	Supplemental Search	\$160	\$170
1.482(a)(1)(i)	Preliminary Exam Fee	\$440	\$450
1.482(a)(1)(ii)	Preliminary Exam Fee	\$650	\$670
1.482(a)(2)(i)	Additional Invention	\$140	\$140
1.482(a)(2)(ii)	Additional Invention	\$220	\$230
1.492(a)(1)	Preliminary Examining Authority	\$620	\$640
1.492(a)(1)	Preliminary Examining Authority (Small Entity)	\$310	\$320
1.492(a)(2)	Searching Authority	\$690	\$710
1.492(a)(2)	Searching Authority (Small Entity)	\$345	\$355
1.492(a)(3)	PTO Not ISA nor IPEA	\$920	\$950
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	\$460	\$475
1.492(a)(4)	Claims - IPEA	\$90	\$90
1.492(a)(4)	Claims - IPEA (Small Entity)	\$45	\$45
1.492(a)(5)	Filing with EPO/JPO Search Report	\$800	\$830
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	\$400	\$415
1.492(b)	Claims - Extra Individual (Over 3)	\$72	\$74
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	\$36	\$37
1.492(c)	Claims - Extra Total (Over 20)	\$20	\$22
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	\$10	\$11
1.492(d)	Claims - Multiple Dependents	\$220	\$230
1.492(d)	Claims - Multiple Dependents (Small Entity)	\$110	\$115
1.492(e)	Surcharge	\$130	\$130
1.492(e)	Surcharge (Small Entity)	\$65	\$65
1.492(f)	English Translation - After 20 Months	\$130	\$130
2.6(a)(1)	Application for Registration, Per Class	\$200	\$210
2.6(a)(2)	Amendment to Allege Use, Per Class	\$100	\$100
2.6(a)(3)	Statement of Use, Per Class	\$100	\$100
2.6(a)(4)	Extension for Filing Statement of Use, Per Class	\$100	\$100
2.6(a)(5)	Application for Renewal, Per Class	\$300	\$300
2.6(a)(6)	Surcharge for Late Renewal, Per Class	\$100	\$100
2.6(a)(7)	Publication of Mark Under § 12(a), Per Class	\$100	\$100
2.6(a)(8)	Issuing New Certificate of Registration	\$100	\$100
2.6(a)(9)	Certificate of Correction of Registrant's Error	\$100	\$100
2.6(a)(10)	Filing Disclaimer to Registration	\$100	\$100
2.6(a)(11)	Filing Amendment to Registration	\$100	\$100
2.6(a)(12)	Filing Affidavit Under Section 8, Per Class	\$100	\$100

2.6(a)(13)	Filing Affidavit Under Section 15, Per Class	\$100	\$100
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	\$200	\$200
2.6(a)(15)	Petitions to the Commissioner	\$100	\$100
2.6(a)(16)	Petition to Cancel, Per Class	\$200	\$200
2.6(a)(17)	Notice of Opposition, Per Class	\$200	\$200
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	\$100	\$100
2.6(a)(19)	Dividing an Application, Per New Application Created	-	\$100
2.6(b)(1)(i)	Copy of Registered Mark	\$3	\$3
2.6(b)(1)(ii)	Copy of Registered Mark, Expedited	\$6	\$6
2.6(b)(1)(iii)	Copy of Registered Mark Ordered Via EOS, Expedited Svc.	\$25	\$25
2.6(b)(2)(i)	Certified Copy of TM Application as Filed	\$12	\$12
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	\$24	\$24
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Contents	\$50	\$50
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status	\$10	\$10
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	\$20	\$20
2.6(b)(5)	Certified or Uncertified Copy of TM Records	\$25	\$25
2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document	\$40	\$40
2.6(b)(6)	For Second and Subsequent Marks in Same Document	\$25	\$25
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.	\$20	\$25
2.6(b)(8)	Terminal Use T-SEARCH	\$40	\$40
2.6(b)(9)	Self-Service Copy Charge	\$0.25	\$0.25
2.6(b)(10)	Labor Charges for Services	\$30	\$30
2.6(b)(11)	Unspecified Other Services	Actual Cost	Actual Cost
1.19(g)	Comparing and Certifying Copies, per Document, per Copy	\$25	\$25
1.24	Trademark Coupons	\$3	\$3

[1141 OG 68]

(37) **DEPARTMENT OF COMMERCE**
Patent and Trademark Office
37 CFR Parts 1 and 2
[Docket No. 90363-9221]
RIN: 0651-AA40

Patent and Trademark Automated Search System Fees

Agency: Patent and Trademark Office, Commerce
 Action: Final Rule

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent and trademark cases, Parts 1 and 2 of Title 37, Code of Federal Regulations, to set forth fees for public access to the text data bases resident on the Automated Patent System (APS) and the automated trademark search system (T-Search). Pub. L. 100-703, enacted on November 19, 1988, allows the Commissioner to establish reasonable fees for on-line access to the automated search systems.

The Office will provide on-line access to its USPAT data base (full text of U.S. patents issued after 1974), the U.S. classification data from 1790 to the present, and to English abstracts of Japanese and Chinese patents (to the extent they are available), hereinafter referred to as APS-Text, in its Patent Search Room and to T-Search in its Trademark Search Library, located in Arlington, Virginia. Except for a series of pilot experiments which may occur over the next one or two years, the Office does not plan to provide routine remote on-line access to these data bases at any other facilities at the present time. A separate rulemaking process will be followed when the Office determines to provide such remote on-line access.

Both search systems have been made available to the public free of charge since April 3, 1989, for the purposes of education and training (familiarization).

The paper and/or microfilm collections of U.S. patents, foreign patents documents and U.S. trademark registrations continue to be available to the public free of charge, as provided by section 104(b) of Pub. L. 100-703. The Office reaffirms its commitment to hold a public hearing prior to making any decision concerning the elimination of the paper files.

This final rule establishes fees for use of the on-line automated search systems. In addition, procedures for public use of the automated search systems, including training and charging of fees, are presented.

In response to the notice of proposed rulemaking published in the *Federal Register* on May 3, 1989 (54 FR 18907), and at a public hearing held on June 30, 1989, the Office received many comments regarding problems encountered by the public in the use of T-Search. The Office believes that T-Search has

proven effective for searches performed by Trademark examining attorneys in connection with their examination of applications for the registration of marks. Although the Office is establishing a fee for accessing the T-Search system, the Commissioner is immediately suspending collection of that fee to provide additional time for the public to familiarize themselves with T-Search. The Office will provide the public with sixty days notice before starting to collect the fee.

Effective Date: February 12, 1990. Rule 2.6(w) will take effect February 12, 1990 but immediately be suspended by the Commissioner. The Office will provide written notice in the *Federal Register* sixty days before starting to collect fees for accessing T-Search.

For Further Information: Frances Michalkewicz by telephone at (703) 557-1610 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The purpose of this final rule is to establish new fees for the on-line use by the public of APS-Text, and T-Search that are to be provided in the Office's facilities in Arlington, Virginia. This final rule is consistent with the Office's Electronic Data Dissemination Policies and Guidelines, which were published in final form in the *Federal Register* on May 3, 1989, at 54 FR 18920. Establishment and adjustment of patent fees is provided for by section 6 and section 41 of Title 35, United States Code, and section 103(b) of Pub. L. 100-703. Establishment and adjustment of trademark fees is authorized by section 31 of the Trademark (Lanham) Act 1946, as amended (15 U.S.C. 1113), and section 103(a) of Pub. L. 100-703. Information on the procedures for public use of the automated systems, including training, waivers, and the charging of fees, also is presented.

Background: In response to Pub. L. 96-517, the 1980 legislation which amended patent and trademark laws, the Office prepared and submitted a plan for the automation of its operations to Congress on December 13, 1982. The plan centered on two basic concepts: the creation of electronic data bases that (1) would eventually replace the Office's all-paper patent and trademark files, and thereby improve the integrity and quality of Office records; and (2) would support searches, examinations, Office actions and other Office functions through electronic workstations which would provide text and image retrieval capabilities and perform other automation functions.

Over 700,000 active Federal trademark registrations have been converted to an electronic data base of textual and digital image data. A computer system has been installed to enable trademark examining attorneys to search the data base for registered and pending trademarks and associated textual data, including marks containing designs, and to retrieve, display

and print all information as a substitute for paper file searches. Trademark examining attorneys have been using T-Search exclusively since January 1988 via a network of approximately 40 terminals. After a six-month experimental T-Search evaluation program conducted between June and December 1988, the capability was deployed for public use in the Trademark Search Library on April 3, 1989.

The T-Search "dead data base", trademarks cancelled, expired or abandoned since March 1984, also is available to the public, but approximately 17,000 images are missing and an additional 184,000 registrations and applications have not been quality checked. Trademark examining attorneys do not search this data base in connection with examining activities.

An Automated Patent System (APS) was installed for test and evaluation purposes, using one patent examining group as an operational testbed. Major operational components of APS, that is, large scale computers with conventional magnetic storage devices, a high-speed local data communications network, and electronic workstations equipped with two high resolution graphic displays and laser printers were interconnected on July 1, 1986, to enable system test and evaluation to begin in the testbed group.

On-line access to the full-text of all U.S. patents granted after 1974 and then to English language abstracts of Japanese patents was deployed to the patent examining staff beginning in 1986. On-line access to APS-Text permits examiners to search the text of approximately one million U.S. patents containing more than five billion words. Today, all examiners have been trained in the use of the full-text searching tool, and it has become a routine part of the patent examination process for many examiners. Searches are conducted from approximately 71 single screen text terminals located throughout the Office. The APS-Text capability was deployed to the public in the Patent Search Room on April 3, 1989.

The Office intends to enter the text of virtually all U.S. patents issued after 1970. In addition, selected tubular data and chemical and mathematical equations will be added to the current full text file. Ultimately, approximately 1.2 million U.S. patents will be available to both patent examiners and the public for search in full text form.

Public evaluation of the APS full-text search capability was conducted between January 11 and April 15, 1988. Forty-two (42) public users were trained an APS-Text during January 1988, and allowed first-come/first-serve access to several terminals. Reactions of public users to APS-Text were positive. Public users found APS-Text useful for pre-application and state-of-the-art searches.

A total of 38 public users were trained on T-Search during a public evaluation period conducted between June and December 1988. Preliminary review indicated that public users considered T-Search to be useful both as a source for registrability searching and for verifying paper searches. In addition, T-Search was found to facilitate searches by class and ownership.

Pub. L. 100-703, enacted on November 19, 1988, allows the Commissioner to establish reasonable fees for public access to the automated search systems while it continues the requirements that no more than 30 percent of automation resources may be from user fees and that the Office may not enter into exchange agreements relating to automatic data processing resources.

Section 104(c) of Pub. L. 100-703 allows the Commissioner to waive the payment by an individual of fees for accessing the automated search systems upon a showing of need or hardship, and if such waiver is in the public interest.

The information contained in the automated data bases, which will be available to the public at the Patent and Trademark Office in Arlington, Virginia, is available free of charge at that location in paper form, and is substantially available through commercial vendors. The Office believes it to be in the public interest to waive the fee for public access to its text data bases in situations where access to the data base is needed for a personal, educational purpose by an individual or member of an educational or non-profit organization, or where payment of the fee would pose a genuine financial hardship to the user.

A personal, educational purpose is one in which the person using the data base is attempting to satisfy a personal need, and is not conducting a search or otherwise using the data base for compensation in any form. Examples of appropriate waiver situations would include students or teachers doing a term

paper, a university professor collecting background information for the preparation of an application for a research grant. An example of a situation where a waiver would not be appropriate would include an individual doing work for remuneration -- e.g., a law student doing a pre-examination or infringement search for a law firm.

The Commissioner will further consider a fee waiver based on a genuine financial hardship. The person requesting a waiver will be required to provide information that would demonstrate a clear inability to pay the fee.

A waiver for the payment of fees is intended to be granted sparingly, and generally only when terminals are available. It is not anticipated that fees will be waived for any one individual more than once or twice each year. The Commissioner reserves the authority to control access to the data bases and deny a waiver to any individual.

The waiver policy would apply only to use of the automated system, and not to the printing or sale of copies. Any abuse of the waiver policy could lead to a ban on the use of any public search facility for that individual.

Cost Calculations: The Office calculated unit costs for all fees based on OMB Circular A-25 "User Fees", and OMB Circular A-130, "Management of Federal Information Resources." Costs were determined from the best available records (for example, financial statements for the Office) and included direct and indirect costs to the Office of carrying out the activity, as directed by OMB Circular A-25. User charges for both APS-Text and T-Search were based on the marginal costs of providing these services to the public.

In calculating the costs of providing access to T-Search and APS-Text to the public, the Office followed Congressional direction that fees be reasonable by reflecting the marginal cost for providing the new service and not include the costs of designing or installing the automated system for use by Office examiners, or the development of the new systems.

Prior to preparation of this final rule, all of the cost assumptions and cost calculations were reviewed and modified to ensure that they included the Office's best estimates and projections.

APS-Text

The Office is establishing the \$40.00 fee for each hour of terminal session time on APS-Text. The marginal costs for one hour terminal session time on APS-Text include a portion of the lease cost of a new computer mainframe which originally was to be acquired in fiscal year 1990 for use by Office patent examiners. To meet public search requirements, the mainframe is being leased earlier than originally planned. That portion of lease costs for the three (3) month period March 1990 through May 1990 over and above the lease costs for a mainframe sized to meet only examiner needs is being passed on to the user. After May 1990, the mainframe was intended to be procured and installed to support APS. Therefore, no costs are being passed on to the public user after that time. When public usage reaches the level where a mainframe dedicated for public use is required, fee adjustments will be proposed to pass all of the costs of that mainframe on to the public.

The level of public use will affect the amount of main memory needed to support the additional search sessions. It is projected that an additional increment of main memory will be required in fiscal years 1991 and 1992. This increment would not be required to support the examiner workload alone.

The fee calculations for public access also include the costs for equipment: network interface units, text terminals, printer noise dampeners and text terminal printers.

Other costs include a portion of the license fees that must be paid to Chemical Abstracts Service for its proprietary text and structure search software; additional personnel for the Patent Search Room, and the Office of Information Systems; computer installation costs; supplies and equipment dedicated to public use; and general and administrative overhead.

The Office is providing free access time during training on the automated search systems in accordance with § 104(c) of Public Law 100-703 which reads, "...a limited amount of free access shall be made available to all users of the systems for purposes of education and training."

The usage rate estimates are based on the three-month public user study performed from January through March 1988. For

this study, 42 frequent Patent Search Room users were selected to be trained in the use of APS-Text. Three text terminals were made available to the trained public users at no charge. During the three-month study period, use of the three terminals averaged approximately 50 percent. While it is impossible to accurately predict future use by a more diverse group of public users, the cost calculations attempted to take into account the following factors and assumptions:

1. Future public users, on average, would use APS-Text less frequently than the 42 frequent users selected for the 1988 study, many of whom routinely used commercially available automated text search tools.

2. Collection of a fee for use (as opposed to the absence of any charge during the study) would reduce demand for text search services when compared with usage data obtained during the study period.

3. The potential universe of public users is expected to average no more than 300 per day.

4. The average length of a public user search session is projected to be approximately 22 minutes -- the average length of a search session during the 1988 test of public use.

5. Based on the preceding assumptions, if all 300 potential public users conducted a single search session during a workday, a total of 110 hours of access would be required. Twenty-five text terminals available five days a week, twelve hours a day, would provide a maximum potential of 300 hours of available text search time. Under these assumptions, the number of text terminals appeared to be adequate for the foreseeable future.

6. For purposes of actual use of available text terminals, the following estimates were used:

(a) In fiscal year 1990, between four (4) and six (6) terminals would be available during the first quarter. An estimate of 45 percent utilization of available text terminal time was projected. By increasing the number of text terminals to 10 in January 1990 and 20 in April 1990, an estimate of 40 percent utilization of available text terminal time was projected. By increasing the number of text terminals to 25 in July 1990, an estimate of 35 percent utilization of available text terminal time was projected.

(b) During fiscal year 1991 and beyond, stable levels of usage were projected to be achieved, yielding an estimated 35 percent average utilization of the 25 available terminals. This utilization rate equates to 105 session hours per day, or an average of 4.2 session hours per terminal per day. At an average of 22 minutes per session, a total of 286 search sessions per day. Although usage rates since the system was made available to the public in April 1989 have been higher than projected, the Office believes these projections are valid for the three-year fee cycle.

A summary of the fee calculations is as follows:

**APS-Text
Marginal Cost of One-Hour of
Terminal Session Time
(December 1989-November 1992)**

Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$918,196
Hardware & Maintenance	\$691,289
Software (license fees)	\$295,676
Site Preparation	\$38,118
Non-capital Furniture	\$8,750
Supplies & Forms	\$3,500
Sub-Total	\$1,955,529
General & Administrative Overhead	\$361,773
TOTAL COST	\$2,317,302
Estimated Use (hours)	\$65,946
UNIT COST (per hour)	\$35.14

The marginal cost for one hour of Office staff search assistance on APS-text includes the costs of personnel compensation and benefits.

A summary of the fee calculation is as follows:

**APS-Text
Marginal Cost of One-Hour of
Office Staff Search Assistance
(December 1989-November 1992)**

Cost Element	Public Share (Marginal Cost)
Personnel: Annual Compensation and Benefits	\$45,659
Work Hours (per annum)	1,776
UNIT COST (per hour)	\$25.71

The marginal cost for a printed copy generated from APS-Text includes costs for compensation and benefits, printers, furniture for the printers, supplies and forms, and general and administrative overhead. A summary is as follows:

**APS-Text
Marginal Cost of
Each Printed Page
(December 1989-November 1992)**

Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$173,472
Hardware & Maintenance	\$13,483
Non-capital Furniture	\$5,000
Supplies & Forms	\$35,882
Sub-Total	\$227,837
General & Administrative Overhead	\$42,150
TOTAL COST	\$269,987
Estimated Use (pages)	4,496,325
UNIT COST (per page)	\$0.060

T-Search

The marginal cost for one hour of terminal session time on T-Search includes the costs of personnel in the Trademark Search Library, maintenance of the T-Search terminals, routine site preparation, supplies and forms, and general and administrative overhead. The Office is establishing the \$40.00 fee for each hour of terminal session time on T-Search, but is immediately suspending collection of that fee in order to provide public users additional time to familiarize themselves with the system.

The comments submitted in response to the proposed rule-making indicate that the public users have not adequately adjusted to the T-Search system. During the period collection of the fee is suspended, the public will have an opportunity to better learn the system so as to perform more effective searches than they may be experiencing now. The Office will publish a notice in the *Federal Register* sixty days before it begins collecting a fee for public access to T-Search.

Usage rates for T-Search during fiscal years 1990-1992 were projected to be 28 percent of the hours the system would be available to the public. This rate was extrapolated from actual usage rates during the T-Search public user pilot program which was conducted from June through December 1988. A total of 38 members of the public were trained on T-Search, and about 24 to 28 public users were active on T-Search each month. The overall usage rate of these active users was 14 percent of the hours the system was available to the public. In projecting usage rates on which to base a fee amount, it was anticipated that the overall number of users and the usage rate would double once T-Search was made available in the Trademark Search Library to all users of that search facility and training was provided on a routine basis. Although usage rates since the system was made available to the public in April 1989 have been higher projected, the Office believes these projections are valid for the three-year fee cycle.

A summary of the fee calculations are as follows:

**T-Search
Marginal Cost of One-Hour of
Terminal Session Time
(December 1989-November 1992)**

Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$154,451
Hardware & Maintenance	\$28,809
Site Preparation	\$1,000
Supplies & Forms	\$3,298
Sub-Total	\$187,558
General & Administrative Overhead	\$34,698
TOTAL COST	\$222,256
Estimated Use (hours)	5,985
UNIT COST (per hour)	\$37.14

The marginal cost for a printed copy generated from T-Search includes costs for compensation, and supplies and forms. A summary of the costs is as follows:

**T-Search
Marginal Cost of
Each Printed Page
(December 1989-November 1992)**

Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$27,862
Hardware & Maintenance	\$5,274
Supplies & Forms	\$3,579
Sub-Total	\$36,715
General & Administrative Overhead	\$6,792
TOTAL COST	\$43,507
Estimated Use (pages)	448,875
UNIT COST (per page)	\$0.097

The proposed fee of \$25.00 for each hour of Office staff search assistance to conduct a search using T-Search has been withdrawn. The T-Search system can be used by the public with routine assistance provided by the regular staff of the Trademark Search Library. This is similar to assistance on how to use the paper files now provided free of charge by the Trademark Search Library staff. Office employees will neither work one-on-one with members of the public in conducting searches, nor conducted searches for members of the public.

Rounding Procedures: Fee amounts were rounded so that the amount rounded would be de minimis and convenient to the user. This procedure is consistent with section 103(b) of Pub. L. 100-703 which allows the Office to adjust patent fees in the aggregate, and with section 103(a) of Pub. L. 100-703 which allows the Office to adjust trademark fees in the aggregate.

The Office has detailed cost calculation worksheets for each fee item, which are available for public inspection in Suite 904 of Building 2, Crystal Park at 2121 Crystal Drive, Arlington, Virginia.

**PROCEDURES FOR PUBLIC USE OF
APS-TEXT AND T-SEARCH**

Patent Search Room Configuration

Initially four (4) text search terminals will be installed and available for public use in the Patent Search Room. A printer will be associated with each text search terminal. An additional terminal will be located in Patent Search Room employee office space for control and administrative activities. Up to twenty-one (21) more terminals and printers are planned to be added

for public use during fiscal year 1990, if necessary.

Trademark Search Library Configuration

Initially three (3) T-Search terminals with associated printers all be installed and available for public use in the Trademark Search Library. The terminals will be clustered in one area of the Trademark Search Library. An additional terminal will be located in Trademark Search Library employee office space for control and administration activities. Additional terminals printers will be added as demand warrants and space permits.

Training

To enable prospective public users to become effective on APS-Text, approximately fourteen (14) hours of free basic training is being offered. For those familiar with automated search systems, a shorter course of six (6) hours is provided. Ten (10) members of the public can be trained during each class. Training is being held at the Office's Arlington, Va. complex during normal work hours.

Four (4) hours of basic training is being offered on the use of T-Search. For those familiar with automated search systems, a shorter course of one (1) hour is available. T-Search training is being held in the Office's Arlington, Va. complex during morning, evening and weekend hours.

Enrollment in all training classes initially was on a lottery basis. Public users who wished to be trained on APS-Text or T-Search were required to submit an application form. The Office is now accepting requests for training and adding the names to the list. As of August 31, 1989, 696 people or 70 percent of all those requesting training have been trained.

System Use and Fee Procedures

To ensure equity of public access to the automated systems, as well as efficient operations, rules for use will be posted at the terminals. Users of the systems will be expected to comply with the rules and with all other regulations regarding the use of facilities.

Users are strongly encouraged to register in advance for system use. Each week, the next week's schedule will be available in the Patent Search room and the Trademark Search Library. Should requests for blocks of terminal time exceed the availability of terminals, limits on the amount of reserved time may be instituted. Up to three (3) of the initial four (4) terminals in the Patent Search Room and up to two (2) of the initial three (3) terminals in the Trademark Search Library will be allocated to public users with advance reserved times. The remaining terminal in the Patent Search Room will be available for walk-up users and for assisted searches for infrequent users. The remaining terminal in the Trademark Search Library will be available for walk-up users. The terminal time reservation system and the number of terminals available for walk-up public use and for assisted searches (in the Patent Search Room) is subject to change based upon operational experience.

All public use of APS-Text and T-Search, with the exception of scheduled training classes, is on a pre-payment basis. In pre-paying for use of the systems, the public may use a blank signed check, major credit card or charge to a deposit account. At the end of the search or the pre-paid amount of time, users will receive an accounting from Patent Search Room or Trademark Search Library staff for terminal time used and prints produced. The user must then finalized payment.

Discussion of Specific Rules

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21 is amended to add new paragraph (o) to set the fees for access to the Automated Patent System full-text search capability (APS-Text) and to provide for the waiver of fees under certain circumstances.

Section 1.21 is amended to add new paragraph (p) to set the fees for APS-Text search assistance by Office staff.

Section 1.21 is amended to add new paragraph (q) to set the fee for a printed copy from APS-Text.

37 CFR 2.6 Trademark fees

Section 2.6 is amended to add new paragraph (w) to set the fees for access to the automated trademark search system (T-Search) and to provide for the waiver of fees under certain circumstances.

Section 2.6 is amended to add new paragraph (x) to set the fee for a printed copy from T-Search.

A final rule package establishing two new fees under the provisions of Pub. L. 100-667, the Trademark Law Revision Act of 1988, has been published which added paragraphs (u) and (v) to section 2.6. Therefore, the rule has been modified from the proposal to add paragraphs (w) and (x) instead of paragraphs (u), (v) and (w).

Response to Comments on the Rules

A notice of proposed rulemaking to establish a basis for the charges for use of the on-line automated search systems in the Patent Search Room and Trademark Search Library located at the Patent and Trademark Office in Arlington, Virginia was published in the *Federal Register* on May 3, 1989, at 54 FR 18907. Corrections were published in the *Federal Register* on May 12, 1989, at 54 FR 20670. A notice also was published on May 30, 1989, in volume 1102 of the Official Gazette of the United States Patent and Trademark Office, pages 94 through 98 for patents, and pages 96 through 100 for trademarks.

A public hearing was conducted on June 30, 1989. A total of 25 comments were received: 24 respondents submitted written comments and five people presented oral testimony (four of whom also submitted written comments) at the public hearing. On the 25 comments, twelve (12) were from individuals, seven (7) from libraries, five (5) from organizations and one (1) from business. All of the written and oral comments were considered in adopting the rules set forth herein.

Many of the comments from the representatives of the Patent Depository Libraries raised questions or commented on the proposed rules from the perspective of their impact on Patent Depository Libraries. The proposed rules and policies set forth in the *Federal Register* Notice of May 3, 1989 are applicable only to the automated search systems provided in PTO's facilities located in Arlington, Virginia. When the Office is prepared to offer the automated search systems at the Patent Depository Libraries, a proposed notice will be published for public comment. Therefore, any comments relating to procedures for accessing the automated search systems in the Patent Depository Libraries will not be addressed at this time.

Comment: Overall, nine respondents acknowledged the usefulness of the automated search systems, particularly APS-Text. Although seven respondents alleged that T-Search is not adequate to meet the needs of the public, that its response time is too slow, and that it is not sufficiently accurate to meet the specific needs of the commentor, most of these respondents acknowledged that T-Search had the potential for being a useful tool. Documentation of specific problems, for example, those associated with conducting a phonetic search, were provided. Two respondents said that T-Search is flawed and the decision to require examiners to use the system on an exclusive basis was ill-advised and regrettable.

Response: Trademark examining attorneys have been using T-Search for word mark searches since August 1987, and for word mark and design searches since January 1988. The public has been using the system since April 3, 1989.

The minutes to the September 27, 1988, meeting of the Public Advisory Committee for Trademark Affairs, express the view that: "...T-Search searches are more thorough than manual searches." The transcript to that meeting contains the following comments: "I don't think there is any question, but a T-Search [sic] properly done gives an excellent result" and "...from the corporate point of view, ... I am pleased to say that I like what I see. I like the very fast action we're getting on the first action." From the transcript to the February 23, 1988 meeting: "I'd like to start with a glowing report. I think that the registration process is working very well. From my own personal experience in terms of what the examiners are doing, they get an A plus. They're really doing a good job."

The consensus of the management of the Trademark Examining Operation is that the T-Search system meets the needs of the Office at this time. There is no indication in any records or activities in the PTO which would indicate that the use of

T-Search has caused a deterioration in the quality of searches conducted by Trademark examining attorneys.

The difference between the perceptions of the Trademark examining attorneys and the public may be attributed to several factors: Trademark examining attorneys use the system on a daily basis; they know what the system can do and what it cannot do and avoid the latter; and they know how to utilize the system's functionalities to perform the best search possible. Further, Trademark examining attorneys do different types of searches, and have different needs, than the public. T-Search use statistics for the period April 1989 through August 1989 demonstrate that the public is making extensive use of the system. Following is a summary of those statistics:

Month	Available Hours	Hours Used By Public	Rate of Usage	Average Session Time
April	513	108	21%	13.02 min.
May	513	126	24%	12.25 min.
June	627	183	29%	10.84 min.
July	570	186	33%	12.51 min.
August	656	217	33%	9.66 min.

This usage rate compares favorably to the projected usage rate of 28 percent.

Comment: Seven respondents claimed that the paper Trademark files have been allowed to deteriorate and, therefore, are not reliable for use by the public.

Response: The Office contracts for file maintenance services in both the Trademark Search Library and the Patent Search Room. Among the tasks performed by the contractor in the Trademark Search Library are maintaining the pending files, filing newly registered Trademarks, pulling erroneous registrations from the file, etc. The contract for the Trademark Search Library includes a monitoring system based on MIL-STD 105, which is a sampling plan that provides a 97 percent accuracy level. Once the contractor completes a task, Office staff check the required sample levels to ensure that filing was performed accurately. The Office is constantly monitoring the status of the paper files, but notes that maintenance of paper file integrity is subject to inherent limitations.

Comment: In view of the above comments about the inadequacy of the Trademark paper search files and T-Search, six respondents advocated the need for T-Search, at no charge to the user, as an adjunct or back-up to the paper files. One respondent suggested a similar arrangement in the Patent Search Room.

Response: The Office has adopted the \$40.00 fee amount for one hour of terminal session time on both APS-Text and T-Search. In order to give the public more time to become familiar with the T-Search system, the Commissioner is immediately suspending collection of that fee. This will enable users to learn the system so as to perform more effective searches. The Office will publish a notice in the *Federal Register* announcing its decision regarding the imposition of the fee at least 60 days before starting to collect the fee amount. At that time, the Office also will publish validated cost estimates based on usage rates and actual costs documented from the present time to the time the decision to collect a fee is made.

Comment: Two respondents claimed that the objective of automation necessarily contemplated a free search system to give meaning to the constructive notice provisions of the Trademark Act.

Response: Registration of a trademark constitutes constructive notice and records of all active trademark registrations and pending applications are available for searching free of charge in the paper file and on TRAM (Trademark Reporting and Monitoring System) data base.

Comment: One respondent stated that PTO is required to provide access to disclosed patent information as the information is made public; four respondents were opposed to the Office charging fees for accessing the automated search systems; two other respondents commented that the Office should not charge fees for using systems designed to be the sole searching source of the public records which the Office is charged by law to provide; and one respondent commented that the proposal to limit access to the automated data bases only to those who

can pay a fee is deplorable policy at a time when there is concern about industrial competitiveness with Japan.

Response: The Office will continue to make the paper and/or microfilm collections of U.S. patents, foreign patent documents and U.S. trademark registrations available for public access free of charge. The Office also has adopted a policy whereby the hourly terminal session fee for access to the data base can be waived when it is needed for a personal, educational purpose by an individual or member of an educational or non-profit organization, or where payment of the fee would pose a genuine financial hardship to the user. In this way, the Office will continue to provide public access to all available information free of charge.

Comment: One respondent commented that user fees for electronic data is a form of dual taxation when information was gathered, organized and produced at taxpayers expense; and two respondents claimed that users of information have contributed up to 30 percent of the \$120 million for development of the APS system to date — in other words, the public already has paid for APS.

Response: In calculating the proposed fees, the Office is consistent with the Office of Management and Budget's proposed policy on user charges for Government information products, as clarified in the June 15, 1989 *Federal Register* notice entitled "Second Advance Notice of Further Policy Development on Dissemination of Information." In that notice, OMB's stated policy is that user charges for Government Information products should be no higher than a level sufficient to recover the costs of disseminating, not collecting, the information.

The costs associated with the fees for accessing APS-Text and T-Search are directly related to the public's use of the systems; for example, the costs associated with the acquisition of the APS-Text terminals that are being used by the public. No costs associated with designing or installing the automated system for use by Office examiners, or the development of the new systems have been included. Neither have costs been included for gathering, organizing or producing information.

The *Federal Register* notice of June 15, 1989 (54 FR 25554, 25558) dealing with policy development on dissemination of information states that: "As to double taxation, OMB notes that user charges policy has a basis in statute (31 U.S.C. 9701), and the Congress has not viewed user charges as double taxation because they are applied when the recipient receives special benefits."

Comment: Two respondents stated that Government information is the same, whether it is provided in printed or electronic form.

Response: Charging fees for access to the automated search systems is consistent with PTO's fee policy. For example, fees are charged for manual search services (e.g., for a search of Office records or for a search of assignment records), and for printed copies of patents and trademarks and for copies of Office documents.

Comment: The Japanese system is available at four locations at no cost, and includes U.S. information made available at U.S. taxpayer expense.

Response: The Japanese automated search system, like the automated search systems in the PTO's search facilities, is being made available free of charge at the present time. The costs of such use, however, are being paid from general fee revenues collected by the Japanese Patent Office. Additionally, the APS-Text system currently includes Japanese English language abstracts and the Office is in the process of acquiring Japanese patent information in digital facsimile form.

Comment: One respondent commented that PTO has no responsibility to provide an expensive, complex, internal Government on-line value-added computer service, that this is far beyond the requirements of public access to patent files; and another respondent commented that it is in the public interest to have the same system that is being used by the examiners also available to the public.

Response: The Office agrees that it is in the public interest to provide the same search system capability to the public that is being used by the examiners.

Comment: One respondent stated that providing free access is not competing with the private sector, and that there always is a place for the private sector to provide value-added information.

Response: The user charges adopted for public access to the APS-Text and T-Search systems are consistent with OMB Circulars A-25 "User Charges" and A-130 "Management of Federal Information Resources", and with the PTO's Electronic Data Dissemination Policies and Guidelines. The PTO's user's fees are designed to recover the marginal costs associated with providing access to the automated search systems to the public.

Comment: Five respondents stated that the proposed fees are not "reasonable" and the Office does not have documented cost estimates and usage rates to support the proposed fee amounts.

Response: The Office is meeting Congressional direction to establish "reasonable" fees by recovering only the marginal costs associated with providing public access to the automated search systems. Costs and projected usage rates were determined from the best available records, for example, financial statements for the Office and the results of the public evaluations of the APS-Text and T-Search systems. A summary of the costs used in the fee calculations is included above under "Cost Calculations." Full details of these cost calculations are available for public inspection at the Patent and Trademark Office in Suite 904 of Building 2, Crystal Park, at 2121 Crystal Drive, Arlington, Virginia.

Comment: Two respondents questioned the proposed fees for search assistance. If the search assistance is similar to that which is provided free now, there should be no fee. If the search assistance entails doing searches, the Office should not be getting into that business.

Response: The PTO is withdrawing the proposed fee for staff search assistance to conduct a search using T-Search capabilities. The fee for staff search assistance to conduct a search using APS-Text capabilities is being adopted, because an untrained user cannot conduct a search without significant help from Office staff. Users of course, have the option of obtaining free training on the system.

Comment: One respondent commented that user fees cannot be justified under the theory that electronic search provides a new service or offers an enhancement to the public's ability to search the patent data base, and that the public has an option of paying the fee or using the paper files. Another respondent commented that APS-Text and T-Search represent enhancements to services already provided.

Response: The fees are specifically authorized under § 104 (c) of Pub. L. 100-703 and are calculated to allow recovery of only the marginal cost for providing the system to the public.

Comment: Two respondents claimed that the Office should ask Congress for funding to offer free access here and at the PDLs.

Response: It continues to be PTO policy, consistent with OMB Circular A-130, that costs for access to the automated search systems be borne by those who actually use the automated search systems.

Comment: One respondent claimed that the accuracy of the trademark data base is suspect.

Response: All of the backfile data base elements (registrations issued prior to September 9, 1980) have been corrected except owner information. As originally planned, the owner field will be cleaned up the active registrations issued prior to September 9, 1980. It is projected that this owner field will be cleaned up by the third quarter of fiscal year 1991.

Comment: Three respondents claimed that the public requires access to the dead data base.

Response: The Office will consider this proposal further. The dead data base is now available in electronic format for all applications and registrations that were active on January 1, 1983 and are now inactive. However, many of these records are of poor quality. Costs for cleaning up these records would be significant, and those costs would likely be reflected in the T-Search user fee.

Comment: Four respondents addressed the fee waiver policy. The proposal to waive fee appears inconsistent with PTO's position that the free paper search files provide an equal and viable resource to anyone not wanting to pay for the automated files. If paper records are inferior, then anyone seeking access to T-Search should be able to qualify for the fee waiver. If the paper records are adequate, then there should be no need to waive the access fee for anyone.

Response: The waiver policy authorized by Pub. L. 100-703 is designed for those individuals who, for some reason in the

public interest, such as an educational purpose, need the capabilities of the automated system, for example, to manipulate the data.

Comment: One respondent commented that the procedure to enroll people in training classes by the use of a lottery was unfair and that everyone who wants to be trained should be enrolled.

Response: The lottery was a method for establishing the initial schedules to provide training. Everyone who requests training will be trained. As of August 31, 1989, 449 out of 623 people requesting training on APS-Text, and 247 out of 376 people requesting training on T-Search have been trained.

Comment: One respondent commented that advance registration is an unrealistic approach for many searchers.

Response: At least one terminal in the Patent Search Room and one in the Trademark Search Library will be available for walk-up users. The other terminals will be available first for users with a reservation and then, if needed, for walk-up users. The system is designed to ensure equity of public access to the automated systems.

Comment: Two respondents asked for information justifying that this is not a "Major Rule" as defined by Executive Order 12291, and that the rule will not have a significant adverse impact on small entities.

Response: The no "major rule" determination and no significant adverse impact on small entities was based on the fact that the automated systems are being offered only at the Patent and Trademark Office's public search facilities located in Arlington, Virginia. The total number of users of these facilities averages less than 400 a day, and many of these users are members of law firms or commercial search services. The annual effect on the economy is expected to be about \$1 million, far less than the \$100 million annual threshold specified in the Executive Order. The fees for accessing the automated search systems are reasonable and should not burden small entities and, at the same time, the Office is continuing to maintain the paper search files which are available to the public free of charge. Finally, there should be no significant adverse effects on competition, because the systems are being offered only at one location, the Patent and Trademark Office in Arlington, Virginia, and the public may continue to use paper files without payment of any fee.

Comment: Five respondent commented that user fees burden small entities and run counter to a fundamental objective of the patent system which is to advance technology through dissemination of the technical information contained in patents.

Response: The Office does not believe that the fee amounts adopted will burden small entities or negatively impact the dissemination of technical information. The Office also will continue to maintain the paper search files using taxpayer funds, and provide access to the public free of charge. Further, the Office has adopted a fee waiver policy whereby the fee amount can be waived where access to the data base is needed for a personal, educational purpose by an individual or member of an educational or non-profit organization, or where payment of the fee would pose a genuine financial hardship to the user. Full details are included above under "Background".

Comment: One respondent commented that the Office needs a policy to ensure that no user of the patent and trademark information is disenfranchised due to an inability to pay for the services necessary to its access.

Response: The Commissioner will consider a fee waiver for users with a genuine financial hardship.

Other Considerations:

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements relating to patent and trademark fee rules.

The Office has determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule change will not have a significant

adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The rules make the Office's on-line, automated patent full-text search and trademark search systems available to the public at rates significantly less than commercial systems.

The Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Parts 1 and 2

37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Reporting and record keeping requirements, Small businesses.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

For the reasons set forth in the permeable, the Office is proposing to amend Title 37 of the code of Federal Regulations, Chapter 1, as set forth below.

PART 1-RULES OF PRACTICE IN PATENT CASES.

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.21 is amended by adding new paragraphs (o)-(q).

§1.21 Miscellaneous fees and charges.

(o) Marginal cost, paid in advance, for each hour of terminal session time, including print time, using Automated Patent System full-text search capabilities, prorated for the actual time used. The Commissioner may waive the payment by an individual for access to the Automated Patent System full-text search capability (APS-Text) upon a showing of need or hardship, and if such waiver is in the public interest\$40.00

(p) Marginal cost, paid advance, for each hour of Office staff search assistance to conduct a search using Automated Patent System full-text search capabilities (APS-Text), prorated for the actual time used \$25.00

(q) Marginal cost, for each printed page generated from the Automated Patent System text terminal.....\$0.10

PART 2- RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for Part 2 continues to read as follows: Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.6 is amended by adding new paragraphs (w)-(x).

§ 2.6 Trademark fees

(w) Marginal cost, paid in advance, for each hour of terminal session time, including print time, using T-Search capabilities, prorated for the actual time used. The Commissioner may waive the payment by an individual for access to T-Search upon a showing of need or hardship, and if such waiver is in the public interest \$40.00

(x) Marginal cost, for each printed page generated from the T-Search terminal.....\$0.10

Dec. 4, 1989

JEFFREY M. SAMUELS
Acting Commissioner of Patents
and Trademarks

[1110 O.G. 601]

(38) DEPARTMENT OF COMMERCE Patent and Trademark Office 37 CFR Part 2

Patent and Trademark Automated Search System Fees

Agency: Patent and Trademark Office, Commerce

Action: Listing of suspension of final rule

Summary: The Patent and Trademark Office (Office), on December 11, 1989, amended the rules of practice in patent and trademark cases, Parts 1 and 2 of Title 37, Code of Federal Regulations, setting forth the fees for public access to the Office's text data bases: the Automated Patent System (APS) and the automated trademark search system (T-Search). 54 FR 50942. That final rule became effective on February 12, 1990.

(39) Public Law 96-517 96th Congress An Act

To amend the patent and trademark laws.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled That title 35 of the United States Code, entitled "Patents," is amended by adding after chapter 29 the following new chapter 30:

"CHAPTER 30-PRIOR ART CITATIONS TO OFFICE AND REEXAMINATION OF PATENTS

Dec. 12, 1990
[H.R. 6933]

"Sec.

"301. Citation of prior art.

302. Request for reexamination.

303. Determination of issue by Commissioner.

304. Reexamination order by Commissioner.

305. Conduct of reexamination proceedings.

306. Appeal.

307. Certificate of patentability, unpatentability, and claim cancellation.

35 USC 301

"§ 301. Citation of prior art

Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying such prior art to at least one claim of the patent, the citation of such prior art and the explanation thereof will become a part of the official file of the patent. At the written request of the person citing the prior art, his or her identity will be excluded from the patent file and kept confidential.

" § 302. Request for reexamination

35 USC 302.

"Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanied by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent.

Fee

" § 303. Determination of issue by Commissioner

35 USC 303.

"(a) Within three months following the filing of a request for reexamination under provisions of section 302 of this title, the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial

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new question of patentability is raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

"(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any.

"(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee required under section 302 of this title.

"§ 304. Reexamination order by Commissioner

"If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent for resolution of the question. The patent owner will be given a reasonable period, not less than two months from the date a copy of the determination is given or mailed to him, within which he may file a statement on such question, including any amendment to his patent and new claim or claims he may wish to propose, for consideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provisions of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed.

"§ 305. Conduct of reexamination proceedings

"After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under the provisions of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office.

"§ 306. Appeal

"The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this title, and may seek court review under the provisions of sections 141 to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

"§ 307. Certificate of patentability, unpatentability, and claim cancellation

"(a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated, the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.

"(b) Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section."

SEC. 2. Section 41 of title 35, United States Code, is amended to read as follows:

§ 41. Patent fees

"(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

"(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

"(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all

35 USC 304

Filing period

35 USC 305.

35 USC 132, 133.

35 USC 306.

35 USC 134
35 USC 141-145.

35 USC 307.

35 USC 252.

35 USC 41.

applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

"(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be \$50.

"(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

"(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three years.

"(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register."

SEC. 3. Section 42 of title 35, United States Code, is amended to read as follows:

§ 42. Patent and Trademark Office funding

"(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

"(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

"(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office.

"(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required."

SEC. 4. Section 154 of title 35, United States Code, is amended by deleting the word "issue".

SEC. 5. Section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended to read as follows:

"§ 31. Fees

"(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material. However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

"(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with any occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups."

SEC. 6. (a) Title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 37 the following new chapter 38:

"CHAPTER 38-PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE

"Sec.

"200. Policy and objective.

"201. Definitions.

"202. Disposition of rights.

"203. March-in rights.

"204. Preference for United States industry.

"205. Confidentiality.

"206. Uniform clauses and regulations.

"207. Domestic and foreign protection of federally owned inventions.

"208. Regulations governing Federal licensing.

"209. Restrictions on licensing of federally owned inventions.

35 USC 13.

Waiver.

35 USC 132

Notice.

35 USC 42

Refund Notice.

Waiver.

Indian Products.
exception.

"210. Precedence of chapter.
"211. Relationship to antitrust laws.

" § 200. Policy and objective.

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

" § 201. Definitions

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

"(b) The term 'funding agreement' means any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as herein defined.

"(c) The term 'contractor' means any person, small business firm, or nonprofit organization that is a party to a funding agreement.

"(d) The term 'invention' means any invention or discovery which is or may be patentable or otherwise protectable under this title.

"(e) The term 'subject invention' means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement.

"(f) The term 'practical application' means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

" § 202. Disposition of rights

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: Provided, however, That a funding agreement may provide otherwise (i) when the funding agreement is for the operation of Government-owned research or production facility, (ii) in exceptional circumstances when it is determined by the agency that restriction or elimination of the right to retain title to any subject invention will better promote the policy and objectives of this chapter or (iii) when it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counterintelligence activities that the restriction or elimination of the right to retain title to any subject invention is necessary to protect the security of such activities. The rights of the nonprofit organization or small business firm shall be subject to the provisions of paragraph (c) of this section and the other provisions of this chapter.

"(b)(1) Any determination under (ii) of paragraph (a) of this section shall be in writing and accompanied by a written statement of facts justifying the determination. A copy of each such determination and justification shall be sent to the Comptroller General of the United States within thirty days after the award of the applicable funding agreement. In the case of determinations applicable to funding agreements with small business firms copies shall also be sent to the Chief Counsel for Advocacy of the Small Business Administration.

"(2) If the Comptroller General believes that any pattern of determinations by a Federal agency is contrary to the policy and objectives of this chapter or that an agency's policies or practices are otherwise not in conformance with this chapter, the Comptroller General

35 USC 200.

35 USC 201.

35 USC 202.

Funding
agreement

Written
determination.

Copy to
Comptroller
General.

Copy to SBA.

shall so advise the head of the agency. The head of the agency shall advise the Comptroller General in writing within one hundred and twenty days of what action, if any, the agency has taken or plans to take with respect to the matters raised by the Comptroller General.

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

"(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

"(5) The right of the Federal agency to require periodic reporting on the utilization or efforts at obtaining utilization that are being made by the contractor or his licensees or assignees: Provided, That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

"(6) An obligation on the part of the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, to include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (A) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor); (B) a prohibition against the granting of exclusive licenses under United States Patents or Patent Applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale or use in one field of use shall not be deemed commercial sale or use as to other fields of use, and a first commercial sale or use with respect to a product of the invention shall not be deemed to end the exclusive period to different subsequent products covered by the invention; (C) a requirement that the contractor share royalties with the inventor; and (D) a requirement that the balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, be utilized for the support of scientific research or education.

"(8) The requirements of sections 203 and 204 of this chapter.

"(d) If a contractor does not elect to retain title to a subject invention in cases subject to this section, the Federal agency may consider and after consultation with the contractor grant requests for retention of rights by the inventor subject to the provisions of this Act and regulations promulgated hereunder.

"(e) In any case when a Federal employee is a coinventor of any invention made under a funding agreement with a nonprofit organization or small business firm, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

"(f) (1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this paragraph.

Contrary agency
determinations.

Report to
congressional
committees.

funding
agreement
requirements.

Rights,
retention.

Rights,
transfer
or assignment.

Third-party

licensing,
prohibition.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing. Any action commenced for judicial review of such determination shall be brought within sixty days after notification of such determination.

" § 203. March-in rights

"With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under whose funding agreement the subject invention was made shall have the right, in accordance with such procedures as are provided in regulations promulgated hereunder to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the contractor, assignee, or exclusive licensee refuses such request, to grant such a license itself, if the Federal agency determines that such—

"(a) action is necessary because the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

"(b) action is necessary to alleviate health or safety needs which are not reasonably satisfied by the contractor, assignee, or their licensees;

"(c) action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) action is necessary because the agreement required by section 204 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 204.

" § 204. Preference for United States industry

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such small business firm or nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

" § 205. Confidentiality

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application for patent filed with the United States Patent and Trademark Office or with any foreign patent office.

" § 206. Uniform clauses and regulations

"The Office of Federal Procurement Policy, after receiving recommendations of the Office of Science and Technology Policy, may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and the Office of Federal Procurement Policy shall establish standard funding agreement provisions required under this chapter.

" § 207. Domestic and foreign protection of federally owned inventions

"Each Federal agency is authorized to—

"(1) apply for, obtain, and maintain patents or other forms of protection in the United States and in foreign countries on inventions in which the Federal Government owns a right, title, or interest;

"(2) grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection obtained, royalty-free or for royalties or other consideration, and on such terms and conditions, including the grant to the licensee of the right of enforcement pursuant to the provisions of chapter 29 of this title as determined appropriate in the public interest;

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

35 USC 203

35 USC 204

Waiver.

35 USC 205.

35 USC 206.

35 USC 207.

35 USC 281
et seq.

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

" § 208. Regulations governing Federal licensing

35 USC 208.

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention, other than inventions owned by the Tennessee Valley Authority, may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

" § 209. Restrictions on licensing of federally owned inventions

35 USC 209

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention, except that any such plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying the invention or produced through the use of the invention will be manufactured substantially in the United States.

"(c)(1) Each Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a federally owned domestic patent or patent application only if, after public notice and opportunity for filing written objections, it is determined that—

"(A) the interests of the Federal Government and the public will best be served by the proposed license, in view of the applicant's intentions, plans, and ability to bring the invention to practical application or otherwise promote the invention's utilization by the public;

"(B) the desired practical application has not been achieved, or is not likely expeditiously to be achieved, under any nonexclusive license which has been granted, or which may be granted, on the invention.

"(C) exclusive or partially exclusive licensing is a reasonable and necessary incentive to call forth the investment of risk capital and expenditures to bring the invention to practical application or otherwise promote the invention's utilization by the public; and

"(D) the proposed terms and scope of exclusivity are not greater than reasonably necessary to provide the incentive for bringing the invention to practical application or otherwise promote the invention's utilization by the public.

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and equally likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the United States in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with antitrust laws.

"(e) The Federal agency shall maintain a record of determinations to grant exclusive or partially exclusive licenses.

"(f) Any grant of a license shall contain such terms and conditions as the Federal agency determines appropriate for the protection of the interests of the Federal Government and the public, including provisions for the following:

"(1) periodic reporting on the utilization or efforts at obtaining utilization that are being made by the licensee with particular reference to the plan submitted: Provided, That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code;

"(2) the right of the Federal agency to terminate such license in whole or in part if it determines that the licensee is not executing the plan submitted with its request for a license and the licensee cannot otherwise demonstrate to the satisfaction of the Federal agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

Development or
marketing planManufacture in
U.S.Antitrust
factors.Small business
preference.Antitrust
factors.

Record.

Terms and
conditions.

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“ § 210. Precedence of chapter

“(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organizations contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

- “(1) section 10(a) of the Act of June 29, 1935, as added by title I of the Act of Aug. 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);
- “(2) section 205(a) of the Act of Aug. 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);
- “(3) section 501(c) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 951(c); 83 Stat. 742);
- “(4) section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1395(c); 80 Stat. 721);
- “(5) section 12 of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360);
- “(6) section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182; 68 Stat. 943);
- “(7) section 305 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457);
- “(8) section 6 of the Coal Research Development Act of 1960 (30 U.S.C. 666; 74 Stat. 337);
- “(9) section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920);
- “(10) section 32 of the Arms Control and Disarmament Act of 1961 (22 U.S.C. 2572; 75 Stat. 634);
- “(11) subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e); 79 Stat. 5);
- “(12) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901); 88 Stat. 1878);
- “(13) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 86 Stat. 1211);
- “(14) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);
- “(15) section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c); 90 Stat. 2829);
- “(16) section 219 of the Foreign Assistance Act of 1961 (22 U.S.C. 2179; 83 Stat. 806);
- “(17) section 427(b) of the Federal Mine Health and Safety Act of 1977 (30 U.S.C. 937(b); 86 Stat. 155);
- “(18) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);
- “(19) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);
- “(20) section 6(b) of the Solar Photovoltaic Energy Research Development and Demonstration Act of 1978 (42 U.S.C. 5585(b); 92 Stat. 2516);
- “(21) section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178(j); 92 Stat. 2533); and
- “(22) section 408 of the Water Resources and Development Act of 1978 (42 U.S.C. 7879; 92 Stat. 1360).

The Act creating this chapter shall be construed to take precedence over any future Act unless that Act specifically cites this Act and provides that it shall take precedence over this Act.

“(b) Nothing in this chapter is intended to alter the effect of the laws cited in paragraph (a) of this section or any other laws with respect to the disposition of rights in inventions made in the performance of funding agreements with persons other than nonprofit organizations or small business firms.

“(c) Nothing in this chapter is intended to limit the authority of agencies to agree to the disposition of rights in inventions made in the performance of work under funding agreements with persons other than nonprofit organizations or small business firms in accordance with the Statement of Government Patent Policy issued on Aug. 23, 1971 (36 Fed. Reg. 16887), agency regulations, or other applicable regulations or to otherwise limit the authority of agencies to allow such persons to retain ownership of inventions. Any disposition of rights in inventions made in accordance with the Statement or implementing regulations, including any disposition occurring before enactment of this section, are hereby authorized.

“(d) Nothing in this chapter shall be construed to require the disclosure of intelligence sources or methods or to otherwise affect the authority granted to the Director of Central Intelligence by statute or Executive order for the protection of intelligence sources or methods.

“ § 211. Relationship to antitrust laws

“Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law.”

(b) The table of chapters for title 35, United States Code, is amended by adding immediately after the item relating to chapter 37 the following:

“38. Patent rights in inventions made with Federal assistance.”

SEC. 7. AMENDMENTS TO OTHER ACTS.—The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words “held by the Commission or”.

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

35 USC 210

91 Stat. 1320

64 Stat. 154
68 Stat. 944

88 Stat. 1887.

42 USC 5908.

7 USC 178j.

92 Stat. 1316.

Rights,
disposition

Disclosure.

35 USC 211.

Effective dates.

35 USC 41 note.

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889-1891).

SEC. 8. (a) Sections 2, 4, and 5 of this Act will take effect upon enactment.

(b) Section 1 of this Act will take effect on the first day of the seventh month beginning after its enactment and will apply to patents in force as of that date or issued thereafter.

(c) Section 3 of this Act will take effect on the first day of the first fiscal year beginning on or after one calendar year after enactment. However, until section 3 takes effect, the Commissioner may credit the Patent and Trademark Office appropriation account in the Treasury of the United States with the revenues from collected reexamination fees, which will be available to pay the costs to the Office of reexamination proceedings.

(d) Any fee in effect as of the date of enactment of this Act will remain in effect until a corresponding fee established under section 41 of title 35, United States Code, or section 1113 of title 15, United States Code, takes effect.

(e) Fees for maintaining a patent in force will not be applicable to patents applied for prior to the date of enactment of this Act.

(f) Sections 6 and 7 of this Act will take effect on the first day of the seventh month beginning after its enactment. Implementing regulations may be issued earlier.

(g) Sections 8 and 9 will take effect on the date of enactment of this Act.

SEC. 9. The Commissioner of Patents and Trademarks shall report to Congress, within two years after the effective date of this Act, a plan to identify, and if necessary develop or have developed, computerized data and retrieval systems equivalent to the latest state of the art which can be applied to all aspects of the operation of the Patent and Trademark Office, and particularly to the patent search file, the patent classification system, and the trademark search file. The report shall specify the cost of implementing the plan, how rapidly the plan can be implemented by the Patent and Trademark Office, without regard to funding which is or which may be available for this purpose in the future.

SEC. 10. (a) Section 101 of title 17 of the United States Code is amended to add at the end thereof the following new language:

“A ‘computer program’ is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.”

(b) Section 117 of title 17 of the United States Code is amended to read as follows:

“117. Limitations on exclusive rights: Computer programs

“Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

“(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

“(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

“Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner.”

Approved Dec. 12, 1980.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 96-1307, Pt. 1 (Comm. on the Judiciary) and No. 96—1307, Pt. 2 (Comm. on Government Operations).

CONGRESSIONAL RECORD, Vol. 126 (1980):

Nov. 17, considered and passed House.

Nov. 20, considered and passed Senate, amended.

Nov. 21, House concurred in Senate amendment.

(40)

Public Law 97-247

97th Congress
An Act

15 USC 632.

To authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That there is authorized to be appropriated for the payment of salaries and necessary expenses of the Patent and Trademark Office to become available for fiscal year 1983, \$76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary as well as such additional or supplemental amounts as may be necessary, for increases in salary, pay, retirement, or other employee benefits authorized by law. Funds available under this section shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code, by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the

Fees.

Computerized
data and
retrieval
system, report to

Congress
35 USC 14 note.

“Computer
program.”

17 USC 117.

17 USC 106

Small Business Act and by regulations established by the Small Business Administration. When so specified and the the extent provided in an appropriation Act, any amount appropriated pursuant to this section and, in addition, such fees as shall be collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), may remain available without fiscal year limitation.

SEC. 2. Notwithstanding any other provision of law, there is authorized to be appropriated for the payment of salaries and expenses of the Patent and Trademark Office, \$121,461,000 for the fiscal year ending September 30, 1982, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

SEC. 3. (a) Section 41(a) of title 35, United States Code, is amended to read as follows: "(a) The Commissioner shall charge the following fees:

"1. On filing each application for an original patent, except in design or plant cases, \$300; in addition, on filing or on presentation at any other time, \$30 for each claim in independent form which is in excess of three, \$10 for each claim (whether independent or dependent) which is in excess of twenty, and \$100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

"2. For issuing each original or reissue patent, except in design or plant cases, \$500.

"3. In design and plant cases:

"a. On filing each design application, \$125.

"b. On filing each plant application, \$200.

"c. On issuing each design patent, \$175.

"d. On issuing each plant patent, \$250.

"4. On filing each application for the reissue of a patent, \$300; in addition, on filing or on presentation at any other time, \$30. for each claim in independent form which is in excess of the number of independent claims of the original patent, and \$10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

"5. On filing each disclaimer, \$50.

"6. On filing an appeal from the examiner to the Board of Appeals, \$115; in addition, on filing a brief in support of the appeal, \$115, and on requesting an oral hearing before the Board of Appeals, \$100.

"7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, \$500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be \$50.

"8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

"a. On filing a first petition, \$50.

"b. On filing a second petition, \$100.

"c. On filing a third or subsequent petition, \$200."

(b) Section 41(b) of title 35, United States Code, is amended to read as follows:

"(b) The Commissioner shall charge the following fees for maintaining a patent in force:

"1. Three years and six months after grant, \$400.

"2. Seven years and six months after grant, \$800.

"3. Eleven years and six months after grant, \$1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an application maintenance fee. No fee will be established for maintaining a design or plant patent in force."

(c) Section 41(c) of title 35, United States Code, is amended to read as follows:

"(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

"(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the

35 USC 112.

35 USC 133, 151

Maintenance
fees.

Expiration.
Surcharge.

Maintenance
fee, delayed
payment.
NSurcharge.

Fees.

protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection."

(d) Section 41(d) of title 35, United States Code, is amended to read as follows:

"(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 113 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be \$50."

(e) Section 41(f) of title 35, United States Code, is amended to read as follows:

"(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored."

(f) Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended by deleting "Fees will be set and adjusted by the Commissioner to recover the aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnished the material."

(g) Section 42(c) of the title 35, United States Code, is amended by adding the following sentence at the end thereof: "Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks."

SEC. 4. Section 3(a) of title 35, United States Code is amended (1) by deleting the phrase "not more than fifteen"; and (2) by inserting the phrase "appointed under section 7 of this title" immediately after the phrase "examiners-in- chief".

SEC. 5. Section 111 of title 35, United States Code, is amended to read as follows:

"SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office."

SEC.6. (a) Section 116 of title 35, United States Code, is amended (1) by deleting the phrase "Joint inventors" from the title and inserting in its place "Inventors"; and (2) in the third paragraph, by deleting the phrase "a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error" and inserting in its place the phrase "through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application".

(b) Section 256 of title 35, United States Code, is amended to read as follows:

§ 256. Correction of named inventor

"Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

"The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly."

SEC. 7. Section 6 of the title 35, United States Code, is amended by deleting paragraph (d) thereof.

SEC. 8. (a) Section 8(a) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(a)), is amended (a) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

(b) Section 8(b) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(b)), is amended (1) by deleting the word "stille"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

SEC. 9. (a) Section 13 of the Trademark Act of 1946, as amended (15 U.S.C. 1063), is amended (1) by deleting the phrase "a verified" and inserting in its place the word "an"; (2) by adding the phrase "when requested prior to the expiration of an extension" immediately after the word "cause"; and (3) by deleting the fourth sentence.

(b) Section 14 of the Trademark Act of 1946, as amended (15 U.S.C. 1064), is amended by deleting the word "verified".

SEC. 10. Section 15 of the Trademark Act of 1946, as amended (15 U.S.C. 1065), is amended by deleting the phrase "the publication" and inserting in its place the word "registration".

SEC. 11. The first sentence of section 16 of the Trademark Act of 1946, as amended

Adjusted fees.

Applications.

35 USC 112.
35 USC 113.
35 USC 115.

Filing date.

Filing Date

(15 U.S.C. 1066), is amended to read as follows: "Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive."

SEC. 12. Section 21 of title 35, United States Code, is amended—

(1) by deleting the phrase "Day for taking action falling on Saturday, Sunday, or holiday" from the title and inserting in its place the phrase "Filing date and day for taking action";

(2) by inserting the following as subsection (a):

"(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner."

(3) by designating the existing paragraph as subsection (b); and

(4) by inserting the word "federal" in subsection (b), as designated above, immediately after the word "a".

SEC. 13. Section 6(a) of title 35, United States Code, is amended (1) by deleting the word "and", third occurrence, and inserting in its place a comma; (2) by inserting the phrase, "or exchanges of items or services" immediately after the word "programs"; and (3) by inserting the phrase "or the administration of the Patent and Trademark Office" immediately after the word "law", second occurrence.

SEC. 14. (a) Section 115 of title 35, United States Code, is amended by (1) deleting the phrase "shall be" and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(b) Section 261 of title 35, United States Code, is amended, in the third paragraph, by inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(c) Section 11 of the Trademark Act of 1946, as amended (15 U.S.C. 1061), is amended by (1) deleting the phrase "shall be", first occurrence, and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

SEC. 15. Section 13 of title 35, United States Code, is amended by deleting "(a)" and inserting in its place "(d)".

SEC. 16. Section 173 of title 35, United States Code, is amended to read as follows: "Patents for designs shall be granted for the term of fourteen years."

SEC. 17. (a) Sections 1, 2, 4, 7, and 13 through 15 of this Act shall take effect on the date of enactment of this Act. Sections 3 and 16 of this Act shall take effect on Oct. 1, 1982. The maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act. Each patent applied for on or after the date of enactment of this Act shall be subject to the maintenance fees established pursuant to section 3(b) of this Act or to maintenance fees hereafter established by law, as to the amounts paid and the number and timing of the payments.

(b)(1) Title 35, United States Code, is amended by inserting after section 293 the following new section of chapter 29:

"§ 294. Voluntary arbitration

"(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

"(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

"(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

"(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give

Effective dates.

35 USC 41 note.

Awards.
9 USC 1 et seq
35 USC 282.

Modification.

Notices
Modification.

notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

"(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner."

(2) The analysis for chapter 29 of title 35 of the United States Code is amended by adding at the end the following:

"294. Voluntary arbitration."

(c) Sections 5, 6, 8 through 12, and 17(b) of this Act shall take effect six months after enactment.

Approved Aug. 27, 1982.

LEGISLATIVE HISTORY-H.R. 6260

HOUSE REPORT No. 97-542 (Comm. on the Judiciary).

CONGRESSIONAL RECORD, Vol. 128 (1982):

June 8, considered and passed House.

Aug. 12, considered and passed Senate.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 18, No. 36 (1982):

Aug. 28, Presidential statement.

(41) 97TH CONGRESS HOUSE OF REPRESENTATIVES REPORT

2d Session

PATENT AND TRADEMARK OFFICE AUTHORIZATION

No. 97-542

May 17, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. KASTENMEIER, from the Committee on the Judiciary, submitted the following REPORT

[To accompany H.R. 6260]

[Including cost estimate of the Congressional Budget Office]

The Committee on the Judiciary, to whom was referred the bill (H.R. 6260) to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment strikes out all after the enacting clause of the bill and inserts a new text which appears in italic type in the reported bill.

PURPOSE OF THE BILL

The purpose of H.R. 6260 is to authorize appropriations for the Patent and Trademark Office for fiscal years 1983 through 1985.

STATEMENT

The Subcommittee on Courts, Civil Liberties and the Administration of Justice previously held two days of hearings on the legislation, receiving testimony from a representative group of witnesses including the Commissioner of Patents and Trademarks, the American Bar Association Section of Patent, Trademark and Copyright Law, the American Patent Law Association, the Patent, Trademark and Copyright Section of the State Bar of Virginia, the United States Trademark Association and the General Patent Counsel of the General Electric Corporation.

H.R. 6260 reflects the recommendation of the Administration with three modifications as follows. First, the Administration proposal authorized the Commissioner of Patents and Trademarks to establish fees administratively. The subcommittee approved an amendment to set forth specific fees in the statute and limited the Commissioner's authority to raise fees. Second, the Administration recommended that user fees recover 100% of the costs of actual processing of patents and trademarks. The subcommittee amended the bill to reduce by 50% patent filing and maintenance fees for individual inventors, small businesses and not for profit institutions. The effect of the amendment is to increase by \$8 million the authorized appropriation which would have been provided under the original Administration request. Third, the subcommittee adopted a recommendation of the Commissioner of Patents and Trademarks, the American Bar Association and a coalition of corporate patent counsel permitting arbitration of patent disputes.

H.R. 6260 was considered by the Full Committee on the Judiciary on May 11, 1982 and was approved as reported by the subcommittee with an amendment offered by Mr. Frank described below.

SYNOPSIS OF H.R. 6260

SECTIONS 1-3

Authorizes the Patent and Trademark Office for fiscal year 1983 at an appropriations level of \$76,000,000 and for fiscal years 1984 and 1985 such sums as may be necessary. This would be

augmented by additional fee income under the bill of approximately \$79 million for a total budget of \$155 million. In fiscal year 1982 the Patent and Trademark Office was authorized at a level of \$118,961,000 of which \$29,600,000 was provided through fee income. Fiscal year 1983 will be the first year in which fee income under P.L. 96-517 will be credited to the Patent and Trademark Office without being counted as part of its authorized appropriation. Had this new accounting procedure been applied to fiscal year 1982 the authorization and appropriation for the Patent and Trademark Office would have been \$89 million. This constitutes the actual level of taxpayer support of the Office. Thus, H.R. 6260 authorizes the expenditure of tax revenue in fiscal 1983 to support the Patent and Trademark Office at a level \$21 million lower than for fiscal 1982. H.R. 6260 proposes to double current fees as the means of making up for the difference between a lower level of taxpayer support and an increased total budget. Further, maintenance fees which were first authorized in P.L. 96-517 and which will not begin to be collected until fiscal year 1986 (Oct. 1, 1985) will also be doubled over the amounts provided for under P.L. 96-517.

The overall objective of H.R. 6260 is to provide for increased user support for the Patent and Trademark Office costs associated with the actual processing of patent applications by fiscal year 1996. The fee schedule is designed to return to the government 100% of actual costs. However, an amendment to the original Administration proposal adopted by the subcommittee would reduce by half the fees for individuals, small businesses and nonprofit inventors. At the present time less than 25% of the actual costs of processing patent applications are supported by fee revenue and under P.L. 96-517, which becomes effective on Oct. 1, 1982, this amount will gradually begin to rise but will only reach 50% of actual costs in 1996.

The amendment offered by Mr. Frank and approved by the Committee modifies that portion of Section 3 of H.R. 6260 dealing with Trademark fees. Public Law 96-517 (35 United States Code, section 31(a)) provides, "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost . . . of performing the service or furnishing the material."

The Administration requested that the figure, "50 per centum", be changed to "100 per centum", thus mandating full recovery to the Treasury of all costs associated with processing trademarks. An amendment offered during subcommittee consideration of the legislation proposed to reduce fee generated revenue supporting processing of trademarks to less than the 100 per centum recovery level. The amendment was not agreed to. The author of the amendment, Mr. Frank, then proposed to amend the law to provide a statutory fee schedule which would return revenue to the Patent and Trademark Office at a level designed to recover 100 per centum of costs. However, following consultations with interested parties, Mr. Frank modified his amendment simply to repeal those portions of P.L. 96-517 which mandate a specified level of cost recovery for the processing of trademark registrations. Thus, the level of cost recovery for processing of trademark registrations will be within the discretion of the Commissioner. The Committee is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of fee:	Proposed fee
Application filing fee per class.....	\$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate.....	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration.....	100
Per class combines section 8 and 15 affidavit.....	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner.....	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks.....	1
Assignments.....	1

¹100 plus for each mark in addition to 1

Section 3(d) also permits the Commissioner of Patents to accept late payment of maintenance fees where it is established that the delay in payment was unavoidable.

Section 4 permits the Commissioner of Patents and Trademarks to appoint temporary examiners in chief for the Board of Patent Appeals to deal more flexibly with workload.

Section 5 permits late filing of the oath and fee accompanying submission of specifications and drawings which accompany patent claims.

Section 6 permits greater flexibility in correcting mistakes in the naming of inventors on a patent application.

Section 7 allocates funds from the Patent and Trademark Office to the Department of State to pay the financial obligations of administering the patent Cooperation Treaty.

Section 8 clarifies the Trademark law with respect to what constitutes use of a mark "in commerce".

Section 9 deletes the burdensome technical requirement that trademark oppositions be verified.

Section 10 makes the date of registration rather than the date of publication the crucial date for

purposes of establishing the incontestability of a trademark. This eliminates an ambiguity in the present law.

Section 11 limits the declaration of interferences under the trademark law to situations where extraordinary circumstances exist.

Section 12 authorizes the Commissioner of the Patent and Trademark Office the flexibility to deal with problems of delay in filing due to postal service breakdowns.

Section 13 permits the Commissioner of Patents to enter into cooperative studies, programs, exchanges and similar ventures associated with the administration of the Patent Office.

Section 14 conforms U.S. Patent and Trademark Law to a recent international treaty governing diplomatic or consular legalization of documents.

Section 15 corrects a mistaken citation in P.L. 96-517.

Section 16 creates a uniform term for design patents.

Section 17 establishes the effective dates for provisions of the Act. Increased filing fees would apply to all applications made on or after the date of enactment of H.R. 6260.

Section 18 permits voluntary arbitration of patent disputes.

SECTION-BY-SECTION ANALYSIS SECTION 1

This section authorizes appropriations for the Patent and Trademark Office for the payment of salaries and necessary expenses of the Office. For Fiscal Year 1983, this section authorizes appropriations of \$76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary, as well as such additional and supplemental amounts as may be necessary to cover any increases in salary, pay, retirement, or employee benefits which may be authorized by law. Funds made available by these appropriations are to be used to reduce by 50 per centum the amount of the fees to be paid under title 35, United States Code, section 41(a) and (b) by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration.

In addition, fees collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), will augment the authorized appropriation to provide the resources needed to conduct the operations of the Office for fiscal year 1983. The total resources for the Office in fiscal year 1983, that is, the amount appropriated pursuant to this section plus fees collected pursuant to the patent and trademark laws, which will be available to the Office, are estimated to be \$154,934,000. The corresponding levels for fiscal year 1984 and fiscal year 1985 are estimated in the President's Budget to be \$167 million and \$176 million, respectively. Any additional amounts to cover increases in salary, pay, retirement, or other employee benefits which may be authorized by law will be in addition to, and will therefore increase, those program levels. Finally, any funds appropriated pursuant to this section and all fees collected, when specified in an appropriation act, will remain available without any fiscal year limitation.

SECTION 2

This section provides that, notwithstanding any other provision of law, there is authorized to be appropriated to the Patent and Trademark Office for fiscal year 1982, \$121,461,000 and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law. This section increases the amount authorized for the Patent and Trademark Office by 2.5 million over that authorized in Public law 97-35. The President is recommending a supplemental appropriation of \$2,500,000 for the Patent and Trademark Office for fiscal year 1982 in order to carry out the program recommendations included in his fiscal year 1983 Budget.

SECTION 3

This section establishes certain statutory fees which are to be charged by the Commissioner and authorizes the Commissioner to establish other fees whose amounts are not specifically set. Thus, the major routine fees which are applicable to patents and patent application processing are established (e.g., filing, issuance, and maintenance fees). The Commissioner is authorized to establish fees for all other processing, services, or materials related to patents which are not specifically established by statute. The processing and service fees, which would be established at a level to recover the estimated average costs to the Office. A more specific discussion of the various provisions of this section is set forth below.

Section 3(a) amends section 41(a) of title 35 to provide the amounts of the fees for filing and issuance of patent applications. In addition, the section includes provisions for increasing the filing fees due to increased complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. The section also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under section 41(a)1, the filing fee for an original patent, except in design or plant cases, is \$300. In addition, on filing or on presentation at any other time, \$30 is due for each claim in independent form which is in excess of three, \$10 is due for each claim (whether independent or dependent) which is in excess of twenty, and \$100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of title 35, United States Code, or any claim depending therefrom, will be considered as separate dependent claims in accordance with the number of claims to which reference is made. Under the section, errors in payment of the

additional fees may be rectified in accordance with regulations of the Commissioner. This will enable the Commissioner to establish regulations whereby patent applications may correct, without prejudice, errors in the additional fees, i.e., those in addition to the basic fees established.

Under section 41(a)2, the fee for issuing all original and reissue patents, except in design or plant cases, would be a uniform amount of \$500. No supplemental issue fees are required.

Section 41(a)3 establishes fixed fees for filing applications for, and issuance of design and plant patents. For design patent cases, the filing fee would be \$200 and the issue fee \$250.

Section 41(a)4 relates to fees in reissue cases and establishes a fee of \$300 for filing each application for the reissue of a patent. In addition, on filing or on presentation at any other time, \$30 is due for each claim in independent form which is in excess of the number of independent claims of the original patent, and \$10 is due for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

Under section 41(a)5, a fee of \$50 would be established for filing each disclaimer in a patent or patent application.

Section 41(a)6 establishes a fee due on filing an appeal from the examiner to the Board of Appeals of \$115. In addition, a fee of \$115 is due on filing a brief in support of the appeal, and a fee of \$100 is due for requesting an oral hearing before the Board of Appeals.

Section 41(a)7 establishes two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees are applicable to petitions to accept the delayed payment of the fee for issuing a patent. The fees set forth in this section are due on filing the petition. Since the section provides for two alternative fees with different standards, the section would permit the applicant seeking revival or acceptance of a delayed payment of the fee for issuing a patent to choose one or the other of the fees and standards under such regulations as the Commissioner may establish. Under the section the Commissioner could establish time limits within which petitions under each of the different fees and standards can be filed. The section establishes a fee of \$500 for filing each petition for revival or for acceptance of the delayed payment of an issue fee where the abandonment or the failure to pay the issue fee is unintentional. In order to prevent abuse and injury to the public the Commissioner could require a terminal disclaimer equivalent to the period of abandonment and could require applicants to act promptly after becoming aware of the abandonment. The section establishes a fee of \$50 for filing a petition under sections 133 or 151 of title 35 in accordance with standards presently in effect requiring that the delay resulting in the abandonment, or the delay in payment of the issue fee, be unavoidable. Under this section a petition accompanied by either a fee of \$500 or a fee of \$50 would not be granted where the abandonment or the failure to pay the fee for issuing the patent was intentional as opposed to being unintentional or unavoidable. This section would permit the Commissioner to have more discretion than present law to revive abandoned applications and accept late payment of the fee for issuing a patent in appropriate circumstances.

Section 41(a)8 establishes fees for filing of petitions for extensions of time. Various time periods are set by the Office for taking actions on matters relating to patent applications. These time periods are set pursuant to statute or by regulations established by the Commissioner under the authority granted to the Commissioner by statute. This section would provide for fees for filing petitions to extend the time periods set pursuant to statute or by regulations for taking action within any limitations set by statute.

A fee of \$50 is established for filing a request for a first one month extension of time, an additional fee of \$100 for filing a request for a second one month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of \$200 for filing a request for a third one month extension of time which would expire three months after the end of the time period set for taking action. A subsequent or fourth extension could be requested if additional time was available under the statute. In no case could a period be extended beyond the maximum time set by statute.

The Commissioner may issue regulations providing when, within any maximum period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. This section does preclude the Commissioner from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause.

Section 41(b) provides that the Commissioner charge the following fees for maintaining a patent other than a design or plant patent, in force: at three years and six months after grant, \$400; at seven years and six months after grant, \$800; and at eleven years and six months after grant, \$1,200. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of a maintenance fee.

In order to avoid an inequitable loss of patent rights, the Commissioner is given the authority to accept payment of any maintenance fee after the six-month grace period if it is established that the delay in payment was unavoidable. It is intended that the Commissioner will issue regulations establishing guidelines for acceptance of late payment. After the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable. A surcharge may be imposed by the Commissioner as a precondition to acceptance of a late fee. This surcharge may be in addition to any surcharge imposed for payment during the grace period.

A provision is included to protect the rights of one who began using or who took steps to begin use of a patent which expired for failure to pay a maintenance fee and which was subsequently reestablished by acceptance of the late payment. The intervening rights provision in section 41(c)(2) is similar to the intervening rights provision in 35 U.S.C. 252 concerning reissued patents.

Section 41(d) provides that the Commissioner establish fees for all other processing services, or materials related to patents not specified in section 41 at an amount calculated to recover the

estimated average cost to the Office of such processing, services, or materials. Such processing and other services includes, but is not limited to, the processing of various petitions desiring certain actions to be taken regarding patent applications, recording of assignments, reexamination of patents and the processing of international applications. Fees for materials include the price of patent copies, certifications and other copying services. The yearly fee for providing a library specified in section 13 of title 35 with uncertified copies of the specifications and drawings for all patents issued in that year is set at \$50.

Section 41(f) provides that the fees established in subsections (a) and (b) of section 41 may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than one per centum may be ignored by the Commissioner in making such adjustments.

Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is being changed to grant the Commissioner discretion to establish the level of recovery of office costs related to trademarks. It is expected that the Commissioner will set the fees in a way that the filing fee will be kept as low as possible to foster use of the Federal registration system. This may require that other fees for services or materials related to trademarks recover more than their actual estimated cost in order that the Commissioner achieve in the aggregate adequate cost recovery for the entire trademark operation.

A provision is inserted in section 42(c) of title 35 in order to ensure that the trademark fees collected are used to fund trademark operations only and not the processing of patent applications.

SECTION 4

Section 3 of title 35 is amended by deleting specific reference to the number of examiners-in-chief in the first sentence. Elimination of the upper limit on the number of permanent members of the Board of Appeals would provide greater flexibility in filling most of its personnel needs, thereby avoiding an excess of examiner details. The authority to appoint acting examiners-in-chief, however, is maintained in order that temporary fluctuations in the workload of the Board may be accommodated.

SECTION 5

Under revised section 111 of title 35, the filing date of an application would be that on which the specification and any required drawings are received by the Patent and Trademark Office. The oath or declaration and filing fee could be submitted at such later time as established by the Commissioner, without any loss of the original filing date. Under the amendment, an applicant could either file the oath or declaration (including the applicant's signature) and fee together with an application or submit them at a later time as determined by the Commissioner.

The section would also authorize the imposition of a surcharge as a condition for accepting filing of the oath of payment of the filing fee after the filing date of the application. Since an application filed without the oath or declaration would not be signed or "made" by the applicant, the amendment permits a patent attorney or agent, authorized by the applicant, to submit the specification and drawings for the purpose of obtaining a filing date. Should the applicant, however, fail to file the oath or declaration, or pay the filing fee within the time limits set by the Commissioner, the application would be regarded as having been abandoned.

SECTION 6

The third paragraph of section 116 of title 35 is amended to enlarge the possibilities for correcting misnamed inventive entities. As a consequence, correction would be permitted also in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Commissioner would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to a different, but actual, joint inventors, conversions from erroneously identified joint inventors to different but actual, joint inventors, and conversions from erroneously identified joint inventors to a different, but actual, sole inventor would also be permitted. In each instance, however, the Commissioner must be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting substitution of a true inventor's name.

The ability to receive a filing date based on a specification and drawings without signature as set forth in revised section 111 of title 35, and to file the oath or declaration and pay the filing fee within such period as determined by the Commissioner is also available to joint inventors.

Section 256 of title 35, which is a companion to section 116, would be amended to similarly enlarge the possibilities for correction of misnamed inventors in issued patents.

SECTION 7

Section 6(d) of title 35, which provides for the allocation of appropriated Patent and Trademark Office funds to the Department of State for payment of United States financial obligations under the Patent Cooperation Treaty, is deleted. The Department of State has traditionally assumed responsibility for financial obligations for international agreements to which the United States adheres.

SECTION 8

Section 8(a) of the Trademark Act is amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission

of the words "in commerce" may have been inadvertent in the 1946 Act, this section has been interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" for registrations published under section 12(c) of the Act. (This pertains to registrations issued under the Act of Mar. 3, 1881 and the Act of Feb. 20, 1905).

The word "still" has been deleted from section 8(a) and 8(b). Thus, the owner of a registration issued on the basis of a foreign registration under the provisions of section 44(e) of the Act will have to submit an affidavit to the effect that the mark is in use in commerce. Since the mark need not be used in commerce when it is registered, the requirement cannot be required to state that it is "still" in such use.

SECTION 9

Section 13 of the Trademark Act is amended to delete the requirement that an opposition be verified. The sentence which allowed an unverified application to be verified at a later date has been deleted. In addition, a phrase has been added to make it clear that any subsequent extension of time to file an opposition, beyond the first extension, must be requested before the end of the preceding extension.

Section 14 of the Trademark Act would also be amended to delete the requirement that a petition to cancel a registration be verified.

SECTION 10

Section 15 of the Trademark Act is amended to change the term "the publication" to "registration" in the first sentence. This change makes the date of registration rather than the date of publication the crucial date for purposes of incontestability. It will also make section 15 consistent with sections 22 and 33 of the Act.

SECTION 11

Section 16 of the Trademark Act is amended to limit the declaration of interferences to those situations where a petition to the Commissioner shows that extraordinary circumstances exist, the rights of the parties can be determined adequately by the existing opposition and cancellation procedures. Additionally, if an interference is declared between an application and a registration and the applicant wins, a cancellation must still be initiated against the registration.

SECTION 12

A new subsection (a) has been added to section 21 of title 35 to authorize, but not to require, the Commissioner of Patents and Trademarks to give as the filing date of any paper or fee which is required to be filed in the Patent and Trademark Office the date on which the paper or fee was deposited with the United States Postal Service. The Commissioner may also give as the filing date of any paper or fee which was required to be filed in the Patent and Trademark Office the date it would have been deposited with the United States Postal Service but for postal service interruptions or emergencies which the Commissioner designates. The requirements governing whether any given paper or fee may be given the filing date of the day on which it was, or would have been deposited with the United States Postal Service will be set forth in regulations established by the Commissioner.

Section 21(b) of title 35 is identical to existing section 21 with two minor amendments. The word "federal" has been inserted before the phrase "holiday within the District of Columbia" to clarify the nature of the holiday.

SECTION 13

This section clarifies the authority of the Commissioner in section 6(a) of title 35 to enter into a wide range of cooperative agreements concerning the patent and trademark laws or the administration of the Patent and Trademark Office. These agreements are in addition to the exchange of publications authorized in 35 U.S.C. 11(b) and 12. These cooperative agreements may take the form of studies, programs, exchanges, and other similar ventures. Thus, the Patent and Trademark Office could, for example, exchange patent copies, non-patent literature, tapes or services in return for goods or services of value to the Patent and Trademark Office.

SECTION 14

The amendments of 35 U.S.C. 115 and Section 11 of the Trademark Act of 1946 recognize the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" which entered into force in the United States on Oct. 15, 1981. The Convention abolishes the requirement of diplomatic or consular legalization for foreign public documents which are sworn to or acknowledged by a notary public in any of the countries adhering to the Convention. For documents executed by a notary public of all other foreign countries, diplomatic or consular legalization will still be required.

The amendment of 35 U.S.C. 261 is intended to give affirmative effect to acknowledgments executed pursuant to the Hague Convention.

SECTION 15

This section corrects an incorrect citation. Public Law 96-517 amended section 41 of title 35, United States Code, in a way which eliminated 35 U.S.C. § 41(a)(9). Unfortunately, section 13 of title 35, United States Code, was not amended accordingly by Public Law 96-517. This section corrects that oversight.

SECTION 16

This section sets a uniform term of fourteen years for all design patents.

SECTION 17

Sections 17(a) and (c) specify the effective dates of the Act. Section 17(a) also specifies that the maintenance fees provided for in section 3(b) of this Act will only apply to patents in which the application was filed on and after the date of enactment or to maintenance fees later established by law.

Section 17(b) adds a section to title 35 providing for the voluntary arbitration of patent disputes by the parties to the dispute. The section requires that the Commissioner be notified in writing of an award made by an arbitrator or modified by a court. Such notification will be entered in the record of the prosecution of the patent.

At present, agreements to arbitrate some aspects of disputes arising under patent licenses are enforceable by the courts; however, there have been court decisions that have disapproved arbitration of disputes concerning patent validity or infringement. In this regard, see, for example, *Zip Mfg. Co. v. Pep Mfg. Co.* 44 F.2d 184, 7 U.S.P.Q. 62 (D. Del. 1930) and *Beckman Instruments, Inc. v. Technical Developments Corp.* 433 F.2d 55, 167 U.S.P.Q. 10 (7th Cir. 1965).

Partly as a reaction to those decisions, during the 93rd Congress both the Department of Commerce and the Department of Justice endorsed a provision specifically authorizing arbitration of validity and infringement disputes. This provision, included in an omnibus patent law revision bill, S. 2504, was never enacted due to the many controversial aspects of that legislation.

In the view of the Committee, a statutory authorization of voluntary agreements to arbitrate validity and infringement disputes would benefit both the parties to these disputes and the public.

Statutory endorsement of arbitration agreements would assure the parties that they could avail themselves of the numerous advantages of arbitration without the possibility of having to reargue the dispute in court. The advantages of arbitration are many: it is usually cheaper and faster than litigation; it can have simpler procedural and evidentiary rules; it normally minimizes hostility and is less disruptive of ongoing and future business dealings among the parties; it is often more flexible in regard to scheduling of times and places of hearings and discovery devices; and, arbitrators are frequently better versed than judges and juries in the area of trade customs and the technologies involved in these disputes.

The enforcement of voluntary arbitration provisions would serve the public in two ways. First, the availability of arbitration with its numerous advantages will enhance the patent system and thus will encourage innovation. This view is supported by the Committee for Economic Development in their Jan. 1980 statement entitled "Stimulating Technological Progress." Secondly, arbitration could relieve some of the burdens on the overworked Federal courts. Chief Justice Burger in his speech to the American Bar Association on Jan. 24, 1982, generally endorsed the use of arbitration to reduce the judicial backlog. Also, I think it is important to note that the American Bar Association's Section on Patent, Trademark and Copyright Law has endorsed court enforcement of arbitration agreements calling for arbitration of validity and infringement.

The recommendations of the Secretary of Commerce to increase substantially patent and trademark user fees were made on the promise that such increases "will lay the groundwork for revitalizing the patent and trademark systems." The Secretary committed to three major goals: (1) to reach an average patent application pendency time of 18 months by FY 1987, (2) to issue an examiner's first action on trademark registrability in three months and disposal of an application within 13 months, and (3) to move realistically toward a fully automated Office by the 1990's. In accepting the Administration's recommendations on user fees, the Committee fully expects the Administration to live up to its end of the bargain to bring about a first-class Patent and Trademark Office. To provide an opportunity for timely and effective Committee oversight of progress toward improving the Patent and Trademark Office, the Committee directs that the Secretary of Commerce report annually to the Committee on progress toward achieving the three major goals of the Patent and Trademark Office, as outlined above, and, in addition, promptly inform the Committee at any time it appears that any of the goals, for any reason, is viewed as not attainable.

OVERSIGHT STATEMENT

The Committee on the Judiciary has oversight responsibility over the Patent and Trademark Office in the Department of Commerce. In addition to its ongoing oversight, the Committee's Subcommittee on Courts, Civil Liberties and the Administration of Justice held an oversight hearing with respect to the Patent and Trademark Office on Mar. 4, 1981, published as Oversight Hearings Before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the Committee on the Judiciary, House of Representatives, Ninety-Seventh Congress, First Session on the Copyright Office, The U.S. Patent and Trademark Office, and the Copyright Royalty Tribunal. Serial No. 17.

The Committee expects to continue its oversight activities in this area.

STATEMENT OF THE BUDGET COMMITTEE

No statement has been received on H.R. 6260 from the House Committee on the Budget.

STATEMENT OF THE CONGRESSIONAL BUDGET OFFICE

Pursuant to clause 7, rule XIII of the Rules of the House of Representatives and section 403 of the Congressional Budget Act of 1974, the following is the cost estimate of H.R. 6260, as amended, prepared by the Congressional Budget Office.

U.S. CONGRESS
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., May 13, 1982.

Hon. PETER W. RODINO, Jr.,
Chairman, Committee on the Judiciary, House of Representatives, Washington, D.C.
DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for H.R. 6260, a bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.
Sincerely

ALICE M. RIVLIN,
Director.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

1. Bill number: H.R. 6260.
2. Bill title: A bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.
3. Bill status: As ordered reported by the House Committee on the Judiciary, May 11, 1982.
Bill purpose: H.R. 6260 would authorize 1982 appropriations at a level \$2.5 million above the amount already appropriated, and would provide a \$76 million authorization level in 1983 to carry out the activities of the Patent and Trademark Office (PTO). In addition, such sums as may be necessary are authorized for fiscal years 1984 and 1985, plus such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other benefits authorized by law for each fiscal year 1983 through 1985. PTO would also have available for obligation offsetting fee collections as provided for in Public Law 96-517, plus the additional fees as specified in H.R. 6260.

Assuming enactment of H.R. 6260, total PTO collections over time would result in recovery of approximately 100 percent of patent and trademark processing costs. Individuals, small businesses, and non-profit institutions would be exempt from the proposed additional fees, however, but would continue to follow the fee schedule outlined in P.L. 96-517, which assumes the ultimate recovery of approximately 50 percent of all processing costs.

The President's 1982 budget includes a request for a \$2.5 million supplemental for the PTO. The Administration has recommended increasing user fees to ultimately recover 100 percent of processing costs beginning in 1983, but does not provide for any exemptions to the proposed fee increases relative to current law. The effect of exemptions is to increase by approximately \$8 million the authorized level of appropriations relative to the Administration's request.

In addition, the bill would make a number of other changes that are not expected to have a cost impact.

5. Cost estimate:

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Authorization level:					
Specified	2.5	76.0	....	....	....
Estimated .....	....	6.8	86.4	86.8	....
Subtotal	2.5	82.8	86.4	86.8	....
Total estimated outlays	2.4	61.8	82.4	82.8	5.5

Including outlays from appropriations to date for PTO, total 1982 outlays are estimated to be \$121.5 million, and total 1983 outlays are estimated to be \$79.8.

The costs of this bill fall within budget subfunction 376.

6. Basis of estimate: The authorization levels for PTO for 1982 and 1983 are those specified in the bill. The estimate authorization levels for 1984 and 1985 assume a level of funding sufficient to maintain a program level of \$167 million and \$176 million, respectively, including offsetting collections. In addition, authorization for increases in pay and other benefits of approximately \$6.8 million, \$7.4 million, and \$7.8 million for fiscal years 1983 through 1985, respectively, were estimated based on CBO's current inflators. Outlays are based on historical spending patterns.

The estimated collections to PTO as a result of fees charged to cover the costs of processing trademarks and patents were provided by the agency, and assume the fee structure outlined in the bill. The estimated collections, under current law and under H.R. 6260, are shown in the table below.

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Estimated offsetting collections:					
Current law	47.8	52.7	57.7	....
Added by H.R. 6260	31.2	35.3	39.3	....
Total-H.R. 6260	79.0	88.0	97.0	....

7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Mary B. Maginniss.
10. Estimate approved by: C. G. Nuckols (James L. Blum, Assistant Director for Budget Analysis).

COMMITTEE VOTE

The Committee on the Judiciary ordered H.R. 6260 as amended reported by a voice vote, without objection being heard, with a quorum of Members being present.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, existing law in which no change is proposed is shown in roman):

TITLE 35, UNITED STATES CODE
PART 1—PATENT AND TRADEMARK OFFICE

CHAPTER 1—ESTABLISHMENT, OFFICERS, FUNCTIONS

§ 3. Officers and employees.

(a) There shall be in the Patent and Trademark Office a Commissioner of Patents and Trademarks, a Deputy Commissioner, two Assistant Commissioners, and [not more than fifteen] examiners-in-chief appointed under section 7 of this title. The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents and Trademarks, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law shall appoint all other officers and employees.

§ 6. Duties of Commissioner.

(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies [and] programs, or exchanges of items or services regarding domestic and international patent and trademark law or the administration of the Patent and Trademark Office, and shall have charge of property belonging to the Patent and Trademark Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office.

(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent and Trademark Office, not to exceed \$100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States.

(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce,

to the Department of State for the purpose of making payments thereof to the International Bureau.]

§ 13. Copies of patents for public libraries.

The Commissioner may supply printed copies of specifications and drawings of patents to public libraries in the United States which shall maintain such copies for the use of the public, at the rate for each year's issue established for this purpose in section 41 [(a)9] (d) of this title.

CHAPTER 2-PROCEEDINGS IN THE PATENT AND TRADEMARK OFFICE

§ 21. [Day for taking action falling on Saturday, Sunday, or holiday] Filing date and day for taking action.

(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.

(b) When the day, or the last day, for taking any action or paying any fee in the United States Patent and Trademark Office falls on Saturday, Sunday, or a Federal holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding secular or business day.

CHAPTER 4-PATENT FEES

§ 41. Patent fees

[(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

[(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

[(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

[(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be \$50.]

(a) The Commissioner shall charge the following fees:

1. On filing each application for an original patent, except in design or plant cases, \$300; in addition, on filing or on presentation at any other time, \$30 for each claim in independent form which is in excess of three, \$10 for each claim (whether independent or dependent) which is in excess of twenty, and \$100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

2. For issuing each original or reissue patent, except in design or plant cases, \$500.

3. In design and plant cases:

a. On filing each design application, \$125.

b. On filing each plant application, \$200.

c. On issuing each design patent, \$175.

d. On issuing each plant patent, \$250.

4. On filing each application for the reissue of a patent, \$300; in addition, on filing or on presentation at any other time, \$30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and \$10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

5. On filing each disclaimer, \$50.

6. On filing an appeal from the examiner to the Board of Appeals, \$115; in addition, on filing a brief in support of the appeal, \$115, and on requesting an oral hearing before the Board of Appeals, \$100.

7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, \$500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be \$50.

8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

a. On filing a first petition, \$50.

b. On filing a second petition, \$100.

c. On filing a third or subsequent petition, \$200.

(b) The Commissioner shall charge the following fees for maintaining a patent in force:

1. Three years and six months after grant, \$400.

2. Seven years and six months after grant, \$800.

3. Eleven years and six months after grant, \$1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.

(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.

(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be \$50.

(3) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

[(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three times.

(f) The fees established in subsection (a) and (b) of this section may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored.

(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.

§ 42. Patent and Trademark Office funding.

(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office. *Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.*

(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.

PART II-PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS

CHAPTER 11-APPLICATION FOR PATENT

§ 111. Application for patent

[Application for patent shall be made by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include: (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be signed by the applicant and accompanied by the fee required by law.]

SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.

§ 115. Oath of applicant

The applicant shall make oath that he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent; and shall state of what country he is a citizen. Such oath may be made before any person within the United States authorized by law to administer oaths, or when, made in a foreign country, before any diplomatic or consular office of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority [shall be] is proved by certificate of a diplomatic or consular officer of the United States, or *apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States* and such oath shall be valid if it complies with the laws of the state or country where made. When the application is made as provided in this title by a person other than the inventor, the oath may be so varied in form that it can be made by him.

§ 116. [Joint inventors] *Inventors.*

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each sign the application and make the required oath, except as otherwise provided in this title.

If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself and the omitted inventor. The Commissioner, on proof of the pertinent facts and after such notice to the omitted inventor as he prescribes, may grant a patent to the inventor making the application, subject to the same rights which the omitted inventor would have had if he had been joined. The omitted inventor may subsequently join in the application.

Whenever [a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error] *through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application*, and such error arose without any deceptive intention on his part, the Commissioner may permit the application to be amended accordingly, under such terms as he prescribes.

CHAPTER 16-DESIGNS

§ 173. Term of design patent.

[Patents for designs may be granted for the term of three years and six months, or for seven years, or for fourteen years, as the applicant, in his application, elects.]

Patents for designs shall be granted for the term of fourteen years.

PART III-PATENTS AND PROTECTION OF PATENT RIGHTS

CHAPTER 25-AMENDMENT AND CORRECTION OF PATENTS

§ 256. Misjoinder of inventor.

[Whenever a patent is issued on the application of persons as joint inventors and it appears that one of such persons was not in fact a joint inventor, and that he was included as a joint inventor by error and without any deceptive intention, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate deleting the name of the erroneously joined person from the patent.

[Whenever a patent is issued and it appears that a person was a joint inventor, but was omitted by error and without deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate adding his name to the patent as a joint inventor.

[The misjoinder or nonjoinder of joint inventors shall not invalidate a patent, if such error can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.]

§ 256. Correction of named inventor.

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error. The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.

CHAPTER 16-OWNERSHIP AND ASSIGNMENT

§ 261. Ownership; assignment.

Subject to the provisions of this title, patents shall have the attributes of personal property.

Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing. The applicant, patentee, or his assigns or legal representatives may in like manner grant and convey an exclusive right under his application for patent, or patents, to the whole or any specified part of the United States.

A certificate of acknowledgment under the hand and official seal of a person authorized to administer oaths within the United States, or, in a foreign country, of a diplomatic or consular officer of the United States or an officer authorized to administer oaths whose authority is proved by a certificate of a diplomatic or consular officer of the United States, or *apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States*, shall be prima facie evidence of the execution of an assignment, grant or conveyance of a patent or application for patent.

An assignment, grant or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.

CHAPTER 29-REMEDIES FOR INFRINGEMENT OF PATENT,
AND OTHER ACTIONS

Sec.

281. Remedy for infringement of patent.

294. Voluntary arbitration.

§ 294. Voluntary arbitration.

(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.

TRADEMARK ACT OF 1946

Sec. 8 (a). Duration of registration-Cancellation at end of 6 years unless affidavit of use filed.

Each certificate of registration shall remain in force for 20 years: *Provided*, That the registration of any mark under the provisions of this Act shall be canceled by the Commissioner at the end of 6 years following its date, unless within 1 year next preceding the expiration of such 6 years the registrant shall file in the Patent and Trademark Office an affidavit showing that said mark is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. Special notice of the requirement for such affidavit shall be attached to each certificate of registration.

Sec. 8(b). Cancellation of republished prior registrations unless affidavit of use filed.

Any registration published under the provisions of subsection (c) of section 12 of this Act shall be canceled by the Commissioner at the end of 6 years after the date of such publication unless within 1 year next preceding the expiration of such 6 years and registrant shall file in the Patent and Trademark Office an affidavit showing that said marks is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

Sec. 11. Acknowledgments and verifications.

Acknowledgments and verifications required hereunder may be made before any person within the United States authorized by law to administer oaths, or, when made in a foreign country, before any diplomatic or consular officer of the United States or before any official authorized to administer oaths in the foreign country concerned whose authority [shall] is proved by a certificate of a diplomatic or consular officer of the United States or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States, and shall be valid if they comply with the laws of the state or country where made.

Sec. 13. Opposition to registration of marks on the Principal Register.

Any person who believes that he would be damaged by the registration of a mark upon the principal register may upon payment of the required fee, file [a verified] an opposition in the

Patent and Trademark Office, stating the grounds therefor, within thirty days after the publication under subsection (a) of section 12 of this Act of the mark sought to be registered. Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause *when requested prior to the expiration of an extension*. The Commissioner shall notify the applicant 86 of each extension of the time for filing opposition. [An unverified opposition may be filed by a duly authorized attorney, but such opposition shall be null and void unless verified by the opposer within a reasonable time after such filing to be fixed by the Commissioner.] An opposition may be amended under such conditions as maybe prescribed by the Commissioner.

SEC. 14. A [verified] petition to cancel a registration of a mark, stating the grounds relied upon, may, upon payment of the prescribed fee, be filed by any person who believes that he is or will be damaged by the registration of a mark on the principal register established by this Act, or under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905—

(a) within five years from the date of the registration of the mark under this Act; or

(b) within five years from the date of publication under section 12(c) hereof of a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905; or

(c) at any time if the registered mark becomes the common descriptive name of an article or substance, or has been abandoned, or its registration was obtained fraudulently or contrary to the provisions of section 4 or of subsections (a), (b), or (c) of section 2 of this Act for a registration hereunder, or contrary to similar prohibitory provisions of said prior Acts for a registration thereunder, or if the registered mark is being used by, or with the permission of, the registrant so as to misrepresent the source of the goods or services in connection with which the mark is used; or

(d) at any time if the mark is registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, and has not been published under the provisions of subsection (c) of section 12 of this Act; or

(e) at any time in the case of a certification mark on the ground that the registrant (1) does not control, or is not able legitimately to exercise control over, the use of such mark, or (2) engages in the production or marketing of any goods or services to which the certification mark is applied, or (3) permits the use of the certification mark for purposes other than to certify, or (4) discriminately refuses to certify or to continue to certify the goods or services of any person who maintains the standards or conditions which such mark certifies:

Provided, That the Federal Trade Commission may apply to cancel on the grounds specified in subsections (c) and (e) of this section any mark registered on the principal register established by this Act, and the prescribed fee shall not be required.

Sec. 15. Incontestability under certain conditions of right to use mark.

Except on a ground for which application to cancel may be filed at any time under subsections (c) and (e) of section 14 of this Act, and except to the extent, if any, to which the use of a mark registered on the principal register infringes a valid right acquired under the law of any State or Territory by use of a mark or trade name continuing from a date prior to the date of [the publication] registration under this Act of such registered mark, the right of the registrant to use such registered mark in commerce for the goods or services on or in connection with which such registered mark has been in continuous use for 5 consecutive years subsequent to the date of such registration and is still in use in commerce, shall be incontestable: *Provided*, That—

(1) there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register; and

(2) there is no proceeding involving said rights pending in the Patent Office or in a court and not finally disposed of; and

(3) an affidavit is filed with the Commissioner within 1 year after the expiration of any such 5-year period setting forth those goods or services stated in the registration on or in connection with which such mark has been in continuous use for such 5 consecutive years and is still in use in commerce, and the other matters specified in subsections (1) and (2) hereof; and

(4) no incontestable right shall be acquired in a mark which is the common descriptive name of any article or substance, patented or otherwise.

Subject to the conditions above specified in this section, the incontestable right with reference to a mark registered under this Act shall apply to a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, upon the filing of the required affidavit with the Commissioner within 1 year after the expiration of any period of 5 consecutive years after the date of publication of a mark under the provisions of subsection (c) of section 12 of this Act.

The Commissioner shall notify any registrant who files the above-prescribed affidavit of the filing thereof.

Sec. 16. Interference.

[Whenever application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive, the Commissioner may declare that an interference exists.] Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with

the services of the applicant to cause confusion or mistake or to deceive. No interference shall be declared between an application and the registration of a mark the right to the use of which has become incontestable.

§ 31. Fees

(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. [Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.] However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.

(42) Request for Refunds

In order to expedite the processing of refunds for payment of fees by actual mistake or in excess of the designated fees, attorneys and applicants requesting refunds should direct their correspondence to the attention of the "Refund Section, Accounting Division, Office of Finance." This procedure should be followed whether the request is for a refund check or for a credit to the deposit account. The problems of misrouting the request for a refund in the Patent and Trademark Office would be alleviated and the payment of refunds accelerated.

BRADFORD R. HUTHER
Assistant Commissioner
for Finance & Planning.

[1024 O.G. 59 (11-23-82)]

(43) Deposit Account Authorizations

The rules of practice were amended effective Oct. 1, 1982, at 37 CFR 1.25(b) to state that: "A general authorization to charge all fees, or only certain fees, set forth in §§ 1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed." A general authorization would not apply to document supply fees under § 1.19, such as those required for certified copies; to post-issuance fees under § 1.20 such as those required for maintenance fees; or to miscellaneous fees and charges under § 1.21, such as assignment recording fees.

Many applications filed prior to Oct. 1, 1982, contain broad language authorizing any additional fees which might have been due to be charged to a deposit account. The Patent and Trademark Office does not interpret such broad authorizations, filed in an application on or after Oct. 1, 1982, will be interpreted as authorization to charge the issue fee; as well as any other fee set forth in §§ 1.16, 1.17 or 1.18. Fees under sections 1.19, 1.20 and 1.21 will not be charged as a result of a general authorization under section 1.25.

It is recommended that authorizations to charge fees to deposit accounts include reference to the particular fees or fee sections of the rules which applicant intends to authorize. For example, if filing and processing fees under §§ 1.16 and 1.17 only are intended to be included in the authorization, and not the issue fee under § 1.18, the authorization could read: "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required during the entire

pendency of the application to Deposit Account No. . . . Such an authorization would clearly exclude issue fees under 37 CFR 1.18 while including all the filing and processing fees listed in 37 CFR 1.16 and 1.17. Similarly, if it were intended to authorize the charging of fees relating only to a specific paper, the authorization could read "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required by this paper to Deposit Account No. . . . Such authorizations would cover situations in which a check to cover a filing and processing fee under 37 CFR 1.16 and 1.17 was omitted or was for an amount less than the amount required.

It is extremely important that the authorization be clear and unambiguous. If applicants file authorizations which are ambiguous and which deviate from the usual forms of authorizations, the Office may not interpret the authorizations in the manner applicants intend. In such cases applicants could be subject to further expenses, petitions, etc. in order to correct fees which were not charged as intended due to an ambiguous authorization.

July 1, 1983

GERALD J. MOSSINGHOFF
Commissioner of Patents
and Trademarks

[1032 OG 32]

(44) Deposit Account Authorization to Charge Issue Fee

This notice supplements the Official Gazette notice, dated July 1, 1983, published at 1032 O.G. 33 on July 26, 1983.

The rules of practice were amended effective Oct. 1, 1982, at 37 CFR 1.25(b) to state that: "A general authorization to charge all fees, or only certain fees, set forth in 37 CFR 1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed."

The Patent and Trademark Office will treat broad language to "charge any additional fees which may be required at any time during the prosecution of the application" as authorization to charge the issue fee on applications filed on or after Oct. 1, 1982.

Sept. 30, 1988

RENE D. TEGTMEYER
Assistant Commissioner
for Patents

[1095 OG 44]

[H.R. 6260]

Patent and Trade-
mark Office
Appropriation
Authorization

(45) Unpaid Fee Checks

Beginning Dec. 1, 1987, the Office will change the procedure for handling fee checks of attorneys and agents that are returned to the Office unpaid. Presently, when a check submitted as payment for an application, a processing, an issue or any other fee is returned to the Office unpaid, the Office of Finance sends a letter to the attorney or agent who represents the applicant, or to the applicant if unrepresented by an attorney or agent, enclosing the check and calling attention to the fact that the check was returned unpaid. Beginning Dec. 1, 1987, the Office of Finance will send a copy of its letter to the applicant if the letter is addressed to an attorney or agent. The prohibition of 37 CFR §§ 1.33 and 2.18 against double correspondence is waived in view of the submission of a check that is returned unpaid to the Office.

A registered patent attorney or agent who repeatedly submits checks that are returned unpaid through no fault of the bank may expect to have the matter referred to the Office of Enrollment and Discipline.

Oct. 5, 1987

DONALD W. PETERSON
Deputy Commissioner

[1083 TMOG 44]

(46) Posting of Filing Fee Codes

We are making a minor change in the recording of fees so that we can speed up the processing of mail.

First, a brief explanation of the problem. Incoming mail to the PTO has soared. The number of envelopes received in the Mail Room in the first four months of this fiscal year is almost 30% higher than for the same period last year. This sudden increase has taxed existing resources and a backlog has developed. It takes a new employee over one year to become proficient in recognizing the hundreds of different types of documents entering the Office, the appropriate fee codes to apply, and the appropriate destination.

One of the most time-consuming functions of the Mail Room initial review clerks is the determination of how many independent and dependent claims there are in a patent application so that the appropriate amounts can be coded for the basic application fee, the extra independent claim fee, the extra total claim fee, and the multiple dependent claim fee. This can involve a substantial amount of time in complicated cases, particularly when there are preliminary amendments. With over 30,000 individual documents patent applications and all other mail to be processed and routed each day, such time-consuming delays have a severe adverse impact in moving all the work.

So, effective immediately, we are making a change which will move the mail more quickly. Rather than go through the time-consuming computation in the Mail Room to determine the amount to charge to each specific claim fee code, the total amount received will be recorded in one filing code. The detailed calculations will continue to be done later in the process where, in conjunction with the formality review of the application, the analysis takes place as to whether or not the fee submitted was correct. The individual charges remain the same and the information on claims contained in the application will continue to be reported on the application filing receipt without change. Here's what would be seen on deposit account charges and checks:

- 101-Includes amount for basic filing fee, extra independent claims, extra total claims, and multiple dependent claims, previously recorded as 101, 102, 103, and 104, respectively.
201-Includes same items as above for small entity applications, previously recorded as 201, 202, 203, and 204.
108-Includes same items as above for reissue applications, previously recorded as 108, 109, and 110.
208-Includes same items as above for small entity reissue applications, previously recorded as 208, 209, and 210.

This revised procedure allows us to be more efficient.

Mar. 31, 1988

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1089 OG 57]

(47) Use of Metric System of Measurements in Patent Applications

The ability of the United States to compete in world trade and improve our trade balance is becoming more important and more difficult each day as our competitors get stronger. Presently, the United States is the only industrial country which has not adopted the metric system of weights and measures. The lack of U.S. goods being produced and packaged under metric standards results in our country being at a competitive disadvantage in world markets.

To improve our competitiveness, in the 1988 trade bill, Congress established metric as the Nation's "preferred system of units for United States trade and commerce," and set a 1992 date for Federal agencies to complete their transition to metric uses in "procurement, grants and other business related activities".

To implement the congressional designation of the metric system of measurement for U.S. trade and commerce, the President on July 25, 1991, issued an Executive Order (Metric Usage in Federal Government Programs) for the Federal Government to lead the way in metric usage. The Department of Commerce has been designated as the lead agency responsible for coordinating usage by the Federal Government.

The Patent and Trademark Office (PTO) does not currently require weights and measures in patent applications to be stated in the metric system. However, in Section 608.01 of the Manual of Patent Examining Procedure, all patent applicants are strongly encouraged to use either (1) only metric units or (2) inch-pound units together with their metric equivalents, when describing their inventions in the specifications of patent applications.

In the spirit of the Executive Order, the PTO reiterates and emphasizes strong encouragement for patent applicants to use the metric system of weights and measurements in patent applications. At some future time when there has been a sufficient conversion to metric usage by U.S. research and development industries, the PTO will consider making it a requirement that patent applicants use metric units in patent applications.

Jan. 15, 1992

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1135 OG 55]

**(48) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 2 and 10
[Docket No. 920671-3225]
RIN 0651-AA55****Changes in Signature and Filing Requirements for Correspondence filed in the Patent and Trademark Office**

Agency: Patent and Trademark Office, Commerce
Action: Final rule; correction.

Summary: The Patent and Trademark Office (Office) is correcting errors in the final rule which appeared in the Federal Register on Friday, October 22, 1993 (53 FR 54494). The regulations related to changes in signature and filing requirements for correspondence filed in the patent and Trademark Office contained in parts 1.2 and 10.
Effective Date: November 22, 1993.

For Further Information Contact: Abraham Hershkovitz by telephone at (703) 305-9282, or by facsimile transmission at (703) 305-8825, or by mail marked to his attention and

addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231

Supplementary Information:

Background

The final regulations that are the subject of these corrections, make changes to the rules of practice relating to signatures and filing requirements for correspondence filed in the Patent and Trademark Office.

Need for Correction

As published, the final regulations contain errors, which may be misleading and are in need of clarification. Several sections relating to receipt of facsimile transmissions in certain trademark documents were omitted.

Correction of Publication

Accordingly, the publication on October 22, 1993, of the final regulations (docket No. 920671-3225), which were the subject of FR Doc. 93-25864, is corrected as follows:

1. On page 54494, in the second column, at the end of the first partial paragraph, the following sentence should be added: "This final rulemaking also expands the acceptability of facsimile transmission to certain trademark documents which were not part of the proposed rulemaking."

2. On page 54495, in the second column, after the first full paragraph, the following paragraphs should be added: "This final rulemaking also expands the acceptability of facsimile transmissions to certain trademark documents, not included in the proposed rulemaking. These additional documents are:

(1) An affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8 (a) or (b) or section 12 (c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c);

(2) An application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059;

(3) In an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051 (d)(1).

The Certificate of Mailing or Transmission provisions of § 1.8 do not apply to correspondence listed in (1) through (3) above, nor to the filing of correspondence in an international application before the U.S. Receiving Office, the U.S. International Searching Authority, or the U.S. International Preliminary Examining Authority or to the filing, in an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), of a request under section 1(d)(2) of the Trademark Act, 15 U.S.C. 1051 (d)(2), for an extension of time to file a statement of use under 1(d)(1) of the Trademark Act, 15 U.S.C. 1051 (d)(1). See 1.8(a) (v), (viii), (ix), (xi) and (xii). If the transmission of any of these documents is completed after midnight (Eastern time) of the due date, the papers are untimely"

3. On page 54495, second column, in the first sentence of the second full paragraph, "2.51, 2.52 or 2.72" should be revised to read "or 2.21".

4. On page 54495, second column, at the end of the third full paragraph, the following sentence should be added: "This final rulemaking also expands the acceptability of specimens filed in conjunction with amendments to allege use under section 1(c); statements of use under section 1(d); affidavits of use or excusable nonuse under section 8(a) or (b) or 12(c); and application for renewal under section 9 of the Trademark Act, 15 U.S.C. 1051 (c) and (d); 1058 (a) and (b); 1062(c) and 1059."

5. On page 54495, third column, in item numbered (2) §§ 2.51, 2.52, or 2.72" should be revised to read "§ 2.21".

6. On the page 54495, third column, the item numbered "(3)"

at the bottom of the column, should be removed.

7. On page 54495, third column, the item numbered "(4)" at the bottom of the column, should be removed.

8. On page 54495, third column, the item numbered "(5)" should be redesignated as "(3)".

9. On page 54495, the item numbered "(6)" should be removed.

10. On page 54496, top of the first column, the item numbered "(7)" should be redesignated as "(4)".

11. On page 54496, top of the first column, the item numbered "(8)" should be redesignated as "(5)".

12. On page 54498, in lines 16 and 17, from the top of the third column, "2.51, 2.51, or 2.72" should be revised to read "or 2.21".

13. On page 54498, in the third column, at the end of the first paragraph, the following sentence should be added: "However, the suggestion has been adopted to the extent that the Office will accept, via facsimile transmission, an affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8 (a) or (b) or section 12(c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c); an application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059; and in application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1)."

14. On page 54502, in section 1.603, lines 4 and 5 should be revised to read "§ 1.8(a)(2)(i)(A) through (D) and (F); 1.8 (a)(2)(ii)(A) and (D); and 1.8(a)(2)(iii)(A)".

15. On page 54502, in section 1.8(a)(2) introductory text, the comma in the last line between "on" and "the" should be removed.

November 27, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce
and Commissioner
of Patents and Trademarks

The corrected Final Rulemaking incorporating the changes identified above is set forth below.

DEPARTMENT OF COMMERCE Patent and Trademark Office 37 CFR Parts 1, 2 and 10 [Docket No. 90671-3225] RIN 0651-AA55

Changes in Signature and Filing Requirements for Correspondence Filed in the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule.

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent and trademark cases to: specify the types of correspondence which will no longer require original signatures; provide for facsimile transmission of certain correspondence to the Office; discontinue use of the drop boxes at Crystal Plaza Building 3 and at the Department of Commerce Building in Washington, D.C.; and clarify other provisions with respect to practice before the Office.
Effective Date: November 22, 1993. These rules will be applicable to all correspondence filed with the Office on or after the effective date.

For Further Information Contact: Abraham Hershkovitz by telephone at (703) 305-9282, by facsimile transmission at (703) 305-8825, or by mail marked to his attention and addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information: In a Notice of Proposed Rulemaking published in the Federal Register at 57 FR 36034

(August 12, 1992) and in the Patent and Trademark Office Official Gazette at 1142 Off. Gaz. Pat. Office 8-13 (September 1, 1992), the Office proposed to amend the rules of practice in patent and trademark cases to simplify the manner in which correspondence may be transmitted to the Office and clarify other provisions with respect to practice before the Office. This rulemaking includes changes to expand those situations where a party can use the Certificate of Mailing or Transmission procedure, and minor technical modifications in Part 2 of Title 37 of the Code of Federal Regulations which were not part of the proposed rulemaking. This rule making also expands the acceptability of facsimile transmissions to certain trademark documents which were not part of the proposed rulemaking.

Written comments were submitted by twenty-two law firms, five individuals, nine corporations, two organizations and three agencies. An oral hearing was not conducted.

The following includes a discussion of the rules being changed and the reasons for those changes, and an analysis of the comments received in response to the notice of proposed rule-making.

Discussion of Specific Sections to be Changed or Added:

(1) Types of Correspondence No longer Requiring Original Signatures (Section 1.4)

Section 1.4 is amended to include a new paragraph (d) to specify that most correspondence filed in the Office, which requires a person's signature, may be an original, or a copy thereof. See §§ 1.4 (e) and (f) for types of correspondence where the original must be filed in the Office. The word original, as used in this rulemaking, is defined as correspondence which is personally signed in permanent ink by the person whose signature appears thereon. Where copies of correspondence are acceptable, photocopies or facsimile transmissions may be filed. For example, a photocopy or facsimile transmission of an original of an amendment, declaration, petition, issue fee transmittal form, authorization to charge a deposit account, etc., may be submitted in a patent or trademark application. Furthermore, where copies are permitted, second and further generation copies (i.e., copy of a copy) are acceptable. The original, if not submitted to the Office, should be retained as evidence of proper execution in the event that questions arise as to the authenticity of the signature reproduced on the photocopy or facsimile-transmitted correspondence. If a question of authenticity arises, the Office may require submission of the original.

Section 1.4(e) identifies types of correspondence in which an original must be submitted to the Office. Where an original is required, copies are not acceptable and will not be accorded a receipt date. Correspondence, as referred to in this section, includes application forms for registration to practice before the Office and data sheets for the register of patent attorneys and agents.

Section 1.4(f) provides that when a document that is required by statute to be certified must be filed (such as a certified copy of a foreign patent application, pursuant to 35 U.S.C. 119; a certified copy of an international application, pursuant to 35 U.S.C. 365; a certified copy of a foreign trademark registration, pursuant to 15 U.S.C. 1126(e); a certified copy of a final court order, pursuant to 15 U.S.C. 1119; or a certified copy of a U.S. trademark registration), a copy of the certification, including a photocopy or facsimile transmission, will not be acceptable. The requirement for an original certification does not apply to certifications such as required under §§ 1.8, 1.10, 1.60, 1.97(e) and 3.73(b), since these certifications are not required by statute.

(2) Identification of Applications (Section 1.5) Section 1.5(a) is amended to make reference to the certificate procedure under § 1.8 consistent with the new title for § 1.8.

(3) Receipt of Correspondence (Section 1.6)

A descriptive heading is added to each paragraph of § 1.6 to identify the content of that paragraph.

The phrase "correspondence" is used in § 1.6 since the terms "papers", "letters" and "fees" all fall within the generic definition of "correspondence".

Section 1.6(a) is amended to clarify that correspondence transmitted by facsimile on weekends or Federal holidays within the District of Columbia, will be accorded the next business day as the date of receipt.

Sections 1.6(b) and (c) are amended to clarify that weekdays refer to any day except a Saturday, Sunday, or Federal holiday within the District of Columbia.

Section 1.6(c) is amended to delete reference to the box locations in the lobby of Crystal Plaza Building 3, Arlington, Virginia, and at the Department of Commerce Building in Washington, D.C. The use of the drop boxes was discontinued on April 21, 1992, and the hours of operation for the attorney's window were extended to midnight, the same hours the drop boxes were available. The public can now deposit correspondence with the Office and obtain an acknowledgment of receipt after normal business hours. See "Changes in How Papers May Be Filed in the Patent and Trademark Office", 1137 Off. Gaz. Pat. Office 7 (April 7, 1992).

Use of the drop boxes at Crystal Plaza Building 3 and Department of Commerce Building locations had caused problems for both the public and the Office. Occasionally, it had been difficult to determine the dates of actual deposit of correspondence in the boxes. On occasion, Office employees and/or members of the public had been denied access to the drop box at the Department of Commerce by building security guards due to a special event taking place at the Department. Additionally, there were instances of correspondence being found outside of the drop boxes (e.g., on the floor of the main lobby of the Department of Commerce Building, on the guard's desk, on a nearby table, etc.). As a result, on occasion, the Office lacked confidence in assigning correct dates of receipt to correspondence deposited in the boxes at Crystal Plaza Building 3 and at the Department of Commerce Building. Given these difficulties, and the fact that the necessity for these boxes has been greatly diminished as a result of the facsimile transmission and certificate of mailing procedures, 1.6(c) is amended by deleting reference to the drop boxes at Crystal Plaza Building 3 and the Department of Commerce Building.

A new section 1.6(d) is added to specify the types of correspondence which may be transmitted by facsimile and former § 1.6(d) is revised to be consistent with § 1.8(b) and redesignated as § 1.6(e). The widespread use of facsimile transmission and the resulting time saved in correspondence between applicants and the Office prompted the Office to establish a trial program to accept facsimile transmission of certain correspondence. The policy on "Filing of Certain Papers and Authorizations to Charge Deposit Accounts by Facsimile Transmission" was published at 1096 Off. Gaz. Pat. Office 30 (November 15, 1988) and was supplemented in the notice "Filing of Certain Papers with the Board of Patent Appeals and Interferences by Facsimile Transmission" published at 1108 Off. Gaz. Pat. Office 15 (November 14, 1989). The policy on "Filing of Certain Trademark Papers and Authorizations to Charge Deposit Accounts by Facsimile Transmission" was published at 1123 Off. Gaz. TM. Office 18 (February 12, 1991). In light of the success of the trial program, a policy on acceptance of facsimile transmission is incorporated into § 1.6(d). The situations where transmission of correspondence by facsimile is permitted have been increased over those permissible under the trial program outlined above. The situations where transmissions by facsimile remain prohibited are identified in 1.6(d)(1)-(9). Prohibitions cover situations where originals are required as specified in §§ 1.4 (e) and (f), and situations where accepting a facsimile transmission would be unduly burdensome on the Office. As a courtesy, the Office will attempt to notify senders whenever correspondence is sent to the Office by facsimile transmission that falls within one of these prohibitions. Senders are cautioned against submitting correspondence by facsimile transmission which is not permitted under § 1.6(d) since such correspondence will not be accorded a receipt date.

This final rulemaking expands the acceptability of facsimile transmission to certain patent interference proceedings, not included in the proposed rulemaking, to reflect the practice set forth at 1108 Off. Gaz. Pat. Office 15 (November 14, 1989).

This final rulemaking also expands the acceptability of facsimile transmission to certain trademark documents, not include in the proposed rulemaking. These additional documents are:

(1) An affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8(a) or (b) or section 12(c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c);

(2) An application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059;

(3) In an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1).

The Certificate of Mailing or Transmission provisions of § 1.8 do not apply to correspondence listed in (1)-(3) above, nor to the filing of correspondence in an international application before the U.S. Receiving Office, the U.S. International Searching Authority, or the U.S. International Preliminary Examining Authority or to the filing, in an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), of a request under section 1(d)(2) of the Trademark Act, 15 U.S.C. 1051(d)(2), for an extension of time to file a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1). See §§ 1.8 (a)(2)(i)(E) and 1.8 (a)(2)(ii)(B), (C), (E) and (F). If the transmission of any of these documents is completed after midnight (Eastern time) of the due date, the papers are untimely.

Under § 1.6(d)(4) as adopted in this final rulemaking, drawings submitted under §§ 1.81, 1.83-1.85, 1.152, 1.165, 1.174, 1.437, or 2.21 may not be filed by facsimile in patent and trademark applications. The experience of the Office is that the quality of the drawings received by facsimile transmission is generally not sufficient to comply with the drawing requirements set forth in these rules. However, applicants may submit by facsimile transmission proposed drawing corrections for approval by the Office.

In trademark proceedings, the facsimile transmission of specimens in response to an Office action will be permitted. Facsimile-transmitted specimens must be legible in order to be accepted and examined as specimens. This final rulemaking also expands the acceptability of specimens filed in conjunction with amendments to allege use under section 1(c); statements of use under section 1(d); affidavits of use or excusable nonuse under section 8 (a) or (b) or 12(c); and applications for renewal under section 9 of the Trademark Act, 15 U.S.C. 1051 (c) and (d); 1058 (a) and (b); 1062(c) and 1059.

The date of receipt accorded to any correspondence permitted to be sent by facsimile transmission is the date the complete transmission is received by an Office facsimile unit, unless the transmission is completed on a Saturday, Sunday, or Federal holiday within the District of Columbia. Correspondence for which transmission was completed on a Saturday, Sunday, or Federal holiday within the District of Columbia, will be accorded a receipt date of the next succeeding day which is not a Saturday, Sunday, or Federal holiday within the District of Columbia. For example, a facsimile transmission to the Office from California starting on a Friday at 8:45 p.m. Pacific time and taking 20 minutes, would be completed at 9:05 p.m. Pacific time. The complete transmission would be received in the Office around 12:05 a.m. Eastern time on Saturday. The receipt date accorded to the correspondence is the date of the following business day, which in this case, would be Monday (assuming that Monday was not a Federal holiday within the District of Columbia).

The following lists itemize types of correspondence which may not be filed by facsimile transmission, and, if submitted by facsimile, will not be accorded a date of receipt:

Correspondence Relative to Patents and Patent Applications Where Filing by Facsimile Transmission is Not permitted

- (1) A document that is required by statute to be certified;
- (2) A national patent application specification and drawing or other correspondence for the purpose of obtaining an application filing date;
- (3) Drawings submitted under §§ 1.81, 1.83-1.85, 1.152, 1.165, 1.174, or 1.437;
- (4) Correspondence in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail";
- (5) Agreements between parties to an interference under 35 U.S.C. 135(c);
- (6) Correspondence to be filed in an interference proceeding which consists of a preliminary statement under § 1.621; a transcript of a deposition under § 1.676 or of interrogatories, cross-interrogatories, or recorded answers under 1.684(c); or an evidentiary record and exhibits under § 1.653;

(7) Correspondence to be filed in a patent application subject to a secrecy order under §§ 5.1-5.8 of this chapter and directly related to the secrecy order content of the application;

(8) An international application for patent;

(9) A copy of the international application and the basic national fee necessary to enter the national stage, as specified in § 1.494(b) or § 1.495(b);

(10) A request for reexamination under § 1.510.

Correspondence Relative to Trademark Registrations and Trademark Applications Where Filing by Facsimile Transmission is Not Permitted

(1) The filing of a trademark application;

(2) Drawings submitted under § 2.21;

(3) A petition to cancel a registration of a mark under section 14, subsection (1) or (2) of the Trademark Act, 15 U.S.C. 1064;

(4) Request for cancellation or amendment of a registration under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e); and certificates of registration surrendered for cancellation or amendment under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e);

(5) Correspondence to be filed with the Trademark Trial and Appeal Board, except the notice of ex parte appeal.

Correspondence Relative to Practitioner Registrations, Investigations, and Disciplinary Proceedings Where Filing by Facsimile Transmission is Not Permitted

Correspondence requiring a person's signature and relating to:

(1) Registration to practice before the Patent and Trademark Office in patent cases;

(2) Enrollment and disciplinary investigations; or

(3) Disciplinary proceedings.

(4) Certificate of Mailing or Transmission Procedure (Section 1.8)

The title of § 1.8 is changed from Certificate of Mailing to Certificate of Mailing or Transmission so as to include facsimile transmission.

Section 1.8(a) prescribes procedures for the use of a certificate of mailing or transmission to file papers or fees in the Office by first class mail or by facsimile transmission. The description of the Certificate of Mailing or Transmission practice is set forth in § 1.8(a)(1), and the list of exceptions to the certificate practice is found in § 1.8(a)(2). The phrase papers or fees in § 1.8(a) is changed to correspondence since both "papers and "fees" fall within the generic definition of correspondence. Paragraphs (a) and (b) of § 1.8 are amended to include correspondence transmitted by facsimile. In the event that correspondence is filed by facsimile transmission, it is recommended that the sending facsimile machine generate a report confirming transmission for each transmission session. This report should be retained by the applicant, along with the correspondence used as the original, as evidence of content and date of transmission. Paragraph (a)(2) of § 1.8 is amended to include separate headings for correspondence which relate to patents, trademarks and disciplinary proceedings. The sequence of some of the paragraphs found in 1.8(a)(2) has been changed in order to have those paragraphs listed under the appropriate heading. The ability to use the Certificate of Mailing or Transmission procedures has been expanded to the filing of an affidavit under section 15, subsection (3) of the Trademark Act, 15 U.S.C. 1065(3), the filing of a notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or 15 U.S.C. 1071(a)(1), in response to another party's appeal to the Court of Appeals for the Federal Circuit, the filing of a notice and reasons of appeal under 35 U.S.C. 142 or a notice of appeal under 15 U.S.C. 1071(a)(2), and the filing of a statement under 42 U.S.C. 2182 or 42 U.S.C. 2457(c). Paragraph (a)(2)(vi) of § 1.8 is redesignated as paragraph (a)(2)(x) and amended to refer to section 14(1) or 14(2) of the Trademark Act, 15 U.S.C. 1064, to conform with the numbering of the Trademark Law Revision Act of 1988. Other sections of paragraph (a)(2) of § 1.8 are amended to identify the types of correspondence which will not receive the benefit of a certificate of mailing or transmission.

Paragraph (b) of § 1.8 outlines procedures to be followed to document the timely filing of correspondence in accordance

with § 1.8(a) where such correspondence is not received by the Office. The phrase "correspondence or fees" in § 1.8(b) is changed to "correspondence" since "fees" fall within the generic definition of "correspondence". Before adoption of this final rule, 1.8(b) required that the party forwarding the correspondence or fee include a declaration, under §§ 1.68 or 2.20 of this chapter, attesting to the previous timely mailing or transmission. In order to be consistent with other sections in Parts 1 and 2 of this chapter, the practice under § 1.8(b) is amended to permit a practitioner, as defined in § 10.1(r), to submit a statement rather than an oath or declaration under §§ 1.68 or 2.20 of this chapter. New paragraph (c) of § 1.8 is added to explicitly provide for a requirement for additional evidence relating to the mailing or transmission of correspondence in accordance with paragraph (a) of this section. The Office may invoke this requirement when it is deemed appropriate to establish an actual date of mailing or transmission. See, e.g., In re Klein, 6 USPQ2d 1547 (Comm'r Pat. 1987), aff'd sub nom. Klein v. Peterson, 696 F. Supp. 695, 8 USPQ2d 1434 (D.D.C. 1988), aff'd 866 F.2d 412, 9 USPQ2d 1558 (Fed. Cir.), cert. denied, 490 U.S. 1091 (1989).

(5) Time for Appeal or Civil Action (Section 1.304)

In section 1.304, paragraphs (a) and (c) are amended to delete a statement that use of the certificate procedure under § 1.8 is prohibited so as to be consistent with changes to § 1.8. Also, a cross reference to 1.658 in paragraph (a) is clarified.

(6) Submission of Maintenance Fees (Section 1.366)

Section 1.366(b) is amended by deleting the words "of mailing" to conform with the new title for § 1.8.

(7) Filing Date of Application for Extension of Patent Term Section 1.741(a) Section 1.741(a) is amended to conform with the new title for the certificate procedure under § 1.8.

(8) Appeal to Court and Civil Action (Section 2.145)

Sections 2.145(c)(3) and 2.145(d)(1) are amended to conform with the revised list of types of correspondence excluded from the certificate of mailing or transmission procedure set out in § 1.8. Formerly, the notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or section 21(a)(1) of the Trademark Act, 15 U.S.C. 1071(a)(1), and the filing of notice and reasons of appeal under 35 U.S.C. 142 or a notice of appeal under section 21(a)(2) of the Trademark Act, 15 U.S.C. 1071(a)(2), were specifically excluded, under §§ 1.8(a)(2) (viii) and (ix), respectively, from the certificate of mailing procedure. Since these notices are no longer excluded under amended § 1.8(a)(2), sections 2.145(c)(3) and 2.145(d)(1) are amended to conform with § 1.8 by deleting the last sentence which provided that the certificate of mailing procedure was not available.

(9) Reconsideration of Affidavit or Declaration (Section 2.165) Section 2.165(a)(1) is amended to refer to the new title for the certificate procedure under § 1.8 of this chapter.

(10) Signature and Certificate of Practitioner (Section 10.18) Section 10.18 is modified to clarify signature requirements for correspondence signed by practitioners. The reference to § 1.4 of this chapter will make it apparent that copies, including photocopies or facsimile transmissions, of correspondence signed by practitioners will be accepted under appropriate circumstances.

(11) Misconduct (Section 10.23(c))

Section 10.23(c) is amended to refer to the new title for the certificate procedure under § 1.8 of this chapter.

Response to Comments on the Rules

The comments received in response to the notice of proposed rulemaking have been given careful consideration and a number of the suggested modifications have been adopted. The comments and responses are discussed below.

Comment: In order to clarify how the Office will treat a copy of a paper, one comment suggested changing the second sentence in proposed § 1.4(d) to indicate that, except as provided in §§ 1.4 (e) and (f), a copy would be treated by the Office as if the original had been filed.

Response: While the suggested language was not adopted, the rule was modified to clarify that, except as provided in §§ 1.4 (e) and (f), an original or a copy thereof may be filed. The rules as stated in this final rulemaking are clear that, where an original is not required, a paper filed will be treated in the same way regardless of whether it is an original or a copy.

Comment: Five comments objected to a perceived requirement in § 1.4(d) that the color of ink used for signing a paper be different from the printing on the paper.

Response: Proposed § 1.4(d) did not require that the color of ink used for signing a paper be different from the printing on the paper. The suggested use of different colors of ink is a preferred procedure for distinguishing between an original and a copy. However, in order to avoid further confusion, the suggestion that a different color of ink be used has been deleted. **Comment:** One comment recommended that the issue of signature authenticity end upon issuance of a patent in order to reduce the need to keep files in storage for long periods of time and to remove the burden on applicants of having to retrieve files from storage.

Response: Once a patent issues, the Office is not likely to inquire into any matters related to signature authenticity of correspondence filed in that patent application. Nevertheless, on rare occasions, a question of signature authenticity might arise after issuance of a patent. Applicants must therefore make their own decisions as to how long to retain originals.

Comment: Two comments questioned the justification for proposed § 1.4(e) requiring originals to be submitted in international patent applications.

Response: Section 1.4(e), as adopted, does not prohibit the filing of photocopies in an international patent application. With regard to facsimile transmissions, Patent Cooperation Treaty (PCT) Rule 92.4, as revised on July 1, 1992, permits the filing by facsimile of certain correspondence related to an international patent application. However, as indicated in §§ 1.6(d)(3), 1.8(a)(2)(iv) and 1.8(a)(2)(vi), the filing by facsimile is not permitted in the following situations relative to international applications for patent: (1) the filing of an international application for patent and (2) the filing of a copy of the international application and the basic national fee necessary to enter the national stage, as specified in §§ 1.494(b) or 1.495(b).

Applicants are cautioned, however, that the Certificate of Mailing or Transmission provisions of § 1.8 do not apply to correspondence filed in an international application before the U.S. Receiving Office, the U.S. International Searching Authority, or the U.S. International Preliminary Examining Authority, regardless of whether the correspondence was filed by mail or facsimile transmission. See § 1.8(a)(2)(5).

Comment: One comment suggested that, in applications filed under § 1.60, the certification that the application and papers being filed are true copies of those filed in the parent application should be excluded from the original signature requirement.

Response: Filing of copies of statements under § 1.60 as well as certifications under §§ 1.8, 1.10, 1.97(e) and 3.73(b) will be permitted. The certified documents referred to in § 1.4(f) are those which are required to be certified by statute (e.g., certified documents under 35 U.S.C. 119).

Comment: One comment questioned whether routine papers could be photocopied with a practitioner's signature thereon with appropriate information being filled in later by another person.

Response: Section 10.18(a) states that the signature of a practitioner, on correspondence filed, constitutes a certificate that the correspondence has been read by the practitioner. Accordingly, the photocopying of papers with a practitioner's signature thereon and subsequently having appropriate information filled in by another person, is not authorized or permitted under the rules.

Comment: One comment questioned whether a docket clerk could use a signature stamp of a registered attorney on a transmittal letter.

Response: Section 10.18(a) states that correspondence filed by a practitioner must be personally signed by that practitioner. Accordingly, use of a signature stamp of a registered attorney by a docket clerk would not be permitted.

Comment: Two comments suggested that the facsimile transmission practice be further liberalized to permit scanned-in signatures to be affixed to facsimile or electronically transmitted correspondence. The personal, handwritten signature would be affixed on a copy of the transmitted correspondence which would be kept by the applicant or his or her representative.

Response: The Office is actively considering acceptance of electronically filed applications and papers related thereto. See "Electronic Filing of Patent and Trademark Applications" published at 57 FR 56537 (November 30, 1992) and 1145 Off.

Gaz. Pat. Office 378 (December 22, 1992). Until an acceptable program is established, every paper, requiring a signature, filed in the Office, regardless of the manner in which it was transmitted, will have to be a paper which was signed by the person whose signature appears thereon, or be a copy thereof. Scanned signatures affixed to papers which were not personally signed will not be permitted at this time.

Comment: One comment indicated that proposed § 1.5(a) appeared to be contrary to PCT Article 27(1) in that it added the additional requirement not set forth in the PCT of requiring correspondence concerning an international application to identify the international application number.

Response: PCT Rule 92.1 requires any paper relating to an international application to identify the international application to which it relates. In order to ensure prompt and proper association of correspondence with the intended application file, it is essential to use the application number on all papers. The practice (which was not a new one added in this rulemaking) is a mere implementation of the requirement in PCT Rule 92.1 and is not contrary to PCT Article 27(1) as no additional requirement is being placed on applicants.

Comment: Two comments recommended an increase from two weeks to 30 days or one month in the period provided in § 1.5(a) for resubmission of correspondence.

Response: The two-week period provided in § 1.5(a) is to enable applicants to provide the necessary identifying data where such data was not provided during the original submission. This is intended to permit immediate resubmission and no additional time is deemed to be necessary. Extending this period to 30 days would unnecessarily delay prosecution of applications.

Comment: Section 1.5(a) suggests that all letters directed to the Office concerning applications for patents should also state "Patent Application". One comment suggested that § 1.5(a) be amended to replace the restrictive reference to a "Patent Application" to read "identifying the correspondence a relating to a patent application".

Response: In order to make it easier for Office employees handling incoming correspondence to direct mail, § 1.5(a) recommends that letters relating to a patent application should state "Patent Application". The suggestion in the comment was not adopted since uniformity in the reference to "Patent Application" is desirable. Furthermore, this suggested labeling is not a requirement as evidenced by the use of the word "should" rather than "must".

Comment: Section 1.5(a) states that "No correspondence relating to an application should be filed prior to when notification of the application number is received from the Patent and Trademark Office". One comment suggested that the phrase "notification of the application number" was not adequately defined as it was not clear if applicants had to wait for the official filing receipt before information disclosure statements or other papers could be filed.

Response: The phrase "notification of the application number" as used in 1.5(a) includes any manner in which an applicant becomes aware of the application number. The phrase is purposely broad and is not limited to the mailing of an official filing receipt. Rather, it includes a return post card which has an application number stamped thereon. The reasoning behind the statement in § 1.5(a) that no correspondence should be filed prior to notification of the application number is that correspondence received without an application number is difficult to match with the appropriate file. Further defining the phrase "notification of the application number" in 1.5(a) is not warranted.

Comment: One comment suggested defining a business day as Monday through Friday, except for Federal holidays in the District of Columbia.

Response: It is not clear which section the comment was directed to, but § 1.6 indicates that no correspondence will be received by the Office on Saturdays, Sundays or Federal holidays within the District of Columbia. Since the language has not created problems in the past, the suggestion will not be adopted.

Comment: Two comments suggested amending § 1.6(c) to indicate the hour of operation of the "walk-up window".

Response: Specifying in the regulations the hours of operation of the "walk-up window" is unnecessary. The hours of operation have been published in Official Gazette announcements and if those hours are changed in the future, the new schedule will

published. Should the hours of operation of the "walk-up window" be changed due to unforeseen circumstances (i.e., snow emergency, etc.), a sign will be posted at the "walk-up window" giving an alternate location to deposit correspondence for the Office.

Comment: Two comments requested that the Office reconsider and withdraw the proposal to eliminate the mail drop box at the guard's desk at the Department of Commerce Building in Washington, D. C.

Response: As indicated in the notice of proposed rulemaking, members of the public were occasionally denied access to the drop box at the Department of Commerce. Additionally, the Office lacked confidence in assigning correct dates of receipt to correspondence deposited in the box as a result of instances when correspondence was found outside of the drop box. Further, since there are many ways to file papers with the Office (i.e., certificate of mailing or transmission, Express Mail, facsimile transmission, longer hours at the "walk-up window"), there is no need to maintain an off-site drop box.

Comment: One comment suggested that the Office publish phone numbers for facsimile machines at various locations, (i.e., Publishing Division, various examining groups, etc.), in order to enable the public to direct their transmissions to a particular location, rather than a central location.

Response: The suggestion has been adopted. See "Patent and Trademark Office (PTO) Information Contacts", 1149 Off. Gaz. Pat. Office 67 (April 27, 1993). The Office will publish in the Official Gazette periodic updates of this list.

Comment: Three comments advocated a further expansion of the facsimile transmission practice to permit transmission of any paper which did not require an original signature. According to the comment, it was difficult to understand why the Office would not permit facsimile transmission of certain papers directly to the Office, but would accept those same papers if transmitted by facsimile to a third party who then hand-delivered the papers to the Office.

Response: The only papers, not requiring an original signature or certification, which the Office will not accept by facsimile transmission are those which, for various reasons, would cause an undue burden on the Office. For example, papers submitted for the purpose of obtaining an application filing date are often rather voluminous difficult to collate and would create inefficiencies in tying up the Office facsimile machines for long periods of time. In addition, there is a time and content criticality to papers filed for the purpose of obtaining a filing date which is not shared by other types of papers. Another example would be drawings submitted under §§ 1.81, 1.83-1.85, 1.152, 1.165, 1.174, 1.437, or 2.21. Experience has shown that the quality of drawings received by facsimile transmission would typically result in an objection by the Official Draftsman. Disputes might arise at that point as to whether the cause of the poor quality was applicant's transmitting unit or the receiving unit of the Office. Hence, the Office will continue to prohibit facsimile transmission of certain papers as specified in § 1.6(d). However, the suggestion has been adopted to the extent that the office will accept, via facsimile transmission, an affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8(a) or (b) or section 12 (c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c); an application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059; and in an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051 (d)(1).

Comment: Section 1.6(d) states that the receipt date accorded to a paper transmitted by facsimile will be the date on which the complete transmission is received in the Office. Three comments objected to this language by arguing that this practice discriminated against West Coast practitioners and gave an advantage to East Coast practitioners because the West Coast practitioners had only until 9 P.M. to complete a transmission in order to receive the benefit of that day's filing.

Response: The facsimile transmission practice is similar to regular mail practice. Thus, a West Coast practitioner depositing correspondence with the local postal service without a certificate of mailing will receive as a receipt date the date on which the Office receives the correspondence, rather than the date on

which the correspondence was deposited. Similarly, a paper transmitted by facsimile will be accorded, as the date of receipt, the date on which the complete transmission was received in the Office, unless the date of receipt is a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case, the date of receipt will be the next business day.

The certificate practice provided in § 1.8, on the other hand, permits the sender to indicate on the correspondence the date of mailing or transmission from the sender's perspective, which date would then be effective to meet a deadline set for response. Use of the certificate of mail or transmission is applicable to correspondence submitted by mail and correspondence transmitted by facsimile. If transmitted by facsimile, the person signing the certificate certifies the expectation that the transmission would be initiated before midnight, local time.

By way of example, a West Coast practitioner preparing a response on the last day of the period for response would have to use the § 1.8 certificate of mailing procedure or the § 1.10 Express Mail procedure, for the response to be considered timely, if the correspondence was sent by way of the U. S. Postal Service. If the practitioner chose to send the correspondence by facsimile on the last day for response and the transmission was started before 9:00 p.m. Pacific time, but was completed after 9:00 p.m. Pacific time, the Office would accord that correspondence a receipt date as of the next business day, which would be after the period for response expired because the Office would have received the correspondence after midnight Eastern time of the last day for response. However, if the practitioner affixed a certificate of transmission to the correspondence sent by facsimile transmission, indicating that the correspondence was being transmitted on the last day in the period for response, then the correspondence would be considered timely filed.

As another example, a transmission started before midnight, Pacific time, on the last day for response and having a certificate of transmission affixed thereto, would be considered timely filed even though the transmission was completed after midnight, Pacific time and was received in the Office the day after the deadline for response.

Comment: One comment suggested replacing "drawings" in § 1.6(d)(4) with "formal drawings" for clarity.

Response: The suggestion has not been adopted because the phrase "formal drawings" does not find support or antecedent basis in sections referred to in § 1.6(d)(4).

Comment: One comment objected to the perceived requirement for a certificate of transmission in order for a facsimile-transmitted document to be accorded a date of receipt.

Response: The receipt date accorded to correspondence eligible for facsimile transmission, whether containing a certificate of transmission or not, will be the date of receipt in the Office of the complete transmission (unless that date is a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case the date accorded will be the next business day). The certificate of transmission, if used, is for purposes of establishing timely filing if the correspondence is transmitted within the period for response but is (1) received in the Office after expiration of the period for response, or (2) lost or (3) not received by the Office.

Comment: One comment requested clarification as to what constituted a "complete transmission" as used in § 1.6(d).

Response: The context in which the phrase "complete transmission" was used in 1.6(d) was to indicate that the transmission was finished. For example, if page 1 of a ten-page facsimile transmission is received in the Office at 11:55 p.m. on a Tuesday and page 10 of that transmission is received at 12:05 a.m. Wednesday, the receipt date accorded to that correspondence will be the date of that Wednesday. (This example assumes that Wednesday is not a Federal holiday within the District of Columbia).

Comment: One comment questioned whether a confirmation in the sender's facsimile machine that the entire facsimile was received constituted sufficient proof that a transmission was complete.

Response: A confirmation by the sender's facsimile machine is evidence that a transmission was made. As such, the confirmation will be considered together with any other evidence presented when questions of filing by facsimile transmission arise. It is therefore suggested that a certificate of transmission be used to enable the sender to rely on the procedures set forth in § 1.8(b).

Comment: One comment requested clarification as to what constituted an incomplete, faulty or illegible facsimile. Also, if an incomplete transmission was sent near the end of the period for response, will the sender be able to rely on the date the facsimile was initially transmitted, or would the sender have to rely on § 1.137 to revive the application if it became abandoned?

Response: If an incomplete, faulty or illegible facsimile transmission is received, that correspondence will be treated by the Office in the same manner that a comparably incomplete, faulty or illegible piece of correspondence would be treated if the correspondence were hand-delivered or mailed to the Office. Whether the application would be held abandoned upon receipt of an incomplete facsimile transmission or whether an opportunity would be provided to complete the transmission will be decided on a case-by-case basis using the same standards that are currently used - for example, for incomplete responses to Office actions, see § 1.135(c).

Comment: One comment indicated that the proposed practice of not accepting papers related to international applications if transmitted by facsimile and the indication that papers transmitted by facsimile, when prohibited, may be disposed of is contrary to PCT practice wherein PCT expressly provides for facsimile transmission of such papers and when not acceptable, an opportunity to correct is provided.

Response: PCT does not mandate acceptance of facsimile transmissions; it merely authorizes their acceptance. See PCT Rule 92.4(h). Additionally, as indicated above, the suggestion that the Office permit facsimile transmission of correspondence relative to an already filed international application has been adopted to a large extent.

There is no provision in PCT to provide an opportunity for correction when correspondence is filed by facsimile in spite of a refusal by a national Office to accept that type of correspondence by facsimile. As with national applications, the Office will attempt to notify senders whenever a facsimile transmission received is of a type which the Office has not agreed to accept by facsimile. Senders are cautioned against submitting such correspondence by facsimile transmission since the correspondence will not be accorded a filing date or date of receipt in the Office.

Comment: One comment suggested changing the phrase "Certificate of Transfer" in § 1.8 to "Certificate of Transmittal" or "Certificate of Sending" because "transfer" typically implies transfer of ownership interest in patents or trademarks.

Response: While each phrase has its own advantages and drawbacks, the suggestion will not be adopted. Nevertheless, in order to avoid confusion, this rulemaking leaves the old "Certificate of Mailing" intact, while adding "or Transmission" to include correspondence filed by facsimile transmission.

Comment: In the notice of proposed rulemaking, it was recommended that the facsimile machine transmission report be retained by the sender along with the correspondence used as the original, as evidence of content and date of transfer. One comment indicated that the correspondence used as the original can only be retained using the older stand-alone type of facsimile machine, since there is no such physical document with the newer in-computer facsimile cards.

Response: Section 1.4(d)(2) provides for submission of copies, e.g., by facsimile, of originals as defined in § 1.4(d)(1). Section 1.4(d)(2) does not provide for transmission of unsigned correspondence from a computer. While 1.4(d)(2) does not require the sender to retain the original, there may be occasions when the sender will have to document the date and content of a document previously filed by facsimile transmission. The recommendation made in the notice of proposed rulemaking will apply to any situation where a paper document served as the original from which a facsimile was transmitted. If a facsimile transmission by using a computer is desired, a paper copy of the document to be transmitted may be printed out, signed and retained by the sender as evidence of content of the document transmitted. Once signed, if filing of a copy is permitted, the document could be scanned into the computer and facsimile transmitted to the Office.

Comment: In proposed section 1.8(a)(1) published in the Federal Register, paragraphs (i) and (ii) were joined with the alternative "or" to indicate that correspondence could be filed by being deposited with the U. S. Postal Service or transmitted by facsimile. This same section was published in the Official

Gazette, by having paragraphs (i) and (ii) joined with the connective "and". Numerous comments, received apparently from individuals who saw the proposed rules in the Official Gazette, objected to the requirement that, in order to receive benefits under § 1.8, correspondence transmitted by facsimile also had to be mailed.

Response: Section 1.8(a)(1) as published in the Federal Register was correct, while the version published in the Official Gazette contained a typographical error. Hence, §§ 1.8(a)(1)(i) (A) and (B), as adopted in this rulemaking, make clear that the certificate of mailing or transmission practice will be applicable to correspondence mailed or sent by facsimile. The Office discourages the practice of having the same papers submitted by both methods as this practice would result in unnecessary duplication of papers and processing requirements.

Comment: One comment indicated that since all facsimile transmissions include the date and time of the actual facsimile transmission, the Office should not require a certificate of transmission, in order to get the benefit of an earlier filing date under § 1.8(a), when correspondence is transmitted by facsimile.

Response: The Office is concerned that some older machines may not print the date and time of the actual transmission. Furthermore, even on the new machines the date and time printed by the sending unit may not always be correct, particularly after a temporary electrical disconnection, change in time, etc. Hence, for purposes of being considered timely filed, if the sender wishes to obtain the benefits of a date earlier than the date the complete transmission is received in the Office, the correspondence must include a certification in accordance with § 1.8(a).

A suggested format for a Certificate of Mailing and a Certificate of Transmission under § 1.8, to be included with the correspondence, is reproduced below:

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

on

Date	Signature
	Typed or printed name of person signing certificate

Certificate of Transmission

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office:

on

Date	Signature
	Typed or printed name of person signing certificate

OTHER CONSIDERATIONS

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal

impact of these changes is to incorporate existing Office policy into the regulations, permit the filing of certain correspondence without an original signature and permit the filing of certain correspondence by facsimile transmission.

The Office has determined that these rule changes are not major rules under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individuals, industries, Federal, state or local government agencies, or geographic regions because most of the changes reduce procedural burdens. There will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that these changes have no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes contain collection-of-information requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., which have previously been approved by the Office of Management and Budget under Control Nos. 0651-0009 and 0651-0011. The public reporting burden for these collections of information for Certificates of Mailing or Transmission is estimated to average 0.1 hours each, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collections of information. Send comments regarding these burden estimates, or any other aspect of these collections of information, including suggestions for reducing the burden, to Abraham HersHKovitz, Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503 (ATTN: Paperwork Reduction Act Projects 0651-0009 and 0651-0011).

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Freedom of information, Inventions and patents, Reporting and record keeping requirements.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

37 CFR Part 10

Administrative practice and procedure, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set out in the preamble, and pursuant to the authority contained in 15 U.S.C. 1123 and 35 U.S.C. 6, parts 1, 2 and 10 of title 37 of the Code of Federal Regulations are amended as set forth below:

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:
Authority: 35 U.S.C. 6, unless otherwise noted.

2. In Section 1.4, the title is revised and paragraphs (d) through (f) are added to read as follows:

§ 1.4 Nature of correspondence and signature requirements.

(d) Each piece of correspondence, except as provided in paragraphs (e) and (f) of this section, filed in a patent or trademark application, reexamination proceeding, patent or trademark interference proceeding, patent file or trademark registration file, trademark opposition proceeding, trademark cancellation proceeding, or trademark concurrent use proceeding, which requires a person's signature, must either:

(1) be an original, that is, have an original signature personally signed in permanent ink by that person; or

(2) be a copy, such as a photocopy or facsimile transmission (§ 1.6(d)), of an original. In the event that a copy of the original is filed, the original should be retained as evidence of authenticity. If a question of authenticity arises, the Patent and Trademark Office may require submission of the original.

(e) Correspondence requiring person's signature and relating to registration to practice before the Patent and Trademark Office in patent cases, enrollment and disciplinary investigations, or disciplinary proceedings must be submitted with an original signature personally signed in permanent ink by that person.

(f) When a document that is required by statute to be certified must be filed, a copy, including a photocopy or facsimile transmission, of the certification is not acceptable.

3. Section 1.5(a) is revised to read as follows:

§ 1.5 Identification of application, patent or registration.

(a) No correspondence relating to an application should be filed prior to when notification of the application number is received from the Patent and Trademark Office. When a letter directed to the Patent and Trademark Office concerns a previously filed application for a patent, it must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number, e.g., 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. Any correspondence not containing such identification will be returned to the sender where a return address is available. The returned correspondence will be accompanied with a cover letter which will indicate to the sender that if the returned correspondence is resubmitted to the Patent and Trademark Office within two weeks of the mail date on the cover letter, the original date of (a) No correspondence relating to an application should be filed prior to when notification of the application number is received from the Patent and Trademark Office. When a letter directed to the Patent and Trademark Office concerns a previously filed application for a patent, it must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number, e.g., 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. Any correspondence not containing such identification will be returned to the sender where a return address is available. The returned correspondence will be accompanied with a cover letter which will indicate to the sender that if the returned correspondence is resubmitted to the Patent and Trademark Office within two weeks of the mail date on the cover letter, the original date of receipt of the correspondence will be considered by the Patent and Trademark Office as the date of receipt of the correspondence. Applicants may use either the Certificate of Mailing or Transmission procedure under § 1.8 or the Express Mail procedure under § 1.10 for resubmissions of returned correspondence if they desire to have the benefit of the date of deposit in the United States Postal Service. If the returned correspondence is not resubmitted within the two-week period, the date of receipt of resubmission will be considered to be the date of receipt of the correspondence. The two-week period to resubmit the returned correspondence will not be extended. If for some reason returned correspondence is resubmitted with proper identification later than two weeks after the return mailing by the Patent and Trademark Office, the resubmitted correspondence will be accepted but given its date of receipt. In addition to the application number, all letters directed to the Patent and Trademark Office concerning applications for patent should also state "PATENT APPLICATION," the name of the applicant, the title of the invention, the date of filing the same, and if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

4. In section 1.6, is revised, to read as follows:

§ 1.6 Receipt of correspondence.

(a) Date of receipt and Express Mail date of deposit. Correspondence received in the Patent and Trademark Office is stamped with the date of receipt except as follows:

(1) No correspondence is received in the Patent and Trademark Office on Saturdays, Sundays or Federal holidays within the District of Columbia;

(2) Correspondence filed in accordance with § 1.10 will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or Federal holiday within the District of Columbia in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or Federal holiday within the District of Columbia;

(3) Correspondence transmitted by facsimile to the Patent and Trademark Office will be stamped with the date on which the complete transmission is received in the Patent and Trademark Office unless that date is a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or Federal holiday within the District of Columbia.

(b) Patent and Trademark Office Post Office pouch.

Mail placed in the Patent and Trademark Office pouch up to midnight on any day, except Saturdays, Sundays and Federal holidays within the District of Columbia, by the post office at Washington, D.C., serving the Patent and Trademark Office, is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch by the U.S. Postal Service.

(c) Correspondence delivered by hand.

In addition to being mailed, correspondence may be delivered by hand during hours the Office is open to receive correspondence.

(d) Facsimile transmission.

Except in the cases enumerated below, correspondence, including authorizations to charge a deposit account, may be transmitted by facsimile. The receipt date accorded to the correspondence will be the date on which the complete transmission is received in the Patent and Trademark Office, unless that date is a Saturday, Sunday, or Federal holiday within the District of Columbia. See § 1.6(a)(3). To facilitate proper processing, each transmission session should be limited to correspondence to be filed in a single application or other proceeding before the Patent and Trademark Office. The application number of a patent or trademark application, the control number of a reexamination proceeding, the interference number of an interference proceeding, the patent number of a patent, or the registration number of a trademark should be entered as a part of the sender's identification on a facsimile cover sheet. Facsimile transmissions are not permitted and if submitted, will not be accorded a date of receipt, in the following situations:

(1) Correspondence as specified in § 1.4(e), requiring an original signature;

(2) Certified documents as specified in § 1.4(f);

(3) Correspondence which cannot receive the benefit of the certificate of mailing or transmission as specified in §§ 1.8(a)(2)(i)(A) through (D) and (F); 1.8 (a)(2)(ii)(A) and (D); and 1.8 (a)(2)(iii)(A);

(4) Drawings submitted under §§ 1.81, 1.83 through 1.85, 1.152, 1.165, 1.174, 1.437, 2.51, 2.52, or 2.72;

(5) A request for reexamination under § 1.510;

(6) Correspondence to be filed in a patent application subject to a secrecy order under §§ 5.1 through 5.8 of this chapter and directly related to the secrecy order content of the application;

(7) Requests for cancellation or amendment of a registration under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e); and certificates of registration surrendered for cancellation or amendment under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e);

(8) Correspondence to be filed with the Trademark Trial and Appeal Board, except the notice of ex parte appeal;

(9) Correspondence to be filed in an interference proceeding which consists of a preliminary statement under § 1.621; a transcript of a deposition under § 1.676 or of interroga-

tories, cross-interrogatories, or recorded answers under § 1.684(c); or an evidentiary record and exhibits under § 1.653.

(e) Interruptions in U.S. Postal Service.
If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any correspondence which is:

(1) Promptly filed after the ending of the designated interruption or emergency; and

(2) Accompanied by a statement indicating that such correspondence would have been filed on that particular date if it were not for the designated interruption or emergency in the United States Postal Service. Such statement must be a verified statement if made by a person other than a practitioner as defined in § 10.1(r) of this chapter.

5. Section 1.8 is revised to read as follows:

§ 1.8 Certificate of mailing or transmission.

(a) Except in the cases enumerated in paragraph (a)(2) of this section, correspondence required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if the procedure described in this section is followed. The actual date of receipt will be used for all other purposes.

(1) Correspondence will be considered as being timely filed if:

(i) the correspondence is mailed or transmitted prior to expiration of the set period of time by being:

(A) deposited with the U.S. Postal Service with sufficient postage as first class mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231; or

(B) transmitted by facsimile to the Patent and Trademark Office in accordance with § 1.6(d); and

(ii) the correspondence includes a certificate for each piece of correspondence stating the date of deposit or transmission. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed or transmitted on or before the date indicated.

(2) The procedure described in paragraph (a)(1) of this section does not apply to, and no benefit will be given to a Certificate of Mailing or Transmission on the following:

(i) Relative to Patents and Patent Applications

A. The filing of a national patent application specification and drawing or other correspondence for the purpose of obtaining an application filing date;

B. The filing of correspondence in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail";

C. The filing of agreements between parties to an interference under 35 U.S.C. 135(c);

D. The filing of an international application for patent;

E. The filing of correspondence in an international application before the U.S. Receiving Office, the U.S. International Searching Authority, or the U.S. International Preliminary Examining Authority;

F. The filing of a copy of the international application and the basic national fee necessary to enter the national stage, as specified in § 1.494(b) or § 1.495(b).

(ii) Relative to Trademark Registrations and Trademark Applications

A. The filing of a trademark application;

B. The filing of an affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8 (a) or (b) or section 12(c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c);

C. The filing of an application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059;

D. The filing of a petition to cancel a registration of a mark under section 14, subsection (1) or (2) of the Trademark Act, 15 U.S.C. 1064;

E. In an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1);

F. In an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of a request under section 1(d)(2) of the Trademark Act, 15 U.S.C. 1051(d)(2), for an extension of time to file a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1).

(iii) Relative to Disciplinary Proceedings

A. Correspondence filed in connection with a disciplinary proceeding under Part 10 of this chapter.

B. Reserved.

(b) In the event that correspondence is considered timely filed by being mailed or transmitted in accordance with paragraph (a) of this section, but not received in the Patent and Trademark Office, and the application is held to be abandoned or the proceeding dismissed, terminated, or decided with prejudice, the correspondence will be considered timely if the party who forwarded such correspondence:

(1) informs the Office of the previous mailing or transmission of the correspondence promptly after becoming aware that the Office has no evidence of receipt of the correspondence,

(2) supplies an additional copy of the previously mailed or transmitted correspondence and certificate, and

(3) includes a statement which attests on a personal knowledge basis or to the satisfaction of the Commissioner to the previous timely mailing or transmission. Such statement must be a verified statement if made by a person other than a practitioner as defined in § 10.1(r) of this chapter. If the correspondence was sent by facsimile transmission, a copy of the sending unit's report confirming transmission may be used to support this statement.

(c) The Office may require additional evidence to determine if the correspondence was timely filed.

6. Section 1.304 paragraphs (a) and (c) are revised to read as follows:

§ 1.304 Time for appeal or civil action.

(a)(1) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (§ 1.302) or for commencing a civil action (§ 1.303) is two months from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time period provided under § 1.197(b) or § 1.658(b), the time for filing an appeal or commencing a civil action shall expire two months after action on the request. In interferences, the time for filing a cross-appeal or cross-action expires:

(i) 14 days after service of the notice of appeal or the summons and complaint, or

(ii) Two months after the date of decision of the Board of Patent Appeals and Interferences, whichever is later.

(a)(2) The time periods set forth in this section are not subject to the provisions of §§ 1.136, 1.550(c) or § 1.645 (a) or §§ (b). (a)(3) The Commissioner may extend the time for filing an appeal or commencing a civil action:

(i) For good cause shown if requested in writing before the expiration of the period for filing an appeal or commencing a civil action, or

(ii) Upon written request after the expiration of the period for filing an appeal or commencing a civil action upon a showing that the failure to act was the result of excusable neglect.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Appeals for the Federal Circuit and an adverse party has filed notice under 35 U.S.C. 141 electing to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141. The time for filing a cross-action expires 14 days after service of the summons and complaint.

7. Section 1.366(b) is revised to read as follows:

§ 1.366 Submission of maintenance fees.

(b) A maintenance fee and any necessary surcharge submitted for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid and may be paid in the manner set forth in § 1.23 or by an authorization to charge a deposit account established pursuant to § 1.25. Payment of a maintenance fee and any necessary surcharge or the authorization to charge a deposit account must be submitted within the periods set forth in § 1.362 (d), (e) or (f). Any payment or authorization of maintenance fees and surcharges filed at any other time will not be accepted and will not serve as a payment of the maintenance fee except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner in an expired patent pursuant to a petition filed under § 1.378. Any authorization to charge a deposit account must authorize the immediate charging of the maintenance fee and any necessary surcharge to the deposit account. Payment of less than the required amount, payment in a manner other than that set forth in § 1.23, or the filing of an authorization to charge a deposit account having insufficient funds will not constitute payment of a maintenance fee or surcharge on a patent. The certificate procedures of either §§ 1.8 or 1.10 may be utilized in paying maintenance fees and any necessary surcharges.

8. Section 1.741, paragraph (a) is revised to read as follows:

§ 1.741 Filing date of application.

(a) The filing date of an application for extension of patent term is the date on which a complete application is received in the Patent and Trademark Office or filed pursuant to the "Certificate of Mailing or Transmission" provisions of 37 CFR 1.8 or "Express Mail" provisions of 37 CFR 1.10.

PART 2-RULES OF PRACTICE IN TRADEMARK CASES

9. The authority citation for 37 CFR Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

10. Section 2.145 is amended by revising Paragraphs C(3) and D(1) to read as follows:

§ 2.145 Appeal to Court and Civil Action.

(c) ***

(3) Any adverse party to an appeal taken to the U.S. Court of Appeals for the Federal Circuit by a defeated party in an inter partes proceeding may file a notice with the Commissioner within twenty days after the filing of the defeated party's notice of appeal to the court (paragraph (b) of this section), electing to have all further proceedings conducted as provided in section 21(b) of the Act. The notice of election must be served as provided in § 2.119.

(d) Time for appeal or civil action.

(1) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is two months from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration or modification of the decision is filed within the time specified in §§ 2.127(b), 2.129(c) or § 2.144, or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire two months after action on the request. In inter partes cases, the time for filing a cross-action or a notice of a cross-appeal expires

(i) 14 days after service of the notice of appeal or the summons and complaint; or

(ii) two months from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner,

whichever is later.

11. Section 2.165(a)(1) is revised to read as follows:

§ 2.165 Reconsideration of Affidavit or Declaration

(a)(1) If the affidavit or declaration filed pursuant to § 2.162 is insufficient or defective, the affidavit or declaration will be refused and the registrant will be notified of the reason. Reconsideration of the refusal may be requested within six months from the date of the mailing of the action. The request for reconsideration must state the grounds for the request. A supplemental or substitute affidavit or declaration required by section 8 of the Act of 1946 cannot be considered unless it is filed before the expiration of six years from the date of the registration or from the date of publication under section 12(c) of the Act. The Certificate of Mailing or Transmission" procedure provided by § 1.8 does not apply to affidavits or declarations or to supplemental or substitute affidavits or declarations filed under section 8(a) or (b) of the Act, but the certificate by "Express Mail" procedure provided by § 1.10 does apply thereto.

PART 10-REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

12. The authority citation for 37 CFR Part 10 continues to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32 41.

13. Section 10.18, is revised to read as follows:

§ 10.18 Signature and certificate of practitioner.

(a) Except where a copy, including a photocopy or facsimile transmission, of a personally signed piece of correspondence is permitted to be filed pursuant to § 1.4 of this chapter, every piece of correspondence filed by a practitioner on behalf of himself or herself or representing an applicant or a party to a proceeding in the Patent and Trademark Office must bear an original signature personally signed in permanent ink by such practitioner except for correspondence which is required to be signed by the applicant or party. The signature of a practitioner on correspondence filed by the practitioner, regardless of whether the correspondence has an original signature or is a copy, including a photocopy or facsimile transmission, of correspondence bearing an original signature, constitutes a certificate that:

(1) The correspondence has been read by the practitioner;

(2) The filing of the correspondence is authorized;

(3) To the best of practitioner's knowledge, information, and belief, there is good ground to support the correspondence, including any allegations of improper conduct contained or alleged therein; and

(4) The correspondence is not interposed for delay.

(b) Any practitioner knowingly violating the provisions of this section is subject to disciplinary action. See § 10.23(c)(15).

14. Section 10.23, paragraph (c)(9), is revised to read as follows:

10.23 Misconduct

(c) ***

(9) Knowingly misusing a "Certificate of Mailing or Transmission" under 1.8 of this chapter or a certificate of "Express Mail" under § 1.10 of this chapter.

Oct. 15, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce
and Commissioner of Patents
and Trademarks

[1157 OG 86]

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(49) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1
[Docket No. 920666-2275]
RIN 0651-AA59

Changes in Practice Relating to
Filing Patent Applications

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule.

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to provide a uniform practice with respect to filing an oath or declaration and filing fees in continuing applications.

Effective Date: Jan. 4, 1993. These rules will be applicable to all papers and applications filed with the Office on or after the effective date.

For Further Information Contact: Jeffrey V. Nase by telephone at (703) 305-9282 or by mail marked to his attention and addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information: In a Notice of Proposed Rulemaking published in the *Federal Register* (57 FR 31344) on July 15, 1992, and in the Patent and Trademark Office *Official Gazette* (1141 Off. Gaz. Pat. Office 9) on Aug. 4, 1992, the Office proposed to amend § 1.60. The due date for submitting written comments was extended to Sept. 10, 1992, in an Extension of Comment Period published in the *Federal Register* (57 FR 38640) on Aug. 26, 1992.

One comment was received. The comment favored adoption of the proposed rule changes.

A continuation or divisional application filed under § 1.60 did not receive a filing date until a complete copy of the prior application was filed, including a true copy of the oath or declaration. Since the Office is in possession of the oath or declaration of the prior application, § 1.60 is being modified to be consistent with §§ 1.53 and 1.62 by permitting filing of a true copy of the oath or declaration within a time specified in a notice of missing parts mailed by the Office.

The specific revisions are discussed below:

(1) Correction of inventorship (§ 1.48)

Section 1.48(a) is amended to replace the designation by letter of various requirements therein with numbered designations so as to avoid confusion when making reference to this section.

(2) Procedures for completing applications filed under § 1.60

Section 1.60 outlines one of the procedures that may be followed by applicants to file a continuation or divisional application. One of the requirements under this section is that applicants file a true copy of the complete parent application as filed, including the oath or declaration. Paragraph (c) of this section had specified that a filing date would not be granted if applicant failed to file a complete application under this section. When the missing item was filed, a filing date was granted as of the date of receipt of the missing item. Practice under § 1.60 is being modified to be similar to the procedures for filing continuing applications under §§ 1.53(d) and continuation-in-part applications under § 1.62. More specifically, a new paragraph (d) is added in § 1.60 to indicate that if an application filed pursuant to § 1.60(b) is otherwise complete, but does not include the appropriate filing fee or a true copy of the oath or declaration from the prior complete application, a filing date will be granted. The copy of the oath or declaration, as well as payment of the appropriate filing fee must be submitted within a time period specified in a notice of missing parts mailed by the Office. In a manner similar to the practice under §§ 1.53(d) and 1.62(d), the appropriate oath or declaration and/or filing fee as well as the surcharge set forth in § 1.16(e) must be filed within the time period specified in the notice of missing parts in order to avoid abandonment of the application. Paragraphs (b) and (c) of this section are amended to make

reference to the exception specified in paragraph (d) discussed above.

OTHER CONSIDERATIONS

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to accord a filing date to certain continuing applications which, through oversight, fail to include certain papers which can be submitted after the filing date.

The Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions most of the changes reduce procedural burdens. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Freedom of information, Inventions and patents, Reporting and record keeping requirements.

For the reasons set out in the preamble, and pursuant to the authority contained in 35 U.S.C. 6, part 1 of title 37 of the Code of Federal Regulations is amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.48, paragraph (a) is revised to read as follows:

§ 1.48 Correction of inventorship

(a) if the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by:

(1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred;

(2) an oath or declaration by each actual inventor or inventors as required by § 1.63;

(3) the fee set forth in § 1.17(h); and

(4) the written consent of any assignee.

When the application is involved in an interference, the petition shall comply with the requirements of this section and shall be accompanied by a motion under § 1.634.

3. In Section 1.60, paragraphs (b) and (c) are revised and paragraph (d) is added to read as follows:

(50) Patent and Trademark Office
37 CFR Part 1
Changes in Patent Drawing Standards

§ 1.60 Continuation or divisional application for invention disclosed in a prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 and 121 and § 1.78(a)) if:

(1) the prior application was a complete application as set forth in § 1.51(a),

(2) applicant indicates that the application is being filed pursuant to this section and files a true copy of the prior complete application as filed including the specification (with claims), drawings, oath or declaration showing the signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application,

(3) the inventors named in the continuation or divisional application are the same or less than all the inventors named in the prior application, and

(4) the application is filed before the patenting or abandonment of or termination of proceedings on the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (2 1.78(a)) will be entered before calculating the filing fee and granted the filing date. If the continuation or divisional application is filed by less than all the inventors named in the prior application, a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation or divisional application. Except as provided in paragraph (d) of this section, if a true copy of the prior application as filed is not filed with the application or if the statement that the application papers are a true copy is omitted, the application will not be given a filing date earlier than the date upon which the copy and statement are filed, unless a petition with the fee set forth in § 1.17(i)(1) is filed which satisfactorily explains the delay in filing these items.

(c) If an application filed pursuant to paragraph (b) of this section is incomplete for reasons other than those specified in paragraph (d) of this section, applicant will be notified and given a time period within which to complete the application in order to obtain a filing date as of the date of filing the omitted item provided the omitted item is filed before the patenting or abandonment of or termination or proceedings on the prior application. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less the handling fee set forth in § 1.21(n)

(d) If an application filed pursuant to paragraph (b) of this section is otherwise complete, but does not include the appropriate filing fee or a true copy of the oath or declaration from the prior complete application, showing the signature or an indication it was signed, a filing date will be granted and applicant will be so notified and given a period of time within which to file the fee, or the true copy of the oath or declaration and to pay the surcharge as set forth in § 1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section.

Dec. 2, 1992

DOUGLAS B. COMER
Acting Assistant Secretary and Acting
Commissioner of Patents and Trademarks

[1145 OG 377]

Agency: Patent and Trademark Office, Commerce

Action: Final Rule

Summary: The Patent and Trademark Office (Office) is amending the rules of practice regarding patent drawings to adopt international standards and to eliminate unnecessary requirements. The Office is amending the rules to provide clarification and adopt international standards; to delete the reference to changes by bonded draftsmen since the Office will no longer release drawings from patent applications and to include the option of submitting black and white photographs in lieu of black ink drawings.

Effective Date: October 1, 1993. These rules will be applicable to all drawings and papers filed with the Office on or after the effective date.

For Further Information Contact: Richard A. Bawcombe by telephone at (703) 305-8594, by mail marked to his attention addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, or by facsimile transmission to his attention at (703) 305-4372.

Supplementary Information: In a Notice of Proposed Rulemaking published in the *Federal Register* (57 FR 42721) on September 16, 1992, and in the Patent and Trademark Office *Official Gazette* (1143 Off. Gaz. Pat. Office 13) on Oct. 6, 1992, the Office proposed to amend the rules of practice in patent drawings. Drawings acceptable for patent applications filed outside of the United States are not always acceptable in a patent application filed in the United States. Therefore, the rules relating to drawing requirements are being amended to enable the Office, when appropriate, to accept drawings that are capable of clear reproduction for the printing of any resulting patent. Drawings in compliance with the old § 1.84 will be in compliance with the new § 1.84. An oral hearing was not conducted. However, six written comments were submitted.

Response to Comments on the Rules

The comments received in response to the notice of proposed rulemaking have been given careful consideration and several of the suggested modifications have been adopted.

Another modification, since the "Notice of Proposed Rulemaking," is under § 1.84 wherein five sets of drawings were required, but the total has been decreased to three sets due to a reassessment of the need for the additional copies for Office use. The comments and responses are discussed below.

Comment: Three comments were received regarding the proposed changes within § 1.84(b). Three other comments were received regarding the proposed changes to § 1.165. All six comments suggested that the Office continue to accept mounted photographs.

Response: The Office will adopt the suggestion and continue to accept mounted photographs for utility, design, and plant patent applications. The initial reason the Office sought to change the rule was to overcome the problem of mounted photographs becoming detached and separated from the file. The apparent burden to applicants associated with the Office not accepting mounted photographs is the reason the Office will continue to permit mounted photographs provided they are permanently affixed.

Several of the commenters mentioned that they have never had problems with mounted photographs. As commentary on these remarks, it is not the person filing the drawings who would have problems with mounted photographs; it is the Office. And, indeed, the Office has, in the past, experienced problems with mounted photographs coming loose from the paper they are mounted on. When this happens, the photographs can become displaced from the file and lost. This has occurred many times, leading to frustration and wasted effort on the part of many practitioners, as well as on the part of Office personnel. If mounted photographs are to be used, they must be mounted in such a way that they cannot become loose from the Bristol board to which they are mounted.

Comment: Two of the comments regarding 1.84(b) also mentioned that the proposed rules would not allow more than one figure on each sheet of drawings where photographs are being used, and sought relief from this proposed change.

Response: Since the Office will continue to accept mounted photographs, the Office will also accept sheets of drawings where more than one photograph appears on the drawing sheet provided that all other drawing requirements are met.

Comment: Two of the comments suggested that the Office not require photographs to be on A4 size paper.

Response: The Office will adopt the suggestion. The Office will accept photographs on one of the four paper sizes specified in § 1.84(f), as long as all sheets are the same size.

Comment: Regarding § 1.84(f), one comment suggested that the Office permit use of an additional size of paper, i.e., 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches).

Response: The Office will adopt the suggestion. The adoption of the suggestion to add an additional paper size under § 1.84(f), results in the need for an additional margin size. Therefore, an additional paragraph is added to § 1.84(g) to state that "On 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheets, each sheet must include a top margin of 2.5 cm. (1 inch) and bottom and side margins of .64 cm. (1/4 inch) from the edges, thereby leaving a sight precisely 20.3 by 24.8 cm. (8 by 9 3/4 inches)."

Comment: Regarding § 1.84(p)(3), one comment suggested liberalization for drawings which include typewritten subject matter, such as gene or protein sequences that consist predominantly of letters, sometimes with underlining and boxes around them. Other situations cited were graphs and photographs of gels, which often appear in biotechnological inventions, which include typed matter as legends.

Response: The suggestion has not been adopted because letters need to stand at the designated height to maintain legibility when reductions become necessary to accommodate the various photocomposed products.

Comment: Regarding § 1.84(w), one comment mentioned that correction fluid is not permanent and has a tendency to flake and fall from the surface it covers.

Response: Section 1.84(w) permits correction fluid to be used provided the correction fluid is durable and permanent. If correction fluid is used on drawings submitted to the Office, the applicant will be required by the Office to correct the drawings if the correction fluid becomes loose before the patent printing process is completed.

Comment: One comment suggested that § 1.152 was improper in permitting either ink drawings or photographs to be submitted with an application for a design patent, but not both, and in requiring any photographs submitted to show only the design claimed and none of the environment in which it is used. The comment argued that prohibition against using both ink drawings and photographs is inconsistent with 35 U.S.C. 112. Under that section of the statute, a design patent application must disclose the invention "in such full, clear, concise, and exact terms as enable any person skilled in the art... to make and use" the invention and "set forth the best mode contemplated by the inventor of carrying out his invention."

Response: Section 1.152 is consistent with 35 U.S.C. 112. The introduction of both photographs and ink drawings in a design application would result in a high probability of inconsistencies between corresponding elements on the ink drawings as compared with the photographs. However, if special circumstances warrant use of both ink drawings and photographs, applicant can file a petition under § 1.183 to permit both in a design application if such drawings do not introduce inconsistencies between the views.

DISCUSSION OF SPECIFIC SECTIONS CHANGED OR ADDED:

Section 1.17(h) is amended to include a reference to § 1.84 for accepting color drawings or photographs in utility patent applications.

Section 1.19(a)(3) is amended to change the citation of § 1.84(p) to § 1.84(a)(2) in view of the amendments to § 1.84.

Section 1.71(d) is amended to change the citation of § 1.84(o) to § 1.84(s) in view of the amendments to § 1.84.

Section 1.84 is revised as follows:

(a) Drawings. This paragraph is added to classify drawings into two categories, i.e., black ink and color, and deletes the limitation that the use of white pigment to cover lines is not normally acceptable. The black ink drawing requirements are amended to allow computer-generated drawings to be accepted

subject to the same standards applied to all black ink drawings. Color drawing requirements are moved from § 1.84(p) to § 1.84(a). Color drawings may be acceptable upon the granting of a petition filed under this paragraph explaining why the color drawings are necessary. A petition is required because the special handling necessary for color drawings is time consuming and the Office cannot permit such a special procedure except in extenuating circumstances. Since utility patents are not printed in color, 3 sets of color drawings are necessary for proper distribution within the Office. One color set will be attached to the Letters Patent for routing to the applicant. The remaining two color sets will be routed to (1) the patent file, and (2) the Office of Publication and Dissemination, Patent and Trademark Copy Sales, for copying purposes when a copy in color of a utility patent containing a color drawing, as provided for in § 119(a)(3), is requested.

(b) Photographs. This paragraph permits the acceptance of photographs upon granting of an applicant's petition. The Office will accept black and white and color photographs or photomicrographs (not photolithographs or other reproductions of photographs made by using screens), developed on double weight photographic paper or permanently mounted on bristol board, in lieu of ink drawings. The photographs must be of sufficient quality so that all details in the drawing are reproducible in the printed patent.

(c) Identification of drawings. This paragraph permits an applicant to provide proper identification information on the reverse side of each sheet of drawings. The identification information allows the Office to match drawing sheets with the proper application. The identification information should include the application number, if known, or the title of the invention, inventor's name, docket number (if any), and name and telephone number of the person to call if the drawings cannot be matched to the proper patent application. The Office will not object if identifying information is not present; however, if the drawings become separated, it will be virtually impossible for the Office to match the drawings with the application. This paragraph is restructured from previous § 1.84(1) and revised to state that the preferred placement of the information is on the back side of the drawing sheets.

(d) Graphic forms in drawings. This paragraph is added to set standards for chemical and mathematical formulae to align Office standards for formulae, tables, and waveforms with international standards.

(e) Type of paper. This paragraph is a revision of previous § 1.84(a) to set forth the requirements for the type of paper to be used for drawings, including the type of paper for photographs.

(f) Size of paper. This paragraph clarifies Office requirements set forth in previous § 1.84(b) and permits one additional size of paper, i.e., 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches) for drawings.

(g) Margins. This paragraph is restructured from previous § 1.84(b) to indicate how the size of the paper changes the margin requirements. The Office will accept four sizes of paper, however, the sight (i.e. the usable surface) is the same for two of the paper sizes, i.e., 21.6 cm. by 33.1 cm. (8 1/2 by 13 inches), and 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches). The sight is 17.0 cm. by 26.2 cm. for DIN size A4 paper. The sight is 20.3 cm. by 24.8 cm. (8 by 9 3/4 inches) for the added paper size of 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches).

(h) Views. This paragraph is added to reformat previous § 1.84(i) to provide a logical arrangement of the different views provided in the rules, to revise the standards for purposes of clarification, to include the standard for waveforms to show the relative timing, to provide clearer language relative to hatching shown on drawings, to set forth the standard for depicting hatching in sectional views as regularly spaced parallel oblique strokes which precludes use of cross-hatching strokes, and to include requirements pertaining to alternate positions. In addition, both Roman and Arabic numerals are acceptable to designate the section being illustrated.

(i) Arrangement of views. This paragraph is relocated from previous § 1.84(j) and revised to incorporate international standards. In addition, this paragraph is changed and broadened to provide for placement of words on drawings. One view is not to be superimposed within the outline of another. The changes expand the possibilities for presenting graphs to conform to standard scientific conventions, while using a format which is compatible with automated patent searching displays. See 1121

Off. Gaz. Pat. Office 54 (Dec. 25, 1990) and 1129 Off. Gaz. Pat. Office 22 (Aug. 13, 1991).

(j) View for *Official Gazette*. This paragraph is relocated from previous § 1.84(k).

(k) Scale. This paragraph is relocated from previous § 1.84(e) and § 1.84(i) and revised to indicate that the words "actual size" or "scale 1/2" on the drawings are not permitted since the meaning is lost in reduction/enlargement. The paragraph provides that elements of the same view must be in proportion to each other, unless a difference in proportion is indispensable for the clarity of the view. As a preferred alternative to a difference in proportion within one view for the purpose of achieving the necessary clarity, a supplementary view may be added giving a larger-scale illustration of an element from the initial view. When a supplementary view is included, it is recommended that the enlarged element shown in the second view be surrounded by a finely drawn or "dot-dash" circle in the first view pinpointing its location, without obscuring the view.

(l) Character of lines, numbers, and letters. This paragraph is relocated from previous § 1.84(c) and revised to indicate that lines and strokes of different thicknesses may be used in the same drawing where different thicknesses have different meanings. In addition, this paragraph is changed and broadened to allow drawings to be made by any process which will give them satisfactory reproduction characteristics.

(m) Shading. This paragraph is changed and broadened to expand definitions for shading and deletes the limitation that drawings transmitted to the Office should be sent flat, protected by a sheet of heavy binder's board, or rolled for transmission in a suitable mailing tube. This change provides the individual practitioner with greater discretion on how to send drawings. In addition, this paragraph is relocated from previous § 1.84(d) to separate shading requirements from hatching requirements by stating that shading may be used to indicate the surface or shape of spherical, cylindrical, and conical elements of an object, and that spaced lines are preferred for shading purposes. Solid black areas are not permitted, except when used to represent bar graphs or color.

(n) Symbols. This paragraph is relocated from previous § 1.84(g) to separate symbols requirements from legends requirements and enlarges the number of acceptable symbols. Known devices should be illustrated by symbols which have a universally-recognized meaning, and which are generally accepted in the art, provided no further detail is essential for understanding the subject matter of the claimed invention. Symbols which are not universally recognized may be used if they are not likely to be confused with existing conventional symbols and if they are readily identifiable, subject to approval by the Examiner.

(o) Legends. This paragraph is relocated from previous § 1.84(g) to separate legends requirements from symbols requirements and revised to integrate international standards. Where text matter is (1) deemed indispensable for understanding the drawing or (2) may be required by the Examiner, a minimum of words should be used. While such requirement by the Examiner was not contained in the "Notice of Proposed Rulemaking," it was contained in former § 1.84(g). Words should not be used to describe the figure itself, such as "this is a bar graph." All text legends are subject to approval by the examiner.

(p) Numbers, letters, and reference characters. This paragraph is relocated from previous § 1.84(f) and revised to include numbers and letters in the heading formerly designated "reference characters." This section has been reformatted into five subsections and revised to integrate international standards, where possible. Although the Latin alphabet is used in the international standard, the Office takes the view that the English alphabet is more universally acceptable for letters, except where another alphabet is customarily used, such as the Greek alphabet to indicate angles, wavelengths, and mathematical formulae. In addition, the characters used must be oriented in the same direction as the view so as to avoid having to rotate the sheet. Reference characters should be so arranged to follow the profile of the object depicted. See 1121 Off. Gaz. Pat. Office 54 (Dec. 25, 1990) and 1129 Off. Gaz. Pat. Office 22 (Aug. 13, 1991).

(q) Lead lines. This paragraph is added to integrate international standards, to incorporate brief language which appears in previous § 1.84(f), and to change and expand the definition for lead lines. Lead lines are those lines between the reference

characters and the details referred to, and they must be executed in the same way as other lines in the drawing.

(r) Arrows. This paragraph is relocated from previous § 1.84(g) and revised to indicate the meaning of the use of arrows, and to show that they may be used at the end of lead lines only if their meaning is clear.

(s) Copyright or mask work notice. This paragraph is relocated from previous § 1.84(o).

(t) Numbering of sheets of drawings. This paragraph is relocated from previous § 1.84(n) and changed and broadened to allow for the placement of sheet numbers within the sight of the drawing. It is preferable that the sheets be numbered with two Arabic numerals placed on either side of an oblique line, with the first number being the sheet number and the second the total number of sheets of drawings.

(u) Numbering of views. This paragraph is relocated from previous § 1.84(i) and, for clarity, is separately identified in this new section. Use of the abbreviation "FIG." must precede all view numbers.

(v) Security markings. This paragraph is relocated from previous § 1.84(1) to provide that security markings may be placed on the drawings if they are outside the sight and preferably centered in the top margin.

(w) Corrections. This paragraph is added to provide that any corrections made on drawings submitted to the Office must be durable and permanent. The language is revised from previous 1.84(a) which prohibited the use of white pigment to cover lines.

(x) Holes. This paragraph is relocated from previous § 1.84(b) to permit two holes to be punched in the top margin of the drawings with their center lines spaced 7.0 cm. (2 3/4 inches) apart.

Section 1.88 is removed and reserved since the changes effective January 1, 1991, in § 1.85(b) make the regulation regarding the transfer of drawings unnecessary. Since the Office no longer releases drawings from patent applications, applicants are generally retaining the master copy of the drawings. Accordingly, applicants can easily file a copy of drawings in an application and therefore eliminate the need for the Office to transfer drawings. Any situations which present a hardship to applicants may be accommodated by the filing of a petition under § 1.182 requesting the transfer of the drawings.

Section 1.123 prescribes procedures for amending drawings. With the adoption of new rules for amending drawings effective January 1, 1989, the Office no longer requires the submission of formal drawings upon filing a patent application. See 1097 Off. Gaz. Pat. Office 36 (Dec. 13, 1988). Since corrections are the responsibility of the applicant, the original drawing(s) should be retained by the applicant for future correction, if necessary.

As a result of adoption of the new rules in 1989 relating to drawings, the Office will no longer release to applicants, bonded drafting companies or others, drawings from patent applications. Effective January 1, 1991, § 1.85(b) prohibits release of drawings from all patent applications. Accordingly, the reference to changes by bonded draftsmen is deleted from § 1.123.

Section 1.152 is revised to provide that photographs and ink drawings must not be combined in one design application. The reason for this requirement is to avoid inconsistencies between the photograph and the drawing, and further eliminate views that may distort the proportionate relationship between the corresponding elements on the drawing and the photograph. All design photographs are limited to the design for the article claimed and are not to include environmental structure.

Color drawings and color photographs are not permissible in design patent applications. The submission of color photographs will be accepted for filing date purposes, in design patent applications, contrary to the requirement for black ink drawings. The Applications Processing Division has been authorized to construe the color photographs as informal drawings, rather than to hold the applications incomplete as filed. By so construing color photographs when filed as informal drawings, the Office will accept the applications without requiring applicants to file a petition to obtain the original deposit date as the filing date. During the course of prosecution, the Examiner will require properly executed formal black ink drawings or black and white photographs as a substitute for the originally filed color photographs prior to allowance of the

claim. Solid black surface shading is not permitted on a design drawing, except when used to represent color contrast.

Section 1.165 is revised to provide that plant patent drawings must comply with the requirements of § 1.84. The current exception that plant patent drawings do not automatically require view numbers and reference characters is maintained. Two sets of the drawings are needed. One set will be forwarded to the Department of Agriculture and the other set will be routed to the Office of Publication and Dissemination, Patent and Trademark Copy Sales, for copying purposes.

OTHER CONSIDERATIONS

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The Acting General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to revise and reformat the drawing standards to adopt international standards, to the extent possible, and to facilitate access to sections through inclusion of pertinent subsection headings, which should be helpful to small entities.

The Office has determined that these rule changes are not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individuals, industries, Federal, state or local government agencies, or geographic regions because most of the changes reduce procedural burdens. There will be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that these rule changes have no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes contain a collection of information requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, which has previously been approved by the Office of Management and Budget under Control No. 0651-0011.

List of Subjects in 37 CFR Part 1.

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting, and Record keeping requirement.

For the reasons set out in the preamble, and pursuant to the authority contained in 35 U.S.C. 6, Part 1 of Title 37 of the Code of Federal Regulations is amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.17(h) is revised to read as follows:

§ 1.77 Patent application processing fees.

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph.....\$130.00

§ 1.47—for filing by other than all the inventors or a person not the inventor.

§ 1.48—for correction of inventorship.

§ 1.84—for accepting color drawings or photographs.

§ 1.182—for decision on questions not specifically provided for.

§ 1.183—to suspend the rules.

§ 1.295—for review of refusal to publish a statutory invention registration.

§ 1.377—for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.

§ 1.378(e)—for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent.

§ 1.644(e)—for petition in an interference.

§ 1.644(f)—for request for reconsideration of a decision on petition in an interference.

§ 1.666(c)—for late filing of interference settlement agreement.

§§ 5.12, 5.13, & 5.14—for expedited handling of a foreign filing license.

§ 5.15—for changing the scope of a license.

§ 5.25—for retroactive license.

3. Section 1.19(a)(3) is revised to read as follows:

§ 1.19 Document supply fees.

(a) Uncertified copies of patents:

(3) Copy of a utility patent or statutory invention registration containing color drawing (see § 1.84(a)(2))..... \$24.00

4. Section 1.71(d) is revised to read as follows:

§ 1.71 Detailed description and specification of the invention.

(d) A copyright or mask work notice may be placed in a design or utility patent application adjacent to copyright and mask work material contained therein. The notice may appear at any appropriate portion of the patent application disclosure. For notices in drawings, see § 1.84(s). The content of the notice must be limited to only those elements provided for by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "M* John Doe" (17 U.S.C. 909) would be properly limited and, under current statutes, legally sufficient notices of copyright and mask work, respectively. Inclusion of a copyright or mask work notice will be permitted only if the authorization language set forth in paragraph (e) of this section is included at the beginning (preferably as the first paragraph) of the specification.

5. Section 1.84 is revised to read as follows:

§ 1.84. Standards for drawings.

(a) *Drawings.* There are two acceptable categories for presenting drawings in utility patent applications:

(1) *Black ink.* Black and white drawings are normally required. India ink, or its equivalent that secures solid black lines, must be used for drawings, or

(2) *Color.* On rare occasions, color drawings may be necessary as the only practical medium by which to disclose the subject matter sought to be patented in a utility patent application or the subject matter of a statutory invention registration. The Patent and Trademark Office will accept color drawings in utility patent applications and statutory invention registrations only after granting a petition filed under this paragraph explaining why the color drawings are necessary. Any such petition must include the following:

(i) The appropriate fee set forth in § 1.17(h);

(ii) Three (3) sets of color drawings; and

(iii) The specification must contain the following language as the first paragraph in that portion of the specification relating to the brief description of the drawing:

The file of this patent contains at least one drawing executed in color. Copies of this patent with color drawing(s) will be provided by the Patent and Trademark Office upon request and payment of the necessary fee.

If the language is not in the specification, a proposed amendment to insert the language must accompany the petition.

(b) *Photographs.*

(1) *Black and white.* Photographs are not ordinarily permitted in utility and design patent applications. However, the Office will accept photographs in utility and design patent applications only after granting a petition filed under this paragraph which requests that photographs be accepted. Any such petition must include the following:

(i) The appropriate fee set forth in 1.17(h); and

(ii) Three (3) sets of photographs. Photographs must either be developed on double weight photographic paper or be permanently mounted on bristol board. The photographs must be of sufficient quality so that all details in the drawing are reproducible in the printed patent.

(2) *Color.* Color photographs will be accepted in utility patent applications if the conditions for accepting color drawings have been satisfied. See paragraph (a)(2) of this section.

(c) *Identification of drawings.* Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawings a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page.

(d) *Graphic forms in drawings.* Chemical or mathematical formulae, tables, and waveforms may be submitted as drawings, and are subject to the same requirements as drawings. Each chemical or mathematical formula must be labeled as a separate figure, using brackets when necessary, to show that information is properly integrated. Each group of waveforms must be presented as a single figure, using a common vertical axis with time extending along the horizontal axis. Each individual waveform discussed in the specification must be identified with a separate letter designation adjacent to the vertical axis.

(e) *Type of paper.* Drawings submitted to the Office must be made on paper which is flexible, strong, white, smooth, nonshiny, and durable. All sheets must be free from cracks, creases, and folds. Only one side of the sheet shall be used for the drawing. Each sheet must be reasonably free from erasures and must be free from alterations, overwritings, and interlineations. Photographs must either be developed on double weight photographic paper or be permanently mounted on bristol board. See paragraph (b) of this section for other requirements for photographs.

(f) *Size of paper.* All drawing sheets in an application must be the same size. One of the shorter sides of the sheet is regarded as its top. The size of the sheets on which drawings are made must be:

(1) 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches),

(2) 21.6 cm. by 33.1 cm. (8 1/2 by 13 inches),

(3) 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches), or

(4) 21.0 cm. by 29.7 cm. (DIN size A4).

(g) *Margins.* The sheets must not contain frames around the sight, i.e., the usable surface. The following margins are required:

(1) On 21.6 cm. by 35.6 cm. (8 1/2 by 14 inch) drawing sheets, each sheet must include a top margin of 5.1 cm. (2 inches), and bottom and side margins of .64 cm. (1/4 inch) from the edges, thereby leaving a sight no greater than 20.3 cm. by 29.8 cm. (8 by 11 3/4 inches).

(2) On 21.6 cm. by 33.1 cm. (8 1/2 by 13 inch) drawing sheets, each sheet must include a top margin of 2.5 cm. (1 inch) and bottom and side margins of .64 cm. (1/4 inch) from the edges, thereby leaving a sight no greater than 20.3 cm. by 29.8 cm. (8 by 11 3/4 inches).

(3) On 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheets, each sheet must include a top margin of 2.5 cm. (1 inch) and bottom and side margins of .64 cm. (1/4 inch) from

the edges, thereby leaving a sight no greater than 20.3 cm. by 24.8 cm. (8 by 9 3/4 inches).

(4) On 21.0 cm. by 29.7 cm. (DIN size A4) drawing sheets, each sheet must include a top margin of at least 2.5 cm., a left side margin of 2.5 cm., a right side margin of 1.5 cm., and a bottom margin of 1.0 cm., thereby leaving a sight no greater than 17.0 cm. by 26.2 cm.

(h) *Views.* The drawing must contain as many views as necessary to show the invention. The views may be plan, elevation, section, or perspective views. Detail views of portions of elements, on a larger scale if necessary, may also be used. All views of the drawing must be grouped together and arranged on the sheet(s) without wasting space, preferably in an upright position, clearly separated from one another, and must not be included in the sheets containing the specifications, claims, or abstract. Views must not be connected by projection lines and must not contain center lines. Waveforms of electrical signals may be connected by dashed lines to show the relative timing of the waveforms.

(1) *Exploded views.* Exploded views, with the separated parts embraced by a bracket, to show the relationship or order of assembly of various parts are permissible. When an exploded view is shown in a figure which is on the same sheet as another figure, the exploded view should be placed in brackets.

(2) *Partial views.* When necessary, a view of a large machine or device in its entirety may be broken into partial views on a single sheet, or extended over several sheets if there is no loss in facility of understanding the view. Partial views drawn on separate sheets must always be capable of being linked edge to edge so that no partial view contains parts of another partial view. A smaller scale view should be included showing the whole formed by the partial views and indicating the positions of the parts shown. When a portion of a view is enlarged for magnification purposes, the view and the enlarged view must each be labeled as separate views.

(i) Where views on two or more sheets form, in effect, a single complete view, the views on the several sheets must be so arranged that the complete figure can be assembled without concealing any part of any of the views appearing on the various sheets.

(ii) A very long view may be divided into several parts placed one above the other on a single sheet. However, the relationship between the different parts must be clear and unambiguous.

(3) *Sectional views.* The plane upon which a sectional view is taken should be indicated on the view from which the section is cut by a broken line. The ends of the broken line should be designated by Arabic or Roman numerals corresponding to the view number of the sectional view, and should have arrows to indicate the direction of sight. Hatching must be used to indicate section portions of an object, and must be made by regularly spaced oblique parallel lines spaced sufficiently apart to enable the lines to be distinguished without difficulty. Hatching should not impede the clear reading of the reference characters and lead lines. If it is not possible to place reference characters outside the hatched area, the hatching may be broken off wherever reference characters are inserted. Hatching must be at a substantial angle to the surrounding axes or principal lines, preferably 45°. A cross section must be set out and drawn to show all of the materials as they are shown in the view from which the cross section was taken. The parts in cross section must show proper material(s) by hatching with regularly spaced parallel oblique strokes, the space between strokes being chosen on the basis of the total area to be hatched. The various parts of a cross section of the same item should be hatched in the same manner and should accurately and graphically indicate the nature of the material(s) that is illustrated in cross section. The hatching of juxtaposed different elements must be angled in a different way. In the case of large areas, hatching may be confined to an edging drawn around the entire inside of the outline of the area to be hatched. Different types of hatching should have different conventional meanings as regards the nature of a material seen in cross section.

(4) *Alternate position.* A moved position may be shown by a broken line superimposed upon a suitable view if this can be done without crowding; otherwise, a separate view must be used for this purpose.

(5) *Modified forms.* Modified forms of construction must be shown in separate views.

(i) *Arrangement of views.* One view must not be placed upon another or within the outline of another. All views on the same sheet should stand in the same direction and, if possible, stand so that they can be read with the sheet held in an upright position. If views wider than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the top of the sheet, with the appropriate top margin to be used as the heading space, is on the right-hand side. Words must appear in a horizontal, left-to-right fashion when the page is either upright or turned so that the top becomes the right side, except for graphs utilizing standard scientific convention to denote the axis of abscissas (of X) and the axis of ordinates (of Y).

(j) *View for Official Gazette.* One of the views should be suitable for publication in the *Official Gazette* as the illustration of the invention.

(k) *Scale.*

(1) The scale to which a drawing is made must be large enough to show the mechanism without crowding when the drawing is reduced in size to two-thirds in reproduction. Views of portions of the mechanism on a larger scale should be used when necessary to show details clearly. Two or more sheets may be used if one does not give sufficient room. The number of sheets should be kept to a minimum.

(2) When approved by the examiner, the scale of the drawing may be graphically represented. Indications such as "actual size" or "scale 1/2" on the drawings, are not permitted, since these lose their meaning with reproduction in a different format.

(3) Elements of the same view must be in proportion to each other, unless a difference in proportion is indispensable for the clarity of the view. Instead of showing elements in different proportion, a supplementary view may be added giving a larger-scale illustration of the element of the initial view. The enlarged element shown in the second view should be surrounded by a finely drawn or "dot-dash" circle in the first view indicating its location without obscuring the view.

(l) *Character of lines, numbers, and letters.* All drawings must be made by a process which will give them satisfactory reproduction characteristics. Every line, number, and letter must be durable, clean, black (except for color drawings), sufficiently dense and dark, and uniformly thick and well-defined. The weight of all lines and letters must be heavy enough to permit adequate reproduction. This requirement applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. Lines and strokes of different thicknesses may be used in the same drawing where different thicknesses have a different meaning.

(m) *Shading.* The use of shading in views is encouraged if it aids in understanding the invention and if it does not reduce legibility. Shading is used to indicate the surface or shape of spherical, cylindrical, and conical elements of an object. Flat parts may also be lightly shaded. Such shading is preferred in the case of parts shown in perspective, but not for cross sections. See paragraph (h)(3) of this section. Spaced lines for shading are preferred. These lines must be thin, as few in number as practicable, and they must contrast with the rest of the drawings. As a substitute for shading, heavy lines on the shade side of objects can be used except where they superimpose on each other or obscure reference characters. Light should come from the upper left corner at an angle of 45°. Surface delineations should preferably be shown by proper shading. Solid black shading areas are not permitted, except when used to represent bar graphs or color.

(n) *Symbols.* Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols which have a universally recognized conventional meaning and are generally accepted in the art. Other symbols which are not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable.

(o) *Legends.* Suitable descriptive legends may be used, or may be required by the Examiner, where necessary for under-

standing of the drawing, subject to approval by the Office. They should contain as few words as possible.

(p) *Numbers, letters, and reference characters.*

(1) Reference characters (numerals are preferred), sheet numbers, and view numbers must be plain and legible, and must not be used in association with brackets or inverted commas, or enclosed within outlines, e.g., encircled. They must be oriented in the same direction as the view so as to avoid having to rotate the sheet. Reference characters should be arranged to follow the profile of the object depicted.

(2) The English alphabet must be used for letters, except where another alphabet is customarily used, such as the Greek alphabet to indicate angles, wavelengths, and mathematical formulas.

(3) Numbers, letters, and reference characters must measure at least .32 cm. (1/8 inch) in height. They should not be placed in the drawing so as to interfere with its comprehension. Therefore, they should not cross or mingle with the lines. They should not be placed upon hatched or shaded surfaces. When necessary, such as indicating a surface or cross section, a reference character may be underlined and a blank space may be left in the hatching or shading where the character occurs so that it appears distinct.

(4) The same part of an invention appearing in more than one view of the drawing must always be designated by the same reference character, and the same reference character must never be used to designate different parts.

(5) Reference characters not mentioned in the description shall not appear in the drawings. Reference characters mentioned in the description must appear in the drawings.

(q) *Lead lines.* Lead lines are those lines between the reference characters and the details referred to. Such lines may be straight or curved and should be as short as possible. They must originate in the immediate proximity of the reference character and extend to the feature indicated. Lead lines must not cross each other. Lead lines are required for each reference character except for those which indicate the surface or cross section on which they are placed. Such a reference character must be underlined to make it clear that a lead line has not been left out by mistake. Lead lines must be executed in the same way as lines in the drawing. See paragraph (1) of this section.

(r) *Arrows.* Arrows may be used at the ends of lines, provided that their meaning is clear, as follows:

(1) On a lead line, a freestanding arrow to indicate the entire section towards which it points;

(2) On a lead line, an arrow touching a line to indicate the surface shown by the line looking along the direction of the arrow; or

(3) To show the direction of movement.

(s) *Copyright or Mask Work Notice.* A copyright or mask work notice may appear in the drawing, but must be placed within the sight of the drawing immediately below the figure representing the copyright or mask work material and be limited to letters having a print size of .32 cm. to .64 cm. (1/8 to 1/4 inches) high. The content of the notice must be limited to only those elements provided for by law. For example, "© 1983 John Doe" (17 U.S.C. 401) and "M* John Doe" (17 U.S.C. 909) would be properly limited and, under current statutes, legally sufficient notices of copyright and mask work, respectively. Inclusion of a copyright or mask work notice will be permitted only if the authorization language set forth in § 1.71(e) is included at the beginning (preferably as the first paragraph) of the specification.

(t) *Numbering of sheets of drawings.* The sheets of drawings should be numbered in consecutive Arabic numerals, starting with 1, within the sight as defined in paragraph (g) of this section. These numbers, if present, must be placed in the middle of the top of the sheet, but not in the margin. The numbers can be placed on the right-hand side if the drawing extends too close to the middle of the top edge of the usable surface. The drawing sheet numbering must be clear and larger than the numbers used as reference characters to avoid confusion. The number of each sheet should be shown by two Arabic numerals placed on either side of an oblique line, with the first being the sheet number, and the second being the total number of sheets of drawings, with no other marking.

(u) *Numbering of views.*

(1) The different views must be numbered in consecutive Arabic numerals, starting with 1, independent of the numbering of the sheets and, if possible, in the order in which they appear on the drawing sheet(s). Partial views intended to form one complete view, on one or several sheets, must be identified by the same number followed by a capital letter. View numbers must be preceded by the abbreviation "FIG." Where only a single view is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation "FIG." must not appear.

(2) Numbers and letters identifying the views must be simple and clear and must not be used in association with brackets, circles, or inverted commas. The view numbers must be larger than the numbers used for reference characters.

(v) *Security markings.* Authorized security markings may be placed on the drawings provided they are outside the sight, preferably centered in the top margin.

(w) *Corrections.* Any corrections on drawings submitted to the Office must be durable and permanent.

(x) *Holes.* The drawing sheets may be provided with two holes in the top margin. The holes should be equally spaced from the respective side edges, and their center lines should be spaced 7.0 cm. (2 3/4 inches) apart. (See § 1.152 for design drawings, § 1.165 for plant drawings, and § 1.174 for reissue drawings.)

6. Section 1.88 is removed and reserved.

§ 1.88 (Reserved)

7. Section 1.123 is revised to read as follows:

§ 1.123 Amendments to the drawing.

No change in the drawing may be made except with permission of the Office. Permissible changes in the construction shown in any drawing may be made only by the submission of a substitute drawing by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner and should be a separate paper.

8. Section 1.152 is revised to read as follows:

§ 1.152 Design drawing.

The design must be represented by a drawing that complies with the requirements of § 1.84, and must contain a sufficient number of views to constitute a complete disclosure of the appearance of the article. Appropriate surface shading must be used to show the character or contour of the surfaces represented. Solid black surface shading is not permitted except when used to represent color contrast. Broken lines may be used to show visible environmental structure, but may not be used to show hidden planes and surfaces which cannot be seen through opaque materials. Alternate positions of a design component, illustrated by full and broken lines in the same view are not permitted in a design drawing. Photographs and ink drawings must not be combined in one application. Photographs submitted in lieu of ink drawings in design patent applications must comply with § 1.84(b) and must not disclose environmental structure but must be limited to the design for the article claimed. Color drawings and color photographs are not permitted in design patent applications.

9. Section 1.165 is revised to read as follows:

§ 1.165 Plant drawings.

(a) Plant patent drawings should be artistically and competently executed and must comply with the requirements of § 1.84. View numbers and reference characters need not be employed unless required by the examiner. The drawing must disclose all the distinctive characteristics of the plant capable of visual representation.

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings or color photographs must be submitted.

July 14, 1993

MICHAEL K. KIRK
Acting Assistant Secretary and
Acting Commissioner of
Patents and Trademarks

[1153 OG 33]

(47) Use of Symbol "Ø" in Patent Applications

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or slash" key to result in "Ø" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "O" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any questions about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (I, Ø) in the patent application.

Dec. 20, 1978

RICHARD J. SHAKMAN
Assistant Commissioner
for Administration.

[978 O.G. 152]

(52) U.S. Accession to Hague Convention
Abolishing the Requirement of Legalization
for Foreign Public Documents

On Oct. 15, 1981, the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" entered into force between the United States and twenty-eight foreign countries that are parties to the Convention. The Convention applies to any document submitted to the United States Patent and Trademark Office for filing or recording, which is sworn to or acknowledged by a notary public in any one of the member countries. The Convention abolishes the certification of the authority of the notary public in a member country

by a diplomatic or consular officer of the United States and substitutes certification by a special certificate, or apostille, executed by an officer of the member country. Accordingly, the Office will accept for filing or recording a document sworn to or acknowledged before a notary public in a member country if the document bears, or has appended to it, an apostille certifying the notary's authority. The requirement for a diplomatic or consular certificate, specified in 37 CFR 1.66 and note 1 of 37 CFR 3.45, will not apply to a document sworn to or acknowledged before a notary public in a member country if an apostille is used.

The member countries that are parties to the Convention are:

Austria	Italy	Spain
Bahamas	Japan	Suriname
Belgium	Lesotho	Swaziland
Botswana	Liechtenstein	Switzerland
Cyprus	Luxembourg	Tonga
Fiji	Malawi	U.K. of Great
France	Malta	Britain and
Germany	Mauritius	N. Ireland
Fed. Rep. of	Netherlands	United States
Hungary	Portugal	Yugoslavia
Israel	Seychelles	

The Convention prescribes the following form for the apostille:

Model of certificate

The certificate will be in the form of a square with sides at least 9 centimetres long

APOSTILLE

(Convention de La Haye du Oct. 5, 1961)

1. Country:
2. has been signed by
3. acting in the capacity of
4. bears the seal/stamp of

Certified

5. at
6. the
7. by
8. No.
9. Seal/stamp:
10. Signature:

Nov. 5, 1981

GERALD J. MOSSINGHOFF
Commissioner of Patents
and Trademarks

[1013 O.G. 3]

(53)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1 [Docket No. 71008-7208]

Variety Denomination Requirements for Plant Patent Applications

Agency: Patent and Trademark Office, Commerce.
Action: Notice of proposed rulemaking.

Summary: The Patent and Trademark Office proposes to amend certain of the rules of practice applicable to the patenting of plants. Under the proposed rules of practice, an applicant for such a patent would, in addition to any requirements for obtaining a patent, also be required to record an identifying variety denomination for the plant. These proposed rules fulfill an obligation imposed by the Convention of the International Union for the Protection of New Plant Varieties (the UPOV Convention), to which the United States adheres.

Dates: Comments on the proposed rules must be submitted by

Jan. 8, 1988, to assure their consideration in formulating the rules put into effect. A public hearing will be held on Jan. 15, 1988, beginning at 9:30 A.M., in the Commissioner's Conference Room, Crystal Plz. 3, the Patent and Trademark Office. Addresses: Address comments to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231. All comments received will be publicly available in the Patent and Trademark Office, Crystal Plz. 3, Arlington, Va., Rm. 11C28. For Further Information Contact: Mr. Stanley D. Schlosser, Office of Legislation and International Affairs, by telephone at (703) 557-3065 or by mail addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231. Supplementary Information: The UPOV Convention became applicable to the United States on Nov. 8, 1981, as a consequence of the President's exercise of authority to adhere to this international agreement. Under Articles 6 and 13 of the UPOV Convention, each plant variety for which protection is sought must be given a variety denomination and that denomination recorded ("registered" in the language of the Convention) at least by the time the patent is granted. It is left to each of the UPOV member states to determine how recordation is effected. For the United States, the issuance of a patent which includes the denomination of the variety would constitute recordation and registration for the purposes of compliance with UPOV Convention. The patent examining process would include consideration of the suitability for recordation of the proposed variety denomination.

Attention is called to two earlier Commissioner's Notices on this subject. The Notice of Oct. 20, 1981 (46 FR 51426) stated that appropriate rules for the registration of variety denominations, as required by the UPOV Convention, would be issued. The Commissioner's Notice, published in the Federal Register on Aug. 16, 1985, 50 FR 33062, proposed amendments to the Patent and Trademark Office's rules of practice to carry out this requirement. In light of public comments received, the earlier proposed rules are being withdrawn from consideration and replaced by these revised proposed rules. These would apply to plants patented under either 35 U.S.C. 101 or 161, but would not apply to any protection sought under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.), administered by the United States Department of Agriculture.

These proposed rules, in accordance with the patent law requirements for providing a descriptive title for a patent application, would require the variety denomination proposed for recordation to be included in the title of the application. The denomination would be judged for recordability by the examiner assigned the application for examination, who would consult with appropriate trademark examination officials to determine if there exists a possibly conflicting trademark registration or application for registration.

The recordation of a variety denomination for purposes of compliance with UPOV Convention Article 13 is not to be understood as conveying any legal rights in that denomination. Recordation does no more than establish a prima facie case that can be asserted as evidence of the possible generic nature of the variety denomination, if genericness is not already established by its usage in the commercial market, advertising or publication.

Under the proposed rules, the Patent and Trademark Office in examining the recordability of variety denominations will, in addition to its trademark records, utilize the Office's compilation of denominations obtained from horticultural, agricultural, floral and other professional societies, national breeders' rights offices, the UPOV Union's Secretariat, standard references and other available sources. Article 13 of the UPOV Convention requires that the variety denomination must enable the plant variety to be identified, that the denomination not consist solely of numbers except if this is shown to be an established practice for designating plant varieties, and that the denomination not be liable to mislead or cause confusion concerning the characteristics, value or identity of the variety or the identity of the breeder. No specific naming system is required by the Article. While a portion of the consuming public and others might prefer plant variety names conforming to the International Code of Nomenclature for Cultivated Plants or the UPOV Guidelines, common usage, code systems or other ways of identifying plants cannot be ignored.

The Patent and Trademark Office would accept for recordation a variety denomination complying with the requirements

of the UPOV Convention's Articles 13(2) and 13(4). A number of variety denomination systems currently in use, such as the system described in the 1980 revision of the International Code of Nomenclature for Cultivated Plants, the UPOV Guidelines and various code systems may also meet these requirements. Sexually reproduced varieties could be named in compliance with the requirements of the Federal Seed Act. In the event the examiner does not approve a proposed variety denomination for recordation, the applicant could petition the Commissioner for approval. Thus, the examination and approval of variety denominations will be handled in the same way as other procedural and administrative requirements not relating to the merits of the invention, such as the requirement to provide an abstract of the disclosure or the requirement to provide a title. A final refusal by the Commissioner on petition would require submission of another proposed denomination for recordation.

The petition to the Commissioner will be subject to a fee and the other requirements relating to petitions. The Commissioner may in appropriate cases delegate to the Assistant Commissioner for Trademarks or other appropriate trademark officials the decision of such petitions, under 37 C.F.R. 1.181(g).

The UPOV Convention requires the applicant to identify the patented variety by the same variety denomination (or a translation thereof) in all UPOV member states. A different denomination may be recorded in a particular member state, however, in cases where the denomination registered in another member state is unsuitable for business or other reasons. An applicant may during the course of examination be required to inform the Office of any other denomination by which the variety is known.

While these rules provide for the recordation of variety denominations, they recognize at the same time that, in cases of conflict, previously established proprietary rights are paramount. Recordation is in legal effect, therefore, no more than publication of a denomination which is or may become the generic name of a plant variety.

Trademark owners, owners of other proprietary rights and patent applicants share a common interest in knowing as early as possible if a variety denomination proposed for recordation possibly conflicts with a trademark or other proprietary rights. Accordingly, each denomination proposed for recordation, along with the genus and species to which the variety belongs, shall be published in the *Official Gazette* as soon as reasonably possible after receipt of the application in the Office. The Commissioner has determined that publication of such information constitutes special circumstances under 35 U.S.C. 122.

The public may provide information to the Office concerning the recordability of a proposed denomination. Such information would be entered in the official file wrapper of the application and be available to the examiner. Such information shall be called to the attention of the applicant by the Office.

Also, the *Official Gazette* would list newly recorded denominations in United States patents in order for trademark owners to assert their rights in appropriate cases through private negotiations or judicially, as they may now do in trademark cases. Proceedings in the Office in regard to the registration of variety denominations, however, will be conducted ex parte.

Under the proposed rules, each applicant would be required to specify in an application for protection of a plant variety the date of first use of the denomination if used prior to filing of the patent application, or later to provide information about the date of first commercial use during pendency of the application. In cases of conflict between a trademark and a proposed variety denomination, the variety denomination will not be accepted for recordation unless its first commercial use clearly antedates another's established rights.

If a patentee learns of a conflict between a trademark and the recorded variety denomination after issuance of the patent, the patentee in order to resolve the conflict will be permitted to record a different denomination by means of the Certificate of Correction procedure. Also, a variety denomination found after issuance of a patent to be commercially unsuitable or ill-advised could be changed in a similar manner.

The Office now permits plants and plant varieties to be patented both specifically and broadly under patent 35 U.S.C. 101. In some cases, however, claims in an application will not be limited to a specific variety. These proposed rules would apply only to applications where a specific variety or varieties are claimed. Only these need be identified by a variety denomi-

nation, except where the number of varieties involved makes this impractical. In such a case, each claim directed to a specific variety would include its variety denomination, but these variety denominations could be omitted from the title of the patent. Variety denominations would not be required for microorganisms or microscopic plant parts.

Other Considerations: The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. This rule contains a collection of information requirement subject to the Paperwork Reduction Act. This collection of information requirement has been cleared by OMB under control No. 0651-0011.

The General Counsel of the Department Commerce has certified to the Small Business Administration that the proposed rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The variety denomination requirement will not impose extra work on patent applicants (whether small or large businesses or individuals). The rules will help avoid burdensome and expensive litigation over trademark rights.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

For the reasons set out in the preamble, 37 CFR Part 1 is proposed to be amended by revising §§ 1.72, and 1.17 and adding a new § 1.168 as set forth below. All proposed additions are printed between arrows.

PART I - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

AUTHORITY: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.17 is proposed to be amended by adding the following items in numerical order to the list in paragraph (h) to read as follows:

§ 1.17 Patent application processing fees.

(h) ***
► § 1.168(d) For petitioning the Commissioner to record a plant variety denomination . . .
§ 1.168(g) For petitioning the Commissioner to record a substitute plant variety denomination . . . ◄

3. Section 1.72 is proposed to be amended by adding the following paragraph:

§ 1.72 Title and abstract.

► (c) In the case of an application for the patenting of a plant variety under the provisions of 35 U.S.C. 101 or 161, the title of the application must include a variety denomination for the specific new variety claimed, except as provided for in § 1.168(b). The granting of the patent will be deemed the recordation of the variety denomination for purposes of compliance with Article 13 of the Interna-

tional Convention for the Protection of New Varieties of Plants, as revised on Oct. 23, 1978.

4. A new § 1.168 is proposed to be added, to read as follows:

►§ 1.168 Variety denomination, submission to the Office, examination.

(a) The variety denomination submitted by the patent applicant under § 1.72 will be examined for compliance with the International Convention for the Protection of New Varieties of Plants. Specifically, the denomination:

- (1) must enable the plant variety to be identified;
- (2) must not be likely to cause confusion, to cause mistake or to deceive concerning the characteristics, value or identity of the plant variety or the identity of the breeder;
- (3) must not consist solely of numbers except if this is an established practice for designating plant varieties; and
- (4) must not be likely to cause confusion or mistake or to deceive as to any prior right of a third party, and shall not affect prior rights of third parties.

(b) If a proposed variety denomination is not included as part of the title of the application, when filed, the examiner shall set a period of not less than thirty days to provide a variety denomination. If a plurality of plant varieties are claimed, which make it impractical to include each variety denomination in the title of the application, each claim directed to a specific plant variety shall instead include the denomination of the claimed plant variety. In cases where no specific plant variety is claimed, for example, a patent directed to the improvement of a plant species, the denomination requirement applicable to the patenting of a plant variety or varieties will be waived.

(c) If the examiner determines that a proposed variety denomination is not suitable for recordation, the examiner shall refuse recordation thereof and shall set forth in an Office action the reasons for such refusal. An applicant disagreeing with the reasons for such refusal may request reconsideration and withdrawal of the refusal, giving the reasons therefor. If the examiner's refusal to record a proposed variety denomination is repeated and made final, the examiner shall at the same time require the applicant to propose another variety denomination for recordation.

(d) After a final requirement by the examiner for submission of a proposed new variety denomination, the applicant, in addition to making any response due on the remainder of the action, may in lieu of proposing another variety denomination petition the Commissioner for review of the examiner's holding, upon payment of the fee set forth in § 1.17(h).

(e) The applicant is required to submit for recordation the same variety denomination (or, if not in English, a translation or transliteration thereof) as that previously registered or recorded, or proposed for registration in an earlier filed application for protection of the same variety in another member state of the International Union for the Protection of New Varieties of Plants. The applicant may submit another denomination for recordation, however, upon a showing satisfactory to the examiner as to why the denomination originally submitted or registered in another member state of the said Union is unsuitable for recordation in the United States. During pendency of an application, the examiner may require the applicant to provide information regarding all denominations for the same variety registered or proposed for registration in other member states of the said Union before the application was filed in the United States.

(f) The applicant shall indicate in the application the date of first commercial use in the United States if any, of the variety denomination proposed for recordation; or, if not commercially used prior to filing of the application, indicate during pendency of the application when the denomination has first been

commercially used in this country. No variety denomination will be recorded if first commercially used after the establishment of third party proprietary rights to the denomination.

(g) A patentee in order to avoid a conflict between a recorded variety denomination and a trademark or other proprietary right, or where the recorded variety denomination is likely to be confused with another, or where business or marketing considerations dictate, may propose for recordation a substitute variety denomination for that already recorded. Such a proposal shall be in the form of a petition to the Commissioner together with the fee set forth in § 1.17(h). The proposed substitute denomination will be examined in the same manner as the denomination originally recorded, and upon recordation shall be promptly published in the *Official Gazette*. A Certificate of Correction indicating such substitute denomination shall be issued for the patent. If the patent has been assigned, only the assignee of record may apply for recordation of a substitute denomination.

(h) The Commissioner shall upon its receipt in the Office promptly publish in the *Official Gazette* each variety denomination proposed for recordation and the genus and species of the plant involved. Correspondence from the public objecting to the recordation of such denomination, if accompanied by reasons therefor, will be placed in the official file and considered by the examiner in an ex parte manner. An objection to recordation may be based on an earlier recorded or unrecorded variety denomination, a registered or common law trademark, a trade name or trade indicia, or other alleged prior right timely called to the Office's attention. The applicant shall be notified by the Office of the receipt of such correspondence. The secrecy of any pending application will be preserved in accordance with 35 U.S.C. 122.

Sept. 18, 1987

RENE TEGTMEYER
Assistant Commissioner
for Patents

[1085 OG 13]

(54) Summary Results of 1991 Patent Action Survey

The Patent and Trademark Office conducted a survey in the March-June 1991 period to gather information from patent practitioners and other Office "customers" about the quality of Office actions. Approximately 27,000 questionnaires (survey forms) were mailed with Office actions. Each survey form included 10 specific questions and provided space to make general comments. Each survey form identified only the Examining Group to which the application was assigned so that all responses would be completely anonymous.

Approximately 4,200 survey forms were returned (16% return rate).

Results

1. A tabulation of respondents' answers to the 10 specific questions revealed the following compliance rates relative to the accompanying Office actions:

35 U.S.C. 103 Rejections:

1. 72% identify portion of references relied on.
2. 70% indicate how teachings of references are modified or combined.
3. 65% communicate the rationale why the claimed invention would have been obvious.

35 U.S.C. 112, 1st para. rejections:

4. 58% sufficiently explain "new matter" position.
5. 67% sufficiently explain "non-enabling" disclosure position.

Final Rejection Practice:

6. 56% respond to applicant's arguments.
7. 52% of Advisory Actions identify new issues and/or new matter when denying entry.

Allowance Practice:

8. 90% of reasons for allowance were clear.

Miscellaneous:

9. 45% clearly communicate reasons for finding declarations/affidavits unpersuasive.
10. 54% of Examiner's Answers address appellant's arguments.

The questions relating to "Final Rejection Practice" and to the "Miscellaneous" topic areas asked whether examiners respond to attorney arguments and how attorneys interpret the examiners' responses to their arguments. These topic areas and others where there are relatively low compliance rates have been identified as areas of Office practice needing improvement.

The responses to the 10 survey questions show that continuous improvement has been achieved in several areas. For example, the high percentage of affirmative responses in the area of explaining 35 U.S.C. 103 rejections (72%, 70%, and 65%) reflects a clear improvement over internal surveys made within the last several years, and reflects the effectiveness of recent extensive Office training programs in this area. It is also apparent there is still room for further improvement. Another positive result was that 90% of respondents, commenting on Reasons for Allowance, felt that the reasons given were clear.

II. Analysis of respondents' general comments:

Over 1800 survey forms were returned with comments (43% of total responses). While these comments were directed toward many different areas, two major categories were apparent:

Category A: 62% of the comments expressed the need for additional quality improvement of actions.

The most commonly expressed comments in this category indicate that the quality of Office actions can be improved by giving a better explanation of the rationale or reasons in support of rejections. Examples of comments received include: all elements of claims are not addressed in 35 U.S.C. 102(b) rejections; one of the references used in a 35 U.S.C. 103 rejection is not explained; features of dependent claims were not treated; claim limitations were ignored; "boilerplate" 35 U.S.C. 103 rejections were being given; and it was difficult to understand the rationale for the rejection, and, therefore, to file a proper and meaningful response.

The second most common type of comment in this category indicated that examiners misunderstand an essential feature. For example: actions reflect a misunderstanding by the examiner of the scope and content of the prior art, the presently claimed invention, or the original disclosure. Further, comments indicate that some cited references seem to have no bearing on the claimed invention because the rejection of the claims is not supported by the disclosure of the applied reference.

Category B: 20% of the comments had compliments about the quality of Office actions.

The compliments acknowledged actions which presented a thorough analysis of the claim language with respect to the prior art references; which included suggestions for amendments to the claims so as to place the application in condition for allowance; and/or which gave a "tough" examination which would result in a stronger patent.

It is significant that the most common type of comment indicated that enhanced explanations would improve the quality of Office actions, while, at the same time, the second most common type of comment indicated that the quality of Office

actions is considered to be very good in this regard. This seems to indicate that the quality of many Office actions are good, but that additional emphasis is still needed in this area.

Planned Initiatives:

The answers to the 10 questions and the comments are considered vital to current Office efforts to improve the quality of patent examination. The data, where statistically reliable, has been analyzed on an examining corps and individual group basis and the following initiatives have been, or will be, taken:

1. Update our continuing legal education program for experienced examiners with extra emphasis being placed on areas where improved performance is needed, such as the need for better motivation statements in rejections. Specific courses have been developed to provide tailored training in important areas, such as treatment of algorithms in claims, evaluating evidence submitted by applicants, and responding to applicant's arguments.

2. Enhance the Patent Academy curriculum for training junior examiners to place greater emphasis on the areas of examination where improved performance is needed, such as in responding to amendments after final rejection.

3. Implement focused training in each Examining Group to address specific technological/group specific problems that have been indicated by the survey. The training has been implemented in a variety of ways including one-on-one, art unit and group level programs. Form paragraphs have been developed to help ensure that applicant's arguments are appropriately considered and responded to in Office actions.

4. Develop follow-up surveys in order to determine if the corrective actions were successful. In this regard the answers to the questions and the concerns raised by respondents in their comments will serve as baselines for improvement.

The relatively small number of responses (only 16%, 4,200 responses from 27,000 survey forms mailed) resulted in statistically insignificant data for analysis of some questions at the group level. In part, this may have been due to confusion with prior perception surveys, requiring only a single response from each practitioner involved. Unlike perception surveys, each Patent Action Survey is specific to the Office action that accompanies it, and requests a brief response for that action. Hence, a practitioner who received more than one Office action with a survey form was requested to complete a survey form for each accompanying Office action.

The Office is planning follow-up surveys in FY-1992 and 1993. These surveys will be more meaningful and reliable if respondents answer the questions in as objective a manner as possible. Thus, respondents should try to objectively evaluate the accompanying examiner's action to see if that particular action did or did not include the feature(s) addressed by the question rather than whether there is agreement or disagreement with the examiner's position. Further, since greater participation would yield more reliable statistics, patent practitioners are encouraged to respond to future surveys.

Questions about the FY-1991 Patent Action Surveys should be directed to John Terapane, Director Group 1200, or Carolyn Ballard, Patent Action Survey Coordinator, both at (703) 308-0193.

June 29, 1992

STEPHEN G. KUNIN
Deputy Assistant Commissioner
for Patents

[1140 OG 62]

(55) Report on the Quality Reinforcement Program

The Patent and Trademark Office (PTO) has instituted a Quality Reinforcement Program to identify services offered by the PTO that are in need of improvement. As a part of this program, the Office, in cooperation with the American Intellectual Property Law Association (AIPPLA), has completed an evaluation of selected practices performed by both patent examiners and representatives of patent applicants during the exami-

nation process. The results of this evaluation are detailed in Volume I of the PTO Report of the Quality Reinforcement Program. A summary of the findings of this report is presented below. This summary is presented to report on the findings and to solicit suggestions from both the public and employees of the Patent & Trademark Office on steps that might be taken to raise the level of performance of those practices found to be in need of improvement. The full report and evaluation, which is quite extensive with over 350 pages, is available at the PTO.

Address: Comments and inquiries should be addressed to: The Commissioner of Patents and Trademarks, Washington, D.C. 20231, to the attention of Edward Kubasiewicz, Director, Examining Group 250, Rm. CP4-9D19.

Date: Comments should be submitted by June 16, 1987.

DONALD J. QUIGG
*Assistant Secretary and
Commissioner of Patents
and Trademarks.*

Summary of Volume I-Report on Current Level of Performance of Selected Patent Examining Corps Practices

This is a summary of Volume I of the Quality Reinforcement Program Report, which addresses the current level of performance of selected Patent Examining Corps practices. This summary presents a background of the Quality Reinforcement Program and a synopsis of conclusions reached for each selected practice.

Background of the Quality Reinforcement Program

On Feb. 25, 1986, President Reagan issued an executive order establishing a comprehensive program for the improvement of productivity throughout all of government. From this executive order the Department of Commerce evolved a Productivity Improvement Program entitled PROJECT PRIDE. The program was announced as encompassing productivity, quality excellence and client satisfaction.

The role of U.S. Patent and Trademark Office (PTO) in PROJECT PRIDE centers around quality, and is entitled the Quality Reinforcement Program.

The goal of the PTO program is to improve the quality of patent examining functions and the timeliness and quality of other public services. In particular, the program focuses on improving the quality of practices performed in three different areas of the PTO, i.e., the Patent Examining Corps, the Office of Administration and the Office of Documentation.

The quality of an issued patent and the record before the PTO in the patented file are extremely important to the patent owner and to others who may be competitors or otherwise affected by the patent. Investment decisions and the recoupment of research, development and marketing expenditures often depend upon patent protection. Potential licensees and infringers need to know where they stand in regard to an issued patent. Patent owners and others need to be able to have a high degree of confidence in the validity of a patent. Valid patents and a clear and correct file record will help to eliminate unnecessary and expensive patent litigation costs which are currently estimated to total at least \$800 million per year.

The concern for productivity and productivity improvement is not a recent development at the PTO. During the past quarter of a century one of the most pressing problems for the Office has been a large and growing backlog of unexamined patent applications and the resulting long pendency time between filing an application and issuance of a patent. The average pendency of patent applications in 1964 was 37 months. However, average pendency dropped steadily in the 1970s until it culminated in an average pendency of 18 months in 1977. This pendency was shortlived due to a loss of adequate resources. However, pendency is once again falling and it is expected that an average pendency of 18 months will be achieved in 1989.

Historically, the Office has successfully responded to situations similar to the one in which it presently finds itself. Beginning in the 1960s when the backlog of new applications

exceeded 200,000, a program designed to drastically increase the productivity of the Corps was initiated. Part of that program was what has since become known as "compact prosecution". An increased staff of examiners was reinstructed to take a new approach toward examining in which patentable subject matter was looked for and indicated as early in the prosecution of the case as possible, references were automatically furnished with actions, attorneys were urged to originally file claims of the broadest possible range of scope, telephonic prosecution was instituted, first actions and application disposals became the measure of examiners' performance, preprinted first action forms were designed, etc.

The question before the Office now is whether sufficient attention is being given to quality. The intent of the Quality Reinforcement Program, as it applies to the Patent Examining Corps, is to take stock of the present situation and to consider whether any corrective action needs to be taken to improve the quality of the examination process.

The Office is currently using and improving various tools to assure a quality examined patent. These tools include the quality review program, supervisory reviews of examiner work through the performance appraisal system and through the promotion and signatory authority programs, improved and expanded examiner training, development of the automated patent system to improve the quality of examiner searching, recruitment of "top-of-the-class" new examiners, and detailed and clear guidelines on examining policy and procedure.

The Quality Reinforcement Program is a new quality tool for improving the actual quality of the patents issued as well as the record behind the issuance of these patents. This new program differs from the quality review program in that this program looks at the key pieces of the patent examining process that contribute to and make up the end product or patent rather than looking only at the end product. The Quality Reinforcement Program focuses on the effectiveness and consistency with which examiners apply existing law and procedures and how they communicate their findings to applicants. The program also focuses on the attorney's contribution to this work product. Lastly, the program focuses on the timeliness of some of the services provided by the Corps' clerical support staff. Such focusing is not intended to be carried out one time only. Rather, the methodology used in this program will be applied to any key pieces, identified by PTO personnel or the bar in the future, as needing a review of the type dictated by this program. The aim in short is to build quality and timeliness from the ground up and to maintain them at a high level.

This report presents and analyzes the findings of the Quality Reinforcement Program only as the findings relate to practices performed in the Patent Examining Corps. The portion of the program reported in this volume represents a cooperative effort between the Corps and the American Intellectual Property Law Association (AIPLA) through its Ad Hoc Committee on Quality. The focus is on certain practices involved in the prosecution, examination and processing of patent applications by both the PTO and by patent applicants and their representatives.

Methodology

The methodology adopted for the program comprises the following process:

1. select target practices,
2. determine the current quality or performance level of the target practices,
3. compare the current performance of the target practices to the desired level of performance,
4. implement, where appropriate, steps to raise the current level of performance to the desired level,
5. subsequently, determine the level of performance of the target practices, and
6. compare the current level of performance to the subsequently determined level of performance to determine what, if any, change has occurred.

Target Practices

A number of practices were targeted for the program as a result of complaints and concerns, raised by the bar and PTO

personnel. The targeted practices are identified as follows:

A. Explanations of Rejections

This program targeted examiner "explanations of rejections" as a practice to be reviewed based in part on a demphasis by the Office on the degree to which examiners were required to include detailed explanations of the supporting rationale behind their rejections during the 1970s. The PTO instituted the use of an abbreviated, handwritten form (PTO-1142) for the preparation of first Office actions during the early 1970s. The form provided for a cryptic description of how the references were being combined in a § 103 rejection and provided little space for explanation of the supporting rationale behind rejections. The form was mandatory for all first actions, and was discontinued in 1982 primarily due to complaints from the patent bar and the courts that examiner explanations of rejections were not sufficient. The inclusion of "explanations of rejections" as a targeted practice for this program enables the evaluation of whether further improvement is needed in this area.

B. Final Rejection Practice

This program targeted "final rejection practice" for review based in part on the conflicting needs of PTO and patent applicants/attorneys in this area of practice. In order to reduce the time applicants must wait to obtain a patent and to increase efficiency of the examination process, the PTO uses various incentives for examiners to make their rejections final early in the prosecution.

To the contrary, patent applicants often desire to have the examiner repeatedly reconsider his or her position or to continue to amend the claims. These conflicting incentives often lead to disputes relating to the propriety and/or timeliness of final rejections and to whether amendments are entered after an action has been made final.

C. Information Disclosure Statements

This program targeted "information disclosure statements" for review based upon concerns expressed by both applicants/attorneys and by the Patent Examining Corps over the submission of these statements.

Patent examiners, in the interest of efficiency and productivity, are benefited by the disclosure to the Office of all material information relating to the patentability of the application prior to their first Office action. However, this must be balanced against the practical reality that applicants/attorneys often don't become aware of material information until later in the prosecution, and don't have readily available translations of foreign documents or copies of documents for submission to the PTO. This practice looks at the extent to which the practical needs of both the PTO and the applicant/attorney are served by the procedures relating to "information disclosure statements".

D. Interviews

This program targeted "interviews" for review to determine the extent to which personal discussions are held between examiners and attorneys and to evaluate whether the parties consider personal interviews to be a productive or helpful means for clarifying issues that may not have been clearly communicated in earlier written communications. Selection of "interviews" as a targeted practice was based in part on isolated complaints by some examiners that interviews were not always productive for them and by some attorneys that some examiners are reluctant to hold interviews.

PTO procedures require that all business with the Office be conducted in writing (37 CFR § 1.2). To comply with this rule and still accommodate request for oral discussions with examiners, it is PTO policy that the substance of all personal interviews must be reduced to writing (see § 713.04 of the MPEP). Selection of "interviews" as a targeted practice was also based on concerns that the written

record include an explanation of the substance of all oral interviews. Under this practice, the program focused on determining the perceptions of examiners and attorneys about interviews.

E. Responses by Applicant

This program targeted "responses by applicant" for review to determine the extent to which practitioners representing patent applicants submit responses to examiner actions that are complete and in compliance with current rules and procedures. Specific activities under this topic, such as the extent to which explanations of why claims are considered unobvious over the art cited by the examiner and the degree of compliance with 37 CFR § 1.116 when amendments are presented after a final rejection, were selected based upon some complaints by examiners about attorney responses in these areas.

F. Completeness of the Record

This program targeted "Completeness of the Record" for review based primarily upon the importance of a complete file record to those who must review patented files and make important decisions based upon the facts and determinations therein. The necessity of insuring a complete file record has been urged by such diverse interests as federal court judges, potential licensees, potential infringers, and those attempting to avoid infringement.

This topic looks at the extent to which examiners insure a complete file record by including a statement of reasons for allowance where appropriate, fully and properly record the search of the prior art, and check foreign priority information for accuracy and completeness. This topic does not look at the extent to which examiners explain their rejection; see targeted practice A, "Explanation of Rejections." The extent to which applicants file complete responses is covered in targeted practice E, "Responses by Applicant."

G. Compact Prosecution

This program targeted "Compact Prosecution" for review based upon its importance as a key element in current PTO efforts to reduce pendency time of applications to an average of 18 months. The premise behind compact prosecution is that pendency time will be minimized if each stage of prosecution is fully and thoroughly conducted by both examiners and applicants. The demands of such a standard have inevitably led to complaints from each side relating to the completeness of considerations and the willingness to take that "extra step". Examiners have been criticized for confining searches to only what is literally claimed, and for failing to indicate possible areas of patentability at the earliest possible stage. Applicants have been criticized for failure to claim all limitations that might be considered patentable prior to the initial search by the examiner, for amending the claims to include these limitations only after first action, and for failing to correct significant formal deficiencies prior to initial examination.

H. Appeal Practice

This program targeted "Appeal Practice" for review primarily due to the recent and substantial increase in the backlog of appealed applications awaiting decision by the Board of Patent Appeals and Interferences. Primary emphasis was placed on determining the extent to which appellant's brief and the examiner's answer are formally complete so that expeditious consideration may be given by the Board.

As a result of the high priority being given by the PTO to reduce the backlog of cases at the Board, additional survey questions were included to determine the extent to which additional requirements beyond those currently in

SUMMARY OF CONCLUSIONS

effect for the preparation of the appellant's brief and examiner's answer would be useful to examiners and the Board.

I. Allowances After Appeal Brief

This program targeted "Allowances after Appeal" for review in response to complaints that examiners often allow cases after appellant has filed a brief when the cases should have been allowed before the brief was filed.

J. Processing Times

This program targeted "Processing Times" for review based upon its importance to the PTO goal of reducing pendency of patent applications to 18 months.

DETERMINATION OF CURRENT LEVELS
OF PERFORMANCE

The step of determining the current level of performance of the targeted practices was accomplished through a number of surveys.

One survey, called the Applications Survey, was an internal factual survey that involved selecting a sample of 150 applications on a random basis from all the examining groups. A survey team, comprising three Supervisory Patent Examiners (SPEs) and three reviewers from Quality Review, performed a detailed review of the applications according to a questionnaire, which was developed with the joint cooperation of the AIPLA Ad Hoc Quality Committee.

A second survey, called the AIPLA Survey, was an opinion questionnaire provided by the AIPLA to 5500 of its members. The questionnaire was developed jointly with the AIPLA Ad Hoc Quality Committee. The AIPLA questionnaire sought the perception of the attorneys of the quality of the work performed by the Corps relative to the targeted practices. Space was provided for the respondents to include comments on the questionnaire. Over 1100 attorneys responded to the questionnaire.

Another survey, called the Examiners Survey, was also an opinion questionnaire provided to all patent examiners and SPEs on a voluntary and anonymous basis. The questionnaire queried the examiners and SPEs about the practices of the practitioners before the PTO. Space was provided for the respondents to include comments on the questionnaire. Over 650 responses were received.

A fourth survey, called the Appeals Survey, was also an internal factual survey. The questionnaire was developed with the cooperation of the AIPLA Ad Hoc Quality Committee. The questionnaire sought data about the practices carried out in the appeal process in the PTO. For this survey, 60 applications were selected on a random basis from all the examining groups. The survey team performed a detailed review of the applications according to the questionnaire.

Three other surveys were used to gather data. All of these surveys were developed and conducted by the Office of Quality Review. Two surveys involved the review of 1878 allowed applications concerning information disclosure statements. Another survey involved the review of 290 applications allowed after appellant had filed an appeal brief, but before an examiner's answer was prepared.

Relative to the processing times, PALM reports were used to obtain data on the practices targeted for this activity.

COMPARISON OF CURRENT LEVELS
TO DESIRED LEVELS

The step of comparing the current levels of performance to the desired or standard levels of performance was accomplished by setting out the desired or standard level for each target practice. Next, all the information provided by the surveys was analyzed for each target practice and compared to the desired or standard level for the target practice. The analysis resulted in the following general conclusions. (A detailed listing of all conclusions for each targeted practice is presented in Section VII of Volume I of the Quality Reinforcement Program Report.)

A. Explanations of Rejections

1. Identification of Statutory Basis for Rejection

Over 95% of the rejections under 35 USC §§ 103 and 112, second paragraph (clarity), cited the statutory basis for the rejection. With respect to rejections under 35 USC § 102, 92% of the rejections cited the statutory basis. Hence, no significant improvement is needed in specifying the statutory basis of a rejection based on 35 USC §§ 102, 103 or 112, second paragraph.

With respect to rejections under 35 USC § 112, first paragraph, 14-19% of the rejections based on a non-enabling disclosure and 42% of the rejections based on new matter failed to cite the statutory basis. Hence, improvement is needed in specifying that a rejection, based on new matter or the lack of an enabling disclosure, is under 35 USC § 112, first paragraph.

2. Explanation of Rejections Based on Prior Art

Approximately two-thirds of the rejections reviewed failed to explain why the claimed invention would have been obvious in view of the applied prior art. Over 75% of the attorneys responding to the AIPLA survey perceived rejections under 35 USC § 103 as lacking an explanation of why the claimed invention would have been obvious. Moreover, 70 comments from attorneys (the highest for any topic) were critical of the explanations of rejections under 35 USC § 103. Hence, significant improvement is needed to assure that rejections based on prior art appropriately communicate the rationale for such rejections.

3. Explanation of Rejections Under 35 USC § 112, First Paragraph, Non-Enabling Disclosure

Nineteen percent of all the non-enabling disclosure rejections reviewed failed to give reasons in support of the rejection. Hence, improvement is needed in explaining why a disclosure is non-enabling.

4. Explanation of Rejections Under 35 USC § 112, First Paragraph, New Matter

With respect to rejections based on new matter, 35% of the rejections reviewed failed to point out the language considered to be new matter, and 40% of these rejections did not give a reason why the language was considered new matter. Hence, significant improvements are needed in pointing out the language that is considered to be new matter, and explaining why the new matter is not supported by the disclosure as originally filed.

5. Explanation of Rejections Under 35 USC § 112, Second Paragraph

Approximately 90% of the rejections reviewed pointed out the claim language considered unclear. Thus, no significant improvement is needed in pointing out what claim language is considered unclear in rejections under the second paragraph of § 112.

Twenty-three percent of the non-final rejections reviewed failed to explain why the language was considered unclear. In final actions, 8% of the rejections failed to explain why the language was considered unclear. Hence, improvement is needed in explaining why the claim language is considered unclear in rejections under the second paragraph of § 112.

6. Alternative Rejections Under 35 USC §§ 102/103

Three percent of the actions reviewed contained alternative rejections under 35 USC §§ 102, 103. Ten percent of the examiners' answers reviewed contained similar rejections. The number of alternative rejections under either § 102 or § 103 was sufficiently low so that no further action is required.

B. Final Rejection Practice

1. Timely Development of Issues in Examiner and Attorney Communications

The perception surveys indicate that examiner actions and attorney responses leading up to final rejection do not adequately develop the issues. The objective Applications Survey data indicate that 32% of examiners' non-final actions do not fully respond to all arguments raised by the applicant. Improvement is needed by both examiners and attorneys in fully developing the issues prior to final.

Final rejections were found to treat all claims, but were deficient in answering all arguments presented by the applicant and in treating affidavits and declarations submitted to overcome rejections. Improvement is needed in responding to all issues raised during the prosecution when making a final rejection.

2. Appropriateness of Final Rejection

Thirteen percent of the final actions surveyed were considered premature. However, 91% of the final rejections reviewed were considered to be reasonable. Thirty-nine percent of the attorneys responding to the AIPLA survey perceived final actions as proper only occasionally or rarely.

Though examiners appear to be doing an acceptable job in making reasonable and proper final rejections, some improvement is needed. However, attorney perception is substantially lower than the factual findings. This may be due to a desire by attorneys for a more liberal after final procedure rather than improper examiner application of the current procedure.

3. Advisory Actions

Advisory actions were found to be mailed in a timely manner.

Thirty-three percent of the amendments filed after final were improperly refused entry. Only 46% of the attorneys responding to the AIPLA survey perceived that reasons given by examiners for the non-entry of amendments after final were clear almost always or most of the time. Moreover, only 50% of these attorneys perceived their response to final rejections to have been given full consideration.

In only 39% of the instances when an amendment to existing claims was entered after final did the advisory action clearly specify the grounds of rejection applicable to the amended claims.

Hence, significant improvements are needed in assuring that amendments after final:

- are not arbitrarily refused entry,
- are given sufficient consideration, and
- communicate the ground of rejection for any claim amended after the final rejection.

C. Information Disclosure Statements

1. Frequency and Timeliness of Submissions

Information disclosure statements are submitted either as statements in the specification or as separate papers in approximately 60% of the applications. Eighty-two percent of the statements are submitted prior to the first action. However, 47% are filed more than three months from the filing date. In 1978, just after 37 CFR § 1.56 was amended, only 21% of the statements were filed more than three months after the filing date. Twelve percent of applications on appeal had statements filed after the final rejection. Two percent of the statements are filed after the application has been allowed.

Only 11% of the statements filed more than three months after the filing date contained an explanation for the delay.

Hence, significant improvements are needed for assuring that information disclosure statements are filed in a timely manner, and with an explanation for the delay when filed late.

2. Submission Includes Explanation of Relevancy of Documents

The explanation of the relevance of the art is substantially below standard whether the citation is incorporated

in the specification or is in a separate paper. Hence, significant improvement is needed in assuring that explanations of the relevance of documents cited in information disclosure statements are provided.

3. Copy of Documents Supplied

Copies of cited documents, regardless of type, are not provided in approximately 60% of cases when statements are incorporated into the specification. Even when eliminating those statements citing only U.S. patent documents, the Applications Survey still shows a 25% level of non-compliance for specification-incorporated statements. There is a need for improvement in supplying copies of documents cited in specification-incorporated statements.

4. Translation of Foreign Documents Provided

Either a translation or a statement that a translation is not readily available is generally not provided when the citation is incorporated in the specification. While compliance with the standard is better when the citation is in a separate paper, compliance is still poor. Improvement is needed.

5. Form PTO-1449 or Equivalent

Since the use of PTO form 1449 is not mandatory, this section merely reports the degree to which the form is voluntarily used and is thus informational only. Form PTO-1449 is used in about 70% of disclosure statement submissions when the submission is in a separate paper. The form is used in about 25% of the disclosure statements incorporated in the specification.

6. Miscellaneous

Examiners considered art submitted prior to first action in 93% of cases reviewed. Improvement is needed to insure 100% compliance.

While the survey results indicate a perception by examiners that related copending applications are not being fully disclosed, no objective survey data was recorded on this topic. Since attorneys are only required to cite related applications that are *material*, the survey question does not measure perceived performance against the current standard. No conclusions can be reached based upon the survey data.

D. Interviews

1. Interviews in General

The results of the AIPLA survey indicate that, of the attorneys responding to the survey,

- 75% perceived interviews as productive,
- 89% perceived interviews to be kept as scheduled,
- 68% perceived examiners to be adequately prepared, and
- 85% perceived the interview summary form to be completed adequately.

The results of the Examiners Survey indicate that, of the examiners responding to the survey,

- 53% perceived interviews as productive,
- 96% perceived interviews to be kept as scheduled,
- 88% perceived attorneys to be adequately prepared, and
- 67% perceived attorneys as making the substance of the interview of record.

The survey results indicate that attorneys perceive that examiners are willing to grant at least one interview if timely requested. No need for improvement would appear necessary. A substantial number of attorneys (approximately 30%) feel that examiners are only occasionally or rarely willing to discuss and attempt to resolve substantive issues at interviews. However, examiners often express the desire to reserve commitments until after an interview so that full consideration of all points could be made. It cannot be concluded from the survey data whether examiners could be making more substantive commitments at

interviews. No need for improvement is indicated. Some improvement is needed by attorneys in ensuring that an adequate written record of the substance of all interviews is provided.

2. Telephone Restriction

As a general policy, the examiner should telephone the attorney of record and request an oral election when making a restriction requirement. In 62% of the restriction requirements reviewed, the policy was followed. However, the telephone is not required to be used when examiners know that an election will not be made by phone. The number of instances of the remaining 38% where no restriction was made for this reason was not determined. Hence, while it appears that some improvement is needed, the degree of need for improvement cannot be determined without further study.

E. Responses by Applicant

1. Responses under 37 CFR § 1.111

Approximately 90% of the responses reviewed were technically fully responsive to Office actions. However, the percentage of responses that explained why the claimed invention would have been unobvious in view of the prior art was significantly lower. Moreover, some of the comments from examiners indicate that they feel responses often argue references individually rather than address the combination of references set forth in the prior Office action. At least part of this may be due to the lack of an examiner explanation in rejections how references are used and combined.

Hence, no significant improvement is needed in assuring that responses under § 1.1 treat all objections and rejections. However, significant improvement is needed in assuring that responses include an explanation of why it would have been unobvious to combine or modify the references in the manner suggested by the examiner.

2. Responses Under 37 CFR § 1.116

Only 16% of the amendments filed after a final rejection that were reviewed presented a showing of good and sufficient reasons why they were necessary and why they were not presented earlier. Moreover, 48% of the examiners and SPEs responding to the Examiners Survey perceived that attorneys generally do not start serious prosecution or make substantial amendments until after the final rejection.

Hence, significant improvement is needed in assuring that responses under § 1.116 explain why an amendment was not presented earlier.

3. Appeal Briefs-Responses to Rejections

Ninety-four percent of the briefs reviewed contained an explanation why the examiner's modification of the references would have been unobvious. Hence, no significant improvement is needed in assuring that briefs adequately communicate why the examiner's rejection is considered improper.

4. Affidavits/Declarations Submitted to Overcome Rejections

Approximately 20% of affidavits/declarations are not filed in a timely manner. Hence, improvement is needed in assuring that affidavits/declarations are submitted in a timely manner.

Examiner perception of the sufficiency of affidavits to either establish proper "nexus" when asserting commercial success or to present evidence to substantiate an allegation of "secondary considerations" was very low, indicating a need for at least some attorney improvement.

F. Completeness of the Record

1. Reasons for Allowance

In 22% of the applications reviewed, the reason for allowance was not clear from the record. Moreover, only 50% of the attorneys responding to the AIPLA Survey perceived the reason for allowance made of record by the examiner, as clearly establishing why the claims were

allowed. Hence, significant improvement is needed in assuring that the record clearly explain why the claims were allowed.

2. Recordation of Searches

Eighty-five percent of the applications surveyed had search boxes properly filled out by the examiner. Approximately 45% of the applications, wherein an automated search was made, were lacking information about the automated search. Hence, improvements are needed in assuring that the search data are recorded in a complete and accurate manner.

3. Foreign Priority Data Verified

The priority/PCT data appearing on the face of the file wrapper were not verified in 23% of the applications reviewed. Hence, a significant improvement is needed in assuring that the priority/PCT data appearing on the file jacket are verified.

G. Compact Prosecution

1. Adequacy of Applications Prior to First Action

Applications should be devoid of obvious informalities. Significant improvement is needed in foreign origin applications since 70% of the examiners surveyed perceived foreign applications as containing substantial formal deficiencies almost always or most of the time. However, only 16% of the examiners perceived U.S. origin applications as containing substantial formal deficiencies.

The disclosure should be readily understandable and the claims should clearly define the invention to enable the examiner to conduct an adequate search. Improvement is needed in foreign origin applications since 20% of the examiners surveyed perceive such applications as lacking an adequate disclosure to permit examination almost always or most of the time. However, 97% of these examiners perceive U.S. origin applications as containing an adequate disclosure.

Claims should be presented that range from the broadest to the most detailed that applicant is willing to accept. Substantial improvement is needed in this area since the Applications Survey shows that only approximately 60% of the applications surveyed contained such a range of claims.

2. Searches

The first search should cover the invention as described and claimed. Substantial improvement is needed in conducting a more thorough search at the time of the first action since 50% of the applications surveyed revealed newly applied art in subsequent actions that should have been applied in a previous action.

A search should be made in the issuing class/subclass. Improvement is needed in this area because 11% of the allowed applications reviewed did not indicate that the issuing class/subclass was searched.

3. Indication of Allowable Subject Matter

Examiners should communicate certain aspects or features of applicant's invention that if properly claimed would receive favorable consideration. Significant improvement is needed in this area since only 59% of the applications that were deemed appropriate for an indication of allowable subject matter had such an indication.

H. Appeal Practice

1. Appellant's Brief-Format

Ninety-five percent of the briefs reviewed contained a concise explanation of the invention. However, only 46% of the explanations contained a reference back to the drawings and/or specification. Hence, a significant improvement is needed in assuring that appellant's explanation of the invention refers to the drawing and/or specification. Ninety-five percent of the briefs reviewed contained a copy of the claims. Hence, no significant improvement is needed in assuring that appellants provide a copy of the claims on appeal.

In addition, formal matters that are not currently required in briefs were found to be included in the surveyed briefs to the following extent.

- 27% of the briefs included a separate summary of the issues on appeal.
- 53% of the briefs included a citation of the references as well as an explanation of each reference.
- 7% of the briefs included a reference back to the drawings or specification in the copy of the claims presented in the brief; however, 58% of the examiners surveyed thought that an appeal brief would be more useful if the claims on appeal were read on the drawings or specification, and
- 2% of the briefs pointed out an exemplary claim; however 60% of the examiners surveyed thought that an appeal brief would be more useful if appellant is required to state whether all the claims on appeal stand or fall together.

The formal requirements of the brief should be reviewed to determine if these additional requirements would improve the manner in which issues on appeal and evidence in support thereof are set forth in the brief.

2. Examiner's Answer-Format

Ninety percent of the answers surveyed identified the status of all the claims in the applications. One hundred percent of the answers cited all the references relied upon in the appeal and pointed out any deficiencies in the copy of the claims provided by appellant. Hence, no significant improvements are needed in the format of the examiners' answers, as measured against the formal requirements for examiner's answers.

In addition, formal matters that are not currently required in examiner's answers were found to be included in the surveyed answers to the following extent.

- 15% of the answers included a summary of the issues on appeal.
- 40% of the answers included an explanation of the invention, and
- 28% of the answers included an explanation of the references.

The formal requirements of the examiner's answer should be reviewed to determine if these additional requirements would improve the manner in which issues on appeal and evidence in support thereof are set forth in the examiner's answer.

3. Examiner's Answer-Completeness

Seventy-two percent of the answers reviewed responded to every significant argument raised in the briefs. Hence, a significant improvement is needed in assuring that examiners' answers respond to every significant argument/issue raised by appellants.

4. Post Examiner's Answer Practice

The Appeals Survey shows that a substantial number of reply briefs are merely noted with no further comment by the examiner. The findings are inconclusive regarding the propriety of the reply briefs or whether reply briefs are being treated properly by examiners.

I. Allowance After Appeal Brief

Thirty-nine percent of applications allowed after an appeal brief had been filed were found to have no change in appellant's position. Hence, significant improvement is needed in assuring that applications are allowed at the earliest appropriate stage of prosecution.

J. Processing Times

1. 16 Mailing of Office Actions

Substantial improvement in mailing Office actions earlier than one month from the day when the examiners are given credit for the Office action has been accomplished since the inception of the Quality Reinforcement Program.

2. Mailing of Notices of Allowance

Substantial improvement in assuring that Notices of Allowances are mailed promptly has been accomplished since the inception of the Quality Reinforcement Program.

3. Responses to Amendments After Final

Substantial improvement in mailing responses to amendments after final has been accomplished since the inception of the Quality Reinforcement Program.

Perceptions

In addition to reaching conclusions on the current level of performance of each target practice, the program determined the opinions of patent examiners and representatives of applicants on various topics involved in the examination process. A summary of their perceptions is presented below.

Examiner legal proficiency was perceived by attorneys to be in definite need of improvement.

Examiner technical competency, care in doing the job, and neatness of attire were perceived by attorneys as more positive than negative, but in need of improvement.

Clerical competency and care in doing the job were perceived by attorneys to be in definite need of improvement.

Clerical functions including neatness of attire, cooperativeness, courteousness and availability were perceived as being more positive than negative, but with substantial room for improvement.

Attorney handling of foreign origin applications was perceived by examiners to be deficient in preparation of the case for examination. Attorney practices including continued prosecution after final, interview practice, submission of information disclosure statements and explanation of reasons for disagreement with § 103 rejections were also of concern to examiners.

[1078 OG 22]

(56) Diligence in Filing Petitions to Revive and Petitions to Withdraw the Holding of Abandonment

Once an application becomes inadvertently abandoned, it is incumbent on applicant to act with diligence in providing the response necessary to continue prosecution. Petitions to revive or to withdraw the holding of abandonment must be filed promptly after applicant is notified or otherwise becomes aware of the abandonment. Unless and until the Commissioner accepts applicant's response as sufficient and complete to revive the application or to withdraw the holding of abandonment, the application remains abandoned and the burden continues to rest with applicant to exercise diligence.

Some practitioners have demonstrated a lack of diligence in filing or renewing a petition to revive or a petition to withdraw the holding of abandonment. This appears to have been a conscious decision on the practitioners' part based on the belief that any delay in filing or renewing a petition could be cured by filing a terminal disclaimer equivalent to the period of delay in prosecuting the application. While the Office does have a policy of requiring a terminal disclaimer in those situations where there has been a delay of more than six months in filing a grantable petition to revive an application that has become abandoned [37 CFR 1.137(c), 1.316(d) and 1.317(c)], the terminal disclaimer has never been authorized or set forth in the rules as a substitute for diligence. Indeed, such an interpretation would be contrary to the traditional concept of reasonable diligence and is contrary to the explicit requirement of 37 CFR 1.137(a), 1.155(b), 1.181(f), 1.316(b) and 1.137(b) that a peti-

tion to revive be filed promptly. See *In re Application of Takao*, 17 USPQ2d 1155 (Comm'r. 1990).

JAMES E. DENNY
Assistant Commissioner for
Patents-designate

[1124 OG 23]

(57) **Patent and Trademark Office**
37 CFR Part 1

Changes in Procedures for Revival of Patent
Applications and Reinstatement of Patents

Agency: Patent and Trademark Office, Commerce
Action: Final Rule

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to: modify the petition requirements for reviving abandoned applications; extend the provisions for revival under the unintentional standard to applications abandoned under § 1.53(d); modify the requirements for a petition to accept late payment of a maintenance fee filed more than six months after expiration of a patent; modify the requirements for a petition to accept unavoidably delayed payment of a maintenance fee; and provide for reinstatement of a patent where the delay in timely payment of a maintenance fee was unintentional. The Office is also establishing the amount for the surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unintentional. **Effective Date:** Sept. 20, 1993. These rules will be applicable to all papers filed with the Office on or after the effective date. **For Further Information Contact:** Jeffrey V. Nase by telephone at (703) 305-9282 or by mail marked to his attention and addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information: In a Notice of Proposed Rulemaking published in the Federal Register (57 FR 41899) on Sept. 14, 1992, and in the Patent and Trademark Office *Official Gazette* (1143 Off. Gaz. Pat. Office 8) on October 6, 1992, the Office proposed to amend §§ 1.17, 1.137, 1.155, 1.316, 1.317 and 1.378. In an Interim Rule published in the Federal Register (57 FR 56448 on November 30, 1992, and in the Patent and Trademark Office *Official Gazette* (1145 Off. Gaz. Pat. Office 339) on December 8, 1992, the Office, pursuant to Public Law 102-444 enacted October 23, 1992, established interim rules for reinstatement of a patent where the delay in timely payment of a maintenance fee was unintentional. The Office also established the amount for the surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment was shown to the satisfaction of the Commissioner to have been unintentional. No oral hearing was held.

DISCUSSION OF SPECIFIC SECTIONS TO BE CHANGED
OR ADDED:

(1) Post issuance fees. (§ 1.20)

Section 1.20(i) is amended to add a \$1,500 surcharge fee for accepting the unintentionally delayed payment of a maintenance fee.

(2) Unavoidable or unintentional abandonment of an application

Sections 1.137, 1.155, 1.316 and 1.317 each provide for petitions to the Commissioner for relief from failure to timely comply with a requirement of the Office. Section 1.137 provides for petitions to revive patent applications abandoned for failure to prosecute where the delay in prosecution was unavoidable (§ 1.137(a)) or the delay was unintentional (§ 1.137(b)). Section 1.155 provides for petitions for acceptance of late payment of issue fees in applications for design patents as though no abandonment had ever occurred where the delay in payment

was unavoidable (§ 1.155(b)) or unintentional (§ 1.155(c)). Section 1.316 provides for petitions for acceptance of late payment of issue fees in applications for patent as though no abandonment had ever occurred where the delay in payment was unavoidable (§ 1.316(b)) or unintentional (§ 1.316(c)). Section 1.317 provides for acceptance of late payment of the balance of issue fees in patents as though no lapse had ever occurred where the delay in payment was unavoidable (§ 1.317(b)) or unintentional (§ 1.317(c)).

In order to obtain relief under the unavoidable standard in the above-noted sections, the regulations continue to require the filing of a terminal disclaimer if the petition is filed more than six months after the date of abandonment. See §§ 1.137(c), 1.155(d), 1.316(d) and 1.317(d). The terminal disclaimer must disclaim a period equivalent to the period of abandonment. The period of abandonment is considered to be the number of months lapsed from the date of abandonment until the date of filing of a grantable petition.

Sections 1.137(c), 1.155(d) and 1.316(d) are amended to reflect the current practice that a terminal disclaimer filed for the purpose of reviving an application also applies to a patent granted on any continuing application entitled to the benefit of the filing date of the subject application under 35 U.S.C. 120.

Applicants may petition under the provisions of § 1.183 for a waiver of the requirement that a period equivalent to the period of abandonment be disclaimed if it can be shown that an extraordinary situation exists in which justice requires waiver of this requirement.

If petitions under the above-noted sections were not grantable because of insufficient evidence or petitioner's failure to comply with certain requirements, the Office dismissed the petitions. The dismissal indicated any missing items and warned petitioners that any renewed petition seeking reconsideration must be filed promptly. While the promptness requirement was not precisely defined, § 1.181(f) requires the filing of petitions within two months from an action complained of in order to avoid possible dismissal of the petition on the grounds that it was not timely filed. The above-noted sections are being amended to specify a two-month period or such time as may be set in the dismissal as being the appropriate deadline for requesting reconsideration. In those situations where petitioners require more time to gather additional evidence or items needed for reconsideration, an extension of time of up to four months may be obtained under the provisions of § 1.136(a). The filing of a renewed petition within the period specified in the decision or within the extended period permitted under § 1.136 will satisfy the promptness requirement of petitions under the unavoidable standard.

Upon failure to timely file a renewed petition under the unavoidable standard, the Office will require a showing of unavoidable delay for the entire period of abandonment. To be entitled to relief under the unavoidable standard, petitioner must be able to show unavoidable delay from a time prior to abandonment to the filing of a grantable petition. *In re Application of Takeo*, 17 USPQ2d 1155 (Comm'r Pat. 1990). Upon failure to timely file a renewed petition under the unintentional standard (see §§ 1.137(d), 1.155(e), 1.316(e) and 1.317(e)), petitioner may be subject to a loss of the right to proceed under the unintentional standard if more than one year lapsed between the date of abandonment and the date the renewed petition is filed.

The unintentional provisions specified in § 1.137(b) will apply to applications abandoned under § 1.53(d). Effective Nov. 5, 1990, the Commissioner waived, under § 1.183, the exception specified in § 1.137(b) as to applicability of petitions under the unintentional standards to applications abandoned under § 1.53(d). See "Petitions to Revive Patent Applications Waiver of Provisions of 37 CFR § 1.137(b)", 1121 Off. Gaz. Pat. Office 6 (Dec. 4, 1990). Section 1.137(b) is amended to incorporate this new practice into the regulations.

The Office is amending § 1.137(b) to clearly require applicant to state that the delay was unintentional, rather than the abandonment was unintentional. The Office has withdrawn its proposal that would have amended the rules of practice to require a terminal disclaimer if a grantable petition to reinstate an abandoned application was not filed within six months from the date of abandonment. The terminal disclaimer proposal was withdrawn because of the burden that such a requirement would

impose on applicants and the Office and because it is unnecessary to achieve its intended purpose. The Office had suggested the terminal disclaimer proposal to ensure that any petition to revive was promptly filed. However, the proposed terminal disclaimer requirement is unnecessary to ensure prompt filing of the petition to revive since the first sentence of § 1.137(b) states that an application may be revived if the delay was unintentional. Accordingly, the specific requirements for the unintentional petition to revive have been amended to correspond to the existing rule provision that revival is available if the delay was unintentional, not just that the abandonment was unintentional. A person seeking revival should not make a statement that the delay was unintentional unless the entire delay, including the delay from the date it was discovered that the application was abandoned up until the petition to revive was actually filed, was unintentional. For example, a statement that the delay was unintentional would not be proper when applicant becomes aware of an abandonment and then intentionally delays filing a petition to revive the application under § 1.137.

The Office adopted a policy wherein, under certain strictly limited conditions, the one-year period for requesting revival of an unintentionally abandoned application could be waived. Accordingly, the prohibition against requests for waiver found in §§ 1.137(b), 1.155(c), 1.316(c) and 1.317(c) has been deleted. See "Petitions Under 37 CFR 1.183 to Waive the One Year Time Period Requirement in 37 CFR 1.137(b), 1.155(c) and 1.316(c)" at 1059 *Off. Gaz. Pat. Office* 4 (Oct. 1, 1985). However, applicants are cautioned that waiver of the one-year deadline under the unintentional standard will continue to be subject to strictly limited conditions.

(3) Issue and term of design patents (§ 1.155)

Section 1.155 is amended to be consistent with the changes to § 1.137. Paragraph (b) of § 1.155 is further modified to correct a typographical error. In the reference to the fee in § 1.17(1), the letter (l) should have appeared instead of the numeral (1).

(4) Application abandoned for failure to pay issue fee (§ 1.316)

Section 1.316 is amended to be consistent with the changes to § 1.137. Paragraph (b) of § 1.316 is further modified to correct a typographical error. In the reference to the fee in § 1.17(1), the letter (l) should have appeared instead of the numeral (1).

(5) Lapsed Patents; delayed payment of balance of issue fee (§ 1.317)

Section 1.317 contains a provision regarding issue fees paid prior to October 1, 1982. Prior to that date, the Office charged an initial base issue fee and, depending on the size of the specification and drawings printed, billed applicants for a balance of issue fee due. Subsequent to Oct. 1, 1982, all applicants were required to pay the same issue fee regardless of the size of the specification and drawings. Reference to the date in § 1.317 is being deleted at this point in time since it is no longer relevant to pending applications. However, practice under this section continues to be relevant when a fee change becomes effective before payment is received.

In order to satisfy the requirement of 35 U.S.C. 151, the Office mails out a Notice of Allowance which specifies the sum of the issue fee due. When the issue fee amount is changed, the sum specified on the Notice of Allowance is at times different from that required at the time payment is actually received in the Office. If applicants submit issue fee payments in the amount specified on the Notice of Allowance after the effective date of a fee increase, then a balance of issue fee is due. The Office will accept payment of the amount specified on the Notice of Allowance and process the application into a patent. In accordance with 35 U.S.C. 151 and 37 CFR 1.317, a notice is sent to applicants requesting payment of the balance of the issue fee due (the difference between the fee due at time of receipt of payment in the Office and the fee specified on the Notice of Allowance) and setting a three-month period for payment. See *In re Mills*, 12 USPQ2d 1847 (Comm'r Pat.

1989). Failure to pay the balance of the issue fee within the specified three-month period, result in lapse of the patent. Therefore, the reference to Oct. 1, 1982, in § 1.317 is being replaced by language specifying the consequences of failure to pay the issue fee due at the time payment is made.

Section 1.317 is amended to be consistent with the changes in § 1.137. Paragraph (b) of § 1.317 is further modified to correct a typographical error. In the reference to the fee in § 1.17(1), the letter (l) should have appeared instead of the numeral (1).

(6) Delayed payment of a maintenance fee (§ 1.378)

Public Law 102-444 amends subsection 41(c)(1) of title 35, United States Code, to permit the Commissioner to accept late payment of any maintenance fee filed within twenty-four months after the six-month grace period, if the delay in payment is shown to the satisfaction of the Commissioner to have been unintentional. In order to implement Public Law 102-444, paragraphs (a) and (c) of § 1.378 are amended to permit the filing of a petition to accept late payment of a maintenance fee, where the delay in payment was unintentional.

In addition to the timeliness deadline set forth in the preceding paragraph, a petition filed under the unintentional standard of § 1.378(c) would have to include the required maintenance fee set forth in § 1.20(e) through (g), the surcharge for an unintentionally expired patent as set forth in § 1.20(i)(2), and a statement that the delay in payment of the maintenance fee was unintentional.

A person seeking reinstatement of an expired patent should not make a statement that the delay in payment of the maintenance fee was unintentional unless the entire delay, including the delay from the date it was discovered that the maintenance fee was not paid timely up until the maintenance fee was actually paid, was unintentional. For example, a statement that the delay in payment of the maintenance fee was unintentional would not be proper when patentee becomes aware of an unintentional failure to timely pay the maintenance fee and then intentionally delays filing a petition for reinstatement of the patent under § 1.378.

Petitions to accept delayed payment of a maintenance fee in an expired patent, prior to enactment of Public Law 102-444, required a showing of unavoidable delay. In the case of petitions filed more than six months after expiration of a patent, former § 1.378(c) further required a showing that the failure to timely pay the maintenance fee was beyond the control of the patentee. The Office had determined that the "beyond the control" standard did not find adequate support in the relevant statute (35 U.S.C. 41(c)) or in the legislative history of Public Law 97-247. See "Acceptance of Delayed Payment of Maintenance Fees in Expired Patents", 1115 Off. Gaz. Pat. Office 18 (June 12, 1990). Therefore, former § 1.378(c) has been deleted in its entirety to be replaced by the unintentional delay provisions discussed above. Additionally, § 1.378(b) is amended to provide that the unavoidable delay provisions are available at any time following expiration of a patent for failure to pay a maintenance fee.

Furthermore, the practice of accepting late payment of maintenance fees is modified to be more analogous to the practice of reviving abandoned applications and accepting late payment of issue fees. Additionally, the public interest is best served by prompt reinstatement of a patent in which there was an unavoidable or unintentional delay in the timely payment of the maintenance fee.

The requirements for a petition to accept late payment of a maintenance fee, where the delay was unavoidable, are outlined in paragraph (b) of § 1.378. In addition to the maintenance fee and surcharge previously required, paragraph (b) is amended to require prompt filing of a petition after the patentee is notified, or otherwise becomes aware, of the expiration of the patent.

Response to Comments on the Rules

Four comments were received.
Comment 1: One comment questioned the time limits in proposed § 1.378(c)(5).
Reply: The proposed time limits will not be adopted because Public Law 102-444 sets the time limit for filing a petition to

accept the delayed payment of a maintenance fee at twenty-four months after the six-month grace period provided in 35 U.S.C. 41(c).

Comment 2: One comment questioned the proposed terminal disclaimer requirement for petitions to revive an abandoned application under the unintentional standard.

Reply: The proposed terminal disclaimer requirement for petitions to revive an abandoned application under the unintentional standard will not be adopted. First, it has been determined that the proposed terminal disclaimer requirement would have created an unduly complex procedure for both the applicant and the Office. Second, the terminal disclaimer requirement is unnecessary to address a delay in filing a petition for unintentional abandonment since § 1.137(b) already indicates that the application may be revived if the delay was unintentional. If a delay in filing a petition was intentional, the petition would be denied. Third, the requirements for a petition have been amended to add the requirement for a statement that the delay in responding was unintentional so as to be consistent with the requirements of the first sentence of § 1.137(b). Finally, applicants are cautioned against intentionally delaying the filing of a petition to revive an abandoned application because it may preclude any revival from an abandoned status. Applicants have delayed filing a petition under the unintentional standard until after expiration of the one-year period because of a miscalculation of the one-year period. This miscalculation resulted in the applicant being unable to show that the delay was unavoidable. *In re Application of S. 8 USPQ2d 1630 (Comm'r Pat. 1988).*

Comment 3: One comment questioned whether Public Law 102-444 and therefore 37 CFR 1.378(c) were applicable to patents that had expired prior to Oct. 23, 1992, for failure to timely pay the required maintenance fee.

Reply: Section 1.378 has been established in accordance with the statutory mandate. Public Law 102-444 and 37 CFR 1.378(c) are effective as to any patent that would be covered by the literal language of the sections. Public Law 102-444 and interim rule 37 CFR 1.378(c) were effective Oct. 23, 1992. Since Public Law 102-444 provides up to a twenty-four month period after the six-month grace period provided in 35 U.S.C. 41(c) to seek reinstatement of an expired patent where the delay was unintentional, any patent that expired on or after Oct. 23, 1990, for failure to timely pay a maintenance fee is eligible for relief under 37 CFR 1.378(c). However, it should be noted that a petition to reinstate an unintentionally expired patent, the required maintenance fee, and the unintentional surcharge (37 CFR 1.20(i)(2)) must be filed within twenty-four months after the six-month grace period to be eligible for relief under the new unintentional provision.

Comment 4: One comment protested that the \$1,500 surcharge established in § 1.20(i)(2) was too high.

Reply: The \$1,500 surcharge established in § 1.20(i)(2) is proper. The amount of \$1,500 was determined by considering: (1) the \$1,170 petition fee for reinstating an unintentionally abandoned patent application, (2) the relationship imposed by statute between the \$1,170 petition fee for reinstating an unintentionally abandoned patent application and the \$110 petition fee for reinstating an unavoidably abandoned patent application, and (3) the \$620 surcharge for reinstating an unavoidably expired patent. Additionally, the Office noted in its original request for comments on the desirability of permitting acceptance of unintentionally delayed payment of maintenance fees (see 1089 Off. Gaz. Pat. Office 55, April 26, 1988) that the surcharge to accept an unintentionally delayed payment of a maintenance fee would be substantially higher than the surcharge to accept an unavoidably delayed payment of a maintenance fee. Not only was there no comment adverse to the suggestion of a higher fee, one comment suggested that the surcharge to accept an unintentionally delayed payment of a maintenance fee be set extremely high so that the Office could be assured that the late payment was, in fact, unintentional. The Office, after taking all of the above into consideration, determined that \$1,500 was an appropriate amount to charge as the surcharge to accept an unintentionally delayed payment of a maintenance fee.

OTHER CONSIDERATIONS

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et seq., Executive

Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to incorporate Public Law 102-444 into the regulations and will give relief to many small entities that do not now have a mechanism to reinstate their expired patent.

The Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes contain a collection of information requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., which have previously been approved by the Office of Management and Budget under Control Nos. 0651-0016 and 0651-0031. The public reporting burden for these collections of information for abandoned applications and delayed maintenance fees is estimated to average 1.0 hour each including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collections of information. Send comments regarding these burden estimates, or any other aspect of these collections of information, including suggestions for reducing the burden, to Jeffrey V. Nase, Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503 (ATTN: Paperwork Reduction Act Project 0651-0011 and 0651-0016).

List of Subjects 37 CFR Part 1

Administrative practice and procedure, Freedom of information, Inventions and patents, Reporting and record keeping requirements.

For the reasons set out in the preamble, and pursuant to the authority contained in 35 U.S.C. 6, Part 1 of title 37 of the Code of Federal Regulations is amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.20 is amended by revising paragraph (i) to read as follows:

§ 1.20 Post issuance fees.

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been

(1) unavoidable\$620.00
(2) unintentional\$1,500.00

3. Section 1.137 is revised to read as follows:

(a) § 1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfac-

tion of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by:

(1) a proposed response to continue prosecution of that application, or the filing of a continuing application, unless either has been previously filed;

(2) the petition fee as set forth in § 1.17(1); and

(3) a showing that the delay was unavoidable. The showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) An application unintentionally abandoned for failure to prosecute may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be:

(1) accompanied by a proposed response to continue prosecution of that application, or the filing of a continuing application, unless either has been previously filed;

(2) accompanied by the petition fee as set forth in § 1.17(m);

(3) accompanied by a statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay was unintentional; and

(4) filed either:

(i) within one year of the date on which the application became abandoned; or

(ii) within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date on which the application became abandoned.

(c) Any petition pursuant to paragraph (a) of this section not filed within six months of the date of abandonment of the application, must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application. The terminal disclaimer must also apply to any patent granted on any continuing application entitled under 35 U.S.C. 120 to the benefit of the filing date of the application for which revival is sought.

(d) Any request for reconsideration or review of a decision refusing to revive an application upon petition filed pursuant to paragraphs (a) or (b) of this section, to be considered timely, must be filed within two months of the decision refusing to revive or within such time as set in the decision.

(e) The time periods set forth in this section cannot be extended, except that the three-month period set forth in paragraph (b)(4)(ii) and the time period set forth in paragraph (d) of this section may be extended under the provisions of § 1.136.

4. Section 1.155 is amended by revising paragraphs (b) through (d) and adding paragraphs (e) and (f) to read as follows:

§ 1.155 Issue and term of design patents.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by:

(1) the issue fee, unless it has been previously submitted;

(2) the fee for delayed payment (§ 1.17(1)); and

(3) a showing that the delay was unavoidable. The showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be:

(1) accompanied by the issue fee, unless it has been previously submitted;

(2) accompanied by the fee for unintentionally delayed payment (§ 1.17(m));

(3) accompanied by a statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay was unintentional; and

(4) filed either:

(i) within one year of the date on which the application became abandoned; or

(ii) within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date on which the application became abandoned.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment of the application, must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application. The terminal disclaimer must also apply to any patent granted on any continuing application entitled under 35 U.S.C. 120 to the benefit of the filing date of the application for which revival is sought.

(e) Any request for reconsideration or review of a decision refusing to accept the delayed payment upon petition filed pursuant to paragraphs (b) or (c) of this section, to be considered timely, must be filed within two months of the decision refusing to accept the delayed payment or within such time as set in the decision.

(f) The time periods set forth in this section cannot be extended, except that the three-month period set forth in paragraph (c)(4)(i) of this section and the time period set forth in paragraph (e) of this section may be extended under the provisions of § 1.136.

5. Section 1.316 is amended by revising paragraphs (b) through (d) and adding paragraphs (e) and (f) to read as follows:

§ 1.316 Application abandoned for failure to pay issue fee.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by:

(1) the issue fee, unless it has been previously submitted;

(2) the fee for delayed payment (§ 1.17(1)); and

(3) a showing that the delay was unavoidable. The showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be:

(1) accompanied by the issue fee, unless it has been previously submitted;

(2) accompanied by the fee for unintentionally delayed payment (§ 1.17(m));

(3) accompanied by a statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay was unintentional; and

(4) filed either:

(i) within one year of the date on which the application became abandoned; or

(ii) within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date on which the application became abandoned.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment of the application, must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application. The terminal disclaimer must also apply to any patent granted on any continuing application entitled under 35 U.S.C. 120 to the benefit of the filing date of the application for which revival is sought.

(e) Any request for reconsideration or review of a decision refusing to accept the delayed payment upon petition filed pursuant to paragraphs (b) or (c) of this section, to be considered timely, must be filed within two months of the decision refusing to accept the delayed payment or within such time as set in the decision.

(f) The time periods set forth in this section cannot be extended, except that the three-month period set forth in paragraph (c)(4)(ii) of this section and the time period set forth in paragraph (e) of this section may be extended under the provisions of § 1.136.

6. Section 1.317 is revised to read as follows:

§ 1.317 Lapsed patents: delayed payment of the balance of issue fee.

(a) If the issue fee paid is the amount specified in the Notice of Allowance, but a higher amount is required at the time the issue fee is paid, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three-month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse, and must be accompanied by:

(1) the remaining balance of the issue fee, unless it has been previously submitted;

(2) the fee for delayed payment (§ 1.17(l)); and

(3) a showing that the delay was unavoidable. The showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be:

(1) accompanied by the remaining balance of the issue fee, unless it has been previously submitted;

(2) accompanied by the fee for unintentionally delayed payment (§ 1.17(m));

(3) accompanied by a statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay in payment was unintentional; and

(4) filed either:

(i) within one year of the date on which the patent lapsed; or

(ii) within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date on which the patent lapsed.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of lapse of the patent, must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

(e) Any request for reconsideration or review of a decision refusing to accept the delayed payment upon petition filed pursuant to paragraphs (b) or (c) of this section, to be considered timely, must be filed within two months of the decision refusing to accept the delayed payment or within such time as set in the decision.

(f) The time periods set forth in this section cannot be extended, except that the three-month period set forth in paragraph (c)(4)(ii) and the time period set forth in paragraph (e) of this section may be extended under the provisions of § 1.136.

7. Section 1.378, paragraphs (a), (b), (c) and (e) are revised to read as follows:

§ 1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable (paragraph (b) of this section) or unintentional (paragraph (c) of this section) and if the surcharge required by § 1.20(i) is paid as a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

(b) Any petition to accept an unavoidably delayed payment of a maintenance fee filed under paragraph (a) of this section must include:

(1) the required maintenance fee set forth in § 1.20(e) through (g)

(2) the surcharge set forth in § 1.20(i)(1); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely and that the petition was filed promptly after the patentee was notified of, or otherwise became aware of, the expiration of the patent. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee, the date and the manner in which patentee became aware of the expiration of the patent, and the steps taken to file the petition promptly.

(c) Any petition to accept an unintentionally delayed payment of a maintenance fee filed under paragraph (a) of this section must be filed within twenty-four months after the six-month grace period provided in § 1.362(e) and must include:

(1) the required maintenance fee set forth in § 1.20 (e) through (g);

(2) the surcharge set forth in § 1.20(i)(2); and

(3) a statement that the delay in payment of the maintenance fee was unintentional.

(e) Reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a) of this section may be obtained by filing a petition for reconsideration within two months of, or such other time as set in, the decision refusing to accept the delayed payment of the maintenance fee. Any such petition for reconsideration must be accompanied by the petition fee set forth in § 1.17(h). After decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. If the delayed payment of the maintenance fee is not accepted, the maintenance fee and the surcharge set forth in § 1.20(i) will be refunded following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. Any petition fee under this section will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

Aug. 11, 1993

MICHAEL K. KIRK
Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks

[1154 OG 35]

(58) **DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1
[Docket No. 920670-2281]
RIN 0651-AA57**

Changes in Procedures for Reinstatement of Patents

Agency: Patent and Trademark Office, Commerce

Action: Interim Rule

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to provide for reinstatement of a patent where the delay in timely payment of a maintenance fee was unintentional. The Office is also establishing the amount for the surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unintentional. **Dates:** Interim rule effective Oct. 23, 1992. These rules will be applicable to all petitions to reinstate an expired patent filed with the Office on or after the effective date. The surcharge cited in sections 1.20(i)(2) and 1.378(c)(2) of title 37 of the Code of Federal Regulations will be effective thirty days from publication of this rulemaking in the *Federal Register* or the *Official Gazette* of the Patent and Trademark Office, whichever is later. Written comments on this rulemaking must be received on or before Jan. 8, 1993 to ensure consideration. An oral hearing will not be conducted.

Addresses: Address written comments on this interim rulemaking to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231, marked to the attention of Jeffrey V. Nase. Correspondence may be sent by FAX to the attention of Jeffrey V. Nase at (703) 305-8825.

For Further Information Contact: Jeffrey V. Nase by telephone at (703) 305-9282 or by mail marked to his attention and addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information: In a Notice of Proposed Rulemaking published in the *Federal Register* (57 FR 41899) on Sept. 14, 1992, and in the Patent and Trademark Office *Official Gazette* (1143 Off. Gaz. Pat. Office 8) on Oct. 6, 1992, the Office proposed to amend the current regulations in the event that proposed statutory changes were enacted to allow for the reinstatement of a patent where the delay in timely payment of a maintenance fee was unintentional.

Section 41 of title 35, United States Code, establishes fees that the Commissioner shall charge for patent-related matters. A bill to amend title 35 with respect to the late payment of maintenance fees was introduced on June 4, 1992, in the House of Representatives as H.R. 5328 (hereafter, Bill). The Bill, as introduced, proposed to: (1) amend 35 U.S.C. § 41(c)(1) to permit reinstatement of a patent which expired unintentionally for failure to timely pay the maintenance fee, provided that the payment is made within eighteen months after the six-month grace period specified in 35 U.S.C. § 41(b); and (2) amend 35 U.S.C. § 41(a)(7) to require a petition fee for an unintentionally delayed payment for maintaining a patent in force. The Bill, with amendments, was enacted as Public Law No. 102-444 (hereafter, Act).

The Act amends 35 U.S.C. § 41(c)(1) to permit reinstatement of a patent which expired unintentionally for failure to timely pay the maintenance fee, provided that the payment is made within twenty-four months after the six-month grace period specified in 35 U.S.C. § 41(b).

Since the Act is effective on enactment and since it differs significantly from the Bill, as introduced, it is necessary to promulgate this interim rulemaking. This interim rulemaking implements the procedures the Office will follow to accept the unintentionally delayed payment of a maintenance fee. All aspects of this rulemaking either confer a benefit or are clearly and directly related to the benefit conferred. Therefore, this rulemaking is exempt from the Administrative Procedures Act's rulemaking requirements under the proprietary matters exception, 5 U.S.C. § 553(a)(2). Furthermore, any delay in the implementation of this interim rulemaking would be contrary to the public interest in granting relief by ensuring that patents unintentionally expired for failure to pay the required maintenance fee are promptly reinstated.

Under the Act, the Commissioner has authority to set a surcharge for accepting the unintentionally delayed payment of a maintenance fee. The Commissioner has determined that an interim surcharge of \$1,500 is appropriate. If a surcharge in a lower amount is finally adopted (after review of public comments in response to this interim rulemaking), patentees will be refunded any excess payment. The \$1,500 interim surcharge was determined to be the appropriate amount when compared to the existing \$620 surcharge for accepting the unavoidably delayed payment of a maintenance fee. The higher interim surcharge is appropriate since a petition to accept the unintentionally delayed payment of a maintenance fee will require only a statement that the delay in payment of the maintenance fee was unintentional, not a showing of facts sufficient to establish unavoidable delay. Furthermore, the higher amount for relief based on the unintentional delay relative to those based on unavoidable delay is similar to the statutory difference in fees for petitioning to revive an abandoned application.

The \$1,500 interim surcharge will not take effect until the date thirty days from publication of this interim rulemaking in the *Federal Register* or the *Official Gazette* of the Patent and Trademark Office, whichever is later. Section 1.378(c)(2) is waived until the \$1,500 surcharge becomes effective. However, petitions to accept the delayed payment of a maintenance fee should not be delayed for that thirty-day period. The surcharge for the acceptance of a maintenance fee resulting from a petition filed under this waiver will be due when the petition is granted.

One comment on the proposed § 1.378 has been received.

Comment: The comment questioned the time limits proposed for § 1.378(c)(5).

Reply: The proposed time limits will not be adopted because the Act sets the time limit for filing a petition to accept the delayed payment of a maintenance fee.

Any final rule will treat both the comments made to the proposed rules and to these interim rules.

DISCUSSION OF SPECIFIC SECTIONS TO BE CHANGED OR ADDED:

(1) Post issuance fees. (§ 1.20)

Section 1.20(i) is amended to add a \$1,500 surcharge fee for accepting the unintentionally delayed payment of a maintenance fee. This amendment will not become effective until the date thirty days after Publication of this interim rulemaking in the *Federal Register* or in the *Official Gazette* of the Patent and Trademark Office, whichever is later.

(2) Delayed payment of a maintenance fee (§ 1.378)

The Act amends subsection 41(c)(1) of title 35, United States Code, to permit the Commissioner to accept late payment of any maintenance fee filed within twenty-four months after the six-month grace period, if the delay in payment is shown to the satisfaction of the Commissioner to have been unintentional. In order to implement the Act, paragraphs (a) and (c) of § 1.378 are amended to permit the filing of a petition to accept late payment of a maintenance fee, where the delay in payment was unintentional.

In addition to the timeliness deadlines set forth in the preceding paragraph, a petition filed under the unintentional standard of § 1.378(c) would have to include the required maintenance fee set forth in § 1.20(e) through (g), the surcharge for an unintentionally expired patent as set forth in § 1.20(i)(2), and a statement that the delay in payment of the maintenance fee was unintentional. The requirement of § 1.378(c)(2) that the petition must include the surcharge will be waived until the date thirty days after publication of this interim rulemaking in the *Federal Register* or in the *Official Gazette* of the Patent and Trademark Office, whichever is later. The surcharge for the acceptance of a maintenance fee resulting from a petition filed under this waiver will be due when the petition is granted.

A statement that the delay in payment of the maintenance fee was unintentional would not be appropriate unless the entire delay, up until the maintenance fee was actually paid, was unintentional. For example, a statement that the delay in payment of the maintenance fee was unintentional would not be

proper when patentee becomes aware of an unintentional failure to timely pay the maintenance fee and then intentionally delays filing a petition for reinstatement of the patent under § 1.378.

Petitions to accept delayed payment of a maintenance fee in an expired patent, prior to enactment of the Act, required a showing of unavoidable delay. In the case of petitions filed more than six months after expiration of a patent, current § 1.378(c) further required a showing that the failure to timely pay the maintenance fee was beyond the control of the patentee. The Office has determined that the "beyond the control" standard does not find adequate support in the relevant statute (35 U.S.C. 41(c)) or in the legislative history of Public Law 97-247. See "acceptance of Delayed Payment of Maintenance Fees in Expired Patents", 1115 Off. Gaz. Pat. Office 18 (June 12, 1990). Therefore, current § 1.378(c) is being deleted in its entirety to be replaced by the unintentional delay provisions discussed above. Additionally, § 1.378(b) is amended to provide that the unavoidable delay provisions are available at any time following expiration of a patent for failure to pay a maintenance fee.

OTHER CONSIDERATIONS

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et. seq.), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to incorporate the Act into the regulations and will give relief to many small entities that do not now have a mechanism to reinstate their expired patent.

The Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes contain a collection of information requirement subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., which has previously been approved by the Office of Management and Budget under Control Nos. 0651-011 and 0651-0016.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Freedom of information, Inventions and patents, Reporting and record keeping requirements.

For the reasons set out in the preamble, and pursuant to the authority contained in 35 U.S.C. § 6, part 1 of title 37 of the Code of Federal Regulations is amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.20 is amended by revising paragraph (i) to read as follows:

§ 1.20 Post issuance fees.

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been

(1) unavoidable \$620.00
(2) unintentional \$1,500.00

3. Section 1.378, paragraphs (a), (b) and (c) are revised to read as follows:

§ 1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable (paragraph (b) of this section) or unintentional (paragraph (c) of this section) and if the surcharge required by § 1.20(i) is paid as a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

(b) Any petition to accept an unavoidably delayed payment of a maintenance fee filed under paragraph (a) of this section must include:

(1) The required maintenance fee set forth in § 1.20 (c)-(g);
(2) The surcharge set forth in § 1.20(i)(1); and

(3) A showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee.

(c) Any petition to accept an unintentionally delayed payment of a maintenance fee filed under paragraph (a) of this section must be filed within twenty-four months after the six-month grace period provided in § 1.362(e) and must include:

(1) The required maintenance fee set forth in § 1.20(e)-(g);
(2) The surcharge set forth in § 1.20(i)(2); and

(3) A statement that the delay in payment of the maintenance fee was unintentional.

Nov. 23, 1992

DOUGLAS B. COMER
Acting Assistant Secretary
and Acting Commissioner
Patents and Trademarks

(59) Withdrawing the Holding of Abandonment When Office Actions Are Not Received

The purpose of this notice is to announce a practice that will minimize costs and burdens to the practitioner and the Office when an application has become abandoned due to a failure to receive an Office action.

A petition to withdraw the holding of abandonment in accordance with *Delgar Inc. v. Schuyler*, 172 USPQ 513 (D.D.C. 1971) is burdensome to the practitioner since the practitioner must overcome a strong presumption that an Office action duly addressed and indicated as mailed was timely delivered to the addressee. To overcome this presumption, a practitioner is currently required to submit a persuasive showing that would permit the Office to conclude that the Office action was not received. Accordingly, evidence which is typically required includes: copies of records which would disclose the receipt of other correspondence mailed from the Patent and Trademark Office on or about the mail date of the non-received Office action, but fail to disclose receipt of the Office action mailed that date; copies of records on which the Office action would have been entered had it been received (e.g., a copy of the outside of the file jacket maintained by the practitioner); and verified statements from persons who would have handled the Office action (e.g., mail clerks, docket clerks, secretary, etc.).

In order to minimize costs and burdens to the practitioner and the Office when an application has become abandoned due to a failure to receive an Office action, the Office is modifying the showing required to make a petition to withdraw the holding of abandonment grantable. The showing required to establish the failure to receive an Office action must consist of a statement from the practitioner stating that the Office action was not received by the practitioner and attesting to the fact that a search of the file jacket and docket records indicates that the Office action was not received. A copy of the docket record where the non-received Office action would have been entered had it been received and docketed must be attached to and referenced in practitioner's statement.

The showing outlined above may not be sufficient if there are circumstances that point to a conclusion that the Office action may have been lost after receipt rather than a conclusion that the Office action was lost in the mail, e.g., if the practitioner has a history of not receiving Office actions. Two additional procedures are available for reviving an application that has become abandoned due to a failure to respond to an Office Action: (1) a petition based on unintentional abandonment or delay; and (2) a petition based on unavoidable delay. See Manual of Patent Examining Procedure § 711.03(c).

Oct. 25, 1993

CHARLES E. VAN HORN
Patent Policy and Projects Administrator
Office of the Assistant Commissioner
for Patents

[1156 OG 53]

(60) Viewing of Video Tapes During Interviews

The Patent and Trademark Office has video tape equipment available in the facilities of the Patent Academy for viewing video tapes from applicants during interviews with patent examiners.

The video tape equipment may use VHS and UHS (3/4 inch tape) cassettes.

Attorneys or applicants wishing to show a video tape during an examiner interview must be able to demonstrate that the content of the video tape has a bearing on an outstanding issue in the application and its viewing will advance the prosecution of the application. Prior approval of viewing of a video tape during an interview must be granted by the SPE. Also, use of the room and equipment must be granted by the Training Manager to avoid any conflict with the Patent Academy.

Requests to use video tape viewing equipment for an interview should be made at least one week in advance to allow the Patent Academy staff sufficient time to ensure the availability and proper scheduling of both a room and equipment.

Interviews using Office video tape equipment will be held only in the Academy facilities located in One Crystal Park, Rm. 502. Attorneys or applicants should not contact the Patent Academy directly regarding availability and scheduling of video equipment. All scheduling of rooms and equipment should be done through and by the examiner conducting the interview.

May 6, 1986

RENE D. TEGTMEYER
Assistant Commissioner
for Patents

[1067 OG 4]

(61) Extension of Time Limit

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

Nov. 28, 1977

WILLIAM FELDMAN
Deputy Assistant Commissioner
for Patents

[965 O.G. 14]

(62) Procedures for Restarting Response Periods

The purpose of this notice is to announce revised procedures for restarting response periods set in patent related matters. Occasionally, mail from the Patent and Trademark Office (PTO) is received late at the correspondence address or the mail is delayed in leaving the PTO.

The following revised procedures are effective immediately and will be followed in processing a petition to reset a period for response due to late receipt of a PTO action or due to a postmark date which is later than the mail date printed on a PTO action. The authority to decide such petitions is delegated to the Group Director, where the PTO action involved in the petition was mailed by a patent examining group.

Petition to reset a period for response due to late receipt of a PTO action

The PTO will grant a petition to restart the previously set period for response to a PTO action to run from the date of receipt of the PTO action at the correspondence address when the following criteria are met: (1) the petition is filed within two weeks of the date of receipt of the PTO action at the correspondence address; (2) a substantial portion of the set response period had elapsed on the date of receipt (e.g., at least one month of a two or three month response period had elapsed); and (3) the petition includes (a) evidence showing the date of receipt of the PTO action at the correspondence address (e.g., a copy of the PTO action having the date of receipt of the PTO action at the correspondence address stamped thereon, a copy of the envelope (which contained the PTO action) having the date of receipt of the PTO action at the correspondence address stamped thereon, etc.), and (b) a statement (verified if made by other than a registered practitioner) setting forth the date of receipt of the PTO action at the correspondence address and explaining how the evidence being presented establishes the date of receipt of the PTO action at the correspondence address.

There is no statutory requirement that a shortened statutory period of longer than thirty days to respond to a PTO action be reset due to delay in the mail or in the PTO. However, when a substantial portion of the set response period had elapsed on the date of receipt at the correspondence address (e.g., at least one month of a two or three month response period had elapsed), the procedures set forth above for late receipt of a PTO action are available. Where a PTO action was received with less than two months remaining in a shortened statutory period of three months, the period may be restarted from the date of receipt. Where the period remaining is between two and three months, the period will be reset only in extraordinary situations—e.g., complex PTO action suggesting submission of comparative data.

Petitions to reset a period for response due to a postmark date later than the mail date printed on a PTO action

The PTO will grant a petition to restart the previously set period for response to a PTO action to run from the postmark date shown on the PTO mailing envelope which contained the PTO action when the following criteria are met: (1) the petition is filed within two weeks of the date of receipt of the PTO action at the correspondence address; (2) the response period was for payment of the issue fee¹; or the response period set was one month or thirty days²; and (3) the petition includes (a) evidence showing the date of receipt of the PTO action at the correspondence address (e.g., a copy of the PTO action having the date of receipt of the PTO action at the correspondence address stamped thereon, etc.), (b) a copy of the envelope which contained the PTO action showing the postmark date, and (c) a statement (verified if made by other than a registered practitioner) setting forth the date of receipt of the PTO action at the correspondence address and stating that the PTO action was received in the post-marked envelope.

The provision of 37 CFR 1.8 and 1.10 apply to the filing of the above-noted petitions with regard to the requirement that the petition be filed within two weeks of the date of receipt of the PTO action.

The showings outlined above may not be sufficient if there are circumstances that point to a conclusion that the PTO action may have been delayed after receipt rather than a conclusion that the PTO action was delayed in the mail or in the PTO.

February 3, 1994 CHARLES E. VAN HORN
Patent Policy and Projects Administrator
Office of the Assistant Commissioner for Patents

[1160 OG 14]

(63) Patent and Trademark Office
37 CFR Parts 1 and 10
[Docket No. 910764-1306]
RIN: 0651-AA27

Duty of Disclosure

Agency: Patent and Trademark Office, Commerce
Action: Notice of final rulemaking.

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to (1) clarify the duty of disclosure for information required to be submitted to the Office; (2) provide flexible time limits for submitting information disclosure statements including the requirement for a fee in certain cases; (3) eliminate consideration of duty of disclosure issues by the Office except in disciplinary and interference proceedings, and under other limited circumstances; and (4) eliminate the striking of patent applications which are improperly executed. The Office further is amending the Patent and Trademark Office Code of Professional Responsibility to define as misconduct a failure to comply with the rules on duty of disclosure. The rules as adopted strike a balance between the need of the Office to obtain and consider all known relevant information pertaining to patentability before a patent is granted and the desire to avoid or minimize unnecessary complications in the enforcement of patents.

Effective Date: March 16, 1992. These rules will be applicable to all applications and reexamination proceedings pending or filed after the effective date.

For Further Information Contact: By telephone Charles E. Van Horn (703-305-9054) or J. Michael Thesz (703-305-9384) or by mail addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231, and marked to the attention of Charles E. Van Horn (Crystal Park 2 - Room 919).

Supplementary Information: A notice of proposed rulemaking on duty of disclosure and practitioner misconduct published in the Federal Register at 54 FR 11334 (March 17, 1989), and in the Patent and Trademark Office Official Gazette at 1101 Off.

¹35 USC 151 permits payment of the issue fee within three months of the date that the Notice of Allowance is mailed to the applicant.

²35 USC 133 does not permit a response period to be less than thirty days from the date the PTO action is given or mailed to the applicant.

Gaz. Pat. Off. 12 (April 4, 1989), was withdrawn. On August 6, 1991, the Office published in the Federal Register a notice of proposed rulemaking relating to duty of disclosure. 56 FR 37321. The notice was also published in the Official Gazette. 1129 Off. Gaz. Pat. Off. 52 (August 27, 1991). Sixty written comments were received in response to the notice of proposed rulemaking. A public hearing was held on October 8, 1991. Eleven individuals offered oral comments at the hearing. The sixty written comments and a copy of the transcript of the hearing are available for public inspection in the Office of the Assistant Commissioner for Patents, Room 919, Crystal Park II, 2121 Crystal Drive, Arlington, VA.

Familiarity with the notice of proposed rulemaking is assumed. Changes in the text of the rules published for comment in the notice of proposed rulemaking are discussed. Comments received in writing and at the public hearing in response to the notice of proposed rulemaking are discussed.

The rules as adopted shall take effect as to all applications and reexamination proceedings either pending or filed on or after the effective date of these rules. Thus, any information disclosure statement that is filed on or after that date must comply with the provisions of §§ 1.97 and 1.98 to be entitled to consideration.

Changes in Text: The final rules contain several changes to the text of the rules as proposed for comment. Those changes are discussed below.

Section 1.17(i)(1) has been changed from the proposed text to reflect the recent increase in the amount of the fee for filing a petition from \$120.00 to \$130.00.

Section 1.56(a) has been clarified to indicate that the duty of an individual to disclose information is based on the knowledge of that individual that the information is material to patentability. A sentence has been added to § 1.56(a) to express the principle that the Office does not condone the granting of a patent on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. In addition, § 1.56(a) as proposed has been changed to indicate that if all information material to patentability of any claim issued in a patent is cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98, the Office will consider as satisfied the duty to disclose to the Office all information known to be material to patentability, as contrasted to the broader duty of candor and good faith. This rule does not attempt to define the spectrum of conduct that would lack the candor and good faith in dealing with the Office which is expected of individuals who are associated with the filing or prosecution of a patent application.

In § 1.56(b), the phrase "or being made of record" has been inserted to make it clear that information is not material to patentability within the meaning of § 1.56 if it is cumulative to either information already of record in the application or contemporaneously being made of record by applicant. For example, there would be no benefit to the Office for applicant to submit to the Office 10 different documents having the same teaching simply because the information was not cumulative to the information already of record.

The term "creates" has been replaced by the term "establishes" in § 1.56(b)(1). In addition, the definition of a prima facie case of unpatentability, as set out in the preamble of the notice of proposed rulemaking, has been incorporated into the rule itself. A prima facie case of unpatentability of a claim is established when the information compels a conclusion that the claim is unpatentable.

- (1) under the preponderance of evidence, burden-of-proof standard,
- (2) giving each term in the claim its broadest reasonable construction consistent with the specification, and
- (3) before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

This prima facie standard conforms to the standard used by an examiner to determine whether a claim is prima facie unpatentable.

Section 1.56(b)(2) has been modified from the text of the proposed rule. The focus of this paragraph has been changed so that it now relates to information which either refutes, or is inconsistent with, a position that applicant takes in either

- (1) opposing an argument of unpatentability relied on by the Office, or
- (2) asserting an argument of patentability.

The change from the proposed rule makes clear that information is material when it either refutes, or is inconsistent with, a position taken by applicant before the Office.

Section 1.97(e) has been changed from the proposed text to make it clear that a certification could contain either of two statements. One statement is that each item of information in an information disclosure statement was cited in a search report from a patent office outside the U.S. not more than three months prior to the filing date of the statement. Under this certification, it would not matter whether any individual with a duty actually knew about any of the information cited before receiving the search report. In the alternative, the certification could state that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual having a duty to disclose more than three months prior to the filing of the statement.

The changes to the text of § 1.97(e) as proposed place the appropriate priority on getting relevant information to the Office promptly, with minimum burden to applicant. The text of the proposal has also been changed by adding the phrase "after making reasonable inquiry" to make it clear that the individual making the certification has a duty to make reasonable inquiry regarding the facts that are being certified. For example, if an inventor gave a publication to the practitioner prosecuting an application with the intent that it be cited to the Office, the practitioner should inquire as to when that inventor became aware of the publication before submitting a certification under § 1.97(e)(ii) to the Office.

A new paragraph (h) has been added to the text of proposed § 1.97. The purpose of new paragraph (h) is to ensure that no one could construe the mere filing of an information disclosure statement as an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b). It is in the best interest of the Office and the public to permit and encourage individuals to cite information to the Office without fear of making an admission against interest.

In § 1.98(a)(2)(iii), the wording has been changed to make it clear that the requirement to submit a copy of each item of information listed in an information disclosure statement does not apply to the citation of a U.S. patent application.

The requirement in proposed § 1.98(a)(3) for a concise explanation of the relevance of each item of information has been substantially changed by limiting the requirement in two significant ways. First, as adopted, the requirement is limited to information that is not in the English language. Second, the explanation required is limited to the relevance as understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information at the time the information is submitted to the Office. Where the information listed is not in the English language, but was cited in a search report by a foreign patent office, the requirement for a concise explanation of relevance is satisfied by submitting an English language version of the search report.

In § 1.98(d), the proposed text has been changed by adding the phrase "cited by or" to make it clear that legible copies of information listed in an information disclosure statement need not be submitted in a continuing application provided the information was either cited by or submitted to the Office in a prior application. A distinction between information cited by the Office or supplied by applicant to the Office serves no useful purpose in this situation.

The text of proposed § 1.555 has been modified to limit the definition of information material to patentability in a reexamination proceeding to the types of information that an examiner could use in a reexamination proceeding to determine whether a claim was patentable, and to adopt other changes that parallel changes made in § 1.56. Proposed § 1.555(a) has been divided into two paragraphs. Paragraph (a), as adopted, substantially parallels the text of § 1.56(a) as adopted. It indicates that the duty to disclose information to the Office in a reexamination proceeding is a part of the duty of candor and good faith that is owed to the Office by individuals transacting business with the Office. It further states one way that an individual may

discharge the duty to disclose information material to patentability in a reexamination proceeding - i.e., by filing an information disclosure statement with the items listed in § 1.98(a) as applied to individuals associated with the patent owner in a reexamination proceeding. Finally, the text of the rule has been changed to add a sentence that expresses the principle that a patent should not be granted on an application in connection with which fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or intentional misconduct.

New paragraph (b) of § 1.555 has been adopted to define information material to patentability in a reexamination proceeding. Much like the definition in § 1.56(b), information is not material when it is cumulative to information of record or being made of record in the reexamination proceeding. Information is considered material when it satisfies either or both of the definitions in § 1.555(b). Under § 1.555(b)(1), information is material when it is a patent or printed publication that establishes, by itself or in combination with other patents or printed publications, a prima facie case of unpatentability of a claim. This definition is limited to patents or printed publications because a reexamination proceeding must be based on patents or printed publications. 35 U.S.C. 302.

The definition of a prima facie case of unpatentability of a claim pending in a reexamination proceeding has been provided in the rule. A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the same principles that are applicable during ex parte examination of a patent application; namely

- (1) under the preponderance of evidence, burden-of-proof standard,
- (2) giving each term in the claim its broadest reasonable construction consistent with the specification, and
- (3) before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

Finally, the definition of information material to patentability in § 1.555(b)(2) has been added to parallel the provision in § 1.56(b)(2).

After reviewing the Office policy on whether to consider duty of disclosure and other inequitable conduct issues in interference proceedings under 35 U.S.C. 135(a), including comments from the public directed to the statement in the notice of proposed rulemaking that the Office will not consider, evaluate, or decide fraud or other inequitable conduct issues during an interference proceeding, a new Office policy has been adopted. Effective October 24, 1991, fraud and inequitable conduct issues will be considered when properly raised inter partes in patent interference cases. 1132 Off. Gaz. Pat. Off. 33 (November 19, 1991). In addition, the Chairman of the Board of Patent Appeals and Interferences has issued a notice that provides guidance on how an issue of fraud or other inequitable conduct can be raised in an interference proceeding. 1133 Off. Gaz. Pat. Off. 21 (December 10, 1991).

Response to and Analysis of Comments: Sixty (60) written comments were received in response to the notice of proposed rulemaking. These comments, along with those made at the public hearing, have been analyzed. Some suggestions made in the comments have been adopted and others have been rejected. Responses to the comments follow.

Comment 1. Nine comments indicated that the Office should not amend § 1.56 since it is presently in conformance to the materiality standard being applied by the Court of Appeals for the Federal Circuit. One comment questioned what practical value of the proposed rule would justify the burden of the change.

Reply: The amendment to § 1.56 was proposed to address criticism concerning a perceived lack of certainty in the materiality standard. The rule as promulgated will provide greater clarity and hopefully minimize the burden of litigation on the question of inequitable conduct before the Office, while providing the Office with the information necessary for effective and efficient examination of patent applications.

Comment 2. One comment stated that the present rules should be maintained and strengthened since the public interest is hurt more by an unjustly issued patent than by an unjustly denied patent. Another comment disagreed and argued that an unjustly denied patent can do great harm to society.

Reply: The Office strives to issue valid patents. The Office has

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both an obligation not to unjustly issue patents and an obligation not to unjustly deny patents. Innovation and technological advancement are best served when an inventor is issued a patent with the scope of protection that is deserved. The rules as adopted serve to remind individuals associated with the preparation and prosecution of patent applications of their duty of candor and good faith in their dealings with the Office, and will aid the Office in receiving, in a timely manner, the information it needs to carry out effective and efficient examination of patent applications.

Comment 3. Two comments stated that the rule should not permit applicants to draft claims and a specification to avoid a prima facie case of obviousness over a reference and then to be able to withhold the reference from the examiner.

Reply: The comments reflect a correct reading of the rule in that information is not material unless it comes within the definition of § 1.56(b)(1) or (2). If information is not material, there is no duty to disclose the information to the Office. The Office believes that most applicants will wish to submit the information, however, even though they may not be required to do so, to strengthen the patent and avoid the risks of an incorrect judgment on their part on materiality or that it may be held that there was an intent to deceive the Office.

Comment 4. One comment stated that promulgation of the proposed rule would result in a significant decrease in the quantity of art cited to the Office because there will be no duty to cite art relevant to a pending claim.

Reply: The Office does not anticipate any significant change in the quantity of information cited to the Office after promulgation of amended § 1.56. Presumably, applicants will continue to submit information for consideration by the Office in applications rather than making and relying on their own determinations of materiality. An incentive remains to submit the information to the Office because it will result in a strengthened patent and will avoid later questions of materiality and intent to deceive. In addition, the new rules will actually facilitate the filing of information since the burden of submitting information to the Office has been reduced by eliminating, in most cases, the requirement for a concise statement of the relevance of each item of information listed in an information disclosure statement.

Comment 5. Several comments stated that an objective "but for" standard would be preferable to the proposed rule. The objective "but for" standard would presumably consider information as a court does in an infringement proceeding with a clear and convincing, burden-of-proof standard, giving the terms in each claim a narrow construction where necessary to uphold validity.

Reply: The Office believes that amended § 1.56 will provide a reasonable balance between the needs of applicants and of the Office. The suggested "but for" standard would not cause the Office to obtain the information it needs to evaluate patentability so that its decisions may be presumed correct by the courts. If the Office does not have needed information, meaningful examination of patent applications will take place for the first time in an infringement case before a district court. Courts will become increasingly less confident of the Office's product if they get the impression that practitioners and inventors can routinely withhold information from the Office, or that practitioners and inventors can make up their own minds about what is patentable. The Office should decide, in the first instance, what is patentable and any decision should be made with the best information available, including that known by the applicant. The Office notes that the House of Delegates of the American Bar Association twice, once in 1990 and again in 1991, refused to adopt a resolution favoring adoption of the "but for" standard.

Comment 6. One comment argued that proposed § 1.56 does not relate to "the conduct of proceedings in the Patent and Trademark Office" (35 U.S.C. 6(a)) since the Office does not intend to reject applications as indicated by the cancellation of paragraphs (c) through (i) of current § 1.56.

Reply: The amendment to § 1.56 comes within the authority of the Commissioner for establishing regulations. *Norton v. Curtiss*, 433 F.2d 779, 167 USPQ 532 (CCPA 1970). The Office has reserved its inherent authority to reject an application under appropriate circumstances where fraud or other inequitable conduct has occurred. Also, the Office will consider fraud and inequitable conduct when properly raised in interference

proceedings under 35 U.S.C. 135(a). The Office will also consider fraud and inequitable conduct in connection with attorney conduct under § 10.23(c).

Comment 7. One comment stated that § 1.56 should require only anticipatory art to be submitted during examination of an application, with a procedure such as reexamination being used after discovery in any litigation on the patent has revealed all available art.

Reply: An application is examined under all appropriate sections of Title 35, United States Code, and a presumption of validity attaches to a patent with regard to all aspects of patentability, including anticipation. 35 U.S.C. 282. Therefore, § 1.56 should address more than just the submission of anticipatory information, including information relevant to patentability under 35 U.S.C. 103 and 35 U.S.C. 112.

Comment 8. One comment suggested that proposed § 1.56 has some dangerous implications since courts are going to find violations of the duty of disclosure if §§ 1.97 and 1.98 are not complied with completely.

Reply: Section 1.56 provides that the duty of disclosure can be met by submitting information to the Office in the manner prescribed by §§ 1.97 and 1.98. Sections 1.97 and 1.98 are being amended so that information will be submitted to the Office in the manner and at the time which will facilitate consideration by the examiner. Applicants are provided certainty as to when information will be considered, and applicants will be informed when information is not considered. The Office does not believe that courts should, or will, find violations of the duty of disclosure because of unintentional non-compliance with §§ 1.97 and 1.98. If the non-compliance is intentional, however, the applicant will have assumed the risk that the failure to submit the information in a manner that will result in its being considered by the examiner may be held to be a violation.

Comment 9. Two comments stated that the Office should not delete the offense of attempted fraud from the § 1.56. The comments stated that elimination of the reference to "gross negligence" in current § 1.56 would be sufficient to protect the practitioner who delays submission of information with no intent to deceive the Office. One of the comments stated that the disciplinary rules alone are not sufficient to deter attempted fraud or inequitable conduct.

Reply: The language of §§ 1.56(a) and 1.555(a) has been modified to retain the provisions of prior § 1.56(d) to indicate that the Office does not condone fraud, attempted fraud, or violation of the duty of disclosure through bad faith or intentional misconduct.

Comment 10. One comment stated that the appropriate standards for the duty of candor are analogous to fiduciary law which requires the fiduciary to disclose not only known facts, but also facts which it should have known, i.e., a negligence standard. The comment argued that it was undesirable to measure duty of candor or fraud by a reduced measure of "intent" instead of an objective negligence standard since the Office is not bound by the U.S. Court of Appeals for the Federal Circuit decision in *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 9 USPQ2d 1384 (Fed. Cir. 1988) (*en banc*), *cert. denied*, 490 U.S. 1067 (1989), and since the proposed standard is no more objective than alternative standards but is simply narrower and more certain. Another comment suggested that the Office should indicate that there is no intention to change the *Kingsdown* ruling.

Reply: Section 1.56 has been amended to present a clearer and more objective definition of what information the Office considers material to patentability. The rules do not define fraud or inequitable conduct which have elements both of materiality and of intent. The Office does not advocate any change to the *Kingsdown* ruling.

Comment 11. Two comments stated that the proposed modification of § 1.56 would make submission of information to the Office an implied admission of the prima facie unpatentability of a claim. Several comments suggested that a sentence should be added to proposed § 1.56 to specify that submission of information to the Office under this section shall not be deemed to be an admission or representation that the information is material to patentability.

Reply: The suggestions in the comments have been adopted by modifying § 1.97 which deals with submission of information to the Office. Paragraph (h) of § 1.97 now provides that the filing

of an information disclosure statement shall not be considered to be an admission that the information cited in the statement is, or is to be considered to be, material to patentability as defined in § 1.56.

Comment 12. One comment stated that the proposed § 1.56 definition would be difficult to apply in litigation in which a different burden-of-proof standard is applied.

Reply: The definition of information material to patentability includes standards which are familiar to the Federal courts and which are capable of being handled like other issues.

Comment 13. One comment suggested that the last sentence of proposed § 1.56 (a), in which the Office encourages applicants to carefully examine prior art cited in foreign search reports and the closest known information, be removed from the rule and be placed in the preamble discussion so as to avoid the interpretation that the sentence creates a duty for applicants.

Reply: The suggestion is not adopted. The sentence does not create any new duty for applicants, but is placed in the text of the rule as helpful guidance to individuals who file and prosecute patent applications.

Comment 14. Three comments stated that the language of proposed § 1.56(a) required revision to remove all statements or suggestions which might allow a court to consider a pending (i.e., unissued) claim for the purpose of determining whether the duty of disclosure requirement was met in view of the fact that the proposed rule was intended to indicate that there is no duty to disclose information which is material to a pending claim unless that claim ultimately issues in a patent. One comment argued that a court might interpret "the duty of candor and good faith" to be broader than the particular duty of disclosure specified in other portions of the proposed rule.

Reply: The language of §§ 1.56 and 1.555 has been modified to emphasize that there is a duty of candor and good faith which is broader than the duty to disclose material information. Section 1.56 further states that "no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct."

Comment 15. One comment suggested that proposed § 1.56(a) be modified to clarify that both information and its materiality must be known before there is a duty to disclose the information.

Reply: The Office considers the language of § 1.56(a) to be sufficiently clear in referring to a "duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section." If information is known to be material, it inherently must be known. Likewise, if information is not known to an individual, there is no duty to disclose the information whether it is material or not.

Comment 16. One comment stated that it should be made clear that "known" is limited to contemporaneous knowledge since a practitioner may have known something ten years ago but may not remember it presently.

Reply: Section 1.56 states that each individual associated with the filing and prosecution of a patent application has a duty to disclose all information known to that individual to be material to patentability as defined in the section. Thus, the duty applies to contemporaneously or presently known information. The fact that information was known years ago does not mean that it was recognized that the information is material to the present application.

Comment 17. One comment suggested that proposed § 1.56(a) be modified to state that the duty of disclosure ends when an application becomes abandoned or allowed.

Reply: Paragraph (a) of § 1.56 states that the duty to disclose information exists until the application becomes abandoned. The duty to disclose information, however, does not end when an application becomes allowed but extends until a patent is granted on that application. The rules provide for information being considered after a notice of allowance is mailed and before the issue fee is paid (§ 1.97(d)) and for an application to be withdrawn from issue after the issue fee has been paid. An application may be withdrawn from issue because one or more claims are unpatentable (§ 1.313(b)(3)) or an application may be withdrawn from issue and abandoned so that information may be considered in a continuing application before a patent issues (§ 1.313(b)(5)).

Comment 18. Three comments stated that the first two sentences of proposed § 1.56(a) should be deleted since rules should simply instruct practitioners what to do without discussion of

why they should do it or the philosophy involved.

Reply: The suggestion has not been adopted since the sentences aid in the understanding of the rule and will provide those involved in enforcing patents with an indication of the policy on which the rule is based.

Comment 19. One comment stated that §§ 1.56(a)(2) and (c) should be modified to refer to "individuals substantively associated with" the filing or prosecution of the patent application.

Reply: The suggestion is not adopted since the proposed rule language is clear and the suggested modification would create a redundancy with the language of § 1.56(c)(3). The individuals designated in §§ 1.56(c)(1) and (2) as being associated with the filing or prosecution of a patent application within the meaning of the section are inherently substantively involved in the preparation or prosecution of the application.

Comment 20. One comment stated that proposed § 1.56(b) should be modified to clarify that information is not material if it is cumulative to information already of record in an application or to information concurrently being made of record.

Reply: The suggestion has been adopted by adding a reference to information being made of record with regard to cumulative information in §§ 1.56(b) and 1.555(b).

Comment 21. One comment stated that the preamble discussion (of § 1.56(b)) should indicate that test results in situations such as tests involving biological systems may properly be submitted as averages rather than as individual test runs.

Reply: Whether test results can be submitted as averages rather than as individual test runs depends on whether doing so would provide to the Office the information needed to make a proper determination on patentability. If the actual results are provided, the examiner can make an independent determination on whether some rejection is appropriate. In some cases providing averages might be misleading, but in other cases providing averages might be appropriate.

Comment 22. One comment stated that the definition of materiality in proposed § 1.56(b) imposes substantial new burdens on applicants who would be required to disclose failed experiments, papers published less than one year prior to filing and experimental public uses even if they clearly are refutable and will not affect patentability. One comment stated that the proposed rule would require applicants to incur added expense for affidavits and comparison tests. Five comments stated that the Office should not require applicants to present results from clearly invalid tests since this would be contrary to usual scientific practice. One comment argued that information should not be required to be submitted if there was no doubt that it would not preclude patentability, e.g., where common ownership existed so that the exception of 35 U.S.C. 103, second paragraph, would apply.

Reply: The definition of materiality in § 1.56 does not impose substantial new burdens on applicants, but is intended to provide the Office with the information it needs to make a proper and independent determination on patentability. It is the patent examiner who should make the determination after considering all the facts involved in the particular case. The comments reflect that the Office objective of clarifying what information the Office considers to be material has been accomplished by the amendment of the rules.

Comment 23. One comment suggested that § 1.56 should confine the duty of disclosure to references known to applicant or the practitioner representing applicant and not found in prior art materials in the Office.

Reply: This suggestion is not adopted since information may be in the Office but not in the application file. It is not reasonable to assume that an examiner knows of a particular item of information or appreciates its relevance to a particular invention simply because it exists somewhere in the Office.

Comment 24. One comment stated that the language "or in combination with other information" should be removed from proposed § 1.56(b)(1) because it was unworkable to require an applicant to combine references against its own claims, especially since, according to the commentator, examiners and the Board of Patent Appeals and Interferences frequently misapply the law. Another comment stated that the language creates an open field for litigators to claim that an inordinate number of references could be combined.

Reply: The rule does not require an applicant to combine references against its own claims. The applicant can submit information to the Office for the examiner's consideration whether the

information is considered material or not. The fact that the teachings of a large number of references must be combined for a prima facie case of obviousness does not by itself weigh against a holding of obviousness. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Comment 25. Four comments stated that the definition of "prima facie case of unpatentability" § 1.56(b)(1) should be included in the rule itself. One comment said that the definition should not be included in the rule.

Reply: The definition has been included in the rule for clarity. **Comment 26.** One comment stated that the proposed § 1.56(b)(1) placed a burden on the practitioner to analyze references that is inappropriate and contradictory to a practitioner's responsibility to his client.

Reply: The rule itself does not place a burden on the practitioner to analyze references. Information can be submitted to the Office in accordance with §§ 1.97 and 1.98, and the examiner will consider the references.

Comment 27. One comment questioned whether an applicant would be charged with withholding material information if the "other information" (§ 1.56(b)(1)) necessary to cause an undisclosed reference to become material is unknown to the applicant. Another comment suggested that the language should be changed to read "other known information" to show that the information must be known to applicant to give rise to a duty of disclosure.

Reply: Paragraph (b) of § 1.56 defines information material to patentability. While information may be material under the definition, there is no duty on an individual to disclose the information if the information is unknown to the individual (§ 1.56(a)).

Comment 28. One comment suggested that defining materiality in § 1.56(b) in terms of prima facie unpatentability would permit a conspiracy of silence in which (1) the applicant knows of information but is incapable of making the legal analysis to determine whether the information is material and (2) the patent practitioner, who is equipped to determine whether information is material, does not know of the information and does not ask. Thus, it is argued there would be no violation of the duty of disclosure which requires knowledge of both information and its materiality.

Reply: The Office has set forth what information should be submitted so that the Office can make a proper determination on patentability. The term "conspiracy" has the connotation of unlawfulness which would not be consistent with the duty of candor and good faith required in dealings with the Office.

Comment 29. One comment suggested that proposed § 1.56(b)(1) should be revised to read "in combination with other information already of record in the application" to avoid the possibility that undisclosed material could be considered material in subsequent litigation when combined with information not known at the time of the prosecution to any person substantively involved in the preparation or prosecution of the application.

Reply: Paragraph (a) of § 1.56 makes it clear that the Office recognizes that the duty to disclose material information is limited to such information which is known by an individual substantively involved in the preparation or prosecution of the application. Thus, while information may be material under the definition of § 1.56(b)(1), there can be no duty to disclose the information if it is material only in combination with unknown information.

Comment 30. One comment stated that proposed § 1.56(b) should be modified so that paragraph (b)(1) refers to information that renders a claim unpatentable ("but for"), paragraph (b)(2) remains as proposed, and a paragraph (b)(3) is added to include the definition of materiality as "the closest information over which any pending claim patentably defines." This comment suggested that this modified definition would have the advantage of not requiring the applicant to submit references which applicant knows are immaterial and to then engage in "straw man" arguments based on such references.

Reply: The suggested modification to § 1.56 has not been adopted. The suggested language would seemingly require information to be filed in each application, whether the information is relevant or not, since the "closest information" would be required. Section 1.56 does not require information which is not relevant to be submitted, but only information which meets the definition of material as set out in the rule.

Comment 31. One comment stated that if proposed § 1.56(b)(1) is promulgated, there would be no need for proposed § 1.56(b)(2) with regard to information which would make a prima facie case of unpatentability and other information required by paragraph (b)(2) might be obscure. Another comment argued that paragraph (b)(2) was unnecessary, confusing and ambiguous and suggested changes in the language to make the requirement clear and less ambiguous.

Reply: The suggestion as to the language change to § 1.56(b)(2) has been adopted. The final rule language avoids the perceived problem of requiring an applicant to submit information supporting a position taken by the examiner. It is not appropriate, however, to eliminate paragraph (b)(2) because it is an essential part of the definition of information material to patentability and will help to ensure that all material facts are brought to the attention of the examiner during the examination process.

Comment 32. One comment questioned the language of proposed § 1.56(b)(2) as to how an applicant could consider a prior art reference as supporting a position of unpatentability taken by the Office while at the same time disputing that interpretation.

Reply: The language of § 1.56(b)(2) has been modified to clarify that information is material to patentability if it refutes, or is inconsistent with, a position the applicant takes in (1) opposing an argument of unpatentability relied on by the Office, or (2) asserting an argument of patentability.

Comment 33. One comment stated that § 1.56(b)(2) was flawed in requiring a duty to conduct a file search to make sure that no information exists which even arguably contradicts a position taken or to be taken in response to the examiner, or which supports the examiner's position which may be improper.

Reply: Section 1.56(b)(2) does not require a search of files. Under § 1.56(a), the duty of disclosure is confined to that information which is known to an individual to be material as defined in paragraph (b).

Comment 34. One comment stated that proposed § 1.56(c) should be modified so that the duty of any individual designated as having a duty of disclosure would terminate when such individual ceases to be substantively involved in the preparation or prosecution of the application. The comment used, as an example, an inventor who would not be aware of art cited by the examiner which would cause information known to the inventor to fall within the definition of materiality for the first time.

Reply: The suggestion in the comment is not adopted. The duty to disclose information material to patentability rests on the individuals designated in § 1.56(c) until the application issues as a patent or becomes abandoned. Paragraph (a) of § 1.56 makes it clear, however, that each individual has a duty to disclose only information which is known to that individual to be material.

Comment 35. One comment stated that proposed § 1.56(c)(3) should not include the assignee, or anyone to whom there is an obligation to assign the application, in the class of those who have a duty to disclose material information since there might be a "witch hunt" during litigation to find one employee with knowledge of, or possession of, information that should have been disclosed.

Reply: No modification to § 1.56(c)(3) is needed since § 1.56 sets forth that only individuals who are associated with the filing and prosecution of a patent application have a duty of candor and good faith, including a duty to disclose to the Office all information known to be material to patentability.

Comment 36. One comment stated that proposed § 1.56(d) should be revised to expressly allow an inventor to satisfy the duty by disclosing information to the practitioner who prepares or prosecutes the application so that redundant information disclosure statements will not be required from both the inventor and the attorney or agent.

Reply: The suggestion in the comment is not adopted since the duty as described in § 1.56 will be met as long as the information in question was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98 before issuance of the patent. Statements from both an inventor and the practitioner are not required to be submitted.

Comment 37. One comment stated that proposed §§ 1.52(c) and 1.67(c) should be modified to either (1) expressly permit alterations to be made in an application subsequent to the signing of the oath or declaration if a supplemental oath or

declaration is later submitted, or (2) more properly, prohibit such alterations since if alterations are desirable, they can be made and the application can be filed with an unsigned oath or declaration. Another comment stated that willfully filling out false oaths should never be condoned.

Reply: The Office does not condone willfully filling out false oaths. Further, § 10.23(c)(11) indicates that the Office considers it misconduct for a practitioner to knowingly file or cause to be filed an application containing a material alteration made after the signing of an accompanying oath or declaration without identifying the alteration. The Office will not consider striking an application in which an alteration was made, but a supplemental oath or declaration is required to be filed in an application containing alterations made after the signing of the oath or declaration.

Comment 38. One comment stated that the implementation of proposed §§ 1.63(b)(3) and 1.175(a)(7) allows for a two-month delay in the deadline for requiring declarations complying therewith.

Reply: The averments in oath or declaration forms presently in use that comply with the previous § 1.63 or § 1.175 will also comply with the requirements of the new rules. Therefore, the Office will continue to accept the old oath or declaration forms as complying with the new rules.

Comment 39. Five comments questioned the need for the proposed rules since statistics show that information disclosure statements are submitted early in prosecution and questioned what new service is being provided for the proposed fee in § 1.97.

Reply: The Office desires to continue to encourage information to be submitted promptly so that it can be considered by the examiner when the first Office action is prepared. Some people have expressed a desire to have the option of waiting to submit information until after the first Office action, without concern that they will be subject to a charge of inequitable conduct. Section 1.97(c), as amended, will provide this option to applicants in that information will be considered later than three months after the filing date of the application (§ 1.97(a) prior to amendment) without a showing of promptness (prior § 1.99). The fee will compensate the Office for the added expense caused by the late submission of the information and will serve as a disincentive to the intentional withholding of information even for a short period of time.

Comment 40. Two comments suggested that proposed § 1.97(a) be modified so that the mechanism of proposed § 1.98 would not be the only acceptable technique for submitting information.

Reply: The Office has set forth the minimum requirements for information to be considered in §§ 1.97 and 1.98. These rules will provide certainty for the public of exactly what the requirements are, when the Office will consider information and when the Office will not consider information. Thus, applicants are provided with means for complying with the duty of disclosure by following the rules. If information is submitted in a manner so that it is not considered by the Office, applicant will assume the risk that a court might find a violation of the duty of candor and good faith which includes the duty to disclose material information.

Comment 41. Four comments suggested that information which is recognized by applicant as being material after the period set in proposed § 1.97(b) as the result of prior art cited by the examiner should be permitted to be submitted to the Office without the fee set forth in 1.17(p), the certification or the petition fee required by § 1.97.

Reply: The suggestion in the comments is not adopted since it would require a certification, e.g., why the information was just recognized as being material, and would unduly complicate the rules and the procedures for considering information submitted by applicant. Applicants can avoid or, at least, minimize the problem by submitting information which is known to be relevant to the application even though it is not yet recognized as being required to be submitted because it is material to patentability. The fees charged are to compensate the Office for the additional work that will be necessary when information is submitted during an advanced stage of the examination process.

Comment 42. Two comments suggested that the period for submitting information set in proposed § 1.97(b) be changed to be two months from the issuance of the Official Filing Receipt to avoid information disclosure statements being misrouted in

the Office.

Reply: The suggestion in the comment is not adopted. The date that the Filing Receipt is mailed is not maintained in the application file so there would be administrative difficulty in determining when a fee or certification is required to be filed under the new rule. An application can be filed with a self-addressed return postcard so that applicant can obtain the serial number assigned to the application very soon after filing. Further, information may be filed under § 1.97(b) before the mailing of a first Office action on the merits even if this occurs later than three months after the application filing date.

Comment 43. One comment questions whether § 1.97(b) or § 1.97(d) applies in the event of issuance of a final rejection within three months of the filing of an application. The comment indicated that paragraph (b) should apply in this situation.

Reply: Paragraph (b) would apply in this situation since the paragraph specifies that information may be filed within three months of the filing date of the application or before the mailing date of a first Office action on the merits, whichever event occurs last. Thus, information would be considered pursuant to § 1.97(b) if it was filed within three months of the filing date of the application even if a final rejection was mailed prior to three months from the filing date.

Comment 44. One comment stated that proposed § 1.97(b)(1) should be clarified to indicate that "the filing of a national application" includes "a continuing application which replaces the original application."

Reply: The suggested modification has not been adopted since it is not necessary for clarity. The term "national application" includes continuing applications in this and the other patent rules. It is not desirable to add the suggested language to all occurrences of the term "application" in the rules or to raise the implication that continuing applications are not included in the term in other rules by adding the suggested language to this rule.

Comment 45. One comment stated that proposed § 1.97 should be changed to state that if a responsible party becomes aware of material information less than three months before issuance of an Office action, that information will be considered timely filed if it is submitted together with the response to the action. The comment also stated that the Office could go farther and implement a rule which specifies that such information will be considered timely submitted if it reaches the examiner before the response to the Office action is taken up for consideration. Three other comments stated that the Office should accept information disclosure statements with responses to Office actions, with one comment arguing that there is no benefit in submitting two papers where one would suffice.

Reply: The suggestions in the comments are not adopted. The rule as proposed and promulgated has the advantage of being relatively easy to comply with and administer. Information should be submitted promptly so that the examiner will have the option of reviewing the information and withdrawing or revising the Office action. Requiring information to be submitted promptly contributes to the efficiency of the examination process.

Comment 46. One comment stated that there should be no fee in § 1.97 associated with the filing of an information disclosure statement since this might impact negatively on the submission of material information; rather, it would be sufficient to permit material information submitted subsequent to a non-final action to support a final rejection in the next action, in the absence of the certification proposed in the rules. Another comment, however, stated that the proposed fee requirement would not be a disincentive to submission of prior art, but would force examiners to consider certain art which under current practice often is not made of record, but instead, requires the filing of a continuation application.

Reply: The fee required in the rule will serve both to cover additional expense caused the Office by the late submission of information and will also serve as a disincentive to failing to cooperate in submitting information early in the prosecution of an application rather than as a disincentive to submitting information at all.

Comment 47. One comment questioned whether information in an information disclosure statement submitted during the period set forth by proposed § 1.97(c) could be used by an examiner to make the next action final if the statement was submitted with a certification under § 1.97(e).

Reply: Information submitted with a certification during the period set forth in § 1.97(c) will not be used to make the next Office action final on unamended claims since in this situation it is clear that applicant has submitted the information to the Office promptly after it has become known and the information is being submitted prior to a final determination on patentability by the Office.

Comment 48. One comment stated that it was unfair for the Office to require a fee for considering information pursuant to proposed § 1.97(c) and then also be able to use the information in making the Office action final.

Reply: The policy is not considered to be unfair. If information is submitted during the period set forth in § 1.97(c) without the certification, the fee will compensate the Office for extra work that may be caused by the failure to submit information promptly. If the cost for this extra work were not placed upon the applicant in this situation, the cost would have to be borne by all applicants through payment of higher fees. The possibility that the next Office action may be made final will further encourage prompt disclosure of information to the Office.

Comment 49. One comment suggested that information should be considered (§ 1.97(c)) after final rejection, since this is different from after allowance when the Office would have to go back and reconsider its work. Two comments stated that proposed § 1.97(c)(1) should not penalize applicants who receive a foreign search report after a final rejection is made in the application and that the certification under § 1.97(e) should be available until an advisory action after final rejection or a notice of allowability occurs in the application. Another comment stated that final action may not even be on the merits but merely administrative.

Reply: The suggestions in the comments are not adopted. Both a notice of allowance and a final rejection represent a final Office decision on patentability. Information considered after either of these actions may require the Office to alter its position. After either of these actions, information will be considered only if it is submitted promptly in accordance with § 1.97(d) or is submitted in a refiled application. It should be noted that information cited in a foreign search report, if cited to the Office within three months of the date on the search report, will be considered by the Office if filed before payment of the issue fee.

Comment 50. One comment stated that proposed § 1.97(d) would result in unequal treatment of U.S. inventors who file first in the Office as compared to foreign inventors who file first in a foreign country since the latter will have the results of the search made by the foreign examining country earlier in the pendency of the U.S. application. Six comments suggested that a U.S. inventor should have the ability to make the certification of § 1.97(e) and to have the Office consider the information, regardless of the stage of prosecution at which information from a foreign office is submitted.

Reply: It should be noted that the certification of § 1.97(e) can be made and information considered by the Office until the issue fee is paid on the application. After the issue fee has been paid on an application, it is impractical for the Office to attempt to consider newly submitted information. The application may be withdrawn from issue at this point, however, pursuant to § 1.313(b)(5) so that the information can be considered in a continuing application, or pursuant to § 1.313(b)(3) if applicant states that one or more claims are unpatentable over the information that is cited. It is further noted that it is applicants, not the Office, who make decisions on when and in which countries to file an application. U.S. inventors who may desire to seek patent protection in foreign countries have the ability to utilize the provisions of the Patent Cooperation Treaty and to delay the requirement to enter the national stage until after a search report on the invention is made.

Comment 51. One comment questioned whether a certification under § 1.97(e) could properly be made in situations where information known by the applicant but not considered material is cited by a foreign patent office more than three months later than the first knowledge by applicant.

Reply: The language of § 1.97(e) has been modified to permit a certification to be made in the situation described in the comment. If an item of information is submitted within three months of being cited in a communication from a foreign patent office in a counterpart foreign patent application, the certification can be properly made regardless of any individual's

previous knowledge of the information.

Comment 52. One comment stated that the three-month time period for submitting information from foreign patent offices under proposed § 1.97(e) might be too short because not all foreign offices provide copies of references and that the Office should provide for a petition in unusual circumstances. Five comments stated that a three-month time limit for filing foreign search reports is not reasonable but rather that six months would be more reasonable.

Reply: The Office has chosen the three month time period as appropriate in view of all the factors involved in obtaining information and in the examination process. It should be noted that Office actions typically set a three-month shortened statutory period for response. A response to an Office action generally requires more time for preparation than is involved in the submitting of a foreign search report and copies of the documents cited.

Comment 53. Five comments suggested that § 1.97(e) should permit a certification to be made if an individual knew of information for more than three months before it was filed but did not recognize its materiality or relevance to the application.

Reply: The suggestion in the comments is not adopted. The Office desires to encourage prompt evaluation of information as to materiality by applicants and the Office so as to contribute to the efficiency and effectiveness of the examination process. It should be noted that an applicant is not required to delay the submission of information while evaluating materiality, but can submit the information pursuant to §§ 1.97 and 1.98.

Comment 54. One comment stated that proposed § 1.97(e) should be clarified to specify that the certificates can be made regardless of the source of the information being submitted, so long as it is disclosed within three months of receipt. One comment stated that the three-month period of proposed § 1.97(e) should be measured from the receipt date of a communication from a foreign patent office.

Reply: A certification under § 1.97(e) can be made if each item of information was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to filing the statement. A certification can also be made if no item of information was cited in a communication from a foreign patent office in a counterpart foreign application or was known to any individual designated in § 1.56(c) more than three months prior to filing the information disclosure statement. The Office wishes to encourage prompt evaluation of the relevance of information and to have a date certain for determining if a certification can properly be made. Although it is recognized that an individual actually becomes aware of the information in the communication from a foreign patent office sometime after it was mailed, the mailing date of such a communication, if it occurs prior to a first awareness of the same information, would determine the date for filing of an information disclosure statement without a fee. The Office is willing to absorb any additional cost in considering such information relevant to patentability after the time set in proposed paragraph (b) only when it is clear that an applicant is diligent in providing the information to the Office.

Comment 55. One comment stated that the cost of making a certification under § 1.97(e) would be more than the \$200.00 fee proposed where no certification is made due to difficulties in obtaining information from foreign clients. The comment suggested that the rule provide for (1) the opportunity to provide documentation (as opposed to certification) illustrating when the information was received, and (2) the opportunity to submit information with increasing fees depending on when in the periods of § 1.97(c) and (d) the information is submitted.

Reply: The suggestions in the comment are not adopted since they would add undue complexity to the rules and procedures. Further, the suggested provision of documentation, which presumably would be reviewed by someone in the Office, would probably add considerably to the overall expense of filing an information disclosure statement. No other comments indicated a desire for increasing fees depending on when the information is submitted.

Comment 56. Two comments stated that proposed § 1.97(e) is ambiguous in using the language "to the knowledge of the person signing the certification" in that it could refer to "information and belief," "actual knowledge of the facts" or "no knowledge to the contrary." One comment stated that certifications should be able to be made on information and belief by

a U.S. attorney or agent submitting a material reference received from a foreign patent attorney or agent, rather than requiring a certification from the foreign individual. Another comment suggested that the period should be calculated from when the applicant either knew or could have known of the reference because the U.S. attorney should not be penalized for delays from their foreign patent associates.

Reply: The certification under § 1.97(e) should be made by a person who has knowledge of the facts being certified. The certification can be made by a practitioner who represents a foreign client and who relies on statements made by the foreign client as to the date the information first became known. A practitioner who receives information from a client without being informed whether the information was known for more than three months, however, cannot make the certification without making reasonable inquiry.

Comment 57. One comment stated that the language of proposed § 1.97(e) would preclude the use of the certification in an application by corporations whose practitioners have over the years reviewed thousands of patents and technical publications, even though they are unaware of the relevance of any one thereof to the application.

Reply: The language of § 1.97(e) is not intended to preclude use of the certification by representatives of corporations. The certification can be based on present, good faith knowledge about when information became known without a search of files being made. The Office, however, does desire to have information considered promptly by applicants as to materiality and to have information submitted to the Office early in the prosecution of an application.

Comment 58. One comment suggested that proposed § 1.97(e) should permit certification only as to information submitted within four months of receipt from a foreign patent office, with all other late-submitted information requiring a fee so as to not open a legal quagmire implicit in the proposed certification requirement.

Reply: The suggestion in the comment is not adopted. The certification set forth in § 1.97(e) is preferable since it provides the avoidance of the payment of a fee by a person who is submitting information promptly to the Office. An applicant has the option under the circumstances described in § 1.97(c), however, to not make the certification and to pay the fee instead if so desired.

Comment 59. One comment suggested that proposed § 1.97(f) be modified to specify that *not less than one month* will be given if a bona fide attempt is made to comply with § 1.98 but part of the required content is omitted. Another comment suggested that § 1.97(f) should state that the Office will give (rather than may give) additional time for compliance with § 1.98.

Reply: The suggestions in the comments are not adopted. The language of § 1.97(f) parallels present § 1.135(c) since the practice and considerations are similar for both rules. The Office intends to provide one month to comply with § 1.98 where a bona fide attempt has been made to do so.

Comment 60. One comment stated that proposed § 1.97(f) should specify that the Office shall inform the applicant if a reference will not be considered due to noncompliance with § 1.98 so as to avoid any argument in litigation that a certain reference was not considered due to clerical noncompliance.

Reply: The Office plans to notify applicants in accordance with §§ 1.97(f) and (i) if submitted information will not be considered. The examiner will also indicate in the application record what information has been considered. Further details will appear in the Manual of Patent Examining Procedure in due course.

Comment 61. One comment suggested that proposed § 1.97(g) should be modified to state that the filing of an information disclosure statement shall not be construed as a representation that no other material information exists such as is set forth in current § 1.97(b).

Reply: The suggestion in the comment has not been adopted since referring to "no other material information" would imply that the information being submitted was admitted to be material. There is no requirement that information being submitted be material to the application.

Comment 62. One comment suggested that proposed § 1.97(h) be modified to state that information not considered by the Office will be deemed in all respects to have not been submitted

by the applicant since this would make a noncompliant submission clearly not a fulfillment of the duty of candor.

Reply: The suggestion in the comment is not adopted. The Office has no need or desire to rule on lack of fulfillment of the duty of candor in such a situation. The rules are drafted such that § 1.56 sets forth what information is material to patentability and §§ 1.97 and 1.98 set forth procedures to assure consideration of information by the Office.

Comment 63. One comment stated the Office has a duty to consider information even if this involves withdrawing an application from issue or publishing a cancellation notice and that proposed § 1.97(h) should be changed to so state. Another comment stated that it would be an abdication of the duty that the Office owes to the public for information in the file to be ignored since issuance of an invalid patent can be used to discourage others in the field. The comment suggested that the Office should leave in doubt whether the information will be considered or not.

Reply: It is necessary for the Office to balance its need and desire to consider all information relevant to an application with its need for an efficient operation and its capability to consider information at various stages in the prosecution of an application. The Office is setting forth when information will and will not be considered to provide certainty for the public.

Comment 64. One comment requested information on how a United States patent application or other information (§ 1.98(a)(1)(iii)) should be listed on a PTO 1449 form.

Reply: The PTO 1449 has been drafted so as to provide spaces for listing documents which are available to the public and which will be printed on the patent at issuance. Other information should be listed separately from the PTO 1449 form.

Comment 65. One comment stated that § 1.98(a)(2)(i) should not require the submission by applicants of United States patents listed in an information disclosure statement since the Office is better equipped to provide examiners with copies of those documents than inventors and their attorneys. Alternatively, the comment suggested that the Office should establish a procedure whereby an order for the Office to provide the copies of the patents at the usual fee can accompany the information disclosure statement.

Reply: At the present time, when the Automated Patent System has not been fully implemented, the overall cost of the Office obtaining copies of patents and associating them with application files would be greater than for applicants to provide copies with information disclosure statements. Presumably, the applicant would be using a copy of the patent in preparing the statement and could easily make a copy for submission to the Office.

Comment 66. One comment suggested that § 1.98(a)(2)(iii), as proposed, be clarified by substituting "except that no copy of a U.S. patent application need be included" for the proposed phrase "except a U.S. patent application."

Reply: The suggested clarification to the language of the rule has been adopted.

Comment 67. A number of comments objected to the requirement in § 1.98(a)(3) for a concise explanation of the relevance of all items of information being submitted.

Reply: In response to the comments, § 1.98(a)(3) has been modified to require a concise explanation only of patents, publications or other information listed in an information disclosure statement that are not in the English language. Applicants may, if they wish, provide concise explanations of why English-language information is being submitted and how it is understood to be relevant. Concise explanations are helpful to the Office, particularly where documents are lengthy and complex and applicant is aware of a section that is highly relevant to patentability.

Comment 68. Five comments stated that the proposed rules should be modified to state that if information is being submitted from a foreign search report, the requirement for a concise explanation in proposed § 1.98(a)(3) may be satisfied by submitting an English-language version of the search report.

Reply: The language of § 1.98(a)(3) has been modified so that no concise explanation is required for information submitted in the English language. The concise explanation requirement for non-English language information may be met by the submission of an English language version of the search report indicating the degree of relevance found by the foreign office. It is not necessary that this detail be included in the rule.

Comment 69. Five comments questioned whether the requirement in proposed § 1.98(a)(3) would be satisfied by a statement that the references were cited in the prosecution of a parent application.

Reply: The requirement in § 1.98(a)(3) for a concise explanation of non-English language information would not be satisfied by a statement that a reference was cited in the prosecution of a parent application. The concise explanation must explain the relevance as presently understood by the person designated in § 1.56(c) most knowledgeable about the content of the information.

Comment 70. One comment suggested that proposed § 1.98(a)(3) should be modified to require a concise explanation of "what is believed to be" the relevance of information listed to avoid the accusation of violation of duty of disclosure merely because more relevant portions of the information are later found. Another comment suggested that the concise explanation should state what is "reasonably understood by the person submitting the statement." Another comment stated that the applicant should be required to explain (1) only what is understood or believed about the item of information at the time the disclosure is made, or (2) why the item is listed.

Reply: The suggestions in the comments have been substantially adopted in modifying the language of § 1.98(a)(3).

Comment 71. One comment stated that proposed § 1.98(b) should not require the date (unless material) and place of publication of journal articles since such information is not given on search reports from foreign patent offices or on journals published by the American Chemical Society, which just give the year. Another comment indicated that sometimes it is not clear where the place of publication is.

Reply: The suggestions in the comments are not adopted. The date of publication is necessary for the Office to be able to determine if the information may be used in a rejection of the claims in an application. The place of publication refers to the name of the journal, magazine or other publication in which the article was published, which should be available in the vast majority of cases.

Comment 72. One comment suggested that § 1.98(c) should not require a translation of a non-English language document to be filed if a translation is within the possession, custody or control of an individual designated in § 1.56(c) because such person may not recall that there is a translation somewhere in the records of the individual, perhaps having been made for another application years earlier.

Reply: The requirement of the rule for a translation to be submitted under limited conditions is not a change in practice. See prior §§ 1.56(j) and 1.97(b). Since the requirement has caused little, if any, problem in the past, the suggestion of the comment is not adopted.

Comment 73. One comment suggested that § 1.98(c) should be revised to make it clear that a reference that is essentially cumulative to another reference need not be listed in an information disclosure statement.

Reply: The concept that cumulative information is not material is set forth in § 1.56(b). Section 1.98 does not deal with what information must be submitted, but provides an exception for cumulative information to the requirement for a copy to be submitted of each item of information listed in an information disclosure statement.

Comment 74. One comment stated that a sentence in the preamble discussion of proposed § 1.98(c) was burdensome because it would require submission of incomplete or inexact translations which may have been made of an item of information. The sentence in question reads:

"But if the individual has the ability to translate the non-English language into English and has done so for the purposes of reviewing the information relative to the claimed invention, the translation would be considered 'readily available.'"

Another comment stated that proposed § 1.98(c) should be modified to require a translation if the non-English language document is to be considered by the examiner since the attorney would want to prepare an accurate translation of particularly relevant references. One comment suggested that § 1.98(c), or the preamble discussion, should make it clear that an English-language translation of a foreign language material reference need not be submitted where an individual merely reads in the reference in its original language and translates it mentally but

does not prepare a written translation. Five other comments requested clarification on this point.

Reply: The Office does not intend to require translations unless they have been reduced to writing and are actually translations of what is contained in the non-English language information. Applicants should note, however, that most examiners do not have the ability to understand information which is not in English and that the Office will not routinely translate information submitted in a non-English language. The examiner will consider the information insofar as it is understood on its face, e.g., drawings, chemical formulas, English-language abstracts, but will not have the information translated unless it appears to be necessary to do so. Applicants are required to aid the examiner by complying with the requirements for a concise explanation in § 1.98(a)(3) for information submitted in a non-English language.

Comment 75. One comment stated that § 1.98(d) should be clarified to state that a copy of an item of information listed in an information disclosure statement need not be submitted if the reference was cited by the Office or previously submitted to the Office in connection with a prior application.

Reply: The suggestion in the comment is adopted. The language of § 1.98(d) has been modified to state that a copy of an item of information is not required if it was previously cited by the Office or previously submitted to the Office in a prior application being relied on for an earlier filing date under 35 U.S.C. 120.

Comment 76. One comment suggested that proposed § 1.98(d) should be revised to not require the submission of a copy of the information listed in an information disclosure statement if a copy of the information has previously been submitted to the Office in a prior application, whether or not the earlier application is being relied upon for an earlier filing date under 35 U.S.C. 120.

Reply: The suggestion in the comment is not adopted. The exception to the requirement for a copy of each item of information to be submitted has been made with regard to prior applications which will normally be available to, and considered by, the examiner. It would not be efficient for the examiner to be required to seek out unrelated application files to obtain a copy of an item of information when a copy could easily be submitted by applicant.

Comment 77. One comment questioned what would be considered "timely" under § 1.291 so that information would be considered by the examiner without payment of a fee, in contrast to proposed § 1.97 which may require a fee.

Reply: Section 1.291 has not been amended to redefine timeliness. The comment seems to imply that the fee requirements of § 1.97 can be avoided through the use of a protest submitting information, but such a course of action might raise questions regarding compliance with the duty of candor and good faith required in dealings with the Office.

Comment 78. One comment stated that the Office should not drop the acknowledgment of a protest having been filed under § 1.291 in a reissue application because the acknowledgment served as an indication that the protest had been received in the examining group from the mail room.

Reply: The suggestion in the comment is not adopted. Any perceived benefit from retaining the acknowledgment is outweighed by the administrative burden it causes. There is no good reason to treat the filing of protests in reissue applications differently from the filing of protests in original applications or from the filing of other papers in the Office.

Comment 79. One comment questioned whether an application could be withdrawn from issue pursuant to proposed § 1.313(b)(5) without admitting unpatentability.

Reply: There is no requirement that unpatentability must be admitted before an application can be withdrawn from issue pursuant to § 1.313(b)(5). The rule provides for applications to be withdrawn from issue and abandoned for consideration of information in a continuing application. This differs from a petition under § 1.313(b)(3) based on unpatentability of one or more claims.

Comment 80. One comment questioned whether, if an application is withdrawn from issue pursuant to proposed § 1.313(b)(5), an information disclosure statement can be submitted in the continuing application under § 1.97(b) without a certification.

Reply: A continuing application is treated like any other application with regard to the times set forth in § 1.97(b). Thus, for

example, an information disclosure statement could be filed without a fee or certification in a continuing application within three months of the filing date of the continuing application.

Comment 81. One comment questioned whether an application withdrawn from issue pursuant to § 1.313(b)(5) could have new art and amendments considered in that application rather than in a continuing application. The comment also questioned the handling of applications withdrawn from issue pursuant to § 1.313(b)(3).

Reply: The language of § 1.313(b)(5) makes it clear that an application withdrawn from issue thereunder is to be abandoned without further prosecution. This differs from an application withdrawn from issue pursuant to § 1.313(b)(3) because applicant had admitted the unpatentability of one or more claims.

Comment 82. One comment questioned whether the continuing application mentioned in proposed § 1.313(b)(5) could be a file wrapper continuing application under § 1.62 and how applicants can accomplish the withdrawal from issue under proposed § 1.313(b) late in the prosecution of an application.

Reply: The continuing application mentioned in § 1.313(b)(5) can be a file wrapper continuing application under § 1.62. Even though § 1.62 requires a file wrapper continuing application to be filed before the payment of the issue fee, the Office will consider the filing of a petition to withdraw from issue under § 1.313(b)(5) as sufficient grounds to waive that requirement of § 1.62. Late in the prosecution of an application, the Office has difficulty in matching papers with the application file. Papers requesting that an application be withdrawn from issue after the issue fee is paid should be directed, or preferably hand-carried, to the Office of Petitions in the Office of the Assistant Commissioner for Patents.

Comment 83. Seven comments suggested that § 1.555(a) should not be amended to require the submission of "all information material to patentability" since a reexamination proceeding is limited to consideration of patents and printed publications.

Reply: The suggestion in the comments has been adopted. A paragraph (b), which defines what information is material to patentability in a reexamination proceeding, has been added to the rule.

Comment 84. One comment suggested that proposed § 1.555(a) should be modified to make clear that there is no duty of disclosure on employees of a corporate patent owner if the employees are not substantively involved in the preparation of the reexamination request or the reexamination proceeding.

Reply: The suggestion in the comment to modify the language in § 1.555(a) has not been adopted. The rule refers to individuals who are substantively involved on behalf of the patent owner in a reexamination proceeding.

Comment 85. Two comments stated that the Office should consider fraud or other inequitable conduct issues in interference proceedings.

Reply: The suggestion in the comments has been adopted. The Office will consider inequitable conduct issues in interference proceedings as announced on November 19, 1991, in the *Official Gazette* of the Patent and Trademark Office at 1132 Off. Gaz. Pat. Off. 33.

Comment 86. One comment requested more examples with regard to proposed § 10.23(c)(10) of what alteration or combination of alterations in a declaration would be considered material.

Reply: It is not the function of the rules or the rulemaking process to provide a detailed listing of what alterations may be considered to be improper. This consideration will necessarily be made in view of the totality of the circumstances involved. Practitioners would be well advised to avoid filing applications which contain alterations which have not been initialed and dated.

Comment 87. Two comments stated that § 10.23(c)(10) should be amended to prohibit knowingly attempting to mislead the Office in the drafting or prosecution of a patent application. One comment stated that attempted fraud or inequitable conduct would not be prohibited by proposed § 10.23(c)(10) because such conduct would not be a violation of proposed §§ 1.56 or 1.555.

Reply: No amendment is necessary to the language of § 10.23(c)(10). It should be noted that the duty of candor and good faith in dealing with the Office is included in §§ 1.56 and 1.555. This duty includes a prohibition against knowingly attempting to mislead the Office.

Comment 88. Five comments stated that it would be unfair to

impose the new disclosure requirements and fees on applications that are pending before the Office on the effective date of the new rule. Another comment stated that the rules should be immediately effective for all pending applications with some grace period for making the initial disclosure without penalty and without fee.

Reply: The Office will apply the new rules to all applications pending on, or filed on or after, the effective date of the rules. While this implementation may cause some burden on some applicants, other applicants will obtain benefits not otherwise available. This decision will also ease the administrative burden on the Office in implementing the new rules.

Other Considerations

The rule change is in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)) because the rules as adopted do not require individuals to submit information that they are not already aware of and are not already under an obligation to provide to the Office. The rules further promote the efficiency of the examination process by encouraging a timely submission of an information disclosure statement and by substantially eliminating rejections based on inequitable conduct, thereby reducing the costs to all patent applicants.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, state or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity or innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

This rule contains a collection of information requirement subject to the Paperwork Reduction Act, which has previously been approved by the Office of Management and Budget under Control No. 0651-0011. Each information disclosure statement is estimated to take approximately 30 minutes, including time for reviewing instructions, gathering and maintaining data needed, and completing and reviewing the collection of information. The time estimate has been reduced from that stated in the proposal since the requirement for a concise explanation of the relevance of each item of information cited in an information disclosure statement has been limited to information submitted in a language other than English. Send comments regarding this burden estimate Patent and Trademark Office, Office of Management and Organization, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503. (Attention Paper Reduction Project 0651-0011)

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 10

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements.

For the reasons set forth in the preamble, 37 CFR Parts 1 and 10 are amended as follows:

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. In § 1.17, paragraph(i)(1) is revised and paragraph (p) is added to read as follows:

§ 1.17 Patent application processing fees.

(i)(1) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph.....130.00

§ 1.12—for access to an assignment record.

§ 1.14—for access to an application.

§ 1.53—to accord a filing date.

§ 1.55—for entry of late priority papers.

§ 1.60—to accord a filing date.

§ 1.62—to accord a filing date.

§ 1.97(d)—to consider an information disclosure statement.

§ 1.103—to suspend action in application.

§ 1.177—for divisional reissues to issue separately.

§ 1.312—for amendment after payment of issue fee.

§ 1.313—to withdraw an application from issue.

§ 1.314—to defer issuance of a patent.

§ 1.334—for patent to issue to assignee, assignment recorded late.

§ 1.666(b)—for access to interference settlement agreement.

(p) For submission of an information disclosure statement under § 1.97(c)..... \$200.00

3. Section 1.28, paragraph (d)(2) is revised to read as follows:

§ 1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(d)(1) ***

(2) Improperly and with intent to deceive

(i) establishing status as a small entity,

or

(ii) paying fees as a small entity

shall be considered as a fraud practiced or attempted on the Office.

4. Section 1.51, paragraph (b) is revised to read as follows:

§ 1.51 General requisites of an application.

(b) Applicants are encouraged to file an information disclosure statement. See §§ 1.97 and 1.98.

5. Section 1.52, paragraph (c) is revised to read as follows:

§ 1.52 Language, paper, writing, margins.

(c) Any interlineation, erasure, cancellation or other alteration of the application papers filed should be made before the signing of any accompanying oath or declaration pursuant to § 1.63 referring to those application papers and should be dated and initialed or signed by the applicant on the same sheet of paper. Application papers containing alterations made after the signing of an oath or declaration referring to those application papers must be supported by a supplemental oath or declaration under § 1.67(c). After the signing of the oath or declaration referring to the application papers, amendments may be made in the manner provided by §§ 1.121 and 1.123 through 1.125.

6. Section 1.56 is revised to read as follows:

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine: (1) prior art cited in search reports of a foreign patent office in a counterpart application, and (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) it establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) it refutes, or is inconsistent with, a position the applicant takes in:

(i) opposing an argument of unpatentability relied on by the Office, or

(ii) asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) each inventor named in the application;

(2) each attorney or agent who prepares or prosecutes the application; and

(3) every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

7. Section 1.63, paragraphs (b)(3) and (d) are revised to read as follows:

§ 1.63 Oath or declaration.

(b) ***

(3) Acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in § 1.56.

(d) In any continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, the oath or declaration must also state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in § 1.56, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

8. Section 1.67 is amended by adding a new paragraph (c) to read as follows:

§ 1.67 Supplemental oath or declaration.

(c) A supplemental oath or declaration meeting the requirements of § 1.63 must also be filed if the application was altered after the oath or declaration was signed or if the oath or declaration was signed:

(1) in blank;

(2) without review thereof by the person making the oath or declaration; or

(3) without review of the specification, including the claims, as required by § 1.63(b)(1).

9. Section 1.97 is revised to read as follows:

§ 1.97 Filing of information disclosure statement.

(a) In order to have information considered by the Office during the pendency of a patent application, an information disclosure statement in compliance with § 1.98 should be filed in accordance with this section.

(b) An information disclosure statement shall be considered by the Office if filed:

(1) within three months of the filing date of a national application;

(2) within three months of the date of entry of the national stage as set forth in § 1.491 in an international application; or

(3) before the mailing date of a first Office action on the merits, whichever event occurs last.

(c) An information disclosure statement shall be considered by the Office if filed after the period specified in paragraph (b) of this section, but before the mailing date of either

(1) a final action under § 1.113 or

(2) a notice of allowance under § 1.311,

whichever occurs first, provided the statement is accompanied by either a certification as specified in paragraph (e) of this section or the fee set forth in § 1.17(p).

(d) An information disclosure statement shall be considered by the Office if filed after the mailing date of either

(1) a final action under § 1.113 or

(2) a notice of allowance under § 1.311,

whichever occurs first, but before payment of the issue fee, provided the statement is accompanied by:

(i) a certification as specified in paragraph (e) of this section,

(ii) a petition requesting consideration of the information disclosure statement, and

(iii) the petition fee set forth in § 1.17(i)(1).

(e) A certification under this section must state either

(1) that each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the statement, or

(2) that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in § 1.56(c) more than three months prior to the filing of the statement.

(f) No extensions of time for filing an information disclosure statement are permitted under § 1.136. If a bona fide attempt is made to comply with § 1.98, but part of the required content

is inadvertently omitted, additional time may be given to enable full compliance.

(g) An information disclosure statement filed in accordance with this section shall not be construed as a representation that a search has been made.

(h) The filing of an information disclosure statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b).

(i) Information disclosure statements, filed before the grant of a patent, which do not comply with this section and § 1.98 will be placed in the file, but will not be considered by the Office.

10. Section 1.98 is revised to read as follows:

§ 1.98 Content of information disclosure statement.

(a) Any information disclosure statement filed under § 1.97 shall include:

(1) A list of all patents, publications, or other information submitted for consideration by the Office;

(2) A legible copy of:

(i) Each U.S. and foreign patent;

(ii) Each publication or that portion which caused it to be listed; and

(iii) All other information or that portion which caused it to be listed, except that no copy of a U.S. patent application need be included; and

(3) A concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language. The concise explanation may be either separate from the specification or incorporated therein.

(b) Each U.S. patent listed in an information disclosure statement shall be identified by patentee, patent number and issue date. Each foreign patent or published foreign patent application shall be identified by the country or patent office which issued the patent or published the application, an appropriate document number, and the publication date indicated on the patent or published application. Each publication shall be identified by author (if any), title, relevant pages of the publication, date and place of publication.

(c) When the disclosures of two or more patents or publications listed in an information disclosure statement are substantively cumulative, a copy of one of the patents or publications may be submitted without copies of the other patents or publications provided that a statement is made that these other patents or publications are cumulative. If a written English-language translation of a non-English language document, or portion thereof, is within the possession, custody or control of, or is readily available to any individual designated in § 1.56(c), a copy of the translation shall accompany the statement.

(d) A copy of any patent, publication or other information listed in an information disclosure statement is not required to be provided if it was previously cited by or submitted to the Office in a prior application, provided that the prior application is properly identified in the statement and relied upon for an earlier filing date under 35 U.S.C. 120.

11. Section 1.99 is removed and reserved.

12. Section 1.175, paragraph (a)(7), is revised to read as follows:

§ 1.175 Reissue oath or declaration.

(a) ***

(7) Acknowledging the duty to disclose to the Office all information known to applicants to be material to patentability as defined in § 1.56.

13. Section 1.193(c) is removed and reserved.

§ 1.193 Examiner's Answer.

14. Section 1.291, paragraphs (a) and (c), are revised to read as follows:

§ 1.291 Protests by the public against pending applications.

(a) Protests by a member of the public against pending applications will be referred to the examiner having charge of the subject matter involved. A protest specifically identifying the application to which the protest is directed will be entered in the application file if:

- (1) the protest is timely submitted; and
 - (2) the protest is either served upon the applicant in accordance with § 1.248, or filed with the Office in duplicate in the event service is not possible.
- Protests raising fraud or other inequitable conduct issues will be entered in the application file, generally without comment on those issues. Protests which do not adequately identify a pending patent application will be disposed of and will not be considered by the Office.

(c) A member of the public filing a protest in an application under paragraph (a) of this section will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard which the member of the public may include with the protest in order to receive an acknowledgment by the Office that the protest has been received. The Office may communicate with the applicant regarding any protest and may require the applicant to respond to specific questions raised by the protest. In the absence of a request by the Office, an applicant has no duty to, and need not, respond to a protest. The limited involvement of the member of the public filing a protest pursuant to paragraph (a) of this section ends with the filing of the protest, and no further submission on behalf of the protestor will be considered unless such submission raises new issues which could not have been earlier presented.

15. Section 1.313, paragraph (b), is revised to read as follows:

§ 1.313 Withdrawal from issue.

(b) When the issue fee has been paid, the application will not be withdrawn from issue for any reason except:

- (1) a mistake on the part of the Office;
- (2) a violation of § 1.56 or illegality in the application;
- (3) unpatentability of one or more claims;
- (4) for interference; or
- (5) for abandonment to permit consideration of an information disclosure statement under § 1.97 in a continuing application.

16. Section 1.555 is revised to read as follows:

§ 1.555 Information material to patentability in reexamination proceedings.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective reexamination occurs when, at the time a reexamination proceeding is being conducted, the Office is aware of and evaluates the teachings of all information material to patentability in a reexamination proceeding. Each individual associated with the patent owner in a reexamination proceeding has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability in a reexamination proceeding. The individuals who have a duty to disclose to the Office all information known to them to be material to patentability in a reexamination proceeding are the patent owner, each attorney or agent who represents the patent owner, and every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. The duty to disclose the information exists with respect to each claim pending in the reexamination proceeding until the claim is cancelled. Information material to the patentability of a can-

celled claim need no be submitted if the information is not material to patentability of any claim remaining under consideration in the reexamination proceeding. The duty to disclose all information known to be material to patentability in a reexamination proceeding is deemed to be satisfied if all information known to be material to patentability of any claim in the patent after issuance of the reexamination certificate was cited by the Office or submitted to the Office in an information disclosure statement. However, the duties of candor, good faith, and disclosure have not been complied with if any fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct by, or on behalf of, the patent owner in the reexamination proceeding. Any information disclosure statement must be filed with the items listed in § 1.98 as applied to individuals associated with the patent owner in a reexamination proceeding, and should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible.

(b) Under this section, information is material to patentability in a reexamination proceeding when it is not cumulative to information of record or being made of record in the reexamination proceeding, and

(1) it is a patent or printed publication that establishes, by itself or in combination with other patents or printed publications, a prima facie case of unpatentability of a claim; or

(2) it refutes, or is inconsistent with, a position the patent owner takes in:

(i) opposing an argument of unpatentability relied on by the Office, or

(ii) asserting an argument of patentability.

A prima facie case of unpatentability of a claim pending in a reexamination proceeding is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) The responsibility for compliance with this section rests upon the individuals designated in paragraph (a) of this section and no evaluation will be made by the Office in the reexamination proceeding as to compliance with this section. If questions of compliance with this section are discovered during a reexamination proceeding, they will be noted as unresolved questions in accordance with § 1.552(c).

Part 10 - Representation of Others Before the Patent and Trademark Office

17. The authority citation for Part 10 continues to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

18. Section 10.23, paragraphs (c)(10) and (c)(11), are revised to read as follows:

§ 10.23 Misconduct.

(c) ***

(10) Knowingly violating or causing to be violated the requirements of § 1.56 or § 1.555 of this subchapter.

(11) Knowingly filing or causing to be filed an application containing any material alteration made in the application papers after the signing of the accompanying oath or declaration without identifying the alteration at the time of filing the application papers.

Jan 9, 1992

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1135 OG 13]

(64) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1

[Docket No. 910764-1306]
RIN 0651-AA27

Duty of Disclosure

Agency: Patent and Trademark Office, Commerce

Action: Correcting amendments.

Summary: This document contains corrections to the final regulations which were published in the Federal Register on Friday, January 17, 1992 (57 FR 2021). The regulations related to changes regarding the duty of disclosure contained in parts 1 and 10.

Effective Date: March 16, 1992.

For Further Information Contact: Charles E. Van Horn by telephone at (703) 305-9054, or by facsimile transmission at (703) 305-8825, or by mail marked to his attention and addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information:

Background

The final regulations that are the subject of these corrections, make changes to the rules of practice relating to the duty of disclosure and the procedures for submitting information disclosure statements to the Office.

Need for Correction

As published, the final regulations contain an error, which may be misleading and is in need of clarification.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

PART 1 - RULES OF PRACTICE IN PATENT CASES

Accordingly, 37 CFR Part 1 is corrected by making the following correcting amendment:

1. The authority citation for Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.
§ 1.97(c)(2) [Corrected]

2. In § 1.97(c)(2), the fifth line down, is revised to read "certification as specified in paragraph (e) of this section . . ." instead of "(3) of this section."

June 17, 1994

CHARLES E. VAN HORN
Deputy Assistant Commissioner
for Patent Policy and
Projects

[1164 OG 54]

(65) Implementation of Rules on Information
Disclosure Statements

New rules on the duty of disclosure and information disclosure statements, effective March 16, 1992, were published in the *Federal Register* at 57 FR 2021 (Jan. 17, 1992) and in the *Official Gazette* at 1135 Off. Gaz. Pat. Office 13 (Feb. 4, 1992).

The procedures for handling information disclosure statements (37 CFR 1.97 and 1.98) will be set forth in Section 609 of the Manual of Patent Examining Procedure (MPEP). A copy of the instructions being given to examiners for handling information disclosure statements under the new rules is being published for the benefit of the public. Also being published is a sample declaration form which incorporates language conforming to the amendment to 37 CFR 1.63 contained in the new rules. Declaration forms acceptable under the rules in effect prior to the change effective March 16, 1992, will continue to be acceptable under the new rules.

The Office is considering changing its policy regarding the printing on patents of citations of information considered in patent applications. The proposed change will not affect consideration by the examiner of information submitted to the Office in compliance with 37 CFR 1.97(b)-(d) and 1.98. The proposed change affects only the information printed on the patent. Presently, as set forth in the last paragraph of the instructions which follow, information properly submitted by applicant and considered by the examiner will be printed on the patent along with the references cited by the examiner in Office actions. It has been suggested that it would be more helpful to the Office and to the public in using a patent for future search purposes if only the references cited and/or relied upon by the examiner in Office actions were listed on the printed patent. Alternatively, it has been suggested that the references listed on a patent be differentiated as to whether they were cited and/or relied on by the examiner or cited by applicant but not relied on by the examiner. The Office has a preference for the option that lists only the information cited and/or relied on by the examiner because it reduces printing costs (some citations by applicants now add several additional pages to the patent grant) and minimizes processing problems associated with correcting incomplete or inaccurate citations before the patent is printed. Public comment on these proposals is welcomed and should be directed to J. Michael Thesz (703-305-9384) or by mail directed to Mr. Thesz in the Office of the Assistant Commissioner for Patents. Comments should be received before May 29, 1992.

April 20, 1992

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1138 OG 37]

(66) Processing of Information Disclosure Statements
Under the New Rules Effective March 16, 1992

Applicants and other individuals substantively involved with the preparation and/or prosecution of a patent application have a duty to submit to the Office information which is material to patentability as defined in 37 CFR 1.56. These individuals also may want the Office to consider information for a variety of other reasons, e.g., without first determining whether the information meets any particular standard of materiality, or because another patent office considered the information to be relevant in a counterpart or related patent application filed in another country, or to make sure that the examiner has an opportunity to consider the same information that was considered by the individuals that were substantively involved with the preparation or prosecution of a patent application.

An information disclosure statement filed in accordance with the provisions of 37 CFR 1.97 and 1.98 provides the procedure available to an applicant to submit information to the Office so that information will be considered by the examiner assigned to the application. The requirements for the content of a statement have been simplified in the new rules effective March 16, 1992, to encourage individuals associated in a substantive way with the filing and prosecution of a patent application to submit information to the Office so the examiner can determine its relevance to the claimed invention. The procedure for submitting an information disclosure statement under the new rules are designed to encourage individuals to submit information to the Office promptly.

In order to have information considered by the Office during the pendency of a patent application, an information disclosure statement in compliance with 37 CFR 1.98 as to content must be filed in accordance with the procedural requirements of 37 CFR 1.97. The requirements as to content are discussed in A below. The requirements based on the time of filing the statement are discussed in B below. Examiner handling of information disclosure statement is discussed in C below.

The Office has set forth the minimum requirements for information to be considered in 37 CFR 1.97 and 1.98. Once the minimum requirements are met, the examiner has an obligation to consider the information. These rules provide certainty for the public by defining what the requirements are, when the

Office will consider information and when the Office will not consider information.

The filing of an information disclosure statement shall not be construed as a representation that a search has been made. 37 CFR 1.97(g). There is no requirement that an application for a patent make a patentability search. Further, the filing of an information disclosure statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in 37 CFR 1.56(b), 37 CFR 1.97(h). See MPEP 706.02(b) regarding admissions by applicant.

Multiple information disclosure statements may be filed in a single application, and they will be considered, provided each is in compliance with the appropriate requirements. Use of form PTO-1449, "Information Disclosure Citation," is encouraged as a means providing the required list of information. See C(2) below.

Information which is cited or submitted to the Office in the parent application of a file wrapper continuing application under 37 CFR 1.62 will be part of the file before the examiner and need not be resubmitted in the continuing application. Likewise, the examiner will consider information cited or submitted to the Office in a parent application when examining a continuing application and thus this information need not be resubmitted unless applicant desires the information to be printed on the patent.

A. Content

An information disclosure statement must comply with the provisions of 37 CFR 1.98 as to content in order to be considered by the Office. Each information disclosure statement must comply with the applicable provisions of A(1), A(2) and A(3) below.

A(1) Each information disclosure statement must include a list of all patents, publications, or other information submitted for consideration by the Office.

Paragraph (b) of 37 CFR 1.98 requires that each U.S. patent listed in an information disclosure statement be identified by patentee, patent number and issue date. Each foreign patent or published foreign patent application must be identified by the country or patent office which issued the patent or published the application, an appropriate document number, and the publication date indicated on the patent or published application. Each publication must be identified by author (if any), title, relevant pages of the publication, date (at least month and year) and place of publication. The place of publication refers to the name of the journal, magazine or other publication in which the information being submitted was published.

The list may not be incorporated into the specification but must be submitted in a separate paper. A separate list is required so that it is easy to confirm that applicant intends to submit an information disclosure statement, and because it provides a readily available checklist for the examiner to indicate which identified documents have been considered. A copy of a separate list will also provide a simple means of communication to applicant to indicate the listed documents that have been considered and those listed documents that have not been considered. Use of form PTO-1449, "Information Disclosure Citation," is encouraged. See C(2) below.

A(2) In addition to the list, each information disclosure statement must also include a legible copy of:

- (i) Each U.S. and foreign patent;
- (ii) Each publication or that portion which caused it to be listed; and
- (iii) All other information or that portion which caused it to be listed, except that no copy of a U.S. patent application need be included.

There are exceptions to this general rule that a copy must be provided. First, paragraph (d) of 37 CFR 1.98 states that a copy of any patent, publication or other information listed in an information disclosure statement is not required to be provided if it was previously cited by or submitted to the Office in a prior application, provided that the prior application is

properly identified in the statement and relied upon for an earlier filing date under 35 U.S.C. 120. The examiner will consider information cited or submitted to the Office in a prior application relied on under 35 U.S.C. 120. This exception to the requirement for copies of information does not apply to information which was cited in an international application under the Patent Cooperation Treaty.

Second, paragraph (c) of 37 CFR 1.98 states that when the disclosures of two or more patents or publications listed in an information disclosure statement are substantively cumulative, a copy of the one of the patents or publications may be submitted without copies of the other patents or publications provided that a statement is made that these other patents or publications are cumulative. The examiner will then consider only the patent or publication of which a copy is submitted and will so indicate on the list or form PTO-1449 submitted, e.g., by crossing-out the listing of the cumulative information.

Paragraph (c) of 37 CFR 1.98 further states that if a written English language translation of a non-English language document, or portion thereof, is within the possession, custody or control of, or is readily available to any individual designated in 37 CFR 1.56(c), a copy of the translation shall accompany the statement. Translations are not required to be filed unless they have been reduced to writing and are actually translations of what is contained in the non-English language information. If no translation is submitted, the examiner will consider the information in view of the concise explanation and insofar as it is understood on its face, e.g., drawings, chemical formulas, English language abstracts, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches.

A(3) Each information disclosure statement must further include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language. The concise explanation may be either separate from the specification or incorporated therein.

The requirement for a concise explanation of relevance is limited to information that is not in the English language. The explanation required is limited to the relevance as understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information at the time the information is submitted to the Office. If a translation of the information into English is submitted with the foreign language information, no concise explanation is required. There is no requirement for the translation to be verified. Where the information listed is not in the English language, but was cited in a search report by a foreign patent office in a counterpart foreign application, the requirement for a concise explanation of relevance can be satisfied by submitting an English language version of the search report which indicates the degree of relevance found by the foreign office. The requirement for a concise explanation of non-English language information would not be satisfied by a statement that a reference was cited in the prosecution of a parent, related, or copending United States application.

The concise explanation may indicate that a particular figure or paragraph of the patent or publication is relevant to the claimed invention. It might be a simple statement pointing to similarities between the item of information and the claimed invention. It is permissible but not necessary to discuss differences between the cited information and the claims.

Applicants may, if they wish, provide a concise explanation of why English-language information is being submitted and how it is understood to be relevant. Concise explanations are helpful to the Office, particularly where documents are lengthy and complex and applicant is aware of a section that is highly relevant to patentability or where a large number of documents are submitted and applicant is aware that one or more are highly relevant to patentability.

B. Time for Filing

The procedure and requirements for submitting an information disclosure statement are linked to four stages in the pro-

cessing of a patent application: (1) within three months of filing, or before first Office action, whichever is later; (2) after the period in (1), but before final Office action or a Notice of Allowance, whichever is earlier; (3) after the period in (2) but on or before the issue fee is paid; and (4) after the period in (3) and up to the time the patent application can be effectively withdrawn from issue. The procedures and requirements apply to applications filed under 35 U.S.C. 111 (utility), 161 (plants), 171 (designs), and 251 (reissue), as well as international applications entering the national stage under 35 U.S.C. 371.

The requirements based on the time when the information disclosure statement is filed are summarized as follows:

Time when IDS is filed	37 CFR 1.97 Requirements
(1) Within 3 months of filing or before first Office action on the merits, whichever is later.	None (always considered).
(2) After (1) but before final action or notice of allowance.	Certification or 1.17(p) fee.
(3) After final action or notice of allowance and before payment of issue fee.	Certification, petition, and petition fee.

B(1) Statement filed BEFORE first action on the merits or within three (3) months of actual filing date (37 CFR 1.97(b)).

An information disclosure statement will be considered by the examiner if filed:

- (i) within three months of the filing date of a national application;
- (ii) within three months of the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; or
- (iii) before the mailing date of a first Office action on the merits, whichever event occurs last. A statement filed within this period requires neither a fee nor a certification of prompt filing.

The term "national application" includes continuing applications (continuations, divisions, continuations-in-part) so three-months will be measured from the actual filing date of an application as apposed to the effective date of a continuing application.

All information disclosure statements that comply with the content requirements of 37 CFR 1.98 and are filed within three months of the filing date will be considered by the examiner, regardless of whatever else has occurred in the examination process up to that point in time. Thus, in the rare instance that a final Office action or a notice of allowance is prepared and mailed prior to a date which is three months from the filing date, any information contained in a complete information disclosure statement filed within that three-month window will be considered by the examiner.

Likewise, an information disclosure statement will be considered if it is filed later than three months after the filing date but before the mailing date of a first Office action on the merits. An action on the merits means an action which treats the patentability of the claims in an application, as opposed to only formal or procedural requirements. An action on the merits would, for example, contain a rejection or indication of allowability of a claim or claims rather than just a restriction requirement (37 CFR 1.142) or just a requirement for additional fees to have a claim considered (37 CFR 1.16(d)). Thus, if an application was filed on Jan. 1 and the first Office action on the merits was not mailed until six months later on July 1, the examiner would be required to consider any proper information disclosure statement filed prior to July 1.

An information disclosure statement will be considered to have been filed on the day it was received in the Office, or on

an earlier date of mailing if accompanied by a properly executed certificate of mailing under 37 CFR 1.8, or Express Mail certificate under 37 CFR 1.10. An Office action is mailed on the date indicated in the Office action.

B(2) Statement filed after B(1), but BEFORE mailing of final action or Notice of Allowance (37 CFR 1.97(c)).

An information disclosure statement will be considered by the examiner if filed after the period specified in B(1) above, but before the mailing date of either

- a final action under 37 CFR 1.113 or
- a notice of allowance under 37 CFR 1.311,

whichever occurs first, provided: (1) the statement is accompanied by either a certification as specified in 37 CFR 1.97(e) or (2) the fee set forth in 37 CFR 1.17(p). If a final action or notice of allowance is mailed in an application and later withdrawn, the application will be considered as not having had a final action or notice of allowance mailed for purposes of considering an information disclosure statement.

(i) If information submitted during the period set forth in 37 CFR 1.97(c) with a certification is used in a new ground of rejection on unamended claims, the next Office action will not be made final since in this situation it is clear that applicant has submitted the information to the Office promptly after it has become known and the information is being submitted prior to a final determination on patentability by the Office. However, the information submitted with a certification can be used in a new ground of rejection and the next Office action made final. If the new ground of rejection was necessitated by amendment of the application by applicant. Where the information is submitted during this period with a fee, the examiner may use the information submitted, e.g., printed publication or evidence of public use, and make the next Office action final whether or not the claims have been amended, provided that no other new ground of rejection which was not necessitated by amendment to the claims is introduced by the examiner. See MPEP 706.07(a). If a new ground of rejection is introduced that is neither necessitated by an amendment to the claims nor based on the information submitted with the fee set forth in 37 CFR 1.17(p), the Office action shall not be made final.

(ii) A certification under 37 CFR 1.97(e) must state either

(a) that each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the statement, or

(b) that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in 37 CFR 1.56(c), more than three months prior to the filing of the statement.

A certification can contain either of two statements. One statement is that each item of information in an information disclosure statement was cited in a communication, such as a search report, from a patent office outside the U.S. in a counterpart foreign application not more than three months prior to the filing date of the statement. Under this certification, it does not matter whether any individual with a duty of disclosure actually knew about any of the information cited before receiving the search report. The date on the communication by the foreign patent office begins the three-month period in the same manner as the mailing of an Office action starts a three-month shortened statutory period for response. The date starting the three-month period is not the date the communication was received by a foreign associate or the date it was received by a U.S. registered practitioner. Likewise, the statement will be considered to have been filed on the date the statement was received in the Office, or on an earlier date of mailing if accompanied by a properly executed certificate of mailing under 37 CFR 1.8, or Express Mail certificate under 37 CFR 1.10.

B(3) Statement filed after B(2), but Prior to Payment of Issue Fee (37 CFR 1.97(d)).

An information disclosure statement will be considered by the examiner if filed after the mailing date of either a final action under 37 CFR 1.113 or a notice of allowance under 37 CFR 1.311, whichever occurs first, but before or simultaneous with payment of the issue fee, provided the statement is accompanied by:

- (i) a certification as specified in 37 CFR 1.97(e) (see the discussion in B(2)(ii) above),
- (ii) a petition requesting consideration of the information disclosure statement, and
- (iii) the petition fee set forth in 37 CFR 1.17(i)(1).

These requirements are appropriate in view of the late stage of prosecution when the information is being submitted, i.e., after the examiner has reached a final determination on the patentability of the claims presented for examination. The petition should be directed to the Group Director of the examining group handling the application. The petition need do nothing more than request consideration of the information being submitted. Payment of the petition fee (37 CFR 1.17(i)(1)) and submission of the appropriate certification (37 CFR 1.97(e)) are the essential elements for having information considered at this advanced stage of prosecution.

The requirements of 37 CFR 1.97 provide for consideration by the Office of information which is submitted within a reasonable time, i.e., within 3 months after an individual designated in 37 CFR 1.56(c) becomes aware of the information or within 3 months of the information being cited in a communication from a foreign patent office in a counterpart foreign application. This undertaking by the Office to consider information would be available throughout the pendency of the application until the point where the patent issue fee was paid. If an applicant chose not to comply, or could not comply, with the requirements of 37 CFR 1.97(d), a continuing application could be filed to have the information considered by the examiner. The parent application could be permitted to become abandoned by not paying the issue fee required in the Notice of Allowance, for example, or by the filing of a file wrapper continuing application under 37 CFR 1.62. It would not be proper to make final a first Office action in the continuing application if the information submitted is used in a new ground of rejection.

B(4) Statement filed after Payment of Issue Fee.

After the issue fee has been paid on an application, it is impractical for the Office to attempt to consider newly submitted information. Information disclosure statements filed after payment of the issue fee in an application will not be considered but will merely be placed in the application file. See C below. The application may be withdrawn from issue at this point, however, pursuant to 37 CFR 1.313(b)(5) so that the information can be considered in a continuing application. In this situation, a file wrapper continuing application under 37 CFR 1.62 could be filed even though the issue fee had already been paid. The Office will consider the filing of a petition under 37 CFR 1.313(b)(5) as sufficient grounds to waive the requirement that an application under 37 CFR 1.62 be filed before payment of the issue fee. Alternatively, for example, a petition pursuant to 37 CFR 1.313(b)(3) could be filed if applicant states that one or more claims are unpatentable. This statement that one or more claims are unpatentable over the information must be unequivocal. A statement that a serious question as to patentability of a claim has been raised, for example, would not be acceptable to withdraw an application from issue under 37 CFR 1.313(b)(3).

If an application has been withdrawn from issue under one of the provisions of 37 CFR 1.313(b)(1)-(4), it will be treated as though no notice of allowance had been mailed and the issue fee had not yet been paid with regard to the time for filing information disclosure statements. Petitions under 37 CFR 1.313(b) should be directed to the Office of Petitions in the Office of the Assistant Commissioner for Patents.

B(5) Extensions of Time (37 CFR 1.97(f))

The term counterpart foreign patent application means that a claim for priority has been made in either the U.S. application or a foreign application based on the other, or that the disclosures of the U.S. and foreign patent applications are substantively identical (e.g., an application filed in the European Patent Office claiming the same U.K. priority as claimed in the U.S. application).

In the alternative, a certification can be made if no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after making reasonable inquiry, neither was it known to any individual having a duty to disclose more than three months prior to the filing of the statement.

The phrase "after making reasonable inquiry" makes it clear that the individual making the certification has a duty to make reasonable inquiry regarding the facts that are being certified. The certification can be made by a registered practitioner who represents a foreign client and who relies on statements made by the foreign client as to the date the information first became known. A registered practitioner who receives information from a client without being informed whether the information was known for more than three months, however, cannot make the certification without making reasonable inquiry. For example, if an inventor gave a publication to the attorney prosecuting an application with the intent that it be cited to the Office, the attorney should inquire as to when that inventor became aware of the publication and should not submit a certification under 37 CFR 1.97(e)(2) to the Office until a satisfactory response is received. The certification can be based on present, good faith knowledge about when information became known without a search of files being made.

Certification need not be in the form of an oath or a declaration under 37 CFR 1.68. Certification by a registered practitioner or any other individual that the statement was filed within the three-month period of either first citation by a foreign patent office or first discovery of the information will be accepted as dispositive of compliance with this provision in the absence of evidence to the contrary. For example, a certification could read as follows:

"I hereby certify that each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.", or

"I hereby certify that no item of information in the Information Disclosure Statement filed herewith was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this Information Disclosure Statement."

An information disclosure statement may include two list and two certifications, similar to the above examples, in situations where some of the information listed was cited in a communication from a foreign patent office not more than three months prior to filing the statement and some was not, but was not known more than three months prior to filing the statement.

A copy of the foreign search report need not be submitted with the certification, but an individual may wish to submit an English-language version of the search report to satisfy the requirement for a concise explanation where non-English language information is cited. The time at which information "was known to any individual designated in 37 CFR 1.56(c)" is the time when the information was discovered in association with the application even if awareness of the materiality came later. The Office wishes to encourage prompt evaluation of the relevance of information and to have a date certain for determining if a certification can properly be made. A statement on information and belief would not be sufficient. Examiners should not remind or otherwise make any comment about an individual's duty of candor and good faith, but questions about the adequacy of any certification received in writing by the Office should be directed to the Office of the Assistant Commissioner for Patents.

No extensions of time for filing an information disclosure statement are permitted under 37 CFR 1.136(a) or (b). If a bona fide attempt is made to comply with the content requirements of 37 CFR 1.98, but part of the required content is inadvertently omitted, additional time may be given to enable full compliance.

C. Examiner Handling of Information Disclosure Statements

Information disclosure statements will be reviewed for compliance with the requirements of 37 CFR 1.97 and 1.98 as discussed in A and B above. Applicant will be notified of compliance and non-compliance with the rules as discussed below.

C(1) Non-complying statements

Pursuant to 37 CFR 1.97(i), submitted information, filed before the grant of a patent, which does not comply with 37 CFR 1.97 and 1.98 will be placed in the file, but will not be considered by the Office. Information submitted after the grant of a patent must comply with 37 CFR 1.501.

(i) If an information disclosure statement does not comply with the requirement based on the time of filing the statement as discussed in B above, including the requirements for fees and/or certification, the statement will be placed in the application file, but none of the information will be considered by the examiner. The examiner may use form paragraph 6.49 which is reproduced below to inform applicant that the information has not been considered. Applicant may then file a new information disclosure statement or correct the deficiency in the previously filed statement but the date of that the statement or correction is filed will be the date of the statement for purposes of determining whether the requirements based on the time of filing the statement (37 CFR 1.97) have been complied with.

The examiner should write "not considered" on an information disclosure statement where none of the information listed complies with the requirements, e.g., no copies of listed items submitted. The paper containing the disclosure statement or list will be placed in the record in the application file. The examiner will inform applicant that the information has not been considered and the reasons why by using form paragraph 6.49. If the improper citation appears as part of another paper, e.g., an amendment, which may be properly entered and considered, the portion of the paper which is proper for consideration will be considered.

6.49 Information Disclosure Statement Not Considered

The information disclosure statement filed⁽¹⁾ fails to comply with the provisions of MPEP 609 because⁽²⁾. It has been placed in the application file, but the information referred to therein has not been considered as to the merits.

Examiner Note:

See MPEP 609 for situations where use of this paragraph would be appropriate.

(ii) If an information disclosure statement complies with the requirements based on the time of filing the statement as discussed in B above, including the requirements for fees and/or certification, but part of the content requirements as discussed in A above has been inadvertently omitted, the examiner may set a one-month time period to correct the omission. Form paragraph 6.51 may be used for this purpose.

6.51 Time Limit for Completing Information Disclosure Statement

The Information Disclosure Statement filed on⁽¹⁾ does not comply with the requirements of 37 CFR 1.98 because⁽²⁾. Since the submission appears to be bona fide, but through an apparent oversight or inadvertence failed to comply with the necessary requirements, applicant is required to complete the statement within a time limit of one month from the date of this letter. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) OR (b). Failure to comply

with this notice will result in the Information Disclosure Statement being placed in the application file with the non-complying information not being considered.

Examiner Note:

This practice does not apply where there has been a deliberate omission of some necessary part of an information disclosure statement or where the requirements based on the time of filing the statement as set forth in 37 CFR 1.97 have not been complied with.

If a statement fails to comply with requirements as discussed in this section for an item of information, that item of information in the statement will not be considered and a line should be drawn through the citation to show that it has not been considered. However, other items of information that do comply with all the requirements will be considered by the examiner.

If information is listed in the specification rather than in a separate paper, or if the other content requirements as discussed in A above are not complied with, the examiner will notify applicant in the next Office action that the information has not been considered. It should be noted, however, that no copy of a U.S. patent application is required to be submitted. See A(2)(iii) above. Where a U.S. patent application is properly cited, the examiner should obtain access to that file within the Office.

C(2) Complying Statements

The information contained in information disclosure statements which comply with both the content requirements as discussed in A above and the requirements based on the time of filing the statement as discussed in B above will be considered by the examiner.

Applicants, patent owners, reexamination requesters, protesters and others are encouraged to use form PTO-1449, "Information Disclosure Citation," when preparing an information disclosure statement. A copy of this form is reproduced in this section to indicate how the form should be completed. This form will enable persons to comply with the requirements to list each item of information being submitted and to provide the Office with a uniform listing of citations and with a ready way to indicate that information has been considered.

Examiners must consider all citations submitted in conformance with the rules and this section and place their initials adjacent the citations on a list or in the boxes provided on a form PTO-1449. If the citations are submitted on a list other than on a form PTO-1449, the examiner may write "all considered" and his or her initials to indicate that all citations have been considered. If any of the citations are considered, a copy of the submitted list or form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original copy of the form will be entered into the application file. The copy returned to applicant will serve both as acknowledgment of receipt of the information disclosure statement and as an indication that the references were considered by the examiner. Forms PTO-326 and PTOL-37 include a box to indicate the attachment of form PTO- 449.

Information which complies with requirements as discussed in this section but which is in a non-English language will be considered in view of the concise explanation submitted (A(3) above) and insofar as it is understood on its face, e.g., drawings, chemical formulas, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches. The examiner need not have the information translated unless it appears to be necessary to do so. The examiner will indicate that the non-English language information has been considered in the same manner as consideration is indicated for information submitted in English. The examiner should not require that a translation be filed by applicant. The examiner should not make any comment such as that the non-English language information has only been considered to the extent understood, since this fact is inherent.

Since information is required to be listed in a separate paper rather than in the specification, there is no need to mark "All checked" or "Checked" in the margin of a specification containing citations.

If a statement fails to comply with the requirements as discussed in this section for an item of information, a line should be drawn through the citation to show that it has not been

considered. The other items of information listed that do comply with the rules and this section will be considered by the examiner and will be appropriately initialed.

D. Information Printed on Patent

A citation listed on form PTO-1449 and considered by the examiner in accordance with this section will be printed on the patent. A citation listed in a separate paper, equivalent to but not on form PTO-1449, and considered by the examiner in accordance with this section will be printed on the patent if the list is on a separate sheet which is clearly identified as an information disclosure statement and the list lends itself to easy capture of the necessary information by the Office printing contractor, i.e., each item of information is listed on a single line, the lines are at least double-spaced from each other, the information is uniform in format for each listed item, the list includes a column for the examiner's initials to indicate that the information was considered. If a citation is not printed on the patent but has been considered by the examiner in accordance with this section, the patented file will reflect that fact as noted in C(2) above.

[1138 OG 37]

(67) Using Certificate of Correction to Perfect Claim for Priority Under 35 USC 119

Under 35 USC 119, an applicant may assert a right of priority and claim the benefit of an earlier filing date in a foreign country. In this regard, 35 USC 119 states:

No application for patent shall be entitled to this right or priority unless a claim therefor and a certified copy of the original foreign application, specification and drawings upon which it is based are filed in the Patent and Trademark Office before the patent is granted. . . .

The failure to perfect a claim to foreign priority benefits prior to issuance of the patent may be cured by filing a reissue application; *Brenner v. State of Israel*, 158 USPQ 584 (CA DC 1968).

However, under certain conditions, this failure may also be cured by filing a Certificate of Correction request under 35 USC 255 and 37 CFR 1.323. For example, in the case of *In re Van Esdonk*, 187 USPQ 671 (Comr. 1975), the Commissioner granted a request to issue a Certificate of Correction in order to perfect a claim to foreign priority benefits. In that case, a claim to foreign priority benefits had not been filed in the application prior to issuance of the patent. However, the application was a continuation of an earlier application in which the requirements of 35 USC 119 had been satisfied. Accordingly, the Commissioner held that the "applicants' perfection of a priority claim under 35 USC 119 in the parent application will satisfy the statute with respect to their continuation application."

Although *In re Van Esdonk* involved the patent of a continuation application filed under 37 CFR 1.60, it is proper to apply the holding of that case in similar factual circumstances to any patented application having benefits under 35 USC 120. This is primarily because a claim to foreign priority benefits in a continuing application, where the claim has been perfected in the parent application, constitutes in essence a mere affirmation of the applicant's previously expressed desire to receive benefits under 35 USC 119 for subject matter common to the foreign, parent, and continuing applications.

In summary, a Certificate of Correction under 35 USC 255 and 37 CFR 1.323 may be requested and issued in order to perfect a claim to foreign priority benefits in a patented continuing application if the requirements of 35 USC 119 had been satisfied in the parent application prior to issuance of the patent and the requirements of 37 CFR 1.55(a) are met.

However, a claim to foreign priority benefits cannot be perfected via a Certificate of Correction if the requirements of 35 USC 119 had not been satisfied in the patented application, or its parent, prior to issuance and the requirements 37 CFR 155(a) are not met. In this latter circumstance, the claim to foreign

priority benefits can be perfected only by way of a reissue application in accordance with the rationale set forth in *Brenner v. State of Israel*, supra.

July 25, 1986

RENE D. TEGTMEYER
Assistant Commissioner
for Patents

[1169 OG 38]

(68) DEPARTMENT OF COMMERCE Patent and Trademark Office 37 CFR Part I [Docket No. 70635-9174] RIN: 0651-AA13 Deposit of Biological Materials for Patent Purposes

Agency: Patent and Trademark Office, Commerce
Action: Final Rule

Summary: The Patent and Trademark Office (Office) is amending its rules of practice in patent cases to define procedures to govern the deposit of biological materials for patent purposes. Where an invention is or relies on a biological material which cannot be described in writing alone, and access to the biological material is necessary to satisfy the statutory requirements for patentability under 35 U.S.C. 112, these rules prescribe the procedures and conditions for making a deposit that will satisfy these requirements. These rules also prescribe examining procedures that will be used to address deposit issues, and the procedures pertaining to access to a deposit once a patent is granted.

Effective Date: January 1, 1990.

For Further Information Contact: Charles E. Van Horn or Harris A. Pitlick by telephone at [703] 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information:

Every patent must contain a written description of the invention sufficient to enable a person skilled in the art to which the invention pertains to make and use the invention. Where the invention involves a biological material and words alone cannot sufficiently describe how to make and use the invention in a reproducible or repeatable manner, access to the biological material is necessary for the satisfaction of the statutory requirements for patentability under 35 U.S.C. 112. The rules set forth examining procedures and conditions of deposit which must be satisfied in the event a deposit is required to provide the necessary access. The rules do not address the substantive issue of whether a deposit is required under any particular set of facts.

These rules will be effective for all applications filed on or after January 1, 1990, and for all reexamination proceedings in which the request for reexamination was filed on or after January 1, 1990, except that deposits made prior to the effective date which are acceptable under current practice will be acceptable in such applications and proceedings. Since most of the provisions reflect existing policy and practice, little change to existing practice or burden on applicants for patent and patent owners relying on the deposit of biological material is anticipated. Applicants and patent owners are encouraged to comply with these rules prior to the effective date.

The final rules on the deposit of biological materials for patent purposes have evolved over several years of actual experience in administering the guidelines set forth in Section 608.01(p) of the Manual of Patent Examining Procedure, including several administrative and judicial decisions, and interaction with interested public, bar and industry groups. A draft policy statement on the deposit of biological materials was circulated among interested bar and industry groups and published in the BNA-Patent, Trademark and Copyright Journal on May 22, 1986. An advance notice of proposed rulemaking setting forth rules being considered for deposits of biological material was published in the *Federal Register*, 52 FR 34080 (September 9, 1987), and in the *Official Gazette*, 1082 O.G. 47 (September 29, 1987). Finally, a notice of proposed rulemaking relating to the deposit of biological materials for patent purposes was published in the *Federal Register* 53 FR 39420 (October

6, 1988), and in the *Official Gazette*, 1095 O.G. 47 (October 25, 1988).

In this notice of final rulemaking, a description of the changes in the text of the proposed rules is provided along with an explanation of the reasons supporting the changes. In addition, comments received in response to the notice of proposed rulemaking are analyzed. Finally, an explanation of the content of the final rules is provided, together with a compilation of relevant comments and responses that have been made during the rulemaking process. This explanation and compilation of previous comments and responses will serve as a set of guidelines that will be reproduced in the Manual of Patent Examining Procedure in due course.

Changes in Text of Proposed Rules

Several changes have been made in the text of the final rules from the text of the proposed rules which were published for comment in the notice of proposed rulemaking. Those changes are discussed below.

Section 1.200 as proposed has been renumbered as § 1.801 as adopted and the term "patent purposes" as proposed has been replaced with the term "purposes of patents for inventions under 35 U.S.C. 101" as adopted to clarify that the regulations pertaining to the deposit of biological material do not apply for purposes other than patents for inventions. Thus, these regulations are not applicable to applications for plant patents under 35 U.S.C. 161-164.

Section 1.201 as proposed has been renumbered as § 1.802 as adopted and the term "or Opportunity" in the heading thereof has been inserted after "Need" to reflect the permissive nature of a deposit when not necessary to satisfy 35 U.S.C. 112.

Paragraph (a) thereof as proposed provided that where a claimed invention is or relies on a biological material, the disclosure may include a deposit of the biological material deposited in a depository and under conditions complying with these regulations, provided a precondition was satisfied. The precondition was that the biological material not be known and readily available to the public and not be describable in writing alone. Paragraph (a) as adopted eliminates this precondition, does not require that the biological material be, or be used for, a claimed invention, does not require that the deposit be made in a depository and under conditions complying with these regulations, and more accurately states that the disclosure may include reference to a deposit, since the deposit is not physically part of the disclosure. Paragraph (a) as adopted merely provides that where an invention is, or relies on, a biological material, the disclosure may include reference to a deposit of such biological material.

Paragraph (b) of § 1.802 prescribes that biological material need not be deposited unless access to the material is necessary to satisfy 35 U.S.C. 112. If a deposit is necessary, it shall be acceptable if made in accordance with these regulations. Proposed paragraph (b) made no reference to 35 U.S.C. 112. Situations where a biological material is known and readily available to the public or can be made or isolated without undue experimentation are now listed as some, but not an exhaustive set, of the circumstances where deposit need not be made. The term "from known and readily available material" has been dropped from the end of the term "can be made or isolated without undue experimentation" as redundant. Paragraph (b) as adopted also prescribes that once deposited in a depository complying with these regulations, a biological material will be considered to be readily available even though some requirement of law or regulation permits access only under conditions imposed for safety, public health or similar reasons. Proposed paragraph (b) did not include the condition of deposit in a depository complying with these regulations.

Proposed paragraph (c) thereof was limited to reference to a specific organism or other biological material in a specification disclosure as not creating a presumption that the material was necessary to satisfy 35 U.S.C. 112 or that a deposit thereof is required. Paragraph (c) as adopted eliminates the term "specific organism or other" as redundant and also includes the act of deposit by an applicant or patent owner as not creating a presumption that the deposit is or was required.

Section 1.202 as proposed has been renumbered as § 1.803 as adopted.

Paragraph (a) thereof as proposed prescribed that a deposit shall be made in any International Depositary Authority (IDA) or any other depository recognized as suitable by the Office. Paragraph (a) as adopted now specifies that such deposits shall be recognized for the purpose of these regulations so as not to preclude deposits made for other reasons such as a gratuitous disclosure. Paragraph (a)(2) as adopted eliminates the requirement in the proposed rule that impartial consultants be from the biotechnology industry or governmental agencies. Paragraph (a)(2) as adopted also contains new sub-subparagraph (vii) as a requirement which a suitable depository must meet, viz., that it promptly notify depositors of its inability to furnish samples, and the reasons why. This requirement appeared, in essence, in proposed § 1.204(a).

Proposed paragraph (b) thereof has not been adopted. Replacement of deposits is governed solely by § 1.805, *infra*.

Proposed paragraph (c) thereof has been adopted as paragraph (b). In subparagraph (2) thereof, "(b)" has been changed to "(a)(2)" to correct an inadvertent error in the proposed rule.

Proposed paragraph (d) thereof has been adopted as paragraph (c) except that the reference to paragraph (a) has been changed to paragraph (a)(2) to more clearly delineate which category of depository is intended to be covered by this paragraph of § 1.803 and all references to other paragraphs whose designations have been changed by adoption of these rules have been changed accordingly.

Proposed paragraph (e) thereof has been adopted as paragraph (d).

Section 1.203 as proposed has been renumbered as § 1.804 as adopted.

Paragraph (a) thereof prescribed that an original deposit of a biological material may be made before filing an application for patent or, pursuant to a requirement that will be made by the examiner no later than the date the Notice of Allowance and Issue Fee Due is mailed, during pendency of the application for patent. Paragraph (a) as adopted adds a precondition to making an original deposit that the biological material be specifically identified in the application as filed. Since proposed paragraph (a) did not address original deposits made during the pendency of an application that were not made pursuant to a requirement of an examiner, the rule as adopted states that original deposits may be made during pendency of an application for patent, subject to 1.809, *infra*, which prescribes, *inter alia*, when during the pendency of an application for patent a deposit shall be made when made pursuant to a requirement by the examiner.

Paragraph (b) thereof as proposed required a statement that, for an original deposit made after the effective filing date of an application for patent, the biological material deposited was the same biological material described in the application as filed. Paragraph (b) as adopted substitutes the word "a" for the word "the" since more than one biological material may be referred to in the application as filed, drops the word "same" and requires the statement that the biological material deposited is a biological material specifically identified in the application as filed.

Section 1.204 as proposed has been renumbered as § 1.805 as adopted and a reference to supplemental deposits has been added to the heading thereof. Paragraphs (a) and (b) of the section as proposed have been substantially rewritten as paragraphs (a), (b) and (c). New elements have been added and some eliminated, although some elements of the proposed rule on replacement deposits have been adopted, either with similar language or different language.

Elements of the proposed rule on replacement deposits which have not been adopted include a requirement that replacement deposits be made or be made within a specific time limit. Ramifications in Office proceedings from not making a replacement deposit, or in the case of a patent, not diligently making a replacement deposit, are stated.

A requirement in the proposed section that depositories promptly notify depositors of an inability to furnish samples has been adopted as 1.803(a)(2)(vii), *supra*.

Paragraph (a) of § 1.805 requires a depositor, after receiving notice during the pendency of an application for patent, application for reissue patent or reexamination proceeding, that the depository possessing a deposit either cannot furnish samples thereof or can furnish samples thereof but the deposit has become contaminated or has lost its capability to function as

described in the specification, to notify the Office in writing, in each application for patent or patent affected. In such a case, or where the Office otherwise learns, during the pendency of an application for patent, application for reissue patent or reexamination proceeding, that the depository possessing a deposit either cannot furnish samples thereof or can furnish samples thereof but the deposit has become contaminated or has lost its capability to function as described in the specification, the need for making a replacement or supplemental deposit will be governed by the same considerations governing the need for making an original deposit under the provisions set forth in § 1.802(b). A replacement or supplemental deposit made during the pendency of an application for patent shall not be accepted unless it meets the requirements for making: an original deposit under these regulations, including the requirement set forth under § 1.804(b). A replacement or supplemental deposit made in connection with a patent, whether or not made during the pendency of an application for reissue patent or a reexamination proceeding or both, shall not be recognized by the Office unless a certificate of correction under § 1.323 is requested by the patent owner which meets the terms of paragraphs (b) and (c) of this section. The proposed rules did not provide for certificates of correction relating to replacement or supplemental deposits.

Paragraph (b) of § 1.805 prescribes that a request for certificate of correction under this section shall not be granted unless the certificate identifies the accession number for the replacement or supplemental deposit; the date of the deposit; and the name and address of the depository.

Paragraph (c) of § 1.805 prescribes that a certificate of correction under this section shall not be granted unless the request therefor is made promptly after the replacement or supplemental deposit has been made and includes a verified statement of the reason for making the replacement or supplemental deposit; a verified statement from a person in a position to corroborate the fact, and shall state, that the replacement or supplemental deposit is of a biological material which is identical to that originally deposited; a verified showing that the patent owner acted diligently - in the case of a replacement deposit, in making the deposit after receiving notice that samples could no longer be furnished from an earlier deposit, or in the case of a supplemental deposit, in making the deposit after receiving notice that the earlier deposit had become contaminated or had lost its capability to function as described in the specification; a verified statement that the term of the replacement or supplemental deposit expires no earlier than the term of the deposit being replaced or supplemented; and otherwise establishes compliance with these regulations, except that if the person making one or more of the required statements or showing is an attorney or agent registered to practice before the Office, that statement or showing need not be verified.

Paragraph (d) of § 1.805 prescribes that a depositor's failure to replace a deposit, or in the case of a patent, to diligently replace a deposit and promptly thereafter request a certificate of correction which meets the terms of paragraphs (b) and (c) of this section, after being notified that the depository possessing the deposit cannot furnish samples thereof, shall cause the application or patent involved to be treated in any Office proceeding as if no deposit were made.

Paragraph (e) as adopted is identical to proposed paragraph (d) except that the word "the" before "patent" has been replaced with "a" because the term "the patent" had no antecedent basis, and the term "according to these regulations" has been inserted after the word "replaced" to make it clear that the rebuttable presumption according to this paragraph applies only where the replacement deposit has been made according to these regulations.

Paragraph (f) as adopted is substantially similar to proposed paragraph (e) with respect to an applicant's ability to make a replacement for any reason during the pendency of an application for patent. Paragraph (f) extends such applicant's ability to supplemental deposits as well. The first two sentences of proposed paragraph (e) prescribing when a replacement deposit shall be made while an application is still pending and that an applicant notify the Office when a replacement deposit is necessary have been adopted in § 1.805(a), *supra*.

Paragraph (g) as adopted is identical to proposed paragraph (f) except that supplemental deposits are also included and the

reference to another section therein has been changed to reflect its renumbering.

Paragraph (h) as adopted is substantially similar to proposed paragraph (g) except for two changes. One is that the word "the" before "biological material" has been changed to "a" because the term "the biological material" had no antecedent basis. The other change is replacement of the term "viable deposit is in the depository" with the term "depository can furnish samples thereof". The term "in the depository" was not clear. The word "viable" before "deposit" would have excluded biological materials not capable of reproduction either directly or indirectly. For biological materials which are so capable of reproduction, samples of viable deposits thereof which become non-viable cannot be furnished by the depository.

Paragraph (i) as adopted modifies paragraph (h) as proposed. Whereas the proposed rule proscribed a patentee from replacing a viable deposit where the depository can furnish samples, the rule as adopted states that the Office will not recognize in any Office proceeding a replacement deposit of a biological material made by a patent owner where the depository could furnish samples of the deposit being replaced.

Section 1.205 as proposed has been renumbered as § 1.806 as adopted. The proposed rule had set the term of deposit as, *inter alia*, at least thirty years after the date of a viable deposit. The rule as adopted sets the thirty-year term to begin after a deposit, before or during pendency of an application for patent, is made. The term of a deposit made by a patent owner is not prescribed. However, § 1.805(a), *supra*, prescribes that a replacement or supplemental deposit made in connection with a patent will not be recognized in any Office proceeding unless a certificate of correction under § 1.323 is requested by the patent owner which meets the terms of paragraphs (b) and (c) of § 1.805, one of which terms is a verified statement by the patent owner that the term of the new deposit expires no earlier than the term of the deposit being replaced or supplemented. An additional change in the rule as adopted is the replacement of the term "deposited biological material" with the word "deposit" since the former term had no antecedent basis.

Section 1.206 as proposed has been renumbered as § 1.807 as adopted. The rule as adopted is identical to the rule as proposed except for the reference to a rule which has been renumbered.

Section 1.207 as proposed has been renumbered as § 1.808 as adopted.

In paragraph (a) thereof, first word, "The" as proposed has been replaced with "A" because "The" had no antecedent basis.

In view of the non-adoption of proposed § 1.207(c), *infra*, paragraph (a)(2) as adopted refers to only paragraph (b), not paragraphs (b) and (c).

Paragraph (b)(1) as proposed permitted a depositor to require, *inter alia*, that a depository furnish samples only if a request for a sample is in writing and signed.

Paragraph (b) as adopted permits a depositor to require a request to be in writing or other tangible form. The signing requirement, however, has not been adopted.

Paragraph (b)(3) as proposed permitted a depositor to require, *inter alia*, that a depository furnish the depositor with a copy of the request. This requirement has not been adopted.

Paragraph (c) as proposed has not been adopted.

Paragraph (d) as proposed, with one change, has been adopted as paragraph (c). The change is the insertion of the term "made to the Office" after the term "Upon request" to make it clear that certification imposes no burden on a depository.

Section 1.208 as proposed has been renumbered as § 1.809 as adopted.

The term "required" when referring to "deposit" in proposed paragraphs (a), (b) and (c) thereof has been changed to "needed" as adopted for purposes of consistency with § 1.802. The term "in case one has not been made, or" as proposed in paragraph (a) has been replaced with "and if needed," as adopted for purposes of clarification. The statement as proposed that a deposit accepted in any acceptable depository under § 1.202(a) shall be accepted for patent purposes if made under conditions complying with § 1.207(a) has not been adopted. The statement is redundant in view of the provision in § 1.802(b) as adopted that a deposit necessary for the satisfaction of 35 U.S.C. 112 shall be acceptable if made in accordance with these regulations. Since the question of deposits may come up in reissue applications and reexamination proceedings as well as in applications

for patents, paragraph (a) as adopted covers examination of all such applications and proceedings. Paragraph (a) as adopted also refers to supplemental deposits since issues of the need for a deposit may arise where a deposit has lost its capability to function as described in the specification. Paragraph (a) as proposed prescribed that affected claims would be rejected in an Office action. Paragraph (a) as adopted drops "in an Office action" and instead prescribes that the claims would be rejected "where appropriate."

Paragraph (b)(1) as proposed was limited to applicants. Paragraph (b)(1) as adopted covers applicants for patents and patent owners involved in specified Office proceedings. The provision for applicants for patents in paragraph (b)(1) as adopted is identical to the provision for applicants in paragraph (b)(1) as proposed except for the additional adoption of a reference to supplemental deposits. Paragraph (b)(1) as adopted additionally provides for patent owners responding to a rejection under paragraph (a) of this section by requesting a certificate of correction of the patent which meets the terms of paragraphs (b) and (c) of § 1.805.

Paragraph (b)(2) as proposed has not been adopted. Subparagraph (3) has therefore been renumbered as (2) and the reference therein to paragraph (b)(2) has been eliminated. Two additions have been made. One, since the question of deposit may come up in connection with a reissue application or reexamination proceeding, the term "or patent" has been inserted after "application" in the first sentence. Two, since paragraph (a) provides for a rejection under 35 U.S.C. 112 when a deposit actually made cannot be accepted, it is considered an appropriate response that a deposit actually made should be accepted. Thus, the term "and/or why a deposit actually made should be accepted" has been inserted at the end of the first sentence of paragraph (b)(2) as adopted.

Paragraph (c) as proposed has been adopted except that the term "for patent" has been inserted after "application" in the first sentence to make it clear that this paragraph does not apply to other applications, such as applications for reissues. Additionally, the word "the" before the proposed term "required deposit" has been changed to "a" because the term "the required deposit" had no antecedent basis. Finally, the term "37 CFR" preceding "1.136" in the proposed rule has been replaced with "\$" as adopted to be consistent with standard nomenclature.

Paragraph (d)(3) as proposed required a taxonomic description of the deposit. Paragraph (d)(3) as adopted requires a description of the deposited biological material sufficient to specifically identify it and to permit examination. Paragraphs (d)(1), (d)(2), (d)(3) and (d)(4) have otherwise been adopted except for the addition of prefatory articles "The" or "A".

Response to and Analysis of Comments

Written comments from sixteen (16) sources were received in response to the notice of proposed rulemaking. Some suggestions made in comments have been adopted as presented or in modified form and others have not been adopted. A detailed analysis of the comments follows.

Comment: The proposed rule numbers, except § 1.200, are the same as those of the old interference rules, and it appears to be Office practice to normally avoid using rule numbers which end in "00," especially for a rule, viz., 1.200, which is the first of a group of rules. The rules, if adopted, should have different numbers.

Response: The suggestion has been adopted. Proposed §§ 1.200 through 1.208 have been renumbered as §§ 1.801 through 1.809 as adopted, respectively.

Comment: Two comments ask whether the rules will apply retroactively. One comment suggests that they should and further, that the benefits provided for depositors in proposed §§ 1.207(b) and (c) take effect immediately so that those patent applicants who would benefit from them will be encouraged not to delay in filing or obtaining a patent until a final rule takes effect.

Response: To the extent the rules codify existing Office practice, they are already effective. Otherwise, the rules will be effective in applications for patent or for reissue of patent filed on or after January 1, 1990, and in reexamination proceedings in which the request for reexamination was filed on or after January 1, 1990, except that deposits made prior to the effective date which are acceptable under current practice will

be acceptable in such applications and proceedings. Applicants and patent owners are encouraged to comply now with those requirements of the rules not required by existing Office practice.

Comment: A sentence should be added at the end of proposed § 1.200 to clarify that the rule does not preclude the possibility of depositing other biological materials for patent purposes, such as plants per se, even though not within the scope of the term "biological material" as defined by the rule. Adding such a sentence would be consistent with previous concerns expressed to the Office over the possible requirement for deposits with respect to plant patents. With the added sentence, the rule would not address any kind of requirement for deposit in plant patents.

Response: In a response to a comment in the notice of proposed rulemaking, it was stated that the Office did not intend to propose rules on deposits under the Plant Patent Act (35 U.S.C. 161-164) at this time, nor will the Office take the position that a deposit is required under the present provisions of 35 U.S.C. 162. The text of the rule adopted in § 1.801 is the same as proposed in § 1.200 except that the rule now explicitly states that the regulations are for purposes of patents for inventions under 35 U.S.C. 101. Thus, these regulations do not and are not intended to address the question of deposits in plant patent applications.

Comment: One comment suggests that the language in § 1.200 should be expanded to make it clear that other biological materials, such as plants per se, are not precluded from being deposited. Another comment assumes that the Office intends to limit the scope of "biological material" as defined by this rule. The rules and commentary should indicate that the scope and effect of the rules are limited to biological materials as defined in the rules. This rule is acceptable provided it simply defines what constitutes biological material.

Response: None of the suggestions have been adopted. In a response to a comment in the notice of proposed rulemaking, it was stated that biological material is defined in the proposed rule in terms of a non-exhaustive list of what it includes and that no materials were explicitly excluded. The response also stated that the Office does not contemplate that there would be many situations where a material that is not capable of self-replication either directly or indirectly would be acceptable as a deposit under these regulations but that an applicant was not precluded in any given case from attempting to show why such a material should be acceptable. Plants per se are an example of such materials.

Comment: The proposed rules do not, but should, address a problem associated with marine sponges and other marine macroorganisms. These materials and their natural location can be adequately described so that one skilled in the art could obtain them using the necessary equipment. But their taxonomy is in a developmental stage and scientific names are subject to revision. Deposit and maintenance of these materials in viable form is not practical. They can and have been deposited in non-viable form, preserved or fixated in a suitable non-destructive medium, where their shelf life is expected to be at least 30 years.

Response: See the response to the previous comment. As stated in a response to a comment in the advance notice of proposed rulemaking, the PTO Board of Patent Appeals and Interferences held that a description of the precise geographic location of marine tunicates used in a claimed invention was adequate to satisfy the enablement requirement of 35 U.S.C. 112. *Ex Parte Rinehart*, 10 USPQ2d 1719 (PTO Bd. Pat. App. & Int. 1985). It was also stated in that response that the term "readily" as used in the term "known and readily available" appearing in the proposed rules is considered appropriate to define that degree of availability which would be reasonable under the circumstances. Since the comment states that the subject materials and their natural location can be adequately described so that one skilled in the art could obtain them using the necessary equipment, the disclosure would appear to be sufficient to meet the enablement requirements of 35 U.S.C. 112 without a deposit so long as their degree of availability is reasonable under the circumstances.

Comment: In a response to a comment in the notice of proposed rulemaking which was in response to a solicitation for comments in the advance notice of proposed rulemaking on the setting of an appropriate minimum number of seeds to

ensure availability of the seed through the enforceable life of the patent, it was stated that the Office does not intend to propose rules quantifying a minimum number of seeds but that the Office will consider 2500 to be a minimum number in the normal case and will provide an applicant an opportunity to provide justification why a lesser number would be suitable under the circumstances of a particular case. One comment suggests that 2500 may present problems where the normal yield of a plant is only a few seeds. A more reasonable minimum is 1250. Another comment suggests that there be no minimum number but an obligation on the part of the depositor to replace a seed each time one is requested.

Response: Since the Office has stated that an applicant will be provided an opportunity to show why a lesser amount than 2500 seeds would be appropriate in a particular case, the policy of requiring minimum number of 2500 is adhered to. An obligation on the part of the depositor to replace a seed each time one is requested is simply impractical.

Comment: The title of proposed § 1.201 should be changed from "Need to make a deposit" to "Opportunity to make a deposit" since the provision states that "the disclosure may include a deposit of a biological material"

Response: The suggestion has been adopted in part. Since § 1.802 applies to situations both when a deposit may be made (optional) and when a deposit is necessary, the heading of the rule states both need and opportunity in the alternative.

Comment: Proposed § 1.201(a) should state that the disclosure may include reference to a deposit, rather than that the disclosure may include a deposit.

Response: The suggestion has been adopted in § 1.802(a).

Comment: Proposed § 1.201(a) does not clearly permit deposits where conditions enumerated therein do not apply. The proposed rule should be revised by eliminating the requirement that the biological material not be known and readily available to the public before a deposit may be made. The proposed revision would make clear that an applicant has a universal and unconditional right to make a deposit of a biological material whenever the biological material cannot be described in writing alone, regardless of whether the material is known and readily available. The rule as proposed is not consistent with the permissive use of deposits where they might not be mandated. The proposed revision would dispel any suggestion or implication that the legal standard under which deposits are mandated is that the biological material be neither known nor readily available. Obviously, such materials even if unknown and not readily available might be enabled solely through a written description, rendering deposit unnecessary.

Response: The suggestion has been adopted in § 1.802(a). In addition, the rule as adopted permits deposits even where the biological material can be described in writing alone and even where the claimed invention is not, or does not rely on, the biological material. Section 1.802(a) as adopted permits reference in the disclosure to a deposit of a biological material, the only precondition being that an invention is or relies on that material. The requirement in the proposed rule that the biological material not be known and readily available to the public and not be describable in writing alone, and that the material be, or be used for, the claimed invention, has not been adopted.

Comment: Two comments suggest that § 1.201(a) refer to 35 U.S.C. 112. One comment suggests that § 1.201(a) should make some reference to 35 U.S.C. 112 for completeness. Another comment suggests that proposed § 1.201(a) contains no standard and should thus make reference to 35 U.S.C. 112, for example, by inserting words to the effect that the biological material cannot be described in writing alone to satisfy the requirements of 35 U.S.C. 112.

Response: The suggestions have not been adopted. *But see* the response to the next comment.

Comment: Proposed § 1.201(b) should be revised by stating that biological material need not be deposited unless necessary for the satisfaction of the statutory requirements of 35 U.S.C. 112. Thus, the rule would state that the ultimate reason for a requirement for a deposit would be to satisfy 35 U.S.C. 112. Further, the rule should state one circumstance, among others, where a biological material need not be deposited, viz., where it is known and readily available to the public or can be made or isolated without undue experimentation. The last sentence of proposed § 1.201(b) should state a precondition that a deposit

of the biological material be made in a depository complying with these regulations.

Response: The suggestions have been adopted in § 1.802(b).

Comment: Proposed § 1.201(c) should be revised by stating that the actual deposit of a biological material referred to in a specification disclosure also does not create a presumption that the material is necessary to satisfy 35 U.S.C. 112 or that the deposit is or was required. The proposed revision would recognize that the act of deposit does not and should not constitute an admission by the applicant that the deposit was made because it was necessary to satisfy 35 U.S.C. 112. For example, deposit may be necessary in the United States prior to the time a patent application is filed in order for an applicant to be entitled to assert a priority right under patent laws of a foreign country based on a United States application which makes reference to such deposit. Additionally, applicants ought to be encouraged to make deposits in questionable cases without such act being construed as an admission of any sort.

Response: The suggestion has been adopted in § 1.802(c).

Comment: The term "or other biological material" in proposed § 1.201(c) should be changed to "or any other biological material" to make sure that all biological materials that would normally be considered for deposits are included.

Response: The comment is not understood. Nevertheless, it is moot. The term "specific organism or other biological material" in proposed § 1.201(c) has been changed to "biological material" in § 1.802(c) as adopted.

Comment: Two comments suggest that proposed § 1.202(a)(2) unnecessarily limits who may be consulted in determining the suitability of a depository to be recognized by the Office to those in the biotechnology industry or Government agencies. Views from academia may be wanted. One of the comments suggests, therefore, that the term "from the biotechnology industry or governmental agencies" be deleted from § 1.202(a)(2).

Response: The suggestions have been adopted in § 1.803(a)(2).

Comment: Proposed § 1.202(a) should be revised to state that a deposit shall be recognized for the purposes of these regulations if made in a depository according to subparagraph (1) or (2) thereof. The proposed revision would allow for deposits other than in Office-recognized depositories, but give deposits in Office-recognized depositories the "safe harbor" advantages of these regulations.

Response: The suggestion has been adopted in § 1.803(a). Simply put, the rules do not prohibit deposits made under any conceivable conditions. The Office will treat a deposit not made according to these regulations, however, as if no deposit had been made.

Comment: The provision set forth in proposed § 1.202(c)(3), i.e., that a depository seeking status under paragraph (a)(2) indicate that it intends to be available, for the purposes of deposit, to any depositor under these same conditions, should also be listed in § 1.202(a)(2), which enumerates the qualifications for a depository seeking recognition as suitable by the Office.

Response: The suggestion is not being adopted. The requirement in proposed § 1.202(a)(2)(v), and § 1.803(a)(2)(v) as adopted, that the depository be impartial and objective, is inclusive of a requirement that it be available, for purposes of deposit, to any depositor under these same conditions.

Comment: One comment suggests that the proposed rules do not adequately define the term "depositor". It could be the inventor, the assignee, one to whom the inventor has an obligation to assign, or the individual who signs the deposit form. In the case of joint inventors with different institutional ties, who is the depositor? Assuming that where the inventor is a university professor, the depositor is the university, deposit in that university's depository would be precluded by proposed § 1.202(a)(2)(ii) and possibly 1.202(a)(2)(v). An exception should be made for non-profit organizations. They should be allowed to "self-deposit" since it is highly improbable that they would refuse to provide samples to third parties. The availability of a strain from a university was found to satisfy 35 U.S.C. 112 in *Merck and Co., Inc. v. Chase Chemical Co.*, 273 F.Supp. 68, 77, 92, 155 USPQ 139, 146, 159 (D.N.J. 1967). Another comment suggests that it is not clear, where the depositor is a separate, independent division of a particular entity and the depository is another separate, independent division of the same

entity, whether this arrangement meets the terms of proposed § 1.202(a)(2)(ii).

Response: None of the suggestions have been adopted. In § 1.803(a)(2)(ii) as adopted, a depository recognized to be suitable by the Office and not otherwise an IDA must exist independent of the control of the depositor. In a response to a comment in the notice of proposed rulemaking, it was stated that the term "depositor" is intended to include the party on whose behalf the deposit is made. It was further stated in that response that the rationale of the Office in requiring that a depository, if not an IDA, be independent of the depositor was adequately discussed in the advance notice of proposed rulemaking. The advance notice stated:

The concept of an independent depository or an IDA as an acceptable depository is based on the need and desire to ensure the safe and reliable storage of a deposited biological material under circumstances that are free of the opportunity for intentional or negligent handling of the deposited material. The use of an independent depository or an internationally recognized depository will tend to preserve the integrity of the deposit process against those that may accidentally alter the deposited material, may wish to tamper with the deposited material or may wish to resume control of its availability when the patent is no longer enforceable, and to preserve the interest of the public in the free access to the biological material for any purpose once the term of the patent expires. Further, while the PTO is constrained to approve independent depositories other than an IDA, the PTO has neither the resources nor capability to assess the individual capability of any party that wishes to act as its own depository. The rules under consideration are intended to minimize depositories that will be found acceptable.

The above discussion applies to non-profit organizations as well as for-profit organizations. Moreover, it is clear from the discussion above that the scope of the term "depositor" is limited only by the requirement that the depositor have *no control* over the depository. Such a relationship is not necessarily inconsistent with one where there is some legal relationship between depositor and depository. The *Merck* case cited above does not stand for the proposition that a university is necessarily an acceptable depository because it makes available samples of a biological material. In *Merck*, the availability of the biological material from the university was evidence that the biological material was known and readily available. While a deposit by an applicant in a depository under the applicant's control will not be recognized by the Office as a deposit under these regulations, an applicant is not precluded from showing that the deposited material, by virtue of conditions of public knowledge of unrestricted availability of samples of the deposit, is known and readily available to the public. However, depositors should be aware that relying on such a showing rather than making a deposit according to these regulations involves a risk that the biological material might in the future not be readily available. The university relied on in the *Merck* case, for example, eventually ceased its practice of making biological materials readily available.

Comment: Proposed § 1.202(b) is intended to apply in the event that a depository ceases to enjoy the status of a recognized depository. The manner of making a substitute deposit in such a situation would not seem to be fully explained by a reference to proposed § 1.204. For example, if a depository were to cease operation, it might not be able to, in the words of proposed 1.204(a), "promptly after having noted its inability to furnish samples, notify the depositor of such inability". Second, the rule as proposed is difficult to follow. For example, it indicates that a substitute deposit "must be viable if the biological material is of a kind capable of self-replication". The implication that certain deposits might be non-viable is at best confusing in the absence of a definition for viability.

Response: Proposed § 1.202(b) has not been adopted. Section 1.805, the rule as adopted on replacement deposits, puts the burden exclusively on the applicant or patent owner, whatever the case may be, to both make a replacement deposit and make the necessary showing that such a deposit complies with these regulations. Viability is dealt with exclusively by § 1.807 as adopted.

Comment: Three comments suggest that it be a requirement of the rules that the biological material have been in existence at the time of filing the patent application. One comment suggests that a sentence be added to proposed 1.208(a) to require

that the application as filed state that the biological material is in existence. The other comments suggest that proposed § 1.203 require an averment that the deposited biological material was in existence at the time the application was filed.

Response: None of the suggestions have been adopted. Patent law does not require an actual reduction to practice as a condition precedent to filing a patent application. While few, if any, situations can be imagined where the description requirement of 35 U.S.C. 112 can be satisfied where the biological material was not in existence at the time of filing, the rules do not preclude such a situation. *But see* the response to the next comment.

Comment: Proposed § 1.203(a) should require that a biological material may be deposited only if an adequate antecedent basis exists in the specification as filed, i.e., the biological material to be deposited must be specifically identified therein.

Response: The suggestion has been adopted in § 1.804(a). It must be clear from the application as filed that the invention claimed and described in the specification "was fully capable of being reduced to practice (i.e., no technological problems, the resolution of which would require more than ordinary skill and reasonable time, remained in order to obtain an operative, useful process)." *Feldman v. Aunstrup* 517 F.2d 1351, 1355, 186 USPQ 108, 113 (CCPA 1975), *cert. denied*, 424 U.S. 912 (1976). *Accord, In re Lundak*, 773 F.2d 1216, 1221, 227 USPQ 90, 94 (Fed. Cir. 1985).

Comment: Two comments suggest that proposed § 1.203(a) be revised so that it addresses the permissible situation where a deposit is made during the pendency of an application for patent not pursuant to a requirement made by an examiner.

Response: The suggestion has been substantially adopted in § 1.804(a). An original deposit may be made, subject to § 1.809, during pendency of the application for patent. Where § 1.809 does not apply, i.e., where a deposit is ultimately not required, a deposit may be made at any time during pendency.

Comment: The Office should discuss in the commentary accompanying the notice of proposed § 1.203(b) as a final rule the meaning and intent behind the requirement that the deposited biological material be the "same" as the material described in the specification. For example, does the Office contemplate that the statement constitute a representation that the deposited material is in essentially the same form as was in existence at the time of the filing of the patent specification, and, accordingly as specifically described therein?

Response: Proposed § 1.203(b) has been adopted as § 1.804(b) but with the word "same" deleted and the term "described" replaced with "specifically identified." Under § 1.804(b), the biological material deposited must be a biological material specifically identified in the application as filed.

Comment: One comment asks whether a patent which is defective because of the lack of a deposit can be rectified by making the deposit in connection with a reissue application. Another comment points out that the issue of post-grant original deposits is not addressed by these regulations and the Office is urged to comment to this effect in the final promulgation of the rules.

Response: It is assumed from the comment that a deposit was necessary at the time the patent issued. A patent defective because of lack of a necessary deposit is necessarily fatally defective for failure to comply with the first paragraph of 35 U.S.C. 112. Reissue is not available in such cases. *See In re Hay*, 534 F.2d 917, 189 USPQ 790 (CCPA), *cert. denied*, 429 U.S. 977 (1976). Whether reissue is available where a biological material necessary for compliance with 35 U.S.C. 112 was known and readily available at the time of issuance of the patent and subsequently ceased to be readily available is not addressed by this response. Nor do the rules address the question of post-issue original deposits, whether necessary or not to comply with the patent statutes.

Comment: Many comments were received regarding proposed § 1.204 and the subject of replacement deposits. One comment suggests that the time limits in proposed § 1.204(a) for making replacement deposits, specifically as they apply post-grant, are totally arbitrary. For example, a replacement deposit made four months after notice from the depository, without a suitable petition for extension of time, could not be relied on. A number of comments suggest that in proposed § 1.204(a), it is not clear who is required to petition whom in order to obtain an extension of time in which to make a

replacement deposit. A depository is not equipped to deal with the legalities of such matters. If the petition is filed with the Office, there will be administrative burdens. Another comment suggests that instead of specified time limits and petitions for extensions of time, the rule should state that where a patentee makes a replacement deposit, the patentee shall promptly request a certificate of correction identifying the particulars of the replacement deposit and that no certificate of correction shall be granted unless the request includes, *inter alia*, a verified showing that the patentee acted diligently in making the replacement deposit. A certificate of correction in providing the particulars of the new deposit (depository and accession number) would provide the simplest and most straightforward vehicle under which the patentee could assure continuing public notice (and accordingly public access) to particular biological materials described in the specification. Corrections to the issued patent would be made subject to all conditions of these deposit regulations and an additional specific requirement that the replacement deposit be made diligently after the notification is received that samples cannot be furnished from the deposit. This generalized requirement of diligence is preferable to the more rigid and cumbersome procedures set forth in the rules as proposed.

Response: The provisions of a three-month time limit for making a replacement deposit and petitioning for extensions of time to extend the limit in proposed § 1.204(a) applied by their terms only to patentees or patent owners. These provisions have not been adopted. Except in reexamination and reissue applications, it is beyond the rulemaking authority of the Office to regulate issued patents. Thus, instead of requiring patent owners to make replacement, or supplemental, deposits and to make them within a specified time, or to require them to request certificates of correction, paragraphs (a), (b) and (c) of § 1.805 as adopted specify that a replacement or supplemental deposit made in connection with a patent, whether or not made during the pendency of an application for reissue patent or a reexamination proceeding or both, shall not be recognized in any Office proceeding unless the patent owner requests a certificate of correction under § 1.323 provided certain specified conditions are met, including that the patent owner acted diligently in making the replacement or supplemental deposit and promptly thereafter requested the certificate of correction.

Comment: The rules should indicate that replacement deposits made during the pendency of an application will be treated in exactly the same way as any other deposit made after the filing date.

Response: The suggestion has been essentially adopted in § 1.805(a) which states, *inter alia*, that a replacement or supplemental deposit made in connection with an application for patent shall be accepted if it meets the requirements for making an original deposit under these regulations, including the requirement set forth under § 1.804(b).

Comment: The rules should address a situation where the deposit is of a non-viable biological material, such as a marine sponge or other marine macroorganism. Filling requests for samples can ultimately consume the entire deposit. Two other comments suggest that a depositor be permitted to charge the requesting party a fee sufficient to cover the cost of replacing the deposit. A competitor could "drain off" the store of deposit and thereby require replacement at significant economic hardship to the depositor.

Response: Where the biological material deposited is capable of self-replication either directly or indirectly, exhaustion of the deposit would appear to be highly unlikely. Regardless of the type of biological material deposited, however, the depositor must assure that samples thereof be available beyond the enforceable life of any patent relying on the material.

Comment: Nothing in the regulations which define the suitability of a depository requires that the depository itself must provide notice to depositors in the event of an inability to furnish samples yet proposed 1.204(a) does.

Response: The suggestion has been adopted in § 1.803(a)(2)(vii).

Comment: A number of comments suggest that the legal ramifications of an additional deposit made pursuant to proposed § 1.204(h), i.e., made where an earlier deposit has become contaminated or has lost its capability to function as described in the specification, are not clear. Some of the same comments go on to suggest that the deposit provided for in § 1.204(h) be

termed a "supplemental" deposit rather than an "additional" deposit to emphasize the relationship between it and the earlier deposit, that such a deposit have the same legal effect as the earlier deposit provided the patent holder provides a verified statement that it is identical to the earlier deposit, and that it have the same accession number as the earlier deposit, perhaps with a suffix modification. One comment suggests that the rules require that a deposit under paragraph (h) be assigned the same accession number but with an appropriate suffix. A depository commentator asks that where a deposit under paragraph (h) is made, which deposit — the earlier or the later one — should be made available to the public. Currently, this depository advises a requesting party that there are two deposits.

Response: The suggestion of replacing the term "additional" with the term "supplemental" has been adopted but in a somewhat different setting. Whereas proposed § 1.204(h) stated that nothing in the regulations was intended to prohibit a patentee from making an additional deposit, paragraphs (a), (b), (c), (f) and (g) of § 1.805 as adopted provide for patent owners as well as patent applicants making supplemental deposits of a biological material earlier deposited from which a depository can still furnish samples. These paragraphs provide for supplemental deposits similar to the provisions in these paragraphs for replacement deposits, including the requirement of showing diligence in making the deposit in connection with a patent, except that instead of making the deposit after receiving notice that samples could no longer be furnished from an earlier deposit, as in the case of a replacement deposit, the deposit is made after receiving notice that the earlier deposit had become contaminated or had lost its capability to function as described in the specification. While the rules specify that the Office in any Office proceeding will recognize supplemental deposits if made under certain conditions, it is not known what legal effect a court will give to such recognition. As far as what accession number a depository should give to a supplemental deposit, this is a matter within the discretion of the depository. As to which deposit, either an earlier deposit or a supplemental deposit, should be made available to the public, this would depend on the accession number requested. A supplemental deposit made according to these regulations would be freely available to the public to the same extent as an original deposit made according to these regulations. Obviously, nothing in these regulations prohibits a depository from advising a requesting party that there is more than one deposit of a particular biological material.

Comment: To the extent proposed § 1.204 regulates the effects on patents, in other than certain statutorily defined situations such as reexamination and reissue, for failure to make replacement deposits according to the rule, it exceeds the rulemaking authority of the Office. An example is proposed 1.204(c).

Response: Section 1.805 as adopted, to the extent it addresses replacement deposits made by patent owners, contains no affirmative provisions requiring or prohibiting replacement deposits. Rather, it prescribes what an applicant or patent owner may do vis-a-vis the Office if a replacement deposit is made and what the ramifications are in any Office proceeding if a replacement deposit is not made or improperly made. Proposed § 1.204(c) was, and § 1.805(d) as adopted is, limited to Office proceedings. The provision that a patentee may not replace a viable deposit where the depository can furnish samples in proposed 1.204(h) has been replaced in § 1.805(i) as adopted with the provision that the Office will not recognize in any Office proceeding a replacement deposit made by a patent owner where the depository could furnish samples of the deposit being replaced.

Comment: One comment suggests that the term of deposit in proposed § 1.205 is excessive. The term should be through the expiration of the patent plus 10 years. Another comment suggests that § 1.205 be adopted except that the last sentence should be deleted and the term "viable" before "deposit" be dropped. The term "viable" should be deleted as viability is dealt with elsewhere, e.g., proposed § 1.206. The last sentence should be deleted because, while the Office may set what it considers adequate terms of deposit on or before patent grant, it has no statutory authority or mechanism for supervising the term of the agreement of the deposit. The last sentence is also highly indefinite in failing to indicate how far beyond the enforceable life of a patent the deposit must be maintained.

Response: The suggestions have been adopted in part. Proposed § 1.205, including the last sentence, has been adopted as § 1.806 except that the thirty-year term applies to any deposit made before or during pendency of an application for patent. No requirement of viability is stated in the rule. The Office agrees that once a patent issues, it has no authority or mechanism for supervising the term of the agreement of the deposit. But the Office does have the authority to set the term of deposit while an application is still pending. That is all § 1.806 does. In almost all cases, the term of deposit as set forth in the first sentence of § 1.806 will extend beyond the enforceable life of the patent for which a deposit was made. The last sentence of § 1.806 is intended to cover those rare circumstances where extended prosecution in the Office results in expiration of the term of deposit as set forth in the first sentence while the patent is still enforceable. At this time, there appears to be no need to specify any finite time period beyond the enforceable life of a patent. If experience demonstrates that the public interest is not being served by the present provisions, an appropriate amendment will be proposed.

Comment: A depository commentator suggests that the requirement in proposed § 1.207(b)(1) that a request for a sample of the deposited material be signed poses an administrative burden on depositories which accept telephone, telex and electronic mail requests for samples. Requiring that a request be signed can and will delay the receipt of samples by many days. The signing requirement should not be adopted.

Response: The suggestion has been adopted in § 1.808(b)(1).

Comment: A depository commentator suggests that the requirement in proposed § 1.207(b)(3) that a copy of the request be provided to the depositor poses a problem since most requests also include a request for samples of many other deposited biological materials. For such a request, it would be necessary to send a copy to each depositor, blanking out the other deposits not made by that depositor. It should be sufficient that the depositor is notified to whom and the date a sample was provided. The cost will be much greater if a copy has to be supplied.

Response: The suggestion has been adopted in § 1.808(b)(3).

Comment: A depository commentator suggests that in proposed § 1.207(b), it is not clear, after the term of the patent, whether the deposit is again restricted as it was before the patent was granted, i.e., not furnished unless the requesting party has the proper authorization from the depositor or the Commissioner, or whether the deposit is no longer subject to subparagraphs (1), (2) and (3) thereof and can be furnished without any specific identification or notification. It is suggested that either a statement be added as to what happens after the term of the patent or the term "during the term of the patent" be deleted.

Response: The suggestions have not been adopted. Section 1.808(a)(2) requires that subject to paragraph (b) thereof, all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of the patent. Paragraph (b), by its terms, is limited to the term of the patent. A contract between a depositor and a depository according to paragraph (b) but which extends beyond the term of the patent would violate paragraph (a)(2). It should be self-evident that for deposits in compliance with these regulations, samples of the deposit may be furnished without any specific identification or notification for requests made after the term of the patent.

Comment: While many comments suggest adoption of a rule restricting the transfer of a sample of a deposited material to a third party without the depositor's permission, such as proposed § 1.207(c), as well as the adoption of a rule requiring other restrictions on access to deposited material, two comments suggest that such rules not be adopted. The rationale is that if a deposit is basically a replacement for that which could not be adequately written in the patent specification itself, no specific statutory authority exists for restricting access to the deposited material any more than the patent law would countenance restrictions on access to the written description itself. If abuses exist by virtue of the absence of limitations on access to deposited materials, then the remedy for patent infringement is as applicable to deposited material as it is to infringers acting from knowledge of the written description itself. Accordingly, unrestricted access to deposits should be allowed. One of the comments suggests further that if there are to be some restrictions to access, proposed § 1.207(c) is otherwise problematic

and ineffective. For example, the limitation on access applies to "derived" materials which could include wholly noninfringing derivatives which might themselves constitute a patentable invention of a third party requester. The proposed rule would deny the third party requester the right to what ought to be an unrestricted right to sell or otherwise dispose of this derivative material to third parties. Moreover, the proposed rule is remedial since the Office neither has continuing jurisdiction over the patentee nor a third party requester. Two depository commentators expressed reservations about proposed 1.207(c). One suggests that the first sentence therein is in direct contradiction to the long-standing policies of both NRRL and ATCC. Most depositories no longer require this type of guarantee from requesting parties as they find it almost impossible to enforce. The other suggests that the administrative burden to the depository in handling agreements made pursuant to the proposed rule will be great and the cost will be borne by the depositor. At \$10 an agreement and 300 requests a year for a particular deposit, the cost to the depositor would be \$3,000 a year. If § 1.207(c) is adopted, there should be some mention that if a depository charges a fee for this service, the fee must be paid or the depository will not be obligated to provide the service. In the European Patent Office (EPO), which has a similar provision, the EPO, not the depository, obtains the agreement and advises the depository to make the sample available. The comment asks if the Office is prepared to do this. Additional comments ask what rules govern a new deposit for patent purposes of the same or derived biological material by a requesting party if the substance of proposed § 1.207(c) is adopted. Some comments were in response to a solicitation in the notice of proposed rulemaking for alternative approaches and suggested appropriate definition of "essential characteristics" with respect to derived material in proposed § 1.207(c).

Response: The Office has decided not to adopt a rule permitting a depositor to require that a sample of a deposited biological material shall be furnished only if the requesting party has agreed not to make the material or a derivative thereof available to a third party without the depositor's permission. Thus, proposed § 1.207(c) has not been adopted. The Office agrees with many of the comments about shortcomings in the proposed rule. Fundamentally, however, the proposed rule has not been adopted in view of the rationale stated in the comment that no greater restriction on access to a deposit should be permitted than is permitted on access to the written description itself, even considering that the practical value of access to a deposit may be substantially greater than access to the written description and that infringement may be more difficult to police. While it might be argued that the adoption of proposed § 1.207(b) with revisions as § 1.808(b) is inconsistent with this rationale, the Office believes that permitting the depositor to require a requesting party, in essence, to identify itself is not unreasonable under the circumstances and is consistent with international practice as embodied in the Budapest Treaty.

Comment: Many comments which suggest the adoption of the substance of proposed § 1.207(c) also suggest the adoption of rules incorporating the recommendations made in the April 8, 1987 World Intellectual Property Organization (WIPO) report on the Industrial Property Protection of Biotechnological Inventions (1) to use the biological material only for experimental purposes concerning the invention, and (2) not to export the biological material except to a country for which a relevant patent has been granted. The reasons generally given were that it is necessary to protect the patentee and enhance the patentee's ability to enforce a patent relying on a deposited material. One comment suggests that incorporating the recommendation on experimental use would clarify what is permitted by law. In the Notice of Proposed Rulemaking, 53 Fed. Reg. at 39423-24, the Office described the difficulties in drafting a regulation incorporating these recommendations and requested specific suggestions as to how to draft a regulation which both accomplishes the intended purpose and is not inconsistent with law. No specific suggestions were received, although one comment suggests that where a deposited material is covered by an unexpired U.S. patent, a rule be adopted permitting the depositor to require the requesting party to agree to comply with the provisions of 35 U.S.C. 271. Another comment suggests that legislation is necessary to deal with the problems addressed by the WIPO recommendations. A restriction against exports could be considered to be violative of 35 U.S.C. 112 since

foreign requesters would be denied access to deposits where a patentee had never sought foreign patent protection. A restriction to experimental purposes only, while more justifiable, raises two problems. One is that "experimental purposes" have not been defined and the term has been open to several interpretations. The other is that the proper redress for non-experimental use is a suit for patent infringement, not a suit based on the requester's promise to the depo comment suggests that a rule be adopted permitting the depositor to require that a requesting party acknowledge that the furnishing of a sample of the deposited biological material does not constitute a license, express or implied, to use that sample for any purpose.

Response: None of the suggestions have been adopted for essentially the same rationale discussed in the response to the previous comment. None suggest how to draft a regulation which both accomplishes the intended purpose and is not inconsistent with law, and which provides a compelling justification and rationale for departing from present policy and practice. The suggestion that a requesting party agree to comply with 35 U.S.C. 271 as a condition precedent to obtaining a sample of deposited biological material is interpreted as an agreement not to infringe a corresponding valid patent, something which a requesting party is already bound not to do under law. The suggestion that a depositor be permitted to require a requesting party to acknowledge that there is no express or implied license to use a sample for any purpose exceeds the rulemaking authority of the Office since certain unlicensed uses of patented subject matter have been found by the courts to be permissible.

Comment: Many of the comments suggesting adoption of the substance of § 1.207(c) and/or the WIPO recommendations on experimental use and export also suggest adoption of rules permitting additional restrictions. One comment suggests requiring the recipient of biological material to report, at least annually, to the patent holder, on the research and other results obtained by use of the biological material. The same commentator suggests that even after patent expiration, an unlicensed recipient should not be permitted to use the biological material for other than experimental purposes absent agreement from the depositor. The commentator would prohibit commercial use of the biological material without permission of the depositor. Another comment suggests that the policy consideration for permitting deposits is to insure that the patented invention can be practiced after patent expiration. Requiring a requesting party to enter into an agreement with the depositor defining the terms and conditions under which a sample of the deposited material would be used making an accounting of such use, and proof of compliance, is neither unreasonable nor contrary to law. It would not place an administrative burden on the Office since the depository could be permitted to release samples only if the requesting party signs a license. Any attempt by the depositor to impose an unlawful restriction and withhold release would be a matter for the courts, not the Office. Another comment suggests various additional restrictions be adopted. These are (1) that the requesting party have residence in the U.S. or in the country where the depository is located, if different; (2) that the patentee be given the option to restrict furnishing of samples to independent experts only for the duration of the patent; and (3) that the deposit be released only if the depositor expressly consents (in the absence of which validity of the patent must be resolved without recourse to the deposit). Restriction (1) should be adopted so that the deposit cannot be legally exported to a country where the patent owner has no enforceable rights. Restriction (2) should be adopted to prevent access of the deposited material to potential infringers. Its adoption should be coupled with a statement that a deposit released to an expert shall be regarded as being available to the public. Restriction (3) should be adopted as an extension to the description in proposed § 1.201 that the disclosure "may include a deposit." In other words, the patentee at any time during the patent term should be able to rely on the written description alone for satisfying 35 U.S.C. 112, such as where the reasons for requiring a deposit originally no longer exist.

Response: None of the suggestions have been adopted for essentially the same reasons discussed in the responses to the previous two comments.

Comment: A depository commentator suggests that proposed § 1.207(d) needs further deliberation. Now, publication in a U.S. patent of a deposit and accession number is sufficient for that depository (ATCC) to make samples available. The Office

should be prepared to receive several thousand requests for certification under § 1.207(d) if adopted. If the Office is going to certify the availability of deposits, it should certify the availability of all deposits. Easier than the proposed rule would be to include a statement in the patent that there is a deposit, its accession number and where it is deposited, and that it has been made under the condition that it is available upon publication of the issued patent.

Response: The suggestion has not been adopted. The comment appears to be interpreting the term "Upon request" at the beginning of proposed § 1.207(d) to mean "Upon request to a depository for a sample of a deposited material", or in other words, the commentator appears to have interpreted the proposed language as requiring the depository to request certification from the Office each time a request for a sample of a deposit is made. It was not intended to impose such a burden on depositories. Rather, it was intended that the term "Upon request" refer to a request made to the Office. Therefore, proposed § 1.207(d), revised by inserting the term "made to the Office" after "Upon request", has been adopted as § 1.808(c).

Comment: One comment suggests that there is no apparent reason for the use of the different words "[e]stablishing" and "[a]rguing", in proposed paragraphs (b)(2) and (b)(3), respectively, of § 1.208 since the same meaning is intended by each. Either word alone should be used in both subparagraphs (2) and (3). The same comment goes on to suggest that the reference to paragraph (b)(2) in the last sentence of proposed § 1.208(b)(3) is redundant since the examiner may be convinced that a deposit is not required where the applicant has established that the involved biological material is known and readily available to the public. A comment along the same lines suggests that paragraph (b)(2) is unnecessary. As a purely logical matter, an applicant ought to be entitled to reply to a rejection either by making an acceptable deposit or arguing why a deposit is not required under the circumstances. Proposed 1.208(b)(2) is merely one possibility for an argument that a deposit is not required.

Response: The suggestions have been adopted. Proposed § 1.208(b)(2) has not been adopted and proposed § 1.208(b)(3) has been substantially adopted as 1.809(b)(2). In addition, § 1.809(b)(2) provides for examination with respect to a patent, since deposit issues may arise in connection with a reissue application and/or a reexamination proceeding, and provides also for an argument that a deposit actually made should be accepted.

Comment: A number of comments suggest that the term "taxonomic description" in proposed § 1.208(d)(3) is unclear and inappropriate in some cases. One comment suggests that it is not clear how complete a description is required. If construed in its broadest sense, it could have the undesirable effect of delaying filing of an application until taxonomic characteristics have been determined. Some biological materials within the scope of the proposed rules, such as plasmids, are not susceptible of taxonomic description. The requirement that the specification contain a taxonomic description should not be adopted since such a description may not be possible and since the availability of a deposit makes such a description superfluous, since the taxonomy is inherent in the deposit. The response to comments made earlier regarding the taxonomic description requirement is inconsistent with the proposed rule. The response states that the extent to which a taxonomic description is required will depend on the facts of the case yet the proposed rule states that the specification shall contain such a description. The response states that the taxonomic description must be sufficient for purposes of 35 U.S.C. 112 yet the requirement of a deposit presupposes that a written description alone will not satisfy the statute. The need to verify that the deposited biological material is that disclosed in the specification arises only when the deposit is made after the filing date. That situation can be dealt with by deleting the taxonomic description requirement from § 1.208(d) and adding a new subparagraph (e) which would provide that in cases where a deposit is made after the filing date and where the nature of the material permits, a taxonomic description is required in addition to the items specified in subparagraph (d). Another comment suggests that the term "taxonomic" be deleted since it is irrelevant to many types of deposits and would provide greater clarity to the rules. Another comment suggests that the current language in pro-

posed § 1.208 (d)(3) be replaced with "Fully identify and describe the deposited material".

Response: The suggestions have been adopted in part. Section 1.809(d)(3) as adopted requires a description of the deposited biological material sufficient to specifically identify it and to permit examination. While the rule does not by its terms require a taxonomic description, such a description should satisfy the rule as adopted in cases where the biological material deposited admits of a taxonomic description.

Comment: The Office should petition the Budapest Assembly to address the same issues dealt with in the proposed rules so that they apply to both U.S. and foreign filings. Uniformity in the rules is important, especially for U.S. inventors who file here and abroad.

Response: While uniformity in both U.S. and foreign rules is desirable, this is not deemed to be the appropriate forum in which to address the suggestion.

Discussion of Specific Sections

BIOLOGICAL MATERIAL [§ 1.801]:

The section indicates that the rules pertaining to deposits for purposes of patents for inventions under 35 U.S.C. 101 are intended to relate to biological material. For the purposes of these rules, the term "biological material" is defined in terms of a non-exhaustive list of representative materials which can be deposited in accordance with the procedures defined in these rules. Since these rules are intended to address procedural matters in the deposit of biological material for patent purposes, and are not designed to decide such substantive issues such as whether a deposit of a particular organism or material would be recognized or needed to be made for the purposes of satisfying the statutory requirements for patentability under 35 U.S.C. 112, the definition provided in this section is intended to be permissive - specifically defining materials which can be deposited.

Biological material includes material that is capable of self-replication either directly or indirectly. Direct self-replication includes those situations where the biological material reproduces by itself. Representative examples of materials capable of self-replication are defined in the rule. Indirect self-replication is meant to include those situations where the biological material is only capable of replication when another self-replicating biological material is present. Self-replication after insertion in a host is one example of indirect self-replication. Examples of indirect replicating biological materials include viruses, phages, plasmids, symbionts, and replication defective cells. The list of representative examples of each type of replicating material includes viruses to demonstrate that the lists are not intended to be mutually exclusive.

Although plant material is included within the scope of the definition of biological material for purposes of patents for inventions under 35 U.S.C. 101, these rules on deposits are not applicable to applications filed under the Plant Patent Act (35 U.S.C. 161-164). The Office is of the view that a deposit is not required under the present provisions of 35 U.S.C. 162. Thus, no plant patent granted under the provisions of 35 U.S.C. 161-164 need be supported by a deposit. As with other biological material deposited for purposes of patents for inventions under 35 U.S.C. 101, the deposit of plant material together with the written specification must enable those skilled in the art to make and use the claimed invention.

As with some types of reproducible biological material, seeds can be reproduced only after a growing season which may be relatively long. Although the rules do not specify a specific number of seeds to be deposited to meet the requirements of these rules, the Office will consider 2500 to be a minimum number in the normal case, but will give an applicant the opportunity to provide justification why a lesser number would be suitable under the circumstances of a particular case. The Department of Agriculture requires a deposit of 2500 seeds for the grant of a Plant Variety Protection Certificate. As the reproduction of seeds will often take a substantial period of time, the Office will require, at a minimum, a number of seeds that is likely to satisfy demand for samples once the patent is granted.

Section 1.801 does not attempt to identify what biological material either needs to be or may be deposited to comply with

the requirements of 35 U.S.C. 112. For the most part, this issue must be addressed on a case-by-case basis. Thus, while the Office does not presently contemplate that there would be any situations where a material that is not capable of self-replication either directly or indirectly would be acceptable as a deposit, an applicant is clearly not precluded in any given application, by these rules, from attempting to show why the deposit of such a material should be acceptable to satisfy the requirements of 35 U.S.C. 112.

NEED OR OPPORTUNITY TO MAKE A DEPOSIT [§ 1.802]

This section permits a deposit of a biological material to be referenced in a patent application where an invention is, or relies on, a biological material. The invention may rely on a biological material for the purposes of making or using the invention, either as a preferred mode or an alternative mode of operation. It is not necessary, for the purposes of paragraph (a), that a deposit be required to satisfy the requirements of 35 U.S.C. 112 before a reference to a deposit is permitted in the specification.

There is no necessary implication or presumption that can or should be made about the need for a deposit simply because reference to a deposit is made in an application disclosure. As noted in paragraph (b), biological material need not be deposited unless access to such material is necessary for the satisfaction of the statutory requirements for patentability under 35 U.S.C. 112 and that access is not otherwise available in the absence of a deposit. Where a deposit is required to provide the necessary access, a deposit is acceptable for patent purposes only where it is made in accordance with these regulations. Even where access to biological material is required to satisfy these statutory requirements, a deposit may not be necessary if access sufficient to satisfy these requirements is otherwise available.

For example, applicant could show that the biological material is known and readily available to the public. The concepts of "known and readily available" are considered to reflect a level of public accessibility to a necessary component of an invention disclosure that is consistent with an ability to make and use the invention. To avoid the need for a deposit on this basis, the biological material must be both known and readily available - neither concept alone is sufficient. A material may be known in the sense that its existence has been published, but is not available to those who wish to obtain that particular known biological material. Likewise, a biological material may be available in the sense that those having possession of it would make it available upon request, but no one has been informed of its existence.

By showing that a biological material is known and readily available or by making a deposit in accordance with these rules, applicant does not guarantee that such biological material will be available forever. Public access during the term of the patent may affect the enforceability of the patent. Although there is a public interest in the availability of a deposited biological material during and after the period of enforceability of the patent, the examiner need not be unduly concerned about continued access to the public. Unless there is a reasonable basis to believe that the biological material will cease to be available during the life of the patent, the examiner should accept current availability as satisfying the requirement. The incentives provided by the patent system should not be constrained by the mere possibility that a disclosure that was once enabling would become non-enabling over a period of time through no fault of the patentee. *In re Meitcalfe*, 410 F.2d 1378, 161 USPQ 789 (CCPA 1969).

There are many factors that may be used as indicia that a biological material is known and readily available to the public. Relevant factors include commercial availability, references to the biological material in printed publications, declarations of accessibility by those working in the field, evidence of predictable isolation techniques, or an existing deposit made in accordance with these rules. Each factor may or may not be sufficient alone to demonstrate that the biological material is known and readily available. Those applicants that rely on evidence of accessibility other than a deposit take the risk that the patent may no longer be enforceable if the biological material necessary to satisfy the requirements of 35 U.S.C. 112 ceases to become accessible.

The Office will accept commercial availability as evidence that a biological material is known and readily available only when the evidence is clear and convincing that the public has access to the material. A product could be commercially available but only at a price that effectively eliminates accessibility to those desiring to obtain a sample. The relationship between an applicant relying on a biological material and the commercial supplier relied upon is one factor that would be considered in determining whether the biological material was known and readily available. However, the mere fact that the biological material was available only through the patent holder or the patent holder's agents or assigns shall not, by itself, justify a finding that the necessary material is not readily available, absent reason to believe that access to the biological material would later be improperly restricted.

The mere reference to a deposit or the biological material itself in any document or publication does not necessarily mean that the deposited biological material is readily available. Even a deposit made under the Budapest Treaty and referenced in a United States or foreign patent document would not necessarily meet the test for known and readily available unless the deposit was made under conditions which are consistent with those specified in these rules, including the one that requires, with one possible exception, that all restrictions on the accessibility will be irrevocably removed upon the granting of the patent.

Applicant may show that a deposit is not necessary even though specific biological materials are required to practice the invention if those biological materials can be made or isolated without undue experimentation. Deposits may be required to support the claims if an isolation procedure requires undue experimentation to obtain the desired biological material. *Ex Parte Jackson*, 217 USPQ 804 (PTO Bd. Pat. App. 1982) No deposit is required, however, where the required biological materials can be obtained from publicly available material with only routine experimentation and a reliable screening test. *Tabuchi v. Nubel*, 559 F.2d 1183, 194 USPQ 521 (CCPA 1977); *Ex Parte Hata*, 6 USPQ 2d 1652 (PTO Bd. Pat. App. & Int. 1987).

Once a deposit is made in a depository complying with these rules, and under conditions complying with these rules, a biological material will be considered to be readily available even though some requirement of law or regulation in the United States or in the country where the depository institution is located permits access to the material only under conditions imposed for health, safety or similar reasons. This provision is consistent with the Budapest Treaty (Article 5) and is designed to permit the patenting of inventions involving materials having restricted distribution, where the restrictions are imposed for the public, as opposed to the private, welfare.

Paragraph (c) specifically provides that the mere reference to a deposit of biological material in the specification disclosure or the actual deposit of such material does not create any presumption that such referenced or deposited material is necessary to satisfy 35 U.S.C. 112, or that a deposit in accordance with these regulations is or was required. Since reference to a biological material cannot be added to a specification disclosure after filing an application without risking the prohibited introduction of new matter (35 U.S.C. 132), applicants must be permitted to address the need to make a deposit in accordance with these regulations without jeopardizing a filing date. Thus, the examiner has the burden of showing that a deposit is required to satisfy 35 U.S.C. 112, and cannot rely on whether a deposit has been made or has been referenced in the specification disclosure to establish a prima facie case that the disclosure does not comply with 35 U.S.C. 112 without deposit.

ACCEPTABLE DEPOSITORY [§ 1.803]

This section indicates that a depository will be recognized as acceptable for the purposes of these regulations if it is either an International Depository Authority (IDA) established under the Budapest Treaty, or if it is a depository recognized as suitable by the Commissioner. After the effective date of these regulations, a deposit of biological material which is made in a depository which is not recognized as acceptable under this regulation will not be considered as satisfying the requirements of 35 U.S.C. 112. On the other hand, if a deposit is not required to satisfy the requirements of 35 U.S.C. 112, it is permissible to make reference to such a deposit even though it may not be in

a depository or made under the conditions which are acceptable under these regulations. As new depositories are accepted under the Budapest Treaty or are recognized as suitable by the Commissioner, their identity will be announced in the *Official Gazette*.

An organization may be recognized as suitable by the Office if the procedure and conditions specified in paragraphs (a)(2) and (b) are followed. Generally, it is not the intention of the Office to recognize as suitable any organization where the need for a suitable depository for patent purposes is being met by depositories recognized as IDAs under the Budapest Treaty. Suitability will be judged by the Commissioner, based on need and the information supplied by the organization seeking status, and information obtained from other sources that may be consulted.

While there is a desire to provide flexibility to a patent applicant in selecting an appropriate depository, these rules are not intended to permit each patent applicant to become its own depository since both the patent owner and the public have an interest in the continued availability and accessibility of the deposit during the enforceable life of the patent, and the public has a continuing interest in its availability when the patent is no longer enforceable. The concept of a depository independent of the control of the depositor or an IDA as an acceptable depository is based on the need and desire to ensure the safe and reliable storage of a deposited biological material under circumstances that are substantially free of the opportunity for intentional or negligent handling of the deposited material. The use of an independent depository or internationally recognized depository will tend to preserve the integrity of the deposit process against those that may accidentally alter the deposited material, may wish to tamper with the deposited material or may wish to resume control of its availability when the patent is no longer enforceable, and to preserve the interest of the public in the access to the biological material once the term of the patent expires.

When a depository having status under paragraph (a)(2) of this regulation seeks to change the kinds of biological materials that it will accept and maintain for the purposes of these rules, a communication requesting such a change should be directed to the Commissioner containing the information requested in paragraph (b). When such a change is requested, the requesting organization should provide a complete list of the kinds of biological materials it will accept.

Paragraph (d) of this section indicates that once a depository is recognized as suitable for the purposes of this rule, or has defaulted or discontinued its performance under this section, notice thereof will be published in the *Official Gazette* of the Patent and Trademark Office. A current list of IDAs recognized under the Budapest Treaty is as follows:

Agricultural Research Culture Collection (NRRL) - USA
American Type Culture Collection (ATCC) - USA
Australian Government Analytical Laboratories (AGAL) - Australia
Centraalbureau Voor Schimmelcultures (CBS) - Netherlands
Collection Nationale De Culture De Micro-organismes (CNCM) - France
Commonwealth Agricultural Bureau (CAB), International - Mycological Institute - United Kingdom
Culture Collection of Algae and Protozoa (CCAP) - United Kingdom
Deutsche Sammlung Von Mikroorganismen (DSM) - Federal Republic of Germany
European Collection of Animal Cell Cultures (ECACC) - United Kingdom
Fermentation Research Institute (FRI) - Japan
Institute of Micro-organism Biochemistry and Physiology of the USSR Academy of Science (IBFM) - Soviet Union
In Vitro International, Inc. (IVI) - USA
Mezozagdasagi Es Ipari Mikroorganizmusok Magyar Nemzeti Gyujtemenye (MIMNG) - Hungary
National Bank for Industrial Microorganisms and Cell Cultures (NBIMCC) - Bulgaria
National Collection of Industrial Bacteria (NCIB) - United Kingdom
National Collection of Type Cultures (NCTC) - United Kingdom
National Collection of Yeast Cultures (NCYC) - United

Kingdom

USSR Research Institute for Antibiotics of the USSR Ministry of the Medical and Microbiological Industry (VNIIAA) - Soviet Union

USSR Research Institute for Genetics and Industrial Microorganism Breeding of the USSR Ministry of the Medical and Microbiological Industry (VNI Genetika) Soviet Union

TIME OF MAKING AN ORIGINAL DEPOSIT [§ 1.804]

This section specifies the time for making an original deposit to fulfill the requirements of 35 U.S.C. 112. Paragraph (a) specifies not only a permissible time frame for making an original deposit, but also specifies that the biological material deposited must be specifically identified in the application for patent as filed. The requirement for a specific identification is consistent with the description requirement of the first paragraph of 35 U.S.C. 112, and to provide an antecedent basis for the biological material which either has been or will be deposited before the patent is granted.

The description in the Lundak application as filed (now patent 4,594,325) provides a suitable illustration of the specific identification and description which is required in an application for patent as filed. In that application, an immortal B-cell line was disclosed and claimed. The cell line was referred to in the application as filed as WI-L2-729 HF2. The methods of obtaining and using this cell line were also described in the application as filed. A deposit of the cell line was made with the American Type Culture Collection (ATCC) about a week after the application was filed in the United States. The United States Court of Appeals for the Federal Circuit held that the requirements of access by the Office to a sample of the cell line during pendency, and public access after grant, were met by Lundak's procedures. The Court further held that the addition of information designating the depository, accession number, and deposit date of the deposited cell line in ATCC after the filing date did not violate the prohibition against new matter in 35 U.S.C. 132. *In re Lundak*, 773 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985). It must be clear from the application as filed that the invention claimed and described in the specification "was fully capable of being reduced to practice (i.e., no technological problems, the resolution of which would require more than ordinary skill and reasonable time, remained in order to obtain an operative, useful process)." *Feldman v. Aunstrup*, 517 F.2d 1351, 1355, 186 USPQ 108, 113 (CCPA 1975), *cert. denied*, 424 U.S. 912 (1976).

When the original deposit is made after the effective filing date of an application for patent, applicant is required to promptly submit a verified statement from a person in a position to corroborate that the biological material which is deposited is a biological material specifically identified in the application (the filing date of which is relied upon) as filed. The nature of this corroboration will depend on the circumstances in the particular application under consideration, including the length of time between the application filing date and the date of deposit. While few, if any, situations can be imagined where the description requirement of 35 U.S.C. 112 can be satisfied where the biological material was not in existence at the time of filing, the rules do not preclude such a situation. There is no requirement in the patent law that an actual reduction to practice occur as a condition precedent to filing a patent application. The requirement for a verified statement is not necessary under paragraph (b) of this section if the person making the statement is an attorney or agent registered to practice before the Office.

For the purposes of complying with the requirements of 35 U.S.C. 112, a deposit of a biological material may be made at any time before filing the application for patent or during the pendency of the application subject to the conditions of § 1.809. Where the deposit is needed to satisfy the requirement of 35 U.S.C. 112 and is made during the pendency of the application, it must be made no later than the time period set by the examiner at the time the Notice of Allowance and Issue Fee Due is mailed. A necessary deposit need not be made by applicant until the application is in condition for allowance so long as applicant provides a written assurance that an acceptable deposit will be made on or before the payment of the issue fee. This written assurance must provide sufficiently detailed informa-

tion to convince the examiner that there is no outstanding issue regarding deposits that needs to be resolved.

Those applicants intending to file patent applications in a country foreign to the United States relying upon biological material that must be deposited to satisfy the requirements of 35 U.S.C. 112 when the application is filed in the United States are cautioned that in many countries the deposit must be made before the filing date of the priority application in order to obtain foreign priority rights. Thus, while the deposit of a biological material subsequent to the effective filing date of a United States application is sufficient to comply with 35 U.S.C. 112, an applicant may not be able to rely on the filing date of such a U.S. application if a patent is sought in a country foreign to the United States.

REPLACEMENT OR SUPPLEMENT OF DEPOSIT [§ 1.805]

This section relates to the deposit of a biological material to replace or supplement a previous deposit. The term "replacement" is directed to those situations where one deposit is being substituted for another. An applicant may have greater latitude in replacing a deposit during the pendency of an application than after the patent is granted. Replacement will typically take place where the earlier deposit is no longer viable. The term "supplement" is directed to those situations where the earlier deposit is still viable in the sense that it is alive and capable of replication either directly or indirectly, but has lost a quality (e.g., purity, functionality) it allegedly possessed at the time the application was filed. The procedures in these rules contemplate that only the original depositor would have a right to replace or supplement the original deposit.

Paragraph (a) relates to the procedure for replacing or supplementing a deposit with respect to a pending application or a patent. An applicant for patent or patent owner whose patent is the subject of a reissue application or reexamination proceeding is required to notify the Office when it obtains information that the depository possessing a deposit either cannot furnish samples thereof or can furnish samples thereof but the deposit has become contaminated or has lost its capability to function as described in the specification. When the Office is so notified or otherwise becomes aware of such information, the need for making a replacement or supplemental deposit will be determined by the same considerations used to determine the need for an original deposit under § 1.802(b).

A replacement or supplemental deposit made in connection with a pending application for patent will be accepted if it meets all the requirements for making an original deposit. It should be noted that for a pending application for patent, applicant need not replace or supplement the identical material previously deposited, but may make an original deposit of a biological material which is specifically identified and described in the application as filed. Whether this alternative deposit will meet the requirements of 35 U.S.C. 112 with respect to the claimed subject matter must be resolved by the examiner on a case-by-case basis.

A replacement or supplemental deposit made in connection with a patent, whether or not it is the subject of a pending reissue application or reexamination proceeding, shall not be recognized in any Office proceeding unless a certificate of correction under § 1.323 is requested by the patent owner which meets the terms of paragraphs (b) and (c) of this section. These paragraphs specify the procedures that a patent owner must follow to ensure both that a replacement or supplemental deposit will be recognized in any Office proceeding and that a certificate of correction under this section containing "up to date" information about a deposited biological material will be granted. The term "recognized in any Office proceeding" as used in this section includes the proceeding in which a request for certificate of correction under this section is acted upon. Paragraph (b) describes the information which must be contained in the certificate of correction, whereas paragraph (c) describes when the request must be made and the information which must be provided in the request to make the correction. The rules require, *inter alia*, that replacement or supplement of a deposit be made diligently, followed by prompt request thereafter for a certificate of correction, as conditions precedent to being recognized in any Office proceeding. Thus, for example, if a patent owner learns early during the term of the patent that the depository cannot furnish samples of a deposit described in the patent

and the patent owner fails to both diligently make a replacement deposit and promptly thereafter request a certificate of correction under these rules, a replacement deposit made years later when the patent becomes the subject of a reissue application or reexamination proceeding will not be recognized by the Office nor will any request for certificate of correction in connection with that deposit be granted.

Where a proper request for certificate of correction is made and has been granted, any correction made to the original patent will be automatically incorporated into any reissued or reexamined patent unless changes are made during examination of the reissue application or reexamination proceeding.

Paragraph (d) of § 1.805 sets forth the Office position that the failure to make a replacement deposit or, in the case of a patent, diligently make a replacement deposit and promptly thereafter request a certificate of correction which meets the terms of paragraphs (b) and (c) of this section, after notification that samples of an earlier deposit cannot be furnished, shall cause the application or patent involved to be treated in any Office proceeding as if no deposit were made.

Paragraph (e) thereof indicates that the Office will apply a rebuttable presumption of an identity between the replacement deposit and an original deposit where a patent making reference to the deposit is relied on during any Office proceeding. This means that where a replacement deposit is permitted and made, the examiner will assume that the same material as described in the patent is accessible from the identified depository unless evidence to the contrary comes to the attention of the Office.

An applicant for patent may make a replacement or supplemental deposit during the pendency of the application for any reason. The provisions of paragraph (f) of § 1.805 recognize that since an original deposit may be made during the pendency of the application subject to the conditions of § 1.809, a replacement or supplemental deposit logically cannot be held to any higher standard or any further requirements. Likewise, the provisions of paragraph (g) indicate that neither a replacement nor a supplemental deposit need be made where, at the point in time when replacement or supplement would otherwise be necessary, access to the necessary biological material was otherwise available. For example, a replacement or supplemental deposit would not be required under the circumstances where access to the necessary biological material was established through commercial suppliers.

The provisions of paragraph (h) of § 1.805 indicate that a replacement deposit is not required even though the depository cannot furnish samples, under certain conditions, to those requesting a sample outside of the jurisdiction where the depository is located. The conditions are specified in this paragraph as being limited to national security, health or environmental safety reasons.

Finally, paragraph (i) of this section indicates that the Office will not recognize in any Office proceeding a replacement deposit made by the patent owner where the depository could furnish samples of the deposit being replaced. The best evidence of what was originally deposited should not be lost through destruction or replacement if made in association with an existing patent. A supplemental deposit may be accepted in an Office proceeding, however, depending on the circumstances in each case.

TERM OF DEPOSIT [§ 1.806]

The term of deposit must satisfy the requirements of the Budapest Treaty which sets a term of at least 30 years from the date of deposit and at least five (5) years after the most recent request for the furnishing of a sample of the deposit was received by the depository. In the event that the 30-year term covers the 17-year term of the patent plus six (6) years to include the Statute of Limitations, no further requirement is necessary. The mere possibility of patent term extension or extended litigation involving the patent should not be considered in this analysis.

In the event that the 30-year term of deposit measured from the date of deposit would necessarily terminate within the period of enforceability of the patent (normally the 17-year term plus six (6) years), samples must be stored under agreements that would make them available beyond the enforceable life of the patent for which the deposit was made. No requirement should be made as to any particular period of time beyond the enforce-

able life of the patent. The purpose of the requirement is to insure that a deposited biological material necessary for the practice of a patented invention would be available to the public after expiration of the patent for which the deposit was made. The term of the deposit must comply with the requirements of each sentence of § 1.806 whether or not the deposit is made under the Budapest Treaty. A specific statement that the deposit complies with the second sentence of this section is required only where the 30-year term would terminate within the enforceable life of the patent.

VIABILITY OF DEPOSITS [§ 1.807]

This section requires that the deposit of biological material that is capable of self-replication either directly or indirectly must be viable at the time of deposit and during the term of deposit. This requirement for viability is essentially a requirement that the deposited material is capable of reproduction. For the purpose of making a deposit under these rules, there is no requirement that evidence be provided that the deposited material is capable or has the ability to perform any function described in the patent application. However, as with any other issue of description or enablement, if the examiner has evidence or reason to question the objective statements made in the patent application, applicants may be required to demonstrate that the deposited biological material will perform in the manner described.

Under the Budapest Treaty, there is a requirement that the deposit be tested for viability before it is accepted. Thus, a mere statement by applicant, an authorized representative of applicant or the assignee that the deposit has been accepted under the Budapest Treaty would satisfy § 1.807.

For each deposit which is not made under the Budapest Treaty, a viability statement must be filed in the patent application and contain the information listed in paragraph (b) of this section. Under paragraph (c), the examiner will accept the conclusion set forth in a viability statement which is issued by a depository recognized under § 1.803(a). If the viability test indicates that the deposit is not viable upon receipt, or the examiner cannot for scientific or other valid reasons accept the statement of viability received from the applicant, the examiner shall so notify the applicant stating the reasons for not accepting the statement and proceed with the examination process as if no deposit had been made.

FURNISHING OF SAMPLES [§ 1.808]

This section requires that the deposit of biological material be made under two (2) conditions:

- (1) access to the deposit will be available during pendency of the patent application making reference to the deposit to one determined by the Commissioner to be entitled thereto under § 1.14 and 35 U.S.C. 122, and
- (2) with one exception, that all restrictions imposed by the depositor on the availability to the public of the deposited biological material will be irrevocably removed upon the granting of the patent.

The one exception that is permitted is specified in paragraph (b) of this section which permits the depositor to contract with the depository to require that samples of a deposited biological material shall be furnished only if a request for a sample, during the term of the patent meets any one or all of the three conditions specified in this paragraph. These conditions are:

- (1) the request is in writing or other tangible form and dated; and/or
- (2) the request contains the name and address of the requesting party and the accession number of the deposit; and/or
- (3) the request is communicated in writing by the depository to the depositor along with the date on which the sample was furnished and the name and address of the party to whom the sample was furnished.

It should be noted that this exception to the general rule that all restrictions will be removed must be strictly followed and that no variations of this explicit exception will be accepted as meeting the conditions of this section. This exception is consistent with the provisions in the Budapest Treaty and its implementing regulations (Rule 11.4).

Since the mere description of a deposit or identity of a deposit in a patent specification is not necessarily an indication that a requirement for deposit was made or that a deposit which complies with these rules has been made, accessibility to a deposited material referenced in a patent may depend on the satisfaction of conditions not apparent on the face of the patent. For these reasons, and upon request made to the Patent and Trademark Office, the Office will certify whether a deposit has been stated to have been made under conditions which would make it available to the public as of the issue date of the patent grant provided the request is made to the Director of Patent Examining Group 180, and contains the following information:

- (1) the name and address of the depository
- (2) the accession number given to the deposit
- (3) the patent number and issue date of the patent referring to the deposit and
- (4) the name and address of the requesting party.

For those deposits made pursuant to the Budapest Treaty, the World Intellectual Property Organization provides a form (Form BP-12) for requesting a certification of the availability of samples of deposited microorganisms pursuant to Rule 11.3(a) of the regulations under the Budapest Treaty. Copies of this form are available from the Director of Patent Examining Group 180.

EXAMINATION PROCEDURES [§ 1.809]

This section sets forth procedures that will be used by the examiner to address a deposit issue. Deposit issues may arise in the examination of claims in applications for patent and for reissue of a patent, and in the examination of new or amended claims in a reexamination proceeding. The burden is initially on the Office to establish that access to a biological material is necessary for the satisfaction of the statutory requirements for patentability under 35 U.S.C. 112. Once the Office has met this burden, the burden shifts to the applicant or patent owner to demonstrate that access to such biological material either is not necessary or is already available, or that a deposit of such material is being or will be made, replaced or supplemented in accordance with these regulations.

Under paragraph (a) of this section, once the examiner has determined that access to a biological material is necessary, and that access is not presently available in accordance with these regulations, the examiner should make an appropriate rejection under 35 U.S.C. 112.

The applicant or patent owner may respond, pursuant to paragraph (b)(2) of this section, to a rejection made under paragraph (a) thereof by arguing why a deposit is not needed under the circumstances and/or why a deposit actually made should be acceptable. Other prescribed responses which are available to such a rejection depend upon whether the rejection is made in an application for patent, on the one hand, or in a proceeding involving a patent, i.e., an application for reissue patent or reexamination proceeding, on the other hand.

In an application for patent, applicant may respond, pursuant to paragraph (b)(1) of this section, by either making an acceptable original, replacement or supplemental deposit in accordance with these regulations, or assuring the Office in writing that an acceptable deposit will be made on or before the date of payment of the issue fee. In a proceeding involving a patent, the patent owner may respond, pursuant to paragraph (b)(1) of this section, by requesting a certificate of correction of the patent which meets the terms of paragraphs (b) and (c) of § 1.805. In all cases, any other response shall be considered non-responsive. The rejection will be repeated and made final until the requirements of paragraph (b)(1) of this section are satisfied or the examiner is convinced that a deposit is not required for the claimed subject matter.

As set forth in paragraph (c) of this section, in the event that an application for patent is otherwise in condition for allowance except for a needed deposit and the Office has received a written assurance that an acceptable deposit will be made, the Office will mail to the applicant a requirement that the needed deposit be made within three (3) months together with the Notice of Allowance and Issue Fee Due. Although the period for paying the issue fee cannot be extended under the provisions of § 1.136, the period for satisfying the requirement to make an acceptable deposit may be extended under

the provisions of that section. Failure to make the needed deposit in accordance with this requirement may be considered a failure to prosecute the application under 35 U.S.C. 133 and result in abandonment of the application.

The type of written assurance which will be considered acceptable by the Office that an acceptable deposit will be made within the required time must include sufficient information to conclude that there is no outstanding issue with regard to the deposit of an appropriate biological material under conditions which satisfy these rules.

In a proceeding involving a patent, it may not be possible to request a certificate of correction of the patent which meets the terms of paragraphs (b) and (c) of § 1.805. For example, if the patent owner is on notice that samples of an original deposit can no longer be furnished by the depository, failure to diligently make a replacement deposit will preclude grant of a certificate of correction. A replacement deposit subsequently made will not be recognized by the Office nor will a request for certificate of correction, even if made promptly thereafter, be granted. It would also not be possible to request a certificate of correction of the patent which meets the terms of paragraphs (b) and (c) of § 1.805 where no original deposit was made before or during the pendency of the application which matured into the patent.

A patent defective because of lack of a necessary deposit is necessarily fatally defective for failure to comply with the first paragraph of 35 U.S.C. 112. Reissue is not available in such cases. See *In re Hay*, 534 F.2d 917, 189 USPQ 790 (CCPA 1976). Whether reissue is available where a biological material necessary for compliance with 35 U.S.C. 112 was known and readily available at the time of issuance of the patent and subsequently ceased to be readily available is problematic. Nevertheless, the rules do not provide for post-issue original deposits.

Where an applicant for patent has any doubt whether access to a biological material specifically identified in the specification is necessary to satisfy 35 U.S.C. 112 or whether such a material, while presently freely available, may become unavailable in the future, the applicant would be well-advised to make a deposit thereof before any patent issues. Similarly, where a patent owner has any doubt whether a deposit referred to in the specification is of a biological material necessary to satisfy 35 U.S.C. 112 and, if the material is necessary, whether it is otherwise known and readily available, the patent owner would be well-advised to follow the procedures set forth in paragraphs (b) and (c) of 1.805 after receiving the notice specified in those paragraphs.

Paragraph (d) of this section sets forth the requirements for the content of the specification with respect to a deposited biological material. Specifically, the specification shall contain the accession number for the deposit, the date of the deposit, the name and address of the depository, and a description of the deposited biological material sufficient to specifically identify it and to permit examination. The description must be sufficient to permit verification that the deposited biological material is in fact that disclosed. Once the patent issues, the description must be sufficient to aid in the resolution of questions of infringement. As a general rule, the more information that is provided about a particular deposited biological material, the better the examiner will be able to compare the identity and characteristics of the deposited biological material with the prior art.

OTHER CONSIDERATIONS

The rules are in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel has certified to the Chief Counsel for Advocacy, Small Business Administration, that this rule change is not expected to have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The deposit practice will not impose extra work on patent applicants (whether small or large businesses or individuals).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million.

There will be no major increases in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions. There will be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rules contain a collection of information requirement subject to the Paperwork Reduction Act which has been approved by the Office of Management and Budget under Control No. 0651-0022. Public reporting burden for this collection of information is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed to make a deposit or request a sample, and completing and reviewing the collection of information. It is further estimated that a respondent depository would spend about five hours collecting and submitting the necessary information to be recognized as a suitable depository by the Office. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Organization, Patent and Trademark Office, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 2050 (Paperwork Reduction Project 0651-0022). No comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, were received in response to the notice of proposed rulemaking.

LIST OF SUBJECTS IN 37 CFR PART 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and record-keeping requirements, Small business.

For the reasons set out in the preamble, 37 CFR Part 1 is being amended as follows:

PART 1-RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. A new Subpart G - Biotechnology Invention Disclosures, consisting of centered heading - Deposit of Biological Materials - and new §§ 1.801 to 1.809 are added to read as follows:

Subpart G - Biotechnology Invention Disclosures

Deposit of Biological Material

Sec.

- 1.801 Biological material.
- 1.802 Need or Opportunity to make a deposit.
- 1.803 Acceptable depository.
- 1.804 Time of making an original deposit.
- 1.805 Replacement or supplement of deposit.
- 1.806 Term of deposit.
- 1.807 Viability of deposit.
- 1.808 Furnishing of samples.
- 1.809 Examination procedures.

Subpart G - Biotechnology Invention Disclosures

Authority: 35 U.S.C. 6

Deposit of Biological Material

§ 1.801 Biological material.

For the purposes of these regulations pertaining to the deposit of biological material for purposes of patents for inventions under 35 U.S.C. 101, the term biological material shall include material that is capable of self-replication either directly or

indirectly. Representative examples include bacteria, fungi including yeast, algae, protozoa, eukaryotic cells, cell lines, hybridomas, plasmids, viruses, plant tissue cells, lichens and seeds. Viruses, vectors, cell organelles and other non-living material existing in and reproducible from a living cell may be deposited by deposit of the host cell capable of reproducing the non-living material.

§ 1.802 Need or Opportunity to make a deposit.

(a) Where an invention is, or relies on, a biological material, the disclosure may include reference to a deposit of such biological material.

(b) Biological material need not be deposited unless access to such material is necessary for the satisfaction of the statutory requirements for patentability under 35 U.S.C. 112. If a deposit is necessary, it shall be acceptable if made in accordance with these regulations. Biological material need not be deposited, *inter alia*, if it is known and readily available to the public or can be made or isolated without undue experimentation. Once deposited in a depository complying with these regulations, a biological material will be considered to be readily available even though some requirement of law or regulation of the United States or of the country in which the depository institution is located permits access to the material only under conditions imposed for safety, public health or similar reasons.

(c) The reference to a biological material in a specification disclosure or the actual deposit of such material by an applicant or patent owner does not create any presumption that such material is necessary to satisfy 35 U.S.C. 112 or that deposit in accordance with these regulations is or was required.

§ 1.803 Acceptable depository.

(a) A deposit shall be recognized for the purposes of these regulations if made in

(1) any International Depositary Authority (IDA) as established under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, or

(2) any other depository recognized to be suitable by the Office. Suitability will be determined by the Commissioner on the basis of the administrative and technical competence, and agreement of the depository to comply with the terms and conditions applicable to deposits for patent purposes. The Commissioner may seek the advice of impartial consultants on the suitability of a depository. The depository must:

- (i) Have a continuous existence;
- (ii) Exist independent of the control of the depositor;
- (iii) Possess the staff and facilities sufficient to examine the viability of a deposit and store the deposit in a manner which ensures that it is kept viable and uncontaminated;
- (iv) Provide for sufficient safety measures to minimize the risk of losing biological material deposited with it
- (v) Be impartial and objective;
- (vi) Furnish samples of the deposited material in an expeditious and proper manner; and
- (vii) Promptly notify depositors of its inability to furnish samples, and the reasons why.

(b) A depository seeking status under paragraph (a)(2) of this section must direct a communication to the Commissioner which shall:

- (1) Indicate the name and address of the depository to which the communication relates;
- (2) Contain detailed information as to the capacity of the depository to comply with the requirements of paragraph (a)(2) of this section, including information on its legal status, scientific standing, staff and facilities;
- (3) Indicate that the depository intends to be available, for the purposes of deposit, to any depositor under these same conditions;
- (4) Where the depository intends to accept for deposit only certain kinds of biological material, specify such kinds;
- (5) Indicate the amount of any fees that the depository will, upon acquiring the status of suitable depository under paragraph (a)(2) of this section, charge for storage, viability statements and furnishings of samples of the deposit.

(c) A depository having status under paragraph (a)(2) of this section limited to certain kinds of biological material may

extend such status to additional kinds of biological material by directing a communication to the Commissioner in accordance with paragraph (b) of this section. If a previous communication under paragraph (b) of this section is of record, items in common with the previous communication may be incorporated by reference.

(d) Once a depository is recognized to be suitable by the Commissioner or has defaulted or discontinued its performance under this section, notice thereof will be published in the *Official Gazette* of the Patent and Trademark Office.

§ 1.804 Time of making an original deposit.

(a) Whenever a biological material is specifically identified in an application for patent as filed, an original deposit thereof may be made at any time before filing the application for patent or, subject to § 1.809, during pendency of the application for patent.

(b) When the original deposit is made after the effective filing date of an application for patent, the applicant shall promptly submit a verified statement from a person in a position to corroborate the fact, and shall state, that the biological material which is deposited is a biological material specifically identified in the application as filed, except if the person is an attorney or agent registered to practice before the Office, in which case the statement need not be verified.

§ 1.805 Replacement or supplement of deposit.

(a) A depositor, after receiving notice during the pendency of an application for patent, application for reissue patent or reexamination proceeding, that the depository possessing a deposit either cannot furnish samples thereof or can furnish samples thereof but the deposit has become contaminated or has lost its capability to function as described in the specification, shall notify the Office in writing, in each application for patent or patent affected. In such a case, or where the Office otherwise learns, during the pendency of an application for patent, application for reissue patent or reexamination proceeding, that the depository possessing a deposit either cannot furnish samples thereof or can furnish samples thereof but the deposit has become contaminated or has lost its capability to function as described in the specification, the need for making a replacement or supplemental deposit will be governed by the same considerations governing the need for making an original deposit under the provisions set forth in § 1.802(b). A replacement or supplemental deposit made during the pendency of an application for patent shall not be accepted unless it meets the requirements for making an original deposit under these regulations, including the requirement set forth under § 1.804(b). A replacement or supplemental deposit made in connection with a patent, whether or not made during the pendency of an application for reissue patent or a reexamination proceeding or both, shall not be accepted unless a certificate of correction under § 1.323 is requested by the patent owner which meets the terms of paragraphs (b) and (c) of this section.

(b) A request for certificate of correction under this section shall not be granted unless the certificate identifies:

- (1) The accession number for the replacement or supplemental deposit;
- (2) The date of the deposit; and
- (3) The name and address of the depository.

(c) A request for a certificate of correction under this section shall not be granted unless the request is made promptly after the replacement or supplemental deposit has been made and:

- (1) Includes a verified statement of the reason for making the replacement or supplemental deposit;
- (2) Includes a verified statement from a person in a position to corroborate the fact, and shall state, that the replacement or supplemental deposit is of a biological material which is identical to that originally deposited;
- (3) Includes a verified showing that the patent owner acted diligently—

(i) In the case of a replacement deposit, in making the deposit after receiving notice that samples could no longer be furnished from an earlier deposit, or

(ii) In the case of a supplemental deposit, in making the deposit after receiving notice that the earlier deposit had become

contaminated or had lost its capability to function as described in the specification;

(4) Includes a verified statement that the term of the replacement or supplemental deposit expires no earlier than the term of the deposit being replaced or supplemented; and

(5) Otherwise establishes compliance with these regulations, except that if the person making one or more of the required statements or showing is an attorney or agent registered to practice before the Office, that statement or showing need not be verified.

(d) A depositor's failure to replace a deposit, or in the case of a patent, to diligently replace a deposit and promptly thereafter request a certificate of correction which meets the terms of paragraphs (b) and (c) of this section, after being notified that the depository possessing the deposit cannot furnish samples thereof, shall cause the application or patent involved to be treated in any Office proceeding as if no deposit were made.

(e) In the event a deposit is replaced according to these regulations, the Office will apply a rebuttable presumption of identity between the original and the replacement deposit where a patent making reference to the deposit is relied upon during any Office proceeding.

(f) A replacement or supplemental deposit made during the pendency of an application for patent may be made for any reason.

(g) In no case is a replacement or supplemental deposit of a biological material necessary where the biological material, in accordance with 1.802(b), need not be deposited.

(h) No replacement deposit of a biological material is necessary where a depository can furnish samples thereof but the depository for national security, health or environmental safety reasons is unable to provide samples to requesters outside of the jurisdiction where the depository is located.

(i) The Office will not recognize in any Office proceeding a replacement deposit of a biological material made by a patent owner where the depository could furnish samples of the deposit being replaced.

§ 1.806 Term of deposit.

A deposit made before or during pendency of an application for patent shall be made for a term of at least thirty (30) years and at least five (5) years after the most recent request for the furnishing of a sample of the deposit was received by the depository. In any case, samples must be stored under agreements that would make them available beyond the enforceable life of the patent for which the deposit was made.

§ 1.807 Viability of deposit.

(a) A deposit of biological material that is capable of self-replication either directly or indirectly must be viable at the time of deposit and during the term of deposit. Viability may be tested by the depository. The test must conclude only that the deposited material is capable of reproduction. No evidence is necessarily required regarding the ability of the deposited material to perform any function described in the patent application.

(b) A viability statement for each deposit of a biological material defined in paragraph (a) of this section not made under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure must be filed in the application and must contain:

- (1) The name and address of the depository;
- (2) The name and address of the depositor;
- (3) The date of deposit;
- (4) The identity of the deposit and the accession number given by the depository;
- (5) The date of the viability test;
- (6) The procedures used to obtain a sample if the test is not done by the depository; and
- (7) A statement that the deposit is capable of reproduction.

(c) If a viability test indicates that the deposit is not viable upon receipt, or the examiner cannot, for scientific or other valid reasons, accept the statement of viability received from the applicant, the examiner shall proceed as if no deposit has been made. The examiner will accept the conclusion set forth in a viability statement issued by a depository recognized under

§ 1.803(a).

§ 1.808 Furnishing of samples.

(a) A deposit must be made under conditions that assure that:

(1) Access to the deposit will be available during pendency of the patent application making reference to the deposit to one determined by the Commissioner to be entitled thereto under § 1.14 and 35 U.S.C. 122, and

(2) Subject to paragraph (b) of this section, all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of the patent.

(b) The depositor may contract with the depository to require that samples of a deposited biological material shall be furnished only if a request for a sample, during the term of the patent:

(1) Is in writing or other tangible form and dated;

(2) Contains the name and address of the requesting party and the accession number of the deposit; and

(3) Is communicated in writing by the depository to the depositor along with the date on which the sample was furnished and the name and address of the party to whom the sample was furnished.

(c) Upon request made to the Office, the Office will certify whether a deposit has been stated to have been made under conditions which make it available to the public as of the issue date of the patent grant provided the request contains:

(1) The name and address of the depository;

(2) The accession number given to the deposit;

(3) The patent number and issue date of the patent referring to the deposit; and

(4) The name and address of the requesting party.

§ 1.809 Examination procedures.

(a) The examiner shall determine pursuant to § 1.104 in each application for patent, application for reissue patent or reexamination proceeding if a deposit is needed, and if needed, if a deposit actually made is acceptable for patent purposes. If a deposit is needed and has not been made or replaced or supplemented in accordance with these regulations, the examiner, where appropriate, shall reject the affected claims under the appropriate provision of 35 U.S.C. 112, explaining why a deposit is needed and/or why a deposit actually made cannot be accepted.

(b) The applicant for patent or patent owner shall respond to a rejection under paragraph (a) of this section by

(1) In the case of an applicant for patent, making an acceptable original or replacement or supplemental deposit or assuring the Office in writing that an acceptable deposit will be made on or before the date of payment of the issue fee, or, in the case of a patent owner, requesting a certificate of correction of the patent which meets the terms of paragraphs (b) and (c) of § 1.805, or

(2) Arguing why a deposit is not needed under the circumstances of the application or patent considered and/or why a deposit actually made should be accepted. Other replies to the examiner's action shall be considered non-responsive. The rejection will be repeated until either paragraph (b)(1) of this section is satisfied or the examiner is convinced that a deposit is not needed.

(c) If an application for patent is otherwise in condition for allowance except for a needed deposit and the Office has received a written assurance that an acceptable deposit will be made on or before payment of the issue fee, the Office will mail to the applicant a Notice of Allowance and Issue Fee Due together with a requirement that the needed deposit be made within three months. The period for satisfying this requirement is extendable under § 1.136. Failure to make the needed deposit in accordance with this requirement will result in abandonment of the application for failure to prosecute.

(d) For each deposit made pursuant to these regulations, the specification shall contain:

(1) The accession number for the deposit;

(2) The date of the deposit;

(3) A description of the deposited biological material sufficient to specifically identify it and to permit examination; and

(4) The name and address of the depository.

Dated: July 21, 1989

DONALD J. QUIGG
Assistant Secretary and Commissioner
of Patents and Trademarks

[1106 OG 37]

(69) Means Or Step Plus Function Limitation Under 35 U.S.C. § 112, 6th Paragraph

The following guidelines have been distributed to patent examiners for guidance on examining practice and procedure relating to limitations falling under 35 U.S.C. § 112, 6th paragraph, after *In re Donaldson*, 29 USPQ2d 1845 (Fed. Cir. 1994). These guidelines will be incorporated into the Manual of Patent Examining Procedure.

April 20, 1994

CHARLES E. VAN HORN
Patent Policy and Projects Administrator

**Examination Guidelines For Claims
Reciting A "Means or Step Plus Function" Limitation
In Accordance With 35 U.S.C. § 112, 6th Paragraph**

The purpose of this memo is to set forth guidelines for the examination of § 112, 6th paragraph "means or step plus function" limitations in a claim. The court of Appeals for the Federal Circuit, in its en banc decision *In re Donaldson*, 29 USPQ2d 1845 (Fed. Cir. 1994), decided that a "means-or-step-plus-function" limitation should be interpreted in a manner different than patent examining practice has dictated for at least the last forty-two years. The *Donaldson* decision affects only the manner in which the scope of a "means or step plus function" limitation in accordance with § 112, 6th paragraph, is interpreted during examination. *Donaldson* does not directly affect the manner in which any other section of the patent statutes is interpreted or applied. When making a determination of patentability under 35 U.S.C. §§ 102 or 103, past practice was to interpret a "means or step plus function" limitation by giving it the "broadest reasonable interpretation." Under the PTO's long-standing practice this meant interpreting such a limitation as reading on any prior art means or step which performed the function specified in the claim without regard to whether the prior art means or step was equivalent to the corresponding structure, material or acts described in the specification. However, in *Donaldson* the Federal Circuit stated that: Per our holding, the "broadest reasonable interpretation" that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination.¹ Thus, effective immediately, examiners shall interpret a § 112, 6th paragraph "means or step plus function" limitation in a claim as limited to the corresponding structure, materials or acts described in the specification and equivalents thereof in accordance with the following guidelines.

I. Identifying a § 112, 6th paragraph limitation

Although there is no magic language that must appear in a claim in order for it to fall within the scope of § 112, 6th paragraph, it must be clear that the element in the claim is set forth, at least in part, by the function it performs as opposed to the specific structure, material, or acts that perform the function. Limitations that fall within the scope of § 112, 6th paragraph include: (1) a jet driving device so constructed and

¹*In re Donaldson*, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994).

located on the rotor as to drive the rotor . . .² ["means" unnecessary]

(2) "printing means" and "means for printing" would have the same connotations³

(3) force generating means adapted to provide . . .⁴

(4) call cost register means, including a digital display for providing a substantially instantaneous display for . . .⁵

(5) reducing the coefficient of friction of the resulting film⁶ [step plus function: "step" unnecessary], and

(6) raising the Ph of the resultant pulp to about 5.0 to precipitate . . .⁷

In the event that it is unclear whether the claim limitation falls within the scope of § 112, 6th paragraph, a rejection under § 112, 2d paragraph may be appropriate. *Donaldson* does not affect the holding of *In re Hyatt*, 708 F.2d 712, 218 USPQ 195 (Fed. Cir. 1983) to the effect that a single means claim does not comply with the enablement requirement of § 112, first paragraph. As *Donaldson* applies only to an interpretation of a limitation drafted to correspond to § 112, 6th paragraph, which by its terms is limited to "an element in a claim to a combination," it does not affect a limitation in a claim which is not directed to a combination.

II. Examining procedure**A. Scope of the Search and Identification of the Prior Art**

As noted above, in *Donaldson* the Federal Circuit recognized that it is important to retain the principle that claim language should be given its broadest reasonable interpretation. This principle is important because it helps insure that the statutory presumption of validity attributed to each claim of an issued patent is warranted by the search and examination conducted by the examiner. It is also important from the standpoint that the scope of protection afforded by patents issued prior to *Donaldson* are not unnecessarily limited by the latest interpretation of this statutory provision. Finally, it is important from the standpoint of avoiding the necessity for a patent specification to become a catalogue of existing technology.⁸

The *Donaldson* decision thus does not substantially alter examining practice and procedure relative to the scope of the search. Both before and after *Donaldson*, the application of a prior art reference to a means or step plus function limitation requires that the prior art element perform the identical function specified in the claim. However, if a prior art reference teaches identity of function to that specified in a claim, then under *Donaldson* an examiner carries the initial burden of proof for showing that the prior art structure or step is the same as or equivalent to the structure, material, or acts described in the specification which has been identified as corresponding to the claimed means or step plus function.

The "means or step plus function" limitation should be interpreted in a manner consistent with the specification disclosure. If the specification defines what is meant by the limitation for the purposes of the claimed invention, the examiner should interpret the limitation as having that meaning. If no definition is provided, some judgment must be exercised in determining the scope of the limitation.

B. Making a prima facie case of equivalence

If the examiner finds that a prior art element performs the function specified in the claim, and is not excluded by any explicit definition provided in the specification for an equivalent

lent, the examiner should infer from that finding that the prior art element is an equivalent, and should then conclude that the claimed limitation is anticipated by the prior art element. The burden then shifts to applicant⁹ to show that the element shown in the prior art is not an equivalent of the structure, material or acts disclosed in the application. *In re Mulder*, 716 F.2d 1542, 219 USPQ 189 (Fed. Cir. 1983).¹⁰ The factors to be considered when determining whether the applicant has successfully met the burden of proving that the prior art element is not equivalent to the structure, material or acts described in the applicant's specification are discussed below.

However, even where the applicant has met that burden of proof and has shown that the prior art element is not equivalent to the structure, material or acts described in the applicant's specification, the examiner must still make a § 103 analysis to determine if the claimed means or step plus function is obvious from the prior art to one of ordinary skill in the art. Thus, while a finding of non-equivalence prevents a prior art element from anticipating a means or step plus function limitation in a claim, it does not prevent the prior art element from rendering the claim limitation obvious to one of ordinary skill in the art.

Because the exact scope of an "equivalent" may be uncertain, it would be appropriate to apply a § 102/§ 103 rejection where the balance of the claim limitations are anticipated by the prior art relied on.¹¹ In addition, although it is normally the best practice to rely on only the best prior art references in rejecting a claim, alternative grounds of rejection may be appropriate where the prior art shows elements that are different from each other, and different from the specific structure, material or acts described in the specification, yet perform the function specified in the claim.

C. Determining whether an applicant has met the burden of proving non-equivalence after a prima facie case is made

If the applicant disagrees with the inference of equivalence drawn from a prior art reference, the applicant may provide reasons why the applicant believes the prior art element should not be considered an equivalent to the specific structure, material or acts disclosed in the specification. Such reasons may include, but are not limited to: 1) teachings in the specification that particular prior art is not equivalent, 2) teachings in the prior art reference itself that may tend to show non-equivalence, or 3) Rule 132 affidavit evidence of facts tending to show non-equivalence.

When the applicant relies on teachings in applicant's own specification, the examiner must make sure that the applicant is interpreting the "means or step plus function" limitation in the claim in a manner which is consistent with the disclosure in the specification. If the specification defines what is meant by "equivalents" to the disclosed embodiments for the purpose of the claimed means or step plus function, the examiner should interpret the limitation as having that meaning. If no definition is provided, some judgment must be exercised in determining

⁹No further analysis of equivalents is required of the examiner until applicant disagrees with the examiner's conclusion, and provides reasons why the prior art element should not be considered an equivalent.

¹⁰See also, *In re Walter*, 618 F.2d at 768, 205 USPQ at 407-08, (a case treating § 112, 6th paragraph, in the context of a determination of statutory subject matter and noting "If the functionally-defined disclosed means and their equivalents are so broad that they encompass any and every means for performing the recited functions . . . the burden must be placed on the applicant to demonstrate that the claims are truly drawn to specific apparatus distinct from other apparatus capable of performing the identical functions"); *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 229 (C.C.P.A. 1971) (a case in which the CCPA treated as improper a rejection under § 112, 2d paragraph, of functional language, but noted that "where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristics relied on"); and *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980) (a case indicating that the burden of proof can be shifted to the applicant to show that the subject matter of the prior art does not possess the characteristic relied on whether the rejection is based on inherency under § 102 or obviousness under § 103).

¹¹A similar approach is authorized in the case of product-by-process claims because the exact identity of the claimed product or the prior art product cannot be determined by the examiner. *In re Brown*, 450 F.2d 531, 173 USPQ 685 (CCPA 1972).

²The term "device" coupled with a function is a proper definition of structure in accordance with the last paragraph of § 112. The addition of the words "jet driving" to the term "device" merely renders the latter more definite and specific. *Ex partes Stanley*, 121 USPQ 621 (Bd. App. 1958).

³*Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967). However, the terms "plate" and "wing", as modifiers for the structureless term "means", specify no function to be performed, and do not fall under the last paragraph of § 112.

⁴*De Graffereid v. U.S.*, 20 Ct. Cl. 458, 16 USPQ2d 1321 (Ct. Cl. 1990)

⁵*Intellicall Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 21 USPQ2d 1383 (Fed. Cir. 1992).

⁶*In re Roberts*, 470 F.2d 1399, 176 USPQ 313 (CCPA 1973).

⁷*Ex parte Zamerley*, 153 USPQ 367 (Bd. App. 1966).

⁸A patent specification need not teach, and preferably omits, what is well known in the art. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986).

the scope of "equivalents." Generally, an "equivalent" is interpreted as embracing more than the specific elements described in the specification for performing the specified function,¹² but less than any element that performs the function specified in the claim.

The scope of equivalents embraced by a claim limitation is dependent on the interpretation of an "equivalent." The interpretation will vary depending on how the element is described in the supporting specification. The claim may or may not be limited to particular structure, material or acts (e.g. steps) as opposed to any and all structure, material or acts performing the claimed function, depending on how the specification treats that question.

If the disclosure is so broad as to encompass any and all structure, material or acts for performing the claimed function, the claims must be read accordingly when determining patentability. When this happens the limitation otherwise provided by "equivalents" ceases to be a limitation on the scope of the claim in that an equivalent would be any structure, material or act other than the ones described in the specification that perform the claimed function. For example, this situation will often be found in cases where (1) the claimed invention is a combination of elements, one or more of which are selected from elements that are old per se, or (2) apparatus claims are treated as indistinguishable from method claims.¹³

On the other end of the spectrum, the "equivalents" limitation as applied to a claim may also operate to constrict the claim scope to the point of covering virtually only the disclosed embodiments. This can happen in circumstances where the specification describes the invention only in the context of a specific structure, material or act that is used to perform the function specified in the claim.

When deciding whether an applicant has met the burden of proof with respect to showing non-equivalence of a prior art element that performs the claimed function, the following factors may be considered. First, unless an element performs the identical function specified in the claim, it cannot be an equivalent for the purposes of § 112, 6th paragraph.¹⁴

Second, while there is no litmus test for an "equivalent" that can be applied with absolute certainty and predictability, there are several indicia that are sufficient to support a conclusion that one element is or is not an "equivalent" of a different element in the context of § 112, 6th paragraph. Among the indicia that will support a conclusion that one element is or is not equivalent of another are:

1) Whether the prior art element performs the function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding element disclosed in the specification.¹⁵

2) Whether a person of ordinary skill in the art would have recognized the interchangeability of the element shown in the prior art for the corresponding element disclosed in the specification.¹⁶

3) Whether the prior art element is a structural equivalent of the corresponding element disclosed in the specification being examined.

¹²To interpret "means plus function" limitations as limited to a particular means set forth in the specification would nullify the provisions of § 112 requiring that the limitation shall be construed to cover the structure described in the specification and equivalents thereof. *D.S.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574, 225 USPQ 236, 238 (Fed. Cir. 1985).

¹³See, for example, *In re Meyer*, 688 F.2d 789, 215 USPQ 193 (1982); *In re Abele*, 618 F.2d at 768, 205 USPQ at 407-08; *In re Walter*, 618 F.2d 758, 767, 205 USPQ 397, 406-07 (C.C.P.A. 1980); *In re Maucorps*, 609 F.2d 481, 203 USPQ 812 (C.C.P.A. 1979); *In re Johnson*, 589 F.2d 1070, 200 USPQ 199 (C.C.P.A. 1978); and *In re Freeman*, 573 F.2d at 1246, 197 USPQ at 471.

¹⁴*Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 4 USPQ2d 1737 (Fed. Cir. 1987), cert. denied, 484 U.S. 961 (1988).

¹⁵*Lockheed Aircraft Corporation v. United States*, 193 USPQ 449, 461 (Cl. Ct. 1977); *Graver Tank* concepts of equivalents are relevant to any "equivalents" determination. *Polambo v. Don-Joy Co.*, 762 F.2d 969, 975, n. 4, 226 USPQ 5, 8-9, n. 4 (Fed. Cir. 1985).

¹⁶*Lockheed Aircraft Corporation v. United States*, 193 USPQ 449, 461 (Cl. Ct. 1977); *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987).

¹⁷That is, the prior art element performs the function specified in the claim in substantially the same manner as the function is performed by the corresponding element described in the specification.

4) Whether the structure, material or acts disclosed in the specification represents an insubstantial change which adds nothing of significance to the prior art element.¹⁸

These examples are not intended to be an exhaustive list of the indicia that would support a finding that one element is or is not an equivalent of another element for the purposes of § 112, 6th paragraph. A finding according to any of the above examples would represent a sufficient, but not the only possible, basis to support a conclusion that an element is or is not an equivalent. There could be other indicia that also would support the conclusion.

In determining whether arguments or Rule 132 evidence presented by an applicant are persuasive that the element shown in the prior art is not an equivalent, the examiner should consider and weigh as many of the above-indicated or other indicia as are presented by applicant, and should determine whether, on balance, the applicant has met the burden of proof to show non-equivalence. However, under no circumstance should an examiner accept as persuasive a bare statement or opinion that the element shown in the prior art is not an equivalent embraced by the claim limitation. Moreover, if an applicant argues that the "means" or "step" plus function language in a claim is limited to certain specific structural or additional functional characteristics (as opposed to "equivalents" thereof) where the specification does not describe the invention as being only those specific characteristics, the claim should not be allowed until the claim is amended to recite those specific structural or additional functional characteristics.¹⁹

Finally, as in the past, applicant has the opportunity during proceedings before the Office to amend the claims so that the claimed invention meets all the statutory criteria for patentability. An applicant may choose to amend the claim by further limiting the function so that there is no longer identity of function with that taught by the prior art element, or the applicant may choose to replace the claimed means plus function limitation with specific structure material or acts that are not described in the prior art.

D. Related issues under Section 112, first or second paragraphs

The *Donaldson* decision may create some uncertainty as to what applicant regards as the invention. If this issue arises, it should be addressed in a rejection under § 112, 2d paragraph. While § 112, 6th paragraph permits a particular form of claim limitation, it cannot be read as creating an exception either to the description, enablement or best mode requirements of the paragraph or the definiteness requirement of the 2d paragraph of § 112. *In re Knowlton*, 481 F.2d 1357, 178 USPQ 486 (CCPA 1973).

If a "means or step plus function" limitation recited in a claim is not supported by corresponding structure, material or acts in the specification disclosure, the following rejections should be considered: (1) under § 112, 1st paragraph, as not being supported by an enabling disclosure because the person skilled in the art would not know how to make and use the invention without a description of elements to perform the function;²⁰ (2) under § 112, 2d paragraph, as being indefinite because the element or step is not defined in the specification by corresponding structure, material or acts; and (3) under §§ 102 or 103 where the prior art anticipates or renders obvious the claimed subject matter including the means or step that

¹⁷*In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

¹⁸ *Valmont Industries, Inc. v. Reinke Manufacturing Co., Inc.*, 983 F.2d 1039, 25 USPQ2d 1451 (Fed. Cir. 1993).

¹⁹ Otherwise, a claim could be allowed having broad functional language which in reality is limited to only the specific structure or steps disclosed in the specification. This would be contrary to public policy of granting patents which provide adequate notice the public as to a claim's true scope.

²⁰ The description of an apparatus with block diagrams describing the function, but not the structure, of the apparatus is not fatal under the enablement requirement of § 112, 1st paragraph, as long as the structure is conventional and can be determined without an undue amount of experimentation. *In re Ghiron*, 442 F.2d 985, 991, 169 USPQ 723, 727 (CCPA 1971).

performs the function specified in the claim. [Theory: since there is no corresponding structure, etc. in the specification to limit the means or step plus function limitation, an equivalent is any element that performs the specified function].

III. Avoid confusion with the doctrine of equivalents

An "equivalent" for the purposes of § 112, 6th paragraph, should not be confused with the doctrine of equivalents. The doctrine of equivalents, most often associated with *Graver Tank & Mfg. Co. v. Linde Air Products*, 339 U.S. 605, 85 USPQ 328 (1950), is sometimes applied to do equity among the parties before the court in an infringement action involving an issued patent. The doctrine typically involves a three-part inquiry - whether an accused device performs substantially the same function, in substantially the same way, to obtain substantially the same result as the claimed invention. Section § 112, 6th paragraph limits the scope of the broad language of "means or step plus function" limitations, in a claim to a combination, to the structures, materials and acts described in the specification and equivalents thereof. The doctrine of equivalents equitably expands exclusive patent rights beyond the literal scope of a claim.²¹ Accordingly, decisions involving the doctrine of equivalents should not unduly influence a determination under § 112, 6th paragraph during *ex parte* examination.

[1162 OG 59]

(70) Department of Commerce
Patent and Trademark Office

37 CFR Part 1
[Docket No. 940965 - 4265]

RIN: 0651-AA67

Revision of Affidavits Under 37 CFR 1.131

Agency: Patent and Trademark Office, Commerce

Action: Notice of proposed rulemaking

Summary: The Patent and Trademark Office (Office) proposes to amend the rules of practice relating to submission of affidavits or declarations under 37 CFR 1.131 (a) to implement the relevant provisions of Public Law No. 103 - 182 and the GATT (General Agreement on Trade and Tariffs), and to provide relief in certain circumstances where a common assignee holds both an application and a patent claiming patentably indistinct, but not identical, inventions.

Date: Written comments must be submitted on or before December 1, 1994. No oral hearing will be held.

Addressees: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Charles E. Van Horn, Deputy Assistant Commissioner for Patent Policy and Projects, or by fax to (703) 305-8825.

For Further Information Contact: Charles E. Van Horn by telephone at (703) 305-9054 or Hiram Bernstein by telephone at (703) 305-9282 or by mail marked to the attention of Charles E. Van Horn, Deputy Assistant Commissioner for Patent Policy and Projects, and addressed as above.

Supplementary Information: Public Law No. 103-182 (November 4, 1993) implementing the North American Free Trade Agreement (NAFTA), amended 35 U.S.C. 104 to provide that for the purpose of obtaining a patent, an applicant can show a date of invention in the United States, or in a NAFTA country which occurred after the date of implementation (i.e., December 8, 1993). Although GATT enabling legislation has not been passed, these proposed rule changes assume that it will be passed, and therefore changes to 37 CFR 1.131(a) similar to NAFTA would be required. See Article 27, paragraph 1, of the Agreement on Trade-related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, of the GATT. In the event that the GATT enabling legislation is not

enacted when the final rules are published, the proposed rule changes relative to the GATT will be withdrawn.

The Office proposes to amend 37 CFR 1.131(a), which is currently limited to facts showing a completion of the invention in the United States, to allow for a submission of facts in an affidavit or declaration that show completion of the invention in a NAFTA or a World Trade Organization (WTO) Member country. The WTO is established under the GATT agreement to resolve disputes between signatories to the agreement. The facts presented must demonstrate completion of the invention prior to the effective date of a reference thought to bar the grant of a patent or the patentability of a claim in a patent under reexamination.

Additionally, the Office recognizes that there is a potential conflict between existing 37 CFR 1.131(a) and 37 CFR 1.602(a). Section 1.131(a) prohibits affidavits or declarations thereunder when the same patentable invention as defined in 37 CFR 1.601(n) (i.e., patentably indistinct inventions) is claimed. An interference under 35 U.S.C. § 135, rather than antedating under § 1.131(a), is generally the available remedy. However, 37 CFR 1.602(a) provides that when the applications or the application and patent are owned by a single party, interferences are not declared or continued unless good cause is shown. This can result in a hardship where there is an issued patent that can no longer be amended as by filing a continuation-in-part application. Where there are two or more pending applications, the conflict can be avoided by filing a continuation-in-part application incorporating the conflicting inventions in a single application.

The Office proposes to amend 37 CFR 1.131 to broaden its application to a single party where inventions of a pending application and a patent held by the party are patentably indistinct but not identical. Under the proposed additions to § 1.131, an affidavit or declaration could be filed by a party to avoid a 35 U.S.C. § 103 rejection based on a 35 U.S.C. §§ 102(a) or (e) patent owned by that party, where the patent claimed an invention that was patentably indistinct, but not identical to an invention claimed in an application or patent undergoing reexamination.

The proposed addition to § 1.131 would not affect the use of the issued patent in a rejection based on double patenting. However, where patentably indistinct but not identical inventions are claimed, a double patenting rejection can be avoided by filing an appropriate terminal disclaimer. In addition, petitions under § 1.183 will be entertained for waiver of § 1.131 requirements in appropriate instances where two pending applications claiming patentably indistinct but not identical inventions are held by a single party.

Discussion of Specific Rules:

Section 1.131(a), if amended to (a)(1) as proposed, would allow a § 1.131 affiant or declarant to rely upon facts occurring in a NAFTA or a WTO Member country to show completion of the invention. The term "domestic" would be changed to "U.S." The section is proposed to be amended from a single sentence to three sentences.

Section 1.131(a)(2), if added as proposed, would limit the availability of acts showing completion of the invention in a NAFTA or WTO Member country to those acts occurring subsequent to the effective date of the agreements.

Section 1.131(a)(3), if added as proposed, would allow a showing of prior invention to be made in a pending application or a patent that is undergoing reexamination where a single party holds both the application or patent undergoing reexamination and another patent where the claimed inventions were, at the time the later invention was made, both owned by the single party or subject to an obligation of assignment to that party. Further, in order to rely on proposed § 1.131(a)(3), the inventions claimed in the application or in the patent undergoing reexamination and in the other patent must not be identical as set forth in 35 U.S.C. § 102.

Other Considerations:

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The Office of Management and

²¹Valmont Industries Inc. v. Reinke Manufacturing Co., Ind.,

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OFFICIAL GAZETTE

JANUARY 3, 1995

Budget has determined that the proposed rule changes are not significant for the purposes of E.O. 12866.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the proposed rules would affect only a small number of applications and would provide a streamlined and simplified procedure, eliminating the need for requesting waiver of the rules.

The Patent and Trademark Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements.

For the reasons set forth in the preamble, and pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. § 6, the Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below, with deletions indicated by brackets () and additions indicated by arrows (▶◀).

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 C.F.R., Part 1, would continue to read as follows:

Authority: 35 U.S.C. § 6, unless otherwise noted.

2. Section 1.131 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) ▶(1)◀ When any claim of an application or a patent under reexamination is rejected on reference to a [domestic] ▶U.S.◀ patent which substantially shows or describes but does not claim the same patentable invention, as defined in § 1.601(n), as the rejected invention, or on reference to a foreign patent or to a printed publication, [and] the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the person qualified under §§ 1.42, 1.43 or 1.47, [shall make] ▶may overcome the patent or publication by filing an appropriate◀ oath or declaration ▶,◀ [as to] ▶The oath or declaration must include◀ facts showing a completion of the invention in this country ▶or in a NAFTA or WTO Member country◀ before the filing date of the application on which the [domestic] ▶U.S.◀ patent issued, or before the date of the foreign patent, or before the date of the printed publication [, then][,] ▶When an appropriate oath or declaration is made,◀ the patent or publication cited shall not bar the grant of a patent to the inventor or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.

▶(a)(2) A date of completion of the invention may not be established under this section before December 8, 1993, in a NAFTA country, or before _____ in a WTO Member country other than a NAFTA country.

(a)(3) Notwithstanding the provisions of paragraph (a)(1), a showing may be made under this section where the inventions defined by a claim in an application or a patent under reexami-

nation and by a claim in another U.S. patent are not identical as set forth in 35 U.S.C. 102, and where the inventions were, at the time the later invention was made, owned by the same person or subject to an obligation of assignment to the same person.◀

September 26, 1994

BRADFORD R. HUTHER
Acting Assistant Secretary
of Commerce and Acting
Commissioner of Patents
and Trademarks

[1167 OG 96]

(71) Reserved

(72) In re Baird

The Patent and Trademark Office (PTO) has received a decision of the Court of Appeals for the Federal Circuit in *In re Baird*, F.2d 29 USPQ2d 1550 (Fed. Cir. 1994). In the opinion of the Commissioner of Patents and Trademarks, *Baird* was wrongly decided by the Court because an improper standard of patentability under 35 U.S.C. § 103 was applied in assessing the obviousness question before the Court.

The Court's decision in *Baird* is inconsistent with applicable binding precedent. The Board of Patent Appeals and Interferences (Board), in correctly deciding the case, applied and cited the proper binding precedent, which includes *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971), followed by the Federal Circuit in *Merck & Co. v. Biocraft Laboratories, Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir., cert. denied, 493 U.S. 975 (1989)).

Ordinarily, where the Commissioner believes that the Federal Circuit has erroneously decided an appeal, it would be appropriate to ask for reconsideration or to ask the Solicitor General to file a petition for certiorari to seek review of the decision. However, in this case, the PTO has discovered additional reasons for reopening prosecution of the application. Under these circumstances, it would not be appropriate to burden the applicant or the courts with further pleadings when ultimately a rejection will be entered. *Compare In re Gould*, 673 F.2d 1385, 213 USPQ 628 (CCPA 1982) (remand to Board authorized even after appellant filed brief where Solicitor indicated that new rejection would be made if court reversed rejection on appeal).

In order to properly serve the public and patent applicants appearing before the PTO, it is imperative that the PTO apply a consistent standard of patentability in the examination of patent applications. *Baird* is inconsistent with applicable binding precedent. Accordingly, to maintain uniform standards in the examination of patent applications, patent examiners are directed to follow the *In re Susi* and *Merck* decisions rather than the *Baird* decision and to cite this notice as a full response to any applicant who may rely on the *Baird* decision in responding to rejections.

Should an issue similar to that raised in the *Baird* case come before the Federal Circuit in the future, the conflict between *Baird* and the above- noted binding precedent will be called to the Court's attention so that it may resolve any conflict.

March 22, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1161 OG 314]

(73) Patentable Subject Matter

Mathematical Algorithms and Computer Programs

The following represents a recent legal analysis done by Associate Solicitor Lee E. Barrett, an attorney in the Office of

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U.S. PATENT AND TRADEMARK OFFICE

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the Solicitor of the Patent and Trademark Office, on the subject of the patentability of mathematical algorithms and computer programs. The analysis is published for the benefit of the public.

August 9, 1989

FRED E. McKELVEY
Solicitor

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- 1. The Supreme Court has not ruled on the patentability of computer programs
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Discussion

1. Statutory Subject Matter - 35 U.S.C. § 101

Inventions may be patented only if they fall within one of the four statutory classes of subject matter of 35 U.S.C. § 101: "process, machine, manufacture, or composition of matter." See *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 483, 181 USPQ 673, 679 (1974):

[N]o patent is available for a discovery, however useful, novel, and nonobvious, unless it falls within one of the express categories of patentable subject matter of 35 U.S.C. § 101.

Subject matter that does not fall within one of the statutory classes of 35 U.S.C. § 101 is said to be "nonstatutory" or to be "unpatentable subject matter."

The broad language of § 101 is intended to delineate a "general industrial boundary" of patentable invention. *In re Bergy*, 596 F.2d 952, 974 n.11, 201 USPQ 352, 372 n.11 (CCPA 1979), vacated, 444 U.S. 1028, *aff'd sub nom.*, *Diamond v. Chakrabarty*, 447 U.S. 303, 206 USPQ 193 (1980). The first statutory class, process, is defined in 35 U.S.C. § 100(b) and refers to acts, while the last three classes, machine, manufacture and composition of matter, refer to physical things; therefore, the general field of patentable invention consists of new acts and new things. *Id.* The classes relevant to this discussion

are "process" and "machine." A "process" is equivalent to a "method." *Bergy*, 596 F.2d at 965, 201 USPQ at 364. The term "machine" is used interchangeably with "apparatus." *In re Prater*, 415 F.2d 1393, 1395 n.11, 162 USPQ 541, 543 n.11 (CCPA 1969).

The question of whether a claimed invention satisfies the other conditions for patentability is "wholly apart from whether the invention falls into a category of statutory subject matter" (emphasis deleted). *Diamond v. Diehr*, 450 U.S. 175, 190, 209 USPQ 1, 9 (1981) (citing *Bergy*, 596 F.2d at 961, 201 USPQ at 361). As stated in *Parker v. Flook*, 437 U.S. 584, 593, 198 USPQ 193, 198-99 (1978):

The obligation to determine what type of discovery is sought to be patented must precede the determination of whether that discovery is, in fact, new [i.e., novel under § 102] or obvious [§ 103].

See also *In re Sarkar*, 588 F.2d 1330, 1333 n.10, 200 USPQ 132, 137 n.10 (CCPA 1978) ("If the subject matter as claimed is subject to patenting, i.e., if it falls within § 101, it must then be examined for compliance with § 102 and 103").

Legislative history indicates that Congress contemplated that the subject matter provisions be given a broad construction and were intended to "include anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. at 309, 206 USPQ at 197. Any process, machine, manufacture, or composition of matter constitutes statutory subject matter unless it falls within a judicially determined exception to § 101. *In re Pardo*, 684 F.2d 912, 916, 214 USPQ 673, 677 (CCPA 1982). Exceptions include laws of nature, physical phenomena and abstract ideas. *Diehr*, 450 U.S. at 185, 209 USPQ at 7, and cases cited therein. This analysis addresses whether mathematical algorithms and computer programs are statutory subject matter.

II. Mathematical Algorithms

A. Mathematical algorithms *per se* are not a statutory "process" under § 101

A mathematical algorithm is defined as a "procedure for solving a given type of mathematical problem." *Gottschalk v. Benson*, 409 U.S. 63, 65, 175 USPQ 673, 674 (1972); *Flook*, 437 U.S. at 585 n.1, 198 USPQ at 195 n.1; *Diehr*, 450 U.S. at 186, 209 USPQ at 8. Mathematical algorithms are nonstatutory because they have been determined not to fall within the § 101 statutory class of a "process." *Benson*. "[A]n algorithm, or mathematical formula, is like a law of nature, which cannot be the subject of a patent." *Diehr*, 450 U.S. at 186, 209 USPQ at 8. The exception applies only to mathematical algorithms since any process is an "algorithm" in the sense that it is a step-by-step procedure to arrive at a given result. *In re Walter*, 618 F.2d 758, 764 n.4, 205 USPQ 397, 405 n.4. (CCPA 1980); *Pardo*, 684 F.2d at 915, 214 USPQ at 676.

Although mathematical algorithms *per se* are nonstatutory, as stated in *Diehr*, 450 U.S. at 187-88, 209 USPQ at 8-9:

[A] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer. . . . [I]n *Parker v. Flook* we stated that "a process is not unpatentable simply because it contains a law of nature or a mathematical algorithm." 437 U.S. at 590. It is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection. As Justice Stone explained four decades ago: "While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939). [Citations omitted.]

The Supreme Court thus recognizes that mathematical algorithms are "the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67, 175 USPQ at 675, and should not be the subject of exclusive rights, whereas technological application of scientific principles and mathematical algorithms furthers the constitutional purpose of promoting "the Progress of . . . Useful arts." U.S. Const. art. I, 8. It is also recognized that mathematical

algorithms may be the most precise way to describe the invention.

Where claims involve mathematical algorithms, as stated in *In re Abele*, 684 F.2d 902, 907, 214 USPQ 682, 687 (CCPA 1982):

The goal is to answer the question "What did applicants invent?" If the claimed invention is a mathematical algorithm, it is improper subject matter for patent protection, whereas if the claimed invention is an application of the algorithm, § 101 will not bar the grant of a patent.

The tests for determining whether claims containing mathematical algorithms are statutory have gradually evolved in the courts since the Supreme Court's decision in *Benson* in 1972.

B. Evolution of the two-part test for mathematical algorithm-statutory subject matter

The proper legal analysis of mathematical algorithm-statutory subject matter cases is the two-part test of *In re Freeman*, 573 F.2d 1237, 197 USPQ 464 (CCPA 1978), as modified by *Walter* and *Abele*. See *In re Meyer*, 688 F.2d 789, 796, 215 USPQ 193, 198 (CCPA 1982) ("A more comprehensive test for cases involving mathematical algorithms is set forth in *In re Abele*"). A review of the evolution of the analysis provides some useful insights into the application of the test.

In *Benson*, the Supreme Court concluded that claims directed to a particular algorithm for converting binary coded decimal numbers to binary numbers was not statutory subject matter. The Supreme Court further concluded that any patent issued on those claims "would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." 409 U.S. at 72, 175 USPQ at 676. These two conclusions formed the basis for the two-part analysis of the Court of Customs and Patent Appeals (CCPA) in *Freeman*, 573 F.2d at 1245, 197 USPQ at 471:

First, it must be determined whether the claim directly or indirectly recites an "algorithm" in the *Benson* sense of that term, for a claim which fails even to recite an algorithm clearly cannot wholly preempt an algorithm. Second, the claim must be further analyzed to ascertain whether in its entirety it wholly preempts that algorithm.

In 1978, the Supreme Court held in *Flook* that a claim need "not . . . cover every conceivable application of the formula" to be nonstatutory. 437 U.S. at 586, 198 USPQ at 196. This decision left undefined what constitutes statutory subject matter. In *Walter*, the CCPA modified the second step of *Freeman* to require a more positive approach to determining what is claimed, 618 F.2d at 767, 205 USPQ at 407:

If it appears that the mathematical algorithm is implemented in a specific manner to define structural relationships between the physical elements of the claim (in apparatus claims) or to refine or limit claim steps (in process claims), the claim being otherwise statutory, the claim passes muster under § 101. If, however, the mathematical algorithm is merely presented and solved by the claimed invention, as was the case in *Benson* and *Flook*, and is not applied in any manner to physical elements or process steps, no amount of post-solution activity will render the claim statutory; nor is it saved by a preamble merely reciting the field of use of the mathematical algorithm.

The CCPA noted that while the second step of *Freeman* was "stated in terms of preemption" it had consistently been applied "in the spirit of the foregoing principles." 618 F.2d at 767, 205 USPQ at 407.

In *Abele*, the CCPA further modified the second part of the test to provide a more comprehensive test, 684 F.2d at 906-7, 214 USPQ at 686:

Appellants summarize the *Walter* test as setting forth two ends of a spectrum: what is now clearly nonstatutory, i.e., claims in which an algorithm is merely presented and solved by the claimed invention (preemption), and what is clearly statutory, i.e., claims in which an algorithm is implemented in a specific manner to define structural relationships

between the physical elements of the claim (in an apparatus claim) or to refine or limit steps (in a process). Appellants urge that the statement of the test in *Walter* fails to provide a useful tool for analyzing claims in the "gray area" which falls between the two ends of that spectrum. We agree that the board's understanding and application of the *Walter* analysis justifies appellant's position. However, the *Walter* analysis quoted above does not limit patentable subject matter only to claims in which structural relationships or process steps are defined, limited or refined by the application of the algorithm.

Rather, *Walter* should be read as requiring no more than that the algorithm be "applied in any manner to physical elements or process steps," provided that its application is circumscribed by more than a field of use limitation or non-essential post-solution activity. Thus, if the claim would be "otherwise statutory," i.e., albeit inoperative or less useful without the algorithm, the claim likewise presents statutory subject matter when the algorithm is included. This broad reading of *Walter*, we conclude, is in accord with the Supreme Court decisions [holding "that a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer." *Diamond v. Diehr*, 450 U.S. at 187, 209 USPQ at 8].

The reason for the modification of the test was because, as noted in *Abele*, 684 F.2d at 909, 214 USPQ at 688:

The algorithm [in *Abele*] does not necessarily refine or limit the earlier steps of production and detection as would be required to achieve the status of patentable subject matter by the board's narrow reading of *Walter*.

The second test of *Abele* suggests that the determination of whether the algorithm is "applied in any manner to physical element or process steps" may be made by viewing the claims without the algorithm and determining whether what remains is "otherwise statutory." This analysis focuses on identifying the statutory process in the claim and is consistent with previous cases such as *Walter*, 618 F.2d at 769, 205 USPQ at 409 ("Examination of each claim demonstrates that each has no substance apart from the calculations involved"). The technique of viewing the claim without the mathematical algorithm is not inconsistent with the requirement that claims must be considered "as a whole" under § 101.

The requirement that claims be considered "as a whole" arose out of the now rejected "point of novelty" approach to statutory subject matter. Under the "point of novelty" approach, if a claim considered without the nonstatutory subject matter was unpatentable over the prior art (i.e., if the algorithm was at the "point of novelty" of the claim), the claims were found to not recite statutory subject matter. This approach was consistently rejected by the CCPA. See *In re Chaffield*, 545 F.2d 152, 191 USPQ 730 (CCPA 1976), *cert. denied*, 434 U.S. 875 (1977); *In re Deutsch*, 553 F.2d 689, 193 USPQ 645 (CCPA 1977); *In re de Castelet*, 562 F.2d 1236, 195 USPQ 439 (CCPA 1977); *Freeman*; *Sarkar*; *Walter*. The point of novelty approach was finally put to rest in *Diehr*, 450 U.S. at 188-89, 209 USPQ at 9:

In determining the eligibility of respondents' claimed process for patent protection under § 101, their claims must be considered as a whole. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis. . . . The "novelty" of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.

Under the second test of *Abele*, the claims are considered without the algorithm to determine whether what remains is "otherwise statutory," not to determine whether what remains is novel and nonobvious.

C. Application of the two-part test

1. Step 1 - presence of a mathematical algorithm
 - a. Mathematical algorithm

A mathematical algorithm is a "procedure for solving a given type of mathematical problem." In this sense, a mathematical algorithm refers "to methods of calculation, mathematical formulas, and mathematical procedures generally." *Walter*, 618 F.2d at 764-65 n.4, 205 USPQ at 405 n.4. "The type of mathematical computation involved does not determine whether a procedure is statutory or nonstatutory." *In re Gelnovatch*, 595 F.2d 32, 41, 201 USPQ 136, 145 (CCPA 1979). A "claim for an improved method of calculation, even when tied to a specific end use, is unpatentable subject matter under § 101." *Flook*, 437 U.S. at 595 n.18, 198 USPQ at 199 n.18.

Mathematical algorithms may represent scientific principles, laws of nature, or ideas or mental processes for solving complex problems. See *Meyer*, 688 F.2d at 794-95, 215 USPQ at 197:

Scientific principles, such as the relationship between mass and energy [$E = mc^2$], and laws of nature, such as the acceleration of gravity, namely $a = 32 \text{ ft./sec.}^2$, can be represented in mathematical format. However, some mathematical algorithms and formulae do not represent scientific principles or laws of nature; they represent ideas or mental processes and are simply logical vehicles for communicating possible solutions to complex problems.

See also *Safe Flight Instrument Corp. v. Sundstrand Data Control, Inc.*, 706 F. Supp. 1146, 10 USPQ2d 1733 (D.Del. 1989) (mathematical algorithm representing a natural phenomenon, windshear). No distinction is made between mathematical algorithms invented by man, and mathematical algorithms representing discoveries of scientific principles and laws of nature which reveal a relationship that has always existed.

b. "Process" versus "apparatus" claims

Since mathematical algorithms have been determined not to fall within the § 101 statutory class of a "process," attempts have been made to circumvent the nonstatutory subject matter rejection by drafting mathematical algorithms as "machine" claims. The technique used is to draft the method steps in terms of "means for" language permitted by 35 U.S.C. § 112, sixth paragraph. While such a claim is technically a "machine" or "apparatus" claim, the courts have held that form of the claim does not control whether the subject matter is statutory. See *In re Maucorps*, 609 F.2d 481, 485, 203 USPQ 812, 815-16 (CCPA 1979):

Labels are not determinative in § 101 inquiries. "*Benson* applies equally whether an invention is claimed as an apparatus or process, because the form of the claim is often an exercise in drafting." *In re Johnson*, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978). "Though a claim expressed in 'means for' (functional) terms [under 35 U.S.C. § 112, sixth paragraph] is said to be an apparatus claim, the subject matter as a whole of that claim may be indistinguishable from that of a method claim drawn to the steps performed by the 'means.'" *In re Freeman*, 573 F.2d at 1247, 197 USPQ at 472. Moreover, that the claimed computing system may be a "machine" within "the ordinary sense of the word," as appellant argues, is irrelevant. The holding in *Benson* "forecloses a purely literal reading of § 101."

The test for determining whether "means for" apparatus claims should be treated as method claims is stated in *Walter*, 618 F.2d at 768, 205 USPQ at 408:

If the functionally-defined disclosed means and their equivalents are so broad that they encompass any and every means for performing the recited functions, the apparatus claim is an attempt to exalt form over substance since the claim is really to the method or series of functions itself. . . . In such cases the burden must be placed on the applicant to demonstrate that the claims are truly drawn to specific apparatus distinct from other apparatus capable of performing the identical functions.

If this burden has not been discharged, the apparatus claim will be treated as if it were drawn to the method or process

which encompasses all of the claimed "means." See *In re Maucorps*, 609 F.2d at 485, 203 USPQ at 815-816; *In re Johnson*, 589 F.2d at 1077, 200 USPQ at 206; *In re Freeman*, 573 F.2d at 1247, 197 USPQ at 472. The statutory nature of the claim under § 101 will then depend on whether the corresponding method is statutory.

See also *Meyer*, 688 F.2d at 795 n.3, 215 USPQ at 198 n.3; *Abele*, 684 F.2d at 909, 214 USPQ at 688; *Pardo*, 684 F.2d at 916 n.6, 214 USPQ at 677 n.6; *Arshal v. United States*, 621 F.2d 421, 427-28, 208 USPQ 397, 404 (Ct. Cl. 1980), *cert. denied*, 449 U.S. 1077 (1981), *reh'g denied*, 450 U.S. 1050 (1981). In *Maucorps*, the limitation of various "means" in claim 1 to include certain "electric circuits" did not prevent the claim from being treated as a method. A claim is not presumed to be statutory simply because it is in apparatus form.

c. Form of the mathematical algorithm

The first step of the analysis is to determine whether the claim directly or indirectly recites a mathematical algorithm. A mathematical algorithm can appear in many forms. As stated in *Freeman*, 573 F.2d at 1246, 197 USPQ at 471:

The manner in which a claim recites a mathematical algorithm may vary considerably. In some claims, a formula or equation may be expressed in traditional mathematical symbols so as to be immediately recognizable as a mathematical algorithm. See, e.g., *In re Richman*, 563 F.2d 1026, 195 USPQ 340 (CCPA 1977); *In re Flook*, 559 F.2d 21, 195 USPQ 9 (CCPA 1977), *cert. granted sub nom.*, *Parker v. Flook*, [437 U.S. 584] (1978). Other claims may use prose to express a mathematical computation or to indirectly recite a mathematical equation or formula by means of a prose equivalent thereof. See, e.g., *In re de Castelet*, *supra* (claims 6 and 7); *In re Waldbaum*, 559 F.2d 611, 194 USPQ 465 (CCPA 1977). A claim which substitutes, for a mathematical formula in algebraic form, "words which mean the same thing," nonetheless recites an algorithm in the *Benson* sense. *In re Richman*, *supra* 563 F.2d at 1030, 195 USPQ at 344. Indeed, the claims at issue in *Benson* did not contain a formula or equation expressed in mathematical symbols.

Claims which include mathematical formulas or calculations expressed in mathematical symbols clearly include a mathematical algorithm. Mathematical algorithms in prose form may be expressed as literal translations of the mathematical algorithm (e.g., substituting the expression "division" or "taking the ratio" for a division sign) or may be expressed in words which indicate the mathematical algorithm. See *Safe Flight Instrument*, 706 F. Supp. at 1148, 10 USPQ2d at 1734 (subtracting); *Abele*, 684 F.2d at 908 n.8, 214 USPQ at 687 n.8 ("The algorithm, calculating the difference, is defined in the specification as a Gaussian weighting function"); *In re Taner*, 681 F.2d 787, 790, 214 USPQ 678, 681 (CCPA 1982) (summing); *In re Johnson*, 589 F.2d 1070, 1079, 200 USPQ 199, 208 (CCPA 1978) ("computing" connotes the execution of one or a sequence of mathematical operations); *In re Waldbaum*, 559 F.2d 611, 194 USPQ 465 (CCPA 1977) (method of claim 1 "to count" the number of busy lines "solves a mathematical problem, to wit, counting a number of busy lines in a telephone system." *In re Bradley*, 600 F.2d 807, 810 n.4, 202 USPQ 480, 484 n.4 (CCPA 1979), *aff'd by an equally divided court sub nom.*, *Diamond v. Bradley*, 450 U.S. 381, 209 USPQ 97 (1981)).

It is not always possible to determine by inspection of the claim whether it indirectly recites a mathematical algorithm; in such instances the analysis "requires careful interpretation of each claim in the light of its supporting disclosure." *Johnson*, 589 F.2d at 1079, 200 USPQ at 208. See also *id.* at 1078-79, 200 USPQ at 208 ("the flow diagrams which form part of the specification disclose explicit mathematical equations which are to be used in conjunction with each of these [claimed] steps [of 'determining' or 'correlating']"); *Waldbaum*, 559 F.2d 611, 194 USPQ 465 ("series of steps for manipulating binary numbers within a procedure for calculating the number of binary 1's and 0's present" was considered a mathematical algorithm, *Gelnovatch*, 595 F.2d at 39, 201 USPQ at 143); *In re Sherwood*, 613 F.2d 809, 818, 204 USPQ 537, 545 (CCPA 1980), *cert. denied*, 450 U.S. 994 (1981) ("claims must be said to include the indirect recitation of a mathematical equation"); *Meyer*,

688 F.2d at 795, 215 USPQ at 198 (claims indirectly "recite a mathematical algorithm, which represents a mental process that a neurologist should follow").

2. *Step 2- is the mathematical algorithm "applied in any manner to physical elements or process steps?"*

The second test is to determine whether the mathematical algorithm is "applied in any manner to physical elements or process steps." The guideline for the analysis should be the CCPA's suggestion in *Abele* to view the claim without the mathematical algorithm to determine whether what remains is "otherwise statutory"; if it is, it does not become nonstatutory simply because it uses a mathematical algorithm. It is recognized that "[t]he line between a patentable 'process' and an unpatentable 'principle' is not always clear." *Flook*, 437 U.S. at 589, 198 USPQ at 197. There are no definitive "tests for determining whether a claim positively recites statutory subject matter." *Meyer*, 688 F.2d at 796 n.4, 215 USPQ at 198 n.4. Nevertheless, some useful guidelines may be synthesized out of the court decisions.

a. *Post-solution activity*

If the only limitation aside from the mathematical algorithm is insignificant or non-essential "post-solution activity," the claimed subject matter is nonstatutory. *Flook*, 437 U.S. at 590, 198 USPQ at 197:

The notion that post-solution activity . . . can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques.

Insignificant post-solution activity by itself is insufficient to constitute a statutory process. In *Flook*, the final step of adjusting an alarm limit was not sufficient. *See also Safe Flight* (final step of "means for processing said windshear signal to provide an indication representing the magnitude thereof" not sufficient); *Abele*, 684 F.2d at 909, 214 USPQ at 688 (final step of display: "that the result is displayed as a shade of gray rather than as simply a number provides no greater or better information, considering the broad range of applications encompassed by the claims"); *Walter*, 618 F.2d at 770, 205 USPQ at 409 (final step in dependent claim of magnetic recording: "If § 101 could be satisfied by the mere recitation of the results of a nonstatutory process on some record medium, even the most unskilled patent draftsman could provide for such a step"); *Gelnovatch*, 595 F.2d at 41 n.7, 201 USPQ at 145 n.7 (final step of storing outputs: "each of the steps of the claimed process, except perhaps the final step of equating the process outputs to the values of the last set of process inputs, directly or indirectly recites a mathematical computation"); *Sarkar*, 588 F.2d at 1332 n.6, 200 USPQ at 136 n.6 (final step of constructing an obstruction at a location determined by a mathematical model: "Sarkar no longer relies upon bridge of dam construction as post-solution activity steps effective to bring his process within 101"); *de Castelet*, 562 F.2d at 1244, 195 USPQ at 446 (final step of transmitting: "That the computer is instructed to transmit electrical signals, representing the result of its calculations . . . does not transform the claim into one for a process merely using an algorithm").

The absence of post-solution activity or the fact that any post-solution activity may be trivial is only one factor to be considered. On one hand, as stated in *Walter*, 618 F.2d at 767-68, 205 USPQ at 407:

if the end-product of a claimed invention is a *pure number*, as in *Benson* and *Flook*, the invention is nonstatutory regardless of any post-solution activity which makes it available for use by a person or machine for other purposes.

On the other hand, as stated in *Abele*, 684 F.2d at 908 n.9, 214 USPQ at 687 n.9:

"the fact that [the] equation is the final step is not determinative of the section 101 issue." *In re Richman*, 563 F.2d at 1030, 195 USPQ at 343. *Accord, In re Taner*, 681 F.2d 787 ((CCPA) 1982), *overruling In re Christensen*, 478 F.2d 1392, 178 USPQ 35 ((CCPA) 1973).

The particular order of the steps should not be determinative of the statutory subject matter inquiry.

b. *Field of use limitations*

A mathematical algorithm is not made statutory by "attempting to limit the use of the formula to a particular technological environment." *Diehr*, 450 U.S. at 191, 209 USPQ at 10. Thus, "field of use" or "end use" limitations in the claim preamble are insufficient to constitute a statutory process. This is consistent with the usual treatment of preambles as merely setting forth the environment. *See Flook* (the preamble, while limiting the application of the claimed method to "a process comprising the catalytic chemical conversion of hydrocarbons" did not serve to render the method statutory); *Walter*, 618 F.2d at 769, 205 USPQ at 409 ("Although the claim preambles relate the claimed invention to the art of seismic prospecting, the claims themselves are not drawn to methods of or apparatus for seismic prospecting"); *de Castelet*, 562 F.2d at 1244 n.6, 195 USPQ at 446 n.6 ("The potential for misconstruction of preamble language requires that compelling reason exist before that language may be given weight"). *Compare Waldbaum*, 559 F.2d at 616 n.6, 194 USPQ 469 n.6 (portion of preambles referred to in method portion of claims "are necessary for completeness of the claims and are proper limitations thereto").

c. *Data-gathering steps*

If the only limitations in the claims in addition to the mathematical algorithm are data-gathering steps which "merely determine values for the variables used in the mathematical formulae used in making the calculations," such antecedent steps are insufficient to change a nonstatutory method of calculation into a statutory process. *See In re Richman*, 563 F.2d at 1030, 195 USPQ at 343; *Sarkar*, 588 F.2d at 1335, 200 USPQ at 139 ("If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a 'process' under § 101"); *Gelnovatch*, 595 F.2d at 41 n.7, 201 USPQ at 145 n.7 ("claimed step of perturbing the values of a set of process inputs (step 3), in addition to being a mathematical operation, appears to be a data-gathering step"). Where the claim "presents data gathering steps not dictated by the algorithm but by other limitations which require certain antecedent steps" the claim may present statutory subject matter. *Abele*, 684 F.2d at 908, 214 USPQ at 687.

d. *Transformation of something physical*

In determining whether the claim recites a statutory process or a nonstatutory mathematical algorithm, it is useful to analyze whether there is transformation of something physical into a different form. One distinction is made between transformation of physical "signals" from one physical state to a different physical state, a statutory process in the electrical arts, and mere mathematical manipulation of "data" which, by itself, is not a statutory process. *Compare Taner* (conversion of "substantially spherical seismic signals" into "a form representing the earth's response to cylindrical or plane waves" was statutory process); *Sherwood*, 613 F.2d at 819, 204 USPQ at 546 (conversion of amplitude-versus-time seismic traces into amplitude-versus-depth seismic traces was statutory process because it "converts one physical thing into another physical thing just as any other electrical circuitry would do"); and *Johnson* (technique for removing unwanted noise from a seismic trace was statutory process); *with Walter*, 618 F.2d at 768, 770, 205 USPQ at 407, 409 (if "the claimed invention produces a physical thing . . . the fact that it is represented in numerical form does not render the claim nonstatutory" but finding that the "signals" claimed "may represent either physical quantities or abstract quantities" and thus were to the algorithm itself and not a particular application); *Richman* (method of calculating airborne radar boresight correction angle from "a plurality of

signal sets" not statutory); *Gelnovatch*, 595 F.2d at 42, 201 USPQ at 145 (where "the claims solely recite a method whereby a set of numbers is computed from a different set of numbers by merely performing a series of mathematical computations, the claims do not set forth a statutory process"); and *Benson* (conversion of binary coded decimal numbers into pure binary numbers not statutory). It is manifest that the statutory nature of the subject matter does not depend on the labels "signals" or "data."

e. *Structural limitations in process claims*

Another issue is the effect of structural limitations in method claims. While structural limitations in method claims are not improper, they are usually not entitled to patentable weight unless they somehow affect or form an essential part of the process. *See Benson*, 409 U.S. at 73, 175 USPQ at 677 (claim 8 recited use of a "reentrant shift register"); *Waldbaum*, 559 F.2d at 616, 194 USPQ at 469 (machine limitations in data processor method claims); *de Castelet*, 562 F.2d at 1244, 195 USPQ at 447 ("Claims to nonstatutory processes do not automatically and invariably become patentable upon incorporation of reference to apparatus"). The related problem of specific structural language in apparatus claims has been treated, *supra*, in section II.C.1.b.

D. *Examples*

1. *Diamond v. Diehr*

The following claim was held to recite statutory subject matter.

1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising: providing said computer with a data base for said press including at least, natural logarithm conversion data (ln), the activation energy constant (C) unique to each batch of said compound being molded, and a constant (x) dependent upon the geometry of the particular mold of the press, initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure, constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding, constantly providing the computer with the temperature (Z), repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation for reaction time during the cure, which is $\ln v = CZ + x$ where v is the total required cure time, repetitively comparing in the computer at said frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and opening the press automatically when a said comparison indicates equivalence.

Step 1 The claim contains an equation for controlling the in-mold time: $\ln v = CZ + x$.

Step 2 The claimed subject matter is statutory because it recites an "otherwise statutory" process in addition to the mathematical algorithm. As stated in *Abele*, 684 F.2d at 907, 214 USPQ at 686:

In Diehr, were the claims to be read without the algorithm, the process would still be a process for curing rubber, although it might not work as well since the in-mold time would not be as accurately controlled.

The steps in the process, 450 U.S. at 187, 209 USPQ at 8:

include installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time.

The statutory nature of the claim is not based on the post-solution activity of opening the press, but on the application of the mathematical algorithm to the whole process.

2. *Parker v. Flook*

The following claim in *Flook* was held to recite nonstatutory subject matter.

1. A method for updating the value of at least one alarm limit on at least one process variable involved in a process comprising the catalytic chemical conversion of hydrocarbons wherein said alarm limit has a current value of

$Bo + K$

wherein Bo is the current alarm base and K is a predetermined alarm offset which comprises:

(1) determining the present value of said process variable, said present value being defined as PVL;
(2) determining a new alarm base B1 using the following equation:

$$B1 = Bo(1.0 - F) + PVL(F)$$

where F is a predetermined number greater than zero and less than 1.0;

(3) determining an updated alarm limit which is defined as $B1 + K$; and thereafter

(4) adjusting said alarm limit to said updated alarm limit value.

Step 1 The claim contains a mathematical algorithm comprising determining a new alarm base in step (2) and computing an "alarm limit" in step (3).

Step 2 When viewed without the steps of the mathematical algorithm, steps (2) and (3), the only limitations remaining are the preamble limitation restricting the field of use to "a process comprising the catalytic chemical conversion of hydrocarbons"; the data-gathering step of step (1); and the post-solution step of step (4). None of these limitations comprises an "otherwise statutory" process. The claim seeks to protect a method for computing an "alarm limit" rather than the application of the computation within an otherwise statutory process.

3. *In re Abele*

In *Abele*, claim 5 was held to recite nonstatutory subject matter under § 101 whereas dependent claim 6 was statutory.

5. A method of displaying data in a field comprising the steps of calculating the difference between the local value of the data at a data point in the field and the average value of the data in a region of the field which surrounds said point for each point in said field, and displaying the value of said difference as a signed gray scale at a point in a picture which corresponds to said data point.

6. The method of claim 5 wherein said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner.

Step 1 Claim 5 contains a mathematical algorithm, "calculating the difference," which is defined in the specification as a Gaussian weighting function.

Step 2 When claim 5 is viewed without the mathematical algorithm, the only remaining limitation is the post-solution activity of displaying the result. The display by itself did not constitute an "otherwise statutory" process. The court held that "the algorithm is neither explicitly nor implicitly applied to any certain process." 684 F.2d at 909, 214 USPQ at 688. However, when dependent claim 6 is added to the limitations of claim 5, 684 F.2d at 908, 214 USPQ at 687-88:

Were we to view the claim absent the algorithm, the production, detection and display steps would still be present and would result in a conventional CAT-scan process . . . [W]e view the production, detection, and display steps as manifestly statutory subject matter and are not swayed from this conclusion by the presence of an algorithm in the claimed method.

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III. Computer Programs

A. "Computer programs" versus "computer processes"

A "process" or "algorithm" is a step-by-step procedure to arrive at a given result. In the patent area, a "computer process" or "computer algorithm" is a process, i.e., a series of steps, which is performed by a computer. A "[computer] program is a sequence of coded instructions for a digital computer." *Benson*, 409 U.S. at 65, 175 USPQ at 674. Computer programs are equivalently known as "software."

Unfortunately for discussion in this area, "[b]oth the series of steps performed by a computer, and the software directing those steps, have acquired the name 'computer programs.' *Gelnovatch*, 595 F.2d at 45 n.5, 201 USPQ at 148 n.5 (Markey, C.J., dissenting). What is sought to be protected by patent is the underlying process. As stated in *Gelnovatch*, 595 F.2d at 44, 201 USPQ at 147:

Confusion may be avoided if it be realized that what is at issue is not the "program," i.e., the software, but the process steps which the software directs the computer to perform.

See, e.g., *Maucorps*, 609 F.2d at 483, 203 USPQ at 814 ("The [claimed] invention is implemented via a computer program written in FORTRAN IV, either built into the calculating machine, or loaded into a general purpose computer").

B. Statutory nature of computer processes

1. The Supreme Court has not ruled on the patentability of computer programs.

The Supreme Court has not ruled on whether computer processes are per se statutory or nonstatutory. The decisions in *Benson*, *Flook* and *Diehr* all dealt with claims viewed as mathematical algorithms. In *Benson* and *Diehr*, the claims contained mathematical algorithms implemented by a computer. In *Benson*, the Court held that the claims preempted the use of the mathematical algorithm, but did not hold that "any program servicing a computer" would be nonstatutory. In *Diehr*, the Court held that the claims otherwise defined a statutory process for curing rubber, and that the inclusion of a mathematical algorithm or computer program did not make claim nonstatutory. The claim in *Flook* did not involve a computer process.

In *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976), *rev'g on other grounds*, *In re Johnston*, 502 F.2d 765, 183 USPQ 172 (CCPA 1974), which involved a "machine system for automatic record-keeping of bank checks and deposits," the Court declined to discuss the § 101 issue of the general patentability of computer programs, 425 U.S. at 220, 189 USPQ at 258:

We find no need to treat that question in this case, however, because we conclude that in any event respondent's system is unpatentable on grounds of obviousness. 35 U.S.C. § 103.

In *Diamond v. Bradley*, an equally divided Supreme Court affirmed the CCPA's decision in *Bradley*. The claims were directed to computer "firmware," which refers to microinstructions permanently embodied in hardware elements, and not to a computer application or process. The CCPA found that the claims literally recited a machine and that, in applying the two-part test of *Freeman*, the claims did not recite a mathematical algorithm.

2. The CCPA has held that computer processes are statutory unless they fall within a judicially determined exemption

In *Pardo*, the most recent CCPA case on computer processes, the CCPA stated that, 684 F.2d at 916, 214 USPQ at 677:

any process, machine, manufacture, or composition of matter constitutes statutory subject matter unless it falls within a judicially determined exception to section 101.

The major (and perhaps only) exception in the area of computer processes is the mathematical algorithm. Although not binding precedent on the Federal Circuit, the district court in

Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, 564 F. Supp. 1358, 1367, 218 USPQ 212, 218 (D. Del. 1983) stated:

The CCPA [has] . . . held that a computer algorithm, as opposed to a mathematical algorithm, is patentable subject matter.

If a computer process claim does not contain a mathematical algorithm in the *Benson* sense, the second step of the *Freeman-Walter-Abele* test is not reached, and the claimed subject matter will usually be statutory.

The traditional approach by the CCPA to the PTO's rejection of computer processes as nonstatutory subject matter has been to apply the two-part test for mathematical algorithms and to find statutory subject matter if the claims do not recite a mathematical algorithm. See *Pardo*, 684 F.2d at 916, 214 USPQ at 676 (process for converting source program into object program: "we are unable to find any mathematical formula, calculation, or algorithm either directly or indirectly recited in the claimed steps of examining, compiling, storing, and executing"); *In re Toma*, 575 F.2d 872, 877, 197 USPQ 852, 856 (CCPA 1978) (process for translating a source natural language, e.g., Russian, to a target natural language, e.g., English: "[we] are unable to find any direct or indirect recitation of a procedure for solving a mathematical problem"); *In re Phillips*, 608 F.2d 879, 883, 203 USPQ 971, 975 (CCPA 1979) (process for preparing architectural specifications: "Our analysis of the claims on appeal reveals no recitation, directly or indirectly, of an algorithm in the *Benson* and *Flook* sense"); *Freeman*, 573 F.2d at 1246, 197 USPQ at 471 ("The method claims here at issue do not recite process steps which are themselves mathematical calculations, formulae, or equations"); *Deutsch*, 553 F.2d 689, 692, 193 USPQ 645, 648 (CCPA 1977) (method of operating a system of manufacturing plants: "Nothing in the methods claimed by *Deutsch* preempts a mathematical formula, an algorithm, or any specific computer program"); *Chatfield*, 545 F.2d at 158, 191 USPQ at 736 (method of reassigning priorities within a computer: "[the] independent claims contain neither a mathematical formula nor a mathematical algorithm").

If the computer process is found to contain a mathematical algorithm, it must then pass the second part of the *Freeman-Walter-Abele* test for statutory subject matter. See, e.g., *Sherwood*; *Maucorps*; *Gelnovatch*.

Arguably, other exceptions such as "methods of doing business" and "mental steps" may be raised if a claim is not a true computer process, but merely recites that an otherwise nonstatutory process is performed on a computer. *de Castelet*, 562 F.2d at 1244, 195 USPQ at 447 ("Claims to nonstatutory processes do not automatically and invariably become patentable upon incorporation of reference to apparatus"). These would appear to be exceptions with very narrow application to claims which are not limited to implementation by a machine. For example, while a "method of doing business" *per se* is not statutory subject matter, "a method of operation on a computer to effectuate a business activity" has been held to be statutory subject matter. *Paine, Webber v. Merrill Lynch*, 564 F. Supp. at 1369, 218 USPQ at 220. See also *Deutsch*, 553 F.2d at 692 n.5, 193 USPQ at 648 n.5 (claims were not a method of doing business because "[t]hey do not merely facilitate business dealings"); *Johnston, rev'd on other grounds*, *Dann v. Johnston* (apparatus claims directed to system for automatic record-keeping of bank checks and deposits did not cover a method of doing business). Similarly, machine or computer implementation of "mental steps" is statutory subject matter. *Prater*; *In re Bernhart*, 417 F.2d 1395, 163 USPQ 611 (CCPA 1969); *In re Musgrave*, 431 F.2d 882, 167 USPQ 280 (CCPA 1970). See also *Toma* (computer implemented method for translation of natural languages is statutory).

Chronological Order Case List

In re Prater, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)
In re Bernhart, 417 F.2d 1395, 163 USPQ 611 (CCPA 1969)
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In re Richman, 563 F.2d 1026, 195 USPQ 340 (CCPA 1977)
In re de Castelet, 562 F.2d 1236, 195 USPQ 439 (CCPA 1977)
In re Freeman, 573 F.2d 1237, 197 USPQ 464 (CCPA 1978)
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In re Gelnovatch, 595 F.2d 32, 201 USPQ 136 (CCPA 1979)
In re Maucorps, 609 F.2d 481, 203 USPQ 812 (CCPA 1979)
In re Phillips, 608 F.2d 879, 203 USPQ 971 (CCPA 1979)
In re Sherwood, 613 F.2d 809, 204 USPQ 537 (CCPA 1980), *cert. denied*, 450 U.S. 994, 210 USPQ 776 (1981)
In re Walter, 618 F.2d 758, 205 USPQ 397 (CCPA 1980)
Arshal v. United States, 621 F.2d 421, 208 USPQ 397 (Ct. Cl. 1980), *cert. denied*, 449 U.S. 1077 (1981), *reh'g denied*, 450 U.S. 1050 (1981)
Diamond v. Diehr, 450 U.S. 175, 209 USPQ 1 (1981)
Diamond v. Bradley, 450 U.S. 381, 209 USPQ 97 (1981), *aff'd by an equally divided Court*, *In re Bradley*, 600 F.2d 807, 202 USPQ 480 (CCPA 1979)
In re Pardo, 684 F.2d 912, 214 USPQ 673 (CCPA 1982)
In re Taner, 681 F.2d 787, 214 USPQ 678 (CCPA 1982)
In re Abele, 684 F.2d 902, 214 USPQ 682 (CCPA 1982)
In re Meyer, 688 F.2d 789, 215 USPQ 193 (CCPA 1982)
Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, 564 F. Supp. 1358, 218 USPQ 212 (D. Del. 1983)
Safe Flight Instrument Corp. v. Sundstrand Data Control, Inc., 706 F. Supp. 1146, 10 USPQ2d 1733 (D. Del. 1989)

[1106 OG 5]

(74) Department of Commerce
Patent and Trademark Office37 CFR Part 1
[Docket No. 941087-4287]

RIN 0651-AA52

Amendment to Rules for Extension of Patent Term

Agency: Patent and Trademark Office, Commerce.

Action: Notice of Proposed Rulemaking.

Summary: The Patent and Trademark Office (Office) proposes to amend the rules directed to the extension of patent term to implement the provisions of Pub. L. No. 103-179 (December 3, 1993) and to clarify the requirements for eligibility. The proposed rules establish procedures for the Commissioner to issue an interim extension of the term of a patent where the original term would expire before a product covered by the patent has received regulatory approval for commercial marketing or use. The rules also are proposed to be amended to clarify that an application for patent term extension must be based on regulatory activities performed by the patent owner or its agent.

Dates: Written comments must be submitted on or before January 12, 1995. There will be no oral hearing.

Address: Address written comments to Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Charles E. Van Horn, Deputy Assistant Commissioner for Patent Policy and Projects, or by FAX to (703) 305-8825.

For Further Information Contact: Charles E. Van Horn by telephone at (703) 305-9054 or Gerald A. Dost by telephone at (703) 305-9282 or by mail addressed to Commissioner of

Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Charles E. Van Horn, Deputy Assistant Commissioner for Patent Policy and Projects, or by FAX to (703) 305-8825.

Supplementary Information: Patent term extension has been available under 35 U.S.C. § 156 for patents that claim certain products that are subject to regulatory review before being commercially marketed or used. Prior to enactment of Pub. L. No. 103-179, eligibility for patent term extension was dependent on regulatory approval of the product before the original patent term expired. Pub. L. No. 103-179 has made it possible, under appropriate circumstances, to obtain interim extensions of patent term where the regulatory process is likely to extend beyond the expiration of the patent term.

One purpose of the proposed rule change is to revise the present regulations contained in 37 C.F.R. Part 1, Subpart F, to include provisions for interim extension of the patent term prior to regulatory approval of the product that can now form the basis of patent term extension. These proposed rules set forth procedures that govern the content and submission of applications for an interim extension of a patent term, and procedures governing the interim extension determination and issuance of interim patent term extension certificates by the Office.

Initial guidelines directed to the preparation and filing of applications for interim extensions of patent terms as authorized by Pub. L. 103-179 were published as "Guidelines For Interim Extension Under 35 U.S.C. § 156(d)(5) of a Patent Term Prior To Regulatory Approval of a Product For Commercial Marketing or Use - Public Law 103-179 (December 3, 1993)" in the *Official Gazette* at 1159 Off. Gaz. Pat. Office 12 (February 1, 1994). It is intended that those guidelines will continue in effect until the promulgation of final rules based on the proposed rulemaking.

It is important to keep in mind the distinction between an interim patent term extension under § 156(e)(2) and the interim patent term extension provided for by Pub. L. No. 103-179 under § 156(d)(5). The former applies *after* regulatory approval has occurred and is addressed in 37 C.F.R. § 1.760. Interim patent term extensions under § 156(e)(2) are not affected by the proposed changes to the rules. The latter applies *before* regulatory approval has occurred and is addressed in 37 C.F.R. §§ 1.780 and 1.790.

The eligibility criteria for obtaining an interim extension under § 156(d)(5) are substantially the same as for obtaining patent term extension under § 156 after regulatory approval has occurred. Under the provisions of Pub. L. No. 103-179, a patent owner or its agent may submit an application for an interim patent term extension within six months, but not later than 15 days, of the original expiration date of the patent. At the time the application is submitted, the regulatory review period must have advanced to the approval phase as defined in § 156(g), but must not have ended. For a new drug, for example, the approval phase is defined in § 156(g)(1)(B)(ii) as the period beginning on the date a new drug application was initially submitted for the new drug under section 505 of the Federal Food, Drug and Cosmetic Act.

The content of the application for interim extension is proposed to be the same as for an application for patent term extension following regulatory review, with certain modifications necessitated by the circumstances. For example, the application for interim term extension will not be required to contain information about regulatory approval since that event has not occurred. A fee is proposed for each interim extension application filed before regulatory approval occurs - \$400.00 for the initial application for interim extension and \$200.00 for each supplementary application for interim extension.

The processing of an application for interim patent term extension under Pub. L. No. 103-179 will not require transmission of a copy of the application to the regulatory agency. However, it is contemplated that the Office will consult with the regulatory agency, as it has been doing for the past 10 years under § 156, on the question of eligibility for patent term extension.

If the patent is eligible for extension but for the fact that it is still under regulatory review, the Office can extend the patent term in one-year increments not to exceed five years from the expiration date. Any such extension would terminate 60 days after market approval. Before the 60-day period expires, the

patentee could submit an application for patent term extension, supplying any additional information necessary to obtain any additional extension available under § 156.

The interim extension of patent term available under § 156(d)(5) cannot exceed the extension from the original patent term that would be available after regulatory approval. Thus, for example, a patent that was subject to the two-year extension limitation of § 156(g)(6)(C), could not obtain interim extension beyond two years from the original patent term expiration date. However, after an interim extension under § 156(d)(5) has been granted, the amount of patent term extension available after regulatory review is controlled by either § 156(d)(5) or § 156(g)(6)(A) or (B). In no case would the extension go beyond five years from the original expiration date of the patent. However, for those situations falling under § 156(g)(6)(C), where regulatory approval occurs within the two-year period after the original expiration date of the patent, the extension after approval is measured from the date on which the product receives permission for commercial marketing or use. § 156(d)(5)(E)(ii).

Review of recent applications for patent term extension has revealed that the provisions of 37 C.F.R. § 1.785(c) may be read as being inconsistent with 35 U.S.C. § 156. The statute requires that an application for patent term extension be filed by the patent owner or its agent. 35 U.S.C. § 156(d)(1). The statute further requires under § 156(d)(1)(D) a description of the activities undertaken by the applicant (i.e., the patent owner or its agent) during the regulatory review period, and specifies in § 156(d)(2)(B)(i) that the lack of due diligence by the applicant during the regulatory review period may be taken into account. Given these statutory requirements, the Office has held that in order to be eligible for patent term extension, the patent owner or its agent must have undertaken the activities that lead to regulatory approval. If a patent owner has not been involved, either directly or indirectly, in the regulatory review process, that patent owner has not lost any effective patent life since it never invested time and resources necessary to obtain approval for commercial marketing or use. Accordingly, to the extent that § 1.785 could be interpreted to permit a patent owner to obtain a patent term extension where neither the patent owner nor its agent were responsible for activities leading to regulatory approval, it was misleading and contrary to both the letter and intent of § 156.

Discussion of Specific Rules:

Section 1.750, if amended as proposed, would be changed to also provide for an eligibility determination which will be made on applications for interim extension filed in compliance with § 1.790. The section is further modified to limit the mailing of a notice of a final determination to applications filed in compliance with § 1.740 after the regulatory approval process is complete.

Section 1.760, if amended as proposed, would have the title recite that the section is directed to requests for interim extensions of patent term under 35 U.S.C. § 156(e)(2), to distinguish it from interim extensions available under Pub. Law. No. 103-179, proposed to be addressed in § 1.780.

Section 1.765(a), if amended as proposed, would change the phrase (two occurrences) "the Office of the Secretary" to read "the Office or the Secretary." The change provides that the applicant has a duty of disclosure to both the Patent and Trademark Office and the Secretary of Health and Human Services or the Secretary of Agriculture.

Section 1.780, if amended as proposed, would provide that a certificate of interim extension under 35 U.S.C. § 156(d)(5) will be issued to the applicant. Section 1.780 would also provide for notification of the issuance of the certificate of interim extension under 35 U.S.C. § 156(d)(5), including the identity of the product currently under regulatory review, to be published in the Federal Register.

Section 1.785, if amended as proposed, would require the applicant for extension, i.e., the patent owner or its agent, to also have been the marketing applicant who obtained regulatory approval of the product for commercial marketing or use. While regulatory approval can be obtained by a party other than the patent owner, that other party must have been an agent of the patent owner when obtaining the regulatory approval in order

for the patent owner to be eligible to apply for extension of the patent term.

Section 1.790, if added as proposed, would provide for one or more interim extensions for periods of up to one year for patents where the applicable regulatory review period described in paragraph (1)(B)(ii), (2)(B)(ii), (3)(B)(ii), (4)(B)(ii), or (5)(B)(ii) of section 156(g) that began for the patented product may extend beyond the expiration of the patent term in effect.

Paragraph (a) of proposed § 1.790 defines the time periods in which the initial interim extension application and each subsequent interim extension application must be filed in the Office. In no event will interim extensions be granted under proposed § 1.790 for a period of extension longer than that to which the applicant would be entitled to under 35 U.S.C. § 156(c).

Paragraph (b) of proposed § 1.790 would establish that the content requirements for the initial interim extension applications are substantially the same as the content requirements for a formal application for extension of patent term under § 1.740 and a complete application under § 1.741, except that the content requirements relate to a product currently undergoing regulatory review. In other words, the interim extension applications contain information available to the patent owner or its agent at the time the application is filed.

Paragraph (c) of proposed § 1.790 permits each interim extension application after the initial interim extension application to be limited to a request for a subsequent interim extension along with a statement that the regulatory review period has not been completed and any materials or information required under §§ 1.740 and 1.741 not present in the preceding interim extension application.

Section § 1.795, if added as proposed, would provide that any interim extension granted under 35 U.S.C. § 156(d)(5) terminates at the end of the 60-day period beginning on the date on which the product involved receives permission for commercial marketing or use. If within that 60-day period the patent owner or its agent files additional information required under 35 U.S.C. § 156(d)(1) not contained in the applications for interim extension, the patent shall be further extended in accordance with the provisions of 35 U.S.C. § 156.

Other Considerations:

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. § 601 et seq., E.O. 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The proposed rule changes have been determined to be not significant for the purposes of E.O. 12866.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. § 605(b)), because the proposed rules would affect only a very small number of patents eligible for interim patent term extension.

The Office has also determined that this notice has no federalism implications affecting the relationship between the National Government and the States as outlined in E.O. 12612.

These rule changes will impose no substantial additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. § 3501 et seq. The paperwork burden imposed by adherence to the patent term extension rules is currently approved by the Office of Management and Budget under Control Number 0651-0020. Comments relating to this requirement should be directed to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office.

List of Subjects in 37 C.F.R. Part 1,

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interest, Courts, Inventions and patents, Lawyers.

For the reasons given in the preamble and pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. §§ 6 and 156, the Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below:

It is proposed to amend 37 C.F.R. Part 1, Subparts A and F, as follows wherein removals are indicated by brackets and additions by arrows:

Part 1 - Rules of Practice in Patent Cases

1. (a) An authority citation for 37 CFR Part 1, subpart A would be added to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

1. (b) The authority citation for 37 CFR Part 1, subpart F would continue to read as follows:

Authority: 35 U.S.C. 6 and 156.

2. Section 1.20 is proposed to be amended by revising paragraph (j) to read as follows:

§ 1.20 Post-issuance fees.

* * * * *

(j) For filing an application for extension of the term of a patent

▶(1) Application for extension under
§ 1.740▶[(§ 1.740)].....\$1,000.00

▶(2) Initial application for interim extension under
§ 1.790.....\$400.00

(3).Subsequent application for interim extension under
§ 1.790.....\$200.00◀

3. Section 1.750 is proposed to be revised to read as follows:

§ 1.750 Determination of eligibility for extension of patent term

A determination as to whether a patent is eligible for extension may be made by the Commissioner solely on the basis of the representations contained in the application for extension filed in compliance with § 1.740▶or § 1.790◀. This determination may be delegated to appropriate Patent and Trademark Office officials and may be made at any time before the certificate of extension is issued. The Commissioner or other appropriate officials may require from applicant further information or make such independent inquiries as desired before a final determination is made on whether a patent is eligible for extension.▶In an application for extension filed in compliance with § 1.740, a◀ [A] notice will be mailed to applicant containing the determination as to the eligibility of the patent for extension and the period of time of the extension, if any. This notice shall constitute the final determination as to the eligibility and any period of extension of the patent. A single request for reconsideration of a final determination may be made if filed by the applicant within such time as may be set in the notice of final determination or, if no time is set, within one month from the date of the final determination. The time periods set forth herein are subject to the provisions of [37 CFR] ▶§◀1.136.

4. In § 1.760, the heading is proposed to be revised to read as follows:

§ 1.760 Interim extension of patent term ▶under 35 U.S.C. § 156(e)(2)◀.

5. Section 1.765(a) is proposed to be revised to read as follows:

§ 1.765 Duty of disclosure in patent term extension proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office and the Secretary of Health and Human Services or the Secretary of Agriculture rests on the patent owner or its agent, on each attorney or agent who represents the patent owner and on every other individual who is substantively involved on behalf of the patent owner in a patent term extension proceeding. All such individuals who are aware, or become aware, of material information adverse to a determination of entitlement to the extension sought, which has not been previously made of record in the patent term extension proceeding

must bring such information to the attention of the Office [of] ▶or◀ the Secretary, as appropriate, in accordance with paragraph (b) of this section, as soon as it is practical to do so after the individual becomes aware of the information. Information is material where there is a substantial likelihood that the Office [of] ▶or◀ the Secretary would consider it important in determinations to be made in the patent term extension proceeding.

6. Section 1.780 is proposed to be revised to read as follows:

§ 1.780 Certificate of extension of patent term.

If a determination is made pursuant to § 1.750 that a patent is eligible for extension and that the term of the patent is to be extended, a certificate of extension, under seal, ▶or certificate of interim extension under 35 U.S.C. § 156(d)(5)◀ will be issued to the applicant for the extension of the patent term. Such certificate will be recorded in the official file of the patent and will be considered as part of the original patent. Notification of the issuance of the certificate of extension will be published in the Official Gazette of the Patent and Trademark Office.▶Notification of the issuance of the certificate of interim extension under 35 U.S.C. § 156(d)(5), including the identity of the product currently under regulatory review, will be published in the Official Gazette of the Patent and Trademark Office and in the Federal Register.◀ No certificate of extension will be issued if the term of the patent cannot be extended, even though the patent is otherwise determined to be eligible for extension. In such situations the final determination made pursuant to § 1.750 will indicate that no certificate will issue.

7. Section 1.785 is proposed to be revised to read as follows:

§ 1.785 Multiple applications for extension of term of the same patent or of different patents for the same regulatory review period for a product

(a) Only one patent may be extended for a regulatory review period for any product (§ 1.720[(g)] ▶(h)◀). If more than one application for extension of the same patent is filed, the certificate of extension of patent term, if appropriate, will be issued based upon the first filed application for extension. (b) If more than one application for extension is filed by a single applicant which seeks the extension of the term of two or more patents based upon the same regulatory review period, and the [applications or] ▶patents are◀ otherwise eligible for extension pursuant to the requirements of this subpart, in the absence of an election by the applicant, the certificate of extension of patent term, if appropriate, will be issued upon the application for extension of the patent ▶term◀ having the earliest date of issuance of those patents for which extension is sought.

(c) If an application for extension is filed which seeks the extension of the term of a patent based upon the same regulatory review period as that relied upon in one or more applications for extension pursuant to the requirements of this subpart, the certificate of extension of patent term will be issued on the application only if [—

(1) The applicant for extension] ▶the patent owner or its agent◀ is the holder of the regulatory approval granted with respect to the regulatory review period [, or

(2) The holder of the regulatory approval granted with respect to the regulatory review period is not an applicant and the applicant for extension holds express and exclusive authorization from the holder of the regulatory approval to rely upon the regulatory review period as the basis for the application for extension, or

(3) The holder of the regulatory approval granted with respect to the regulatory review period is not an applicant and no applicant for extension holds an express and exclusive authorization from the holder of the regulatory approval to rely upon the regulatory review period as the basis for the application for extension and the application is for extension of the patent having the earliest date of issuance of those patents for which extension is sought based upon the same regulatory review period].

(d) An application for extension shall be considered complete and formal regardless of whether it contains the identification

of the holder of the regulatory approval granted with respect to the regulatory review period [or express and exclusive authorization from the holder of the regulatory approval to rely on the regulatory review period for extension]. When an application contains such information, or is amended to contain such information, it will be considered in determining whether an application is eligible for an extension under this section. A request may be made of any applicant to supply such information within a non-extendable period of not less than one (1) month whenever multiple applications for extension of more than one patent are received and rely upon the same regulatory review period. Failure to provide such information within the period for response set shall be regarded as conclusively establishing that the applicant is not the holder of the regulatory approval [and is not expressly and exclusively authorized by the holder of the regulatory approval to seek the extension being sought]. (e) Determinations made under this section shall be included in the notice of final determination of eligibility for extension of the patent term pursuant to § 1.750 and shall be regarded as part of that determination.

8. Section 1.790 is proposed to be added to read as follows:

►§ 1.790 Interim extension of patent term under 35 U.S.C. § 156(d)(5).

(a) An owner of record of a patent or its agent who reasonably expects that the applicable regulatory review period described in paragraph (1)(B)(ii), (2)(B)(ii), (3)(B)(ii), (4)(B)(ii), or (5)(B)(ii) of subsection (g) of 35 U.S.C. 156 that began for a product that is the subject of such patent may extend beyond the expiration of the patent term in effect may submit one or more applications for interim extensions for periods of up to one year each. The initial application for interim extension must be filed during the period beginning 6 months and ending 15 days before the patent term is due to expire. Each subsequent application for interim extension must be filed during the period beginning 60 days before and ending 30 days before the expiration of the preceding interim extension. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be entitled under 35 U.S.C. § 156(c).

(b) A complete application for interim extension under this section shall include all of the information required for a formal application under § 1.740 and a complete application under § 1.741. Sections (a)(1), (a)(2), (a)(4), and (a)(6) - (a)(17) of § 1.740 and § 1.741 shall be read in the context of a product currently undergoing regulatory review. Sections (a)(3) and (a)(5) of § 1.740 are not applicable to an application for interim extension under this section.

(c) The content of each subsequent interim extension application may be limited to a request for a subsequent interim extension along with a statement that the regulatory review period has not been completed and any materials or information required under § 1.740 and § 1.741 not present in the preceding interim extension application. ◀

9. Section 1.791 is proposed to be added to read as follows:

►§ 1.791 Termination of interim extension granted prior to regulatory approval of a product for commercial marketing or use.

Any interim extension granted under 35 U.S.C. § 156(d)(5) terminates at the end of the 60-day period beginning on the date on which the product involved receives permission for commercial marketing or use. If within that 60-day period the patent owner or its agent files an application for extension under § 1.740 and § 1.741 including any additional information required under U.S.C. § 156(d)(1) not contained in the application for interim extension, the patent shall be further extended in accordance with the provisions of 35 U.S.C. § 156. ◀

Nov. 2, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1169 OG 33]

**(75) GUIDELINES FOR INTERIM EXTENSION
UNDER 35 U.S.C. § 156(d)(5) OF A PATENT TERM
PRIOR TO REGULATORY APPROVAL OF A
PRODUCT FOR COMMERCIAL MARKETING OR
USE - PUBLIC LAW 103-179 (December 3, 1993)**

This notice is intended to establish initial guidelines for patent owners who are seeking interim extensions of patent terms pursuant to newly enacted 35 U.S.C. § 156(d)(5). These guidelines will be in effect until further notice. These guidelines do not affect the rights of a patent owner or the procedures to request interim extensions under 35 U.S.C. § 156(e)(2).

Section 156(d)(5)(A) of Title 35, United States Code, provides that a patent owner seeking an interim extension of the terms of a patent pursuant to its provisions must submit an application to the Commissioner of Patents and Trademarks (Commissioner) within a certain defined period of time. Section 156(d)(5) specifies certain components the application is to contain, including "such patent or other information as the Commissioner may require." See 35 U.S.C. § 156(d)(5)(A)(v). Section 156(h) provides that the "Commissioner may establish such fees as the Commissioner determines appropriate to cover the costs to the Office of receiving and acting upon applications under this section." The purpose of this notice is to provide guidelines which a patent owner or its agent should use in (1) deciding whether the requirements for the submission of an application for an interim extension of the term of a patent are satisfied, and (2) making the submission of such an application to the Patent and Trademark Office.

This notice includes guidelines as to the actual content of an application for interim extension of the term of a patent. The guidelines should be used in determining whether a patent is subject to, and meets the conditions for interim extension of its term under section 156(d)(5). The guidelines should also be used in preparing and filing an application for interim extension of the patent term. If any application for interim extension of the term of a patent is filed in accordance with 35 U.S.C. § 156(d)(5), but is not in compliance with the requirements of this notice, applicant will be notified of the deficiencies in the application and will be given a period of time within which to correct the deficiencies.

GUIDELINES

A. Patents eligible for interim extension of the patent term.

(a) Any patent which claims a product as defined in paragraph (b) of this section, or a method of using such a product, is eligible for an interim extension of its patent term in accordance with 35 U.S.C. § 156(d)(5).

(b) The term "product" referred to in paragraph (a) of this section means a product as defined in 35 U.S.C. 156(f).

§ B. Conditions for interim extension of patent term.

A patent may be granted an interim extension of its term if:

(a) the patent claims a product or a method of using or manufacturing a product as defined in § A of this notice;

(b) the term of the patent has been extended under 35 U.S.C. § 156(e);

(c) an application for interim extension under § 156(d) is submitted pursuant to § E of this notice;

(d) the product is currently undergoing a regulatory review as described in paragraph (1)(B)(ii), (2)(B)(ii), (3)(B)(ii), (4)(B)(ii), or (5)(B)(ii) of 35 U.S.C. § 156(g);

(e) the product has not received permission for commercial marketing or use; or, in the case of a patent claiming a method of manufacturing a product which primarily uses recombinant DNA technology in the manufacture of the product, no permission for commercial marketing or use has been granted for a product manufactured under the process claimed in the patent; and,

(f) the application is submitted during the period beginning 6 months, ending 15 days, before the expiration of the patent term; or, in the case of a subsequent interim extension, during the period beginning 60 days before, and ending 30 days before, the expiration of the preceding interim extension.

§ C. Applicant for interim extension of patent term.

Any application for interim extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of § E of this notice.

§ D. Filing date of application for interim extension of patent term.

(a) The filing date of an application for interim extension of patent term is the date on which a complete application is received in the Patent and Trademark Office, or filed pursuant to the "Certificate of Mailing" provisions of 37 CFR § 1.8 or "Express Mail" provisions of 37 CFR § 1.10.

A complete application shall include:

(1) identification of the product then under regulatory review;

(2) identification of each Federal statute under which regulatory review is occurring;

(3) identification of the patent for which an interim extension is sought;

(4) identification of each claim of the patent which claims the product or a method of using or manufacturing the product then under regulatory review;

(5) sufficient information to enable the Commissioner to determine that, except for permission to market or use the product commercially, the patent would be eligible for an extension of its term under 35 U.S.C. § 156; and,

(6) a brief description of the activities undertaken by the applicant during the applicable regulatory review period with respect to the product or a method of using or manufacturing the product then under regulatory review and the significant dates applicable to such activities.

(b) If any application submitted pursuant to this section is held to be incomplete, applicant may seek to have this holding reviewed under 37 CFR § 1.181.

§ E. Application for interim extension of patent term.

(a) An application for interim extension of a patent term must be made in writing to the Commissioner of Patents and Trademarks.

(b) A formal application for interim extension of the patent term shall include:

(1) a complete identification of the product under regulatory review as by appropriate chemical and generic name, physical structure or characteristics, and, where the requested extension is based on a method claim, the method of using or method of manufacturing the product then under regulatory review;

(2) a complete identification of the Federal statute including the applicable provision of law under which the regulatory review is occurring;

(3) in the case of a human drug product, an identification of each active ingredient in the product and as to each active ingredient, a statement that it has not been previously approved for commercial marketing or use under the Federal Food, Drug and Cosmetic Act, the Public Health Service Act, or the Virus-Serum-Toxin Act, or a statement of when the active ingredient was approved for commercial marketing or use (either alone or in combination with other active ingredients) the use for

which it was approved, and the provision of law under which it was approved;

(4) a statement that the application is being submitted within the period permitted for submission pursuant to § B of this notice, and an identification of the date of the first and last days on which the application could be submitted;

(5) a complete identification of the patent for which an interim extension is sought by the name of the inventor, the patent number, the date of issue, and the date of expiration;

(6) a copy of the patent for which an interim extension is sought, including the entire specification (with claims) and drawings;

(7) a copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;

(8) a statement that the patent claims the product or a method of using or manufacturing the product under regulatory review, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the product or a method of using or manufacturing the product under regulatory review;

(9) a statement beginning on a new page, of the relevant dates and information pursuant to 35 U.S.C. § 156(g) of the applicable current regulatory review period as follows:

(i) for a patent that claims a human drug, antibiotic, or human biological product, the effective date of the investigational new drug (IND) application and the IND number, and the date on which a new drug application (NDA) or a Product License Application (PLA) was initially submitted and the NDA or PLA number;

(ii) for a patent claiming a new animal drug, the date a major health or environmental effects test on the drug was initiated and any available substantiation of the date or the date of an exemption under subsection (j) of section 512 of the Federal Food, Drug and Cosmetic Act became effective for such animal drug; and the date on which a new animal drug application (NADA) was initially submitted and the NADA number;

(iii) for a patent claiming a veterinary biological product, the date the authority to prepare an experimental biological product under the Virus-Serum-Toxin Act became effective; and the date an application for license was submitted under the Virus-Serum-Toxin Act;

(iv) for a patent claiming a food or color additive, the date a major health or environment effects test on the additive was initiated and any available substantiation of that date; and the date on which a petition for product approval under the Federal Food, Drug and Cosmetic Act was initially submitted and the petition number;

(v) for a patent claiming a medical device, the effective date of the investigational device exemption (IDE) and the IDE number, if applicable, or the date on which the applicant began the first clinical investigation involving the device if no IDE was submitted and any available substantiation of that date; and the date on which any application for product approval or notice of completion of a product development protocol under section 515 of the Federal Food, Drug and Cosmetic Act was initially submitted and the number of the application;

(10) a brief description beginning on a new page of the significant activities undertaken by the applicant during the applicable regulatory review period with respect to the product under regulatory review and the significant dates applicable to such activities;

(11) a statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks any information which is material to the determination of entitlement to the interim extension sought;

(12) the prescribed fee for receiving and acting upon the application for extension (see § F of this notice);

(13) the name, address, and telephone number of the person to whom inquiries and correspondence relating to the application for interim patent term extension are to be directed;

(14) a duplicate of the application papers, certified as such; and,

(15) an oath or declaration as set forth in paragraph (c) of this section.

(c) Any oath or declaration submitted in compliance with paragraph (b) of this section must be signed by the owner of record of the patent or its agent, specifically identify the papers and the patent for which an interim extension is sought and aver that the person signing the oath or declaration;

(1) is the owner, an official of a corporate owner authorized to obligate the corporation, or a patent attorney or agent authorized to practice before the Patent and Trademark Office and who has general authority from the owner to act on behalf of the owner in patent matters;

(2) has reviewed and understands the contents of the application being submitted pursuant to this section;

(3) believes the patent is eligible for extension pursuant to § A of this notice;

(4) believes an interim extension is justified under 35 U.S.C. § 156(d)(5) and the guidelines of this notice; and,

(5) believes the patent for which the extension is being sought meets the conditions for interim extension of the term of a patent as set forth in § B on this notice.

(d) If any application for interim extension of patent term submitted pursuant to this section is held to be informal, applicant may seek to have that holding reviewed by filing a petition with the required fee, as necessary, pursuant to 37 C.F.R. §§ 1.181, 1.182 or 1.183, as appropriate, within such time as may be set in the notice that the application has been held to be informal, or if no time is set, within one month of the date on which the application was held informal. The time periods set forth herein are subject to the provisions of 37 C.F.R. § 1.136.

§ F. Fees for receiving and acting on application filed pursuant to 35 U.S.C. § 156(d)(5).

Pursuant to 35 U.S.C. § 156(h), the Commissioner has determined that the following fees are appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for interim patent term extension filed pursuant to 35 U.S.C. § 156(d)(5):

(a) for an initial application for "interim extension" under 35 U.S.C. § 156(d)(5)(A): \$400.00; and,

(b) for each application requesting a "subsequent interim extension" under 35 U.S.C. § 156(d)(5)(C): \$200.00.

The appropriate fee should accompany the application when filed. If a fee in a different amount is adopted in Title 37 of the Code of Federal Regulations, applicant will be refunded any excess or required to submit any deficiency.

§ G. Address for filing applications pursuant to 35 U.S.C. § 156(d)(5).

All applications for interim extension of the term of a patent and any communications relating thereto should be addressed to the Commissioner of Patents and Trademarks, Box Patent Ext., Washington, D.C., 20231. When appropriate, the communication should be marked to the attention of a particular individual.

§ H. Termination of Interim Extension.

Any interim extension granted under 35 U.S.C. § 156(d)(5) terminates at the end of the 60-day period beginning on the date on which the product involved receives permission for commercial marketing or use. If within that 60-day period the

patent owner or its agent files additional information required under 35 U.S.C. § 156(d)(1) not contained in the application for interim extension, the patent shall be further extended in accordance with the provisions of 35 U.S.C. § 156.

§ I. For further information contact:

Charles E. Van Horn by telephone at (703) 305-9054 or Gerald A. Dost by telephone at (703) 305-8813; or by mail marked to their attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Summary

The initial guidelines set forth above are considered to be appropriate and authorized by 35 U.S.C. § 156. They will provide appropriate guidelines to patent owners and their agents pending appropriate changes which will be made in Title 37 of the Code of Federal Regulations.

Jan. 6, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1159 OG 12]

(76) Petitioning to Make Applications Relating to Biotechnology Special

This notice is intended to highlight the procedures which are available to applicants and, in particular, to applicants seeking patents on inventions relating to biotechnology, so as to have their applications accorded "special" status. A new interim procedure is also hereby established. Applications which have been made special will be advanced out of turn for examination and, subject alone to diligent prosecution by the applicant, will continue to be treated as special throughout the entire course of prosecution in the Patent and Trademark Office.

The Office accords special status to patent applications by granting petitions to make special on a number of grounds. These grounds include, for example, prospective manufacture of the invention, actual infringement of the invention, that the invention will materially enhance the quality of the environment and for inventions relating to safety of research in the field of recombinant DNA. See 37 CFR 1.102 and Manual of Patent Examining Procedure (MPEP) section 708.02 for details. Applicants seeking patents on inventions relating to biotechnology may petition based on any of the above grounds if they meet the appropriate criteria.

A new application (one which has not received any examination by the examiner) may be granted special status under the accelerated examination program. As set forth in MPEP 708.02, applicants are not subject to any of the above-mentioned criteria under this program but merely must 1) submit a written petition and the fee set forth in 37 CFR 1.17(i) which presently is \$72.00; 2) present all claims directed to a single invention; 3) submit a statement that a pre-examination search was made, specifying by whom the search was made and listing the field of search; 4) submit one copy of each of the references deemed most closely related to the subject matter encompassed by the claims; and 5) submit a detailed discussion of the references pointing out how the claimed subject matter is distinguishable over the references. In those instances where the petition for this special status does not meet all the prerequisites set forth above, applicant will be notified of the defects and will be given an opportunity to perfect the petition.

In addition to the above-noted procedures to have biotechnology applications accorded special status, a new interim procedure is hereby established whereby applicants who are small entities may request that their biotechnology applications be granted special status. To take advantage of this interim special status for biotechnology inventions, an applicant must file a petition with the petition fee under 37 CFR 1.17(i) requesting the special status and must (1) state that small entity status has been established or include a verified statement establishing small entity status; (2) state that the subject of the patent application is a major asset of the small entity; and (3) state that the

development of the technology will be significantly impaired if examination of the patent application is delayed including an explanation of the basis for making the statement. This newly established interim procedure will remain in effect until further notice in the *Official Gazette*. It is intended that a notice discontinuing this procedure will be published as the average pendency approaches the 18 month goal in this area. If the number of requests for making applications special under this procedure is too great, the procedure may have to be limited or discontinued.

The Office is continuing to work to reduce the pendency time for all applications. Special efforts are being made to reduce the pendency of biotechnology applications where filings are increasing rapidly and an already large backlog exists. Meanwhile, applicants who so desire can petition to have their applications made special as noted above. Questions concerning petitions to make special should be directed as follows:

- 1) to the Office of the Assistant Commissioner for Patents for petitions based on the grounds of prospective manufacture or infringement;
- 2) to the Board of Patent Appeals and Interferences for petitions on applications within the jurisdiction of the Board; or
- 3) to the appropriate Examining Group for petitions to make special on all other grounds.

June 22, 1988

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents and Trademarks

[1092 OG 55]

(77) Department of Commerce Patent and Trademark Office 37 CFR Part 5 Patent Law Foreign Filing Amendments

Agency: Patent and Trademark Office, Commerce

Action: Notice of Final Rulemaking

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to implement the Patent Law Foreign Filing Amendments Act of 1988, Subtitle B of Public Law 100-418. The rules reflect changes made to 35 U.S.C. 184 which specify that a license is not required to, file amendments, modifications, and supplements containing additional subject matter to a previously licensed foreign patent application if such amendments, modifications, and supplements do not change the general nature of the invention disclosed in the application in a manner which would require a corresponding United States patent application to be made available for national security inspection under 35 U.S.C. 181. These regulatory changes are applicable to most existing foreign filing license holders if their patent application did not undergo security inspection under 35 U.S.C. 181. Also, under the rules, a retroactive foreign filing license may be granted in situations where a proscribed foreign filing occurred through error and without deceptive intent as opposed to the earlier standard of inadvertence.

Effective Date: Feb. 19, 1991.

Supplementary Information: A notice of proposed rulemaking was published in the *Federal Register* at 55 Fed. Reg. 24270-24275 (June 15, 1990) and at 1116 *Official Gazette* 21-25 (July 10, 1990). No oral hearing was held. Three written comments on the proposed rulemaking were received. The comments received and replies thereto are listed below.

The rules are intended to implement the Patent Law Foreign Filing Amendments Act of 1988, Subtitle B of Public Law 100-418 (hereinafter the Act), which amended §§ 184, 185 and 186 of Title 35, United States Code, in order to simplify the procedures for United States inventors filing and prosecuting patent applications in foreign countries. The Office has not made any rule changes to implement the amendments to 35 U.S.C. 185 or 186 since these changes affect matters outside its jurisdiction.

Section 184 of Title 35 is intended to protect United States national security interests by preventing the disclosure of potentially sensitive inventions made in the United States to foreign nationals by the act of filing a patent application in foreign

countries. An inventor may not apply for a foreign patent on an invention made in the United States until at least six (6) months after the inventor has filed a United States patent application unless the inventor receives a license from the Office permitting an earlier foreign filing. This six month period assures the Office the opportunity to screen applications for information the disclosure of which might be detrimental to the national security. Also, § 184, as originally enacted, authorized the Office to grant a retroactive license for an unlicensed foreign filing of a patent application if the foreign filing was inadvertent and if the disclosure of the subject matter in the application would not be detrimental to United States security interests.

The original regulatory implementation of 35 U.S.C. 184 required applicants to obtain a license not only for the original foreign patent application but also for the filing of almost any information in support of the application, thereby creating administrative problems for United States inventors seeking foreign patent protection. For example, foreign patent offices often demand that additional technical data, such as the melting point of a chemical, be added to a patent application. An additional foreign filing license was usually required before the inventor could submit modifications, amendments, or supplements to a previously licensed foreign patent application, regardless of how trivial the change might be.

Recognizing the problems involved in obtaining these additional licenses, the Office promulgated rules in 1984 (see § 5.15(a) and 49 Fed. Reg. 13456 (April 4, 1984)) to streamline the licensing procedure. The 1984 rule change provided that an inventor could obtain in applications, the disclosure of the content of which is not potentially detrimental to United States security interests, a license which permitted the foreign filing of modifications, amendments, and supplements without further licensing if such changes were within the scope or character of the originally licensed invention (§ 5.15(a)). The 1984 rule change, however, could not be made retroactive, and therefore had no effect on licenses granted under the old system. If an applicant wished to broaden a pre-April 4, 1984, foreign filing license to the scope allowed by § 5.15(a), this involved filing a separate petition under § 5.15(c) in each application.

The present Act clarifies the statutory basis for the current Patent and Trademark Office rules by providing that inventors, in most circumstances, are not required to obtain an additional license to file modifications, amendments, and supplements to their foreign applications for which a foreign filing license has been obtained under § 5.15(a). Unlike the previous Office rules, these rules broaden the scope of most existing licenses, provided that the conditions contained in the Act are met.

The Act and these rules also address difficulties associated with attempts to procure a retroactive foreign filing license. Some applicants faced loss of their patent rights due to improper foreign filings even though they believed, in good faith, that a license was not necessary for certain minor changes to their foreign application. Court decisions have held that supplemental information filed abroad was exempt from the license requirement only when it was recited *verbatim* in the United States patent application, or was so commonly known that it could have been said to have been expressly disclosed in the United States application. *In re Gaertner*, 604 F.2d 1348, 202 USPQ 714 (CCPA 1979). If a patent applicant did not obtain a foreign filing license from the Office, any corresponding United States patent was at risk of being held invalid under 35 U.S.C. 185 if technical information was added to the foreign application, even if the technical information was completely unrelated to United States security interests.

Loss of United States patent rights subsequent to an "inadvertent" unlicensed foreign filing could be avoided if a retroactive license was obtained under 35 U.S.C. 184. *Twin Disc, Inc. v. United States*, 10 Cl. Ct. 713, 231 USPQ 417 (Cl. Ct. 1986) and *Minnesota Mining and Manufacturing Co. v. Norton Co.*, 366 F.2d 238, 151 USPQ 1 (6th Cir. 1966), cert. denied, 385 U.S. 1005 (1967). While the *Gaertner* decision defined a broad range of circumstances under which a foreign filing license would be required, other court decisions made correction of licensing errors difficult by setting forth various strict interpretations of the standard of "inadvertence." Compare *Iron Ore Co. of Canada v. Dow Chemical Co.*, 177 USPQ 34 (D. Utah 1972), *aff'd*, 500 F.2d 189, 182 USPQ 520 (10th Cir. 1974) and *Reese v. Dann*, 391 F. Supp. 12, 185 USPQ 492 (D.D.C.

1975). An inventor could fail to meet the standard of "inadvertence" even if the information disclosed was not significant in nature and did not contain any sensitive national security information. For example, one decision suggested that the filing of information abroad was intentional because the inventor first considered the applicability of § 184. *Shelco, Inc. v. Dow Chemical Co.*, 322 F. Supp. 485, 168 USPQ 395 (N.D. Ill. 1970), *aff'd*, 466 F.2d 613, 173 USPQ 451 (7th Cir. 1972), *cert. denied*, 409 U.S. 876 (1972). Under the Shelco standard, if supplemental information had been filed abroad as a considered, willful act, even though done through error in the belief that the information disclosed abroad did not exceed the scope of the disclosure in the United States patent application, the filing would not be "inadvertent"; and, therefore, the subject information could not qualify for a retroactive license.

The Act addresses these problems, and the rules implement the intention of the Act. The Act changes the language of the statute to provide that an inventor may receive a retroactive license if the inventor can show that the premature filing of a foreign patent application, or the submission of supplemental information in support of a foreign patent application, was made "through error and without deceptive intent." This criterion is equivalent to that for reissue of a patent under 35 U.S.C. 251 to correct errors made without any deceptive intention. The reissue error requirement has been considered by the courts. See, e.g., *In re Weiler*, 790 F.2d 1576, 229 USPQ 673 (Fed. Cir. 1986) and *In re Wadlinger* 496 F.2d 1200, 181 USPQ 826 (CCPA 1974). The applicant for a retroactive license also must show that the foreign filing did not disclose any information detrimental to the national security and that diligence was exercised in seeking a retroactive license once the applicant became aware of the proscribed foreign filing.

The Act became effective on August 23, 1988, but it does not affect any final decision made by the Office or a court, nor the rights or liabilities of any party under a patent in a case pending before a court on the above date or under any subsequent patent deriving priority rights from such patent under 35 U.S.C. 120 or 121. Therefore, the retroactive effect of the Act and the rules is limited.

Comments on the Proposed Rules

Comment

One comment stated that the discussion in the proposed rulemaking of the modification of the standard for obtaining a retroactive license from inadvertence to "through error and without deceptive intent" should have included a reference to *In re Wadlinger*, 492 F.2d 1200, 181 USPQ 826 (CCPA 1974) rather than to *In re Weiler*, 790 F.2d 1576, 229 USPQ 673 (Fed. Cir. 1986). The comment stated that *Wadlinger* was a more appropriate and illustrative case because it discusses more fully the meaning of the term "error" as encompassing "inadvertence, accident or mistake" and as having a very broad meaning. The comment also noted that *Wadlinger* was referenced in comments made in the hearing on the proposed legislation as indicative of the reissue standard being applied to retroactive license requests.

Reply

A citation to *In re Wadlinger* has been added to the citation of *In re Weiler* in the discussion of the final rules. It was not the intent of the Office by citing the *Weiler* case to suggest that decisions on petitions for the grant of retroactive licenses would be limited by that case. Decisions are based on the particular facts in each case and the entire body of law with respect to the standard of "through error and without deceptive intent."

Comment

A comment stated that the Office should provide additional examples in the explanatory text in the final rule as to changes that may be made to foreign applications that have been licensed under 37 CFR 5.15(a) without obtaining any additional license. The comment pointed out that examples were given in the 1984 rulemaking.

Reply

The list of examples presented at the time that 37 CFR 5.15(a) was adopted in 1984 was not intended to be all-inclusive. The Office is not aware of any judicial decisions setting limits to changes that may be made under a 5.15(a) license. Depending on the nature and the criticality, changes in temperature, por-

tions, size, etc., outside of a previously disclosed value or range that do not change the general nature of the invention from what was previously disclosed are within the scope of a § 5.15(a) license. However, if the newly disclosed value or range does change the general nature of the invention from that of the originally disclosed value or range, then a separate license is required. Likewise, new species or subcombinations of a previously disclosed genus or combination would appear to require an additional license to include such a change in a foreign application.

Comment

One comment stated that the Office should provide clarification of the attorney's ability to make decisions as to whether or not the added subject matter, in his opinion, changes the general nature of the invention.

Reply

Not only does the attorney have the ability to make the decision as to whether or not the additional subject matter changes the general nature of the invention, the attorney has the responsibility to do so. The Office will not give advisory opinions on whether an additional license is necessary, and will treat any provisional requests for a prospective or retroactive license as a request for a license. The procedure of the Office resolving any questions as to the security inspection status of any changes to previously licensed material is intended to apply only to those changes that have been submitted to the Office, i.e., the Office will reply to any inquiry as to whether previously submitted subject matter underwent, or should have undergone, security review.

Comment

One comment questioned what would happen if an attorney on considered judgment, honestly believed that a supplement did not change the general nature of a licensed invention, but that judgment later proved to be erroneous.

Reply

The Act and the rules now provide for a retroactive license to be granted in situations where it can be shown that a filing was made without a license through error and without deceptive intent. Thus, a retroactive license could be sought under § 5.25.

Discussion Of Specific Rule Changes

Section 5.11(a), as amended, specifies when a license is required before filing any foreign application for patent, including any modifications, amendments and supplements or divisions thereof. Section 5.11(a) adopts the statutory definition of "application" in 35 U.S.C. 184. Also, the rule, as amended, clarifies that the provisions of this section apply only to inventions made in the United States as stated in 35 U.S.C. 184. However, where an improvement or modification to a foreign-origin invention is made in the United States, a license would be required for the additional subject matter. The language proposed for § 5.11(e)(3) has been redrafted for clarity but still provides that an inventor need not obtain a supplemental license to file modifications, amendments and supplements containing subject matter not disclosed in, or divisions of, a foreign application for which an initial foreign filing license was not required, as long as the corresponding United States application was not required to be made available for inspection under 35 U.S.C. 181 and § 5.1 and the changes did not alter the general nature of the invention in a manner which would require the United States application to have been made available for inspection under 35 U.S.C. 181 and § 5.1. The need for a supplemental license depends on whether the changes altered the general nature of the invention, rather than the label applied to the changes, i.e., "Continuation", "Continuation In-Part", "Division", etc.

Authorized parties may determine whether a particular application was forwarded to the defense agencies for inspection under 35 U.S.C. 181 either by reviewing the filing receipt to determine if a license is or was granted, in which case security inspection did not occur, or by reviewing the file wrapper to determine if an access acknowledgment under 35 U.S.C. 181 is present, in which case security inspection did occur. If verification of the security inspection status of an application is needed, the authorized parties may submit a written request therefor to the Office, directed to the attention of Licensing and Review. A written response from the Office will be issued. In the event Office records are not available, a *de novo* determi-

nation by the Office will be made of the need for defense agency inspection under the present national security standards. If security inspection was not required under 35 U.S.C. 181, then the provisions of the Act will convert a previously granted or implied license into one having the scope of proposed § 5.15(a).

Section 5.15(a), as amended, adopts the specific provisions of the Act and clarifies the existing rules by expressly stating that the license provisions of the paragraph are applicable to United States applications which were not required to be made available for inspection under 35 U.S.C. 181 and § 5.1. The inspection provisions of 35 U.S.C. 181 delegate to the Commissioner of Patents and Trademarks the authority to decide which applications will be forwarded to United States defense agencies for national security inspection when the Government has no property interest in the invention. The fact that an application was forwarded to the defense agencies does not necessarily mean that the application was properly within the inspection scope of 35 U.S.C. 181. Thus, if an application was not required to be inspected but was inspected by mistake, it is eligible for such a license. The changes to the regulation expressly apply to modifications, amendments, and supplements to a previously licensed foreign application, and divisions thereof, provided the not alter the general nature of the invention in a manner which would require a corresponding United States application to have been made available for inspection under 35 U.S.C. 181.

The language of § 5.15(a)(1) also has been clarified. If the filing of the foreign application was pursuant to a license granted under § 5.15 and issued prior to publication of the notice in the Federal Register at 49 Fed. Reg. 13456 (April 4, 1984) for subject matter which was not appropriate for inspection under 35 U.S.C. 181, the license is now expanded to cover amendments, modifications, and supplements thereto, or divisions thereof, which do not change the general nature of the invention in a manner which would require such application to be made available for security inspection under 35 U.S.C. 181. Also, paragraphs (a)(3) and (a)(4) of § 5.15 have been merged in order to more clearly define the type of subsequent changes to a previously licensed foreign patent application which may be filed without any additional license. In particular, it is made clear that these changes must not be such as to require the application to be made available for security inspection. Any questions about the security inspection status of any application or amendments, modifications, and supplements thereto, or divisions thereof, will be handled in the manner as described above.

Section 5.15(b), as amended, clarifies the existing rule by expressly stating that the license provisions of § 5.12(b) are applicable to United States applications which were required to be made available for inspection under 35 U.S.C. 181 and § 5.1. The amendments also clarify the language of the paragraph and indicate that the more restrictive license under this paragraph includes authority to take actions in the foreign or international application, provided subject matter additional to that covered by the license is not involved. Section 5.15(c), as amended, clarifies the existing rule by expressly stating that the granting of a § 5.15(a) scope to a license under § 5.15(b) and conversion provisions of this paragraph are only applicable to material submitted under § 5.13 or United States applications, which are not, or were not, required to be made available for inspection under 35 U.S.C. 181 and § 5.1.

Sections 5.15(e) and (f), as amended, substitute a reference to § 5.15(a)(3) rather than to § 5.15(a)(4) which has been eliminated as a separate paragraph. Paragraph (e) also has been amended to state that changes to the general nature of the invention, which would require the application to have been made available for inspection under 35 U.S.C. 181 and § 5.1, require a separate license.

Section 5.25(a), as amended, provides that the inventor may receive a retroactive license if the inventor can show that the premature filing of papers in a foreign patent office was made through error and without deceptive intent. This criterion is the same as that for "error without any deceptive intention" for reissue of a patent and replaces the previous standard of inadvertence. This section also has been amended to clarify that each country in which a proscribed filing occurred must be listed in a petition for retroactive license. Also, the rule has been amended to define a verified statement as being in the

form of either an oath or a declaration. Finally, the rule has been clarified by defining the period over which error without deceptive intent must be shown as being the time leading up to and including the proscribed foreign filing.

Other Considerations

The rule change is in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Acting Chief Counsel for Advocacy, Small Business Administration, that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)) because the rules simplify the procedures for all United States inventors who file and prosecute applications in foreign countries.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individuals, industries, Federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rules contain a collection of information requirement subject to the Paperwork Reduction Act which has previously been approved by the Office of Management and Budget under Control No. 0651-0011 with an expiration date of March 31, 1993. The average time for each petition for license under § 5.12(b) or § 5.25 is estimated to be approximately thirty (30) minutes, including time for reviewing instructions, gathering and maintaining data needed, and completing and reviewing the petition submission. Send comments regarding this burden estimate to the Patent and Trademark Office, Office of Management and Organization, Washington, D.C. 20231, and the Office of Management and Budget, Washington, D.C. 20503 (Attention: Paperwork Reduction Project 0651-0011).

List Of Subjects

37 CFR Part 5

Classified information, Exports, Foreign relations, Inventions and patents.

For the reasons set forth in the preamble, 37 CFR Part 5 is amended as set forth below.

PART 5 - SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

1. The authority citation for Part 5 is revised to read as follows:

Authority: 35 U.S.C. 6, 41, 181-188, as amended by the Patent Law Foreign Filing Amendments Act of 1988, Pub. L. 100-418 102 Stat. 1567; the Arms Export Control Act, as amended, 22 U.S.C. 2751 *et seq.*, the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*, and the Nuclear Non-Proliferation Act of 1978, 22 U.S.C. 3201 *et seq.*, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

2. Section 5.11, paragraphs (a) and (e), are revised to read as follows:

§ 5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting an international application.

(a) A license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent including any modifications, amendments, or supplements thereto or divisions thereof or for the registration of a utility model, industrial design, or model, in a foreign patent office or any foreign patent agency or any international agency other than the United States Receiving Office, if the invention was made in the United States and:

(1) An application on the invention has been on file in the United States less than six months prior to the date on which the application is to be filed, or

(2) No application on the invention has been filed in the United States.

(e) No license pursuant to paragraph (a) of this section is required:

(1) If the invention was not made in the United States, or
(2) If the corresponding United States application is not subject to a secrecy order under § 5.2, and was filed at least six months prior to the date on which the application is filed in a foreign country, or

(3) For subsequent modifications, amendments and supplements containing additional subject matter to, or divisions of, a foreign patent application if:

(i) a license is not, or was not, required under paragraph (e)(2) of this section for the foreign patent application;

(ii) the corresponding United States application was not required to be made available for inspection under 35 U.S.C. 181 and § 5.1; and

(iii) such modifications, amendments, and supplements do not, or did not, change the general nature of the invention in a manner which would require any corresponding United States application to be or have been available for inspection under 35 U.S.C. 181 and § 5.1.

3. Section 5.15, paragraphs (a), (b), (c), (e) and (f), are revised to read as follows:

§ 5.15 Scope of license.

(a) Applications or other materials reviewed pursuant to § 5.12 through 5.14, which were not required to be made available for inspection by defense agencies under 35 U.S.C. 181 and § 5.1, will be eligible for a license of the scope provided in this paragraph. This license permits subsequent modifications, amendments, and supplements containing additional subject matter to, or divisions of, a foreign patent application, if such changes to the application do not alter the general nature of the invention in a manner which would require the United States application to have been made available for inspection under 35 U.S.C. 181 and § 5.1. This license also covers the inventions disclosed in foreign applications which had been granted a license under this part prior to April 4, 1984, and which were not subject to security inspection under 35 U.S.C. 181 and § 5.1. Grant of this license authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any patent agency or international patent agency when the subject matter of the foreign or international application corresponds to that of the domestic application. This license includes authority:

(1) To export and file all duplicate and formal application papers in foreign countries or with international agencies;

(2) To make amendments, modifications, and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application; and

(3) To take any action in the prosecution of the foreign or international application provided that the adding of subject matter or taking of any action under paragraphs (a)(1) and (2) of this section does not change the general nature of the invention disclosed in the application in a manner which would require such application to have been made available for inspection under 35 U.S.C. 181 and § 5.1 by including technical data pertaining to:

(i) Defense services or articles designated in the United States Munitions List applicable at the time of foreign filing, the unlicensed exportation of which is prohibited pursuant to the Arms Export Control Act, as amended, and 22 CFR Parts 121 through 130; or

(ii) Restricted Data, sensitive nuclear technology or technology useful in the production or utilization of special nuclear material or atomic energy, the dissemination of which is subject to restrictions of the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, as implemented by the regulations for Unclassified Activities in Foreign Atomic Energy Programs, 10 CFR Part 810, in effect at the time of foreign filing.

(b) Applications or other materials which were required to be made available for inspection under 35 U.S.C. 181 and § 5.1 will be eligible for a license of the scope provided in this paragraph. Grant of this license authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency. Further, this license includes authority to export and file all duplicate and formal papers in foreign countries or with foreign and international patent agencies and to make amendments, modifications, and supplements to, file divisions of, and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved.

(c) A license granted under § 5.12(b) pursuant to § 5.13 or § 5.14 shall have the scope indicated in paragraph (a) of this section, if it is so specified in the license. A petition, accompanied by the required fee (1.17(h)), may also be filed to change a license having the scope indicated in paragraph (b) of this section to a license having the scope indicated in paragraph (a) of this section. No such petition will be granted if the copy of the material filed pursuant to § 5.13 or any corresponding United States application was required to be made available for inspection under 35 U.S.C. 181 and § 5.1. The change in the scope of a license will be effective as of the date of the grant of the petition.

(c) Any paper filed abroad or transmitted to an international patent agency following the filing of a foreign or international application which changes the general nature of the subject matter disclosed at the time of filing in a manner which would require such application to have been made available for inspection under 35 U.S.C. 181 and § 5.1 or which involves the disclosure of subject matter listed in paragraphs (a)(3)(i) or (ii) of this section must be separately licensed in the same manner as a foreign or international application. Further, if no license has been granted under § 5.12(a) on filing the corresponding United States application, any paper filed abroad or with an international patent agency which involves the disclosure of additional subject matter must be licensed in the same manner as a foreign or international application.

(f) Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided:

(1) Subject matter which changes the general nature of the subject matter disclosed at the time of filing or which involves subject matter listed in paragraphs (a)(3)(i) or (ii) of this section is not introduced, and

(2) In the case where at least one of the licenses was obtained under § 5.12(b), additional subject matter is not introduced.

4. Section 5.25, paragraph (a), is revised to read as follows:

§ 5.25 Petition for retroactive license

(a) A petition for a retroactive license under 35 U.S.C. 184 shall be presented in accordance with § 5.13 or § 5.14 (a), and shall include:

(1) A listing of each of the foreign countries in which the unlicensed patent application material was filed,

(2) The dates on which the material was filed in each country,

(3) A verified statement (oath or declaration) containing:

(i) An averment that the subject matter in question was not under a secrecy order at the time it was filed abroad, and that it is not currently under a secrecy order,

(ii) A showing that the license has been diligently sought after discovery of the proscribed foreign filing, and

(iii) An explanation of why the material was filed abroad through error and without deceptive intent without the required license under § 5.11 first having been obtained, and

(4) The required fee (§ 1.17(h)).

The above explanation must include a showing of facts rather than a mere allegation of action through error and without deceptive intent. The showing of facts as to the nature of the error should include statements by those persons having personal knowledge of the acts regarding filing in a foreign country and should be accompanied by copies of any necessary supporting documents such as letters of transmittal or instructions for filing. The acts which are alleged to constitute error without deceptive intent should cover the period leading up to and including each of the proscribed foreign filings.

Nov. 28, 1990

HARRY F. MANBECK, JR.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1123 OG 20]

(78)

Department of Commerce
Patent and Trademark Office
37 CFR Part 150
[Docket No. 71038-8108]

Requests for Presidential Proclamations Under the Semiconductor Chip Protection Act of 1984, 17 U.S.C. 902(a)(2)

Agency: Patent and Trademark Office, Commerce

Action: Final Rule

Summary: The Patent and Trademark Office (PTO) is adding a new Subchapter C, Part 150 to its rules to implement the Presidential proclamation provisions of the Semiconductor Chip Protection Act of 1984, 17 U.S.C. 902(a)(2). The rules establish procedures for the evaluation of requests by foreign governments for the issuance of Presidential proclamations granting protection in the United States to mask works of foreign origin. The rules also permit the Commissioner of Patents and Trademarks independently to initiate an evaluation. The effect of the rules will be to establish a regime of protection for foreign mask works in the United States, provided mask works of U.S. origin are adequately protected in the country requesting a Presidential proclamation.

Effective Date: August 1, 1988

For Further Information Contact: Michael K. Kirk, Assistant Commissioner for External Affairs, by telephone at (703)557-3065, or by mail marked to his attention and addressed to Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.

Supplementary Information: The Semiconductor Chip Protection Act of 1984 (SCPA) established a new form of intellectual property protection for mask works that are fixed in semiconductor chips. Mask works are defined as a "series of related images, however fixed or encoded," that represent the three-dimensional pattern in the layers of a semiconductor chip. Thus, the subject matter of protection under the SCPA are the layout designs of semiconductor chips, known in some countries as "integrated circuit layout designs" or as "semiconductor topographies." The SCPA provides a ten-year term of protection for original mask works measured from their date of registration or first commercial exploitation anywhere in the world. To maintain protection, mask works must be registered in the United States Copyright Office within two years of first commercial exploitation.

Protection for foreign mask works may be granted under both section 902 and section 914 of the SCPA. Section 902 sets out three different ways that foreign mask works may become eligible for protection in the United States. First, on

the date the work is registered or is first commercially exploited anywhere in the world, the mask work is protectible if its owner is a national, domiciliary or sovereign authority of a foreign nation that is a party to a treaty that provides protection of mask works and to which the United States is also a party, or if a stateless person, wherever domiciled. Second, foreign mask works may be protected when they are first commercially exploited in the United States. The third way, set forth in section 902(a)(2), is where the foreign mask work comes within the scope of a Presidential proclamation. The President may issue a proclamation upon finding that a foreign nation extends to mask works of owners who are U.S. nationals or domiciliaries, protection (1) on substantially the same basis as that on which the foreign nation extends protection to mask works of its own nationals and domiciliaries and mask works first commercially exploited in that nation, or (2) on substantially the same basis as provided in the SCPA. Pursuant to Executive Order 12504, 50 FR 4849 (Feb. 4, 1985), requests for issuance of Presidential proclamations are to be presented to the President by the Secretary of Commerce.

Section 914 was included in the SCPA as a transitional provision, intended by Congress to encourage other countries to pass laws extending protection to this new form of intellectual property. Once laws were in place, it was reasoned, permanent protection for foreign mask works could be conferred under section 902 or through a multilateral treaty that extended coverage to mask works. Section 914 gives the Secretary of Commerce authority to issue orders extending interim protection to foreign mask work owners upon the satisfaction of certain conditions. First, the Secretary must find that the foreign nation is making good faith efforts and reasonable progress toward entering into a treaty with the United States, or toward enacting legislation that will protect U.S. mask works on the same basis as domestic mask works, or at a level similar to that provided under the SCPA. Second, the Secretary must determine that nationals, domiciliaries and sovereign authorities of the foreign nation are not engaged in the misappropriation, unauthorized distribution, or unauthorized commercial exploitation of mask works. Finally, the Secretary must determine that issuance of an interim order would promote the purposes of the SCPA and international comity with respect to the protection of mask-works.

By Amendment 1 to Department Organization Order 10-14, issued Dec. 3, 1984, the Secretary of Commerce delegated to the Assistant Secretary and Commissioner of Patents and Trademarks the authority under section 914 to make pertinent findings and to issue orders for the interim protection of foreign mask works. Amendment 2 to Department Organization Order 10-14, issued Sept. 28, 1987, expanded the earlier delegation to include responsibility for prescribing regulations for the presentation to the President of requests for issuance of proclamations under section 902.

The Commissioner has issued orders granting interim protection under section 914 for mask works produced in Australia, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. All of the interim protection orders were recently extended until May 31, 1989. See *Extension of Previously-Granted Interim Orders Under the Semiconductor Chip Protection Act of 1984*, 53 FR 16308 (May 6, 1988).

This proceeding was initiated by a Notice of Proposed Rulemaking published at 53 FR 5588-90 (Feb. 25, 1988). The notice set forth proposed regulations for the submission and evaluation of requests that the Secretary of Commerce recommend the issuance or revocation of a Presidential proclamation granting U.S. protection to foreign mask works under section 902(a)(2) of the SCPA. Comments on the proposed rules were received from the Commission of the European Communities and the U.S. Semiconductor Industry Association.

Discussion of Specific Rules

Section 150.1 of the new rules sets forth relevant definitions. Section 150.2 specifies the conditions under which an evaluation of recommending the issuance, revision, suspension or revocation of a section 902 proclamation will be initiated by the Commissioner. Section 150.2(a) provides that the Commissioner must initiate an evaluation of the propriety of recom-

mending the issuance of a section 902 proclamation upon receipt of a request from a foreign government. Section 150.2(b) gives the Secretary the discretion to initiate independently an evaluation concerning issuance, revision, suspension or revocation of a proclamation, or as directed by the Secretary of Commerce.

Section 150.3(a) states that requests for the issuance of a section 902 Presidential proclamation shall be made by "foreign governments." The definition of "foreign government" in section 150.1 of the rules makes clear that international intergovernmental organizations may request Presidential proclamations on behalf of their member states.

Section 150.3(b) lists the documentation that must accompany requests for issuance of a proclamation. The laws, legal rulings, regulations, and administrative orders submitted must be in unedited, full-text form. Where possible, the materials submitted should be reproduced from the original document, e.g., from court reports or statutory instruments. Abstracts, summaries and commentaries are not acceptable. If the documents are not in English, a certified English translation must accompany them.

Section 150.4 sets out the procedure the Commissioner will follow after a request for issuance of a proclamation has been submitted, or following a decision independently to initiate an evaluation. If a foreign government requests a section 902 proclamation before a section 914 proceeding has taken place, under section 150.4(a) the Commissioner may initiate such a proceeding to compile a record of necessary information and, where appropriate, to provide interim protection in the United States while the section 902 request is pending. Section 150.4(b) provides that the information obtained during a section 914 proceeding, if one has been held, will be considered by the Commissioner in determining whether to recommend the issuance of a Presidential proclamation.

Section 150.4(c) provides that requests for Presidential proclamations, and notices of the Commissioner's determination independently to initiate section 902 evaluations, will be published in the *Federal Register*. Written comments will be requested. Section 150.4(d) requires the Commissioner to notify the Register of Copyrights and the Committees on the Judiciary of the Senate and the House of Representatives of the initiation of an evaluation. Under section 150.4(e), a hearing may be scheduled if the written comments raise issues that cannot be resolved through informal contacts. Section 150.4(f) provides that the record to be considered by the Commissioner in determining whether to recommend a Presidential proclamation will be the request from a foreign government, if any, written comments received, the record of any section 914 proceedings, and the information obtained in a hearing, if one is held.

Sections 150.4(g) and (h) provide that the Commissioner will forward the draft recommendation to the Secretary, who will then forward a recommendation regarding issuance of a proclamation to the President. Section 150.5(a) makes clear that the recommendation for issuance of a proclamation may include terms and conditions regarding the duration of the proclamation. Section 150.5(b) provides that interested parties may request the revision, suspension or revocation of Presidential proclamations.

Comments on the Proposed Rules

Comments on the proposed rules were submitted by the Commission of the European Communities and the U.S. Semiconductor Industry Association (SIA). The Commission of the European Communities noted that any request for a proclamation in favor of mask works produced in the Member States will be made by the Commission. The Commission requested a clarification that the term "foreign governments" as used in section 150.3(a) includes international intergovernmental organizations which have been empowered by their member states to request Presidential proclamations granting U.S. protection to mask works produced in such states.

The PTO adopts the Commission's suggestion. The rules are not intended to preclude foreign governments from having requests for Presidential proclamations presented on their behalf by an international or regional intergovernmental organization. Accordingly, a definition of "foreign government" is added as section 150.1(b) of the rules, making clear that international

intergovernmental organizations may request Presidential proclamations on behalf of their member states.

In its comments, the SIA requested that section 150.4(c) be amended to require that the Commissioner hold a public hearing when requested by any interested party after an evaluation has begun. As proposed, section 150.4(e)(2)(ii) gives the Commissioner discretion to hold a hearing to gather additional information if material issues raised in written comments cannot be resolved less formally. SIA also requested that section 150.4(f) be amended to include information obtained in public hearings in the list of materials to be evaluated by the Commissioner. SIA suggested that section 150.4(c) specify a time period of thirty (30) days after publication of a request for comments in the *Federal Register* during which written comments and requests for a hearing may be submitted.

The PTO does not agree that the Commissioner should be required to hold a hearing as part of every section 902 evaluation whenever requested. Section 150.4(b) provides that information obtained during section 914 proceedings will be used in evaluating requests for Presidential proclamations. Moreover, under section 150.4(a) the Commissioner may institute section 914 proceedings if an interim order has not been issued in favor of mask works from such a requesting nation. Given the thoroughness with which section 914 proceedings are generally conducted, the Commissioner is expected to have available a substantial record concerning the degree of protection for U.S. mask works in the subject country. A separate hearing might only serve to cause delay in such cases.

Moreover, effective public participation in the section 902 evaluation process is not dependent on whether the Commissioner holds a hearing. The rules proceed from the assumption that any material issues relating to protection of U.S. mask works in a requesting foreign country can be raised in written comments, and that these issues can be resolved flexibly through informal *inter partes* contacts. Where issues cannot be resolved through such informal contacts, section 150.4(e)(ii) gives the Commissioner discretion to hold a hearing to obtain additional views and to assist in resolving the issues. It is not evident that a mandatory hearing upon request of interested parties would provide an opportunity for exchange of views or information that is not otherwise available under section 150.4(c).

The PTO agrees that, if the Commissioner elects to hold a hearing, the information obtained should be included in the record. Accordingly, section 150.4(f) is amended to make this clarification. It is also proper that the rules specify a time period for the submission of comments following publication in the *Federal Register* of the request for a proclamation or the Commissioner's determination to initiate independently a section 902 evaluation. Thus, to ensure that all interested parties have sufficient time to investigate and prepare complete written comments, section 150.4(c) is amended to specify that comments must be submitted within sixty (60) days of *Federal Register* publication.

Discussion of Principal Changes

A new section 150.1(b) has been added to the rules as proposed to clarify that international or regional intergovernmental organizations may request Presidential proclamations on behalf of their member states, provided the member states have empowered the organization to make such requests. Proposed sections 150.1(c)-(g) have been redesignated as sections 150.1(d)-(h). The definition of "mask work" in section 150.1(d) (proposed section 150.1(c)) has been modified slightly to conform to the language in section 901(a)(2) of the SCPA. The definition of "Presidential proclamation" in section 150.1(e) (proposed section 150.1(d)) has been changed slightly by substituting the words "applying for" for the word "making" before the word "registrations." The purpose of this change is to conform the language of the rule to section 908 of the SCPA, which relates to mask work registration. The definition of "request" in section 150.1(f) (proposed section 150.1(e)) has been changed to indicate that the Commissioner is not required to treat request revision, suspension or revocation of a Presidential proclamation in the same way as requests for issuance of such proclamations (see discussion of section 150.5(b), *infra*).

Section 150.2(a) has been expanded to make clear that the Commissioner may initiate independently an evaluation of rec-

ommending the revision, suspension, or revocation of a Presidential proclamation, as well as an evaluation of recommending the issuance of a proclamation. This change reflects the amendment to section 902(a)(2) made by the Semiconductor Chip Protection Act Extension of 1987, which clarifies that the President has the authority to revise, suspend or revoke, as well as issue, proclamations extending protection to foreign mask works.

Section 150.3(b) has been changed to state that requests for issuance of a Presidential proclamation must be accompanied by "a copy" of laws, legal rulings, regulations or administrative orders, rather than "an official copy" of such materials, as was proposed. This change is made to avoid confusion arising from the fact that the meaning of "official copy" may vary from country to country. Section 150.3(b)(5) has been redesignated as section 150.3(b)(6), and a new section 150.3(b)(5) has been added to specify that the copies submitted to the PTO must be in full text, unedited, and where possible, be reproduced from the original document.

Section 150.4(c) has also been changed. The proposed rule stated that notices of requests by foreign governments for the issuance of Presidential proclamations will be published in the *Federal Register*. Language has been added to make clear that notices of the Commissioner's determination independently to initiate evaluations will also be published in the *Federal Register*. Section 150.4(c) has also been changed to provide that comments shall be submitted to the Commissioner within sixty (60) days of publication of the *Federal Register* notice. Section 150.4(f) has been modified to include information obtained in a public hearing held pursuant to section 150.4(e)(ii), if such a hearing is held, in the list of materials to be evaluated by the Commissioner.

Section 150.5(h) has been changed to reflect the amendment to section 902(a)(2) made by the Semiconductor Chip Protection Act Extension of 1987. The first sentence provides that any interested party may request the "revision, suspension or revocation" of a proclamation. The second sentence has been modified to provide that "requests for revision, suspension or revocation of a proclamation will be considered in substantially the same manner as requests for the issuance of a section 902 proclamation." The word "substantially" has been added to indicate that the Commissioner need not initiate a formal evaluation in every case where a request is made for the revision, suspension or revocation of a Presidential proclamation. In contrast to situations where a foreign government requests the issuance of such a proclamation. While good faith requests for the revision, suspension or revocation of a proclamation will be accorded fair procedural treatment, it is proper that the Commissioner have flexibility at the outset to consider such requests on a case-by-case basis as experience is gained under these rules. If necessary, the PTO may amend the rules at a later time to provide additional procedures for consideration of requests for revision, suspension or revocation of Presidential proclamations.

Stylistic changes have also been made in sections 150.2(a), 150.3(b)(6) (proposed section 150.3(b)(5)) and 150.5(a), but these changes are for purposes of clarity and are not substantive in nature.

Other Considerations

This rule does not have a significant impact on the quality of the human environment or the conservation of natural resources. This rule is in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the proposed rule will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*) The economic impact of a Presidential proclamation on small entities will be beneficial, since such proclamations may be issued only upon a finding that a foreign nation extends reciprocal protection to U.S. mask works.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers,

individual industries, federal, state or local government agencies, or geographic regions. By extending protection to foreign mask work owners, the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets will be enhanced.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the national government and the states as outlined in Executive Order 12612.

The rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3510 *et seq.*, since no record-keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Subchapter C

Administrative practice and procedure, Authority delegations, Semiconductor chips, Mask works.

For the reasons set out in the preamble, Chapter 1 of Title 37 CFR is amended by adding a new Subchapter C, Part 150, as follows:

Subchapter C - PROTECTION OF FOREIGN MASK WORKS

Part 150 - REQUESTS FOR PRESIDENTIAL PROCLAMATIONS PURSUANT TO 17 U.S.C. 902(a)(2)

Sec.

150.1 Definitions.

150.2 Initiation of Evaluation.

150.3 Submission of Requests.

150.4 Evaluation.

150.5 Duration of Proclamation.

150.6 Mailing Address.

Authority: 35 U.S.C. 6; E.O. 12504, 50 FR 4849, 3 CFR, 1985 Comp., p. 335.

Section 150.1 Definitions.

- (a) "Commissioner" means Assistant Secretary and Commissioner of Patents and Trademarks.
- (b) "Foreign government" means the duly-constituted executive of a foreign nation, or an international or regional intergovernmental organization which has been empowered by its member states to request issuance of Presidential proclamations on their behalf under this part.
- (c) "Interim order" means an order issued by the Secretary of Commerce under 17 U.S.C. 914.
- (d) "Mask work" means a series of related images, however fixed or encoded—

- (1) having or representing the predetermined, three dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product; and
- (2) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

- (e) "Presidential proclamation" means an action by the President extending to foreign nationals, domiciliaries and sovereign authorities the privilege of applying for registrations for mask works pursuant to 17 U.S.C. 902.
- (f) "Request" means a request by a foreign government for the issuance of a Presidential proclamation.
- (g) "Proceeding" means a proceeding to issue an interim order extending protection to foreign nationals, domiciliaries and sovereign authorities under 17 U.S.C. Chapter 9.
- (h) "Secretary" means the Secretary of Commerce.

Section 150.2 Initiation of Evaluation.

- (a) The Commissioner independently or as directed by the Secretary, may initiate an evaluation of the propriety of recommending the issuance, revision, suspension or revocation of a section 902 proclamation.

- (b) The Commissioner shall initiate an evaluation of the propriety of recommending the issuance of a section 902 proclamation upon receipt of a request from a foreign government.

Section 150.3 Submission of Requests.

- (a) Requests for the issuance of a section 902 proclamation shall be submitted by foreign governments for review by the Commissioner.
- (b) Requests for issuance of a proclamation shall include:
- (1) A copy of the foreign law or legal rulings that provide protection for U.S. mask works which provide a basis for the request.
 - (2) A copy of any regulations or administrative orders implementing the protection.
 - (3) A copy of any laws, regulations or administrative orders establishing or regulating the registration (if any) of mask works.
 - (4) Any other relevant laws, regulations or administrative orders.
 - (5) All copies of laws, legal rulings, regulations or administrative orders submitted must be in unedited, full-text form, and if possible, must be reproduced from the original document.
 - (6) All material submitted must be in the original language, and if not in English, must be accompanied by a certified English translation.

Section 150.4 Evaluation.

- (a) Upon submission of a request by a foreign government for the issuance of a section 902 proclamation, if an interim order under section 914 has not been issued, the Commissioner may initiate a section 914 proceeding if additional information is required.
- (b) If an interim order under section 914 has been issued, the information obtained during the section 914 proceeding will be used in evaluating the request for a section 902 proclamation.
- (c) After the Commissioner receives the request of a foreign government for a section 902 proclamation, or after a determination is made by the Commissioner to initiate independently an evaluation pursuant to section 150.2(a) of this part, a notice will be published in the Federal Register to request relevant and material comments on the adequacy and effectiveness of the protection afforded U.S. mask works under the system of law described in the notice. Comments should include detailed explanations of any alleged deficiencies in the foreign law or any alleged deficiencies in its implementation. If the alleged deficiencies include problems in administration such as registration, the respondent should include as specifically as possible full detailed explanations, including dates for and the nature of any alleged problems. Comments shall be submitted to the Commissioner within sixty (60) days of publication of the *Federal Register* notice.
- (d) The Commissioner shall notify the Register of Copyrights and the Committees on the Judiciary of the Senate and the House of Representatives of the initiation of an evaluation under these regulations.
- (e) If the written comments submitted by any party present relevant and material reasons why a proclamation should not issue, the Commissioner will:
- (1) Contact the party raising the issue for verification and any needed additional information;
 - (2) Contact the requesting foreign government to determine if the issues raised by the party can be resolved; and,
- (i) If the issues are resolved, continue with the evaluation; or,
 - (ii) If the issues cannot be resolved on this basis, hold a public hearing to gather additional information.
- (f) The comments, the section 902 request, information obtained from a section 914 proceeding, if any, and information obtained in a hearing held pursuant to subsection (e)(ii) of this section, if any, will be evaluated by the Commissioner.

- (g) The Commissioner will forward the information to the Secretary, together with an evaluation and a draft recommendation.
- (h) The Secretary will forward a recommendation regarding the issuance of a section 902 proclamation to the President.

Section 150.5 Duration of Proclamation.

- (a) The recommendation for the issuance of a proclamation may include terms and conditions regarding the duration of the proclamation.
- (b) Requests for the revision, suspension or revocation of a proclamation may be submitted by any interested party. Requests for revision, suspension or revocation of a proclamation will be considered in substantially the same manner as requests for the issuance of a section 902 proclamation.

Section 150.6 Mailing Address.

Requests and all correspondence submitted pursuant to these guidelines shall be addressed to:

Commissioner of Patents and Trademarks
Box 4
Washington, D.C. 20231

June 23, 1988

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents
and Trademarks

[1092 OG 52]

(79) Errors in Notice of Allowance

The purpose of this notice is to clarify existing Office practice with respect to providing a new issue fee due date. Sometimes errors appear on the Notice of Allowance, such as an incorrect number of claims, the misspelling of an inventor's name, an incorrect inventorship, or an incorrect title. A duplicate Notice of Allowance correcting the errors may be requested from the Group that mailed the Notice. However, a new issue fee due date will not be provided if the information on the original Notice of Allowance is sufficient to allow a reasonable practitioner to timely file a proper issue fee in the correct application. Specifically, the mere filing of a request for a corrected or duplicate Notice of Allowance will not act to stay the period for paying the issue fee.

June 12, 1985

JAMES E. DENNY
Deputy Assistant Commissioner
for Patents

[1056 OG 35]

(80) Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120

The Patent and Trademark Office has established initial guidelines for patent examiners to use in implementing the changes made in 35 U.S.C. 103, 116, and 120 by Public Law 98-622, the Patent Law Amendments Act of 1984. As a service to the public, those guidelines are published below. A copy of Public Law 98-622 is also being published concurrently herewith. Some of the procedural aspects of matters contained in the guidelines will be incorporated into Title 37 of the Code of Federal Regulation through the rule-making process.

Dec. 11, 1984

RENE D. TEGTMEYER
Assistant Commissioner
for Patents

Initial Guidelines As To Implementation Of 35 U.S.C. 103

Public Law 98-622 added a new sentence to 35 U.S.C. 103 which reads as follows:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." The significant features resulting from this amendment to § 103 are the following:

- (1) The only prior art which is disqualified is prior art under § 102(f) or (g) where the subject matter, i.e., the prior art, and the invention "were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." (Person includes organization.)
- (2) If the subject matter (prior art) qualifies as prior art under any other section, e.g., § 102(a), (b), or (e), it is still prior art and can be used.
- (3) Amendment applies only to subject matter which qualifies as prior art under § 103; it does not affect subject matter which qualifies as prior art under § 102, i.e., anticipatory prior art.
- (4) Term "another person" means any inventive entity other than the inventor and includes the inventor and any other person.
- (5) Term "developed" is to be read broadly and is not limited to any particular manner of development.
- (6) Subject matter derived from another under § 102(f) is prior art under § 103 unless the derived subject matter and the claimed invention are owned by, or subject to an obligation of assignment to, the same person at the time the claimed invention was made.
- (7) The disclosure of an earlier filed patent application which issues as a patent continues to be prior art under § 102(e) against a later invented and filed application of another inventor even though the patent and the later application are owned by, or subject to an obligation of assignment to, the same person.
- (8) Commonly owned applications, i.e., applications owned by the same person, may be refiled as a single application to avoid one or more of them becoming prior art against another under §§ 102(e) and 103.
- (9) The phrase "owned by the same person" requires that the same person, persons, or organization own 100% of the subject matter (prior art) and 100% of the claimed invention.
- (10) The phrase "subject to an obligation of assignment to the same person" requires that a legal obligation of assignment exist and not merely a moral or unenforceable obligation.
- (11) As long as the same person owns the subject matter and the invention at the time the claimed invention was made, a license to another may be made without the subject matter becoming prior art.
- (12) Amended § 103 requires actual ownership (or obligation to assign) be in existence at the time the claimed invention is made for the subject matter to be disqualified as prior art; acquiring one or the other later is not sufficient.
- (13) Burden of establishing that subject matter is disqualified as prior art is placed on patent applicant and not on the patent examiner once the examiner establishes a prima facie case of obviousness based on the prior art.
- (14) Double patenting rejections may now be made in applications based on commonly owned patents of different inventive entities and double patenting rejections of the obviousness type can be overcome by terminal disclaimers.
- (15) A double patenting rejection may also be made in a later filed application where the application/patent on which the rejection is based and the later filed application are not commonly owned as long as one of the inventors is common between the later filed application and the application/patent; such a rejection cannot be overcome by terminal disclaimer in view of the lack of common ownership.
- (16) The Commissioner's Notice of January 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967) is withdrawn to the extent that it does not authorize a double patenting rejection where different inventive entities are present.

- (17) Inventors of subject matter not commonly owned at the time of the invention may file as joint inventors in a single application. However, the claims in such an application are not protected from a § 102(f)/103 or § 102(g)/103 rejection.

Implementation Steps As To Amended 35 U.S.C. 103

A. Applications To Be Considered

- (1) Amended § 103 does not "affect any final decision made by the court or the Patent and Trademark Office before the date of enactment [November 8, 1984]. . . with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired."
- (2) The amendment of § 103 will *not* be considered to apply to:
- (a) Any application which has been abandoned prior to November 8, 1984, unless such application is revived pursuant to the provisions of 37 CFR 1.137(a) or (b) and is pending on or after November 8, 1984;
 - (b) Any application in which all the claims have been allowed and in which prosecution has been closed prior to November 8, 1984, e.g., by an *Ex parte* Quayle action, a Notice of allowability, or a Notice of Allowance. However, a continuing application would obtain the benefit of amended § 103 if filed prior to the abandonment or issuance of the application; and
 - (c) Any application in which an appeal has been filed and is no longer pending or in which the time for filing an appeal has expired prior to November 8, 1984. However if the application contains allowed claims on or after November 8, 1984, the allowed claims are subject to amended § 103.
- (3) The amendment to § 103 will be applied to any application (a) which is before the examiner for action and in which all the claims have not been allowed and the prosecution closed or (b) in which prosecution has been closed and is being reopened to reject the allowed claims on grounds other than 102(f)/103 or § 102(g)/103.
- (4) Applications not before the examiner for action, e.g., an application in which a response from applicant is required, will not be considered as to the applicability of amended § 103 unless applicant takes timely action which properly requires an action on the merits by the examiner.

B. Conflicting Co-pending Applications Of Different Inventive Entities With No Indication That They Are Commonly Owned

- (1) If the application files do not establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:
- (a) assume that the applications are not commonly owned;
 - (b) examine the applications on all grounds other than any conflict between the applications;
 - (c) consider the applicability of § 102(f)/103 or § 102(g)/103 if one application refers to the other (if there is no cross-reference between the applications it would be inappropriate for the examiner to refer to one application in the other in view of 35 U.S.C. 122);
 - (d) consider interference if appropriate;
 - (e) suspend the later filed application if it is otherwise allowable until the earlier filed application is abandoned or issues as a patent and then reject the later filed application under § 102(e)/103, if appropriate; and
 - (f) proceed under item C below if at any time during the examination a statement is made that the applications are commonly owned.

C. Conflicting Co-pending Applications Of Different Inventive Entities Which Are Commonly Owned

- (1) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (a) the application files refer to assignments recorded in the PTO in accordance with 37 CFR 1.331 which convey the entire rights in the applications to the same person(s) or organization(s); or (b) copies of unrecorded assignments which convey the entire rights

in the applications to the same person(s) or organization(s) are filed in each of the applications; or (c) an affidavit or declaration by the common owner is filed which states that there is common ownership and explains why the affiant believes there is common ownership; or (d) other evidence is submitted which establishes common ownership of the applications in question, e.g., a court decision determining the owner. In circumstances where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.

- (2) If the application files establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:

- examine the applications as to all grounds except § 102(f) and (g) as they apply through § 103 if the application files establish common ownership at the time the later invention was made;
- examine the applications for double patenting, including double patenting of the obviousness type, and make a provisional rejection, if appropriate, (see *In re Mott*, 190 USPQ 536 (CCPA 1976);
- examine the later filed application under § 102(e) as it applies through § 103 and make a provisional rejection under § 102(e)/103 in the later filed application, if appropriate;
- permit applicant of the later filed application to file an affidavit under 37 CFR 1.131 to overcome the provisional or actual § 102(e)/103 rejection, if appropriate, and a terminal disclaimer to overcome the provisional or actual rejection on double patenting of the obviousness type.

Initial Guidelines As To Implementation Of 35 U.S.C. 116

Public Law 98-622 amended 35 U.S.C. 116 to clarify that each inventor need not "sign the application" in addition to making the required oath and to add a new sentence which reads as follows:

"Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent."

The significant features resulting from these amendments to § 116 are the following:

- The joint inventors do not have to separately "sign the application," but only need apply for the patent jointly and make the required oath by signing the same; this is a clarification, but not a change in current practice.
- Inventors may apply for a patent jointly even though "they did not work together or at the same time," thereby clarifying (a) that it is not necessary that the inventors physically work together on a project, and (b) that one inventor may "take a step at one time, the other an approach at different times." (*Monsanto Co. v. Kamp*, 154 USPQ 259 (D.D.C. 1967)).
- Inventors may apply for a patent jointly even though "each did not make the same type or amount of contribution," thereby clarifying the "fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another does not detract from the fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem." *Monsanto supra*.
- Inventors may apply for a patent jointly even though "each did not make a contribution to the subject matter of every claim of the patent."
- Inventors may apply for a patent jointly as long as each inventor made a contribution, i.e., was an inventor or joint inventor, of the subject matter of at least one claim of the patent, there is no requirement that all the inventors be joint inventors of the subject matter of any one claim.

(6) If an application by joint inventors includes more than one independent and distinct invention, restriction may be required with the possible result of a necessity to change the inventorship named in the application if the elected invention was not the invention of all the originally named inventors.

- (7) The amendment to § 116 increases the likelihood that different claims of an application or patent may have different dates of invention; when necessary the Office or court may inquire of the patent applicant or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Implementation Steps As To Amended 35 U.S.C. 116

- See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended § 116.
- Pending applications will be permitted to be amended by complying with 37 CFR 1.48 to add claims to inventions by inventors not named when the application was filed as long as such inventions were disclosed in the application as filed since 37 CFR 1.48 permits correction of inventorship where the "correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors."
- Under amended § 116 an examiner will reject claims under § 102(f) only in circumstances where a named inventor is not the inventor of at least one claim in the application; no rejection under § 102(f) is appropriate if a named inventor made a contribution to the invention defined in any claim of the application.
- Under amended § 116 considered in conjunction with amended § 103, a rejection may be appropriate under § 102(f)/103 where the subject matter, i.e., prior art, and the claimed invention were not owned by, or subject to an obligation of assignment to, the same person at the time the invention was made.
- Applicants are responsible for correcting, and will be required to correct, the inventorship in compliance with 37 CFR 1.48 when the application is amended to change the claims so that one (or more) of the named inventors is no longer an inventor of the subject matter of a claim remaining in the application.
- In requiring restriction in an application filed by joint inventors the examiner will remind applicants of the necessity to correct the inventorship pursuant to 37 CFR 1.48 if an invention is elected and the claims to the invention of one or more inventors are cancelled.
- The examiner will not inquire of the patent applicant concerning the inventors and the invention dates for the subject matter of the various claims until it becomes necessary to do so in order to properly examine the application.
- If an application is filed with joint inventors, the examiner will assume that the subject matter of the various claims was commonly owned at the time the inventions covered therein were made, unless there is evidence to the contrary. If inventors of subject matter, not commonly owned at the time of the later invention, file a joint application, applicants have an obligation pursuant to 37 CFR 1.56 to point out the inventor and invention dates of each claim and the lack of common ownership at the time the later invention was made in order that the examiner may consider the applicability of § 102(f)/103 or 102(g)/103. The examiner will assume, unless there is evidence to the contrary, that applicants are complying with their duty of disclosure.

Initial Guidelines As To Implementation Of 35 U.S.C. 120

Public Law 98-622 amended 35 U.S.C. 120 by striking out "by the same inventor" and inserting in its place "which is filed by an inventor or inventors named in the previously filed application."

The amended first paragraph of 35 U.S.C. 120 (the bracketed portion was deleted and the underlined portion added) reads as follows:

§ 120. Benefit of earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, [by the same inventor] which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application."

The significant features of these amendments to § 120 are the following:

- A later filed application by an inventor or inventors of a previously filed co-pending application may claim the benefit of the previously filed co-pending application under § 120 even though the later filed application does not name all of the same inventors as the previously filed application.
- In order for the later filed application to be entitled to claim the benefit of the earlier filed co-pending application under § 120 the earlier filed co-pending application must:
 - have at least one inventor in common with the later filed application;
 - disclose the common inventor's invention in the manner provided by the first paragraph of 35 U.S.C. 112, i.e., fully disclose and support at least one of the common inventor's claims found in the later application.
- When necessary the Patent and Trademark Office or a court may inquire of the patent applicant or owner as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application.
- Double patenting rejections may be applicable, whether or not the applications and patents are commonly owned as long as the applications/patent(s) have at least one inventor in common.
- If the applications and patents are commonly owned, the rejection of the applications on the grounds of double patenting can be overcome by an appropriate terminal disclaimer as long as the identical invention is not being claimed. See *In re Robeson*, 141 USPQ 485 (CCPA 1964), and *In re Kaye*, 141 USPQ 829 (CCPA 1964).
- If the applications and patents are not commonly owned, the double patenting rejection is entered in the later filed application and cannot be overcome by a terminal disclaimer since the ownership of the subject matter being claimed belongs to someone other than the owner of the later application.

Implementation Steps As To Amended 35 U.S.C. 120

- See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended § 120.
- The examiner will examine any earlier filed co-pending application to which priority is claimed under § 120 to determine if:
 - the earlier filed co-pending application has at least one inventor in common with the later filed application;
 - the other requirements for claiming benefit under 120 are met; and
 - a rejection on the grounds of double patenting is proper.
- As long as the formal requirements for claiming benefit under § 120 are met, the examiner will permit the claim to be made without examining the earlier filed co-pending application for disclosure and support of at least one claim of the later filed application under the first paragraph of § 112 unless it becomes necessary to do so, e.g. because of an interference or an intervening reference.
- The examiner will not inquire of the patent applicant as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application until it becomes necessary to do so in order to properly examine the application.

- (5) The examiner will examine the earlier and later filed applications and make actual or provisional rejections for double patenting where appropriate, whether or not the applications are commonly owned.

Example 1 - Single Application - Plural Inventors

Inventors A and B, both employees of Company E with obligation to assign all their inventions to E develop inventions X and Y respectively. An application for patent is properly filed listing A and B as joint inventors and with claims to both X and Y as now possible under § 116 as amended by Public Law 98-622.

Situation 1.

The claims to X and Y are not patentably distinct.

Examiner's Action:

If otherwise patentable over the prior art—allows application.

Situation 2.

The claims to X and Y are patentably distinct.

Examiner's Action:

Require restriction and election of claims to either X or Y. The applicant, after election, must correct the inventorship of the application to list only the inventor of the elected invention; for example, inventor A if claims to invention X were elected. A divisional application with B as inventor and claims to Y may claim benefit of the originally filed application under 35 U.S.C. 120 as amended by Public Law 98-622.

Situation 3.

The application contains a Markush-type claim to X and Y and separate species claims to X and Y.

Examiner's Action:

- Examine the application to determine if the inventions X and Y are restrictable. If so, the claims to elected invention X (assume X is elected by applicants) and the X portion of the Markush claim to X and Y are examined.
 - if the claim to X is allowable, the entire Markush claim and the species claim to Y must also be examined.
 - if the claim to X is not allowable, no further action on species claim Y or the Y portion of the Markush claim is required.
- The inventorship of the application at the time of allowance must be corrected, if necessary, to correspond to the inventions covered by the claims allowed.

Example 2 - Multiple applications - plural inventions

Inventors A and B, both employees of Company E, with obligation to assign all their inventions to E, develop inventions X and Y with Y being developed by B after knowledge of A's development of X. A files application on X before B's development of Y and B later files application. Both applications establish they are owned by Company E.

Situation 1.

The claims to X and Y are not patentably distinct.

Examiner's Action:

- Examine the applications as to all grounds except § 102(f) and (g) as they apply through § 103;
- Make a provisional rejection of the later filed application on the grounds of double patenting of the obviousness type, if appropriate. If a terminal disclaimer is filed in accordance with § 1.321(b), the provisional double patenting rejection of the obviousness type will be overcome;
- Examine the later filed application under § 102(e)/103 and make a provisional rejection based on § 102(e)/103, if appropriate. An affidavit under § 1.131 can be filed to overcome the rejection based on § 102(e)/103.

Situation 2.

After receiving the examiner's action in situation 1, A and B filed a continuation-in-part application with inventor C and

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claim A's invention, B's invention and an improvement they jointly developed with C. A and B abandon their prior applications.

Examiner's Action:

Examine the application in the normal manner; no double patenting and 102(e)/103 problems now exist.

Example 3 - Two copending applications with no indication in the record of common ownership

Inventor A files an application with claims to invention X. Another copending application is filed by inventor B claiming invention Y. There is no indication of common ownership.

Situation 1.

The claims in the two applications are directed to patentably distinct inventions.

Examiner's Action:

If the claims are otherwise allowable, the applications are both allowed.

Situation 2.

The claims in the two applications are not patentably distinct.

Examiner's Action:

The applications are prosecuted until one application is allowable. If the time difference between the two applications is too large to declare an interference, action on the later filed application is suspended until the earlier filed application issues as a patent. At that time the later filed application is rejected over the earlier filed application under § 102(e)/103.

If the filing dates of the applications are sufficiently close to declare an interference, claims for an interference should be suggested. If the applications are commonly owned, the common owner must make the ownership known. When such common ownership is made known, a provisional double patenting rejection should be made in the later filed application. If the double patenting rejection is of the obviousness type, a terminal disclaimer under 37 CFR 1.321(b) may be filed. The later filed application should be examined under § 102(e)/103 and a provisional rejection based on § 102(e)/103 should be made in the later filed application, if appropriate. An affidavit under § 1.131 can be filed to overcome a rejection based on § 102(e)/103.

Example 4 - Claims in single application by different inventors.

An application for patent is filed in the Patent and Trademark Office in which the owner E sets forth the following information.

"The subject matter of claim 1 was invented by inventor A. The subject matter of claim 2 was invented by inventor B. Inventor B knew of the invention of inventor A at the time he made his invention. Both A and B made their inventions while working for owner E with a duty to assign". The inventions are different but not patentably distinct.

Examiner's Action:

If the claims are patentable over the prior art, the application should be allowed.

Public Law 98-622
Signed November 8, 1984
Ninety-eighth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the twenty-third day of January, one thousand nine hundred and eighty-four

An Act

To amend title 35, United States Code, to increase the effectiveness of the patent laws, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Patent Law Amendments Act of 1984".

TITLE I-PATENT IMPROVEMENT PROVISIONS

USE OF PATENTED INVENTIONS OUTSIDE

THE UNITED STATES

SEC. 101.(a) Section 271 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:

"(f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

"(2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer."

STATUTORY INVENTION REGISTRATION

SEC. 102.(a) Chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following new section:

§ 157. Statutory invention registration

"(a) Notwithstanding any other provision of this title, the Commissioner is authorized to publish a statutory invention registration containing the specification and drawings of a regularly filed application for a patent without examination if the applicant:

"(1) meets the requirements of section 112 of this title;

"(2) has complied with the requirements for printing, as set forth in regulations of the Commissioner;

"(3) waives the right to receive a patent on the invention within such period as may be prescribed by the Commissioner; and

"(4) pays application, publication, and other processing fees established by the Commissioner.

If an interference is declared with respect to such an application, a statutory invention registration may not be published unless the issue of priority of invention is finally determined in favor of the applicant.

"(b) The waiver under subsection (a)(3) of this section by an applicant shall take effect upon publication of the statutory invention registration.

"(c) A statutory invention registration published pursuant to this section shall have all of the attributes specified for patents in this title except those specified in section 183 and sections 271 through 289 of this title. A statutory invention registration shall not have any of the attributes specified for patents in any other provision of law other than this title. A statutory invention registration published pursuant to this section shall give appropriate notice to the public, pursuant to regulations which the Commissioner shall issue, of the preceding provisions of this subsection. The invention with respect to which a statutory invention certificate is published is not a patented invention for purposes of section 292 of this title.

"(d) The Secretary of Commerce shall report to the Congress annually on the use of statutory invention registrations. Such report shall include an assessment of the degree to which agencies of the Federal Government are making use of the statutory invention registration system, the degree to which it aids the management of federally developed technology, and an assess-

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ment of the cost savings to the Federal Government of the use of such procedures."

(b) The table of sections at the beginning of chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following:

"157. Statutory invention registration."

(c) The amendments made by this section shall take effect six months after the date of the enactment of this Act.

PRIOR ART

SEC. 103. Section 103 of title 35, United States Code, is amended by adding at the end thereof the following:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

JOINT INVENTORS

SEC. 104. (a) Section 116 of title 35, United States Code, is amended by amending the first paragraph to read as follows:

"When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent."

(b) Section 120 of title 35, United States Code, is amended by striking out "by the same inventor" and inserting in lieu thereof "which is filed by an inventor or inventors named in the previously filed application".

ARBITRATION OF INTERFERENCES

SEC. 105. Section 135 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:

"(d) Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference."

EFFECTIVE DATE

SEC. 106. (a) Subject to subsections (b), (c), (d), and (e) of this section, the amendments made by this Act shall apply to all United States patents granted before, on, or after the date of enactment of this Act, and to all applications for United States patents pending on or filed after the date of enactment.

(b) The amendments made by this Act shall not affect any final decision made by the court or the Patent and Trademark Office before the date of enactment of this Act with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired.

(c) Section 271(f) of title 35, United States Code, added by section 101 of this Act shall apply only to the supplying, or causing to be supplied, of any component or components of a patented invention after the date of enactment of this Act.

(d) No United States patent granted before the date of enactment of this Act shall abridge or affect the right of any person or his successors in business who made, purchased, or used prior to such effective date anything protected by the patent, to continue the use of, or to sell to others to be used or sold,

the specific thing so made, purchased, or used, if the patent claims were invalid or otherwise unenforceable on a ground obviated by section 103 or 104 of this Act and the person made, purchased, or used the specific thing in reasonable reliance on such invalidity or unenforceability. If a person reasonably relied on such invalidity or unenforceability, the court before which such matter is in question may provide for the continued manufacture, use, or sale of the thing made, purchased, or used as specified, or for the manufacture, use, or sale of which substantial preparation was made before the date of enactment of this Act, and it may also provide for the continued practice of any process practiced, or for the practice of which substantial preparation was made, prior to the date of enactment, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the date of enactment.

(e) The amendments made by this Act shall not affect the right of any party in any case pending in court on the date of enactment to have their rights determined on the basis of the substantive law in effect prior to the date of enactment.

TITLE II-PATENT AND TRADEMARK OFFICE PROCEDURES

BOARD OF PATENT APPEALS AND INTERFERENCES

SEC. 201. (a) Section 7 of title 35, United States Code, is amended to read as follows:

§ 7. Board of Patent Appeals and Interferences

"(a) The examiners-in-chief shall be persons of competent legal knowledge and scientific ability, who shall be appointed to the competitive service. The Commissioner, the Deputy Commissioner, the Assistant Commissioners, and the examiners-in-chief shall constitute the Board of Patent Appeals and Interferences.

"(b) The Board of Patent Appeals and Interferences shall, on written appeal of an applicant, review adverse decisions of examiners upon applications for patents and shall determine priority and patentability of invention in interferences declared under section 135(a) of this title. Each appeal and interference shall be heard by at least three members of the Board of Patent Appeals and Interferences, who shall be designated by the Commissioner. Only the Board of Patent Appeals and Interferences has the authority to grant hearings.

"(c) Whenever the Commissioner considers it necessary, in order to keep current the work of the Board of Patent Appeals and Interferences, the Commissioner may designate any patent examiner of the primary examiner grade or higher, having the requisite ability, to serve as examiner-in-chief for periods not exceeding six months each. An examiner so designated shall be qualified to act as a member of the Board of Patent Appeals and Interferences. Not more than one of the members of the Board of Patent Appeals and Interferences hearing an appeal or determining an interference may be an examiner so designated. The Secretary of Commerce is authorized to fix the pay of each designated examiner-in-chief in the Patent and Trademark Office at not to exceed the maximum rate of basic pay payable for grade GS 16 of the General Schedule under section 5332 of title 5. The rate of basic pay of each individual designated examiner-in-chief shall be adjusted, at the close of the period for which that individual was designated to act as examiner-in-chief, to the rate of basic pay which that individual would have been receiving at the close of such period if such designation had not been made."

(b) The item relating to section 7 in the table of sections at the beginning of chapter 1 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

INTERFERENCES

SEC. 202. Section 135(a) of title 35, United States Code, is amended to read as follows:

"(a) Whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any pending application, or with any unexpired patent, an interfer-

ence may be declared and the Commissioner shall give notice of such declaration to the applicants, or applicant and patentee, as the case may be. The Board of Patent Appeals and Interferences shall determine questions of priority of the inventions and may determine questions of patentability. Any final decision, if adverse to the claim of an applicant, shall constitute the final refusal by the Patent and Trademark Office of the claims involved, and the Commissioner may issue a patent to the applicant who is adjudged the prior inventor. A final judgment adverse to a patentee from which no appeal or other review has been or can be taken or had shall constitute cancellation of the claims involved in the patent, and notice of such cancellation shall be endorsed on copies of the patent distributed after such cancellation by the Patent and Trademark Office."

APPEALS AND CIVIL ACTIONS

SEC. 203. (a) Section 141 of title 35, United States Code, is amended-

(1) in the first sentence-

(A) by striking out "of the Board of Patent Appeals may appeal" and inserting in lieu thereof "in an appeal to the Board of Patent Appeals and Interferences under section 134 of this title may appeal the decision"; and

(B) by striking out, "thereby waiving his right" and inserting in lieu thereof, "By filing such an appeal the applicant waives his or her right";

(2) in the second sentence-

(A) by striking out "board of patent interferences on the question of priority may appeal" and inserting in lieu thereof "Board of Patent Appeals and Interferences on the interference may appeal the decision";

(B) by striking out "according to" and inserting in lieu thereof "in accordance with"; and

(C) by striking out "he" and inserting in lieu thereof "the party"; and

(3) by amending the last sentence to read as follows: "If the appellant does not, within thirty days after the filing of such notice by the adverse party, file a civil action under section 146, the decision appealed from shall govern the further proceedings in the case."

(b) Section 145 of title 35, United States Code, is amended-

(1) in the first sentence by striking out "Appeals may" and inserting in lieu thereof "Patent Appeals and Interferences in an appeal under section 134 of this title may," and

(2) in the second sentence by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 146 of title 35, United States Code, is amended by striking out "board of patent interferences on the question of priority" and inserting in lieu thereof "Board of Patent Appeals and Interferences on the interference".

TECHNICAL AND CONFORMING
AMENDMENTS

SEC. 204. (a) Section 41(a)(6) of title 35, United States Code, is amended-

(1) by striking out "Appeals" each place it appears and inserting in lieu thereof "Patent Appeals and Interferences"; and

(2) by inserting "in the appeal" "after oral hearing".

(b)(1) Section 134 of title 35, United States Code, is amended-

(A) in the section caption by striking out "APPEALS" and inserting in lieu thereof "PATENT APPEALS AND INTERFERENCES"; and

(B) by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(2) The item relating to section 134 in the table of sections at the beginning of chapter 12 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 305 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

AMENDMENTS TO OTHER PROVISIONS
OF LAW

SEC. 205. (a) Section 1295(a)(4)(A) of title 28, United States code, is amended by striking out "Appeals or the Board of Patent" and inserting in lieu thereof "Patent Appeals and".

(b) Section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) is amended in the third paragraph-

(1) by striking out "Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences";

(2) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(c)(1) Section 305(d) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(d)) is amended-

(A) by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences"; and

(B) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(2) Section 305(e) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(e)) is amended by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

SAVINGS PROVISION

SEC. 206. Any individual who, on the effective date of this title, is an examiner-in-chief of the Board of Patent Appeals of the Patent and Trademark Office or an examiner of interferences of the Board of Patent Interferences of such office shall be entitled to continue in office as a member of the Board of Patent Appeals and Interferences of the Patent and Trademark Office as of such effective date.

EFFECTIVE DATE

SEC. 207. Section 206 of this Act and the amendments made by this title shall take effect three months after the date of the enactment of this Act.

TITLE III- NATIONAL COMMISSION ON
INNOVATION AND PRODUCTIVITY

ESTABLISHMENT

SEC. 301. There is hereby established a National Commission on Innovation and Productivity (hereinafter in this title referred to as the "Commission").

MEMBERSHIP OF COMMISSION

SEC. 302. (a) The Commission shall be composed of

(1) three Members of the Senate appointed by the President of the Senate;

(2) three Members of the House of Representatives appointed by the Speaker of the House of Representatives; and

(3) three members appointed by the President of the United States, one of whom the President shall designate as Chairman. Of the members appointed by the President, one member should be an appropriate officer or employee of the United States, one member should be an employer who employs inventors, and one member should be an employed inventor.

(b) At no time shall more than two of the members appointed under paragraph (1), (2), or (3) of subsection (a) be persons who are members of the same political party.

(c) Any vacancy in the Commission shall not affect its powers but shall be filled in the same manner in which the original appointment was made, and subject to the limitation set forth in subsection (b) with respect to the original appointment.

(d) Six members of the Commission shall constitute a quorum, but a lesser number may conduct hearings.

DUTIES OF THE COMMISSION

SEC. 303. The Commission shall make a full and complete review and study of the level of innovation and productivity of employed inventors. Such study shall include an analysis of the various methods available to inspire or stimulate individual and corporate innovation and productivity, including an assessment of the techniques used in other countries to achieve this objective. Such study may include an assessment of those aspects of other areas of intellectual property law that inspire or stimulate such innovation and productivity. The Commission shall make recommendations for such revisions of the laws of the United States, including the repeal of unnecessary or undesirable statutes, and such other changes as the Commission considers will better foster innovation and productivity.

COMPENSATION OF MEMBERS OF THE COMMISSION

SEC. 304. (a) A member of the Commission who is a Member of Congress or a full-time officer or employee of the United States shall receive no additional compensation by reason of his or her service on the Commission.

(b) Subject to amounts provided in advance in appropriations Acts, a member of the Commission from private life shall receive the daily equivalent of the annual rate of basic pay payable for level III of the Executive Schedule for each day (including traveltime) during which such member is engaged in the actual performance of duties vested in the Commission, plus reimbursement for travel, subsistence, and other necessary expenses incurred in the performance of such duties, in accordance with subchapter I of chapter 57 of title 5, United States Code.

DIRECTOR AND STAFF

SEC. 305. (a) The Commission shall have a Director who shall be appointed by the Commission and who shall be paid at a rate not to exceed the rate of basic pay payable for level IV of the Executive Schedule. The Director, subject to the direction of the Commission, shall supervise the activities of persons employed by the Commission and the preparation of the reports of the Commission and shall perform such other duties as may be assigned to the Director by the Commission.

(b) The Commission may appoint and fix the pay of such additional personnel as it considers appropriate.

(c) The staff of the Commission may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and may be paid without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no individual so appointed may receive pay in excess of the maximum annual rate of basic pay payable for GS-16 of the General Schedule.

(d) The Chairman of the Commission may procure temporary and intermittent services under section 3109(b) of title 5, United States Code.

GOVERNMENT AGENCY COOPERATION

SEC. 306. The Commission is authorized to request from any department, agency, or independent instrumentality of the Government any information and assistance it considers necessary to carry out its functions under this title. Each such department, agency, and instrumentality is authorized to cooperate with the Commission and, to the extent permitted by law, to furnish such information and assistance to the Commission.

REPORT OF THE COMMISSION; TERMINATION

SEC. 307. The Commission shall submit interim reports on its activities to the President and the Congress at such times as the Commission considers appropriate, except that at least one such report shall be so submitted within one year after the date of the enactment of this Act. The Commission shall submit its final report on its activities to the President and the Congress within two years after such date of enactment. The Commission shall cease to exist sixty days after the date of the submission of its final report.

ADMINISTRATIVE SERVICES

SEC. 308. The General Services Administration shall provide administrative services for the Commission on a reimbursable basis.

AUTHORIZATION OF APPROPRIATIONS

SEC. 309. There is authorized to be appropriated \$250,000 to carry out this title.

EFFECTIVE DATE

SEC. 310. This title shall take effect on January 21, 1985.

TITLE IV- MISCELLANEOUS PROVISIONS

INTERNATIONAL STAGE

SEC. 401. (a) Section 361(d) of title 35, United States Code, is amended in the first sentence by inserting "or within one month after the date of such filing" after "application".

(b) Section 366 of title 35, United States Code, is amended-

(1) in the first sentence-

(A) by inserting "after the date of withdrawal," after "effect"; and

(B) by inserting before the period the following: " , unless a claim for the benefit of a prior filing date under section 365(c) of this part was made in a national application, or an international application designating the United States, filed before the date of such withdrawal"; and

(2) in the second sentence by inserting "withdrawn" after "such".

NATIONAL STAGE

SEC. 402. (a) Section 371(a) of title 35, United States Code, is amended-

(1) by striking out "is" and inserting in lieu thereof "may be"; and

(2) by striking out " , except those filed in the Patent Office". (b) Section 371(b) of title 35, United States Code, is amended to read as follows:

"(b) Subject to subsection (f) of this section, the national stage shall commence with the expiration of the applicable time limit under article 22(1) or (2) of the treaty."

(c) Section 371(c)(2) of title 35, United States Code, is amended-

(1) by striking out "received from" and inserting in lieu thereof "communicated by"; and

(2) by striking out "verified" before "translation".

(d) Section 371(d) of title 35, United States Code, is amended to read as follows:

"(d) The requirements with respect to the national fee referred to in subsection (c)(1), the translation referred to in subsection (c)(2), and the oath or declaration referred to in subsection (c)(4) of this section shall be complied with by the date of the commencement of the national stage or by such later time as may be fixed by the Commissioner. The copy of the international application referred to in subsection (c)(2) shall be submitted by the date of the commencement of the national stage. Failure to comply with these requirements shall be regarded as abandonment of the application by the parties thereof, unless it be shown to the satisfaction of the Commissioner that such failure to comply was unavoidable. The payment of a surcharge may be required as a condition of accepting the national fee referred to in subsection (c)(1) or the oath or declaration referred to in subsection (c)(4) of this section if these requirements are not met by the date of the commencement of the national stage. The requirements of subsection (c)(3) of this section shall be complied with by the date of the commencement of the national stage, and failure to do so shall be regarded as a cancellation of the amendments to the claims in the international application made under article 19 of the treaty."

(e) Section 372(b) of title 35, United States Code, is amended-

(1) by striking out the period at the end of paragraph (2) and inserting in lieu thereof " ; and"; and

(2) by adding at the end thereof the following:

"(3) the Commissioner may require a verification of the translation of the international application or any other document pertaining to the application if the application or other document was filed in a language other than English."

(f) Section 372 of title 35, United States Code, is amended by striking out subsection (c).

(g) Section 376(a) of title 35, United States Code, is amended by striking out paragraph (5) and redesignating paragraph (6) as paragraph (5).

TECHNICAL AMENDMENTS

SEC. 403. (a) Title 35, United States Code, is amended by striking out "Patent Office" each place it appears and inserting in lieu thereof "Patent and Trademark Office".

(b) The table of parts at the beginning of title 35, United States Code, is amended by adding at the end thereof the following:

"IV. Patent Cooperation Treaty.....351"

PATENT FEES

SEC. 404. (a) Notwithstanding section 41 of title 35, United States Code, as in effect before the enactment of Public Law 97-247 (96 Stat. 317), no fee shall be collected for maintaining a plant patent in force.

(b) Notwithstanding section 41(c) of title 35, United States Code, as in effect before the enactment of Public Law 97-247 (96 Stat. 317), the Commissioner of Patents and Trademarks may accept, after the six-month grace period referred to in such section 41(c), the payment of any maintenance fee due on any patent based on an application filed in the Patent and Trademark Office on or after December 12, 1980, and before August 27, 1982, to the same extent as in the case of patents based on applications filed in the Patent and Trademark Office on or after August 27, 1982.

TRADEMARK TRIAL AND APPEAL BOARD

SEC. 405. Section 3 of title 35, United States Code, is amended by adding at the end thereof the following:

"(c) The members of the Trademark Trial and Appeal Board of the Patent and Trademark Office shall each be paid at a rate not to exceed the maximum rate of basic pay payable for GS-16 of the General Schedule under section 5332 of title 5."

EFFECTIVE DATE

SEC. 406. (a) Section 404 of this Act and the amendments made by section 403 of this Act shall take effect on the date of the enactment of this Act.

(b) The amendments made by sections 401, 402, and of this Act shall take effect six months after the date of the enactment of this Act.

[1050 OG 316]

(81) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1, Part 5 and Part 10
[Docket No. 920779-3226]
RIN 0651-AA34

Miscellaneous Changes in Patent Practice

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule.

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent cases to: expand the authority to sign a terminal disclaimer in a patent application or a disclaimer in a patent; eliminate some formal requirements for an appeal brief for an appellant appearing without counsel; prohibit fee extensions of time to file reply briefs and requests for oral hearing; clarify the requirements for claiming foreign priority; specify the manner in which the fee deficiency is

computed when applicants seek to correct an error in claiming small entity status; and correct errors in published regulations. *Effective Date:* Jan. 3, 1994. The time periods and extension of time provisions of §§ 1.193 and 1.194 for filing reply briefs and requests for oral hearing will be applicable where the examiner's answer was mailed on or after the effective date. *For Further Information Contact:* Abraham HersHKovitz by telephone at (703) 305-9282, or by facsimile transmission at (703) 305-8825, or by mail marked to his attention and addressed to: Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information: In a Notice of Proposed Rulemaking published in the Federal Register at 57 FR 43412 (September 21, 1992) and in the Patent and Trademark Office Official Gazette at 1143 Off. Gaz. Pat. Office 33-40 (October 13, 1992), the Office proposed to amend several rules of practice in patent and trademark cases. This rulemaking includes changes in § 1.9(d) which were not part of the proposed rules. The changes in § 1.9(d) were made in order to update the information pertaining to establishing small entity status as a small business. No substantive changes have been made in § 1.9(d). The proposed rule requiring that the specification of a design application describe the nature and intended use of the article being claimed has been withdrawn. Additionally, the proposed rule prohibiting a fee extension of time to file corrected drawings after allowance has been withdrawn.

Written comments were submitted by 13 firms, one association and one individual. An oral hearing was not conducted.

The following includes a discussion of the rules being changed and the reasons for those changes and an analysis of the comments received in response to the notice of proposed rulemaking.

Discussion of Specific Sections to be Changed or Added:

(1) Definitions (Section 1.9)

Section 1.9(d) is amended in order to update the information therein regarding the regulations of the Small Business Administration (SBA). The SBA's rule for defining a small business has been modified. Section 1.9(d) will no longer repeat the SBA rule in its entirety. Rather, § 1.9(d), as adopted, contains a short summary of the SBA definitions. The size limit of 500 employees (including those of its affiliates) for a small business concern has not been changed. Information on size standards for a small business concern may be obtained from the Small Business Administration by calling (202) 205-6618, or by writing to: Small Business Administration, Size Standards Staff, 409 Third Street, S.W., Washington, D.C. 20416.

(2) Copies of Papers (Section 1.13)

Section 1.13(a) is amended to clarify that the paragraph pertains to non-certified copies, and that copies of patents, trademark registrations and other papers within the jurisdiction of the Office, as opposed to being within the jurisdiction of another agency, may be obtained from the Office upon payment of the fee therefor.

Section 1.13(b) is amended to clarify that certified copies of the above items may be obtained from the Office upon payment of the fee for a certified copy.

(3) Patent Applications Preserved in Secrecy (Section 1.14)

Section 1.14(b) is amended to correct a typographical error in that the second and third sentences of this section were inadvertently deleted during an earlier revision of this section. See 50 Fed. Reg. 9378 (March 7, 1985) and 1053 Off. Gaz. Pat. Office 10-26 (April 2, 1985). Section 1.14(b) is amended by restoring the deleted sentences and by changing, in the first sentence, the plural "applicants" to the singular "applicant".

(4) Effect on Fees of Failure to Establish Status, or Change Status, as Small Entity (Section 1.28)

Section 1.28(c) is amended to reflect Office practice in calculating fee deficiencies when fees have been improperly paid as a small entity. The Office receives deficiency payments that differ based on varying interpretations of § 1.28(c). Some

simply double the small entity fee in effect when the fee was originally paid in error in the small entity amount, while others compute the difference between the fee already paid and the other than small entity fee level in effect at the time the deficiency is paid. The Office requires payments to be based on fee levels in effect at the time the other than small entity fee is paid.

Since 1989, fee levels have been adjusted annually. In view of these adjustments, there are frequently situations where the fee amount has changed since it was originally paid erroneously at the small entity rate. Calculation of deficiency amounts based on fee levels in effect at the time the deficiency is paid conforms with the general concept that fees to be paid are those in effect at the time of receipt of the fees. Section 1.28(c) is amended to reflect this practice of calculating the amount of the deficiency based on the fee level in effect at the time of the deficiency payment.

(5) Claim for Foreign Priority (Section 1.55)

Section 1.55(a) is amended to incorporate the limitations of 35 U.S.C. 119, which provides that the claim for priority and the appropriate copy of the foreign application must be filed before the patent is granted. Additionally, some applicants did not realize that submission of priority papers after payment of the issue fee, but before the grant of the patent, required the filing of a petition to accept submission of priority papers after payment of the issue fee. After a patent is granted, applicants may still be able to establish priority benefits by filing a reissue application to correct the failure to perfect the claim for priority. *Brenner v. State of Israel*, 400 F.2d 789, 158 USPQ 584 (D.C. Cir. 1968). Section 1.55(a) lists separately those instances when priority documents must be filed prior to payment of the issue fee to receive the benefit of the filing date of a prior foreign application. Furthermore, § 1.55(a) is amended to clarify when a verified English language translation of priority application not in the English language must be filed and to require a statement from the translator that the translation of the priority document is accurate. *Krenitsky v. Utagawa*, 215 USPQ 713 (Comm'r Pat. 1981).

(6) Claiming Benefit of Earlier Filing Date and Cross References to other Applications (Section 1.78)

Section 1.78(a) is amended to correct a typographical error. In the reference to the fee in § 1.21(l), the letter (l) should have appeared instead of the numeral (1). Section 1.78(a) is further amended to be consistent with § 1.5(a), by permitting the identification of the prior application by application number or serial number and filing date.

(7) Prohibition of Fee Extensions of Time (Section 1.136(a))

Section 1.136(a) is amended by adding two additional situations in which applicants would no longer be able to use fee extensions. Section 1.136(a) is rearranged so that referenced sections appear in numerical order. The new prohibitions will apply to situations where the request to extend the time is: (1) to permit filing reply briefs under § 1.193(b); and (2) to permit filing requests for oral hearing under § 1.194(b) before the Board of Patent Appeals and Interferences (Board). Fee extensions of time to file reply briefs or requests for oral hearing delay transfer of jurisdiction of the appeal to the Board and unnecessarily delay final disposition of the appeal.

The Office has considered changing the practice to require payment of the fee and filing the request for an extension of time before the period set for response expires in the situations addressed in this rulemaking, but did not adopt that approach because of the complexity that it would introduce into the system.

Under the previous rules, applicants could request a maximum four-month extension of time under § 1.136(a) to file reply briefs or request oral hearings. Since the backlog of cases awaiting a decision by the Board has been reduced, these extension requests have resulted in unnecessary delays in transmitting appeals to the Board and increased pendency of applications. The periods specified in 1.193(b) and 1.194(b), as adopted, are considered sufficient to file a reply brief or request an oral hearing. Extensions of time for cause may be available

under § 1.136(b). Therefore, § 1.136(a) is amended to prohibit fee extensions of time to file a reply brief or request an oral hearing.

(8) Appeal to the Board of Patent appeals and Interferences (Section 1.191)

Section 1.191(d) is amended to be consistent with the changes to 1.136(a).

(9) Appellant's Brief (Section 1.192)

Sections 1.192(a) and (d) are amended by moving the last sentence of current § 1.192(d) to § 1.192(a) to highlight that the Board may refuse consideration of any arguments or authorities not included in the brief.

Section 1.192(c) is amended to eliminate some of the formal requirements for an appeal brief for a pro se appellant, that is, an appellant appearing without counsel. An appellant appearing without counsel means there is no attorney or agent of record in the application or reexamination proceeding, the brief was not prepared by a registered practitioner, and the brief was not signed by a registered practitioner. Paragraph (c) is amended to allow a pro se appellant's brief to be accepted provided it is at least in substantial compliance with the requirements of subparagraphs (1), (2), (6) and (7) of paragraph (c). If a pro se appellant's brief is accepted, it will be presumed that a rejected group of claims stand or fall together unless an argument is included in the brief that presents reasons as to why appellant considers one or more claims in the rejected group of claims to be separately patentable from the other claims in the group.

(10) Examiner's Answer (Section 1.193)

Section 1.193(b) is amended to clarify the consequence of failure to file a reply brief in response to an expressly stated new ground of rejection made in an examiner's answer. The failure to file a reply brief will result in dismissal of the appeal as to the claims made subject to the expressly stated new ground of rejection. If the dismissal of the appeal applies to all claims in the application, the application will be abandoned. Additionally, this section is amended to change the period for filing a reply brief to two months from the date of the examiner's answer, regardless of whether the examiner's answer includes a new ground of rejection. The change to two months will avoid confusion in those cases in which there is a disagreement as to whether the examiner's answer in fact states a new ground of rejection and will provide an adequate period of time to file a reply brief without the need to request an extension of time. Finally, this section is amended to be consistent with the changes to § 1.136(a).

(11) Oral Hearing (Section 1.194)

Section 1.194(b) is amended to be consistent with the changes to 1.136(a). Under the previous rule, if a new ground of rejection was made in an examiner's answer, two months were permitted for filing a reply brief and, if a reply brief was filed, an applicant was permitted three months after the date of filing a reply brief to file a request for an oral hearing. In order to provide a more consistent approach vis-a-vis time periods for filing reply briefs and requests for oral hearing and to permit earlier decisions of issues on appeal, the period for filing a request for oral hearing has been changed to two (2) months from the date of an examiner's answer, regardless of whether the examiner's answer includes a new ground of rejection. This period should be sufficient to request an oral hearing without the need to request an extension of time.

(12) Decision by the Board of Patent Appeals and Interferences (Section 1.196)

Section 1.196(f) is amended to refer to § 1.550(c) for extensions of time in reexamination proceedings.

(13) Action Following Decision (Section 1.197)

Section 1.197(b) is amended to refer to § 1.550(c) for extensions of time in reexamination proceedings.

(14) Amendments After Allowance (Section 1.312)

Section 1.312(b) is amended to clarify that the fee required for a petition under this section is that specified in § 1.17(i)(1).

(15) Statutory Disclaimers, Including Terminal Disclaimers (Section 1.321).

The title of section 1.321 is amended to clarify that this section applies to terminal disclaimers, as well as to statutory disclaimers in general. Section 1.321 is further amended to permit the signing of a disclaimer in a patent by the patentee, or an attorney or agent of record, whereas, persons permitted to sign a disclaimer in a patent application will be any person specified in § 1.33(a)(1)-(4). The person signing the disclaimer must state the present extent of the disclaiming party's (i.e., patentee's or assignee's) interest in the patent or patent application. Naturally, a disclaimer signed on behalf of a party who no longer has an ownership interest in the patent or patent application cannot be accepted since 35 U.S.C. 253 requires a disclaimer to be signed by the owner of the whole or any sectional interest in the patent or patent application.

Section 253 of Title 35 of the United States Code states that disclaimer of any complete claim in a patent may be made by the patentee. Furthermore, any terminal part of the patent granted or to be granted may be disclaimed by the patentee, or applicant, respectively. It was the recent policy of the Office to accept disclaimers only if signed by the owner of record. This policy was too restrictive in that it precluded authorized patent practitioners from signing disclaimers. Furthermore, it was often difficult to ascertain whether the person signing was in fact an officer of the entity owning rights to the application. Accordingly, the rules as adopted, permit an attorney or agent of record to sign terminal disclaimers.

If the patent or patent application is assigned to an organization, such as a corporation, partnership, university, Government agency, or similar entity, and the disclaimer is signed by the assignee, the assignee must comply with § 3.73(b). See "Taking Action in a Patent Matter Before the Office by the Assignee under 37 CFR 3.73", at 1150 Off. Gaz. Pat. Office 62 (May 25, 1993). However, the rules, as adopted, permit an attorney or agent of record to sign a terminal disclaimer without the need to comply with § 3.73(b). Paragraph (a) of this section is further amended to refer only to disclaimers filed in patents. The Office does not record a disclaimer of part of a claim or claims. Hence, paragraph (a) of this section is amended to indicate that a disclaimer which does not disclaim a complete claim or claims will be refused recordation, rather than "may be refused recordation" as the rule read previously.

Paragraph (b) of this section is amended to refer only to terminal disclaimers filed in a patent application. Section 1.321(b) is also amended to include a reminder that the disclaimer is binding upon the grantee and its successors or assigns.

Paragraph (c) of this section incorporates the language of former paragraph (b) of this section concerning terminal disclaimers to obviate a double patenting rejection. This paragraph also includes reference to terminal disclaimers filed in reexamination proceedings for the same purpose.

(16) Publication of Notice of Proposed Amendments (Section 1.352(a))

Section 1.352(a) is amended to delete the language "and in other cases whenever practicable" so that the Office may engage in expedited rulemaking when publication of a notice of proposed amendments to regulations is not required by law.

(17) Time for Payment of Maintenance Fees (Section 1.362)

Section 1.362 is amended to clarify applicability and due dates for payment of maintenance fees. Paragraph (c)(3) of § 1.362 indicates that the actual filing date of a continuing application determines applicability of maintenance fees, while paragraph (c)(4) indicates that in the case of a reissue application, the filing date of the original non-reissue application determines applicability of maintenance fees. Some patentees and

patent practitioners expressed confusion with respect to applicability of maintenance fees in the case of a continuing application of a reissue application. Uncertainty has been expressed as to whether this type of application would fall within paragraph (c) (3) or (c) (4). The amendment to 1.362(c)(4) clarifies that continuing reissue application of a reissue application is subject to maintenance fees only if the original (non-reissue) patent would be subject to such fees. These amendments also remove any confusion that may have existed with regard to the due dates for payment of maintenance fees in reissued patents by adding § 1.362(h) to specify that the due dates for payment of maintenance fees in such reissued patents are computed from the date of grant of the original (non-reissue) patent. The due dates for payment of maintenance fees in a reissued patent are computed from the date of grant of the original (non-reissue) patent. Note the distinction between a continuing reissue application of a reissue application, and a regular continuing application of a reissue application as discussed in *re Bauman*, 683 F.2d 405, 214 USPQ 585 (CCPA 1982).

In a notice entitled "Revision of Patent and Trademark Fees" published in the Federal Register at 56 FR 65142 (December 13, 1991), the Office announced an amendment to its rules of practice. Included in that notice was a change to paragraph (e) of § 1.362 which was not intended. See 56 FR at 65146. The portion of paragraph (e) which was not intended to be amended is changed back to its earlier version.

(18) Request by Applicant for Interference With Patent (Section 1.6077)

Section 1.607(a)(5) (i) is amended to correct a typographical error in the spelling of the word "count".

(19) Export of Technical data (Section 5.19)

Section 5.19(a) is amended to correct the citations set forth in the rule and to update the name of the office in the Department of Commerce.

(20) Sharing legal fees (Section 10.48)

Section 10.48(b) is amended to correct a typographical error in the spelling of the word "deceased".

Response to Comments on the Rules

The comments received in response to the notice of proposed rulemaking have been given careful consideration and a number of the suggested modifications have been adopted. The comments and responses are discussed below.

Comment: One comment inquired as to why the phrase by "serial number and filing date" was used in § 1.78(a), where as the phrase "application number (consisting of the series code and serial number, e.g., 07/123,456), or the serial number and filing date" was used in § 1.5(a).

Response: The inconsistency has been removed by having section 1.78(a) changed to use terminology consistent with § 1.5(a).

Comment: A number of comments directed to § 1.85(c) expressed concern that applications would become abandoned as a result of the proposal that fee extensions of time under § 1.136(a) could not be obtained for filing corrected drawings.

Response: The proposal that fee extensions of time under § 1.136(a) not be permitted for filing corrected drawings has been withdrawn.

Comment: Regarding § 1.85(c), one comment recommended that the Notice of Draftman's Patent Drawing Review (PTOL-948) include separate boxes for each drawing objection (e.g., a separate box for each of "pale," "rough," "blurred," and "jagged"); that drafting personnel be better trained to more completely communicate the objection to any particular drawing; and that the Notice of Allowability indicate for which specific figure formal drawings are required.

Response: The proposed rule changed to § 1.85(c) has been withdrawn. Questions concerning the Notice of Draftman's Patent Drawing Review may be referred to the Official Draftman at (703) 305-8335, and questions concerning any require-

ment on a Notice of Allowability should be directed to the examiner.

Comment: Regarding §§ 1.153 and 1.154, a number of comments objected to the proposed requirement that the specification of a design application contain a statement of the nature and intended use of the article claimed.

Response: The proposed rule change regarding §§ 1.153 and 1.154 has been withdrawn. The Office will continue its current practice of mailing a request for information where the nature or intended use of the article is not evident in the application file.

Comment: Regarding § 1.153, one comment stated that the language of the proposed rule is unclear as to whether an abstract is required. The comment recommended that the Office should require an abstract and require it to provide the necessary information.

Response: As discussed above, the proposed rule change regarding §§ 1.153 and 1.154 has been withdrawn. The present rules do not require an Abstract. Suggestions concerning this issue may be directed to the Director of Examining Group 2900.

Comment: Regarding §§ 1.193(b) and 1.194(b), one comment opposed the elimination of fee extensions in the filing of reply briefs and requests for oral hearings, as one month, while often a sufficient time to file a reply brief, is insufficient where counsel must communicate with a patent department or foreign applicants, especially where there is a delay between the time the Office mails the communication and it is received by counsel.

Response: The period for filing a reply brief or request for oral hearing has been changed to two months from the date of the examiner's answer. The period was extended to two months in this rulemaking, as adopted, to provide appellants adequate time to take appropriate action, and to provide a uniform period in the rules to file a reply brief or request an oral hearing. Extensions of time for cause under § 1.136(b) will be available for those rare situations when an extension is necessary.

Comment: Regarding §§ 1.193(b) and 1.194(b), one comment opposed the elimination of fee extensions in the filing of reply briefs and requests for oral hearings, as a one-month period for response is insufficient for sole practitioners and persons who do not maintain offices for the sole purpose of responding to Office communications.

Response: As discussed above, the period for filing a reply brief or request for oral hearing has been changed to two months from the date of the examiner's answer. This two-month period should be an adequate period of time for filing a reply brief or a request for an oral hearing. Extensions of time for cause under § 1.136(b) will be available for those rare situations when an extension is necessary.

Comment: Regarding §§ 1.193(b) and 1.194(b), one comment deemed it reasonable and necessary that the Board have at its disposal all possible arguments. The refusal to enter a reply brief was characterized as an impediment to a decision based upon a complete record. Additionally, the comment argued that the refusal to enter a reply brief would result in attempts to enter the arguments under another guise, such as during oral argument or by filing a memorandum of oral argument.

Response: An appellant should present all arguments for patentability in the appeal brief. A reply brief should not be necessary to present a complete record, and would be inappropriate except in those case where the examiner has introduced a new point of argument or new ground of rejection in the examiner's answer.

Comment: Regarding §§ 1.193(b) and 1.194(b), one comment noted that fee extensions for filing reply briefs and requests for oral hearings do not create any more of a delay in the final disposition of an appeal than a fee extension for filing the Notice of Appeal or the brief in support of the appeal.

Response: The comment reflects a misunderstanding of the appeal process and the handling of applications in which an appeal has been filed. Under the existing rules before this rulemaking, appellants were able, with the maximum four-month fee extension, to file reply briefs or request oral hearings up to six months after an examiner's answer. As a result, appeals otherwise ready for a decision were either held in the examining group for that period of time before transmittal to the Board or when transmitted to the Board earlier, were occasionally acted upon by a Board panel before the reply briefs or requests

for oral hearing were filed, requiring the Board to vacate its decision. As the backlog of appeals awaiting a decision by the Board has been reduced, retaining applications in the examining group has resulted in unnecessarily prolonging the pendency of applications. Under the rules as adopted, appellants are generally given more time (two months instead of one month) to file a reply brief or request an oral hearing, and the Office minimizes the delay necessary before transmitting the appeal to the Board for decision.

Comment: Regarding § 1.193(b), one comment stated that an appeal should not be dismissed for failure to file a reply brief to a new ground of rejection made in the examiner's answer, unless the examiner's answer expressly states that there is a new ground of rejection. The comment suggests that this rule should recite "If the examiner's answer expressly states a new ground of rejection is being made...."

Response: The proposal has been adopted to the extent that the final rule, as adopted, states "If the examiner's answer expressly states that it includes a new ground of rejection, appellant must file a reply thereto within two months from the date of such answer to avoid dismissal of the appeal as to the claims subject to the new ground of rejection."

Comment: Regarding § 1.193(b), one comment recommended that appellants should be given three months to respond to a new ground of rejection in an examiner's answer, as the current two-month time period is inadequate, and this period would be equal to the period given for response to rejections under § 1.106.

Response: This recommendation is not adopted. The Office experience has shown that the two-month period from the date of an examiner's answer has been an adequate period of time for filing a reply brief in response to a new ground of rejection. Also, it is desirable to set a uniform period of time in the rules to file a reply brief. Extensions of time for cause under § 1.136(b) will be available for those rare situations when an extension is necessary.

Comment: One comment recommended that appellants should be permitted to obtain fee extensions where the examiner's answer includes a new ground of rejection.

Response: This recommendation is not adopted. As indicated above, fee extensions for filing reply briefs have resulted in unnecessarily prolonging the pendency of applications. Extensions of time for cause under § 1.136(b) will be available for those rare situations when an extension is necessary.

Comment: Regarding §§ 1.193(b) and 1.194(b), one comment suggested that the rule be modified to permit the filing of a request for an oral hearing concurrently with a reply brief as one cannot appropriately determine the necessity for an oral hearing until a reply brief is drafted.

Response: Under the proposed rules, the time period for filing a request for an oral hearing was the later of one month from the date of an examiner's answer, or the date of filing a timely reply brief. Under the rules as adopted, an appellant has two months from the date of the examiner's answer to file a reply brief and request an oral hearing. Therefore, a request for oral hearing may be filed concurrently with a reply brief.

Comment: Regarding § 1.312, one comment recommended that amendments under § 1.312 be processed expeditiously, as the current system for the processing of such amendments is inadequate.

Response: Examiners are instructed to act promptly on all amendments under § 1.312. Any problems should be brought to the attention of the Group Director.

OTHER CONSIDERATIONS

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to permit persons other than the assignee of a patent application or patent to sign certain disclaimers, incorporate existing Office policy into the regulations and eliminate the opportunity to pay for extensions of time in

certain situations where the extensions substantially interfere with the efficient operation of the Office.

The Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes contain collection-of-information requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, which has previously been approved by the Office of Management and Budget under Control No. 0651-0011. Public reporting burden for these collections of information is estimated to average 0.1 hours each for fee extensions of time under § 1.136(a), and 0.2 hours each for disclaimers under § 1.321, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding these burden estimates, or any other aspect of this collection of information, including suggestions for reducing the burden, to Abraham Hershkovitz, Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503 (ATTN: Paperwork Reduction Act Project No. 0651-0031).

LIST OF SUBJECTS 37 CFR Part 1

Administrative practice and procedure, Freedom of information, Inventions and patents, Reporting and recordkeeping requirements.

37 CFR Part 5

Classified information, Exports, Foreign relations, Inventions and patents.

37 CFR Part 10

Administrative practice and procedure, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set out in the preamble, Parts 1, 5 and 10 of title 37 of the Code of Federal Regulations are amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.9, paragraph (d) is revised to read as follows:

§ 1.9 Definitions.

(d) A small business concern as used in this chapter means any business concern as defined by the regulations of the Small Business Administration in 13 CFR 121.1301 through 121.1305, which define a small business concern as one whose number of employees, including those of its affiliates, does not exceed 500 persons and which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business

concern or a nonprofit organization under this section. Questions related to size standards for a small business concern may be directed to: Small Business Administration, Size Standards Staff, 409 Third Street, S.W., Washington, D.C. 20416.

(e) ***

3. Section 1.13 is revised to read as follows:

§ 1.13 Copies and certified copies.

(a) Non-certified copies of patents and trademark registrations and of any records, books, papers, or drawings within the jurisdiction of the Patent and Trademark Office and open to the public, will be furnished by the Patent and Trademark Office to any person, and copies of other records or papers will be furnished to persons entitled thereto, upon payment of the fee therefor.

(b) Certified copies of the patents and trademark registrations and of any records, books, papers, or drawings within the jurisdiction of the Patent and Trademark Office and open to the public or persons entitled thereto will be authenticated by the seal of the Patent and Trademark Office and certified by the Commissioner, or in his name attested by an officer of the Patent and Trademark Office authorized by the Commissioner, upon payment of the fee for the certified copy.

4. Section 1.14, paragraph (b) is revised to read as follows:

§ 1.14 Patent applications preserved in secrecy.

(b) Except as provided in § 1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application in which the applicant has filed an authorization to open the complete application to the public, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Complete applications (§ 1.51(a)) which are abandoned may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

5. Section 1.28, paragraph (c) is revised to read as follows:

§ 1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(c) If status as a small entity is established in good faith, and fees as a small entity are paid in good faith, in any application or patent, and it is later discovered that such status as a small entity was established in error or that through error the Patent and Trademark Office was not notified of a change in status as required by paragraph (b) of this section, the error will be excused (1) if any deficiency between the amount paid and the amount due is paid within three months after the date the error occurred or (2) if any deficiency between the amount paid and the amount due is paid more than three months after the date the error occurred and the payment is accompanied by a statement explaining how the error in good faith occurred and how and when the error was discovered. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The deficiency is based on the amount of the fee, for other than a small entity, in effect at the time the deficiency is paid in full.

6. Section 1.55, paragraph (a) is revised to read as follows:

§ 1.55 Claim for foreign priority.

(a) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119 and 172. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required

by § 1.63. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed:

- (1) in the case of an interference (§ 1.630);
- (2) when necessary to overcome the date of a reference relied upon by the examiner;
- (3) when specifically required by the examiner; and
- (4) in all cases, before the patent is granted. If the claim for priority or the certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in § 1.17(i)(1). If the certified copy filed is not in the English language, a translation need not be filed except in the case of an interference; or when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

7. Section 1.78, paragraph (a) is revised to read as follows:

§ 1.78 Claiming benefit of earlier filing date and cross references to other applications.

(a)(1) An application may claim an invention disclosed in a prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must name as an inventor at least one inventor named in the later filed application and disclose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior application must be

- (i) complete as set forth in § 1.51; or
 - (ii) entitled to a filing date as set forth in § 1.53(b) and include the basic filing fee set forth in § 1.16; or
 - (iii) entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21 (1) within the time period set forth in § 1.53(d).
- (a)(2) Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by application number (consisting of the series code and serial number), or serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See § 1.14(b)).

8. Section 1.136, paragraph (a) is revised to read as follows:

§ 1.136 Filing of timely responses with petition and fee for extension of title for cause.

(a)(1) If an applicant is required to respond within a nonstatutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in § 1.17 are filed prior to or with the response, unless

- (i) applicant is notified otherwise in an Office action,
- (ii) the response is a reply brief submitted pursuant to § 1.193(b),
- (iii) the response is a request for an oral hearing submitted pursuant to § 1.194(b),
- (iv) response is to a decision by the Board of Patent Appeals and Interferences pursuant to §§ 1.196, 1.197 or 1.304, or
- (v) the application is involved in an interference declared pursuant to § 1.611.)

(a)(2) The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and

the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. See § 1.136(b) for extensions of time relating to proceedings pursuant to §§ 1.193(b), 1.194, 1.196 or 1.197. See § 1.304 for extension of time to appeal to the U.S. Court of Appeals for the Federal Circuit or to commence a civil action. See § 1.550(c) for extension of time in reexamination proceedings and § 1.645 for extension of time in interference proceedings.

9. Section 1.191, paragraph (d) is revised to read as follows:

§ 1.191 Appeal to Board of Patent Appeals and Interferences.

(d) The time periods set forth in §§ 1.191 and 1.192 are subject to the provisions of § 1.136 for patent applications and § 1.550(c) for reexamination proceedings. The time periods set forth in §§ 1.193, 1.194, 1.196 and 1.197 are subject to the provisions of § 1.136(b) for patent applications or § 1.550(c) for reexamination proceedings. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action.

10. Section 1.192, paragraphs (a), (c) introductory text and (d) are revised to read as follows:

§ 1.192 Appellant's brief

(a) The appellant shall, within 2 months from the date of the notice of appeal under § 1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in § 1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. Any arguments or authorities not included in the brief may be refused consideration by the Board of Patent Appeals and Interferences.

(b) ***

(c) The brief shall contain the following items under appropriate headings and in the order here indicated unless there is no attorney or agent of record in the application or reexamination proceeding, the brief was not prepared by a registered practitioner, and the brief was not signed by a registered practitioner, wherein the brief will be accepted as complying with this paragraph provided it is at least in substantial compliance with the requirements of paragraphs (1), (2), (6) and (7):

(d) If a brief is filed which does not comply with the requirements of paragraph (c) of this section, the appellant will be notified of the reasons for non-compliance and provided with a period of one month within which to file an amended brief. If the appellant does not file an amended brief during the one-month period, or files an amended brief which does not overcome all the reasons for non-compliance stated in the notification, the appeal will be dismissed.

11. Section 1.193, paragraph (b) is revised to read as follows:

§ 1.193 Examiner's answer.

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within two months from the date of such answer. The new points of argument shall be specifically identified in the

reply brief. If the examiner determines that the reply brief is not directed only to new points of argument raised in the examiner's answer, the examiner may refuse entry of the reply brief and will so notify the appellant. If the examiner's answer expressly states that it includes a new ground of rejection, appellant must file a reply thereto within two months from the date of such answer to avoid dismissal of the appeal as to the claims subject to the new ground of rejection; such reply may be accompanied by any amendment or material appropriate to the new ground. See § 1.136(b) for extensions of time for filing a reply brief in a patent application and § 1.550(c) for extensions of time in a reexamination proceeding.

12. Section 1.194, paragraph (b) is revised to read as follows:

§ 1.194 Oral hearing.

(b) If appellant desires an oral hearing, appellant must file a written request for such hearing accompanied by the fee set forth in § 1.17(g) within two months after the date of the examiner's answer. If appellant requests an oral hearing and submits therewith the fee set forth in § 1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board. See § 1.136(b) for extensions of time for requesting an oral hearing in patent application and § 1.550(c) for extensions of time in a reexamination proceeding.

13. Section 1.196, paragraph (f) is revised to read as follows:

§ 1.196 Decision by the Board of Patent Appeals and Interferences

(f) See 1.136(b) for extensions of time to take action under this section in a patent application and § 1.550(c) for extensions of time in a reexamination proceeding.

14. Section § 1.197, paragraph (b) is revised to read as follows:

§ 1.197 Action following decision.

(b) A single request for reconsideration or modification of the decision may be made if filed within one month from the date of the original decision, unless the original decision is so modified by the decision on reconsideration as to become, in effect, a new decision, and the Board of Patent Appeals and Interferences so states. The request for reconsideration shall state with particularity the points believed to have been misapprehended or overlooked in rendering the decision and also state all other grounds upon which reconsideration is sought. See § 1.136(b) for extensions of time for seeking reconsideration in a patent application and § 1.550(c) for extensions of time in a reexamination proceeding.

15. Section 1.312, paragraph (b) is revised to read as follows:

§ 1.312 Amendments after allowance.

(b) Any amendment pursuant to paragraph (a) of this section filed after the date the issue fee is paid must be accompanied by a petition including the fee set forth in § 1.17(i)(1) and a showing of good and sufficient reasons why the amendment is necessary and was not earlier presented.

16. Section 1.321 is revised to read as follows:

§ 1.321 Statutory Disclaimers, including Terminal Disclaimers.

(a) A patentee owning the whole or any sectional interest in a patent may disclaim any complete claim or claims in a patent. In like manner any patentee may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted. Such disclaimer is binding upon the grantee and its successors or assigns. A notice of the disclaimer is published in the *Official Gazette* and attached to the printed copies of the specification. The disclaimer, to be recorded in the Patent and Trademark Office, must:

- (1) be signed by the patentee, or an attorney or agent of record;
- (2) identify the patent and complete claim or claims, or term being disclaimed. A disclaimer which is not a disclaimer of a complete claim or claims, or term will be refused recordation;
- (3) state the present extent of patentee's ownership interest in the patent; and
- (4) be accompanied by the fee set forth in § 1.20(d).

(b) An applicant or assignee may disclaim or dedicate to the public the entire term, or any terminal part of the term, of a patent to be granted. Such terminal disclaimer is binding upon the grantee and its successors or assigns. The terminal disclaimer, to be recorded in the Patent and Trademark Office, must:

- (i) be signed: (i) by the applicant, or
- (ii) if there is an assignee of record of an undivided part interest, by the applicant and such assignee, or
- (iii) if there is an assignee of record of the entire interest, by such assignee, or
- (iv) by an attorney or agent of record;
- (2) specify the portion of the term of the patent being disclaimed;
- (3) state the present extent of applicant's or assignee's ownership interest in the patent to be granted; and
- (4) be accompanied by the fee set forth in § 1.20(d).

(c) A terminal disclaimer, when filed to obviate a double patenting rejection in a patent application or in a reexamination proceeding, must:

- (1) comply with the provisions of paragraphs (b)(2) through (b)(4) of this section;
- (2) be signed in accordance with paragraph (b)(1) of this section if filed in a patent application, or in accordance with paragraph (a)(1) of this section if filed in a reexamination proceeding; and
- (3) include a provision that any patent granted on that application or any patent subject to that reexamination proceeding shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection.

17. Section 1.352 is amended by revising paragraph (a) to read as follows:

§ 1.352 Publication of notice of proposed amendments.

(a) Whenever required by law, notice of proposed amendments to the regulations in this part will be published in the *Official Gazette* and in the *FEDERAL REGISTER*. If not published with the notice, copies of the text will be furnished to any person requesting the same. All comments, suggestions, and briefs received within a time specified in the notice will be considered before adoption of the proposed amendments which may be modified in the light thereof.

18. Section 1.362 is amended by revising paragraphs (c)(4) and (e) and adding paragraph (h) to read as follows:

§ 1.362 Time for maintenance fees.

(c) ***

(4) For a reissue application, including a continuing reissue

application claiming the benefit of a reissue application under 35 USC 120, the United States filing date of the original non-reissue application on which the patent reissued is based.

(e) Maintenance fees may be paid with the surcharge set forth in 1.20(h) during the respective grace periods after:

- (1) 3 years and 6 months and through the day of the 4th anniversary of the grant for the first maintenance fee.
- (2) 7 years and 6 months and through the day of the 8th anniversary of the grant for the second maintenance fee, and
- (3) 11 years and 6 months and through the day of the 12th anniversary of the grant for the third maintenance fee.

(h) The periods specified in §§ 1.362(d) and (e) with respect to a reissue application, including a continuing reissue application thereof, are counted from the date of grant of the original non-reissue application on which the reissued patent is based.

19. Section 1.607, paragraph (a)(5)(i) is revised to read as follows:

§ 1.607 Request by applicant for interference with patent.

- (a) ***
- (5) ***
- (i) Identified as corresponding to the count, and

PART 5 - CLASSIFIED INFORMATION, FOREIGN RELATIONS, INVENTIONS, AND PATENTS

20. The authority citation for 37 CFR Part 5 continues to read as follows:

Authority: 35 U.S.C. 6, 41, 181-188, as amended by the Patent Law Foreign Filing Amendments Act of 1988, Pub. L. 100-418, 102 Stat. 1567; the Arms Export Control Act, as amended, 22 U.S.C. 2751 *et seq.*, the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*, and the Nuclear Non-Proliferation Act of 1978, 22 U.S.C. 3201 *et seq.*, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

21. Section 5.19, paragraph (a) is revised to read as follows:

§ 5.19 Export of technical data

(a) Under regulations (15 CFR 770.10(j)) established by the U.S. Department of Commerce, Bureau of Export Administration, Office of Export Licensing, a validated export license is not required in any case to file a patent application or part thereof in a foreign country if the foreign filing is in accordance with the regulations (37 CFR 5.11 through 5.33) of the Patent and Trademark Office.

PART 10 - REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

22. The authority citation for 37 CFR Part 10 continues to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

23. Section 10.48, paragraph (b) is revised to read as follows:

§ 10.48 Sharing legal fees

(b) A practitioner who undertakes to complete unfinished legal business of a deceased practitioner may pay to the estate

of the deceased practitioner that proportion of the total compensation which fairly represents the services rendered by the deceased practitioner.

Oct. 15, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1156 OG 54]

(82)

U.S. Department of Commerce Patent and Trademark Office Special Status for Patent Applications Relating to Superconductivity

On Commercial Applications of Superconductivity, the President stated that "We need to strengthen patent laws to increase protection for manufacturing processes and speed up the patent process so that it can keep pace with the fast-paced world of high technology." The President also noted that "to most of us laymen, superconductivity was a completely new term, but it wasn't long before we learned of the great promise it held out to alter our world for the better - a quantum leap in energy efficiency that would bring with it a host of benefits, not least among them a reduced dependence on foreign oil, a cleaner environment, and a stronger national economy." The President's Superconductivity Initiative of even date included, as a major administrative component, a proposal "Directing the Patent and Trademark Office to accelerate the processing of patent applications and adjudication of disputes involving superconductivity technologies when requested by the applicants to do so."

In accordance with the President's proposal, the Patent and Trademark Office will, on request, accord "special" status to all patent applications for inventions involving superconductive materials. Examples of such inventions would include those directed to the superconductive materials themselves as well as to their manufacture and application. In order that the Patent and Trademark Office may implement this procedure, we invite all applicants desiring to participate in this program to request that their applications be accorded "special" status. Such requests should be in writing, should identify the application by serial number and filing date, and should be accompanied by a statement under 37 CFR 1.102 that the invention involves superconductive materials. No fee is required. The statement must be verified if made by a person not registered to practice before the Patent and Trademark Office. Decisions whether to accord "special" status on the basis of a request will be made by the appropriate Group Director.

Requests should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Aug. 5, 1987

DONALD J. QUIGG
Assistant Secretary of
Commerce and Commissioner of
Patents and Trademarks

[1082 TMOG 7]

(83) Preparation for Processing High Temperature Superconductor Technology

In response to the President's Superconductivity Initiative announced on July 28, 1987 and with the expectation of the filing of increasing numbers of patent applications relating to higher temperature superconductors, the U.S. Patent and Trademark Office has taken a number of steps to prepare for the effective handling of applications on this subject matter.

These actions include (1) establishing a special Task Force to prepare for the processing of patent applications for higher temperature superconductor technology; (2) making patent applications relating to this technology special on request of the applicant and (3) renewing support for legislation providing

for an expanded scope of protection for process patents to cover products made by the patented process.

The responsibilities of the Task Force are to (1) coordinate the development of a Patent and Trademark Office capability to examine the expected large number of patent applications in this area and (2) provide an information resource and sounding board for legal and practice questions and policy development in this area. The Task Force has been assigned a number of specific tasks, such as developing a complete search file on superconductivity technology for the use of Examiners and the public, establishing a training program for examiners on the technology and assuring a uniform and consistent application of the patent law to the technology in the U.S. Patent and Trademark Office.

Sept. 16, 1987

RENE D. TEGTMEYER, for
DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents and Trademarks

[1083 OG 16]

(84) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 and 2
[Docket No. 90143-9144]
RIN 0651-AA35

**Amendment of Patent and Trademark Rules
concerning Judicial Review of Decisions of the Board
of Patent Appeals and Interferences and the
Trademark Trial and Appeal Board and other
Miscellaneous Matters.**

Agency: Patent and Trademark Office, Commerce.

Action: Final Rule.

Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in patent and trademark cases, Parts 1 and 2 of Title 37, Code of Federal Regulations, relating to (1) decisions of the Board of Patent Appeals and Interferences (BPAI), (2) requests for reconsideration of decisions of the BPAI and the Trademark Trial and Appeal Board (TTAB), (3) extensions of time in proceedings after a decision by the BPAI under §§ 1.196 and 1.197, (4) practices concerning judicial review of final decisions of the BPAI and TTAB, (5) extensions of time for seeking judicial review of BPAI and TTAB decisions and (6) miscellaneous changes in the practice before the BPAI and housekeeping amendments.

Two recent decisions of the U.S. Court of Appeals for the Federal Circuit have held that even though the BPAI includes a new ground for rejection in its decision under 37 CFR § 1.196(b)(3), appellants may appeal directly to the Federal Circuit without first seeking reconsideration at the BPAI. Where judicial review is sought without requesting reconsideration, the arguments against the new ground of rejection are developed for the first time during court proceedings. The amendments require that appellants seek reconsideration of the new ground of rejection prior to appeal or commencement of a civil action.

Experience under the previous rules relating to judicial review of final board decisions indicated that the rules may have been confusing in certain respects relating to the time in which judicial review must be sought and the manner in which extensions of time for seeking judicial review may be obtained. The rules eliminate any confusion as to when judicial review must be sought and standardize the manner of obtaining extensions of time to seek judicial review.

The rules also make clarifying and housekeeping amendments with respect to practice before the BPAI.

Effective Date: August 20, 1989.

For Further Information Contact: Richard E. Schafer by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information:

Background

A notice of proposed rulemaking was published in the *Federal Register* at 54 Fed. Reg. 11009 (March 16, 1989) and at 1101 *Official Gazette* 6 (April 4, 1989). No oral hearing was held and no written comments were received.

Discussion of Specific Rules

(1) Decisions of the BPAI and requests for reconsideration of BPAI and TTAB decisions

Only final decisions of the BPAI and TTAB are subject to judicial review. 35 U.S.C. §§ 141, 145; U.S.C. § 1071; 28 U.S.C. § 1295 (a)(4)(A) and (B).

Section 1.196(b) provides that if the BPAI has knowledge of any grounds, not involved in the appeal, for rejecting any appealed claim, it may include in its decision a statement to that effect. The statement then constitutes a new rejection of the claims. The previous rules permitted appellants to treat the decision as a final decision in the case and thus immediately appealable. 37 CFR § 1.196(b)(3) (1988). Therefore, when an appellant proceeded under this option, arguments against the new rejection were presented for the first time to the reviewing court.

A recent decision by the U.S. Court of Appeals for the Federal Circuit rejected the Commissioner's argument that an appellant should not be permitted to contest the BPAI's new ground for rejection because it had not requested reconsideration of that ground by the BPAI. *In re Evanege*, 829 F.2d 1110, 1113, 4 USPQ 2d 1249, 1252 (Fed. Cir. 1987). See also *In re Nielson*, 816 F.2d 1567, 1570, 2 USPQ 2d 1525, 1527 (Fed. Cir. 1987). In *Evanege*, the Commissioner urged that requiring appellants to request reconsideration, where the BPAI adopts a new ground for rejection, would provide the BPAI with an opportunity to consider appellant's arguments and correct any errors while the case was still in the PTO. This conserves judicial resources, and in any event, obtains the benefit of the BPAI's view should judicial review ultimately be sought. The court held, however, that in view of PTO regulations (37 CFR § 1.196(b)(3)) which "expressly provide that the board's decision, even if based on a new ground, is a final determination and thus may be appealed without seeking reconsideration," appellant could not be required to request reconsideration by the BPAI. *Id.*

The new rule changes eliminate 37 CFR § 1.196(b)(3). By removing § 1.196(b)(3), appellants no longer have the option of treating a new ground of rejection as final and immediately appealable. Appellants' options are limited to requesting remand to the examiner or requesting reconsideration by the BPAI as set forth in §§ 1.196(b)(1) and 1.196(b)(2). The preamble of § 1.196(b) has been amended to specifically recite that a new ground of rejection shall not be considered a final decision for judicial review.

Appellants still may elect further prosecution before the examiner under 37 CFR § 1.196(b)(1) or request reconsideration under 1.196(b)(2). The option of § 1.196(b)(2) requires that any request for reconsideration address the new ground of rejection and specifically state the reasons why the new ground was in error. Section 1.196(b)(2) also provides that the BPAI will reconsider the new rejection and, if necessary, render a new decision. The decision on reconsideration will be deemed to incorporate the earlier decision except for any portions of the earlier decision specifically withdrawn.

Reconsideration or remand need not be requested if appellant does not contest the new ground. Appellants may seek judicial review as to claims not subject to the new ground.

Section 1.196(a) expressly provides for remands to the examiner for further consideration. The BPAI has inherent authority, as part of its role in reviewing standards of patentability applied in the PTO, to remand applications to the examiner for further consideration. Cf. Manual of Patent Examining Procedure (MPEP) §§ 1211 and 1212. The change merely makes express that which is inherent.

The amendments also delete the portion of former § 1.196(d) which provides (1) that any decision which includes a remand shall not be a final decision for the purposes of judicial review and (2) that upon conclusion of the proceedings on remand the BPAI may enter an order making its decision final. Those provisions have been included as new § 1.196(e). Under this

paragraph, decisions pursuant to § 1.196(b) would not be final as to the claims subject to a new rejection.

The last sentence of former § 1.196(b)(1) has been deleted and placed in new § 1.196(e).

(2) Requests for reconsideration of BPAI and TTAB decisions

Section 1.197(b) provides that any request for reconsideration must specifically state the points believed to have been misapprehended or overlooked in the BPAI's decision. Experience has shown that many requests for reconsideration are nothing more than reargument of appellant's position on appeal. The provision, as adopted, limits requests to the points of law or fact which appellant feels were overlooked or misapprehended by the BPAI.

The amendments also clarify the exception found in the first sentence of § 1.197(b) by including specific references to the "original decision" and the "decision on reconsideration." Some confusion had been noted with respect to the meaning of the current language. In order to simplify calculation of times for requesting reconsideration of the decisions of the boards, §§ 1.658(b), 2.129(c), and 2.144 specify a period of one month rather than the periods expressed in days. Section 1.197(a) already specified a one-month period.

(3) Extensions of time after a decision by the BPAI to take action under §§ 1.196 and 1.197

Appellants in patent cases may no longer use fee extensions under § 1.136(a) to extend the time for making an election under § 1.196(b) or seeking reconsideration under § 1.197.

Under previous rules appellants could request reconsideration of a BPAI decision up to five months after a decision or file a response to a new ground of rejection up to six months after the decision. This inordinately delayed final disposition of appeals. Section 1.136(a) provides that fee extensions are not available to file responses to a BPAI decision pursuant to §§ 1.196, 1.197 or 1.304. One month is deemed to be ample time to submit a request for reconsideration. Note that Fed. R. Civ. P. 59 provides 10 days and Fed. R. App. P. 40 provides 14 days for similar requests. Extensions under § 1.136(b) will be available to extend the time to file a response under §§ 1.196 and 1.197. Section 1.304(a) exclusively governs extensions of time to file a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or to commence a civil action. See further discussion below.

Section 1.136(a) specifically refers to § 1.136(b) for extensions of time to file responses under §§ 1.196 and 1.197 and refers to § 1.304 for extensions of time to initiate judicial review. Sections 1.196(f) and 1.197(b) correlatively reference § 1.136(b) for extensions of time.

Fee extensions are not available to extend the time for electing further prosecution before the examiner under § 1.196(b)(1). Where an appellant elects further prosecution before the examiner, fee extensions under § 1.136(a) remain available to respond to the primary examiner's Office actions.

(4) Time for seeking judicial review of decisions of the BPAI and TTAB

Under previous rules, judicial review of final decisions of the BPAI or TTAB had to be sought within sixty days of the decision or thirty days after a decision on reconsideration. However, where a decision on reconsideration was, in effect, a new decision, it was not always clear whether the time for appeal was thirty or sixty days. Sections 1.304(a) and 2.146(d)(1) provide a two-month period to appeal from either the date of the decision or the decision on a timely filed request for reconsideration.

Some problems have been noted with respect to the time for seeking judicial review in days. Miscalculations of the statutory sixty-day time period have resulted in filing untimely requests for judicial review. In order to simplify calculation of the time for seeking judicial review, §§ 1.304(a) and 2.145(d)(1) specify two months. The two-month period meets the sixty-day requirement of 35 U.S.C. §§ 142, 145 and 146 and 15 U.S.C. §§ 1071(a)(2) and (b)(1) except for time periods which include February 28. In order to comply with the sixty-day requirement, §§ 1.304(b) and 2.145(d)(2) provide that an additional day shall

be added to any two-month period for initiating judicial review which includes February 28. Appeals will always be timely if the judicial review is initiated within two months of the final decision.

Previously, the rules did not specify a time period for filing a cross-appeal or cross-action in *inter partes* cases. The absence of such a time period made it difficult for parties and their attorneys to make appropriate plans for judicial review. For example, in an interference where there has been a split judgment, one of the parties may be satisfied with the judgment but may desire to appeal the adverse judgment only if an appeal is noted by the other party. Where the appeal is filed on the last possible day, a cross-appeal is precluded. Sections 1.304(a) and 2.145(d)(1) specify that the time for filing a cross-appeal or commencing a cross-action expires (1) fourteen days after service of the notice of appeal or the summons and complaint or (2) two months after the decision to be reviewed, whichever is later.

Similarly, no provision for filing a cross-action was provided where an appellee elects to have further proceedings conducted in the district court pursuant to 35 U.S.C. § 146 or 15 U.S.C. § 1071(a)(1). Section 1.304(c) and 2.145(d)(3) provide that the time for filing a cross-action expires 14 days after service of the summons and complaint. The district court will determine whether any cross-action was timely filed since neither the complaint nor cross-action is filed in the PTO.

(5) Extensions of time to seek judicial review

In the past, standards for granting requests for extensions of time to take an appeal or commence a civil action varied depending upon which board was involved and upon the particular type proceeding before the board. For example, extensions relating to patent applications could be obtained by paying the appropriate fee under 1.136(a). However, in reexamination proceedings or when judicial review was sought from a decision of the TTAB, the requester must demonstrate sufficient cause under § 1.550(c) or § 2.145(d)(1). The rules standardize the manner in which an extension of time to initiate judicial review may be obtained. The PTO has adopted a standard which is similar to the standard used in the Federal courts for granting extensions. Under the rules the Commissioner may extend the time (1) for good cause if requested before the expiration of the time provided for initiating judicial review or (2) upon a showing of excusable neglect in failing to initiate judicial review if requested after the expiration of the time period. This standard will be applicable in both trademark and patent proceedings (§§ 1.304(a) and 2.145(e)) once the "last" decision, i.e., either the decision (in circumstances where no timely reconsideration is sought) or the decision on reconsideration, of either board has been entered. In patent cases, extensions of time under § 1.136(b) and § 1.550(c) and fee extensions under 37 CFR § 1.136(a) are no longer available to extend the time for the purpose of judicial review once a decision or a decision on reconsideration has been entered. Section 1.304(a) states that the provisions of §§ 1.136 and 1.550(c) are not available to extend the time to initiate judicial review. Sections 1.136(a), 1.136(b), 1.191(d), 1.550(c), 1.645(a) and (b) refer to § 1.304 for extensions of time for seeking judicial review after a decision has been entered. Section 1.645(a) has been amended by (1) adding the introductory phrase "Except to extend the time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action," to the first sentence and (2) deleting the references to filing a notice of appeal or commencing a civil action in the second sentence.

In view of the amendments to §§ 1.197 and 1.304, relating to extensions of time to seek reconsideration or initiate judicial review, § 1.191(d) does not refer to §§ 1.196 and 1.197.

(6) Miscellaneous amendments

In the past, appellants could use fee extensions to delay the time for requesting an oral hearing at the BPAI. This delays final disposition of the appeal and causes administrative problems and duplication of effort due to the transfer of the appeal to the hearing docket. Section 1.191(d) no longer refers to § 1.194. Fee extensions are no longer available to extend the time for requesting an oral hearing. Extensions under § 1.136(b) are available to extend the time to request an oral hearing.

Section 1.191(b) has been rewritten as one sentence without any change in substance.

Some confusion has resulted as to who has jurisdiction over a patent application after a notice of appeal to the BPAI has been filed. Problems arose, for example, as to the appropriate PTO official to decide certain petitions and other matters after an appeal has been filed. MPEP § 1210 indicates that jurisdiction over the application normally passes at one of five possible times listed therein. Section 1.191 includes a new section (e) which provides that jurisdiction transfers to the BPAI when the application or reexamination file including all briefs and examiner's answers is transmitted to the BPAI. Thus, jurisdiction transfers to the BPAI when all written submissions by the applicant and the examiner have been entered and the application papers have been forwarded to the BPAI.

New paragraph 1.191(e) also includes a provision that the Commissioner, prior to the time the BPAI renders its decision, may *sua sponte* order that an application be remanded to the examiner for further consideration. This provision merely makes explicit the inherent authority of the Commissioner to direct and supervise the examination of patent applications.

Under previous rules there was some confusion as to when "termination of proceedings" occurs. Section 1.197(c) provides that proceedings are "terminated" when the Federal Circuit's mandate is received by the PTO or after the time for appeal from the judgment of the district court in a civil action under 35 U.S.C. § 145 has expired. The language "In such cases," in the second sentence of former 1.197(c) has been eliminated since it was superfluous and may have been confusing.

The rules delete the phrase "that he or she elects" and substitutes "electing" therefor in §§ 1.304(c) and 2.145(c)(3), as amended. The amendment merely changes wording without any change in substance.

Section 1.196(b) changes the verb "make" to "makes" to conform the verb to the singular subject of the sentence.

Sections 1.301, 1.303, 2.145(a)(2) and 2.145(c)(3) no longer refer to transmittal of the certified list and certified copies of the notice of election to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. § 141 or 15 U.S.C. § 1071(a)(1). These procedures are required by applicable statutes or Court Rules and are unnecessary in the PTO's regulations.

Sections 1.304(a), 1.304(c), 2.145(c)(3) and 2.145(d)(1) include a statement that the certificate of mailing provisions of § 1.8 are *not applicable*. No substantive change is involved since the inapplicability of § 1.8 is already stated in §§ 1.8(a)(2)(viii) and (ix).

Sections 1.304(b) and 2.145(d)(2) recite "Federal holiday in the District of Columbia" rather than "legal holiday." These changes merely conform the language of these sections with the language of 35 U.S.C. § 21(b) and 37 CFR § 1.7.

Section 2.145(c)(2) and (3) include changes in wording without any change in substance.

Other Considerations

These rules will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 350 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities [Regulatory Flexibility Act, Pub. L. 96-354]. The rule change requiring appellants to request reconsideration under the specific circumstances set forth is not expected to result in an increase of fees charged by attorneys and agents to entities, including small entities, since the rule change is intended to eliminate erroneous grounds for rejection prior to appeal and in some instances is expected to eliminate the need for appeal.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect to the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity,

innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The PTO has also determined that this notice has no Federalism implications affecting the relationship between the national government and the states as outlined in Executive Order 12612. The rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR, Part 1:

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and record keeping requirements, Small businesses.

List of Subjects in 37 CFR, Part 2:

Administrative practice and procedure, Courts, Lawyers, Trademarks.

For the reasons given in the preamble and pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Parts 1 and 2 of Title 37 of the Code of Federal Regulations are amended as set forth below.

PART 1-RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.136 is revised to read as follows:

§ 1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in § 1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action, (2) the application is involved in an interference declared pursuant to § 1.611 or (3) the response is to a decision by the Board of Patent Appeals and Interferences pursuant to §§ 1.196, 1.197 or 1.304. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. See § 1.136(b) for extensions of time relating to proceedings pursuant to §§ 1.196 or 1.197, § 1.304 for extension of time to appeal to the U.S. Court of Appeals for the Federal Circuit or to commence a civil action, § 1.645 for extension of time in interference proceedings and § 1.550(c) for extension of time in reexamination proceedings.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See § 1.304 for extension of time to appeal to the U.S. Court of Appeals for the Federal Circuit or to commence a civil action, § 1.645 for extension of time in interference proceedings and § 1.550(c) for extension of time in reexamination proceedings.

3. Section 1.191 is amended by revising paragraphs (b) and (d) and adding paragraph (e) to read as follows:

§ 1.191 Appeal to Board of Patent Appeals and Interferences

(b) The appeal in an application or reexamination proceeding must identify the rejected claim or claims appealed, and must be signed by the applicant, patent owner or duly authorized attorney or agent.

(d) The time periods set forth in §§ 1.191 through 1.193 are subject to the provisions of § 1.136 for patent applications or § 1.550(c) for reexamination proceedings. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action.

(e) Jurisdiction over the application or patent under reexamination passes to the Board of Patent Appeals and Interferences upon transmittal of the file, including all briefs and examiner's answers, to the Board. Prior to the entry of a decision on the appeal, the Commissioner may *sua sponte* order the application remanded to the examiner.

4. Section 1.196 is amended by revising paragraphs (a), (b) and (d) and adding new paragraphs (e) and (f) to read as follows:

§ 1.196 Decision by the Board of Patent Appeals and Interferences

(a) The Board of Patent Appeals and Interferences, in its decision, may affirm or reverse the decision of the examiner in whole or in part on the grounds and on the claims specified by the examiner or remand the application to the examiner for further consideration. The affirmation of the rejection of a claim on any of the grounds specified constitutes a general affirmation of the decision of the examiner on that claim, except as to any ground specifically reversed.

(b) Should the Board of Patent Appeals and Interferences have knowledge of any grounds not involved in the appeal for rejecting any appealed claim, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a new rejection of the claims. A new rejection shall not be considered final for the purpose of judicial review. When the Board of Patent Appeals and Interferences makes a new rejection of an appealed claim, the appellant may exercise either of the following two options with respect to the new ground:

(1) The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the examiner in which event the application will be remanded to the examiner. The statement shall be binding upon the examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the examiner, overcomes the new ground for rejection stated in the decision. Should the examiner again reject the application the applicant may again appeal to the Board of Patent Appeals and Interferences.

(2) The appellant may have the case reconsidered under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. The request for reconsideration shall address the new ground for rejection and state with particularity the points believed to have been misapprehended or overlooked in rendering the decision and also state all other grounds upon which reconsideration is sought. Where request for such reconsideration is made the Board of Patent Appeals and Interferences shall reconsider the new ground for rejection and, if necessary, render a new decision which shall include all grounds upon which a patent is refused. The decision on reconsideration is deemed to incorporate the earlier decision, except for those portions specifically withdrawn on reconsideration, and is final for the purpose of judicial review.

(d) Although the Board of Patent Appeals and Interferences normally will confine its decision to a review of rejections made by the examiner, should it have knowledge of any grounds for rejecting any allowed claim it may include in its decision

a recommended rejection of the claim and remand the case to the examiner. In such event, the Board shall set a period, not less than one month, within which the appellant may submit to the examiner an appropriate amendment, a showing of facts or reasons, or both, in order to avoid the grounds set forth in the recommendation of the Board of Patent Appeals and Interferences. The examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection. Should the examiner make the recommended rejection final the applicant may again appeal to the Board of Patent Appeals and Interferences.

(e) Whenever a decision of the Board of Patent Appeals and Interferences includes or allows a remand, that decision shall not be considered a final decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

(f) See § 1.136(b) for extensions of time to take action under this section.

5. Section 1.197 is amended by revising paragraphs (b) and (c) to read as follows:

§ 1.197 Action following decision

(b) A single request for reconsideration or modification of the decision may be made if filed within one month from the date of the original decision, unless the original decision is so modified by the decision on reconsideration as to become, in effect, a new decision, and the Board of Patent Appeals and Interferences so states. The request for reconsideration shall state with particularity the points believed to have been misapprehended or overlooked in rendering the decision and also state all other grounds upon which reconsideration is sought. See 37 CFR § 1.136(b) for extensions of time for seeking reconsideration.

(c) Termination of proceedings. Proceedings are considered terminated by the dismissal of an appeal or the failure to timely file an appeal to the court or a civil action (§ 1.304) except: (1) where claims stand allowed in an application or (2) where the nature of the decision requires further action by the examiner. The date of termination of proceedings is the date on which the appeal is dismissed or the date on which the time for appeal to the court or review by civil action (§ 1.304) expires. If an appeal to the court or a civil action has been filed, proceedings are considered terminated when the appeal or civil action is terminated. An appeal to the U.S. Court of Appeals for the Federal Circuit is terminated when the mandate is received by the Office. A civil action is terminated when the time to appeal the judgment expires.

6. Section 1.301 is revised to read as follows:

§ 1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party to an interference dissatisfied with the decision of the Board of Patent Appeals and Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office file a written notice of appeal directed to the Commissioner (see §§ 1.302 and 1.304); and (b) in the Court, file a copy of the notice of appeal and pay the fee for appeal, as provided by the rules of the Court.

7. Section 1.303 is amended by revising paragraph (c) to read as follows:

§ 1.303 Civil Action under 35 U.S.C. 145, 146, 306.

(c) If any adverse party to an appeal taken to the U.S. Court of Appeals for the Federal Circuit by a defeated party in an interference proceeding files notice with the Commissioner within twenty days after the filing of the defeated party's notice of appeal to the court (§ 1.302), that he or she elects to have all further proceedings conducted as provided in 35 U.S.C. 146. The notice of election must be served as provided in § 1.646.

8. Section 1.304 is revised to read as follows:

§ 1.304 Time for appeal or civil action.

(a) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (§ 1.302) or for commencing a civil action (§ 1.303) is two months from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under § 1.197(b) or § 1.658, the time for filing an appeal or commencing a civil action shall expire two months after action on the request. In interferences, the time for filing a cross-appeal or cross-action expires (1) 14 days after service of the notice of appeal or the summons and complaint or (2) two months after the date of decision of the Board of Patent Appeals and Interferences, whichever is later. The time periods set forth in this section are not subject to the provisions of §§ 1.136, 1.550(c) or 1.645(a) or (b). The Commissioner may extend the time for filing an appeal or commencing a civil action (1) for good cause shown if requested in writing before the expiration of the period for filing an appeal or commencing a civil action, or (2) upon written request after the expiration of the period for filing an appeal or commencing a civil action upon a showing that the failure to act was the result of excusable neglect. The certificate of mailing practice of § 1.8 is not available for filing a notice of appeal or cross-appeal. See 1.8(a)(2)(ix).

(b) The times specified in this section in days are calendar days. The times specified herein in months are calendar months except that one day shall be added to any two-month period which includes February 28. If the last day of the time specified for appeal of commencing a civil action falls on a Saturday, Sunday or Federal holiday in the District of Columbia, the time is extended to the next day which is neither a Saturday, Sunday nor a Federal holiday.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Appeals for the Federal Circuit and an adverse party has filed notice under 35 U.S.C. 141 electing to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141. The time for filing a cross-action expires 14 days after service of the summons and complaint. The certificate of mailing practice of § 1.8 is not available for filing a notice of appeal of cross-appeal. See 1.8(a)(2)(viii).

9. Section 1.550 is amended by revising paragraph (c) to read as follows:

§ 1.550 Conduct of reexamination proceedings

(c) The time for taking any action by a patent owner in a reexamination proceeding will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action.

10. Section 1.645 is amended by revising paragraphs (a) and (b) to read as follows:

§ 1.645 Extension of time, late papers, stay of proceedings

(a) Except to extend the time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action, a party may file a motion (§ 1.635) seeking an extension of time to take action in an interference. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action. The motion shall be filed within sufficient time to actually reach the examiner-in-chief before expiration of the time for taking action. A moving party should not assume that the motion will be granted even if there is no objection by any other party. The motion will be denied unless the moving party shows good cause why an extension should be granted. The press of other business arising after an examiner-in-chief sets a time for taking action will not normally constitute good cause. A motion seeking additional time to take testimony because a party has not been able to procure the testimony of a witness shall set forth the name of the witness, any steps taken to procure the testimony of the witness, the dates on which the steps were taken, and the facts expected to be proven through the witness.

(b) Any paper belatedly filed, will not be considered except upon motion (§ 1.635) which shows sufficient cause why the paper was not timely filed. See § 1.304(a) for exclusive procedures relating to belated filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or belated commencement of a civil action.

11. Section 1.658 is amended by revising paragraph (b) to read as follows:

§ 1.658 Final Decision

(b) Any request for reconsideration of a decision under paragraph (a) of this section shall be filed within one month after the date of the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. Any reply to a request for reconsideration shall be filed within 14 days of the date of service of the request for reconsideration. Where reasonably possible, service of the request for reconsideration shall be such that delivery is accomplished by hand or "Express Mail." The Board shall enter a decision on the request for reconsideration. If the Board shall be of the opinion that the decision on the request for reconsideration significantly modifies its original decision under paragraph (a) of this section, the Board may designate the decision on the request for reconsideration as a new decision.

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

12. The authority citation for 37 CFR Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

13. Section 2.129 is amended by revising paragraph (c) to read as follows:

§ 2.129 Oral argument; reconsideration

(c) Any request for rehearing or reconsideration or modification of a decision issued after final hearing must be filed within one month from the date of the decision. A brief in response must be filed within fifteen days from the date of service of the request. The times specified may be extended by order of the Trademark Trial and Appeal Board on motion for good cause.

14. Section 2.144 is revised to read as follows:

§ 2.144 Reconsideration of decision on ex parte appeal

Any request for rehearing or reconsideration, or modification of the decision, must be filed within one month from the date of the decision. Such time may be extended by the Trademark Trial and Appeal Board upon a showing of sufficient cause.

15. Section 2.145 is amended by revising paragraphs (a), (c)(2), (c)(3), (d)(1), (d)(2) and (d)(3) and adding new paragraph (e) to read as follows:

§ 2.145 Appeal to court and civil action.

(a) Appeal to U.S. Court of Appeals for the Federal Circuit. An applicant for registration, or any party to an interference, opposition, or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the Act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal:

(1) In the Patent and Trademark Office give written notice of appeal to the Commissioner (see paragraphs (b) and (d) of this section);

(2) In the court, file a copy of the notice of appeal and pay the fee for appeal, as provided by the rules of the Court.

(c) ***

(2) Any applicant or registrant in an ex parte case who takes an appeal to the U.S. Court of Appeals for the Federal Circuit waives any right to proceed under section 21(b) of the Act.

(3) Any adverse party to an appeal taken to the U.S. Court of Appeals for the Federal Circuit by a defeated party in an inter partes proceeding may file a notice with the Commissioner within twenty days after the filing of the defeated party's notice of appeal to the court (paragraph (b) of this section), electing to have all further proceedings conducted as provided in section 21(b) of the Act. The notice of election must be served as provided in § 2.119. The certificate of mailing practice of § 1.8 is not available for filing a notice of election. See § 1.8(a)(2)(viii).

(d) Time for appeal or civil action. (1) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is two months from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration or modification of the decision is filed within the time specified in §§ 2.127(b), 2.129(c) or 2.144, or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire two months after action on the request. In inter partes cases, the time for filing a cross-action or a notice of a cross-appeal expires (1) 14 days after service of the notice of appeal or the summons and complaint or (2) two months from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, whichever is later. The certificate of mailing practice of § 1.8 is not available for filing a notice of appeal or cross-appeal. See § 1.8(a)(2)(ix).

(2) The times specified in this section in days are calendar days. The times specified herein in months are calendar months except that one day shall be added to any two-month period which includes February 28. If the last day of time specified for an appeal, or commencing a civil action falls on a Saturday, Sunday or Federal holiday in the District of Columbia, the time is extended to the next day which is neither a Saturday, Sunday nor a Federal holiday.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Appeals for the Federal Circuit and an adverse party has filed notice under section 21(a)(1) of the

Act electing to have all further proceedings conducted under section 21(b) of the Act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the Act. The time for filing a cross-action expires 14 days after service of the summons and complaint.

(e) Extensions of time to commence judicial review. The Commissioner may extend the time for filing an appeal or commencing a civil action (1) for good cause shown if requested in writing before the expiration of the period for filing an appeal or commencing a civil action, or (2) upon written request after the expiration of the period for filing an appeal or commencing a civil action upon a showing that the failure to act was the result of excusable neglect.

June 21, 1989

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents
and Trademarks

[1105 OG 5]

(85) **Oral Hearings Before the Board of
Patent Appeals and Interferences**

Equipment has recently been installed in the hearing rooms at the Board of Patent Appeals and Interferences which will permit the presentation of oral arguments via the telephone to a panel hearing an *ex parte* appeal or conducting an interference hearing. In addition, there is a facsimile machine close to each of the Board hearing rooms.

Any *ex parte* appeal appellant who has requested an oral hearing as provided for by 37 CFR 1.194(b), and who has paid the fee set forth in 37 CFR 1.17(g), or a party to an interference in which a date for an oral hearing has been set may file a request to present his/her oral arguments via the telephone. In the case of *ex parte* appeals such requests should be made in a paper addressed to the Chief Clerk of the Board. In the case of interference hearings the request should be in the form of a motion under 37 CFR 1.635.

The appellant or party to an interference who is making the request will be required to bear the cost of the telephone call.

May 19, 1993

SAUL A. SEROTA
Chairman,
Board of Patent Appeals
and Interferences

[1151 OG 33]

(86) **Patent and Trademark Office
37 CFR Part 1
Patent Interference Practice -
Separate Patentability of Claims**

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking

Summary: The Patent and Trademark Office (PTO) proposes to amend its rules of practice in patent interference cases. *In re Van Geuns*, interpreted patent interference rules in a manner different from the manner in which the rules are interpreted by the Commissioner. The Federal Circuit held that the rules authorize a party to argue the separate patentability of claims that the PTO designates as corresponding to a single count. Under PTO rules, however, every claim designated to correspond to a count shall be directed to a single inventive concept. PTO proposes to amend the interference rules to specifically overcome the Federal Circuit's interpretation of the rules in *Van Geuns*. PTO proposes to specify that unless a party files a preliminary motion to contest the designation of a claim as corresponding to a count, the party shall be deemed to have conceded that all claims designated as corresponding to a count are unpatentable if any claim designated as corresponding to the count is held to be unpatentable and may not argue to an examiner-in-chief or the separate patentability of claims designated to correspond to the count. PTO also proposes to specify that when an examiner-in-chief in an interference

becomes aware of a reason why a claim corresponding to a count may not be patentable, the examiner-in-chief may enter an order notifying the parties of the reason and set a time within which each party may present its views, which may include a preliminary motion. The rules would further specify that an opponent may file an opposition to any preliminary motion and that the party would file a reply to an opposition.

These rules will apply prospectively except when an examiner-in-chief notifies a party in an interference to the contrary. If a party is notified, the party will be given an opportunity to respond regarding the patentability of a count in the interference.

Dates: Comments must be submitted on or before Sept. 24, 1993.

Addresses: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of Fred E. McKelvey, Solicitor. Written comments will be available for public inspection in Suite 918, on the 9th floor of Crystal Park II, located at 2121 Crystal Drive, Arlington, Va.

For Further Information Contact: Fred E. McKelvey by telephone at (703) 305-9035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office (PTO) conducts interference proceedings to determine who, as between two or more applicants for patent or one or more applicants and one or more patentees, is the first inventor of a patentable invention.

A primary examiner determines in the first instance whether the claims in an application interfere with the claims in another application or a patent. When the examiner is of the view that an interference exists, the Board of Patent Appeals and Interferences (Board) is notified. 37 CFR § 1.609. An examiner-in-chief, i.e., a member of the Board, is assigned to each interference. The interference is declared by the examiner-in-chief. 37 CFR § 1.610(a).

Each separately patentable invention involved in the interference is defined by a count. The count is a vehicle for contesting priority of invention (i.e., who made the invention defined by the count first) and determining the evidence relevant to the issue of priority. *Squires v. Corbett*, 560 F.2d 424, 433, 194 USPQ 513, 519 (CCPA 1977); *Case v. CPC Int'l, Inc.*, 730 F.2d 745, 749, 221 USPQ 196, 200 (Fed. Cir.), cert. denied, 469 U.S. 872 (1984); *In re Van Geuns*, 988 F.2d at 1184, 26 USPQ2d at 1058-59 (Fed. Cir. 1993).

Each claim of any application or patent to be involved in the interference is designated to correspond to the count or not to correspond to the count. A preliminary determination is made by the PTO as to which claims should be designated to correspond to the count. The claims that are initially determined to define the same patentable invention as the count are designated to correspond to the count. All other claims are designated as not corresponding to the count. The designation of claims as corresponding or not corresponding provides a starting point in an interference. Under PTO practice, there is a presumption that the designation of a claim as corresponding or not corresponding to a count is correct.

The rules authorize a party to file a preliminary motion to redefine an interference by designating a claim as corresponding or not corresponding to a count. 37 CFR § 1.633(c)(3) and (4). Prior to *Van Geuns*, the PTO had interpreted the rules to require a preliminary motion to designate a claim as not corresponding to a count as a condition to being able to argue to an examiner-in-chief or the Board that the claim is separately patentable from the other claims designated to correspond to the count. See *Brooks v. Street*, 16 USPQ2d 1374, 1378, (Bd. Pat. App. & Int. 1990); *Flehmig v. Giesa* 13 USPQ2d 1052, 1054, (Bd. Pat. App. & Int. 1989); *Kwon v. Perkins*, 6 USPQ2d 1747, 1751 (Bd. Pat. App. & Int. 1988), *aff'd on other grounds*, 886 F.2d 325, 12 USPQ2d 1308 (Fed. Cir. 1989); see also *Lamont v. Berquer*, 7 USPQ2d 1580, 1582 (Bd. Pat. App. & Int. 1988). In *Van Geuns*, however, the Federal Circuit interpreted the rules differently, stating:

"[T]he position of the Commissioner that claims designated as corresponding to a count stand or fall with the patentability of the subject matter of the count is overbroad." 988 F.2d at 1185, 26 USPQ2d at 1060. The Federal Circuit further stated:

"[W]e conclude that a party to an interference, who has failed to timely contest the designation of claims corresponding to a count, has not conceded that the claims corresponding to a count are anticipated or made obvious [i.e., are unpatentable] by the prior art when the subject matter of the count is determined to be unpatentable for obviousness. The PTO must determine, based on the actual prior art reference or references, whether claims not [designated as] corresponding exactly to the count are unpatentable."

Id. at __, 26 USPQ2d at 1060. The Federal Circuit still further stated:

"The interference rules do not specify whether a party may argue the patentability of claims separately to the EIC [examiner-in-chief] and the board."

Id. at __, 26 USPQ2d at 1060. The changes proposed to the interference rules are designed to overcome the Federal Circuit's statement.

Subsection (f) of 37 CFR § 1.601, as proposed to be amended, would clarify that claims are designated to correspond to a count. The designation constitutes a rebuttable presumption that, with respect to patentability, the claims stand or fall with the count.

Subsection (f) would also eliminate the "but which defines the same patentable invention as the count" language, thereby eliminating the definition of "same patentable invention" in 37 CFR § 1.601(n) from the designation of claims that correspond substantially to a count. The purpose of the proposed changes is to overcome the Federal Circuit's *Van Geuns* statement that "[i]f a party does not timely contest the designation of claims, there is in effect a concession that all of the designated claims would be anticipated or made obvious if the count were actually prior art." Id. at __, 26 USPQ2d at 1060.

Finally, the definition of a "phantom count" would be revised to clarify that it is unpatentable to the parties under 35 U.S.C. § 112.

Subsection (k) of 37 CFR § 1.633, as proposed to be amended, would provide that a party who fails to contest, by way of a timely preliminary motion under 37 CFR § 1.633, the designation of a claim as corresponding to a count may not subsequently argue to an examiner-in-chief or the Board the separate patentability of claims designated to correspond to a count.

The first sentence of section 1.641, as proposed to be amended, would be redesignated subsection (a) and would clarify that the Examiner-in-Chief would notify the parties by order of the unpatentability of claims designated as corresponding to a count. The word "corresponding" would be changed to "designated to correspond" to conform with the proposed revision to subsection 1.601(f). Proposed subsection (a) would also indicate that responses to the order may include argument and any preliminary motion permitted under § 1.633(c), (d), or (h) as well as any supporting evidence.

A new subsection (b) would be added to section 1.641 that would specify that the opposition and reply practice under section 1.638 applies to a preliminary motion filed in response to the Examiner-in-Chief's order under subsection (a) of this section.

Finally, the last sentence of the current section, 1.641 would be redesignated as subsection (c) and would include a reference to the preliminary motions under section 1.633 permitted under the revision to subsection (a) of this section.

These rules will apply prospectively except when an examiner-in-chief notifies a party in an interference to the contrary. If a party is notified, the party will be given an opportunity to respond regarding the patentability of a count in the interference.

OTHER CONSIDERATIONS

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these proposed changes would be to clarify the

procedure for arguing the patentability of claims corresponding to a count in patent interferences and thereby eliminate any confusion, delay, or redundancy that might result from misinterpretation of the current rules.

The Office has determined that this proposed rule change is not a major rule change, under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The rule change will not impose a burden under the Paperwork Reduction Act, 1980, 44 U.S.C. 3501 *et seq.*, since no record-keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents. For the reasons set out in the preamble, it is proposed to amend 37 CFR part 1 wherein removals are indicated by brackets ([]) and additions by arrows (►►) as follows:

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.601 is proposed to be amended by revising Paragraph (f) to read as follows:

§ 1.601 Scope of rules, definitions.

- (f) A "count" defines the interfering subject matter between:
- (1) two or more applications or
 - (2) one or more applications and one or more patents.

When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent [which] ►that is designated to► correspond(s) to a count is a claim involved in an interference within the meaning of 35 U.S.C. 135(a). A claim of a patent or invention ►that► [which] is identical to a count is said to "correspond exactly" to the count. A claim of a patent or application ►that► [which] is not identical to a count [but which defines the same patentable invention as the count.] is said to correspond substantially to the count. When a count is broader in scope than all claims ►that► [which] correspond to the count, the count is a "phantom count." A phantom count is not patentable to any party under 35 U.S.C. 112.

3. Section 1.633 is proposed to be amended by adding a new paragraph (k) to read as follows:

§ 1.633 Preliminary motions.

(k) A party who fails to contest, by way of a timely filed preliminary motion under § 1.633(c), the designation of a claim as corresponding to a count may not subsequently argue to an Examiner-in-Chief or the Board the separate patentability or the lack of separate patentability of claims designated to correspond to the count.

4. Section 1.641 is proposed to be revised as follows:

Unpatentability Discovered by Examiner-in-Chief

►(a)◄ During the pendency of an interference, if the examiner-in-chief becomes aware of a reason why a claim ►designated to correspond◄ [corresponding] to a count may not be patentable, the examiner-in-chief may [notify] ►enter an order notifying◄ the parties of the reason and set a time within which each party may present its views, ►which may include argument and any appropriate preliminary motion under § 1.633(c), (d), or (h), including any supporting evidence◄.

►(b)◄ If a party timely files a preliminary motion in response to the order of the examiner-in-chief, any opponent may file an opposition pursuant to § 1.638(a). If an opponent files an opposition, the party may file a reply pursuant to § 1.638(b).◄

►(c)◄ After considering any timely filed views, ►including any timely filed preliminary motions under § 1.633,◄ the examiner-in-chief shall decide how the interference shall proceed.

July 16, 1993

MICHAEL K. KIRK
Acting Assistant Secretary
and Acting Commissioner
of Patents and Trademarks

[1153 OG 59]

(87)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 940968-4268]
RIN: 0651-AA71

Patent Appeal and Interference Practice

Agency: Patent and Trademark Office, Commerce.

Action: Notice of Proposed Rulemaking

Summary: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part 1 of Title 37, Code of Federal Regulations, relating to patent appeal and interference proceedings. The proposed changes include amendments to conform the interference rules to 35 U.S.C. 104 as amended by Public Law 103-182, 107, 2057 (1993) (North American Free Trade Agreement Implementation Act Stat. and a number of clarifying and housekeeping amendments.

Dates: Written comments must be submitted no later than November 30, 1994. A public hearing will be held on December 7, 1994. Requests to present oral testimony must be received no later than December 2, 1994.

Addresses: Address written comments to Board of Patent Appeals and Interferences, P.O. Box 15647, Arlington, Virginia 22215, marked to the attention of Fred E. McKelvey. Written comments will be available for public inspection in the interference copy room, which is located on the 10th floor of Crystal Gateway 2, 1225 Jefferson Davis Highway, Arlington, Virginia. For Further Information Contact: Fred E. McKelvey by telephone at (703) 603-3320 or by mail marked to the attention of Fred E. McKelvey at P.O. Box 15647, Arlington, Virginia 22215.

Supplementary Information:

I. Amendments responsive to adoption of Public Law 103-182. Several of the proposed amendments to the interference rules (i.e., 37 CFR §§ 1.601 *et seq.*) are responsive to Public Law 103-182, 107 Stat. 2057 (1993) (North American Free Trade Agreement Implementation Act), which amended 35 U.S.C. 104 to permit reliance on activities occurring in a "NAFTA country" to prove a date of invention. Paragraph (b) of § 104 as amended states that "the term 'NAFTA country' has the meaning given that term in section 2(4) of the North American Free Trade Agreement Implementation Act." That section of Public Law 103-182 has been codified at 19 U.S.C. 3301(4), which reads:

(4) NAFTA country Except as provided in section 3332 of this title, the term "NAFTA country" means—

(A) Canada for such time as the [North American Free Trade] Agreement is in force with respect to, and the United States applies the Agreement to, Canada; and

(B) Mexico for such time as the Agreement is in force with respect to, and the United States applies the Agreement to, Mexico.

Accordingly, it is proposed to amend 37 CFR § 1.601 by adding a new paragraph (r) defining the terms "NAFTA country" and "non-NAFTA country" and to amend the following interference rules, which set forth the requirements for preliminary statements, so as to permit reliance on activities occurring in a NAFTA country: §§ 1.622(b), 1.623(a), 1.624(a) and 1.628(b) (2).

37 CFR 1.684, which relates to the taking of testimony in a foreign country, is proposed to be deleted and reserved in view of proposed amendments to §§ 1.671 and 1.672. Section 1.671 is proposed to be amended by redesignating paragraph (h) as paragraph (i) and adding new paragraphs (h) and (j). New paragraph (h) would set forth the requirements for a motion under § 1.635 to compel testimony or the production of documents or things in a foreign country. New paragraph (j) would provide that the weight to be given testimony taken in a foreign country will be determined on a case-by-case basis. Little, if any, weight would be given to testimony taken in a foreign country unless the party taking the testimony proves by clear and convincing evidence (1) that giving false testimony in an interference proceeding is punishable as perjury under the laws of the foreign country where the testimony is taken and (2) that the punishment in a foreign country for giving such false testimony is similar to the punishment for perjury committed in the United States. The proposed amendments to § 1.672 include amending paragraphs (a) and (b), redesignating current paragraphs (c) through (f) as paragraphs (e) through (h) and adding new provisions identified as paragraphs (c) and (d). Paragraph (a) as proposed to be amended would limit a party's case-in-chief testimony to affidavits, except where testimony is to be compelled under 35 U.S.C. 24 or compelled from a party or in a foreign country. New paragraph (c) would provide that where an opponent objects to the admissibility of any evidence contained in or submitted with an affidavit, the opponent must file and serve objections stating with particularity the nature of the objection, to which the party may respond by filing supplemental affidavits and supplemental official records and printed publications. New paragraph (c) further would provide that any objections to the admissibility of any evidence contained in or submitted with a supplemental affidavit shall be by a motion to suppress under § 1.656(h). New paragraph (d) of § 1.672 would require any cross-examination of affiants to be by deposition within the United States, which is defined in current § 1.601(p) as the United States of America, its territories and possessions. New paragraph (d) of § 1.672 would require that the party whose witness is to be cross-examined notice the deposition under § 1.673(e), obtain a court reporter and provide a translator if the witness will not testify in English. Although not set forth in the proposed rules, any party attending the deposition can bring its own translator or the parties can agree to share the cost of single mutually agreeable translator. Paragraphs (g) and (h) of § 1.671 as proposed to be amended would provide that a party seeking to compel testimony or production of documents or things pursuant to 35 U.S.C. 24 or to compel testimony or production from a party or in a foreign country would have to first file a § 1.635 motion to obtain permission from an administrative patent judge. A motion to compel testimony or the production of documents or things in a foreign country would have to show that the witness has been asked to testify in the United States and has refused to do so or that the individual or entity having possession, custody, and control of the document or thing has refused to produce the document or thing in the United States, even though the moving party has offered to pay the expenses involved in bringing the witness or the document or thing to the United States. When permission has been obtained from the administrative patent judge, the party, after also complying with the current requirements for an oral conference (§ 1.673(g)) and service of documents and a proffer of access to things (§ 1.673(b)), would be required to notice the deposition under § 1.673(a).

Section 1.616 is proposed to be amended by adding a paragraph (c) stating that to the extent that any information under

the control of an individual or entity located in a NAFTA country concerning knowledge, use, or other activity relevant to proving or disproving a date of invention has been ordered to be produced by an administrative patent judge or the Board (§ 1.671(h)), but is not produced for use in the interference to the same extent as such information could be made available in the United States, the administrative patent judge or the Board shall draw such adverse inferences as may be appropriate under the circumstances, or take such other action permitted by statute, rule, or regulation, in favor of the party that requested the information in the interference, including imposition of appropriate sanctions under § 1.616(a).

Section 1.647, which currently requires a party who relies on a non-English language document to provide an English-language translation and an affidavit attesting to its accuracy, is proposed to be amended to extend these requirements to non-English language documents that a party is required to produce via discovery (see § 1.671(h)).

II. Attorney fees and expenses.

Section 1.616 is proposed to be amended by redesignating current paragraphs (a) through (e) as paragraphs (a)(1) through (a)(4) and (a)(6) and adding a new paragraphs (a)(5) and (b). New paragraph (a)(5) would authorize the award of compensatory (as opposed to punitive) expenses and/or attorney fees as a sanction for failing to comply with the rules or an order, since there are occasions when such a sanction would be more commensurate in scope with the infraction than the sanctions that are currently authorized. New paragraph (b) would authorize the imposition of a sanction, including a sanction in the form of compensatory expenses and/or attorney fees, against a party for taking or maintaining a frivolous position.

III. Certificates of prior consultation.

Paragraph (b) of § 1.637 currently requires that a miscellaneous motion under § 1.635 contain a certificate stating that the moving party has conferred with all opponents in a good faith effort to resolve by agreement the issues raised by the motion and indicating whether any other party plans to oppose the motion. It is proposed to amend paragraph (b) to extend the requirement for such a certificate to motions filed under §§ 1.633 and 1.634 and also to require the certificate to indicate that the reasons and facts in support of the motion were discussed with each opponent and, if an opponent has indicated that it will oppose the motion, to identify the issues and/or facts believed to be in dispute. The proposed requirement for consultation should result in a reduction in the number of issues raised by motions under § 1.633 and 1.634 as well as a reduction in the number of motions filed under those rules.

IV. Service of a "developing record."

In addition to the amendments to § 1.672 discussed above under the heading "Amendments responsive to adoption of Public Law 103-182," it is proposed to amend §§ 1.672, 1.682, 1.683 and 1.688 to require each party to serve on each opponent a "developing record" that will evolve into the record required to be filed under § 1.653. Specifically, in § 1.672, it is proposed to amend paragraph (b) to provide that a party presenting testimony of a witness by affidavit shall, no later than the time set by the administrative patent judge for serving affidavits, file (which includes serve) the affidavit, whether it is a new affidavit or an affidavit that was previously filed by that party during *ex parte* prosecution of an application or under § 1.608 or 1.639(b).

Sections 1.682, 1.683 and 1.688 are proposed to be amended to parallel the proposed amendments to § 1.672. Specifically, paragraph (a) of § 1.682 as proposed to be amended would provide that a party may introduce into evidence, if otherwise admissible, an official record or printed publication not identified in an affidavit or on the record during an oral deposition of a witness, by filing (which includes serving) a copy of the official record or publication no later than the time set for filing affidavits under § 1.672(b), thereby dispensing with the current requirement to file a notice of intent to rely on the official record or printed publication. In § 1.683, paragraph (a) as proposed to be amended would provide that a party may introduce into evidence, if otherwise admissible, testimony by affidavit or oral deposition from another interference, proceeding, or action involving the same parties by filing (which includes

serving) a copy of the affidavit or a copy of the deposition transcript no later than the time set for filing affidavits under § 1.672(b), thereby dispensing with the current requirement for a party to file a motion under § 1.635 for leave to rely on such testimony. Section 1.688 as proposed to be amended would provide that, if otherwise admissible, a party may introduce into evidence an answer to a written request for an admission or an answer to a written interrogatory obtained by discovery under § 1.687 by filing a copy of the request for admission or the written interrogatory and the answer no later than the time set for filing affidavits under § 1.672(b). Thus, all evidence filed under §§ 1.672, 1.682, 1.683 and 1.688 that relates to a party's case-in-chief should be filed together no later than the date set by an administrative patent judge for the party to serve affidavits under § 1.672(b) for its case-in-chief and all evidence under those sections that relates to the party's rebuttal should be filed no later than the date set for the party to serve affidavits under § 1.672(b) for its case-in-rebuttal.

The pages of all affidavits and deposition transcripts would be required to have sequential numbers that would also serve as the record page numbers for the affidavits and transcripts in the party's record when it is filed under § 1.653. Likewise, the exhibits identified in the affidavits and deposition transcripts and any official records and printed publications served under § 1.682(a) would be required to have sequential numbers which would serve as the exhibit numbers when the exhibits are filed with the party's record. Affidavits and § 1.683(a) testimony would have to be accompanied by an index giving the name of each witness and the number of the page where the testimony of each witness begins. The exhibits would have to be accompanied by an index briefly describing the nature of each exhibit and giving the number of the page of affidavit or § 1.683(a) testimony where each exhibit identified in an affidavit or during an oral deposition is first identified and offered into evidence.

An opponent who objects to the admissibility of any evidence filed under §§ 1.672(b), 1.682(b), 1.683(a) and 1.688(a) would have to file objections under §§ 1.672(c), 1.682(c), 1.683(b) and 1.688(b) no later than the date set by the administrative patent judge for filing objections to affidavits under paragraph § 1.672(c). An opponent who fails to challenge the admissibility of the evidence on a ground that could have been raised in a timely objection under §§ 1.672(c), 1.682(c), 1.683(b) or 1.688(b) would not be permitted to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection to evidence filed under §§ 1.672(b), 1.682(b), 1.683(a) or 1.688(a), the party may respond by filing supplemental affidavits and, in the case of objections to evidence filed under §§ 1.672(b), 1.682(b) and 1.683(a), may also file supplemental official records and printed publications. No objection to the admissibility of supplemental evidence shall be made, except as provided by § 1.656(h). The page numbers of the supplemental affidavits would be sequentially numbered beginning with the number following the last page number of the testimony served under §§ 1.672(b), 1.683(a) and 1.688(a). Likewise, any additional exhibits identified in the supplemental affidavits and any supplemental official records and printed publications would be given sequential numbers beginning with the number following the last number of the previously identified exhibits. After the time expires for filing objections and supplemental affidavits, or earlier when appropriate, the administrative patent judge would set a time within which any opponent may file a request to cross-examine an affiant on oral deposition.

If any opponent requests cross-examination of an affiant, the party shall notice a deposition at a reasonable location within the United States under § 1.673(e) for the purpose of cross-examination. Any redirect and recross shall take place at the deposition. Within 45 days of the close of the period for taking cross-examination (§ 1.678 is proposed to be amended to change the time for filing certified transcripts from 45 days to 30 days), the party would serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by a witness during a deposition. The pages of the transcripts served under this paragraph and the accompanying exhibits would be sequentially numbered in the manner discussed above. The deposition transcripts would be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and

an index of exhibits of the type specified in § 1.672(b). At this point in time, the opponent will have been served with all of the testimony that will appear in the party's record (with the same page numbers) as well as all of the documentary exhibits that will accompany the record (with the same exhibit numbers).

Since the proposed amendments to § 1.672 would require a party, during its testimony period, to file all affidavits on which it intends to rely at final hearing, it is proposed to delete as unnecessary paragraph (e) of § 1.671, which requires a party to give notice of intent to rely on an affidavit filed by that party during *ex parte* prosecution of an application or an affidavit under § 1.608 or 1.639(b).

V. Withdrawal of previous notices.

Some of the clarifying and housekeeping amendments proposed in part VI below originally appeared in the same or similar form in two previous notices of proposed rulemaking, which are hereby withdrawn:

(a) RIN:0651-AA53 — "Patent Interference Practice - Notice of Proposed Rulemaking," 57 Fed. Reg. 2698 (Jan. 23, 1992), reprinted in 1135 Off. Gaz. Pat. Office 37 (Feb. 11, 1992); and

(b) RIN:0651-AA66 — "Patent Interference Practice - Separate Patentability of Claims," 58 Fed. Reg. 39704 (July 26, 1993), reprinted in 1153 Off. Gaz. Pat. Office 59 (Aug. 17, 1993).

VI. Miscellaneous amendments.

Throughout the rules, the term "examiner-in-chief" has been replaced by "administrative patent judge" to reflect the change in the title of the members of the Board. See Commissioner's Notice of October 13, 1993, published as "New Title for Examiners-in-Chief," 1156 Off. Gaz. Pat. Office 332 (Nov. 9, 1993).

In § 1.111, it is proposed to amend paragraph (e) to allow access to the file of an interference involving a reissue application once the interference has terminated or an award of priority or judgment has been entered as to all counts. Although it was intended that the public have access to any interference that involves a case which is open to the public and § 1.11(b) provides that a reissue application is open to the public, interferences involving reissue applications were inadvertently not included in current § 1.11(c).

In § 1.192, which specifies the contents of the brief of an appellant for final hearing in an *ex parte* appeal, it is proposed to amend paragraph (a) in three respects. The first proposal is to simplify the language used to refer to a brief filed by an applicant who is not represented by a registered practitioner. The second is to delete the requirement that such a brief be in substantial compliance with the requirements of paragraphs (c)(1), (2), (6) and (7), because experience has shown that it is better to evaluate such briefs on a case-by-case basis. The third is to codify the "good cause" standard that is currently used to determine whether the Board will consider any arguments or authorities not included in the brief. It is proposed to make clarifying amendments to paragraphs (c), (c)(5) and (c)(5) (ii), to redesignate current paragraphs (c)(1) through (c)(7) as paragraphs (c)(3) through (c)(9), and to add new paragraphs (c)(1) and (c)(2) that would require an appellant who has filed an appeal to the Board to identify the real party in interest and any related appeals and interferences. The proposed requirement to identify the real party in interest is derived from Federal Circuit Rule 47.4 and Federal Circuit Form 7. For some time, it has been necessary to know the identity of the real party in interest. This information would permit members of the Board to comply with ethics regulations associated with working on matters in which the member has an interest. The proposed requirement to identify related appeals and interferences is derived in part from Federal Circuit Rule 47.5 and, if adopted, would prevent the Board from entering inconsistent decisions in related cases.

Section 1.601 is proposed to be amended in several ways. Paragraph (f) as proposed to be amended would specify that a count should be sufficiently broad as to encompass the broadest corresponding patentable claim of each of the parties without being so broad as to be unpatentable over the prior art and also to indicate that a phantom count is unpatentable to all parties under the written description requirement of the first paragraph of 35 U.S.C. 112. Paragraph (g) as proposed to be amended would broaden the definition of "effective filing date" to mean the actual filing date when the involved application or patent

is not entitled to the benefit of the filing date of an earlier application. Specifically, paragraph (g) would provide that the effective filing date of an application is the filing date of an earlier application accorded to the application under 35 U.S.C. 119, 120, 121 or 365, or, if no benefit is accorded, the filing date of the application. The effective filing date of a patent would be defined as the filing date of an earlier application accorded to the patent under 35 U.S.C. 120, 121, or 365(e) or, if no benefit is accorded, the filing date of the application which matured into the patent. The reference to 35 U.S.C. 121 is included to eliminate any doubt that a divisional application may be entitled to an earlier filing date in accordance with 35 U.S.C. 121.

Paragraph (j) is proposed to be amended by changing "which" to "that." Paragraph (l) is proposed to be amended by changing "assignee" to "assignee of record in the Patent and Trademark Office." Paragraph (q) is proposed to be amended by deleting "a panel of" as superfluous.

Section 1.602 is proposed to be clarified by changing "within 20 days of" to "within 20 days after."

Sections 1.603 and 1.606 are proposed to be amended by deleting the third sentence ("Each count shall define a separate patentable invention.") as redundant in view of the identical sentence in § 1.601(f). In addition, it is proposed to clarify §§ 1.603 and 1.606 by amending them to require each application to contain, or be amended to contain, at least one patentable claim which corresponds to each count.

In section 1.604, it is proposed to amend paragraph (a)(1) by changing "his or her" to "its."

In § 1.605, it is proposed to amend paragraph (a) for clarification.

Section 1.606 is also proposed to be amended to note that the claim in the application need not be, and most often will not be, identical to a claim in the patent.

In § 1.607, it is proposed to amend paragraph (a)(4) by changing "his or her" to "its" and to add a new paragraph (a)(6) requiring an applicant seeking an interference with a patent to demonstrate compliance with 35 U.S.C. 135(b), which provides:

A claim which is the same as, or for the same or substantially the same subject matter as, a claim of an issued patent may not be made in any application unless such a claim is made prior to one year from the date on which the patent was granted.

Requiring an applicant to show compliance with § 135(b) before an interference is declared will prevent an interference from being declared where the applicant cannot satisfy § 135(b) with respect to any claim alleged to correspond to the proposed count.

In § 1.608, it is proposed to amend paragraphs (a) and (b) in several respects. First, both paragraphs are proposed to be amended to delete the information about effective filing dates, which would appear instead in § 1.601(g) as proposed to be amended. Second, it is proposed to relax the current requirement of paragraph (a) for an affidavit filed by the applicant. Paragraph (a) as proposed to be amended would permit a statement to be filed by the applicant or a practitioner of record. Third, it is proposed to change "sufficient cause" in paragraph (b) and in other interference rules to "good cause" in order to make it clear that only one "cause" standard is intended. Fourth, it is proposed to change "8 1/2 x 11 inches (21.8 by 27.9 cm.)" to "21.8 by 27.9 cm. (8 1/2 x 11 inches)."

In § 1.609, it is proposed to amend paragraphs (b)(2) and (b)(3) to require the examiner's statement (i.e., the form PTO-850, also known as the initial interference memorandum) to explain why each claim designated as corresponding to a count is directed to the same patentable invention as the count and why each claim designated as not corresponding to a count is not directed to the same patentable invention as the count. The proposed amendment, if adopted, would provide the Board and the parties with the benefit of the examiner's reasoning and would provide a better foundation for considering preliminary motions to designate claims as corresponding or as not corresponding to a count.

In § 1.610, it is proposed to amend paragraph (a) by deleting the language "a panel consisting of at least three members of" as superfluous and by deleting the reference to § 1.640(e), which is proposed to be amended to allow a request for reconsideration under § 1.640(c) to be decided by an individual administrative

patent judge rather than by the Board. It is further proposed to amend paragraph (b) by deleting "Unless otherwise provided in this section," as unnecessary in light of the proposed amendment to paragraph (a).

Section 1.611 is proposed to be amended by redesignating paragraph (a)(8) as paragraph (a)(9) and adding a new paragraph (a)(8) requiring that a notice of declaration of interference indicate why each claim designated as corresponding to a count is directed to the same patentable invention as the count and why each claim designated as not corresponding to a count is not directed to the same patentable invention as the count. This information should assist the parties in deciding whether to move to have claims designated as corresponding or not corresponding to the count. An administrative patent judge can satisfy this requirement by enclosing a copy of the examiner's statement with the parties' copies of the declaration notice. It is also proposed to capitalize the first word in each of paragraphs (d)(2) and (d)(3).

In § 1.612, it is proposed to amend paragraph (a) to change "opposing party's" to "opponent's" and to add a sentence referring to § 1.111(e) concerning public access to interference files.

In § 1.614, it is proposed to clarify the meaning of paragraph (a) by changing "the Board shall assume jurisdiction" to "the Board acquires jurisdiction."

In § 1.616, in addition to authorizing an award of compensatory attorney fees and expenses in appropriate circumstances, as discussed above, it is proposed to amend current paragraph (b) (which is proposed to be redesignated as paragraph (a)(2)) to permit a party to be sanctioned for failing to comply with the rules or an order by entering an order precluding the party from filing any type of paper. Paragraph (b) currently permits entry of an order precluding the filing of a motion or a preliminary statement.

Section 1.617 is proposed to be amended to authorize a party against whom a § 1.617(a) order to show cause has been issued to respond with an appropriate preliminary motion under § 1.633(c), (f) or (g). A preliminary motion under § 1.633(c) to redefine the interference, under § 1.633(f) for benefit of the filing date of an earlier application or under § 1.633(g) attacking the benefit accorded a patentee may be appropriate where the count set forth in the notice declaring the interference is not the same as the count proposed in the applicant's showing under § 1.608(b). A preliminary motion under § 1.633(f) or (g) may also be appropriate where the count set forth in the notice declaring the interference is the same as the count proposed in the applicant's showing under § 1.608(b), but the notice either fails to accord the applicant the benefit of the filing date of an earlier application whose benefit was requested in the § 1.608(b) showing or accords the patentee the benefit of the filing date of an earlier application whose benefit the § 1.608(b) showing argued should not be accorded the patentee.

In § 1.618, it is proposed to amend paragraph (a) for clarification and to state that a paper that has been returned as unauthorized will not thereafter be considered in the interference. Paragraph (a) currently states that a paper that has been returned as unauthorized will not thereafter be considered by the Patent and Trademark Office.

In § 1.625, it is proposed to simplify paragraph (a) by deleting "the invention was made in the United States or abroad" as surplusage. Section 1.626 is proposed to be simplified by changing "earlier application filed in the United States or abroad" to "earlier filed application." The same change is proposed for §§ 1.630, 1.633(f), 1.633(g), 1.637(c)(1)(vi), 1.637(c)(1)(viii), 1.637(e)(2)(vii) and 1.637(h)(4).

In § 1.628, it is proposed to amend paragraph (a) by changing "ends of justice" to "interest of justice" to be consistent with the language used in §§ 1.628(a) and 1.687(c), since a single standard is intended. Paragraph (a) of § 1.628 is also proposed to be amended to apply the "interest of justice" requirement only to corrected preliminary statements that are filed on or after the due date for serving preliminary statements. Where the moving party has not yet seen the opponent's statement, an opponent will not normally be prejudiced by the filing of a corrected statement.

In § 1.629, it is proposed to amend paragraphs (a), (c)(1) and (d) to make them consistent with the proposed amendment of the definition of "effective filing date" in § 1.601(g).

In § 1.631, it is proposed to amend paragraph (a) to delete "by the examiner-in-chief" (second occurrence) as superfluous.

Section 1.632 is proposed to be amended to more precisely state that a notice of intent to argue abandonment, suppression or concealment must be filed "within ten days after," rather than "within ten days of," the close of the testimony-in-chief of the opponent.

In § 1.633, it is proposed to amend paragraph (a) to specify that a claim shall be construed in light of the specification of the application or patent in which it appears. This amendment would administratively set aside the judicially created rule of *In re Spina*, 975 F.2d 854, 856, 24 USPQ2d 1142, 1144 (Fed. Cir. 1992), to the extent it held that the interference rules require that an ambiguous claim copied from a patent for interference purposes be construed in light of the disclosure of the patent. A claim that has been added to a pending application for any purpose, including to provoke an interference, would be given the broadest reasonable interpretation consistent with the disclosure of the application to which it is added, as are claims which are added during *ex parte* prosecution. As explained in *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

[d]uring patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (before the application is granted, there is no reason to read into the claim the limitations of the specification). The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. *Burlington Industries, Inc. v. Quigg*, 822 F.2d 1581, 1583, 3 USPQ2d 1436, 1438 (Fed. Cir. 1987); *In re Yamamoto*, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984).

If a party believes an opponent's claim corresponding to the count is ambiguous when construed in light of the opponent's disclosure, the party should move under § 1.633(a) for judgment against the claim on the ground of unpatentability under the second paragraph of 35 U.S.C. 112. In paragraph (a), it is also proposed to delete "by reference to the prior art of record" as unnecessary.

Paragraphs (a)(1) and (a)(2) of § 1.633 are proposed to be amended by deleting some unnecessary language from each paragraph and by changing "derivation" to "Derivation" in paragraph (a)(2). Paragraph (b), which concerns motions for judgment on the ground of no interference-in-fact, is proposed to be amended by stating that it is possible for claims of opponents presented in "means plus function" format to define separate patentable inventions even though the claims of the opponents contain the same literal wording. The reason is that the sixth paragraph of 35 U.S.C. 112, which is applicable to "means plus function" limitations in application claims and patent claims, provides that such limitations are to be construed as covering the corresponding structure disclosed in the associated application or patent and equivalents thereof. *In re Donaldson Co.*, 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994).

Paragraph (i) of § 1.633 in its current form authorizes a party who opposes a preliminary motion under § 1.633(a), (b) or (g) to file a preliminary motion under § 1.633(c) or (d). It is proposed to amend paragraph (i) to additionally authorize a party-patentee to file a preliminary motion under § 1.633(h) to add to the interference an application for reissue of the party's involved patent. Because a reissue application can include an amended or new claim to be designated as corresponding to a count, the proposed amendment would give a patentee an option similar to that afforded in the same situation to a party-applicant, who can file a preliminary motion under § 1.633(c)(2) to amend a claim in, or add a claim to, its involved application to be designated as corresponding to a count.

In § 1.637, it is proposed to amend paragraph (a) to incorporate the substance of the Notice of the Chairman of the Board of Patent Appeals and Interferences of August 10, 1990, published as "Interferences - Preliminary Motions for Judgment," 1118 Off. Gaz. Pat. Office 19 (Sept. 11, 1990). Paragraph (a) as proposed to be amended would state that where a party files a preliminary motion for judgment against an opponent under § 1.633(a) based on unpatentability over prior art having a date

that appears to make the prior art equally applicable to the moving party, it will be presumed, without regard to the dates alleged in the preliminary statement of the party, that the cited prior art is also applicable to the party unless there is included with the motion an explanation, and evidence if appropriate, as to why the prior art does not apply to the party. The proposed amendment differs from the notice by providing that if the motion fails to include a sufficient explanation or evidence, the party will not be permitted to rely on any such explanation or evidence in response to or in any subsequent action in the interference. The notice had directed the administrative patent judge to request a satisfactory explanation from the party, a procedure which results in delaying a decision on the preliminary motion. Paragraph (a) is further proposed to be clarified by changing "Every" in the second sentence to "Each."

Paragraph (c)(1) of § 1.637 sets forth the requirements for a preliminary motion to add or substitute a proposed count. It is proposed to amend paragraph (c)(1)(v) in two respects. The first is to require a moving party to show that the proposed count is patentable over the prior art. The second is to specify that a proposed substitute count need only be shown to be patentably distinct from the other counts proposed to remain in the interference, since a proposed substitute count need not be patentably distinct from the count it is to replace. Paragraph (c)(1)(vi) is proposed to be amended to clarify that a preliminary motion under § 1.633(c)(1) need not be accompanied by a preliminary motion for benefit under § 1.633(f) unless the moving party seeks benefit with respect to the proposed count. It is also proposed to add a new paragraph (c)(1)(vii) specifying that where an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, the moving party must show why the opponent is not also entitled to benefit of the filing date of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count. The amendment would eliminate the need for an opponent to respond to a § 1.633(c)(1) motion with a preliminary motion under § 1.633(f) claiming benefit, which has the effect of delaying a decision on the § 1.633(c)(1) motion.

Paragraphs (c)(2)(ii) and (iii) of § 1.637 are proposed to be amended for clarification. Paragraphs (c)(2)(iv) and 1.637(c)(3)(iii), which relate to § 1.633(f) motions for benefit, are proposed to be deleted and reserved as unnecessary, since motions under § 1.633(c)(2) and (3) do not affect the count. Paragraph (c)(3)(ii), which applies to motions under § 1.633(c)(3) to designate a claim as corresponding to a count, is proposed to be amended to have claims compared to claims, as is the case in § 1.633(c)(4)(ii), which applies to motions filed under § 1.633(c)(4) to designate a claim as not corresponding to a count. The proposed amendment avoids the need to compare claims to counts, which are subject to different rules of construction than are claims.

Paragraph (c)(4)(ii) of § 1.637 is proposed to be amended to require that a party moving to designate a claim as not corresponding to a count must show that the claim could not serve as the basis for a preliminary motion under § 1.633(c)(1) to add a new count. The proposed amendment, if adopted, would preclude a party from moving to designate one of its claims as not corresponding to the count where an opponent's disclosure would support a similar claim, in which case the party could file a § 1.633(c)(1) preliminary motion proposing a claim to be added to the opponent's application and suggesting that the proposed claim and the party's claim in question be designated as corresponding to a proposed new count.

Paragraph (d)(4) of § 1.637, which authorizes a party to file a motion for benefit together with a motion under § 1.633(d), is proposed to be deleted and reserved as unnecessary, because motions filed under § 1.633(d) do not affect the count. Paragraphs (e)(1)(viii) and (e)(2)(vii) are proposed to be amended to make it clear that a preliminary motion under § 1.633(e)(1) or (2) need not be accompanied by a preliminary motion for benefit under § 1.633(f) unless the moving party seeks benefit with respect to the proposed count. Paragraphs (e)(1)(ix) and (e)(2)(viii) are proposed to be added to specify that where an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, the moving party must show why the opponent is not entitled to benefit of the earlier filed application with respect to the

proposed count; otherwise, the opponent will be presumed to be entitled to benefit of the earlier filed application with respect to the proposed count. Paragraph (f)(2) of § 1.637 is proposed to be amended to change "abroad" to "in a foreign country" and to delete both occurrences of "filed abroad" as superfluous.

Paragraph (h) of § 1.637 is proposed to be amended to explain that a preliminary motion to add a reissue application that includes a new or amended claim to be designated as *not* corresponding to a count will be given the same treatment as a preliminary motion proposing to amend a claim in, or add a new claim to, an involved application to be designated as *not* corresponding to the count, i.e., the preliminary motion will be dismissed. See *L'Esperance v. Nishimoto*, 18 USPQ2d 1534, 1537 (Bd. Pat. App. & Int. 1991) (interference rules do not authorize a motion by party-applicant to amend or add a claim to be designated as not corresponding to the count).

In § 1.638, it is proposed to amend paragraph (b) for clarification by changing "a reply" to "any reply."

In § 1.639, it is proposed to amend paragraph (a), which requires that a motion, opposition or reply be accompanied by the evidence on which a party intends to rely in support of or in opposition to a motion, to be consistent with paragraphs (c) through (g), which permit some types of evidence to be filed after filing of the motion, opposition or reply. It is also proposed to amend paragraph (d)(1) by changing "call" to "use."

In § 1.640, it is proposed to amend paragraph (b) in several respects. The first is to provide that a decision on a preliminary motion shall be deferred to final hearing unless an administrative patent judge or the Board is of the opinion that a decision on a preliminary motion will materially advance the resolution of the interference. The second is to state that a matter raised by a party in support of or in opposition to a motion that is deferred to final hearing will not be entitled to consideration at final hearing unless the matter is raised in the party's brief at final hearing. It is also proposed to amend paragraph (b) to state that where the administrative patent judge determines that the interference shall proceed to final hearing on the issue of priority or derivation, a time shall be set for each party to file a paper identifying any decisions of the administrative patent judge that the party wishes to have reviewed at final hearing as well as identifying any deferred or belatedly filed motions that the party wishes to have considered at final hearing. Paragraph (b) as proposed to be amended would also require that any evidence a party wishes to have considered with respect to the decisions and motions to be considered or reviewed at final hearing, including any affidavits filed by the party under § 1.608(b) or 1.639(b), would have to be served on the opponent during the testimony-in-chief period of the party.

Paragraph (b)(1) of § 1.640 is proposed to be amended for clarification. Paragraph (b)(2), which currently states that a preliminary motion filed after a decision is entered on preliminary motions under § 1.633 will not be considered except as provided by § 1.655(b), is proposed to be amended to state that a preliminary motion filed after the time expires for filing preliminary motions will not be considered except as provided by § 1.645(b) by changing "1.655(b)" to "1.645(b)," which relates to consideration of belatedly filed papers in general.

Paragraph (c) of § 1.640, which currently requires an administrative patent judge or the Board to specifically authorize an opposition to a request for reconsideration of a decision by an administrative patent judge, is proposed to be amended to authorize an opponent to file an opposition, thereby saving the administrative patent judge or the Board the time it would otherwise take to determine whether an opposition should be authorized. If adopted, the administrative patent judge would continue to have the authority to deny a request for reconsideration without waiting for an opposition. In order to conserve the resources of the Board, it is also proposed to delete the last sentence of § 1.640(c) so as to authorize a single individual administrative patent judge to decide a request for reconsideration. Paragraph (c) is also proposed to be amended to require that a request for reconsideration be filed by hand or Express Mail. Paragraph (d)(1), which currently states that an order to show cause under that section can be based on a decision on a motion which is dispositive of the interference against a party as to any count, is proposed to be amended to include decisions on dispositive matters raised sua sponte by an administrative patent judge.

Paragraph (e) of § 1.640 is proposed to be amended to incorporate the substance of the Deputy Commissioner's Notice of December 8, 1986, published as "Interference Practice: Response to Order to Show Cause Under 37 CFR 1.640," 1074 Off. Gaz. Pat. Office 4 (Jan. 6, 1987), reprinted in 1086 Off. Gaz. Pat. Office 282 (Jan. 5, 1988). Specifically, paragraph (e) as proposed to be amended would provide that where the order to show cause was issued under § 1.640(d)(1), the party may respond with a paper (i) requesting that final hearing be set to review the decision which is the basis for the order and identifying every other decision of the administrative patent judge that the party wishes to have reviewed by the Board at a final hearing, or (ii) fully explaining why judgment should not be entered. Any other party would be permitted to file a response to the paper within 20 days of the date of service of the paper. Where the order was issued under § 1.640(d)(1) and the paper includes a request for final hearing, the response must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. Where the order was issued under § 1.640(d)(1) and the paper does not include a request for final hearing, the response may include a request for final hearing, which must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. Where only the response includes a request for a final hearing, the party who filed the paper would have 14 days from the date of service of the response in which to file a supplemental paper identifying any other decision of the administrative patent judge that the party wishes to have reviewed by the Board at a final hearing. The paper or the response thereto would have to be accompanied by a motion (§ 1.635) requesting a testimony period if a party wishes to introduce any evidence to be considered at final hearing (§ 1.671), such as affidavits previously filed under § 1.639(b). A request for a testimony period would be construed as including a request for final hearing. Where the paper contains an explanation of why judgment should not be entered in accordance with the order and no party has requested a final hearing, the decision that is the basis for the order would be reviewed based on the contents of the paper and the response. If the paper fails to show good cause, the Board would enter judgment against the party against whom the order issued.

Section 1.641 currently indicates that an administrative patent judge who, during the pendency of an interference, becomes aware of a reason why a claim designated to correspond to a count may not be patentable should notify the parties of the reason and set a time within which each party may present its views, which the administrative patent judge will consider in determining how the interference shall proceed. It is proposed to amend § 1.641 to indicate that a party's views may include argument or appropriate preliminary motions under § 1.633(c), (d) and (h), including any supporting evidence.

In § 1.643, it is proposed to amend paragraph (b) for clarification and also to change "ends of justice" to "interest of justice" to be consistent with the language used in other interference rules, including §§ 1.628(a) and 1.687(c).

In § 1.644, it is proposed to simplify paragraph (a) by changing "a panel consisting of more than one examiner-in-chief" to "the Board." Paragraphs (a)(1), (b) and (c) are proposed to be amended by changing both occurrences of "panel" to "Board." Paragraphs (a)(2) and (b) are proposed to be changed to provide that a petition seeking to invoke the supervisory authority of the Commissioner shall not be filed prior to the party's brief for final hearing; these paragraphs currently provide that such a petition shall not be filed prior to a decision of the Board awarding judgment.

Paragraph (b) of § 1.644 is proposed to be clarified by amending it to state that a petition under § 1.644(a) shall be considered timely if it is made as part of, or simultaneously with, a proper motion under § 1.633, 1.634, or 1.635 when granting the motion would require waiver of a rule. In other words, a petition under § 1.644(a)(2) must seek waiver of a rule prospectively rather than retroactively.

Paragraph (d) of § 1.644 is proposed to be amended to provide that the statement of facts in a petition preferably should be in numbered paragraphs and also to delete the second sentence as unnecessary. Paragraph (f) is proposed to be amended to change the "15 days" in which to request reconsideration of a decision by the Commissioner to "14 days." In

paragraph (g), it is proposed to delete the quotation marks around "Express Mail."

Section 1.645, which in its current form permits consideration of a belatedly filed paper only if accompanied by a motion under § 1.635 which shows sufficient cause (§ 1.645(b)) why the paper was not timely filed, is proposed to be amended in several respects. First, it is proposed to change "sufficient cause" to "good cause" in order to use a single "cause" standard throughout the interference rules. Second, it is proposed to amend paragraph (b) to permit consideration of a belatedly filed paper if an administrative patent judge or the Board, sua sponte, is of the opinion that it would be in the interest of justice to consider the paper. An example would be where the delay is short (e.g., one day) and there is no prejudice to an opponent. For purposes of the sections other than § 1.645, a belatedly filed paper is considered "timely filed" if accompanied by a motion under § 1.635 which is granted.

Paragraph (d) of § 1.645 is proposed to be amended by deleting "In an appropriate circumstance" as superfluous in view of the language "may stay proceedings," which indicates that the administrative patent judge has the discretion to stay an interference.

In § 1.646, it is proposed to amend paragraph (a)(2) by deleting the reference to § 1.684, which is proposed to be deleted. It is proposed to amend paragraph (c)(1) by inserting "or causing a copy of the paper to be handed" after "By handing a copy of the paper" to make it clear that the paper need not be personally delivered by the party, i.e., that delivery by hand can be effected by a commercial courier, for example. In paragraph (c)(4), it is proposed to change "mail" (second occurrence) to "first class mail" to make it clear that the service date specified in that paragraph applies only to first class mail. It is also proposed to redesignate paragraph (c)(5) as paragraph (c)(6) and to add a new paragraph (c)(5) which clarifies that a party may serve by Express Mail and that when service is effected by Express Mail, the date of service is considered to be the date of deposit with the U.S. Postal Service. Paragraph (d) is proposed to be amended to delete the quotation marks around "Express Mail." Paragraph (e) is proposed to be amended to state that the due date for serving a paper is the same as the due date for filing the paper in the Patent and Trademark Office.

In § 1.651, it is proposed to amend paragraph (a)(2) by deleting "(testimony includes testimony to be taken abroad under § 1.684)" in order to be consistent with the proposal to delete § 1.684. Paragraphs (c)(2) and (c)(3) are proposed to be amended to be consistent with the proposed amendment to the definition of "effective filing date" in § 1.601(g). In paragraph (d), it is proposed to change "abroad under § 1.684" to "in a foreign country."

In § 1.653, it is proposed to amend paragraph (a) in several ways. The first is to change the references to paragraphs of § 1.672 to be consistent with the proposed redesignation of certain paragraphs of § 1.672, discussed below. The second is to delete "of fact" in the clause "agreed statements of fact under § 1.672(f)" (proposed to be redesignated as § 1.672(h)), because agreed statements under § 1.672(f) can set forth either (1) how a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The third is to delete "under § 1.684(c)," since § 1.684 is proposed to be deleted. A fourth proposed amendment to § 1.653(a) is to indicate that in addition to the types of testimony already set forth in paragraph (a), testimony includes copies of written interrogatories and answers and written requests for admissions and answers, which might be obtained where a motion for additional discovery under § 1.687(c) is granted.

Paragraph (b) of § 1.653 is proposed to be amended to be consistent with the proposed redesignation of certain paragraphs of § 1.672, to delete the reference to § 1.684(c), which is proposed to be cancelled, and for clarity. Paragraphs (c)(1) and (c)(4) of § 1.653 are proposed to be amended to make it clear that the only testimony to be included in a party's record is testimony submitted on behalf of the party. Having copies of the same testimony appear in both parties' records unnecessarily encumbers the records and is confusing in that a given page of testimony will have different page numbers in the different records, with the result that the briefs of the parties will refer to different record pages for the same testimony.

It is proposed that paragraph (c)(5) of § 1.653 be deleted and reserved. Paragraph (c)(5) currently requires that the record

filed by each party include each notice, official record and printed publication relied upon by the party and filed under § 1.682(a). This requirement is considered unnecessary because such notices, official records and printed publications are in the nature of exhibits under § 1.653(i), which are submitted with but not included in the record. The inclusion of exhibits in the record merely increases the size of the record without serving any useful purpose.

Paragraph (g) of § 1.653 is proposed to be amended and paragraphs (f) and (h) deleted and reserved to eliminate the current distinction between typewritten and printed records. Paragraph (g) is also proposed to be amended to change "8 1/2 x 11 inches (21.8 by 27.9 cm.)" to "21.8 by 27.9 cm. (8 1/2 x 11 inches)" and to delete the requirement for justified margins and to require that the records be bound with covers at their left edges in such manner as to lie flat when open to any page and in one or more volumes of convenient size (approximately 100 pages per volume is suggested) and that when there is more than one volume, the numbers of the pages contained in each volume must appear at the top of the cover for each volume. Paragraph (i) is proposed to be amended to state that exhibits include documents and things identified in affidavits or on the record during the taking of oral depositions as well as official records and publications submitted pursuant to § 1.682(a).

In § 1.654, it is proposed to amend paragraph (a) by changing "shall" in the second sentence to "may" for clarity and also to reduce the time for oral argument by a party from 60 minutes to 30 minutes, because most hearings have required no more than 30 minutes per side and a panel has the discretion to grant more time at the hearing, where necessary.

In § 1.655, it is proposed to amend paragraph (a) by changing the standard of review from "erroneous or an abuse of discretion" to "an abuse of discretion." The recitation of a separate "error" standard is unnecessary, because an abuse of discretion may be found when (1) the decision of an administrative patent judge is clearly unreasonable, arbitrary or fanciful, (2) the decision is based on an erroneous conclusion of law, (3) the findings of the administrative patent judge are clearly erroneous, or (4) the record contains no evidence upon which the administrative patent judge rationally could have based the decision. See, e.g., *Heat and Control, Inc. v. Hester Industries, Inc.*, 785 F.2d 1017, 228 USPQ 926 (Fed. Cir. 1986); *Western Electric Co. v. Piezo Technology, Inc. v. Quigg*, 860 F.2d 428, 8 USPQ2d 1853 (Fed. Cir. 1988).

It is proposed to amend paragraph (b) of § 1.655 to clarify which matters a party is not entitled to raise for consideration at final hearing. As proposed to be amended, paragraph (b) would provide that a party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under § 1.633 or 1.634 unless (1) the matter was properly raised in a motion that was timely filed by the party under § 1.633 or 1.634 and the motion was denied or deferred to final hearing, (2) the matter was properly raised by the party in a timely filed opposition to a motion under § 1.633 or 1.634 and the motion was granted over the opposition or deferred to final hearing, or (3) the party shows good cause why the issue was not properly raised by a timely filed motion or opposition. It is also proposed to amend paragraph (b) of § 1.655 to state that a change of attorneys during the interference generally does not constitute good cause for failing to file a timely motion or opposition.

It is further proposed, in response to *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993), to amend paragraph (b) of § 1.655 by adding a sentence explaining that a party who fails to contest, by way of a timely filed preliminary motion under § 1.633(c), the designation of a claim as corresponding to a count may not subsequently argue the separate patentability or the lack of separate patentability of claims designated as corresponding to the count. The Patent and Trademark Office conducts interference proceedings to determine who, as between two or more applicants for patent or one or more applicants for patent and one or more patentees, is the first inventor of a patentable invention. A primary examiner determines in the first instance whether the claims in a pending application interfere with the claims in another pending application or unexpired patent. When the examiner is of the view that an interference exists, the Board is notified (§ 1.609). The interference is assigned to an administrative patent judge (§

1.610), who issues a notice declaring the interference (§ 1.611). Each separately patentable invention involved in the interference is defined by a count, which is merely a vehicle for contesting priority of invention (i.e., who made the invention defined by the count first) and determining the evidence relevant to the issue of priority. A preliminary determination is made by the Patent and Trademark Office as to which claims should be designated to correspond to the count. The claims that are initially determined to define the same patentable invention are designated as corresponding to the count. All other claims are designated as not corresponding to the count. The designation of claims provides a starting point in an interference. There is a presumption that the designation of a claim as corresponding or as not corresponding to a count is correct.

The interference rules authorize a party to file a preliminary motion to redefine an interference by designating a claim as corresponding (§ 1.633(c)(3)) or not corresponding (§ 1.633(c)(4)) to a count. Prior to Van Geuns, the Patent and Trademark Office interpreted the interference rules as requiring a party to file a preliminary motion under § 1.633(c)(4) to designate a claim as not corresponding to the count as a condition for arguing at final hearing that a claim designated as corresponding to the count is patentably distinct from another claim designated as corresponding to the count. See *Brooks v. Street*, 16 USPQ2d 1374, 1377 (Bd. Pat. App. & Int. 1990); *Flehmig v. Geisa*, 13 USPQ2d 1052, 1054 (Bd. Pat. App. & Int. 1989); *Kwon v. Perkins*, 6 USPQ2d 1747, 1750 (Bd. Pat. App. & Int. 1988), *aff'd on other grounds*, 886 F.2d 325, 12 USPQ2d 1308 (Fed. Cir. 1989); see also *Lamont v. Berger*, 7 USPQ2d 1580, 1582 (Bd. Pat. App. & Int. 1988). However, in *Van Geuns* the Federal Circuit interpreted the rules differently, stating:

[T]he position of the Commissioner that claims designated as corresponding to a count stand or fall with the patentability of the subject matter of the count is overbroad. 988 F.2d at 1185, 26 USPQ2d at 1060. The Court further stated: [W]e conclude that a party to an interference, who has failed to timely contest the designation of claims as corresponding to a count, has not conceded that claims corresponding to a count are anticipated or made obvious [i.e., are unpatentable] by the prior art when the subject matter of a count is determined to be unpatentable for obviousness. The PTO must determine, based on the actual prior art reference or references, whether claims not [designated as] corresponding exactly to the count are unpatentable.

... The interference rules do not specify whether a party may argue the patentability of claims separately to the EIC [examiner-in-chief, now administrative patent judge] and the board.

Id. at 1186, 26 USPQ2d at 1060 (bracketed material added by the Commissioner). The proposed amendment to § 1.655(b) is designed to overcome the Federal Circuit's interpretation of the rules and to create a presumption that all claims designated as corresponding to a count are directed to the same patentable invention.

It is proposed to amend paragraph (c) of § 1.655 by changing "To prevent manifest injustice" to "In the interest of justice" to be consistent with the language used in other interference rules.

In § 1.656, it is proposed to redesignate paragraphs (b)(1) through (b)(6) as paragraphs (b)(3) through (b)(8), respectively, and to add new paragraphs (b)(1) and (b)(2) requiring the brief to include (1) a statement of interest identifying every party represented by the attorney in the interference and the real party in interest if the party named in the caption is not the real party in interest and (2) a statement of related cases indicating whether the interference was previously before the Board for final hearing and identifying any related appeal or interference which is pending before, or which has been decided by, the Board, or which is pending before, or which has been decided by, the Court of Appeals for the Federal Circuit or a district court in a proceeding under 35 U.S.C. 146. A related appeal or interference is one which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending interference. Appeals are mentioned because related issues may be present before the Board simultaneously in an ex parte appeal and an interference. It is also proposed to amend current paragraph (b)(3) (proposed to be redesignated

as paragraph (b)(5)) to specify that statements of fact preferably should be presented in numbered paragraphs.

Current paragraph (b)(4) of § 1.656 (proposed to be redesignated as paragraph (b)(6)) requires that the opening brief of the junior party contain the contentions of the party with respect to the "issues to be decided," which has been construed to include the matter of whether some of the senior party's evidence of conception was inadmissible hearsay. *Suh v. Hoefle*, 23 USPQ2d 1321, 1323 (Bd. Pat. App. & Int. 1991). As support, the Board relied on *Fisher v. Bouzard*, 3 USPQ2d 1677 (Bd. Pat. App. & Int. 1987), and *Moller v. Harding*, 214 USPQ 730 (Bd. Pat. Int. 1982). Both of these cases concern interferences declared under the "old" interference rules (i.e., § 1.201 *et seq.*), of which § 1.254 specified that the opening brief of the junior party shall "present a full, fair statement of the questions involved, including his position with respect to the priority evidence on behalf of other parties." Current § 1.656(b)(4) does not expressly require, and was not intended to imply, that the opening brief of the junior party must address the evidence of any other party with respect to the issue of priority or any other issue. In order to clarify that the opening brief of a junior party need not address the evidence of the other parties, it is proposed to amend current paragraph (b)(4) to require that the junior party's opening brief contain the contentions of the party "with respect to the issues it is raising for consideration at final hearing." These issues would include the junior party's case-in-chief for priority with respect to an opponent or derivation by an opponent as well as matters raised in any denied or deferred motions of the junior party that are to be reviewed or considered at final hearing. Where the reply brief of the junior party includes a new argument in response to the case-in-chief of the senior party as presented in the senior party's opening brief, the senior party may move under § 1.635 for leave to file a reply to the junior party's reply brief, which motion must be accompanied by a copy of the senior party's reply.

Paragraph (d) of § 1.656 is proposed to be amended to state that unless ordered otherwise by an administrative patent judge, briefs shall be double-spaced (except for footnotes, which may be single-spaced) and shall comply with the requirements of § 1.653 (g) for records except the requirement for binding. As a result, the current distinction between printed and typewritten briefs would be eliminated.

Paragraphs (e), (g) and (h) of § 1.656 are proposed to be amended to require an original and four copies (currently an original and three copies are required) of each brief, any proposed findings of fact and conclusions of law, any motion under 37 CFR 1.635 to suppress evidence and any opposition to a motion to suppress evidence.

Paragraph (g) of § 1.656, which permits a party to file proposed findings of fact and conclusions of law, is further proposed to be amended to require paragraph numbers for the findings of fact and conclusions of law.

Paragraph (h) is further proposed to be amended to state that a party's failure to challenge the admissibility of the evidence of an opponent on a ground that could have been raised in a timely objection under §§ 1.672(c), 1.682(c), 1.683(b) or 1.688(b) constitutes a waiver of the right to move under § 1.656(h) to suppress the evidence on that ground at final hearing.

Paragraph (i) of § 1.656 currently provides that if a junior party fails to file an opening brief for final hearing, an order may be issued by the administrative patent judge requiring the junior party to show cause why the failure to file a brief should not be treated as a concession of priority and further provides that judgment may be rendered against the junior party if the junior party "fails to respond" within a time period set in the order. The expression "fails to respond" has been misinterpreted by some junior parties as meaning that the mere filing of a response of any kind to the order to show cause should be sufficient to avoid the entry of judgment. Such an interpretation was not intended and if adopted would effectively negate § 1.656(i). The term "respond" is proposed to be changed to "show good cause" in order to make it clear that a junior party's failure to file a timely opening brief will not be excused unless good cause is shown to explain or justify the failure to file a brief. The language of the rule will then be consistent with the other interference rules concerning orders to show cause, e.g., § 1.640(c) and 1.652.

Section 1.657 is proposed to be amended to be consistent with the proposed changes to the definition of "effective filing date" in § 1.601(g) and to state that in an interference involving an application and a patent where the effective filing date of the application is after the date the patent issued, a junior party has the burden of establishing priority by clear and convincing evidence, and that in other interferences the junior party has the burden of establishing priority by a preponderance of the evidence. The proposed amendment would codify the holding of *Price v. Symsek* 988 F.2d 1187, 1190-91, 26 USPQ2d 1031, 1033 (Fed. Cir. 1993), as clarified by *Bosies v. Benedict*, 27 F.3d 539, 541-42, 30 USPQ2d 1862, 1864 (Fed. Cir. 1994).

In § 1.658, it is proposed to amend paragraph (a) to state that when the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision for the purpose of judicial review (35 U.S.C. 141-144, 146) unless a request for reconsideration under paragraph (b) of this section is timely filed. In paragraph (b), third sentence, it is proposed to delete the phrases "[w]here reasonably possible" and "such that delivery is accomplished" as unnecessary and to add a sentence specifying that a decision on reconsideration is a final decision for the purpose of judicial review (35 U.S.C. 141-144, 146). It is also proposed to amend paragraph (b) by changing "reply to a request for reconsideration" to "opposition to a request for reconsideration" to be consistent with the terminology employed in § 1.640(c) regarding requests for reconsideration of decisions on preliminary motions.

Section 1.660 is proposed to be amended by adding a new paragraph (e) explaining that the failure of a party to comply with the notice provisions of § 1.660 may result in sanctions under § 1.616, that knowledge by, or notice to, an employee of the Office other than an employee of the Board, of the existence of the reexamination, application for reissue, protest, or litigation shall not be sufficient, and that the notice contemplated by this section is notice addressed specifically to an administrative patent judge or the Board.

In § 1.662, it is proposed to amend paragraph (a) by changing "filing by an applicant or patentee" in the second sentence to "filing by a party" to make it clear that the terminal disclaimer can be signed by the party's attorney or agent of record. For the same reason, it is proposed to change "by an applicant" to "by a party" in the third sentence of paragraph (a), which concerns abandonment of an involved application.

In paragraph (b) of § 1.662, the first sentence is proposed to be amended to change "omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference" to "does not include a claim that corresponds to a count" in order to make it clear that judgment may not be entered where the reissue application includes a new or amended claim that should be designated as corresponding to a count, even if the patentee argues that it should be designated as not corresponding to a count. Similarly, it is proposed to change "reissue other than for the purpose of avoiding the interference" to "reissue which includes a claim that corresponds to a count."

In § 1.671, it is proposed to amend paragraph (a) by changing "evidence from another interference, proceeding, or action filed under § 1.683" to "testimony from another interference, proceeding, or action filed under § 1.683" in order to be consistent with the terminology of § 1.683. It is proposed to amend paragraphs (c)(6) and (c)(7) of § 1.671 to change "by oral deposition or affidavit" to "by affidavit or oral deposition." Paragraph (f) is proposed to be amended to clarify that the requirement for the significance of documentary and other exhibits to be discussed with particularity by a witness applies only to documentary and other exhibits identified by a witness in an affidavit or during oral deposition. Paragraph (f) does not apply to official records and printed publications submitted into evidence pursuant to § 1.682(a).

In § 1.672, in addition to the proposed amendments discussed above under the heading "Amendments responsive to adoption of Public Law 103-182," it is proposed to amend paragraph (b) by deleting the third sentence, which specifies the type of paper to be used for affidavits, as being superfluous in view of § 1.677(a). In paragraph (d), it is proposed to delete the fifth sentence ("A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under § 1.673(a).") as superfluous in view of the second sentence of § 1.672(d).

In § 1.673, it is proposed to amend paragraph (b) by changing the time for service of evidence to be relied on at an oral deposition from "at least three days" prior to the conference required by § 1.673(g) when service is by hand or by Express Mail to "at least three working days" prior to the conference. It is also proposed to amend paragraph (b) to change the time for service by any other means from 10 days to 14 days prior to the conference. It is proposed to amend paragraph (d) of § 1.673 by deleting the second sentence as unnecessary, since all depositions for a case-in-chief would have to be approved by an administrative patent judge. It is also proposed to delete the quotation marks around "Express Mail" in paragraph (b).

Also in § 1.673, it is proposed to clarify paragraph (e) by changing "party electing to present testimony by affidavit" to "party who has presented testimony by affidavit."

In paragraph (a) of § 1.674, which specifies before whom depositions may be taken, it is proposed to delete the reference to "United States or a territory or insular possession of the United States" in order to make this paragraph applicable to depositions for testimony compelled in foreign countries.

In § 1.675, it is proposed to amend paragraph (d), which concerns reading and signing of a transcript by the witness, to take into account that the witness might refuse to read and/or sign the transcript of the deposition, in which case the circumstances under which the witness refused to sign must be noted on the certificate by the officer who prepared the certified transcript (§ 1.676(c)).

In § 1.676, it is proposed to amend paragraph (a)(4) by changing "opposing party" to "opponent."

Section 1.677, which in its current form specifies the required form for transcripts of depositions, is proposed to be amended to also apply to affidavits. Furthermore, it is proposed to delete the reference to "typewritten" matter, to change "pica-type" to "11 point type" and to change "8 1/2 x 11 inches (21.8 by 27.9 cm.)" to "21.8 by 27.9 cm. (8 1/2 x 11 inches)."

In § 1.678, it is proposed to change the section heading from "Transcript of deposition must be filed" to "Time for filing transcript of deposition" for clarity and to amend the text by changing the time for filing the certified transcript from 45 days to 30 days.

In § 1.679, it is proposed to change "transcript" to "transcript of a deposition" for clarity and also to delete "for printing (§ 1.653 (g))" as unnecessary.

In § 1.682, in addition to the proposed amendments discussed above under the heading "Service of a 'developing record,'" it is proposed to amend paragraph (a) by changing "identified during the taking of testimony of a witness" to "identified in an affidavit or on the record during an oral deposition of a witness" for clarity. It is also proposed to delete and reserve paragraph (a)(4) ("where appropriate, be accompanied by a certified copy of the official record or a copy of the printed publication (§ 1.671(d))") as superfluous in view of Rules 901 and 902 of the Federal Rules of Evidence, which apply to interference proceedings (§ 1.671(b)) and require authentication of evidence that is not self-authenticating. Finally, it is proposed to capitalize the first word in each of paragraphs (a)(2), (a)(3) and (a)(4).

In § 1.685, it is proposed to amend paragraph (d) for clarification.

In § 1.687, it is proposed to amend paragraph (c) to refer to 1.647 concerning translations of documents in a foreign language.

Other Considerations: These proposed rules conform with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, Executive Order 12866, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* The Office of Management and Budget has determined that these proposed rules are not significant for the purposes of Executive Order 12866.

The Assistant Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the changes clarify existing rules setting forth the procedures used in patent appeals and interferences.

The Patent and Trademark Office has determined that this notice has no Federalism implications affecting the relationship

between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

For the reasons set out in the preamble, it is proposed to amend 37 CFR Part 1 wherein removals are indicated by brackets ([]) and additions by arrows (►) as follows:

PART 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.11 is proposed to be amended by revising paragraph (e) to read as follows:

§ 1.11 Files open to public

(e) The file of any interference involving a patent, a statutory invention registration, ► reissue application, ◄ or an application on which a patent has been issued or which has been published as a statutory invention registration, is open to inspection by the public, and copies may be obtained upon paying the fee therefor, if: (1) the interference has terminated, or (2) an award of priority or judgment has been entered as to all parties and all counts.

3. In § 1.192, it is proposed to revise paragraphs (a), (c), (c)(5) and (c)(5)(ii), redesignate current paragraphs (c)(1) through (c)(7) as paragraphs (c)(3) through (c)(9) and add new paragraphs (c)(1) and (c)(2) to read as follows:

§ 1.192 Appellant's brief.

(a) [The appellant] ►Appellant◄ shall, within 2 months from the date of the notice of appeal under § 1.191 [in an application, reissue application, or patent under reexamination,] or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in § 1.17(f) and must set forth the authorities and arguments on which [the] appellant will rely to maintain the appeal. Any arguments or authorities not included in the brief ►will◄ [may] be refused consideration by the Board of Patent Appeals and Interferences ►, unless good cause is shown◄.

(c) The brief shall contain the following items under appropriate headings and in the order [here] indicated ►below◄ unless ►the brief is filed by an applicant who is not represented by a registered practitioner◄ [there is no attorney or agent of record in the application or reexamination proceeding, the brief was not prepared by a registered practitioner, and the brief was not signed by a registered practitioner, wherein the brief will be accepted as complying with this paragraph provided it is at least in substantial compliance with the requirements of paragraphs (c)(1), (2), (6) and (7)]:

►(1) *Real Party in Interest*. A statement identifying the real party in interest, if the party named in the caption of the brief is not the real party in interest, and the parent companies, subsidiaries (except wholly owned subsidiaries) and affiliates that have issued shares to the public of the real party in interest.

(2) *Related Appeals and Interferences*. A statement identifying by number and filing date all other appeals or interferences known to appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.◄

[(1)] ►(3)◄ *Status of Claims*. A statement of the status of all the claims, pending or cancelled, and identifying the claims appealed.

[(2)] ►(4)◄ *Status of Amendments*. A statement of the status of any amendment filed subsequent to final rejection.

[(3)] ►(5)◄ *Summary of Invention*. A concise explanation of the invention defined in the claims involved in the appeal, which shall refer to the specification by page and line number, and to the drawing, if any, by reference characters.

[(4)] ►(6)◄ *Issues*. A concise statement of the issues presented for review.

[(5)] ►(7)◄ *Grouping of Claims*. For each ground of rejection which appellant contests and which applies to more than one claim, [it will be presumed that] the rejected claims ►shall◄ stand or fall together ►with the broadest claim, and only the broadest claim will be considered by the Board of Patent Appeals and Interferences◄ unless:

►(i)◄ a statement is included that the rejected claims do not stand or fall together, and

►(ii)◄ in [the appropriate part or parts of] the argument under subparagraph ►(c)(8)◄ [(c)(6)] of this section appellant presents reasons as to why appellant considers the rejected claims to be separately patentable ►from the broadest claim. Merely pointing out what a claim covers is not an argument as to why the claim is separately patentable from the broadest claims◄.

[(6)] ►(8)◄ *Argument*. The contentions of [the] appellant with respect to each of the issues presented for review in subparagraph ►(c)(6)◄ [(c)(4)] of this section, and the basis therefor, with citations of the authorities, statutes, and parts of the record relied on. Each issue should be treated under a separate heading.

(v) For any rejection other than those referred to in paragraphs ►(c)(8)(i)◄ [(c)(6)(i)] to (iv) of this section, the argument shall specify the errors in the rejection and the specific limitations in the rejected claims, if appropriate, or other reasons, which cause the rejection to be in error.

[(7)] ►(9)◄ *Appendix*. An appendix containing a copy of the claims involved in the appeal.

(d) If a brief is filed which does not comply with all the requirements of paragraph (c) of this section, [the] appellant will be notified of the reasons for non-compliance and provided with a period of one month within which to file an amended brief. If [the] appellant does not file an amended brief during the one-month period, or files an amended brief which does not overcome all the reasons for non-compliance stated in the notification, the appeal will ►stand◄ [be] dismissed.

4. Section 1.601 is proposed to be amended by revising paragraphs (f), (g), (j), (k), (l) and (q) and adding a new paragraph (r) to read as follows:

§ 1.601 Scope of rules, definitions.

(f) A *count* defines the interfering subject matter between (1) two or more applications or (2) one or more applications and one or more patents. ►A count should be broad enough to encompass the broadest corresponding patentable claim of each of the parties. A count may not be so broad as to be unpatentable over the prior art.◄ When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent [which] ►that is designated to◄ correspond[s] to a count is a claim involved in the interference within the meaning of 35 U.S.C. 135(a). A claim of a patent or application ►designated to correspond to a count that◄ [which] is identical to a count is said to "correspond exactly" to the count. A claim of a patent or application ►designated to correspond to a count that ◄[which] is not identical to a count [but which defines the same patentable invention as the count,] is said to "correspond substantially" to the count. When a count is broader in scope than all claims which correspond to the count, the count is a "phantom count." A phantom count is [not patentable to any party] ►unpatentable to all parties under the written description requirement of the first paragraph of 35 U.S.C. 112◄.

(g) The *effective filing date* of an application [or a patent] is the filing date of an earlier application accorded to the application [or patent] under 35 U.S.C. 119, 120, ►121, ◄ or 365 ►or, if no benefit is accorded, the filing date of the application. The *effective filing date* of a patent is the filing date of an earlier application accorded to the patent under 35 U.S.C. 120, 121, or 365(c) or, if no benefit is accorded, the filing date of the application which issued as the patent.◄

(j) An *interference-in-fact* exists when at least one claim of a party [which] ►that◄ corresponds to a count and at least one claim of an opponent [which] ►that◄ corresponds to the count define the same patentable invention.

(k) A *lead* attorney or agent is a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the attorney or agent whom an ►administrative patent judge◄ [examiner-in-chief] may contact to set times and take other action in the interference.

(l) A *party* is (1) an applicant or patentee involved in the interference or (2) a legal representative or an assignee ►of record in the Patent and Trademark Office◄ of an applicant or patentee involved in an interference. Where acts of a party are normally performed by an attorney or agent, "party" may be construed to mean the attorney or agent. An "inventor" is the individual named as inventor in an application involved in an interference or the individual named as inventor in a patent involved in an interference.

(q) A *final decision* is a decision awarding judgment as to all counts. An *interlocutory order* is any other action taken by an ►administrative patent judge◄ [examiner-in-chief] or [a panel of] the Board in an interference, including the notice declaring an interference.

►(r) *NAFTA country* means NAFTA country as defined in section 2(4) of the North American Free Trade Agreement Implementation Act. A "non-NAFTA country" is a country other than the United States or a NAFTA country.◄

5. Section 1.602 is proposed to be amended by revising paragraph (c) to read as follows:

§ 1.602 Interest in applications and patents involved in an interference.

(c) If a change of any right, title, and interest in any application or patent involved or relied upon in the interference occurs after notice is given declaring the interference and before the time expires for seeking judicial review of a final decision of the Board, the parties shall notify the Board of the change within 20 days ►after◄ [of] the change.

6. Section 1.603 is proposed to be revised to read as follows:

§ 1.603 Interference between applications; subject matter of the interference.

Before an interference is declared between two or more applications, the examiner must be of the opinion that there is interfering subject matter claimed in the applications which is patentable to each applicant subject to a judgment in the interference. The interfering subject matter shall be defined by one or more counts. [Each count shall define a separate patentable invention.] Each application must contain, or be amended to contain, at least one ►patentable◄ claim which corresponds to each count. ►The claim in the application need not be, and most often will not be, identical to a claim in the patent.◄ All claims in the application and patent which define the same patentable invention as a count shall be designated to correspond to the count. At the time an interference is initially declared (§ 1.611), a count shall not be narrower in scope than any patent claim which corresponds to the count and any single patent claim will be presumed, subject to a motion under § 1.633(c), not to contain separate patentable inventions.

7. Section 1.604 is proposed to be revised by changing paragraph (a)(1) to read as follows:

§ 1.604 Request for interference between applications by an applicant.

(a) ***

(1) Suggesting a proposed count and presenting at least one claim corresponding to the proposed count or identifying at least one claim in [his or her] ►its◄ application that corresponds to the proposed count.

8. Section 1.605 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.605 Suggestion of claim to applicant by examiner.

(a) ►If no claim in an application is drawn to the same patentable invention claimed in another application or patent, the◄ [The] examiner may suggest that an applicant present a claim [in an application] ►drawn to an invention claimed in another application or patent◄ for the purpose of an interference with another application or a patent. The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim within a time specified by the examiner, not less than one month. Failure or refusal of an applicant to timely present the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim. At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims [would be more appropriate to] ►should◄ be included in any interference which may be declared.

9. Section 1.606 is proposed to be revised to read as follows:

§ 1.606 Interference between an application and a patent; subject matter of the interference.

Before an interference is declared between an application and an unexpired patent, an examiner must determine that there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in the interference. The interfering subject matter will be defined by one or more counts. [Each count shall define a separate patentable invention.] ►The◄ [Any] application must contain, or be amended to contain, at least one ►patentable◄ claim which corresponds to each count. ►The claim in the application need not be, and most often will not be, identical to a claim in the patent.◄ All claims in the application and patent which define the same patentable invention as a count shall be designated to correspond to the count. At the time an interference is initially declared (§ 1.611), a count shall not be narrower in scope than any patent claim which corresponds to the count and any single patent claim will be presumed, subject to a motion under § 1.633(c), not to contain separate patentable inventions.

10. Section 1.607 is proposed to be amended by revising paragraph (a)(4) and adding a new paragraph (a)(6) to read as follows:

§ 1.607 Request by applicant for interference with patent.

(a) ***

(4) Presenting at least one claim corresponding to the proposed count or identifying at least one claim already pending in [his or her] ►its◄ application that corresponds to the proposed count, and, if any claim of the patent or application identified as corresponding to the proposed count does not correspond exactly to the proposed count, explaining why each such claim corresponds to the proposed count, and

(5) ***

►(6) Explaining how the requirements of 35 U.S.C. 135(b) are met, if the claim presented or identified under paragraph (a)(4) of this section was not present in the application until more than one year after the issue date of the patent.◄

11. Section 1.608 is proposed to be amended by revising paragraphs (a) and (b) thereof to read as follows:

§ 1.608 Interference between an application and a patent; prima facie showing by applicant.

(a) When the [earlier of the filing date or] effective filing date of an application is three months or less after the [earlier of the filing date or] effective filing date of a patent, [the applicant,] before an interference will be declared, ►either the applicant or the applicant's attorney or agent of record ◄ shall file [an affidavit] ►a statement ◄ alleging that there is a basis upon which ►the ◄ applicant is entitled to a judgment relative to the patentee.

(b) When the [earlier of the filing date or the] effective filing date of an application is more than three months after the [earlier of the filing date or the] effective filing date [under 35 U.S.C. 120] of a patent, the applicant, before an interference will be declared, shall file (1) evidence which may consist of patents or printed publications, other documents, and one or more affidavits which demonstrate that applicant is *prima facie* entitled to a judgment relative to the patentee and (2) an explanation stating with particularity the basis upon which the applicant is *prima facie* entitled to the judgment. Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the [earlier of the filing date or] effective filing date of the patent. To facilitate preparation of a record (§ 1.653 (g) and (h)) for final hearing, an applicant should file affidavits on paper which is ►21.8 by 27.9 cm. (8 1/2 x 11 inches) ◄ [8 1/2 x 11 inches (21.8 by 27.9 cm.)]. The significance of any printed publication or other document which is self-authenticating within the meaning of Rule 902 of the Federal Rules of Evidence or § 1.671(d) and any patent shall be discussed in an affidavit or the explanation. Any printed publication or other document which is not self-authenticating shall be authenticated and discussed with particularity in an affidavit. Upon a showing of ►good ◄ [sufficient] cause, an affidavit may be based on information and belief. If an examiner finds an application to be in condition for declaration of an interference, the examiner will consider the evidence and explanation only to the extent of determining whether a basis upon which the application would be entitled to a judgment relative to the patentee is alleged and, if a basis is alleged, an interference may be declared.

12. Section 1.609 is proposed to be amended by revising paragraph (b)(2) and (b)(3) to read as follows:

§ 1.609 Preparation of interference papers by examiner.

(b) ***
(2) The claims of any application or patent which correspond to each count, stating whether the claims correspond exactly or substantially to each count ►and an explanation why each claim designated as corresponding to a count is directed to the same patentable invention as the count ◄;
(3) The claims in any application ►or patent ◄ which [are deemed by the examiner to be patentable over any] ►do not correspond to each ◄ count ►and an explanation why each claim designated as not corresponding to a count is not directed to the same patentable invention as the count ◄, and

13. Section 1.610 is proposed to be amended by revising the section heading and paragraphs (a) through (e) to read as follows:

§ 1.610 Assignment of interference to ►administrative patent judge ◄ [examiner-in-chief], time period for completing interference.

(a) Each interference will be declared by an ►administrative patent judge ◄ [examiner-in-chief] who may enter all interlocutory orders in the interference, except that only [a panel con-

sisting of at least three members of] the Board shall (1) hear oral argument at final hearing, (2) enter a decision under §§ 1.617, ►1.640(e) ◄ [1.640(c) or (e)], 1.652, 1.656(i) or 1.658 or (3) enter any other order which terminates the interference.

(b) As necessary, another ►administrative patent judge ◄ [examiner-in-chief] may act in place of the one who declared the interference. [Unless otherwise provided in this section, at] ►At ◄ the discretion of the examiner-in-chief assigned to the interference, a panel consisting of two or more members of the Board may enter interlocutory orders.

(c) Unless otherwise provided in this subpart, times for taking action by a party in the interference will be set on a case-by-case basis by the ►administrative patent judge ◄ [examiner-in-chief] assigned to the interference. Times for taking action shall be set and the ►administrative patent judge ◄ [examiner-in-chief] shall exercise control over the interference such that the pendency of the interference before the Board does not normally exceed two years.

(d) An ►administrative patent judge ◄ [examiner-in-chief] may hold a conference with the parties to consider: (1) Simplification of any issues, (2) the necessity or desirability of amendments to counts, (3) the possibility of obtaining admissions of fact and genuineness of documents which will avoid unnecessary proof, (4) any limitations on the number of expert witnesses, (5) the time and place for conducting a deposition (§ 1.673(g)), and (6) any other matter as may aid in the disposition of the interference. After a conference, the ►administrative patent judge ◄ [examiner-in-chief] may enter any order which may be appropriate.

(e) The ►administrative patent judge ◄ [examiner-in-chief] may determine a proper course of conduct in an interference for any situation not specifically covered by this part.

14. Section 1.611 is proposed to be amended by redesignating paragraph (c)(8) as paragraph (c)(9), adding a new paragraph (c)(8) and revising paragraphs (b), (c)(7) and (d) to read as follows:

§ 1.611 Declaration of interference.

(b) When a notice of declaration is returned to the Patent and Trademark Office undelivered, or in any other circumstance where appropriate, an ►administrative patent judge ◄ [examiner-in-chief] may (1) send a copy of the notice to a patentee named in a patent involved in an interference or the patentee's assignee of record in the Patent and Trademark Office or (2) order publication of an appropriate notice in the *Official Gazette*.

(c) ***

(7) The claim or claims of any application or any patent which correspond to each count; [and]

(8) ►Why each claim designated as corresponding to a count is directed to the same patentable invention as the count and why each claim designated as not corresponding to a count is not directed to the same patentable invention as the count; and
(9) ◄ The order of the parties.

(d) The notice of declaration may also specify the time for: (1) Filing a preliminary statement as provided in § 1.621(a); (2) ►Serving ◄ [serving] notice that a preliminary statement has been filed as provided in § 1.621(b); and (3) ►Filing ◄ [filing] preliminary motions authorized by § 1.633, oppositions to the motions, and replies to the oppositions.

15. Section 1.612 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.612 Access to applications.

(a) After an interference is declared, each party shall have access to and may obtain copies of the files of any application set out in the notice declaring the interference, except for affidavits filed under § 1.131 and any evidence and explanation under § 1.608 filed separate from an amendment. A party seeking access to any abandoned or pending application referred to in the [opposing party's] ►opponent's ◄ involved application or access to any pending application referred to in the [opposing

party's] ►opponent's ◄ patent must file a motion under § 1.635. ►See § 1.11(e) concerning public access to interference files. ◄

16. Section 1.613 is proposed to be amended by revising paragraphs (c) and (d) to read as follows:

§ 1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent.

(c) An ►administrative patent judge ◄ [examiner-in-chief] may make necessary inquiry to determine whether an attorney or agent should be disqualified from representing a party in an interference. If an ►administrative patent judge ◄ [examiner-in-chief] is of the opinion that an attorney or agent should be disqualified, the ►administrative patent judge ◄ [examiner-in-chief] shall refer the matter to the Commissioner. The Commissioner will make a final decision as to whether any attorney or agent should be disqualified.

(d) No attorney or agent of record in an interference may withdraw as attorney or agent of record except with the approval of an ►administrative patent judge ◄ [examiner-in-chief] and after reasonable notice to the party on whose behalf the attorney or agent has appeared. A request to withdraw as attorney or agent of record in an interference shall be made by motion (§ 1.635).

17. Section 1.614 is proposed to be amended by revising paragraphs (a) and (c) to read as follows:

§ 1.614 Jurisdiction over interference.

(a) The Board ►acquires ◄ [shall assume] jurisdiction over an interference when the interference is declared under § 1.611.

(c) The examiner shall have jurisdiction over any pending application until the interference is declared. An ►administrative patent judge ◄ [examiner-in-chief], where appropriate, may for a limited purpose restore jurisdiction to the examiner over any application involved in the interference.

18. Section 1.615 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.615 Suspension of ex parte prosecution.

(a) When an interference is declared, ex parte prosecution of an application involved in the interference is suspended. Amendments and other papers related to the application received during pendency of the interference will not be entered or considered in the interference without the consent of an ►administrative patent judge ◄ [examiner-in-chief].

(b) Ex parte prosecution as to specified matters may be continued concurrently with the interference with consent of the administrative patent judge ◄ [examiner-in-chief].

19. Section 1.616 is proposed to be amended by revising the section heading, introductory text and paragraphs (a) through (e) to read as follows and by adding new paragraphs (b) and (c) to read as follows:

§ 1.616 Sanctions for failure to comply with rules or order ►or for taking or maintaining a frivolous positions ◄.

►(a) ◄ An ►administrative patent judge ◄ [examiner-in-chief] or the Board may impose an appropriate sanction against a party who fails to comply with the regulations of this part or any order entered by an ►administrative patent judge ◄ [examiner-in-chief] or the Board. An appropriate sanction may include among others entry of an order:

►(1) ◄ [(a)] Holding certain facts to have been established in the interference;

►(2) ◄ [(b)] Precluding a party from filing a ►paper ◄ [motion or a preliminary statement];

►(3) ◄ [(c)] Precluding a party from presenting or contesting a particular issue;

►(4) ◄ [(d)] Precluding a party from requesting, obtaining, or opposing discovery; [or]

►(5) ◄ [(e)] ►Awarding compensatory expenses and/or compensatory attorney fees; or

(6) ◄ Granting judgment in the interference.

►(b) An administrative patent judge or the Board may impose a sanction, including a sanction in the form of compensatory expenses and/or compensatory attorney fees, against a party for taking or maintaining a frivolous position.

(c) To the extent that any information under the control of an individual or entity located in a NAFTA country concerning knowledge, use, or other activity relevant to proving or disproving a date of invention has been ordered to be produced by an administrative patent judge or the Board (§ 1.671(h)), but has not been produced for use in the interference to the same extent as such information could be made available in the United States, the administrative patent judge or the Board shall draw such adverse inferences as may be appropriate under the circumstances, or take such other action permitted by statute, rule, or regulation, in favor of the party that requested the information in the interference, including imposition of appropriate sanctions under paragraph (a) of this section. ◄

20. Section 1.617 is proposed to be amended by revising paragraphs (a), (b), (d), (e), (g) and (h) to read as follows:

§ 1.617 Summary judgment against applicant.

(a) An ►administrative patent judge ◄ [examiner-in-chief] shall review any evidence filed by an applicant under § 1.608(b) to determine if the applicant is *prima facie* entitled to a judgment relative to the patentee. If the ►administrative patent judge ◄ [examiner-in-chief] determines that the evidence shows the applicant is *prima facie* entitled to a judgment relative to the patentee, the interference shall proceed in the normal manner under the regulations of this part. If in the opinion of the ►administrative patent judge ◄ [examiner-in-chief] the evidence fails to show that the applicant is *prima facie* entitled to a judgment relative to the patentee, the ►administrative patent judge ◄ [examiner-in-chief] shall, concurrently with the notice declaring the interference, enter an order stating the reasons for the opinion and directing the applicant, within a time set in the order, to show cause why summary judgment should not be entered against the applicant.

(b) The applicant may file a response to the order ►, which may include an appropriate preliminary motion under § 1.633(c), (f) or (g), ◄ and state any reasons why summary judgment should not be entered. Any request by the applicant for a hearing before the Board shall be made in the response. Additional evidence shall not be presented by the applicant or considered by the Board unless the applicant shows good cause why any additional evidence was not initially presented with the evidence filed under § 1.608(b). At the time an applicant files a response, the applicant shall serve a copy of any evidence filed under § 1.608(b) and this paragraph.

(d) If a response is timely filed by the applicant, all opponents may file a statement ►and may oppose any preliminary motion filed under § 1.633(c), (f) or (g) by the applicant ◄ within a time set by the ►administrative patent judge ◄ [examiner-in-chief]. The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the ►administrative patent judge ◄ [examiner-in-chief] for issuing the order to show cause. ►Except as required to oppose a motion under § 1.633(c), (f) or (g) by the applicant, evidence ◄ [Evidence] shall not be filed by any opponent. An opponent may not request a hearing.

(e) Within a time authorized by the administrative patent judge [examiner-in-chief], an applicant may file a reply to any statement or opposition filed by any opponent.

(g) If a response by the applicant is timely filed, the administrative patent judge [examiner-in-chief] or the Board shall decide whether the evidence submitted under § 1.608(b) and any additional evidence properly submitted under paragraphs [paragraph] (b) and (e) of this section shows that the applicant is *prima facie* entitled to a judgment relative to the patentee. If the applicant is not *prima facie* entitled to a judgment relative to the patentee, the Board shall enter a final decision granting summary judgment against the applicant. Otherwise, an interlocutory order shall be entered authorizing the interference to proceed in the normal manner under the regulations of this subpart.

(h) Only an applicant who filed evidence under § 1.608(b) may request a hearing. If that applicant requests a hearing, the Board may hold a hearing prior to entry of a decision under paragraph (g) of this section. The administrative patent judge [examiner-in-chief] shall set a date and time for the hearing. Unless otherwise ordered by the administrative patent judge [examiner-in-chief] or the Board, the applicant and any opponent will each be entitled to no more than 30 minutes of oral argument at the hearing.

21. Section 1.618 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.618 Return of unauthorized papers.

(a) An administrative patent judge or the Board shall enter an order directing the [The Patent and Trademark Office shall] return to a party of any paper presented by the party when the filing of the paper is not authorized by, or is not in compliance with the requirements of, this subpart. Any paper returned will not thereafter be considered [by the Patent and Trademark Office] in the interference. A party may be permitted to file a corrected paper under such conditions as may be deemed appropriate by an administrative patent judge [examiner-in-chief].

22. Section 1.621 is proposed to be amended by revising paragraph (h) to read as follows:

§ 1.621 Preliminary statement, time for filing, notice of filing.

***** (h) When a party files a preliminary statement, the party shall also simultaneously file and serve on all opponents in the interference a notice stating that a preliminary statement has been filed. A copy of the preliminary statement need not be served until ordered by the administrative patent judge [examiner-in-chief].

23. Section 1.622 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.622 Preliminary statement, who made invention, where invention made.

(b) The preliminary statement shall state whether the invention was made in the United States, a NAFTA country (and, if so, which NAFTA country), or [abroad] in a non-NAFTA country. If made in a non-NAFTA country [abroad], the preliminary statement shall state whether the party is entitled to the benefit of the second sentence of 35 U.S.C. 104.

24. Section 1.623 is proposed to be amended by revising the section heading and paragraph (a) to read as follows:

§ 1.623 Preliminary statement; invention made in United States or a NAFTA country.

(a) When the invention was made in the United States or a NAFTA country, or a party is entitled to the benefit of the second sentence of 35 U.S.C. 104, the preliminary statement must state the following facts as to the invention defined by each count:

25. Section 1.624 is proposed to be amended by revising the section heading and paragraphs (a), (a)(1) through (a)(6) and (c) to read as follows:

§ 1.624 Preliminary statement; invention made [abroad] in a non NAFTA country.

(a) When the invention was made in a non-NAFTA country [abroad] and a party intends to rely on introduction of the invention into the United States or a NAFTA country, the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which a drawing of the invention was first introduced into the United States or a NAFTA country.

(2) The date on which a written description of the invention was first introduced into the United States or a NAFTA country.

(3) The date on which the invention was first disclosed to another person in the United States or a NAFTA country.

(4) The date on which the inventor's conception of the invention was first introduced into the United States or a NAFTA country.

(5) The date on which an actual reduction to practice of the invention was first introduced into the United States or a NAFTA country. If an actual reduction to practice of the invention was not introduced into the United States or a NAFTA country, the preliminary amendment shall so state.

(6) The date after introduction of the inventor's conception into the United States or a NAFTA country when active exercise of reasonable diligence in the United States or a NAFTA country toward reducing the invention to practice began.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was introduced into the United States or a NAFTA country, a copy of that drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was introduced into the United States or a NAFTA country, a copy of that written description shall be filed with and identified in the preliminary statement. See § 1.628(b) when a copy of the first drawing or first written description introduced in the United States or a NAFTA country cannot be filed with the preliminary statement.

26. Section 1.625 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.625 Preliminary statement; derivation by an opponent.

(a) When [the invention was made in the United States or abroad and] a party intends to prove derivation by an opponent from the party, the preliminary statement must state the following as to the invention defined by each count:

27. Section 1.626 is proposed to be revised to read as follows:

§ 1.626 Preliminary statement; earlier application.

When a party does not intend to present evidence to prove a conception or an actual reduction to practice and the party intends to rely solely on the filing date of an earlier filed

application [filed in the United States or abroad] to prove a constructive reduction to practice, the preliminary statement may so state and identify the earlier filed application with particularity.

28. Section 1.627 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.627 Preliminary statement; sealing before filing, opening of statement.

(b) A preliminary statement may be opened only at the direction of an administrative patent judge [examiner-in-chief].

29. Section 1.628 is proposed to be amended by revising paragraphs (a) and (b)(2) to read as follows:

§ 1.628 Preliminary statement; correction of error.

(a) A material error arising through inadvertence or mistake in connection with (1) a preliminary statement or (2) drawings or a written description submitted therewith or omitted therefrom, may be corrected by a motion (§ 1.635) for leave to file a corrected statement. The motion shall be supported by an affidavit stating the date the error was first discovered, [and shall show that the correction is essential to the ends of justice and] shall be accompanied by the corrected statement [The motion] and shall be filed as soon as practical after discovery of the error. If filed on or after the date set by the administrative patent judge for service of preliminary statements, the motion shall also show that correction of the error is essential to the interest of justice.

(b) ***

(2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States or a NAFTA country which is available. The party shall file a motion (§ 1.635) to amend its preliminary statement promptly after the first drawing, first written description, or drawing or written description first introduced into the United States or a NAFTA country becomes available. A copy of the drawing or written description may be obtained, where appropriate, by a motion (§ 1.635) for additional discovery under § 1.687 or during a testimony period.

30. Section 1.629 is proposed to be amended by revising paragraphs (a), (c)(1) and (d) to read as follows:

§ 1.629 Effect of preliminary statement.

(a) A party shall be strictly held to any date alleged in the preliminary statement. Doubts as to (1) definiteness or sufficiency of any allegation in a preliminary statement or (2) compliance with formal requirements will be resolved against the party filing the statement by restricting the party to [the earlier of] its [filing date or] effective filing date or to the latest date of a period alleged in the preliminary statement[,] as may be appropriate. A party may not correct a preliminary statement except as provided by § 1.628.

(c) ***

(1) Shall be restricted to the [earlier of the] party's [filing date or] effective filing date and

(d) If a party files a preliminary statement which contains an allegation of a date of first drawing or first written description and the party does not file a copy of the first drawing or written description with the preliminary statement as required by § 1.623(c), § 1.624(c), or § 1.625(c), the party will be restricted to the [earlier of the] party's [filing date or] effective filing date as to that allegation unless the party complies with §

1.628(b). The content of any drawing or written description submitted with a preliminary statement will not normally be evaluated or considered by the Board.

31. Section 1.630 is proposed to be revised to read as follows:

§ 1.630 Reliance on earlier application.

A party shall not be entitled to rely on the filing date of an earlier filed application [filed in the United States or abroad] unless (a) the earlier application is identified (§ 1.611(c)(5)) in the notice declaring the interference or (b) the party files a preliminary motion under § 1.633 seeking the benefit of the filing date of the earlier application.

32. Section 1.631 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.631 Access to preliminary statement, service of preliminary statement.

(a) Unless otherwise ordered by an administrative patent judge [examiner-in-chief], concurrently with entry of a decision [by the examiner-in-chief] on preliminary motions filed under § 1.633, any preliminary statement filed under § 1.621(a) shall be opened to inspection by the senior party and any junior party who filed a preliminary statement. Within a time set by the administrative patent judge [examiner-in-chief], a party shall serve a copy of its preliminary statement on each opponent who served a notice under § 1.621(b).

33. Section 1.632 is proposed to be revised to read as follows:

§ 1.632 Notice of intent to argue abandonment, suppression or concealment by opponent.

A notice shall be filed by a party who intends to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice (35 U.S.C. 102(g)). A party will not be permitted to argue abandonment, suppression, or concealment by an opponent unless the notice is timely filed. Unless authorized otherwise by an administrative patent judge [examiner-in-chief], a notice is timely when filed within ten (10) days after [of] the close of the testimony-in-chief of the opponent.

34. Section 1.633 is proposed to be amended by revising paragraphs (a), (a)(1), (a)(2), (b)(2), (f), (g) and (i) to read as follows:

§ 1.633 Preliminary motions.

(a) A motion for judgment against [on the ground that] an opponent's claim corresponding to a count on the ground that the claim is not patentable to the opponent. In deciding an issue raised in [determining] a motion filed under this paragraph, a claim [may] will be construed [by reference to the prior art of record] in light of the specification of the application or patent in which it appears. A motion under this paragraph shall not be based on:

(1) Priority of invention [of the subject matter of a count] by the moving party as against any opponent or

(2) Derivation [derivation] of the invention [subject matter of a count] by an opponent from the moving party. See § 1.637(a).

(b) ***

(2) no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. See § 1.637(a). When claims of opponents are presented in "means plus function" format, it may be possible for the claims of the opponents not to define the same patentable invention even though the claims contain the same literal wording.

(f) A motion to be accorded the benefit of the filing date of an earlier ►filed◄ application [filed in the United States or abroad]. See § 1.637 (a) and (f).

(g) A motion to attack the benefit accorded an opponent in the notice declaring the interference of the filing date of an earlier ►filed◄ application [filed in the United States or abroad]. See § 1.637 (a) and (g).

(i) When a motion is filed under paragraph (a), (b), or (g) of this section, an opponent, in addition to opposing the motion, may file a motion to redefine the interfering subject matter under paragraph (c) of this section [or]►,◄ a motion to substitute a different application under paragraph (d) of this section ►, or a motion to add a reissue application to the interference under paragraph (h) of this section◄.

35. Section 1.636 is proposed to be amended by revising paragraphs (a) through (d) to read as follows:

§ 1.636 Motions, time for filing.

(a) A preliminary motion under § 1.633 (a) through (h) shall be filed within a time period set by an ►administrative patent judge◄ [examiner-in-chief].

(b) A preliminary motion under § 1.633 (i) or (j) shall be filed within 20 days of the service of the preliminary motion under § 1.633 (a), (b), (c)(1), or (g) unless otherwise ordered by an ►administrative patent judge◄ [examiner-in-chief].

(c) A motion under § 1.634 shall be diligently filed after an error is discovered in the inventorship of an application or patent involved in an interference unless otherwise ordered by an ►administrative patent judge◄ [examiner-in-chief].

(d) A motion under § 1.635 shall be filed as specified in this subpart or when appropriate unless otherwise ordered by an ►administrative patent judge◄ [examiner-in-chief].

36. Section 1.637 is proposed to be amended by revising paragraphs (a), (b), (c)(1)(v), (c)(1)(vi), (c)(2)(ii), (c)(2)(iii), (c)(3)(ii), (c)(4)(i), (c)(4)(ii), (d), (e)(1)(viii), (e)(2)(vii), (f)(2), (h)(3), (h)(4) to read as follows, deleting paragraphs (c)(2)(iv), (c)(3)(iii), (d)(4) and redesignating them as "Reserved," and adding paragraphs (c)(1)(vii), (e)(1)(ix), (e)(2)(viii) to read as follows:

§ 1.637 Content of motions.

(a) A party filing a motion has the burden of proof to show that it is entitled to the relief sought in the motion. ►Each◄ [Every] motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, ►preferably in numbered paragraphs,◄ and (3) a full statement of the reasons why the relief requested should be granted. ►If a party files a motion for judgment under § 1.633(a) against an opponent based on the ground of unpatentability over prior art◄ and the dates of the cited prior art are such that the prior art appears to be applicable to the party, it will be presumed, without regard to the dates alleged in the preliminary statement of the party, that the cited prior art is applicable to the party unless there is included with the motion an explanation, and evidence if appropriate, as to why the prior art does not apply to the party. If the motion fails to include a sufficient explanation or evidence, the party will not be permitted to rely on any such explanation or evidence in response to or in any subsequent action in the interference.◄

(b) A motion under [§]►§§ 1.633, 1.634 or◄ 1.635 shall contain a certificate by the moving party stating that the moving party has conferred with all [opposing parties] ►opponents◄ in an effort in good faith to resolve by agreement the issues raised by the motion. ►The certificate shall indicate that the reasons and facts in support of the motion were discussed with each opponent and, if an opponent has indicated that it will oppose the motion, identify the issues and/or facts believed to

be in dispute.◄ [A moving party shall indicate in the motion whether any other party plans to oppose the motion.] The provisions of this paragraph do not apply to a motion to suppress evidence (§ 1.656(h)).

(c) ***

(1) ***

(v) Show that each proposed count ►is patentable over the prior art and◄ defines a separate patentable invention from every other count ►proposed to remain◄ in the interference.

(vi) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier ►filed◄ application [filed in the United States or abroad]►, if benefit of the earlier filed application is desired with respect to a proposed count◄.

►(vii) If an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, show why the opponent is not entitled to benefit of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count.◄

(2) ***

(ii) Show that the ►claim◄ proposed ►to be amended◄ or added [claim] defines the same patentable invention as the count.

(iii) Show the patentability to the applicant of each ►claim proposed to be◄ amended or added [claim] and apply the terms of the ►claim proposed to be◄ amended or added [claim] to the disclosure of the application; when necessary a moving party applicant shall file with the motion [an] ►a proposed◄ amendment [making the amended] ►to the application amending the claim corresponding to the count◄ or [added] ►adding the proposed additional◄ claim to the application.

(iv) ►Reserved.◄ [Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.]

(3) ***

(ii) Show the claim defines the same patentable invention as ►another claim whose designation as corresponding to◄ the count ►the moving party does not dispute◄.

(iii) ►Reserved.◄ [Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.]

(4) ***

(ii) Show ►(A) that◄ the claim does not define the same patentable invention as any other claim [designated] ►whose designation◄ in the notice declaring the interference as corresponding to the count ►the party does not dispute and (B) that the claim cannot serve as the basis for a motion under § 1.633(c)(1) to add a new count◄.

(d) A preliminary motion under § 1.633(d) to substitute a different application ►of the moving party◄ shall:

(4) ►Reserved.◄ [Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.]

(e) ***

(1) ***

(viii) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier ►filed◄ application [filed in the United States or abroad]►, if benefit is desired with respect to a proposed count◄.

►(ix) If an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, show why the opponent is not entitled to benefit of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count.◄

(2) ***

(vii) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier ►filed◄ application [filed in the United States or abroad]►, if benefit is desired with respect to a proposed count◄.

►(viii) If an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, show why the opponent is not entitled to benefit of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count.◄

(f) ***

(2) When the earlier application is an application filed in the United States, certify that a complete copy of the file of the earlier application, except for documents filed under § 1.131 or § 1.608, has been served on all opponents. When the earlier application is an application filed ►in a foreign country◄ [abroad], certify that a copy of the application [filed abroad] has been served on all opponents. If the earlier ►filed◄ application [filed abroad] is not in English, the requirements of § 1.647 must also be met.

(h) ***

(3) Show the patentability of all claims in, or proposed to be added to, the application for reissue which correspond to each count and apply the terms of the claims to the disclosure of the application for reissue; when necessary a moving applicant for reissue shall file with the motion an amendment adding any proposed claim to the application for reissue. ►A patentee may not move under § 1.633(h) to add a reissue application that includes new or amended claims to be designated as not corresponding to a count.◄

(4) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier ►filed◄ application [filed in the United States or abroad]►, if benefit is desired◄.

37. Section 1.638 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.638 Opposition and reply, time for filing opposition and reply.

(a) Unless otherwise ordered by an ►administrative patent judge◄ [examiner-in-chief], any opposition to any motion shall be filed within 20 days after service of the motion. An opposition shall (1) identify any material fact set forth in the motion which is in dispute and (2) include an argument why the relief requested in the motion should be denied.

(b) Unless otherwise ordered by an ►administrative patent judge◄ [examiner-in-chief], ►any◄[a] reply shall be filed within 15 days after service of the opposition. A reply shall be directed only to new points raised in the opposition.

38. Section 1.639 is proposed to be amended by revising paragraphs (a), (c) and (d)(1) to read as follows:

§ 1.639 Evidence in support of motion, opposition, or reply.

(a) ►Except as provided in paragraphs (c) through (g) of this section, proof◄ [Proof] of any material fact alleged in a motion, opposition, or reply must be filed and served with the motion, opposition, or reply unless the proof relied upon is part of the interference file or the file of any patent or application involved in the interference or any earlier application filed in

the United States of which a party has been accorded or seeks to be accorded benefit.

(c) If a party believes that additional evidence in the form of testimony that is unavailable to the party is necessary to support or oppose a preliminary motion under §1.633 or a motion to correct inventorship under § 1.634, the party shall describe the nature of any proposed testimony as specified in paragraphs (d) through (g) of this section. If the ►administrative patent judge◄ [examiner-in-chief] finds that testimony is needed to decide the motion, the ►administrative patent judge◄ [examiner-in-chief] may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

(d) ***

(l) Identify the person whom it expects to [call] ►use◄ as an expert;

39. Section 1.640 is proposed to be amended by revising paragraphs (a), (b), (b)(1), (b)(2), (c), (d), (d)(1), (d)(3) and (e) to read as follows:

§ 1.640 Motions, hearing and decision, redeclaration of interference, order to show cause.

(a) A hearing on a motion may be held in the discretion of the ►administrative patent judge◄ [examiner-in-chief]. The ►administrative patent judge◄ [examiner-in-chief] shall set the date and time for any hearing. The length of oral argument at a hearing on a motion is a matter within the discretion of the ►administrative patent judge◄ [examiner-in-chief]. An ►administrative patent judge◄ [examiner-in-chief] may direct that a hearing take place by telephone.

(b) ►Unless an administrative patent judge or the Board is of the opinion that a decision on a preliminary motion would materially advance the resolution of the interference, decision on a preliminary motion shall be deferred to final hearing.◄ Motions ►otherwise◄ will be decided by an ►administrative patent judge◄ [examiner-in-chief]. An ►administrative patent judge◄ [examiner-in-chief] may consult with an examiner in deciding motions involving a question of patentability. An ►administrative patent judge◄ [examiner-in-chief] ►may take up motions for decision in any order and◄ may grant or deny any motion or take such other action which will secure the just, speedy, and inexpensive determination of the interference. ►A matter raised by a party in support of or in opposition to a motion that is deferred to final hearing will not be entitled to consideration at final hearing unless the matter is raised in the party's brief at final hearing. If the administrative patent judge determines that the interference shall proceed to final hearing on the issue of priority or derivation, a time shall be set for each party to file a paper identifying any decisions on motions or on matters raised sua sponte by the administrative patent judge that the party wishes to have reviewed at final hearing as well as identifying any deferred motions that the party wishes to have considered at final hearing. Any evidence that a party wishes to have considered with respect to the decisions and motions identified by the party or by an opponent for consideration or review at final hearing, including any affidavit filed by the party under § 1.608 or 1.639(b), shall be served on the opponent during the testimony-in-chief period of the party.◄

(1) ►When appropriate after the time expires for filing replies to oppositions to preliminary motions◄ [When preliminary motions under § 1.633 are decided], the ►administrative patent judge◄ [examiner-in-chief] will [, when necessary,] set a time for filing any amendment to an application involved in the interference and for filing a supplemental preliminary statement as to any new counts ►which may become◄ involved in the interference ►if a preliminary motion to amend or substitute a count has been filed◄. Failure or refusal of a party to timely present an amendment required by an ►administrative patent judge◄ [examiner-in-chief] shall be taken without further action as a disclaimer by that party of the invention

involved. A supplemental preliminary statement shall meet the requirements specified in § 1.623, § 1.624, § 1.625, or § 1.626, but need not be filed if a party states that it intends to rely on a preliminary statement previously filed under § 1.621(a). ►At an appropriate time in the interference, and when necessary, ►[After the time expires for filing any amendment and supplemental preliminary statement], ►an order will be entered redetermining [the examiner-in-chief will, if necessary, redeclare] the interference.

(2) After ►the time expires for filing preliminary motions, ►[a decision is entered on preliminary motions filed under § 1.633], a further ►preliminary motion under § 1.633 will not be considered except as provided by § 1.655(b)] ►1.645(b).►

(c) When a decision on any motion under § 1.633, § 1.634, or § 1.635 ►or on any matter raised sua sponte by an administrative patent judge► is entered which does not result in the issuance of an order to show cause under paragraph (d) of this section, a party may file a request for reconsideration within 14 days after the date of the decision. ►The request for reconsideration shall be served by hand or Express Mail.► The filing of a request for reconsideration will not stay any time period set by the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. ►An opponent may file an opposition within 14 days after service of the request for reconsideration.► [No opposition to a request for reconsideration shall be filed unless requested by an examiner-in-chief or the Board. A decision of a single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board. The request for reconsideration shall be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom will normally be the examiner-in-chief who decided the motion].

(d) An ►administrative patent judge► [examiner-in-chief] may issue an order to show cause why judgment should not be entered against a party when:

(1) A decision on a motion ►or on a matter raised sua sponte by an administrative patent judge► is entered which is dispositive of the interference against the party as to any count;

(3) The party is a junior party whose preliminary statement fails to overcome the [earlier of the filing date or] effective filing date of another party.

(e) When an order to show cause is issued under paragraph (d) of this section, the Board shall enter judgment in accordance with the order unless, within 20 days after the date of the order, the party against whom the order issued files a paper which shows good cause why judgment should not be entered in accordance with the order.

►(1) If the order was issued under paragraph (d)(1) of this section, the paper may (i) request that final hearing be set to review any decision which is the basis for the order as well as any other decision of the administrative patent judge that the party wishes to have reviewed by the Board at final hearing, or (ii) fully explain why judgment should not be entered.

(2)► Any other party may file a response to the paper within 20 days of the date of service of the paper. ►If the order was issued under paragraph (d)(1) of this section and the paper includes a request for final hearing, the response must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. If the order was issued under paragraph (d)(1) of this section and the paper does not include a request for final hearing, the response may include a request for final hearing, which must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. Where only the response includes a request for a final hearing, the party that filed the paper has 14 days from the date of service of the response in which to file a supplemental paper identifying any other decision of the administrative patent judge that the party wishes to have reviewed by the Board at a final hearing.

(3) The paper or the response thereto should be accompanied by a motion (§ 1.635) requesting a testimony period if a party wishes to introduce any evidence to be considered at final hearing (§ 1.671). A request for a testimony period shall be construed as including a request for final hearing.

(4) If the paper contains an explanation of why judgment should not be entered in accordance with the order and no party has requested a final hearing, the decision that is the basis for the order shall be reviewed based on the contents of the paper and the response. If the paper fails to show good cause, the Board shall enter judgment against the party against whom the order issued.► [If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party. If a party wishes to take testimony in response to an order to show cause, the party's response should be accompanied by a motion (§ 1.635) requesting the testimony period. See § 1.651(c)(4).]

40. Section 1.641 and the section heading are proposed to be revised to read as follows:

§ 1.641 Unpatentability discovered by ►administrative patent judge► [examiner-in-chief].

►(a)► During the pendency of an interference, if the administrative patent judge► [examiner-in-chief] becomes aware of a reason why a claim ►designated to correspond► [corresponding] to a count may not be patentable, the ►administrative patent judge► [examiner-in-chief] may ►enter an order notifying► [notify] the parties of the reason and set a time within which each party may present its views ►, which may include argument and any appropriate preliminary motions under § 1.633(c), (d) or (h), including any supporting evidence►.

►(b) If a party timely files a preliminary motion in response to the order of the administrative patent judge, any opponent may file an opposition pursuant to § 1.638(a). If an opponent files an opposition, the party may reply pursuant to § 1.638(b).

(c)► After considering any timely filed views, ►including any timely filed preliminary motions under § 1.633, ►the ►administrative patent judge► [examiner-in-chief] shall decide how the interference shall proceed.

41. Section 1.642 is proposed to be revised to read as follows:

§ 1.642 Addition of application or patent to interference.

During the pendency of an interference, if the ►administrative patent judge► [examiner-in-chief] becomes aware of an application or a patent not involved in the interference which claims the same patentable invention as a count in the interference, the ►administrative patent judge► [examiner-in-chief] may add the application or patent to the interference on such terms as may be fair to all parties.

42. Section 1.643 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.643 Prosecution of interference by assignee.

(b) An assignee of a part interest in an application or patent involved in an interference may file a motion (§ 1.635) for entry of an order authorizing it to prosecute the interference. The motion shall show (1) the inability or refusal of the inventor to prosecute the interference or (2) other cause why ►it is in the interest of► [the ends of] justice ►to permit► [require that] the assignee of a part interest [be permitted] to prosecute the interference. The ►administrative patent judge► [examiner-in-chief] may allow the assignee of a part interest to prosecute the interference upon such terms as may be appropriate.

43. Section 1.644 is proposed to be amended by revising paragraphs (a), (a)(1), (a)(2), (b), (c), (d), (f) and (g) to read as follows:

§ 1.644 Petitions in interferences.

(a) There is no appeal to the Commissioner in an interference from a decision of an ►administrative patent judge► [examiner-in-chief] or ►the Board► [a panel consisting of more than one examiner-in-chief]. The Commissioner will not consider a petition in an interference unless:

(1) The petition is from a decision of an ►administrative patent judge► [examiner-in-chief] or [a panel] ►the Board► and the ►administrative patent judge► [examiner-in-chief] or the [panel] ►Board► shall be of the opinion

(2) The petition seeks to invoke the supervisory authority of the Commissioner [and is not filed prior to the decision of the Board awarding judgment] and does not relate to

(3) ***

(b) A petition under paragraph (a)(1) of this section filed more than 15 days after the date of the decision of the ►administrative patent judge► [examiner-in-chief] or the [panel] ►Board► may be dismissed as untimely. A petition under paragraph (a)(2) of this section shall not be filed prior to ►the party's brief for final hearing (see § 1.656)► [the decision by the Board awarding judgment]. Any petition under paragraph (a)(3) of this section shall be timely if it is made as part of, or simultaneously with, a proper motion under § 1.633, § 1.634, or § 1.635 ►when granting the motion would require waiver of a rule►. Any opposition to a petition shall be filed within 15 days of the date of service of the petition.

(c) The filing of a petition shall not stay the proceeding unless a stay is granted in the discretion of the ►administrative patent judge► [examiner-in-chief, the panel], ►the Board,► or the Commissioner.

(d) Any petition must contain a statement of the facts involved ►, preferably in numbered paragraphs,► and the point or points to be reviewed and the action requested. [Briefs or memoranda, if any, in support of the petition or opposition shall accompany or be embodied therein.] The petition will be decided on the basis of the record made before the ►administrative patent judge► [examiner-in-chief] or the [panel] ►Board► and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record in the interference shall not be submitted with the petition or opposition.

(f) Any request for reconsideration of a decision by the Commissioner shall be filed within ►14►[15] days of the decision of the Commissioner and must be accompanied by the fee set forth in § 1.17(h). No opposition to a request for reconsideration shall be filed unless requested by the Commissioner. The decision will not ordinarily be modified unless such an opposition has been requested by the Commissioner.

(g) Where reasonably possible, service of any petition, opposition, or request for reconsideration shall be such that delivery is accomplished within one working day. Service by hand or ["]Express Mail["] complies with this paragraph.

44. Section 1.645 is proposed to be amended by revising paragraphs (a), (b) and (d) to read as follows:

§ 1.645 Extension of time, late papers, stay of proceedings.

(a) Except to extend the time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action, a party may file a motion (§ 1.635) seeking an extension of time to take action in an interference. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action. The motion shall be filed within sufficient time to actually reach the ►administrative patent judge► [examiner-in-chief] before expiration of the time for taking action. A moving party should not assume that the motion will be granted even if there is no objection by any other party. The motion will be denied unless the moving party shows good cause why an extension should be granted. The press of other business arising after an ►administrative patent judge► [examiner-in-chief] sets a time for taking action will not normally

constitute good cause. A motion seeking additional time to take testimony because a party has not been able to procure the testimony of a witness shall set forth the name of the witness, any steps taken to procure the testimony of the witness, the dates on which the steps were taken, and the facts expected to be proved through the witness.

(b) Any paper belatedly filed[, will not be considered except upon motion (§ 1.635) which shows ►good► [sufficient] cause why the paper was not timely filed.] ►or an administrative patent judge or the Board, sua sponte, is of the opinion that it would be in the interest of justice to consider the paper.► See § 1.304(a) for exclusive procedures relating to belated filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or belated commencement of a civil action.

(d) [In an appropriate circumstance, an] ►An administrative patent judge► [examiner-in-chief] may stay proceedings in an interference.

45. Section 1.646 is proposed to be amended by revising paragraphs (a)(1), (a)(2), (b), (c), (c)(1), (c)(4), (c)(5), (d) and (e), redesignating paragraph (c)(5) as (c)(6) and inserting a new paragraph (c)(5) to read as follows:

§ 1.646 Service of papers, proof of service.

(a) ***

(1) Preliminary statements when filed under § 1.621; preliminary statements shall be served when service is ordered by an ►administrative patent judge► [examiner-in-chief].

(2) Certified transcripts and exhibits which accompany the transcripts filed under §[§] 1.676 [or 1.684]; copies of transcripts shall be served as part of a party's record under § 1.653(c).

(b) Service shall be on an attorney or agent for a party. If there is no attorney or agent for the party, service shall be on the party. An ►administrative patent judge► [examiner-in-chief] may order additional service or waive service where appropriate.

(c) Unless otherwise ordered by an ►administrative patent judge► [examiner-in-chief], or except as otherwise provided by this subpart, service of a paper shall be made as follows:

(1) By handing a copy of the paper ►or causing a copy of the paper to be handed► to the person served.

(4) By mailing a copy of the paper by first class mail; when service is by ►first class► mail the date of mailing is regarded as the date of service.

(5)► By mailing a copy of the paper by Express Mail; when service is by Express Mail the date of deposit with the U.S. Postal Service is regarded as the date of service.

(6)► When it is shown to the satisfaction of an ►administrative patent judge► [examiner-in-chief] that none of the above methods of obtaining or serving the copy of the paper was successful, the ►administrative patent judge► [examiner-in-chief] may order service by publication of an appropriate notice in the *Official Gazette*.

(d) An ►administrative patent judge► [examiner-in-chief] may order that a paper be served by hand or ["]Express Mail["].

(e) ►The due date for serving a paper is the same as the due date for filing the paper in the Patent and Trademark Office.► Proof of service must be made before a paper will be considered in an interference. Proof of service may appear on or be affixed to the paper. Proof of service shall include the date and manner of service. In the case of personal service under paragraphs (c)(1) through (c)(3) of this section, proof of service shall include the names of any person served and the person who made the service. Proof of service may be made by an acknowledgment of service by or on behalf of the person served or a statement signed by the party or the party's attorney or agent containing the information required by this section. A statement of an attorney or agent attached to, or appearing in, the paper stating the date and manner of service will be accepted as *prima facie* proof of service.

46. Section 1.647 is proposed to be revised to read as follows:

§ 1.647 Translation of document in foreign language.

When a party relies on a document or is required to produce a document in a language other than English, a translation of the document into English and an affidavit attesting to the accuracy of the translation shall be filed with the document.

47. Section 1.651 is proposed to be amended by revising paragraphs (a), (a)(2), (c)(1), (c)(2), (c)(3) and (d) to read as follows:

§ 1.651 Setting times for discovery and taking testimony, parties entitled to take testimony.

(a) At an appropriate stage in an interference, an administrative patent judge [examiner-in-chief] shall set

(2) testimony periods for taking any necessary testimony [(testimony includes testimony to be taken abroad under § 1.684)].

(C) ***

(1) The administrative patent judge [examiner-in-chief] orders the taking of testimony under § 1.639(c);

(2) The party alleges in its preliminary statement a date of invention prior to the [earlier of the filing date or] effective filing date of the senior party;

(3) A testimony period has been set to permit an opponent to prove a date of invention prior to the [earlier of the filing date or] effective filing date of the party and the party has filed a preliminary statement alleging a date of invention prior to that date; or

(d) Testimony, including any testimony to be taken in a foreign country [abroad under § 1.684], shall be taken and completed during the testimony periods set under paragraph (a) of this section. A party seeking to extend the period for taking testimony must comply with § 1.635 and § 1.645(a).

48. Section 1.652 is proposed to be revised to read as follows:

§ 1.652 Judgment for failure to take testimony or file record.

If a junior party fails to timely take testimony authorized under § 1.651, or file a record under § 1.653(c), an administrative patent judge [examiner-in-chief], with or without a motion (§ 1.635) by another party, may issue an order to show cause why judgment should not be entered against the junior party. When an order is issued under this section, the Board shall enter judgment in accordance with the order unless, within 15 days after the date of the order, the junior party files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 15 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party.

49. Section 1.653 is proposed to be amended by deleting paragraphs (c)(5), (f) and (h) and redesignating them as "Reserved" and by revising paragraphs (a), (b), (c), (c)(1), (c)(4), (g) and (i) to read as follows:

§ 1.653 Record and exhibits.

(a) Testimony shall consist of affidavits under §§ 1.672(b), (c) and (e) [g], 1.682(c), 1.683(b) and

1.688(b), transcripts of depositions under §§ 1.672(b) and (c) [g], 1.671(g) and 1.672(a) when a deposition is authorized by an administrative patent judge, transcripts of depositions under §§ 1.672(d), 1.682(d), 1.683(c) and 1.688(c) [g], agreed statements [of fact] under § 1.672(f) [g], 1.672(h) [g], [and] transcripts of interrogatories, cross-interrogatories, and recorded answers and copies of written interrogatories and answers and written requests for admissions and answers under § 1.684(c) [g] 1.688(a) [g].

(b) An affidavit shall be filed as set forth in § 1.672(b) [g] 1.677 [g]. A certified transcript of a deposition, including a deposition cross-examining an affiant, shall be filed as set forth in § 1.672(b) [g] 1.676 [g], 1.677 [g] and 1.678 [g]. An original agreed statement shall be filed as set forth in § 1.672(h) [g] 1.672(f). A transcript of interrogatories, cross-interrogatories, and recorded answers shall be filed as set forth under § 1.684(c) [g].

(c) In addition to the items specified in paragraph (b) of this section and within a time set by an administrative patent judge, [examiner-in-chief] each party shall file three copies and serve one copy of a record consisting of:

(1) An index of the names of [each witness] [the witnesses for the party], giving the pages of the record where the direct testimony and cross-examination of each witness begins.

(4) Each (i) affidavit by a witness for the party, (ii) transcript, including transcripts of cross-examination of any affiant who testified for the party and transcripts of compelled deposition testimony by a witness for the party, (iii) agreed statement relied upon by the party, and (iv) transcript of interrogatories, cross-interrogatories and recorded answers [filed under paragraph (b) of this section].

(5) Reserved. [Each notice, official record, and publication relied upon by the party and filed under § 1.682(a).]

(f) Reserved. [The record may be typewritten or printed.]

(g) [When the] record [is printed, it] may be produced by standard typographical printing or by any other process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. [Margins must be justified.] Footnotes may not be printed in type smaller than 9 point. The page [pages] size shall be 21.8 by 27.9 cm. (8 1/2 by 11 inches) [letter size] 8 1/2 by 11 inches (21.8 by 7.9 cm.)] with [type] printed matter 16.5 by 24.1 cm. (6 1/2 by 9 1/2 inches) [6 1/2 by 9 1/2 inches (16.5 by 24.1 cm.)]. The record shall be bound with covers at their left edges in such manner as to lie flat when open to any page and in one or more volumes of convenient size (approximately 100 pages per volume is suggested). When there is more than one volume, the numbers of the pages contained in each volume shall appear at the top of the cover for each volume.

(h) Reserved. [When the record is typewritten, it must be clearly legible on opaque, unglazed, durable paper approximately 8 1/2 by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1 1/2 (3.8 cm.) on the left-hand side of the page. The pages of the record shall be bound with covers at their left edges in such manner to lie flat when open in one or more volumes of convenient size (approximately 100 pages per volume is suggested). Multi-graphed or otherwise reproduced copies conforming to the standards specified in this paragraph may be accepted.]

(i) Each party shall file its exhibits with the record specified in paragraph (c) of this section. Exhibits include documents and things identified in affidavits or on the record during the taking of oral depositions and official records and publications filed by the party under § 1.682(a). One copy of each documentary exhibit shall be served. Documentary exhibits shall be filed in an envelope or folder and shall not be bound as part of the record. Physical exhibits, if not filed by an officer under § 1.676(d), shall be filed with the record. Each exhibit shall contain a label which identifies the party submitting the exhibit and an exhibit number, the style of the interference (e.g., Jones v. Smith), and the interference number. Where

possible, the label should appear at the bottom right-hand corner of each documentary exhibit. Upon termination of an interference, an administrative patent judge [examiner-in-chief] may return an exhibit to the party filing the exhibit. When any exhibit is returned, [the examiner-in-chief] an order shall be entered [enter an appropriate order] indicating that the exhibit has been returned.

50. Section 1.654 is proposed to be amended by revising paragraphs (a) and (d) to read as follows:

§ 1.654 Final hearing.

(a) At an appropriate stage of the interference, the parties will be given an opportunity to appear before the Board to present oral argument at a final hearing. An administrative patent judge may [examiner-in-chief shall] set a date and time for final hearing. Unless otherwise ordered by an administrative patent judge [examiner-in-chief] or the Board, each party will be entitled to no more than 30 [60] minutes of oral argument at final hearing. A party who does not file a brief for final hearing (§ 1.656(a)) shall not be entitled to appear at final hearing.

(d) After final hearing, the interference shall be taken under advisement by the Board. No further paper shall be filed except under § 1.658(b) or as authorized by an administrative patent judge [examiner-in-chief] or the Board. No additional oral argument shall be had unless ordered by the Board.

51. Section 1.655 is proposed to be amended by revising paragraphs (a), (b) and (c) to read as follows:

§ 1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under § 1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether entry of any interlocutory order was [erroneous or] an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing [error or] an abuse of discretion shall be on the party attacking the order. When two or more interlocutory orders involve the same issue, the last entered order shall be presumed to have been correct.

(b) A party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under §§ 1.633 or 1.634 unless (1) the matter was properly raised in a motion that was [properly] timely filed by the party under §§ 1.633 or 1.634 and the motion was denied or deferred to final hearing (2) the matter was properly raised by [a] the party in [an] a timely filed opposition to a motion under §§ 1.633 or 1.634 and the motion was granted over the opposition or deferred to final hearing (3) the party shows good cause why the issue was not [timely] properly raised by a timely filed motion or opposition. A change of attorneys during the interference generally does not constitute good cause. A party who fails to contest, by way of a timely filed preliminary motion under § 1.633(c), the designation of a claim as corresponding to a count may not subsequently argue to an administrative patent judge or the Board the separate patentability or lack of separate patentability of claims designated to correspond to the count.

(c) In the interest of justice [To prevent manifest injustice], the Board may exercise its discretion to consider an issue even though it would not otherwise be entitled to consideration under this section.

52. Section 1.656 is proposed to be amended by revising paragraphs (a), (d), (e), (g), (h) and (i), redesignating paragraphs (b)(1) through (b)(6) as (b)(3) through (b)(8) and adding new

paragraphs (b)(1) and (b)(2) to read as follows:
§ 1.656 Briefs for final hearing.

(a) Each party shall be entitled to file briefs for final hearing. The administrative patent judge [examiner-in-chief] shall determine the briefs needed and shall set the time and order for filing briefs.

(b) ***

(1) A statement of interest indicating:
(i) The full name of every party represented by the attorney in the interference.

(ii) The name of the real party in interest if the party named in the caption is not the real party in interest.

(2) A statement of related cases indicating:

(i) Whether the interference was previously before the Board for final hearing.

(ii) The name and number of any related appeal or interference which is pending before, or which has been decided by, the Board, or which is pending before, or which has been decided by, the U.S. Court of Appeals for the Federal Circuit or a district court in a proceeding under 35 U.S.C. 146. A related appeal or interference is one which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending interference.

(3) ***

(4) [(2)] A statement of the issues presented for decision in the interference.

(5) [(3)] A statement of the facts, preferably in numbered paragraphs, relevant to the issues presented for decision with appropriate references to the record.

(6) [(4)] An argument, which may be preceded by a summary, which shall contain the contentions of the party with respect to the issues it is raising for consideration at final hearing [to be decided], and the reasons therefor, with citations to the cases, statutes, other authorities, and parts of the record relied on.

(7) [(5)] A short conclusion stating the precise relief requested.

(8) [(6)] An appendix containing a copy of the counts.

(d) Unless ordered otherwise by an administrative patent judge, briefs shall be double-spaced (except for footnotes, which may be single-spaced) and shall comply with the requirements of § 1.653(g) for records except the requirement for binding. [Briefs may be printed or typewritten. If typewritten, legal-size paper may be used. The opening brief of each party in excess of 50 legal-size double-spaced typewritten pages or any other brief in excess of 25 legal-size double-spaced typewritten pages shall be printed unless a satisfactory reason be given why the brief should not be printed. Any printed brief shall comply with the requirements of § 1.653(g). Any typewritten brief shall comply with the requirements of § 1.653(h), except legal-size paper may be used and the binding and covers specified are not required.]

(e) An original and four [three] copies of each brief must be filed.

(g) Any party, separate from its opening brief, but filed concurrently therewith, may file an original and four [three] copies of concise proposed findings of fact and conclusions of law. Any proposed findings of fact shall be in numbered paragraphs and supported by specific references to the record. Any proposed conclusions of law shall be in numbered paragraphs and supported by citation of cases, statutes, or other authority. Any [opposing party] opponent, separate from its opening or reply brief, but filed concurrently therewith, may file a paper accepting or objecting to any proposed findings of fact or conclusions of law; when objecting, a reason must be given. The Board may adopt the proposed findings of fact and conclusions of law in whole or in part.

(h) If a party wants the Board in rendering its final decision to rule on the admissibility of any evidence, the party shall file with its opening brief an original and ►four◄ [three] copies of a motion (§ 1.635) to suppress the evidence. The provisions of § 1.637(b) do not apply to a motion to suppress under this paragraph. Any objection previously made to the admissibility of ►the evidence of an opponent◄ [an opponent's evidence] is waived unless the motion required by this paragraph is filed. ►A party that failed to challenge the admissibility of the evidence of an opponent on a ground that could have been raised in a timely objection under § 1.672(c), 1.682(c), 1.683(b) or 1.688(b) may not move under this paragraph to suppress the evidence on that ground at final hearing.◄ An original and ►four◄ [three] copies of an opposition to the motion may be filed with an opponent's opening brief or reply brief as may be appropriate.

(i) When a junior party fails to timely file an opening brief, an order may issue requiring the junior party to show cause why the Board should not treat failure to file the brief as a concession of priority. If the junior party fails to ►show good cause◄ [respond] within a time period set in the order, judgment may be entered against the junior party.

53. Section 1.657 is proposed to be revised to read as follows:

§ 1.657 Burden of proof as to date of invention.

►(a)◄ A rebuttable presumption shall exist that, as to each count, the inventors made their invention in the chronological order of the earlier of their [filing dates or] effective filing dates. The burden of proof shall be upon a party who contends otherwise.

►(b)◄ In an interference involving copending applications or involving a patent and an application having an effective filing date on or before the date the patent issued, a junior party shall have the burden of establishing priority by a preponderance of the evidence.

(c) In an interference involving an application and a patent and where the effective filing date of the application is after the date the patent issued, a junior party shall have the burden of establishing priority by clear and convincing evidence.◄

54. Section 1.658 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.658 Final decision.

(a) After final hearing, the Board shall enter a decision resolving the issues raised at final hearing. The decision may (1) enter judgment, in whole or in part, (2) remand the interference to an ►administrative patent judge◄ [examiner-in-chief] for further proceedings, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing the claims in the party's patent or application which correspond to the count. When the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision ►for the purpose of judicial review (35 U.S.C. 141-144, 146) unless a request for reconsideration under paragraph (b) of this section is timely filed◄.

(b) Any request for reconsideration of a decision under paragraph (a) of this section shall be filed within one month after the date of the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. Any [reply] ►opposition◄ to a request for reconsideration shall be filed within 14 days of the date of service of the request for reconsideration. [Where reasonably possible, service] ►Service◄ of the request for reconsideration shall be [such that delivery is accomplished] by hand or [Express Mail.] [The Board shall enter a decision on the request for reconsideration. If the Board shall be of the opinion that the decision on the request for reconsideration significantly modifies its original decision under paragraph (a) of this section, the Board may designate the decision on the request for reconsideration as a

new decision. ►A decision on reconsideration is a final decision for the purpose of judicial review (35 U.S.C. 141-144, 146).◄

* * * * *

55. Section 1.660 is proposed to be amended by adding paragraph (e) to read as follows:

§ 1.660 Notice of reexamination, reissue, protest or litigation.

* * * * *

►(e)◄ The notice required by this section is designed to assist the administrative patent judge and the Board in efficiently handling interference cases. Failure of a party to comply with the provisions of this section may result in sanctions under § 1.616. Knowledge by, or notice to, an employee of the Office other than an employee of the Board, of the existence of the reexamination, application for reissue, protest, or litigation shall not be sufficient. The notice contemplated by this section is notice addressed specifically to an administrative patent judge or the Board.◄

56. Section 1.662 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.662 Request for entry of adverse judgment; reissue filed by patentee.

(a) A party may, at any time during an interference, request and agree to entry of an adverse judgment. The filing by ►a party◄ [an applicant or patentee] of a written disclaimer of the invention defined by a count, concession of priority or unpatentability of the subject matter of a count, abandonment of the invention defined by a count, or abandonment of the contest as to a count will be treated as a request for entry of an adverse judgment against the applicant or patentee as to all claims which correspond to the count. Abandonment of an application [by an applicant], other than an [applicant] ►application◄ for reissue having a claim of the patent sought to be reissued involved in the interference, will be treated as a request for entry of an adverse judgment against the applicant as to all claims corresponding to all counts. Upon the filing by a party of a request for entry of an adverse judgment, the Board may enter judgment against the party.

(b) If a patentee involved in an interference files an application for reissue during the interference and ►the reissue application does not include a claim that corresponds to a count◄ [omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference], judgment may be entered against the patentee. A patentee who files an application for reissue ►which includes a claim that corresponds to a count◄ [other than for the purpose of avoiding the interference] shall ►, in addition to complying with the provisions of § 1.660(b),◄ timely file a preliminary motion under § 1.633(h) or show good cause why the motion could not have been timely filed or would not be appropriate.

* * * * *

57. Section 1.664 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.664 Action after interference.

(a) After termination of an interference, the examiner will promptly take such action in any application previously involved in the interference as may be necessary. Unless entered by order of an ►administrative patent judge◄ [examiner-in-chief], amendments presented during the interference shall not be entered, but may be subsequently presented by the applicant subject to the provisions of this subpart provided prosecution of the application is not otherwise closed.

(b) After judgment, the application of any party may be held subject to further examination, including an interference with another application.

58. Section 1.671 is proposed to be amended by revising paragraphs (a), (c)(1), (c)(2), (c)(6), (c)(7), (f) and (g) to read

as follows, deleting paragraph (e) and redesignating it as "Reserved", redesignating current paragraph (h) as (i), and adding new paragraphs (h) and (j) to read as follows:

§ 1.671 Evidence must comply with rules.

(a) Evidence consists of testimony and exhibits, official records and publications filed under § 1.682, [evidence] ►testimony◄ from another interference, proceeding, or action filed under § 1.683, and discovery relied upon under § 1.688, and the specification (including claims) and drawings of any application or patent:

* * * * *

(C) * * *

(1) *Courts of the United States, U.S. Magistrate, court, trial court, or trier of fact* means ►administrative patent judge◄ [examiner-in-chief] or Board as may be appropriate.

(2) *Judge* means ►administrative patent judge◄ [examiner-in-chief].

* * * * *

(6) *Before the hearing* in Rule 703 means before giving testimony by ►affidavit or◄ oral deposition [or affidavit].

(7) *The trial or hearing* in Rules 803(24) and 804(5) means the taking of testimony by ►affidavit or◄ oral deposition [or affidavit].

* * * * *

(e) ►Reserved.◄ [A party may not rely on an affidavit filed by that party during *ex parte* prosecution of an application, an affidavit under § 1.608, or an affidavit under § 1.639(b) unless: (1) A copy of the affidavit is or has been served and (2) a written notice is filed prior to the close of the party's relevant testimony period stating that the party intends to rely on the affidavit. When proper notice is given under this paragraph, the affidavit shall be deemed filed under § 1.672(b). A copy of the affidavit shall be included in the record (§ 1.653).]

(f) The significance of documentary and other exhibits ►identified by a witness in an affidavit or during oral deposition◄ shall be discussed with particularity by [a] ►the◄ witness [during oral deposition or in an affidavit].

(g) A party must file a motion (§ 1.635) seeking permission from an ►administrative patent judge◄ [examiner-in-chief] prior to ►compelling◄ [taking] testimony or ►production of◄ [seeking] documents or things under 35 U.S.C. 24 ►or from a party◄. The motion shall describe the general nature and the relevance of the testimony, document, or thing. ►If permission is granted, the party shall notice a deposition under § 1.673 and may proceed to take testimony. The testimony of the witness shall be taken on oral deposition.◄

►(h) A party must file a motion (§ 1.635) seeking permission from an administrative patent judge prior to compelling testimony or production of documents or things in a foreign country.

(1) In the case of testimony, the motion shall:

(i) Describe the general nature and relevance of the testimony;

(ii) Identify the witness by name or title;

(iii) State why the party believes the witness can be compelled to testify in the foreign country; and

(iv) Demonstrate that the witness has been asked to testify in the United States and has refused to do so even though the party has offered to pay the expenses of the witness to travel to the United States.

(2) In the case of production of a document or thing, the motion shall:

(i) Describe the general nature and relevance of the document or thing;

(ii) State why the party believes production of the document or thing can be compelled in the foreign country; and

(iii) Demonstrate that the individual or entity having possession, custody, and control of the document or thing will not produce the document or thing in the United States even though the party has offered to pay the expenses of producing the document or thing in the United States.◄

►(i)◄ [(h)] Evidence which is not taken or sought and filed in accordance with this subpart shall not be admissible.

►(j)◄ The weight to be given testimony taken in a foreign country will be determined on a case-by-case basis. Little, if any, weight may be given to testimony taken in a foreign country unless the party taking the testimony proves by clear and convincing evidence (1) that giving false testimony in an interference proceeding is punishable as perjury under the laws of the foreign country where the testimony is taken and (2) that the punishment in a foreign country for giving such false testimony is similar to the punishment for perjury committed in the United States.◄

59. Section 1.672 is proposed to be amended by revising paragraphs (a), (b), (c) and (d), redesignating paragraphs (c), (d), (e) and (f) as paragraphs (e), (f), (g) and (h), respectively, and by adding new paragraphs (c) and (d) to read as follows:

§ 1.672 Manner of taking testimony.

(a) ►Unless testimony must be compelled under 35 U.S.C. 24 or compelled from a party or in a foreign country, testimony◄ [Testimony] of a witness ►shall◄ [may] be taken by [oral deposition or] affidavit in accordance with this subpart. ►Testimony which must be compelled under 35 U.S.C. 24 or compelled from a party or in a foreign country shall be taken by oral deposition.◄

(b) [A party wishing to take the testimony of a witness whose testimony will not be compelled under 35 U.S.C. 24 may elect to present the testimony of the witness by affidavit or deposition.] A party [electing to present] ►presenting◄ testimony of a witness by affidavit shall, prior to the [close of the party's relevant testimony period, file and serve] ►time set by the administrative patent judge for serving affidavits, file a copy of the [an] affidavit [of the witness or, where appropriate, a notice under § 1.671(e). To facilitate preparation of the record (§ 1.653 (g) and (h)), a party should file an affidavit on paper which is 8 1/2 by 11 inches (21.8 by 27.9 cm)] . ►If the affidavit relates to a party's case-in-chief, it shall be filed no later than the date set by an administrative patent judge for the party to file affidavits for its case-in-rebuttal.◄ A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on any thing mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document. ►The pages of affidavits filed under this paragraph and of any other testimony filed therewith under §§ 1.683(a) and 1.688(a) shall be given sequential numbers which shall also serve as the record page numbers for the affidavits and other testimony in the party's record to be filed under § 1.653. Exhibits identified in the affidavits or in any other testimony filed under §§ 1.683(a) and 1.688(a) and any official records and printed publications filed under § 1.682(a) shall be given sequential exhibit numbers which shall also serve as the exhibit numbers when the exhibits are filed with the party's record. The affidavits, testimony filed under §§ 1.683(a) and 1.688(a) and exhibits shall be accompanied by an index of the names of the witnesses, giving the number of the page where the testimony of each witness begins, and by an index of the exhibits briefly describing the nature of each exhibit and giving the number of the page where each exhibit is first identified and offered into evidence.

(c) If an opponent objects to the admissibility of any evidence contained in or submitted with an affidavit filed under paragraph (b) of this section, the opponent must, no later than the date set by the administrative patent judge for filing objections under this paragraph, file objections stating with particularity the nature of each objection. An opponent that fails to challenge the admissibility of the evidence contained in or submitted with an affidavit on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files objections, the party may, within 20 days of the due date for filing objections, file supplemental affidavits and supplemental official records and printed publications to overcome the objections. No objection to the admissi-

bility of the supplemental evidence shall be made, except as provided by § 1.656(h). The pages of supplemental affidavits filed under this paragraph shall be sequentially numbered beginning with the number following the last page number of the party's testimony submitted under paragraph (b) of this section. The page numbers assigned to the supplemental affidavits shall also serve as the record page numbers for the supplemental affidavits in the party's record filed under § 1.653. Additional exhibits identified in supplemental affidavits and any supplemental official records and printed publications shall be given sequential numbers beginning with the number following the last number of the exhibits submitted under paragraph (b) of this section. The exhibit numbers shall also serve as the exhibit numbers when the exhibits are filed with the party's record. The supplemental affidavits shall be accompanied by an index of the names of the witnesses and an index of exhibits of the type specified in paragraph (b) of this section.

(d) After the time expires for filing objections and supplemental affidavits, or earlier when appropriate, [affidavit is filed and within a time set by an examiner-in-chief.] the administrative patent judge shall set a time within which any opponent may file a request to cross-examine [the witness] an affiant on oral deposition. If any opponent requests cross-examination of an affiant, the party shall notice a deposition at a reasonable location within the United States under § 1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness [whose testimony is presented by affidavit], the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under [this paragraph] paragraphs (b) and (c) of this section, except to the extent necessary to conduct proper redirect. [A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under § 1.673(a).] The party who gives notice of a deposition shall be responsible for providing a translator if the witness does not testify in English, for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. Within 45 days of the close of the period for taking cross-examination, the party shall serve (but not file) a copy of each transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of the transcripts served under this paragraph shall be sequentially numbered beginning with the number following the last page number of the party's supplemental affidavits submitted under paragraph (c) of this section. The numbers assigned to the transcript pages shall also serve as the record page numbers for the transcripts in the party's record filed under § 1.653. Additional exhibits identified in the transcripts shall be given sequential numbers beginning with the number following the last number of the exhibits submitted under paragraphs (b) and (c) of this section. The exhibit numbers assigned to the additional exhibits shall also serve as the exhibit numbers when those exhibits are filed with the party's record. The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in paragraph (b) of this section.

(e) Reserved. [C] A party wishing to take the testimony of a witness whose testimony will be compelled under 35 U.S.C. 24 must first obtain permission from an examiner-in-chief under § 1.671(g). If permission is granted, the party shall notice a deposition of the witness under § 1.673 and may proceed under 35 U.S.C. 24. The testimony of the witness shall be taken on oral deposition.]

(f) When a deposition is authorized under [Notwithstanding the provisions of] this subpart, if the parties agree in writing, the deposition may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions.

(g) If the parties agree in writing, the testimony of any witness may be submitted in the form of an affidavit without opportunity for cross-examination. The affidavit of the witness shall be filed in the Patent and Trademark Office.

(h) If the parties agree in writing, testimony may be submitted in the form of an agreed statement setting forth:

(1) How a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The agreed statement shall be filed in the Patent and Trademark Office. See § 1.653(a).

60. Section 1.673 is proposed to be amended by revising paragraphs (a), (b), (c), (c)(2), (d), (e) and (g) to read as follows:

§ 1.673 Notice of examination of witness when deposition testimony is authorized.

(a) A party [electing] authorized to take testimony of a witness by deposition shall, after complying with paragraphs (b) and (g) of this section, file and serve a single notice of deposition stating the time and place of each deposition to be taken. Depositions to be taken in the United States may be noticed for a reasonable time and place in the United States. [Unless the parties agree in writing, a] deposition may not be noticed for any other place without approval of an administrative patent judge [examiner-in-chief (see § 1.684)]. The notice shall specify the name and address of each witness and the general nature of the testimony to be given by the witness. If the name of a witness is not known, a general description sufficient to identify the witness or a particular class or group to which the witness belongs may be given instead.

(b) Unless the parties agree or an administrative patent judge or the Board determine otherwise, a party shall serve, but not file, at least three working days prior to the conference required by paragraph (g) of this section, if service is made by hand or [Express Mail,] or at least 14 [ten] days prior to the conference if service is made by any other means, the following:

(c) A party shall not be permitted to rely [at any deposition] on any witness not listed in the notice, or any document not served or any thing not listed as required by paragraph (b) of this section:

(1) *

(2) except upon a motion (§ 1.635) promptly filed which is accompanied by any proposed notice, additional documents, or lists and which shows [sufficient] good cause why the notice, documents, or lists were not served in accordance with this section.

(d) Each [opposing party] opponent shall have a full opportunity to attend a deposition and cross-examine. [If an opposing party attends a deposition of a witness not named in a notice and cross-examines the witness or fails to object to the taking of the deposition, the opposing party shall be deemed to have waived any right to object to the taking of the deposition for lack of proper notice.]

(e) A party who has presented [electing to present] testimony by affidavit and [who] is required to notice depositions for the purpose of cross-examination under § 1.672(b), shall, after complying with paragraph (g) of this section, file and serve a single notice of deposition stating the time and place of each cross-examination deposition to be taken.

(g) Before serving a notice of deposition and after complying with paragraph (b) of this section, a party shall have an oral conference with all opponents to attempt to agree on a mutually acceptable time and place for conducting the deposition. A certificate shall appear in the notice stating that the oral conference took place or explaining why the conference could not be had. If the parties cannot agree to a mutually acceptable place and time for conducting the deposition at the conference, the parties shall contact an administrative patent judge [examiner-in-chief] who shall then designate the time and place for conducting the deposition.

61. Section 1.674 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.674 Persons before whom depositions may be taken.

(a) A [Within the United States or a territory or insular possession of the United States a] deposition shall be taken before an officer authorized to administer oaths by the laws of the United States or of the place where the examination is held.

62. Section 1.675 is proposed to be amended by revising paragraph (d) to read as follows:

§ 1.675 Examination of witness, reading and signing transcript of deposition.

(d) Unless the parties agree in writing or waive reading and signature by the witness on the record at the deposition, when the testimony has been transcribed a transcript of the deposition shall, unless the witness refuses to read and/or sign the transcript of the deposition, be read by the witness and then signed by the witness in the form of: (1) An affidavit in the presence of any notary or (2) a declaration.

63. Section 1.676 is proposed to be amended by revising paragraph (a)(4) to read as follows:

§ 1.676 Certification and filing by officer, marking exhibits.

(a) *

(4) The presence or absence of any [opposing party] opponent.

64. Section 1.677 is proposed to be amended by revising the section heading and paragraph (a) to read as follows:

§ 1.677 Form of an affidavit or a transcript of deposition.

(a) An affidavit or a [A] transcript of a deposition must be [typewritten] on opaque, unglazed, durable paper approximately 21.8 by 27.9 cm. (8 1/2 by 11 inches) [8 7/8 by 11 inches (21.8 by 27.9 cm.)] in size (letter size). [Typing] The printed matter shall be double-spaced on one side of the paper in not smaller than 11 Point type [pica-type] with a margin of 3.8 cm. (1 1/2 inches) [1 1/2 inches (3.8 cm.)] on the left-hand side of the page. The pages must be consecutively numbered throughout the entire record of each party (§ 1.653(d)) and the name of the witness [must be typed] shall appear at the top of each page (§ 1.653(e)). In transcripts of depositions, [The] questions propounded to each witness must be consecutively numbered unless paper with numbered lines is used and each question must be followed by its answer.

65. Section 1.678 and the section heading are proposed to be revised to read as follows:

§ 1.678 Time for filing transcript [Transcript] of deposition [must be filed].

Unless otherwise ordered by an administrative patent judge [examiner-in-chief], a certified transcript of a deposition must be filed in the Patent and Trademark Office within 45 days from the date of deposition. If a party refuses to file a certified transcript, the administrative patent judge [examiner-in-chief] or the Board may take appropriate action under § 1.616. If a party refuses to file a certified transcript, any opponent may move for leave to file the certified transcript and include a copy of the transcript as part of the opponent's record.

66. Section 1.679 is proposed to be revised to read as follows:

§ 1.679 Inspection of transcript.

A certified transcript of a deposition filed in the Patent and Trademark Office may be inspected by any party. The certified transcript may not be removed from the Patent and Trademark Office [for printing (§ 1.653(g))] unless authorized by an administrative patent judge [examiner-in-chief] upon such terms as may be appropriate.

67. Section 1.682 is proposed to be amended by deleting paragraphs (a)(4) and (b) and redesignating them as "Reserved," revising paragraphs (a), (a)(2), (a)(3), and (c) and adding a new paragraph (d) to read as follows:

§ 1.682 Official records and printed publications.

(a) A party may introduce into evidence, if otherwise admissible, [any] an official record or printed publication not identified in an affidavit or on the record during an oral deposition [the taking of testimony] of a witness, by filing a notice offering a copy of the official record or printed publication [into evidence]. If the official record or printed publication [evidence] relates to the party's case-in-chief, it shall be filed together with any affidavits filed by the party under § 1.672(b) for its case-in-chief or, if the party does not serve any affidavits under § 1.672(b) for its case-in-chief, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for its [the notice shall be filed prior to close of testimony of the party's] case-in-chief. If the official record or printed publication [evidence] relates to rebuttal, it shall be filed together with any affidavits filed by the party under § 1.672(b) for its case-in-rebuttal or, if the party does not file any affidavits under § 1.672(b) for its case-in-rebuttal, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for its [the notice shall be filed prior to close of testimony of the party's] case-in-rebuttal. [The notice] Official records and printed publications filed under this paragraph shall be assigned sequential exhibit numbers by the party in the manner set forth in § 1.672(b). The official record and printed publications shall be accompanied by a paper which shall:

(1) *

(2) Identify [identify] the portion thereof to be introduced in evidence, and

(3) Indicate [indicate] generally the relevance of the portion sought to be introduced in evidence. [, and]

(4) Reserved. [where appropriate, be accompanied by a certified copy of the official record or a copy of the printed publication (§ 1.671(d)).]

(b) Reserved. [A copy of the notice, official record, and publication shall be served.]

(c) Unless otherwise ordered by an administrative patent judge [examiner-in-chief], any written objection by an opponent to the [notice] paper or to the admissibility of the official record or printed publication shall be filed [within 15 days of service of the notice] no later than the date set by the administrative patent judge for the opponent to file objections under § 1.672(c) to affidavits submitted by the party under § 1.672(b). An opponent who fails to challenge the admissibility of the official record or printed publication on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection, the party may respond by filing supplemental affidavits and supplemental official records and printed publications, which must be filed together with any supplemental evidence filed by the party under § 1.672(c) or, if the party does not file any supplemental evidence under § 1.672(c), no later than the date set by an administrative patent judge for the party to file supplemental affidavits under § 1.672(c). No objection to the admissibility of the supplemental evidence shall be made, except as provided by [See also] § 1.656(h). The pages of supplemental affidavits and the exhibits filed under this section shall be sequentially numbered by the party in the manner set forth in § 1.672(c). The supplemental affida-

vits and exhibits shall be accompanied by an index of witnesses and an index of exhibits of the type required by § 1.672(b).

(d) Any request by an opponent to cross-examine on oral deposition the affiant of a supplemental affidavit submitted under paragraph (c) of this section shall be filed no later than the date set by the administrative patent judge for the opponent to file a request to cross-examine an affiant with respect to an affidavit served by the party under § 1.672(b) or (c). If any opponent requests cross-examination of an affiant, the party shall file notice of a deposition for a reasonable location within the United States under § 1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. The party who gives notice of a deposition shall be responsible for providing a translator if the witness does not testify in English, for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. Within 45 days of the close of the period for taking cross-examination, the party shall serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of deposition transcripts and exhibits served under this paragraph shall be sequentially numbered by the party in the manner set forth in § 1.672(d). The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in § 1.672(b). ◀

68. Section 1.683 is proposed to be amended by revising paragraphs (a) and (b) and adding a new paragraph (c) to read as follows:

§ 1.683 Testimony in another interference, proceeding, or action.

(a) ▶ A party may introduce into evidence, if otherwise admissible, ◀ [Prior to close of a party's appropriate testimony period or within such time as may be set by an examiner-in-chief, a party may file a motion (§ 1.635) for leave to use in an interference] testimony ▶ by affidavit or oral deposition ◀ [of a witness] from another interference, proceeding, or action involving the same parties [, subject to such conditions as may be deemed appropriate by an examiner-in-chief.] ▶ by filing a copy of the affidavit or a copy of the transcript of the oral deposition. If the testimony relates to the party's case-in-chief, it shall be filed together with any affidavits served by the party under § 1.672(b) for its case-in-chief or, if the party does not file any affidavits under § 1.672(b) for its case-in-chief, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for its case-in-chief. If the testimony relates to rebuttal, it shall be filed together with any affidavits served by the party under § 1.672(b) for its case-in-rebuttal or, if the party does not file any affidavits under § 1.672(b) for its case-in-rebuttal, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for its case-in-rebuttal. Pages of affidavits and deposition transcripts served under this paragraph and any new exhibits served therewith shall be assigned sequential numbers by the party in the manner set forth in § 1.672(b). ◀ The [motion] ▶ testimony shall be accompanied by a paper which specifies ◀ [shall specify] with particularity the exact testimony to be used and ▶ demonstrates ◀ [shall demonstrate] its relevance.

(b) [Any objection to the admissibility of the testimony of the witness shall be made in an opposition to the motion. See also] ▶ Unless otherwise ordered by an administrative patent judge, any written objection by an opponent to the paper or the admissibility of the testimony filed under this section shall be filed no later than the date set by the administrative patent judge for the opponent to file any objections under § 1.672(c) to affidavits submitted by the party under § 1.672(b). An opponent who fails to challenge the admissibility of the testimony on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under §

1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection, the party may respond with a supplemental affidavit and supplemental official records and printed publications, which must be filed together with any supplemental evidence filed by the party under § 1.672(c) or, if the party does not file any supplemental evidence under § 1.672(c), no later than the date set by an administrative patent judge for the party to file supplemental evidence under § 1.672(c). No objection to the admissibility of the evidence contained in or submitted with a supplemental affidavit shall be made, except as provided by ◀ § 1.656(h). ▶ The pages of supplemental affidavits and the exhibits filed under this section shall be sequentially numbered by the party in the manner set forth in § 1.672(c). The supplemental affidavits and exhibits shall be accompanied by an index of witnesses and an index of exhibits of the type required by § 1.672(b).

(c) Any request by an opponent to cross-examine on oral deposition the affiant of an affidavit or supplemental affidavit submitted under paragraph (a) or (b) of this section, shall be filed no later than the date set by the administrative patent judge for the opponent to file a request to cross-examine an affiant with respect to an affidavit filed by the party under § 1.672(b) or (c). If any opponent requests cross-examination of an affiant, the party shall file a notice of deposition for a reasonable location within the United States under § 1.673 (e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. The party who gives notice of a deposition shall be responsible for providing a translator if the witness does not testify in English, for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. Within 45 days of the close of the period for taking cross-examination, the party shall serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of deposition transcripts and exhibits served under this paragraph shall be sequentially numbered by the party in the manner set forth in § 1.672(d). The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in ss 1.672(b). ◀

69. Section 1.684 is proposed to be deleted and redesignated as "Reserved," as follows:

§ 1.684 ▶ Reserved. ◀ [Testimony in a foreign country.]

(a) An examiner-in-chief may authorize testimony of a witness to be taken in a foreign country. A party seeking to take testimony in a foreign country shall, promptly after the testimony period is set, file a motion (§ 1.635):

- (1) Naming the witness.
- (2) Describing the particular facts to which it is expected that the witness will testify.
- (3) Stating the grounds on which the moving party believes that the witness will testify.
- (4) Demonstrating that the expected testimony is relevant.
- (5) Demonstrating that the testimony cannot be taken in this country at all or cannot be taken in this country without hardship to the moving party greatly exceeding the hardship to which all opposing parties will be exposed by the taking of the testimony in a foreign country.

(6) Accompanied by an affidavit stating that the motion is made in good faith and not for the purpose of delay or harassing any party.

(7) Accompanied by written interrogatories to be asked of the witness.

(b) Any opposition under § 1.638(a) shall state any objection to the written interrogatories and shall include any cross-interrogatories to be asked of the witness. A reply under § 1.638(b) may be filed and shall be limited to stating any objection to any cross-interrogatories proposed in the opposition.

(c) If the motion is granted, taking of the testimony abroad must be completed within the testimony period set under §

1.651 or within such time as may be set by the Examiner-in-Chief. The moving party shall be responsible for obtaining answers to the interrogatories and cross-interrogatories before an officer qualified to administer oaths in the foreign country under the laws of the United States or the foreign country. The officer shall prepare a transcript of the interrogatories, cross-interrogatories, and recorded answers to the interrogatories and cross-interrogatories and shall transmit the transcript to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231, with a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before answering the interrogatories and cross-interrogatories.

(2) The recorded answers are a true record of the answers given by the witness to the interrogatories and cross-interrogatories.

(3) The name of the person by whom the answers were recorded and, if not recorded by the officer, whether the answers were recorded in the presence of the officer.

(4) The presence or absence of any party.

(5) The place, day, and hour that the answers were recorded.

(6) A copy of the recorded answers was read by or to the witness before the witness signed the recorded answers and that the witness signed the recorded answers in the presence of the officer. The officer shall state the circumstances under which a witness refuses to read or sign recorded answers.

(7) The officer is not disqualified under § 1.674.

(d) If the parties agree in writing, the testimony may be taken before the officer on oral deposition.

(e) A party taking testimony in a foreign country shall have the burden of proving that false swearing in the giving of testimony is punishable as perjury under the laws of the foreign country. Unless false swearing in the giving of testimony before the officer shall be punishable as perjury under the laws of the foreign country where testimony is taken, the testimony shall not be entitled to the same weight as testimony taken in the United States. The weight of the testimony shall be determined in each case.]

70. Section 1.685 is proposed to be amended by revising paragraphs (d) and (e) to read as follows:

§ 1.685 Errors and irregularities in depositions.

(d) An objection to the ▶ deposition on any grounds, such as the ◀ competency of a witness, admissibility of evidence, manner of taking the deposition, the form of questions and answers, any oath or affirmation, or conduct of any party at the deposition ▶, ◀ is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Any objection which a party wishes considered by the Board at final hearing shall be included in a motion to suppress under § 1.656(h).

(e) Nothing in this section precludes taking notice of plain errors affecting substantial rights although they were not brought to the attention of an ▶ administrative patent judge ◀ [examiner-in-chief] or the Board.

71. Section 1.687 is proposed to be amended by revising paragraph (c) to read as follows:

§ 1.687 Additional discovery.

(c) Upon a motion (§ 1.635) brought by a party within the time set by an ▶ administrative patent judge ◀ [examiner-in-chief] under § 1.651 or thereafter as authorized by § 1.645 and upon a showing that the interest of justice so requires, an ▶ administrative patent judge ◀ [examiner-in-chief] may order additional discovery, as to matters under the control of a party within the scope of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery. ▶ See § 1.647 concerning translations of documents in a foreign language. ◀

72. Section 1.688 is proposed to be amended by revising paragraphs (a) and (b) and adding a new paragraph (c) to read as follows:

§ 1.688 Use of discovery.

(a) If otherwise admissible a party may introduce into evidence, an answer to a written request for an admission or an answer to a written interrogatory obtained by discovery under § 1.687 by filing a copy of the request for admission or the written interrogatory and the answer. If the answer relates to a party's case-in-chief, the answer shall be [filed prior to the close of testimony of the party's] ▶ served together with any affidavits served by the party under § 1.672(b) for its case-in-chief or, if the party does not serve any affidavits under § 1.672(b) for its case-in-chief, no later than the date set by an administrative patent judge for the party to serve affidavits under § 1.672(b) for its ◀ case-in-chief. If the answer relates to the party's rebuttal, the [admission or] answer shall be [filed prior to the close of testimony of the party's] ▶ served together with any affidavits served by the party under § 1.672(b) for the its case-in-rebuttal or, if the party does not serve any affidavits under § 1.672(b) for its case-in-rebuttal, no later than the date set by an administrative patent judge for the party to serve affidavits under § 1.672(b) for its ◀ case-in-rebuttal.

▶ (b) ◀ Unless otherwise ordered by an ▶ administrative patent judge ◀ [examiner-in-chief], any written objection to the admissibility of an answer shall be filed [within 15 days of service of the answer.] ▶ no later than the date set by the administrative patent judge for the opponent to file any objections under § 1.672(c) to affidavits submitted by the party under § 1.672(b). An opponent who fails to challenge the admissibility of an answer on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection, the party may respond with supplemental affidavits, which must be filed together with any supplemental evidence filed by the party under § 1.672(c) or, if the party does not file any supplemental evidence under § 1.672(c), no later than the date set by an administrative patent judge for the party to file supplemental affidavits under § 1.672(c). No objection to the admissibility of the evidence contained in or submitted with a supplemental affidavit shall be made, except as provided by ◀ § 1.656(h). ▶ The pages of supplemental affidavits and the exhibits filed under this section shall be sequentially numbered by the party in the manner set forth in § 1.672(c). The supplemental affidavits and exhibits shall be accompanied by an index of witnesses and an index of exhibits of the type required by § 1.672(b).

(c) Any request by an opponent to cross-examine on oral deposition the affiant of a supplemental affidavit submitted under paragraph (b) of this section shall be filed no later than the date set by the administrative patent judge for the opponent to file a request to cross-examine an affiant with respect to an affidavit filed by the party under § 1.672(b) or (c). If any opponent requests cross-examination of an affiant, the party shall file a notice of deposition for a reasonable location within the United States under § 1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. The party who gives notice of a deposition shall be responsible for providing a translator if the witness does not testify in English, for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. Within 45 days of the close of the period for taking cross-examination, the party shall serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of deposition transcripts and exhibits served under this paragraph shall be sequentially numbered by the party in the manner set forth in § 1.672(d). The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in § 1.672(b). ◀

[(b)] ▶(d)◀ A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence under this subpart.

73. Section 1.690 is proposed to be amended by revising paragraphs (a), (b) and (c) to read as follows:

§ 1.690 Arbitration of interferences.

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of Title 9, United States Code. The parties must notify the Board in writing of their intention to arbitrate. An agreement to arbitrate must be in writing, specify the issues to be arbitrated, the name of the arbitrator or a date not more than thirty (30) days after the execution of the agreement for the selection of the arbitrator, and provide that the arbitrator's award shall be binding on the parties and that judgment thereon can be entered by the Board. A copy of the agreement must be filed within twenty (20) days after its execution. The parties shall be solely responsible for the selection of the arbitrator and the rules for conducting proceedings before the arbitrator. Issues not disposed of by the arbitration will be resolved in accordance with the procedures established in 37 CFR, Subpart E of Part 1, as determined by the ▶administrative patent judge◀ [examiner-in-chief].

(b) An arbitration proceeding under this section shall be conducted within such time as may be authorized on a case-by-case basis by an ▶administrative patent judge◀ [examiner-in-chief].

(c) An arbitration award will be given no consideration unless it is binding on the parties, is in writing and states in a clear and definite manner (1) the issue or issues arbitrated and (2) the disposition of each issue. The award may include a statement of the grounds and reasoning in support thereof. Unless otherwise ordered by an ▶administrative patent judge◀ [examiner-in-chief], the parties shall give notice to the Board of an arbitration award by filing within twenty (20) days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue or issues to which it relates.

September 23, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce
and Commissioner of Patents and
Trademarks

(88) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1
[Docket No. 910514-1195]
[RIN: 0651-AA49]

Patent Interference Proceedings

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule

Summary: The Patent and Trademark Office (PTO) is amending its rules of practice in patent interference cases. The U.S. District Court for the District of Columbia recently decided *Kochler v. Mustonen*, Civil Action No. 90-1074 (D.D.C. Apr. 23, 1991). The District Court held that PTO practice regarding taking of testimony abroad was not clear. PTO rules require that a testimony period be set. The rules also require that testimony be taken during the testimony period. Rule 684 authorizes testimony to be taken abroad. However, rule 684 requires that a motion be filed for leave to take testimony abroad and that the motion be filed before the close of a party's testimony period. The District Court suggested that a motion to take testimony abroad, filed in PTO on the last day of the testimony period, could be considered timely even though taking of the testimony might occur after the testimony period. By this amendment, PTO will continue to authorize the filing of a motion to take testimony abroad. However, a party will have to file the motion

within a time such that the testimony can be taken during the testimony period set under PTO rule 651.

Effective Date: Sept. 27, 1991

For Further Information Contact: Fred E. McKelvey by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, DC 20231.

Supplementary Information: The PTO conducts interference proceedings to determine who as between two or more applicants for patent or one or more applicants and one or more patentees is the first inventor of a patentable invention. As part of its proofs in an interference, a party may request leave to take testimony abroad. 37 CFR § 1.684 (1990).

The U.S. District Court for the District of Columbia recently decided *Kochler v. Mustonen*, Civil Action No. 90-1074 (D.D.C. Apr. 23, 1991). The District Court held that PTO practice regarding taking of testimony abroad was not clear. PTO rule 651 (37 CFR § 1.651 (1990)) requires that a testimony period be set. Rule 651 also requires that testimony be taken during the testimony period. Rule 684 (37 CFR § 1.684 (1990)) authorizes testimony to be taken abroad. However, rule 684 requires that a motion be filed for leave to take testimony abroad and that the motion be filed before the close of a party's testimony period. The District Court suggested that a motion to take testimony abroad, filed in PTO on the last day of the testimony period, could be considered timely even though taking of the testimony might occur after the testimony period.

In a notice of proposed rule making published in the *FEDERAL REGISTER* on June 12, 1991 56 FR 26949, paragraphs (a) and (d) of rule 651 and rule 684 were proposed to be revised to require a party to file the motion to take testimony abroad within a time such that the testimony could be taken during the testimony period set under PTO rule 651.

One written comment was submitted by a Chief Executive Officer who stated his support of the proposed amendment. An attorney commented that the proposed amendment of § 1.684 appeared to foreclose the taking of testimony beyond any original time set under § 1.651. The attorney suggested language be added to paragraph (c) stating the alternative that testimony abroad must be completed within the time set under § 1.651 or by the Examiner-in-Chief. This suggestion has been adopted.

Other Considerations: The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to clarify the need for taking testimony abroad during the testimony period. The rule changes include no additional or increased fees. Substantive rights are not adversely affected.

The Office has determined that these rule changes are not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. Because most of the changes do not change burdens, there will be no major increase in costs or prices for consumers; individual industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity or innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The rule change will not impose any additional burden under the paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The Office has also determined that this rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

For the reasons set forth in the preamble and pursuant to the authority granted to the Commissioner of Patents and Trade-

marks by 35 U.S.C. 6 and 135, the PTO is amending 37 CFR part 1 as follows:

Part 1—Rules of Practice in Patent Cases

1. The authority citation for 37 CFR part 1, Suspart E, continues to read as follows:

Authority: 35 U.S.C. 6, 23, 41 and 135.

2. Section 1.651 is revised as follows:

§ 1.651 Setting times for discovery and taking testimony, parties entitled to take testimony.

(a) At an appropriate stage in an interference, an examiner-in-chief shall set (1) a time for filing motions (§ 1.635) for additional discovery under § 1.687(c) and (2) testimony periods for taking any necessary testimony (testimony includes testimony to be taken abroad under § 1.684).

(b) Where appropriate, testimony periods will be set to permit a party to:

(1) Present its case-in-chief and/or case-in-rebuttal and/or

(2) Cross-examine an opponent's case-in-chief and/or a case-in-rebuttal.

(c) A party is not entitled to take testimony to present a case-in-chief unless:

(1) The examiner-in-chief orders the taking of testimony under § 1.639(c);

(2) The party alleges in its preliminary statement a date of invention prior to the earlier of the filing date or effective filing date of the senior party;

(3) A testimony period has been set to permit an opponent to prove a date of the invention prior to the earlier of the filing date or effective filing date of the party and the party has filed a preliminary statement alleging a date of invention prior to the date; or

(4) A motion (§ 1.635) is filed showing good cause why a testimony period should be set.

(d) Testimony, including any testimony to be taken abroad under § 1.684, shall be taken and completed during the testimony periods set under paragraph (a) of this section. A party seeking to extend the period for taking testimony must comply with § 1.635 and § 1.645(a).

3. Section 1.684 is revised as follows:

§ 1.684 Testimony in a foreign country.

(a) An examiner-in-chief may authorize testimony of a witness to be taken in a foreign country. A party seeking to take testimony in a foreign country shall, promptly after the testimony period is set, file a motion (§ 1.635):

(1) Naming the witness

(2) Describing the particular facts to which it is expected that the witness will testify.

(3) Stating the grounds on which the moving party believes that the witness will testify.

(4) Demonstrating that the expected testimony is relevant.

(5) Demonstrating that the testimony cannot be taken in this country at all or cannot be taken in this country without hardship to the moving party greatly exceeding the hardship to which all opposing parties will be exposed by the taking of the testimony in a foreign country.

(6) Accompanied by an affidavit stating that the motion is made in good faith and not for the purpose of delay or harassing any party.

(7) Accompanied by written interrogatories to be asked of the witness.

(b) Any opposition under § 1.638(a) shall state any objection to the written interrogatories and shall include any cross-interrogatories to be asked of the witness. A reply under § 1.638(b) may be filed and shall be limited to stating any objection to any cross-interrogatories proposed in the opposition.

(c) If the motion is granted, taking of the testimony abroad must be completed within the testimony period set under § 1.651 or within such time as may be set by the Examiner-in-Chief. The moving party shall be responsible for obtaining

answers to the interrogatories and cross-interrogatories before an officer qualified to administer oaths in the foreign country under the laws of the United States or the foreign country. The officer shall prepare a transcript of the interrogatories, cross-interrogatories, and recorded answers to the interrogatories and cross-interrogatories and shall transmit the transcript to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, DC 20231, with a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before answering the interrogatories and cross-interrogatories.

(2) The recorded answers are a true record of the answers given by the witness to the interrogatories and cross-interrogatories.

(3) The name of the person by whom the answers were recorded and, if not recorded by the officer, whether the answers were recorded in the presence of the officer.

(4) The presence or absence of any party.

(5) The place, day, and hour that the answers were recorded.

(6) A copy of the recorded answers was read by or to the witness before the witness signed the recorded answers and that the witness signed the recorded answers in the presence of the officer. The officer shall state the circumstances under which a witness refuses to read or sign recorded answers.

(7) The officer is not disqualified under § 1.674.

(d) If the parties agree in writing, the testimony may be taken before the officer on oral deposition.

(e) A party taking testimony in a foreign country shall have the burden of proving that false swearing in the giving of testimony is punishable as perjury under the laws of the foreign country. Unless false swearing in the giving of testimony before the officer shall be punishable as perjury under the laws of the foreign country where testimony is taken, the testimony shall be entitled to the same weight as testimony taken in the United States. The weight of the testimony shall be determined in each case.

Aug. 22, 1991

HARRY F. MANBECK, JR.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1136 OG 40]

(89)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 921118-3184]
RIN: 0651-AA63

Patent Interference Practice Burden of Proof

Agency: Patent and Trademark Office, Commerce
Action: Final Rule

Summary: The Patent and Trademark Office (PTO) is amending its rules of practice in patent interference cases. The amended rules specify that a party filing a motion has the burden of proof for that motion. The amended rules also more clearly state the nature of expert-witness and fact-witness evidence that must accompany a preliminary motion. Moreover, a definition of "interlocutory order," as contrasted with a final decision, is added to clarify the meaning of "interlocutory order."

Effective Date: Oct. 25, 1993. These rules will apply to all papers filed with the PTO on or after the effective date.

For Further Information Contact: Fred E. McKelvey by telephone at (703) 305-9035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington D.C. 20231.

Supplementary Information: A Notice of Proposed Rulemaking was published in the *Federal Register* (58 FR 528) on Jan. 6, 1993, and in the *Official Gazette* of the PTO (1147 Off. Gaz. 11) on Feb. 2, 1993. Comments were due Mar. 8, 1993. Four comments were received.

The PTO proposed moving the presumption of correctness of an interlocutory order, which is presently in 37 CFR § 1.655(a), to a proposed new subsection 1.601(q). The PTO also proposed to make explicit in 37 CFR § 1.637(a) that a party

filing a motion has the burden of proving why it is entitled to the relief sought in the motion.

The PTO proposed to amend 37 CFR § 1.639 to incorporate guidance provided in *Hanagan v. Kimura*, 16 USPQ2d 1791, 1794 (Comm'r Pat. 1990). Subsection (c) of § 1.639 was proposed to be amended to refer to "additional evidence in the form of testimony" so as to distinguish the evidence needed under subsection (c) from evidence submitted under subsections (a) and (b). Subsection (d) to 37 CFR § 1.639 was proposed to be added to specify that the nature of evidence that must be submitted when an opinion of an expert is needed. Subsection (e) was proposed to be added to specify the nature of evidence that must be submitted when a statement of a fact witness is to be relied upon. Subsection (f) was proposed to be added to specify the nature of a showing that should be made when a statement of an opponent is needed or evidence in possession of an opponent is needed. Subsection (g) was proposed to be added to specify the nature of evidence that must be supplied if inter partes tests are to be conducted.

Present 37 CFR 1.655(a) was proposed to be amended by deleting the last sentence, which would be moved to and be included in the proposed definition of interlocutory order in proposed subsection 1.601(g).

The PTO received one comment that endorsed the proposed rulemaking, but was otherwise directed to an earlier rulemaking.

The PTO received two comments regarding proposed subsection 1.601(q). One comment suggested that procedural rules should not be placed in a definition. The comment suggested that the last two sentences of proposed subsection 1.601(q), which deal with the presumed correctness of interlocutory orders, be in a new subsection of section 1.655. This suggestion is adopted in part. The last two sentences of subsection 1.601(q) will be moved to the end of subsection 1.655(a).

A second comment challenged the sufficiency of the notice in the proposed rulemaking. The comment noted that the word "manifest" was omitted from the portion of existing subsection 1.655(a) that was moved to new subsection 1.601(q) and that the word "manifestly" was omitted from the remainder of subsection 1.655(a). The comment argued that the Notice of Proposed Rulemaking did not provide sufficient notice of these omissions, which the comment characterized as substantive changes, and thus violates the requirements of 5 U.S.C. § 553. This comment is not adopted.

The Notice of Proposed Rulemaking gave specific notice of the actual terms of the proposed rule. Cf. § 553(b) (requiring "[g]eneral notice" of "either the terms or substance of the proposed rule or a description of the subjects and issues involved.") In any case, no change actually occurs because the omitted words, "manifest" and "manifestly", in 37 CFR § 1.655(a) are unnecessary. No board decision is known to have relied on the distinction between "error", "clear error", and "manifest error". In appellate courts, manifest error is an extremely deferential standard of review that is closely tied to the abuse-of-discretion standard. See e.g., *Datascope Corp. v. SMEC, Inc.*, 879 F.2d 820, 827-28, 11 USPQ2d 1321, 1326 (Fed. Cir. 1989) (finding no manifest error). Board review of an examiner-in-chief's interlocutory orders is not an independent review of a final decision by a lower tribunal. The board is the only entity that may decide interferences, 35 U.S.C. § 135(a), and the examiner-in-chief, who is a member of the board, 35 U.S.C. § 7(a), is almost always a member of the panel that ultimately decides the interference. Thus, an extremely deferential standard of appeal in this context is inappropriate.

The PTO received one comment regarding proposed subsection 1.637(a). The comment noted that subsection 1.637(a) had been misprinted so that the text "a statement of the precise relief requested, (2)" had been omitted following the "(1)". The comment is correct, the omission was a misprint, and the omitted text has been restored.

The PTO received one comment regarding 37 CFR § 1.639(b). The comment suggested that all proofs introduced under subsection 1.639(b) remain in the record after the decision on the preliminary motions unless the proofs are expressly withdrawn. The opposing party could treat such proofs as subsection 1.672(b) declarations and request an opportunity to cross examine the declarants. The suggestion is not adopted because it is beyond the scope of the present rulemaking.

The PTO received one comment regarding subsection 1.639(c). The comment assumed that the word "needed" had

been intentionally deleted from the end of the first sentence of subsection 1.639(c), but noted that the deletion was not mentioned in the summary. The assumption is correct. This deletion is grammatically required after the addition of the text amending subsection 1.639(c).

The PTO received two comments regarding codification of the *Hanagan* guidelines in subsections 1.639(d)-(g). One comment endorsed codification of the *Hanagan* guidelines, but suggested that the codification be reformulated to increase flexibility. In particular, the comment pointed to the unusual case described in the Notice of Proposed Rulemaking, where an opponent to a preliminary motion was overwhelmed with evidence. The comment suggested that the mandatory requirements of subsection 1.639, as amended, be revised to state that the information required under the *Hanagan* guidelines "should ordinarily" be provided. The comment is not adopted.

When necessary, a party opposing a preliminary motion should request an extension of time to submit the information described in subsections 1.639(d) through (g), which do not require the submission of the actual testimony or evidence. In contrast, in the example discussed in the Notice of Proposed Rulemaking, the examiner-in-chief deferred consideration of the preliminary motion until the final hearing to allow the opponent time to prepare a full opposition, which included the actual evidence the opponent relied upon to support the opposition. As the Notice of Proposed Rulemaking pointed out, examiners-in-chief have, and should exercise, discretion to extend time or otherwise remedy problems that may arise when applying the requirements of section 1.639 in specific cases.

A second comment suggested that the requirements of subsections 1.639(d) and (e) duplicate the declarations submitted under 37 CFR § 1.672(b). The comment recommends that the rules be revised to require a subsection 1.672(b) declaration be submitted once, during the motions period, in support of an opposition to a preliminary motion. The recommendation is not adopted.

Subsection 1.672(b) is directed to the technical requirements for submitting affidavits or depositions for testimony that will not be compelled. Subsection 1.639(c), which invokes the requirements of subsections 1.639(d) and (e), requires a description of the proposed testimony, not an affidavit or deposition of the testimony itself. A request under subsection 1.639(c) must describe the nature of the testimony being sought so the examiner-in-chief can determine whether the testimony is actually needed. *Hanagan*, 16 USPQ2d at 1794. Subsection 1.639(c) is intended to address the situation where evidence in the form of testimony is not available to the party asserting a need for the evidence. The *Hanagan* guidelines require such a party to justify the delay and inconvenience that may result by explaining what the party expects the testimony to prove. To this end, subsection 1.639(c) is revised to clarify that it only applies to testimony that is unavailable to the party seeking the testimony.

OTHER CONSIDERATION

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C.601 et seq.), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principle impact of these changes would be to clarify procedure in patent interferences and thereby eliminate ambiguity that may exist in current rules.

The Office has determined that these rule changes are not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no recordkeeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:
Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.601 is amended by adding paragraph (q) to read as follows:

§ 1.601 Scope of rules, definitions.

* * * * *

(q) A *final decision* is a decision awarding judgement as to all counts. An *interlocutory order* is any other action taken by an examiner-in-chief or a panel of the Board in an interference, including the notice declaring an interference.

3. Section 1.637 is amended by revising paragraph (a) to read as follows:

§ 1.637 Content of motions.

(a) A party filing a motion has the burden of proof to show that it is entitled to the relief sought in the motion. Every motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, and (3) a full statement of the reasons why the relief requested should be granted.

* * * * *

4. Section 1.639 is amended by revising paragraph (c) and by adding paragraphs (d) through (g) as follows:

§ 1.639 Evidence in support of motion, opposition, or reply.

* * * * *

(c) If a party believes that additional evidence in the form of testimony that is unavailable to the party is necessary to support or oppose a preliminary motion under § 1.633 or a motion to correct inventorship under § 1.634, the party shall describe the nature of any proposed testimony as specified in paragraphs (d) through (g) of this section. If the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

(d) When additional evidence in the form of expert-witness testimony is needed in support of or opposition to a preliminary motion, the moving party or opponent should:

(1) identify the person whom it expects to call as an expert;
(2) state the field in which the person is alleged to be an expert; and
(3) state:

(i) the subject matter on which the person is expected to testify;

(ii) the facts and opinions to which the person is expected to testify; and

(iii) a summary of the grounds and basis for each opinion.

(e) When additional evidence in the form of fact-witness testimony is necessary, state the facts to which the witness is expected to testify.

(f) If the opponent is to be called, or if evidence in the possession of the opponent is necessary, explain the evidence sought, what it will show, and why it is needed.

(g) When inter partes tests are to be performed, describe the tests stating what they will be expected to show.

5. Section 1.655 is amended by revising paragraph (a) to read as follows:

§ 1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under § 1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether any interlocutory order was erroneous or an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing error or an abuse of discretion shall be on the party attacking the order. When two or more interlocutory orders involve the same issue, the last entered order shall be presumed to have been correct.

* * * * *

Sept. 16, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1155 OG 65]

(90) Interference Practice: Matters Relating to Related Preliminary Motions

In some interference proceedings, evidence which would provide a basis for a preliminary motion under 37 CFR 1.633 does not come to light until after a decision on preliminary motions has been entered. For example, a party may conclude, after hearing the opponent's testimony, that the opponent's application or patent does not comply with the "best mode" requirement of 35 USC § 112, first paragraph; or a prior art reference may be found which the party could not previously have located. The purpose of this notice is to clarify the policy of the Board of Patent Appeals and Interferences as to what steps the party must take if it wishes to have an issue based on such evidence considered by the Board.

If the time for filing preliminary motions has expired, and then evidence comes to light which in the opinion of a party would provide basis for a preliminary motion under 37 CFR 1.633, that party may not simply raise the matter in its brief at final hearing for the Board's consideration. Rather, it is the policy of the Board that it will not consider the matter unless the party files promptly after the evidence becomes available:

(1) the appropriate preliminary motion under 37 CFR 1.633; and

(2) a motion under 37 CFR 1.635 showing sufficient cause why the preliminary motion was not timely filed, as required by 37 CFR 1.645(b). This motion must include the certificate required by 37 CFR 1.637(b).

If either party believes that additional evidence or discovery concerning the matter raised by the motion(s) is necessary, motions (1) and (2) should also be accompanied by or responded to by such other motions as may be appropriate, as for example, motions under 37 CFR 1.651(b) (4) or 1.687(c).

Oct. 6, 1992

SAUL I. SEROTA
Chairman, Board of Patent
Appeals and Interferences

[1144 OG 8]

(91) **Interference Practice: Response to Order to Show Cause Under 37 CFR 1.640**

37 CFR 1.640(e) provides that when an order to show cause under 37 CFR 1.640(d) is issued against an interference party, the Board of Patent Appeals and Interferences will enter judgment against that party "unless, within 20 days after the date of the order, the party against whom the order issued files a paper which shows good cause why judgment should not be entered in accordance with the order." In the application of this rule, some confusion has arisen as to the nature of the "paper" which the party must file when the basis of the order is 37 CFR 1.640(d)(1), i.e., where "[a] decision on a motion is entered which is dispositive of the interference against the party on any count."

Normally, the "paper" filed in response to such an order to show cause should be a simple request that final hearing (see 37 CFR 1.654) be set to review the decision on the motion which was dispositive of the interference against the party, as well as any other decision on motion which the party may wish to have reviewed by the Board.* When such a response is filed, the Examiner-in-Chief will normally set the times for filing briefs under 37 CFR 1.656. The response should be accompanied by a motion requesting a testimony period, if the party desires to take testimony. See 37 CFR 1.640(e), last sentence. Also, an opposing party may request a testimony period, even if the party responding to the order to show cause does not. Such a request should be filed promptly after the Examiner-in-Chief enters an order setting the brief times, but in no event more than twenty (20) days after entry of such order. Cf. the Commissioner's Notice of June 15, 1981, 1008 O.G. 9 (July 14, 1981).

Instead of filing a request that final hearing be set, the party under order to show cause may file a paper containing a full discussion of the reasons why judgment should not be entered. However, before deciding to file such a paper, the following should be taken into consideration:

(1) Such paper will be construed as a request for final hearing if a testimony period is requested;

(2) Such paper will be deemed a waiver of any opportunity to present oral argument concerning the matters discussed therein, and the matter will be decided by the Board based upon the content of the paper and any response thereto;

(3) An opposing party may still request final hearing and/or a testimony period within twenty (20) days of the date of service of the paper, and if either request is granted it will be necessary for the parties to file briefs under 37 CFR 1.656.

It is the policy of the Board of Patent Appeals and Interferences that when final hearing is set pursuant to a request therefor following an order to show cause issued as a result of a decision on preliminary motions under 37 CFR 1.633 or 1.634, the parties must raise at that hearing for consideration by the Board all matters specified in 37 CFR 1.655(b) which were decided on the merits by the Examiner-in-Chief and which they wish to have considered. In other words, once the brief times are set for such a final hearing, every matter which was decided by an Examiner-in-Chief in connection with a motion under 37 CFR 1.633 or 1.634 must be raised in the parties' main briefs if the parties wish to have those matters considered by the Board. A party cannot wait to see what the Board's decision on one such matter will be and then, if the decision is unfavorable to the party and the case continues, raise that matter or any other such matter at a subsequent final hearing.

Dec. 8, 1986

DONALD W. PETERSON
Deputy Commissioner
of Patents
and Trademarks.

[1074 OG 4]

(92) **Winkler v. Guglielmino**

On March 15, 1989, a panel of the Board of Patent Appeals and Interferences entered a decision in an interference awarding priority to junior party, Guglielmino, and held that Winkler, the senior party, is not entitled to a patent containing a claim

corresponding to the interference count because he admitted the subject matter of the count was unpatentable, *Guglielmino v. Winkler*, 11 USPQ2d 1389 (Bd. Pat. App. & Int. 1989).

An appeal was taken to the U.S. Court of Appeals for the Federal Circuit. On May 9, 1990, the Federal Circuit vacated and remanded. *Winkler v. Guglielmino*, Appeal No. 89-1571 (Fed. Cir. May 9, 1990). The opinion in support of the decision was not published.

In view of the Federal Circuit's decision, the Board's published decision is no longer viable precedent and will not be followed.

In the future, a motion for judgment under 37 CFR § 1.633(a) contending that an opponent's claims corresponding to a count are not patentable over the prior art shall not be taken as an admission *per se* that the moving party's claims corresponding to the count are also unpatentable. However, if an Examiner-in-Chief or a panel of the Board determines that the motion should be granted *on the merits* and the prior art relied upon by the moving party is equally applicable to the claims of the moving party, action may be taken against all parties under 37 CFR § 1.641 by issuing an order to show cause. When the prior art relied upon in support of the motion is not a statutory bar, a party in the response to the order to show cause may request a testimony period for the purpose of presenting evidence to overcome the date of the relied upon prior art.

Prior cases, such as *Slivinski v. Lane*, 1922 Dec. Comm'r Pat. 4 (Comm'r Pat. 1922), held that when an applicant, in interference with a patent, called attention to a reference which allegedly anticipated the subject matter of the count, the interference should be dissolved and the applicant's claims rejected on the admission of non-patentability. The rationale behind this holding was that the Patent Office had no jurisdiction in an interference to cancel a patent. Since 35 U.S.C. § 135(a) gives the Board jurisdiction to consider patentability in an interference and present interference rules authorize a motion for judgment against a patentee based on unpatentability over the prior art, the holding of *Slivinski* and similar cases is no longer applicable. Under 37 CFR §§ 1.601 through 1.690, a motion for judgment based on unpatentability over prior art does not constitute an admission of unpatentability to the moving party.

May 23, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and
Commissioner of Patents and Trademarks

[1115 O.G. 31]

(93) **Interferences-Preliminary Motions for Judgment**

When a party files a preliminary motion for judgment [37 CFR 1.633(a)] against an opponent in an interference on the ground that the claim(s) corresponding to a count are unpatentable over prior art, and, based upon the effective filing date(s) of the application(s)/patent(s) involved in the interference, the prior art would also be applicable to the moving party, the following will apply:

1. The mere filing of the motion *will not* be construed as an admission by the moving party [See Commissioner's Notice of May 23, 1990, 1115 Off. Gaz. Pat. Office 31 (June 19, 1990), discussing *Winkler v. Guglielmino*, Appeal No. 89-1571 (Fed. Cir. May 9, 1990) (unpublished)].

2. The Examiner-in-Chief (EIC) will determine (i) whether the date(s) of the cited prior art are such that it would on its face appear to apply to the moving party, and (ii) if so, whether the motion includes an explanation as to why the prior art would not be applicable to the movant. If the motion does not contain an explanation, the EIC will send a letter to the moving party. The letter must: (a) inform the movant that the prior art appears to be applicable against the movant; (b) set a time period to provide an explanation as to why the prior art does not apply to the movant; (c) state that unless a sufficient explanation (and evidence, if appropriate, e.g., Rule 132 affidavit) is filled within the time set, the movant will not be permitted to rely on any such explanation (and evidence) in response to or in any subsequent action in the interference.

3. If the movant provides no explanation, or an insufficient explanation, as to why the cited prior art would not apply to the movant, the EIC will determine whether or not the prior art cited in support of the motion renders the count (claims corresponding to the count) unpatentable to the moving party as well as each of the other parties. If the EIC concludes that the claims are unpatentable, the EIC will issue an Order to Show Cause under 37 CFR § 1.640 against all parties to whom the prior art is applicable without regard to the dates alleged in the preliminary statements.¹ Note that if the moving party expressly admits that the prior art renders his corresponding claims unpatentable, the EIC must still determine whether the corresponding claims of the other parties are unpatentable over that art.

4. In response to the Order to Show Cause, the parties have the options set forth in the Commissioner's Notice of December 8, 1986, 1074 Off. Gaz. Pat. Office 4 (January 6, 1987), and/or may move under 37 CFR § 1.651(c)(4) for a testimony period, if appropriate. However, the following should be noted:

A. If the party who filed the motion for judgment is under the Order to Show Cause, the party's showing and/or request for testimony in response to the Order may *not* be based upon any reasons which could have been, but were not, given in explanation of why the cited prior art would not apply to the party.

B. If the prior art is not a statutory bar to a party and the allegations in that party's preliminary statement, if proven, would antedate the effective date(s) of the prior art, an appropriate response to the Order to Show Cause would be a request to take testimony to antedate the prior art, as well as to prove priority of invention. *If applicable, this option may be specified in the Order to Show Cause.*

C. A request for a testimony period to remove the prior art based upon other reasons, e.g., inoperativeness of a reference, unexpected results, etc., must meet the criteria set forth in *Hanagan v. Kimura*, Interference No. 102,150, USPQ2d _____

(Comm'r Pat. Apr. 5, 1990) (LEXIS, Patcop library, Omni file).

D. Even assuming corroboration, the evidence necessary to antedate a reference is not necessarily the same as that required to prove priority of invention. Cf. *Anderson v. Norman*, 185 USPQ 371 (Comm'r Pat. 1968). Therefore, depending on the circumstances, a request to take priority testimony may not be adequate to cover taking testimony to antedate the reference, and vice versa.

August 10, 1990

SAUL SEROTA
Chairman,
Board of Patent
Appeals and Interferences

¹ Goutzoulis v. Athale, 15 USPQ2d 1461 (Comm'r Pat.) suggests that a preliminary statement might be considered to determine whether an Order to Show Cause should be issued. In view of the procedure outlined herein, that suggestion will not be followed.

[1181 O.G. 19]

(94) **Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 50103-7058]**

Arbitration of Patent Interference Cases

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.

Summary: The Patent and Trademark Office is amending its rules to implement the arbitration provisions of section 105 of the Patent Law Amendments Act of 1984, Pub. L. 98-622.
Effective Date: May 27, 1987.

For Further Information Contact: Ian A. Calvert or Michael Sofocleous by telephone at (703) 557-4000 or by mail marked to the attention of either and addressed to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Section 105 of the Patent Law Amendments Act of 1984, enacted Nov. 8, 1984, provides for the arbitration of patent interference cases. Section 105, codified as 35 U.S.C. 135(d), provides:

Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.

The Patent and Trademark Office (PTO) conducts interference proceedings to determine any question of patentability and priority of invention between two or more parties claiming the same patentable invention. An interference may be declared between two or more pending applications naming different inventors when, in the opinion of an examiner, the applications contain claims for the same patentable invention. An interference may be declared between one or more pending applications and one or more unexpired patents naming different inventors when, in the opinion of an examiner, any application and any unexpired patent contain claims for the same patentable invention. Patent interference cases can be quite expensive. Arbitration may prove useful to minimize expenses in interference cases. The arbitration rule applies to all pending interferences.

The PTO published an advance notice of rulemaking in the Federal Register of Jan. 16, 1985 (50 FR 2294-2296). The notice was also published in the *Official Gazette* on Feb. 12, 1985 (1051 O.G. 9-10). The notice also appeared in the Bureau of National Affairs' Patent, Trademark and Copyright Journal, Vol. 29, p. 310 (Jan. 24, 1985), hereinafter "BNA." Five written comments were received in response to the advance notice.

A notice of proposed rulemaking was published in the Federal Register on Sept. 15, 1986 (51 FR 32756-32762), in the *Official Gazette* on Oct. 21, 1986 (1071 O.G. 25-31), and in BNA's Patent, Trademark and Copyright Journal, Vol. 32, pp. 552-558 (Sept. 18, 1986). In response to the notice, three comments, two in writing and one by telephone, were received. These comments are discussed herein.

All written comments are available for public inspection in Rm. 10C01, Crystal Gateway 2, 1225 Jefferson Davis Hwy., Arlington, Va.

Discussion of the Rule

Under § 1.690 the arbitrator can determine issues of patentability as between the parties but a determination by him or her that the subject matter is patentable would not be binding upon the PTO. If the arbitrator's award holds that a party's claims corresponding to the count are unpatentable over prior art or under 35 U.S.C. 112, that determination would be binding on that party vis-a-vis the party's opponent and would result in a judgment adverse to that party. The judgment, however, would not discharge the duty that each party has under 37 CFR 1.56 to bring to the attention of the examiner in charge of its respective application any prior art and/or reason relied upon by the arbitrator in the determination of unpatentability.

It is the longstanding practice of the PTO to favor the settlement of interferences and the PTO looks with favor on all proper efforts in that direction as being conducive to the termination of the proceeding. See 4 Revise and Caesar, *Interference Law and Practice*, section 861, p. 2956 (Michie Co. 1948) and the Commissioner's Notice of Nov. 9, 1976, titled, "Extensions of Time and Filing of Papers in Interferences," 953 *Official Gazette* 2 (Dec. 7, 1976). In this regard, the notice states that:

* * * stipulation or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire

extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Consequently, the examiner-in-chief may give favorable consideration to a motion for an extension of time for purposes of settlement; however, a further motion for an extension for that purpose would not be granted unless it is accompanied by a schedule of specific dates showing that the parties will make a good faith effort to promptly terminate the proceeding. If preliminary motions under 37 CFR 1.633 have not been filed, the examiner-in-chief would not normally extend the time for their filing merely for purposes of settlement. In these circumstances, the examiner-in-chief would require that the preliminary motions be filed or that their filing be waived.

If the proceeding is in the testimony stage, the examiner-in-chief could grant the parties' motion to extend all the unexpired testimony times to close concurrently on the date the record is due provided they file a stipulation that any evidence to be submitted will be in one of the forms specified in 37 CFR 1.672(e) and (f), i.e., affidavit testimony or a stipulation either as to what a particular witness would testify to if called or the facts in the case of any party.

Analogously, the aforesaid practice would apply to arbitration. Section 1.690 requires that parties who intend to arbitrate an interference notify the examiner-in-chief in writing of their intention to arbitrate and file a copy of the arbitration agreement within 20 days of its execution. Pursuant to 35 U.S.C. 135(c) an agreement to arbitrate is considered to be one "made in connection with and in contemplation of the termination of the interference". The agreement must be in writing a copy filed in the PTO within 20 days after its execution. The notification of intention to arbitrate must be made in a separate paper. Merely incorporating the notification in the agreement is not sufficient to comply with § 1.690(a). The parties also will be required to adhere to a time schedule approved by the examiner-in-chief such that the interference proceeding can be expeditiously resolved so as to prevent the unnecessary postponement of the beginning of the running of the term of any patent resulting from an application involved in the interference. *Pritchard v. Loughlin*, 361 F.2d 483, 149 USPQ 841 (CCPA 1966).

If the parties desire to arbitrate an interference prior to the close of the motion period, the examiner-in-chief will not normally grant an extension of time for the purpose. The parties will be required to file their preliminary motions under 37 CFR 1.633. After the motions are filed, the examiner-in-chief could grant an extension only upon compliance with 37 CFR 1.645 which requires a showing of "good cause." Such a "good cause" showing would normally include a schedule, agreed to by the parties, setting forth, *inter alia*, the dates for (1) executing the arbitration agreement, (2) determining priority and (3) terminating the interference.

Section 1.690(a) requires that an arbitration agreement include the following:

- (1) The name of the arbitrator or a date certain (not more than 30 days after the execution of the agreement) for his or her selection.
- (2) The issues to be decided by the arbitrator.
- (3) A provisions that the arbitrator's award is binding on the parties and that the Board can enter a judgment based thereon.

Section 1.690(c) requires that a copy of the arbitration award be filed within 20 days from the date of the award or by a date set by the examiner-in-chief.

If the proceeding is in the testimony stage and the parties desire to arbitrate, the examiner-in-chief could grant a reasonable extension for that purpose. A motion for a further extension for that purpose would not be granted unless it were accompanied by a schedule, agreed to by the parties, setting forth, *inter alia*, the dates for (1) executing the arbitration agreement, (2) determining priority, and (3) terminating the interference. If the parties are to submit the required schedule, a motion for a further extension could be granted. If the parties file a copy

of the arbitration agreement and they agree that any evidence submitted in the proceeding will be in one of the forms specified by 37 CFR 1.672(e) or (f), the examiner-in-chief could give favorable consideration to the parties' motion that all the unexpired times be extended to close concurrently on the date the record is due. By that date, the parties would be required to file the arbitrator's award and their records, if necessary for the resolution of any issue not decided by the arbitrator. If the award is not dispositive of all the issues in the interference, the examiner-in-chief would set brief times so that parties could explain their evidence relating to any issues which the arbitrator did not, or was unable to decide. For example, the award might be dispositive of the issue of priority between the parties and leave for the Board's determination the question of substituting a new count raised in a preliminary motion under 37 CFR 1.633.

The arbitration award, filed by the parties, would be in the nature of a final decision and should include the following:

- (1) The style (e.g., *Jones v. Smith*), the number of the interference and the names of the real parties in interest.
 - (2) The subject matter in issue, i.e., the counts and a table of counts, if necessary, indicating the relationship of the parties' claims corresponding to each count and those claims not corresponding thereto.
 - (3) The issues for decision before the arbitrator.
 - (4) The arbitrator's decision. The decision may also include a statement of the grounds and reasoning in support thereof.
 - (5) A summary, if appropriate, indicating, *inter alia*, that judgment should be awarded to one of the parties.
- Any party to the arbitration can attack the award only in the manner provided by 9 U.S.C. 10 and 11.

9 U.S.C. 10 reads as follows:

In either of the following cases the United States court in and for the district wherein the award was made may make an order vacating the award upon the application of any party to the arbitration—

- (a) Where the award was procured by corruption, fraud, or undue means.
- (b) Where there was evident partiality or corruption in the arbitrators, or either of them.
- (c) Where the arbitrators were guilty of misconduct in refusing to postpone the hearing, upon sufficient cause shown, or in refusing to hear evidence pertinent and material to the controversy; or of any other misbehavior by which the rights of any part have been prejudiced.
- (d) Where the arbitrators exceeded their powers, or so imperfectly execute them that a mutual, final, and definite award upon the subject matter submitted was not made.
- (e) Where an award is vacated and the time within which the agreement required the award to be made has not expired the court may, in its discretion, direct a rehearing by the arbitrators.

9 U.S.C. 11 reads as follows:

In either of the following cases, the United States court in and for the district wherein the award was made may make an order modifying or correcting the award upon the application of any party to the arbitration—

- (a) Where there was an evident material miscalculation of figures or an evident material mistake in the description of any person, thing, or property referred to in the award.
- (b) Where the arbitrators have awarded upon a matter not submitted to them, unless it is a matter not affecting the merits of the decision upon the matter submitted.
- (c) Where the award is imperfect in matter of form not affecting the merits of the controversy.

The order may modify and correct the award, so as to effect the intent thereof and promote justice between the parties.

See, for example, *Fairchild and Co., Inc. v. Richmond, F. and P. R. Co.*, 516 F.Supp. 1305 (D.D.C. 1981). If such an attack were to be made by one of the parties while the interference is pending before the Board, the Board would not stay the interference. Rather, the Board would issue its judgment in accordance with the award. So long as the award is in compliance with § 1.690, it would carry the presumption that the arbitrator acted correctly in making his decision and accord-

ingly, the party designated by the award as the prevailing party would be entitled *prima facie* to a judgment in its favor. If the dissatisfied party brings an action in an appropriate United States district court and if the court vacates, modifies or corrects the award, the Board would take action consistent with the court's findings. No action would lie in the PTO to vacate or correct an arbitration award, unless all parties agreed in writing.

The following examples illustrate the practice of the PTO concerning arbitration.

Example 1

Arbitration Practice-Preliminary Stage

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The parties decide to arbitrate the interference in accordance with § 1.690 and file a motion for an extension of time so that they can "freely" arbitrate the interference, but do not file a waiver of their right to file motions.

The examiner-in-chief would deny the motion because the parties' intention to arbitrate, in and of itself, does not constitute a showing of "good cause" within the meaning of 37 CFR 1.645(a). Even if the parties file an agreement to arbitrate, the PTO would not grant any extension of time to permit the parties to "freely" arbitrate an interference prior to the expiration of the time for filing preliminary motions.

Example 2

Arbitration Practice-Testimony Stage

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633. The parties file preliminary motions; the examiner-in-chief renders a decision thereon and sets the testimony times. The parties file a notice of intent to arbitrate the interference under § 1.690(a) and a motion for a one month extension of the testimony times. The examiner-in-chief could grant the motion, but would indicate that if the parties file another motion for an extension for that purpose, the motion must be accompanied by a schedule, agreed to by the parties, setting forth the dates for (1) executing the arbitration agreement, (2) determining priority and (3) terminating the interference.

The parties file a motion for an additional one month extension of time to permit the parties to arbitrate the interference. Accompanying the motion is a proposed schedule of times and a copy of the arbitration agreement which provides, *inter alia*, (i) the name of the arbitrator or a date certain for his selection, (ii) that the arbitrator's award will be binding on the parties, (iii) the issues to be decided by the arbitrator and (iv) that the award will be filed by the date the record is due. The parties also indicate that the evidence to be filed in the proceeding will be in one of the forms specified by 37 CFR 1.672(e) or (f). The examiner-in-chief could grant the motion and indicate that he will give favorable consideration to a motion to extend all the unexpired times to close concurrently on the date the record is due should the parties request such.

On the date for filing the record, the parties file the arbitrator's award and their evidentiary records, if necessary. The award states (i) the style and number of the interference and the real parties in interest, (ii) the subject matter in issue and the parties' claims which correspond thereto and which do not correspond thereto, (iii) the issues for decision before the arbitrator, (iv) the arbitrator's decision (which may include a statement of the grounds and reasoning in support thereof) and (v) that judgment should be awarded to one of the parties. The examiner-in-chief examines the award to ensure that it complies with § 1.690 and is dispositive of the issues in the interference which can be decided by the arbitrator. If the award is otherwise acceptable, the Board would issue a judgment based on the award. If the award is not dispositive of all the issues in the interference, the examiner-in-chief would determine how the interference will proceed.

Example 3

Arbitration Practice-Award Decides Interference-in-Fact Issue and Junior Party Takes No Testimony

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(b) on the ground that there is no interference-in-fact between his claims corresponding to the count and his opponent's claims corresponding thereto. The examiner-in-chief denies the motion, examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. On the date for filing the record, the junior party files the award together with a motion requesting that the interference be terminated in view of the award. He does not file a record. In his award the arbitrator holds that no interference-in-fact exists between the parties' claims corresponding to the count.

The motion would be denied because the award decides a matter of patentability which would not result in a judgment adverse to one of the parties. Consequently, the junior party would be placed under an order to show cause why judgment under 37 CFR 1.652 should not be entered against him for his failure to file an evidentiary record by the time set therefore. In response to the order, the junior party requests final hearing to review the examiner-in-chief's denial of the motion for judgment and a testimony period to show no interference-in-fact. The examiner-in-chief would grant the junior party's request to the extent that final hearing is set and would deny the request for testimony because the junior party already had the opportunity to take testimony on the matter.

Example 4

Arbitration Practice—Cannot Decide Patentability

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(a) on the ground that the claims corresponding to the count are unpatentable over prior art. In his decision on motions, the examiner-in-chief grants the motion and places both parties under an order pursuant to 37 CFR 1.640(d)(1) to show cause why judgment should not be entered against them as to the count. In response to the order, the senior party files a paper in accordance with 37 CFR 1.640(e) purportedly showing good cause why judgment should not be entered in accordance with the order and a motion requesting permission to arbitrate the patentability issue. The examiner-in-chief would deny the motion. The arbitrator is without authority to establish vis-a-vis the public that the subject matter of the court is patentable. Thus, the arbitration will serve no useful purpose. The Board would consider the senior party's paper and enter an appropriate order.

Example 5

Arbitration Practice—Award After Decision on Motions

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(a) on the ground that the claims corresponding to counts 1 and 2 are unpatentable over prior art. In his decision on motions, the examiner-in-chief grants the motion with respect to count 1, denies the motion with respect to count 2 and places both parties under an order pursuant to 37 CFR 1.640(d)(1) to show cause why judgment should not be entered against them as to count 1. The senior party files a paper in accordance with 37 CFR 1.640(e); the junior party, a response thereto. The Board considers the paper and the response thereto and based on the record enters judgment

adverse to both parties as to count 1. Thereafter, the examiner-in-chief examines the preliminary statements and sets dates for taking testimony and filing the record.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. In his award, the arbitrator decides that judgment should be awarded to the junior party. On the date for filing the record, both parties file the award together with a motion requesting that the interference be terminated in view of the award. No record is filed.

The motion would be granted and accordingly it would be held that the senior party is not entitled to a patent containing his claims corresponding to count 2.

Example 6

Arbitration Practice—Award Decides Patentability

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions for judgment under 37 CFR 1.633 are filed and after the examination of the preliminary statements, the examiner-in-chief sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. In his award, the arbitrator finds (1) that the evidence is insufficient to establish a prior public use bar under 35 U.S.C. 102(b) against the junior party, (2) that the claims of the junior party corresponding to the count are patentable under 35 U.S.C. 103 over the prior art cited by the senior party to the junior party, and (3) that judgment on priority should be awarded to junior party. On the date for filing together with a motion requesting that the interference be terminated in view of the award.

The motion would be granted and accordingly it would be held that the senior party is not entitled to a patent containing his claims corresponding to the count. After the termination of the proceeding, each party has the duty under 37 CFR 1.56 to bring before the primary examiner the evidence concerning the purported public use bar and the prior art cited by the senior party and/or considered by the arbitrator.

Example 7

Arbitration Practice—Award Grants Priority to Junior Party Contingent Upon Granting of Preliminary Motion Under 1.633(c)

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion under 37 CFR 1.633(c)(1) to substitute another count. The examiner-in-chief denies the motion, examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intention to arbitrate and enter into an arbitration agreement which is approved by the examiner-in-chief. The agreement provides that any evidence to be submitted by the parties will be in the form of a stipulation under 37 CFR 1.672(e) and (f). The parties file a motion requesting that all the unexpired testimony times be extended to close concurrently on the date the record is due. The motion would be granted.

On the date for filing the record, the junior party files his record and the award. The award states, inter alia, that if the Board at final hearing should grant the junior party's motion under 37 CFR 1.633(c)(1) to substitute a new count, judgment should be awarded to the junior party based on the evidence. Otherwise, the award states that judgment should be awarded to the senior party.

The examiner-in-chief sets the brief times and after the filing thereof the interference would be set for final hearing so that the Board can review the examiner-in-chief's denial of the junior party's motion under 37 CFR 1.633(c) and issue an appropriate judgment based on the award.

Example 8

Arbitration Practice—Award Attacked

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No preliminary motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intention to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief.

On the date for filing the record, both parties file their records. The junior party files the award which states that judgment should be awarded to him and a motion for judgment based on that award. The senior party files an opposition to the motion for judgment on the grounds (i) that the award contains errors of law, (ii) that the award was procured by "corruption, fraud or undue means" in violation of 9 U.S.C. 10(a), and (iii) that the arbitrator exhibited "evident partiality" in violation of 9 U.S.C. 10(b) and was "guilty of misconduct * * * in refusing to hear evidence pertinent and material" to the interference, citing 9 U.S.C. 10(c).

The Board would grant the judgment based on the award, holding that the senior party is not entitled to a patent containing his claims corresponding to the count. So long as the award is in compliance with the provisions of § 1.690, it would carry a presumption that the arbitrator acted properly in all respects. Consequently, before the PTO the award is binding upon the parties and the junior party is *prima facie* entitled to a judgment in its favor. Thus, no action lies in the PTO as regards the matter raised by the senior party. The senior party's action lies in an appropriate United States district court and the PTO would take any action consistent with the court's decision.

Example 9

Arbitration Practice—Award Cannot Modify Board's Final Decision

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference and enter into an arbitration agreement. Neither party notifies the examiner-in-chief of their intent to arbitrate nor do they file a copy of the agreement in the interference. Both parties timely file their records and briefs. Both waive oral argument. The Board enters a final decision after consideration of the evidence in favor of the senior party.

The junior party requests reconsideration of the Board's final decision, submits a copy of the arbitration award and moves that the Board set aside its final decision and enter judgment in his favor based on the award. In support of its request, the junior party cites 9 U.S.C. 9, which provides that "any party to the arbitration may apply to the court so specified for an order confirming the award" and 35 U.S.C. 135(d) which provides that title 9 applies to interference arbitrations.

The Board would deny the motion to set aside. The parties did not comply with § 1.690(a), i.e., notify the examiner-in-chief in writing of their intention to arbitrate and file a copy of the arbitration agreement within twenty (20) days of its execution. The denial of the motion is an appropriate sanction under 37 CFR 1.616. Such action by the Board is considered consistent with long-standing interference practice. Cf. *Humphrey v. Fickert*, 1904 Dec. Comm'r. Pat. 447 (Comm'r. 1904) wherein the Board, after it had considered the evidence, refused to set aside its award of priority to Fickert and act upon the Fickert's concession of priority in favor of Humphrey, the losing party.

Example 10

Arbitration Award Filed With Record—No Notice to Examiner-In-Chief

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference and enter into an arbitration agreement. Neither party notifies the examiner-in-chief of the agreement. The junior party timely files its record together with a copy of the arbitration award and a motion for judgment based on the award.

The motion would be denied. Under the provisions of 37 CFR 1.616, the examiner-in-chief would place both parties under an order to show cause why judgment should not be rendered against them for their failure to comply with 1.690(a), i.e., failing to notify him of their intent to arbitrate and file a copy of the arbitration agreement.

Discussion of Comments

One commentator suggested that the expression "An interference or any aspect thereof shall be arbitrated" in part (b) of proposed § 1.690 might be construed as going beyond the terms of the statute by authorizing an examiner-in-chief to require the parties to arbitrate an interference, and proposed that the quoted language be changed to "An arbitration proceeding under this section shall be conducted." To eliminate any possible misconstruction of the rule, this proposal has been adopted.

A second commentator suggested, by telephone, that a provision be added to proposed § 1.690 requiring that the arbitrator be familiar with United States interference practice, and that United States law be applied by the arbitrator in making the determination. He expressed the fear that a foreign arbitrator might reach a result contrary to established domestic law.

This suggestion has not been adopted. It is incumbent upon the parties to select the arbitrator, and to satisfy themselves as to his or her qualifications. Presumably if the arbitrator's decision is contrary to established law, any resulting patent would be subject to attack on that ground by a third party in subsequent litigation.

Another commentator stated that, with the arbitration rule, the PTO was "attempting to apply a band-aid to a system which cannot be cured by application of a band-aid," and that the first-to-file system should be adopted in place of the first-to-invent system. This suggestion is obviously far beyond the scope of the rule change under consideration. The first-to-invent system is mandated by statute and could not be replaced merely by a change in the rules. The purpose of § 1.690 is to establish a specific procedure governing the optional arbitration of interferences provided by section 105 of Pub. L. 98-622.

Other Considerations

This rule does not have a significant impact on the quality of the human environment or the conservation of natural resources.

The rule is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354) because arbitration intended to minimize expenses in interference cases.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effects on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises

to compete with foreign-based enterprises in domestic or export markets.

The rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and 135, Part 1 of Title 37 CFR is amended as follows:

PART 1-RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. New § 1.690 is added to Subpart E to read as follows:

§ 1.690 Arbitration of Interferences.

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of Title 9, United States Code. The parties must notify the Board in writing of their intention to arbitrate. An agreement to arbitrate must be in writing, specify the issues to be arbitrated, the name of the arbitrator or a date not more than thirty (30) days after the execution of the agreement for the selection of the arbitrator, and provide that the arbitrator's award shall be binding on the parties and that judgment thereon can be entered by the Board. A copy of the agreement must be filed within twenty (20) days after its execution. The parties shall be solely responsible for the selection of the arbitrator and the rules for conducting proceedings before the arbitrator. Issues not disposed of by arbitration will be resolved in accordance with the procedures established in 37 CFR, Subpart E of Part 1, as determined by the examiner-in-chief.

(b) An arbitration proceeding under this section shall be conducted within such time as may be authorized on a case-by-case basis by an examiner-in-chief.

(c) An arbitration award will be given no consideration unless it is binding on the parties, is in writing and states in a clear and definite manner (1) the issue or issues arbitrated and (2) the disposition of each issue. The award may also include a statement of the grounds and reasoning in support thereof. Unless otherwise ordered by an examiner-in-chief, the parties shall give notice to the Board of an arbitration award by filing within twenty (20) days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue or issues to which it relates.

(d) An arbitration award shall not preclude the Office from determining patentability of any invention involved in the interference.

Mar. 16, 1987

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents
and Trademarks

[FR Doc. 87-9373 Filed 4-24-87; 8:45 am]
BILLING CODE 3510-16-M

[1080 OG 15]

Disclosure Document Program

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program. Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

The Program

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

Content of Disclosure Document

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8 1/2 by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A \$10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the \$10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

Retention

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed

unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

Warning as to Limitations

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

Jan. 4, 1971

RICHARD A. WAHL
Assistant Commissioner
of Patents

[883 OG 3]

(96) **Service of Process and Testimony of
Employees of the Patent and Trademark
Office and Production of Documents in Legal Proceedings**

The Patent and Trademark Office (PTO) is adding Parts 15 and 15a to Title 37 of the Code of Federal Regulations. Part 15 concerns service of process on the Commissioner, the Patent and Trademark Office, and employees of the Patent and Trademark Office in their official capacity. Part 15a concerns the testimony of PTO employees regarding official matters and the production of official documents in legal proceedings. Parts 15 and 15a were effective upon publication in the Federal Register, 54 FR 3976-8 (Jan. 26, 1989).

In addition, §§ 1701 and 1701.01 of the Manual of Patent Examining Procedure and §§ 1801 and 1801.01 of the Trademark Manual of Examining Procedure are amended, as indicated below, effective immediately.

Parts 15 and 15a, §§ 1701 and 1701.01 of the Manual of Patent Examining Procedure and §§ 1801 and 1801.01 of the Trademark Manual of Examining Procedure are published in this notice as a convenience to the public. In addition to these materials, the Patent and Trademark Office alerts the public to its position with respect to *Standard Packaging Corp. v. Curwood, Inc.*, 365 F. Supp. 134, 180 USPQ 234 (N.D. Ill. 1973). In the past, parties have attempted, based on *Standard Packaging*, to obtain answers to questions which the Patent and Trademark Office has regarded to be improper. While the Patent and Trademark Office believes *Standard Packaging* accurately states the law, the Office believes that the court misapplied the law to the precise questions in issue. Accordingly, the Office agrees with the Federal Circuit's observation in *Western Electric Co. v. Piezo Technology, Inc. v. Quigg*, 860 F.2d 428, 432, 8 USPQ 2d 1853, 1857 (Fed. Cir. 1988), that there is considerable doubt whether *Standard Packaging* was correctly decided. The Patent and Trademark Office will not permit examiners to answer questions similar to those which the *Standard Packaging* court found acceptable.

**Department of Commerce
Patent and Trademark Office
37 CFR Parts 15 and 15a**

**[Docket No. 9106-9006]
Service of Process and Testimony of
Employees of the Patent and Trademark
Office and Production of
Documents in Legal Proceedings**

Agency: Patent and Trademark Office.

Action: Final rule.

Summary: The Patent and Trademark Office is adding 37 CFR Parts 15 and 15a to supplement 15 CFR Parts 15 and 15a. These new parts prescribe policies and procedures to be followed with respect to service of process on the Patent and Trademark Office, the Commissioner of Patents and Trademarks, and employees of the Office, the testimony of Office employees regarding official matters, and the production of official documents in legal proceedings. These regulations serve as a statement of Office policy and provide comprehensive guidelines for the Office and its employees, outside agencies, and other persons regarding the appropriate procedures for service of process, testimony, and production of documents.

Effective date: Jan. 26, 1989.

For Further Information Contact: Associate Solicitor John W. Dewhurst by mail at Box 8, U.S. Patent and Trademark Office, Washington, D.C. 20231 and by phone at (703) 557-4035.

Supplementary Information: These regulations are designed to supplement, and be construed consistent with, 15 CFR Parts 15 and 15a. The regulations in Part 15a state the views of the Office with respect to the permissible scope of testimony which may be given by Office employees in connection with their performance of quasi-judicial patent and trademark matters. These Office views are consistent with *United States v. Morgan*, 313 U.S. 409, 422 (1941); *Western Electric Co., Inc. v. Piezo Technology, Inc. v. Quigg*, No. 88-1216, 860 F.2d 428, 8 USPQ 2d 1853 (Fed. Cir. Nov. 1, 1988); *In re Mayewsky*, 162 USPQ 86, 89 (E.D. Va. 1969), and *Shaffer Tool Works v. Joy Mfg. Co.*, 167 USPQ 170 (S.D. Tex. 1970).

Because these regulations concern agency management and personnel, they are not rules or regulations within the meaning of section 1(a) of Executive Order 12291, and they are not subject to the requirements of that Order. Accordingly, no preliminary or final regulatory impact analysis has to be or will be prepared.

These regulations, relating to agency management and personnel, are exempt from all requirements of section 553 of the Administrative Procedure Act [5 USC 553] [including a delayed effective date and therefore will be effective immediately upon publication in the Federal Register.

Because a notice of proposed rule making and an opportunity for public comments are not required to be given for these regulations by section 553 of the APA, or by any other law, no regulatory flexibility analysis has to be or will be prepared for purposes of the Regulatory Flexibility Act [5 U.S.C. 603(a) and 604(a)].

This final rule does not contain policies with Federalism implications sufficient to warrant preparation of a Federalism assessment under Executive Order 12612.

This rule does not contain collections of information for purposes of the Paperwork Reduction Act.

List of subjects in 37 CFR Parts 15 and 15a:

Attorneys, Administrative practice and procedure, Courts, Government employees.

For the reasons set forth in the preamble, 37 CFR is amended as follows:

1. Part 15 is added to read as follows:

Part 15
Service of Process

Sec.

15.1 Scope and purpose

15.2 Definitions

15.3 Acceptance of service of process

Authority: 5 U.S.C. 301; 15 U.S.C. 1501, 1512, 1513, 1515, and 1518; Reorganization Plan No. 5 of 1950; 44 U.S.C. 3101; 15 CFR 15.2(a).

§ 15.1 Scope and Purpose.

(a) This part supplements 15 CFR Part 15 and sets forth the procedures to be followed when a summons or complaint is served on the Office or the Commissioner or an employee of the Office in his or her official capacity. This part is to be construed consistent with 15 CFR Part 15.

(b) This part is intended to ensure the orderly execution of the affairs of the Office and not to impede any legal proceeding.

(c) This part does not apply to subpoenas. The procedures to be followed with respect to subpoenas are set out in Part 15a of this Title.

(d) This part does not apply to service of process made on an Office employee personally on matters not related to official business of the Office or to the official responsibilities of the Office employee.

§ 15.2 Definitions.

For the purpose of this part:

(a) "Commissioner" means Assistant Secretary and Commissioner of Patents and Trademarks.

(b) "Legal proceeding" means a proceeding before a tribunal constituted by law, including a court, an administrative body or commission, or an administrative law judge or hearing officer.

(c) "Office" means Patent and Trademark Office.

(d) "Office employee" means any officer or employee of the Office.

(e) "Official business" means the authorized business of the Office.

(f) "Solicitor" means the chief legal officer of the Office or other Office employee to whom the Solicitor has delegated authority to act under this part.

§ 15.3 Acceptance of service of process

(a) Any summons or complaint to be served in person or by registered or certified mail or as otherwise authorized by law on the Office or the Commissioner or an Office employee in his or her official capacity, shall be served on the Solicitor or an Office employee designated by the Solicitor.

(b) Any summons or complaint to be served by mail may be addressed to Solicitor, P.O. Box 15667, Arlington, Va. 22215. Any summons or complaint to be served by hand may be delivered to the Office of the Solicitor.

(c) Any Office employee served with a summons or complaint shall immediately notify and deliver the summons or complaint to the Office of the Solicitor.

(d) Any Office employee receiving a summons or complaint shall note on the summons or complaint the date, hour, and place of service and whether service was by personal delivery or by mail.

(e) When a legal proceeding is brought to hold an Office employee personally liable in connection with an action taken in the conduct of official business, rather than liable in an official capacity, the Office employee by law is to be served personally with process. Service of process in this case is inadequate when made upon the Solicitor or the Solicitor's designee. Any Office employee sued personally for an action taken in the conduct of official business shall immediately notify and deliver a copy of the summons or complaint to the Office of the Solicitor.

(f) An Office employee sued personally in connection with official business may be represented by the Department of Justice at its discretion. See 28 CFR 50.15 and 50.16 (1987).

(g) The Solicitor or Office employee designated by the Solicitor, when accepting service of process for an Office employee in an official capacity, shall endorse on the Marshal's or server's return of service form or receipt for registered or certified mail the following statement: "Service accepted in official capacity

only." The statement may be placed on the form or receipt with a rubber stamp.

(h) Upon acceptance of service or receiving notification of service, as provided in this section, the Solicitor shall take appropriate steps to protect the rights of the Commissioner or Office employee involved.

2. Part 15a is added to read as follows:

Part 15a Testimony by Employees and the Production of Documents in Legal Proceedings

Sec.

15a.1 Scope

15a.2 Definitions

15a.3 Office policy

15a.4 Testimony or production of documents; general rule

15a.5 Testimony of Office employees in proceedings involving the United States

15a.6 Legal proceedings between private litigants

15a.7 Procedures when an Office employee receives a subpoena

Authority: 5 U.S.C. 301; 15 U.S.C. 1501, 1512, 1513, 1515, and 1518; Reorganization Plan No. 5 of 1950; 44 U.S.C. 3101; 15 CFR 15a.1(e) and 15a.2(f).

§ 15a.1 Scope

(a) This part supplements 15 CFR Part 15a and prescribes the policies and procedures of the Office with respect to the testimony of Office employees as witnesses in legal proceedings and the production of documents of the Office for use in legal proceedings pursuant to a request, order, or subpoena. This part is issued pursuant to 15 CFR 15a.1(e) and is to be construed consistent with 15 CFR Part 15a.

(b) This part does not apply to any legal proceeding in which an Office employee is to testify, while on leave status, as to facts or events that are in no way related to the official business of the Office.

(c) This part is intended to ensure the orderly execution of the affairs of the Office and not to impede any legal proceeding and in no way affects the rights and procedures governing public access to records pursuant to the Freedom of Information Act or the Privacy Act. See 15 CFR 15a.4 and 37 CFR 1.15.

§ 15a.2 Definitions.

For the purpose of this part:

(a) "Commissioner" means Assistant Secretary and Commissioner of Patents and Trademarks.

(b) "Demand" means a request, order, or subpoena for testimony or documents for use in a legal proceeding.

(c) "Document" means any record, paper, and other property held by the Office, including without limitation official patent and trademark files, official letters, telegrams, memoranda, reports, studies, calendar and dairy entries, maps, graphs, pamphlets, notes, charts, tabulations, analyses, statistical or informational accumulations, any kind of summaries of meetings and conversations, film impressions, magnetic tapes, and sound or mechanical reproductions.

(d) "Legal proceeding" means a proceeding before a tribunal constituted by law, including a court, an administrative body or commission, an administrative law judge or hearing officer or any discovery proceeding in support thereof.

(e) "Office" means Patent and Trademark Office.

(f) "Office employee" means any officer or employee of the Office.

(g) "Official business" means the authorized business of the Office.

(h) "Solicitor" means the chief legal officer of the Office or other Office employee to whom the Solicitor has delegated authority to act under this part.

(i) "Testimony" means a statement given in person before a tribunal or by deposition for use before the tribunal or any other statement given for use before a tribunal in a legal proceeding, including an affidavit, declaration under 35 U.S.C. 25, or declaration under 28 U.S.C. 1746.

(j) "United States" means the Federal Government, its departments and agencies, and individuals acting on behalf of the

Federal Government.

§ 15a.3 Office policy.

The Office policy is that its documents will not be voluntarily produced and Office employees will not voluntarily appear as witnesses or give testimony in a legal proceeding. The reasons for this policy include:

(a) To conserve the time of Office employees for conducting official business.

(b) To minimize the possibility of involving the Office in controversial or other issues which are not related to the mission of the Office.

(c) To prevent the possibility that the public will misconstrue variances between personal opinions of Office employees and Office policy.

(d) To avoid spending the time and money of the United States for private purposes.

(e) To preserve the integrity of the administrative process, minimize disruption of the decision-making process, and prevent interference with the Office's administrative functions.

§ 15a.4 Testimony or production of documents; general rule

(a) No Office employee shall give testimony concerning the official business of the Office or produce any document in any legal proceeding without the prior authorization of the Solicitor. Where appropriate, an Office employee may be instructed in writing by the Commissioner, Solicitor, or other appropriate Office employee not to give testimony or produce a document. Without prior approval, no Office employee shall answer inquiries from a person not employed by the Department of Commerce regarding testimony or documents subject to a demand or a potential demand under the provisions of this Part. All inquiries involving a demand or potential demand on an Office employee shall be referred to the Solicitor.

(b) A certified copy of a document, not otherwise available under Chapter I of this Title, will be provided for use in a legal proceeding upon written request and payment of applicable fees required by law.

(c)(1) *Request for testimony or document.* A request for testimony of an Office employee or document shall be mailed or hand-delivered to the Office of the Solicitor. The mailing address of the Office of the Solicitor is Box 8, Patent and Trademark Office, Washington, D.C. 20231.

(2) *Subpoenas.* A subpoena for testimony by an Office employee or a document shall be served in accordance with the Federal Rules of Civil or Criminal Procedure as appropriate, or applicable state procedure, and a copy of the subpoena shall be sent to the Solicitor.

(3) *Affidavit.* Every request and subpoena shall be accompanied by an affidavit or declaration under 28 U.S.C. 1746 or, if an affidavit or declaration is not feasible, a written statement setting forth the title of the legal proceeding, the forum, the requesting party's interest in the legal proceeding, the reasons for the request or subpoena, a showing that the desired testimony or document is not reasonably available from any other source, and if testimony is requested, the intended use of the testimony, a general summary of the testimony desired, and a showing that no document could be provided and used in lieu of testimony. The purpose of this requirement is to permit the Solicitor to make an informed decision as to whether testimony or production of a document should be authorized.

(d) Any Office employee who is served with a demand shall immediately notify the Office of the Solicitor.

(e) The Solicitor may consult or negotiate with an attorney for a party or the party, if not represented by an attorney, to refine or limit a demand so that compliance is less burdensome or obtain information necessary to make the determination required by paragraph (c) of this section. Failure of the attorney or party to cooperate in good faith to enable an informed determination to be made under this part may serve as the basis for a determination not to comply with the demand.

(f) A determination under this part to comply or not to comply with a demand is not an assertion or waiver of privilege, lack of relevance, technical deficiencies or any other ground for noncompliance. The Commissioner reserves the right to oppose

any demand on any legal ground independent of any determination under this part.

§ 15a.5 Testimony of Office employees in proceedings involving the United States.

(a) An Office employee may not testify as an expert or opinion witness for any party other than the United States.

(b) When appropriate, the Solicitor may authorize an Office employee to give testimony as an expert or opinion witness on behalf of the United States. Expert or opinion testimony on behalf of the United States will not be authorized in any legal proceeding involving the validity or enforceability of a patent or registered trademark.

(c) Whenever, in any legal proceeding involving the United States, a request is made by an attorney representing or acting under the authority of the United States, the Solicitor will make all necessary arrangements for the Office employee to give testimony on behalf of the United States. Where appropriate, the Solicitor may require reimbursement to the Office of the expenses associated with an Office employee giving testimony on behalf of the United States.

§ 15a.6 Legal proceedings between private litigants

(a) Testimony by an Office employee and production of documents in a legal proceeding not involving the United States shall be governed by § 15a.4.

(b) If an Office employee is authorized to give testimony in a legal proceeding, the testimony, if otherwise proper, shall be limited to facts within the personal knowledge of the Office employee. An Office employee is prohibited from giving expert or opinion testimony, answering hypothetical or speculative questions, or giving testimony with respect to subject matter which is privileged. If an Office employee is authorized to testify in connection with the employee's involvement or assistance in a quasi-judicial proceeding which took place before the Office, that employee is further prohibited from giving testimony in response to questions which seek:

(1) Information about that employee's:

(i) Background.

(ii) Expertise.

(iii) Qualifications to examine or otherwise consider a particular patent or trademark application.

(iv) Usual practice or whether the employee followed a procedure set out in any Office manual of practice in a particular case.

(v) Consultation with another Office employee.

(vi) Understanding of:

(A) A patented invention, an invention sought to be patented, or patent application, patent, reexamination or interference file.

(B) Prior art.

(C) Registered subject matter, subject matter sought to be registered, or a trademark application, registration, opposition, cancellation, interference or concurrent use file.

(D) Any Office manual of practice.

(E) Office regulations.

(F) Patent, trademark, or other law.

(G) The responsibilities of another Office employee.

(vii) Reliance on particular facts or arguments.

(2) To inquire into the manner in and extent to which the employee considered or studied material in performing the quasi-judicial function.

(3) To inquire into the bases, reasons, mental processes, analyses, or conclusions of that Office employee in performing the quasi-judicial function.

§ 15a.7 Procedures when an Office employee receives a subpoena.

(a) Any Office employee who receives a subpoena shall immediately forward the subpoena to the Office of the Solicitor. The Solicitor will determine the extent to which an Office employee will comply with the subpoena.

(b) If the Office employee is not authorized to comply with the subpoena, the Office employee shall appear at the time and

place stated in the subpoena, produce a copy of Part 15a of Title 15 and a copy of this part, and respectfully refuse to provide any testimony or produce any document. *United States ex rel. Touhy v. Ragen*, 340 U.S. 462 (1951).

(c) When necessary or appropriate, the Solicitor will request assistance from the Department of Justice or a U.S. Attorney or otherwise assure the presence of an attorney to represent the interests of the Office or an Office employee.

Dec. 23, 1988

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents
and Trademarks

Revisions to §§ 1701 and 1701.01 of MPEP

§ 1701 Office personnel not to express opinion on validity or patentability of patent

Every patent is presumed to be valid. 35 U.S.C. § 282, first sentence. Public policy demands that every employee of the Patent and Trademark Office refuse to express to any person any opinion as to the validity or invalidity of, or the patentability or unpatentability of any claim in any U.S. Patent, except to the extent necessary to carry out (a) examination of an application seeking to reissue the patent, (b) a reexamination proceeding to reexamine the patent, or (c) an interference involving the patent.

The question of validity or invalidity is otherwise exclusively a matter to be determined by a court. Members of the patent examining corps are cautioned to be especially wary of any inquiry from any person outside the Patent and Trademark Office, including an employee of another Government agency, the answer to which might indicate that a particular patent should not have issued.

When a field of search for an invention is requested, examiners should routinely inquire whether the invention has been patented in the United States. If the invention has been patented, no field of search should be suggested.

Employees of the Patent and Trademark Office, particularly patent examiners who examined an application which matured into a patent or a reissued patent or who conducted a reexamination proceeding, should not discuss or answer inquiries from any person outside the Patent and Trademark Office as to whether or not a certain reference or other particular evidence was considered during the examination or proceeding and whether or not a claim would have been allowed over that reference or other evidence had it been considered during the examination or proceeding. Likewise, employees are cautioned against answering any inquiry concerning any entry in the patent or reexamination file, including the extent of the field of search and any entry relating thereto. The record of the file of a patent or reexamination proceeding must speak for itself.

Practitioners can be of material assistance in this regard by refraining from making improper inquiries of members of the patent examining corps. Inquiries from members of the public relating to the matters discussed above must of necessity be refused and such refusal should not be considered discourteous or an expression of opinion as to validity or patentability.

§ 1701.01 Office personnel not to testify

[Reprint: 37 CFR 15a.1

37 CFR 15a.2

37 CFR 15a.3

37 CFR 15a.4

37 CFR 15a.5

37 CFR 15a.6

37 CFR 15a.7]

It is the policy of the Patent and Trademark Office that its employees, including patent examiners, will not appear as witnesses or give testimony in legal proceedings, except under the conditions specified in 37 CFR Part 15a. Any employee who testifies contrary to this policy will be *dismissed or removed*. The reasons for this policy are set out in 37 CFR 15a.3.

Whenever an employee of the Patent and Trademark Office, including a patent examiner, is asked to testify or receives a subpoena, the employee shall immediately notify the Office of

the Solicitor. Inquiries requesting testimony shall be also referred immediately to the Office of the Solicitor.

Patent examiners and other Patent and Trademark Office employees performing or assisting in the performance of quasi-judicial functions, are forbidden to testify as experts or to express opinions as to the validity of any patent.

Any individual desiring the testimony of an employee of the Patent and Trademark Office, including the testimony of a patent examiner or other quasi-judicial employee, must comply with the provisions of 37 CFR Part 15a.

A request for testimony of an employee of the Patent and Trademark Office should be made to the Office of the Solicitor at least *ten working days* prior to the date of the expected testimony.

If an employee is authorized to testify, the employee will be limited to testifying about facts within the employee's personal knowledge. Employees are prohibited from giving expert or opinion testimony. *Fischer & Porter Co. v. Corning Glass Works*, 61 F.R.D. 321, 181 USPQ 329 (E.D. Pa. 1974). Likewise, employees are prohibited from answering hypothetical or speculative questions. *In re Mayewsky*, 162 USPQ 86, 89 (E.D. Va. 1969) (deposition of an examiner must be restricted to relevant matters of fact and must avoid any hypothetical or speculative questions or conclusions based thereon); *Shaffer Tool Works v. Joy Mfg. Co.*, 167 USPQ 170 (S.D. Tex. 1970) (deposition of examiner should be limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the examiner in acting upon a patent application). Employees will not be permitted to give testimony with respect to subject matter which is privileged. Several court decisions limit testimony with respect to quasi-judicial functions performed by employees. Those decisions include *United States v. Morgan*, 313 U.S. 409, 422 (1941) (improper to inquire into mental processes of quasi-judicial officer or to examine the manner and extent to which the officer considered an administrative record); *Western Electric Co. v. Piezo Technology, Inc. v. Quigg*, 860 F.2d 428, 8 USPQ 2d 1853 (Fed. Cir. 1988) (patent examiner may not be compelled to answer questions which probe the examiner's technical knowledge of the subject matter of a patent); *McCulloch Gas Processing Co. v. Department of Energy*, 650 F.2d 1216, 1229 (Temp. Emer. Ct. App. 1981) (discovery of degree of expertise of individuals performing governmental functions not permitted); *In re Nilssen*, 851 F.2d 1401, 7 USPQ 2d 1500 (Fed. Cir. 1988) (technical or scientific qualifications of examiners-in-chief are not legally relevant in appeal under 35 U.S.C. § 134 since board members need not be skilled in the art to render obviousness decision); *Lange v. Commissioner*, 352 F. Supp. 166, 176 USPQ 162 (D.D.C. 1972) (technical qualifications of examiners-in-chief not relevant in § 145 action).

In view of the discussion above, if an employee is authorized to testify in connection with the employee's involvement or assistance in a quasi-judicial proceeding which took place before the Patent and Trademark Office, the employee will not be permitted to give testimony in response to questions which seek:

- (1) Information about that employee's:
 - (A) Background.
 - (B) Expertise.
 - (C) Qualifications to examine or otherwise consider a particular patent or trademark application.
 - (D) Usual practice or whether the employee followed a procedure set out in any Office manual of practice (including the MPEP or TMEP) in a particular case.
 - (E) Consultation with another Office employee.
 - (F) Understanding of:
 - (i) A patented invention, an invention sought to be patented, or patent application, patent, reexamination or interference file.
 - (ii) Prior art.
 - (iii) Registered subject matter, subject matter sought to be registered, or a trademark application, registration, opposition, cancellation, interference or concurrent use file.
 - (iv) Any Office manual of practice.
 - (v) Office regulations.
 - (vi) Patent, trademark, or other law.

(vii) The responsibilities of another Office employee. (G) reliance on particular facts or arguments.

(2) To inquire into the manner in and extent to which the employee considered or studied material in performing a quasi-judicial function.

(3) To inquire into the bases, reasons, mental processes, analyses, or conclusions of that Office employee in performing the quasi-judicial function.

Any request for testimony addressed or delivered to the Office of the Solicitor shall comply with 37 CFR 15a.4(c). All requests must be in writing. The need for a subpoena may be obviated where the request complies with 37 CFR 15a.4(c) if the party requesting the testimony further meets the following conditions:

(1) The party requesting the testimony identifies the civil action or other legal proceeding for which the testimony is being taken. The identification shall include:

- (a) the style of the case,
- (b) the civil action number,
- (c) the district in which the civil action is pending,
- (d) the judge assigned to the case, and
- (e) the name, address, and telephone number of counsel for all parties in the civil action.

(2) The party agrees not to ask questions seeking information which is precluded by 37 CFR 15a.6(b).

(3) The party shall comply with applicable provisions of the Federal Rules of Civil Procedure, including Rule 30, and give ten working days notice to the Office of the Solicitor prior to the date a deposition is desired. Fifteen working days notice is required for any deposition which is desired to be taken between Nov. 15 and Jan. 15.

(4) The party agrees to notice the deposition at a place convenient to the Patent and Trademark Office. The Conference Room in the Office of the Solicitor is deemed to be a place convenient to the Office.

(5) The party agrees to supply a copy of the transcript of the deposition to the Patent and Trademark Office for its records.

Absent a written agreement meeting the conditions specified in paragraphs (1) through (5), a party must comply with the precise terms of 37 CFR 15a.4(c) and the Patent and Trademark Office will not permit a deposition without issuance of a subpoena.

Revisions to §§ 1801 and 1801.01 of TMEP

§ 1801 Office personnel not to express opinion on validity of registered trademark

A certificate of registration of a trademark on the Principal Register is prima facie evidence of the validity of the registration. 15 U.S.C. § 1057(b). Public policy demands that every employee of the Patent and Trademark Office refuse to express to any person any opinion as to the validity of any registered trademark, except to the extent necessary to carry out *inter partes* proceedings at the Trademark Trial and Appeal Board in cancellation and similar proceedings authorized by law.

The question of validity of a registered trademark is otherwise exclusively a matter to be determined by a court. Members of the trademark examining operation are cautioned to be especially wary of any inquiry from any person outside the Patent and Trademark Office, including an employee of another Government agency, the answer to which might indicate that a particular registration should not have been published or issued.

Employees of the Patent and Trademark Office, particularly trademark examining attorneys who examined an application should not discuss or answer inquiries from any person outside the Patent and Trademark Office as to whether or not a certain registration or other particular evidence was considered during the examination of the application or whether a trademark would have been published or registered if the registration or other evidence had been considered during the examination. Likewise, employees are cautioned against answering any

inquiry concerning any entry in the trademark registration file, including the extent of the field of search and any entry relating thereto. The record of the file of a trademark registration or *inter partes* proceedings before the Trademark Trial and Appeal Board must speak for itself.

Practitioners can be of material assistance in this regard by refraining from making improper inquiries of members of the trademark examining operation. Inquiries from members of the public relating to the matters discussed above must of necessity be refused and such refusal should not be considered discourteous or an expression of opinion as to validity of any registration.

§ 1801.01 Office personnel not to testify

[Reprint: 37 CFR 15a.1

37 CFR 15a.2
37 CFR 15a.3
37 CFR 15a.4
37 CFR 15a.5
37 CFR 15a.6
37 CFR 15a.7]

It is the policy of the Patent and Trademark Office that its employees, including trademark examining attorneys, will not appear as witnesses or give testimony in legal proceedings, except under the conditions specified in 37 CFR Part 15a. Any employee who testifies contrary to this policy will be *dismissed* or *removed*. The reasons for this policy are set out in 37 CFR 15a.3.

Whenever an employee of the Patent and Trademark Office, including a trademark examining attorney, is asked to testify or receives a subpoena, the employee shall immediately notify the Office of the Solicitor. Inquiries requesting testimony shall be also referred immediately to the Office of the Solicitor.

Trademark examining attorneys and other Patent and Trademark Office employees performing or assisting in the performance of quasi-judicial functions, are forbidden to testify as experts or to express opinions as to the validity of any registration.

Any individual desiring the testimony of an employee of the Patent and Trademark Office, including the testimony of a trademark examining attorney or other quasi-judicial employee, must comply with the provisions of 37 CFR Part 15a.

A request for testimony of an employee of the Patent and Trademark Office should be made to the Office of the Solicitor at least *ten working days* prior to the date of the expected testimony.

If an employee is authorized to testify, the employee will be limited to testifying about facts within the employee's personal knowledge. Employees are prohibited from giving expert or opinion testimony. *Fischer & Porter Co. v. Corning Glass Works*, 61 F.R.D. 321, 181 USPQ 329 (E.D. Pa. 1974). Likewise, employees are prohibited from answering hypothetical or speculative questions. *In re Mayewsky*, 162 USPQ 86, 89 (E.D. Va. 1969) (deposition of an examiner must be restricted to relevant matters of fact and must avoid any hypothetical or speculative questions or conclusions based thereon); *Shaffer Tool Works v. Joy Mfg. Co.*, 167 USPQ 170 (S.D. Tex. 1970) (deposition of examiner should be limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the examiner in acting upon an application). Employees will not be permitted to give testimony with respect to subject matter which is privileged. Several court decisions limit testimony with respect to quasi-judicial functions performed by employees. Those decisions include *United States v. Morgan*, 313 U.S. 409, 422 (1941) (improper to inquire into mental processes of quasi-judicial officer or to examine the manner and extent to which the officer considered an administrative record); *Western Electric Co. v. Piezo Technology, Inc. v. Quigg*, 860 F.2d 428, 8 USPQ 2d 1583 (Fed. Cir. 1988) (patent examiner may not be compelled to answer questions which probe the examiner's technical knowledge of the subject matter of a patent); *McCulloch Gas Processing Co. v. Department of Energy*, 650 F.2d 1216, 1229 (Temp. Emer. Ct. App. 1981) (discovery of degree of expertise of individuals performing governmental functions not permitted); *In re Nilssen*, 851 F.2d 1401, 7 USPQ 2d 1500 (Fed. Cir. 1988) (technical or scientific qualifications of examiners-in-chief are not legally relevant in

appeal under 35 U.S.C. § 134 since board members need not be skilled in the art to render obviousness decision); *Lancev.-Commissioner*, 352 F. Supp. 166, 176 USPQ 162 (D.D.C. 1972) (technical qualifications of examiners-in-chief not relevant in Sec. 145 action).

In view of the discussion above, if an employee is authorized to testify in connection with the employee's involvement or assistance in a quasi-judicial proceeding which took place before the Patent and Trademark Office, the employee will not be permitted to give testimony in response to questions which seek:

(1) Information about that employee's:

- (A) Background.
- (B) Expertise.
- (C) Qualifications to examine or otherwise consider a particular patent or trademark application.
- (D) Usual practice or whether the employee followed a procedure set out in any Office manual of practice (including the MPEP or TMEP) in a particular case.
- (E) Consultation with another Office employee.

(F) Understanding of:

- (i) A patented invention, an invention sought to be patented, or patent application, patent, reexamination or interference file.
- (ii) Prior art.
- (iii) Registered subject matter, subject matter sought to be registered, or a trademark application, registration, opposition, cancellation, interference or concurrent use file.
- (iv) Any Office manual of practice.
- (v) Office regulations.
- (vi) Patent, trademark, or other law.
- (vii) The responsibilities of another Office employee.

(G) Reliance on particular facts or arguments.

(2) To inquire into the manner in and extent to which the employee considered or studied material in performing a quasi-judicial function.

(3) To inquire into the bases, reasons, mental processes, analyses, or conclusions of that Office employee in performing the quasi-judicial function.

Any request for testimony addressed or delivered to the Office of the Solicitor shall comply with 37 CFR 15a.4(c). All requests must be in *writing*. The need for a subpoena may be obviated where the request complies with 37 CFR 15a.4(c) only if the party requesting the testimony further meets the following conditions:

(1) The party requesting the testimony identifies the civil action or other legal proceeding for which the testimony is being taken. The identification shall include:

- (a) the style of the case,
- (b) the civil action number,
- (c) the district in which the civil action is pending,
- (d) the judge assigned to the case, and
- (e) the name, address, and telephone number of counsel for all parties in the civil action.

(2) The party agrees not to ask questions seeking information which is precluded by 37 CFR 15a.6(b).

(3) The party shall comply with applicable provisions of the Federal Rules of Civil Procedure, including Rule 30, and give ten working days notice to the Office of the Solicitor prior to the date a deposition is desired.

Fifteen working days notice is required for any deposition which is desired to be taken between Nov. 15 and Jan. 15.

(4) The party agrees to notice the deposition at a place convenient to the Patent and Trademark Office. The Conference Room in the Office of the Solicitor is deemed to be a place convenient to the Office.

(5) The party agrees to supply a copy of the transcript of the deposition to the Patent and Trademark Office for its records.

Absent a written agreement meeting the conditions specified in paragraphs (1) through (5), a party must comply with the

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precise terms of 37 CFR 15a.4(c) and the Patent and Trademark Office will not permit a deposition without issuance of a subpoena.

Feb. 7, 1989

FRED E. McKELVEY
Solicitor

[1099 OG 36]

(97) Department of Commerce
Patent and Trademark Office**United States Adherence to the
International Union for the Protection of New Varieties
of Plants (UPOV)**

On Nov. 12, 1980, the United States deposited its instrument of acceptance of the 1978 text of the UPOV Convention. The United States was the second State to adhere to this text, New Zealand having earlier done so.

The UPOV Convention will take effect with respect to the United States and the other adherents to the 1978 text upon a total of five adherences, three of which must be by present member States (States adhering to the text of the Convention). We expect at least three present member States to adhere shortly and the 1978 text to take effect, therefore, during 1981.

The United States deposited its instrument of acceptance on the basis of the legal protection offered for asexually reproduced plants under the plant patent law (35 U.S.C. 161-164). Accordingly, the Convention will apply only to asexually reproduced plants protected under this law. Steps are now being taken, however, by the Plant Variety Protection Office of the Department of Agriculture to conform the implementation of the Plant Variety Protection Act (7 U.S.C. 2321 et seq.) to the Convention's requirements. When this is done, the United States will notify the UPOV Secretariat that the Convention is also applicable in the United States to sexually reproduced plants protected under that Act.

Questions concerning the UPOV Convention may be directed to the Office of Legislation and International Affairs of the Patent and Trademark Office. This Office may be addressed as follows: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The Office's telephone number is (703) 557-3065.

Dec. 16, 1980

SIDNEY A. DIAMOND
Commissioner of Patents
and Trademarks

[1002 O.G. 102]

(98) Taking Effect in the United States
of the International Convention for
the Protection of New Varieties of Plants

The International Convention for the Protection of New Varieties of Plants (the UPOV Convention) will take effect in the United States on Nov. 8, 1981. It will apply to all applications for the patenting of plants under the provisions of Title 35, United States Code, which are filed on or after Nov. 8, 1981. The actual filing date will govern in determining whether the Convention will apply to an application, even though the application may be entitled to an earlier effective date under section 119 or 120 of Title 35, United States Code.

In addition to the United States, the UPOV Convention will be in effect as of Nov. 8, 1981, in the following fourteen States: Belgium, Denmark, Federal Republic of Germany, France, Ireland, Israel, Italy, Netherlands, New Zealand, Republic of South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

No changes in the patent law are needed to implement the UPOV Convention in the United States. An applicant for a plant patent will be required, however, to submit for registration a variety name for the plant to be patented. Registration is required by Article 13 of the UPOV Convention.

Registrability shall be determined in accordance with the International Code of Nomenclature for Cultivated Plants

OFFICIAL GAZETTE

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(1980). As an interim procedure pending the promulgation of an appropriate rule, inclusion of the variety name in the application will be accepted as a submission of the name for registration. No plant patent as a result of an application filed on or after Nov. 8, 1981, shall be issued without the registration of a variety name. Questions concerning this variety naming requirement or the UPOV Convention may be addressed to:

Mr. Michael K. Kirk, Director
Office of Legislation and
International Affairs Box 4
U.S. Patent and Trademark Office Washington, D.C. 20231

Mr. Kirk's telephone number is (703) 557-3065.

Oct. 15, 1981

GERALD J. MOSSINGHOFF
Commissioner of Patents
and Trademarks

[1011 O.G. 27]

(99) Patent and Trademark Office
37 CFR Part 10
Cross Appeals in Patent and Trademark**Office Disciplinary Proceedings**

Agency: Patent and Trademark Office, Commerce.

Action: Notice of proposed rulemaking.

Summary: The Patent and Trademark Office (PTO) proposes to amend its rules of practice in practitioner disciplinary proceedings. The proposed rule change provides for a time period for a party to a disciplinary proceeding to file a cross-appeal, after the other party (the respondent or the Director of the Office of Enrollment and Discipline) to the proceeding has appealed from an initial decision of the administrative law judge to the Commissioner. Currently, PTO rules do not provide for a time period for filing a cross-appeal in a disciplinary case. A party in a disciplinary case may be interested in appealing only if the other party has appealed. Allowing a time period for filing a cross-appeal will give parties to disciplinary cases more flexibility after an initial decision by the administrative law judge. A party need not file a contingent appeal simply to preserve rights in the event the other party files an appeal.

Dates: Written comments must be received on or before Aug. 20, 1993 to ensure consideration. An oral hearing will not be conducted.

Addresses: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of Fred E. McKelvey, Solicitor. Written comments will be available for public inspection in suite 918, on the 9th floor of Crystal Park II, located at 2121 Crystal Drive, Arlington, Va.

For Further Information Contact: Fred E. McKelvey by telephone at (703) 305-9035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Pursuant to 37 CFR § 10.132 et seq., the Director of the Office of Enrollment and Discipline within the PTO may initiate a disciplinary proceeding against a practitioner. If the proceeding is contested by the practitioner and the Director continues to prosecute, an administrative law judge for the Department of Commerce enters an initial decision which includes findings of fact, conclusions of law and an order. 37 CFR § 10.154.

Either party to the proceeding may appeal from the initial decision of the administrative law judge to the Commissioner within thirty (30) days of the date of the decision. 37 CFR § 10.155(a). However, § 10.155(a) does not currently address the filing of a cross-appeal. That is, no period of time is specified for the non-appealing party to file a cross-appeal.

With regard to interference proceedings, 37 CFR § 1.304(a) addresses the filing of cross-appeals by stating in pertinent part that:

the time for filing a cross-appeal [to the Court of Appeals for the Federal Circuit] or cross-action [in a district court] expires (1) 14 days after service of the notice of appeal or

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(100)

the summons and complaint or (2) two months after the date of decision of the Board of Patent Appeals and Interferences, whichever is later.

The proposed rule change is similar to the cross-appeal authorized in interference proceedings.

OTHER CONSIDERATIONS

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule change will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principle impact of the proposed change is to provide a time period to file a cross-appeal in a PTO disciplinary proceeding.

The PTO has determined that the proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The PTO has also determined that this notice has no federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The proposed rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 35 CFR Part 10

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements.

For the reasons set out in the preamble, and pursuant to the authority contained in 35 U.S.C. 6, the PTO proposes to amend 37 CFR part 10 as follows, wherein deletions are indicated by brackets ([]) and additions by arrows (▶◀):

**PART 10-REPRESENTATION OF OTHERS BEFORE THE
PATENT AND TRADEMARK OFFICE**

1. The authority citation for 37 CFR part 10 would continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

2. Section 10.155 is proposed to be amended by revising paragraph (a) to read as follows:

§ 10.155 Appeal to the Commissioner

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under § 10.154, either party may appeal to the Commissioner. ▶If an appeal is taken, the time for filing a cross-appeal expires (1) 14 days after service of the appeal or (2) 30 days after the date of the initial decision of the administrative law judge, whichever is later. ▶An appeal ▶or cross-appeal▶ by the respondent will be filed with the Director in duplicate and will include exceptions to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal ▶or cross-appeal▶, the director shall serve a copy of the appeal ▶or cross-appeal▶, within thirty (30) days after receipt of an appeal ▶, cross-appeal▶ or copy thereof, the other party may file a reply brief, in duplicate with the Director. If the Director files the reply brief, the Director shall serve a copy of the reply brief. Upon the filing of an appeal ▶, cross-appeal▶ or copy thereof, the other party may file a reply brief, in duplicate with the Director. If the Director files the reply brief, the Director

shall serve a copy of the reply brief. Upon the filing of an appeal ▶, cross-appeal, if any,▶ and [a] reply brief ▶s▶, if any, the Director shall transmit the entire record to the Commissioner.

July 15, 1993

MICHAEL K. KIRK
Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks

[1153 OG 32]

(100) Department of Commerce
Patent and Trademark Office
37 CFR Part 501

[Docket No. 80627-8127]

**Uniform Patent Policy for Domestic
Rights in Inventions Made by Government Employees**

Agency: Under Secretary for Economic Affairs, Department of Commerce.

Action: Final rule.

Summary: Executive Order 10096, as amended by Executive Order 10930, sets forth the policies and procedures for determining the rights in Federal employee inventions with respect to the Federal employee and the Government employer. The Delegation of Authority from the Secretary of Commerce dated Sept. 15, 1988 and effective Nov. 1, 1988, transferred administration of the provisions of Executive Order 10096 as amended by Executive Order 10930 from the Commission of Patents and Trademarks to the Under Secretary for Economic Affairs in the Department of Commerce. This final rule establishes 37 CFR Part 501 which sets forth this delegation of authority to the Under Secretary. In addition, each Government agency is authorized to determine whether the results of research, development or other activity constitute an invention with the purview of Executive Order 10096, as amended by Executive Order 10930 and to determine initially the rights therein in accordance with the provisions of section 501.6 and 501.7 herein. By separate notice in today's *Federal Register* the Patent and Trademark Office is deleting 37 CFR Part 100.

Effective Date: Nov. 1, 1988.

However, all rights, determinations, and appeals submitted to the Commissioner prior to the effective date, will be reviewed by the Commissioner under the procedures of 37 CFR Part 100.

Address: Comments may be sent to Mr. Joseph P. Allen, Acting Director, Federal Technology Management Division, Office of the Under Secretary for Economic Affairs, United States Department of Commerce, Room 4839, Herbert C. Hoover Bldg., Washington, D.C. 20230.

For Further Information Contact: Mr. Joseph P. Allen, by telephone at (202) 377-8100 or Robert B. Ellert by telephone at (202) 377-5394.

Supplementary Information: Executive Order 10096, as amended by Executive Order 10930, sets forth the policies and procedures for determining the rights in Federal Employee inventions with respect to the Federal employer and the Government employer. The Under Secretary for Economic Affairs of the Department of Commerce was delegated responsibility for oversight of the Executive Order on Sept. 15, 1988. Functions required by the Executive Order were previously performed by the Commissioner of Patents and Trademarks. This final rule is substantially the same as the rule set out in 37 CFR Part 100, except, the Secretary of Commerce is substituted for the Commissioner of Patents and Trademarks, and advance approval is given to agency heads to make final determinations relating to determinations of rights decisions of Government employee inventions, subject to employee appeal to the Secretary.

President Reagan in Executive Order 12591, on April 10, 1987 directed all Government agencies to facilitate the transfer of technology developed at federal laboratories to the private

sector and to promote its commercialization. To accomplish the goals of E.O. 12591 it is necessary that rights to inventions made by government employees be determined as expeditiously as possible. Accordingly, the Secretary has reviewed the existing procedures and policies under 37 CFR Part 100 and concluded that administration of the functions thereunder could be performed on a more efficient basis by confining the role of the Department of Commerce to appeals by employees from disputed agency determinations. Accordingly, under 37 CFR Part 501, each Government agency is given the authority to determine whether the results of research, development or other activities within the agency constitute an invention by an employee, and to determine initially the rights relating to ownership within the provisions of Executive Order 10096 as amended by Executive Order 10930. If no appeal is taken to the secretary by an employee under section 501.8, the initial determination of the agency will be final.

Notwithstanding the fact that this is a final rule, comments are requested.

Because this rule concerns agency management and personnel, it is not a rule or regulation within the meaning of section 1(a) of Executive Order 12291, and it is not subject to the requirements of the Order. Accordingly, no preliminary or final regulatory impact analysis has to be or will be prepared.

Because notice of proposed rulemaking and an opportunity for public comments are not required to be given for this rule by section 553 of the Administrative Procedure Act (5 U.S.C. 553), or by any other law, no regulatory flexibility analysis has to be or will be prepared for purposes of the Regulatory Act (5 U.S.C. 603(a) and 604(a)).

This final rule does not contain policies with Federalism implications sufficient to warrant preparation of a Federalism assessment under Executive Order 12612. This rule does not contain collections of information for purposes of the Paperwork Reduction Act.

The changes in the process of determining employee rights to inventions made by this rule do not have takings implications sufficient to require preparation of a Taking Implications Assessment under Executive Order 12630.

List of Subjects in 37 CFR Part 501

Uniform patent policy, domestic Rights in inventions, Inventions made by Government employees.

Oct. 3, 1988

ROBERT ORTNER
*Under Secretary for
Economic Affairs*

* * * * *

For reasons set forth in the preamble 37 CFR is amended by adding Chapter V, consisting of Part 501, to read as follows:

CHAPTER V UNDER SECRETARY FOR ECONOMIC AFFAIRS, DEPARTMENT OF COMMERCE

PART 501 UNIFORM PATENT POLICY FOR DOMESTIC RIGHTS IN INVENTIONS MADE BY GOVERNMENT EMPLOYEES

Sec.

501.1 Purpose.

501.2 Scope.

501.3 Definitions.

501.4 Determination of Inventions and Rights therein.

501.5 Agency Liaison Officer.

501.6 Criteria for The Determination of Rights in and to Inventions.

501.7 Agency Determination.

501.8 Appeals by employees.

501.9 Patent protection.

501.10 Dissemination of this part and of implementing regulations.

Authority: Sec. 4, E.O. 10096, 3 CFR 1949-1953 Comp., p. 292, as amended by E.O. 10930, 3 CFR 1959-1963 Comp., p.

456; and Delegation of Authority by the Secretary of Commerce, Sept. 15, 1988, DOO 10-9.

§ 501.1 Purpose

The purpose of this part is to provide for the administration of a uniform patent policy for the Government with respect to the domestic rights in inventions made by Government employees and to prescribe rules and regulations for implementing and effectuating such policy.

§ 501.2 Scope

This part applies to any invention made by a Government employee and to any action taken with respect thereto.

§ 501.3 Definitions

(a) The term "Secretary," as used in this part, means the Under Secretary of Commerce for Economic Affairs.

(b) The term "Government agency" as used in this part, means and Executive department or independent establishment of the Executive branch of the Government (including any independent regulatory commission or board, any corporation wholly owned by the United States, and the Smithsonian Institution), but does not include the Department of Energy for inventions made or conceived under the provisions of 42 U.S.C. 2182.

(c) The term "Government employee," as used in this part, means any officer or employee, civilian or military, of any Government agency, including any part-time consultant or part-time employee except as may otherwise be provided for by agency regulation approved by the Secretary.

(d) The term "invention," as used in this part, means any art, machine, manufacture, design or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the Patent laws of the United States.

§ 501.4 Determination of Inventions and rights therein.

Each Government agency has the approval of the Secretary to determine whether the results of research, development, or other activity in the agency constitute an invention within the purview of E.O. 10096, as amended by E.O. 19030 and to determine the rights therein in accordance with the provisions of § 501.6 and 501.7 herein.

§ 501.5 Agency Liaison Officer

Each Government agency shall designate a liaison officer to represent the agency before the secretary. Provided, however, that the Departments of the Army, the Navy, and the Air Force may each designate a liaison officer.

§ 501.6 Criteria for the Determination of Rights In and To Inventions.

(a) The following rules shall be applied in determining the respective rights of the Government and of the inventor in and to any invention that is subject to the provisions of this part:

(1) The Government shall obtain, except as herein otherwise provided, the entire domestic right, title and interest in and to any invention made by any Government employee:

(i) During working hours, or

(ii) With a contribution by the Government of facilities, equipment, materials, funds or information, or of time or services or other Government employees on official duty, or

(iii) Which bears a direct relation to or is made in consequence of the official duties of the inventor.

Foreign patent rights are governed by the provisions of 37 CFR Part 101.

(2) In any case where the contribution of the Government, as measured by any one or more of the criteria set forth in paragraph (a)(1) of this section, to the inventor is insufficient

equitable to justify a requirement of assignment to the Government of the entire domestic right, title, and interest in and to such invention, or in any case where the Government has insufficient interest in an invention to obtain the entire domestic right, title, and interest therein (although the Government could obtain same under paragraph (a)(1) of this section), the Government agency concerned shall leave title to such invention in the employees subject however, to the reservation of the government of a non-exclusive, irrevocable, royalty-free license in the invention with power to grant licenses for all governmental purposes, such reservation, in the terms thereof, to appear, where practicable, in any patent, domestic or foreign, which may issue on such invention. Reference is made to section 15 of the Federal Technology Transfer Act of 1986 (15 U.S.C. 3710d) which requires a Government agency to allow the inventor to retain title to any covered invention where the agency does not intend to file a patent application or otherwise promote commercialization.

(3) In applying the provisions of paragraph (a)(1) and (2) of this section to the facts and circumstances relating to the making of a particular invention it shall be presumed that an invention made by an employee who is employed or assigned:

(i) To invent or improve or perfect any art, machine, design, manufacture or composition of matter.

(ii) To conduct or perform research, development work, or both

(iii) To supervise, direct, coordinate, or review Government financed or conducted research, development work, or both, or

(iv) To act in a liaison capacity among governmental or non-governmental agencies or individuals engaged in such research or development work, falls within the provisions of paragraph (a)(1) of this section, and shall be presumed that any invention made by any other employee falls within the provision of paragraph (a)(2) of this section. Either presumption may be rebutted by a showing of the facts and circumstances in the case and shall not preclude a determination that these facts and circumstances justify leaving the entire right, title, and interest in and to the invention in the Government employees, subject to the law.

(4) In any case wherein the Government neither:

(i) Obtains the entire domestic right, title and interest in and to an invention pursuant to the provisions of paragraph (a)(1) of this section nor

(ii) Reserves a non-exclusive, irrevocable, royalty-free license in the invention, with power to grant licenses for all governmental purposes, pursuant to the provisions of paragraph (a)(2) of this section.

The Government shall leave the entire right, title and interest in and to the invention in the government employee, subject to law.

§ 501.7 Agency determination.

(a) If the agency determines that the Government is entitled to obtain title pursuant to § 501.6(a)(1) and the employee does not appeal, no further review is required.

(b) In the event that a Government agency determines, pursuant to paragraph (a)(2) or (a)(4) of § 501.6, that title to an invention shall be left with the employee, the agency shall notify the employee of this determination.

(c) In the case of a determination under either paragraph (a) or (b) of this section, the agency shall promptly prepare, and preserve in appropriate files, accessible to the Secretary, a written, signed, and dated statement concerning the invention including the following:

(1) A description of the invention in sufficient detail to identify the invention and show its relationship to the employee's duties and work assignments;

(2) The name of the employee and employee status, including a detailed statement of official duties and responsibilities at the time the invention was made, and

(3) An explanation of the agency determination and reasons therefor. The agency shall, subject to considerations of national security, or public health, safety, or welfare, submit to the Secretary, if an appeal is taken, a copy of this written statement.

§ 501.8 Appeals by employees.

(a) Any Government employee who is aggrieved by a Government agency determination pursuant to § 501.6(a)(1) or (a)(2), may obtain a review of any agency determination by filing, within 30 days (or such longer period as the Secretary may, for good cause shown in writing, fix in any case) after receiving notice of such determination, two copies of an appeal with the Secretary. The Secretary shall then forward one copy of the appeal to the Government agency.

(b) On receipt of a copy of an appeal filed pursuant to paragraph (a) of this section, the agency official who made the agency determination being appealed shall, subject to considerations of national security or public health, safety, or welfare, promptly furnish both the Secretary and the inventor with a copy of a report containing the following information about the invention involved in the appeal:

(1) A copy of a statement by the agency containing the information specified in § 501.7, and

(2) A detailed statement of the points of dispute or controversy, together with copies of any statements or written arguments filed with the agency, and of any other relevant evidence that the agency considered in making its determination of Government interest. Within 25 days (or such longer period that the Secretary may, for good cause shown, fix in any case) after the transmission of a copy of the agency report of the employee, the employee may file a reply thereto with the Secretary and file one copy thereof with the appropriate agency decision maker.

(c) After the time for the inventor's reply to the Government agency's report has expired and if the inventor has so requested in his or her appeal, a date will be set for hearing of oral arguments before the Secretary, by the employee (or by an attorney whom he or she designates by written power of attorney filed before, or at the hearing) and a representative of the Government agency involved. Unless it shall be otherwise ordered before the hearing begins, oral arguments shall be limited to thirty minutes for each side. The employee need not retain an attorney or request an oral hearing to secure full consideration of the facts and his or her arguments. The employee may expedite such consideration by notifying the Secretary when he or she does not intend to file a reply to the agency report.

(d) After a hearing on the appeal, if a hearing was requested, or after expiration of the period for the inventor's reply to the agency report if no hearing is set, the Secretary shall issue a decision on the matter within 120 days, which decision shall be final after a thirty day period for requesting reconsideration expires or on the date that a decision on a petition for reconsideration is finally disposed of. Any request for reconsideration or modification of the decision must be filed within 30 days from the date of the original decision (or within such an extension thereof as may be set by the Secretary before the original period expires). The decision of the Secretary shall be made after consideration of the statements of fact in the employee's appeal, the agency's report, and the employee's reply, but the Secretary at his or her discretion and with due respect to the rights and convenience of the inventor and the Government agency, may call for further statements on specific questions of fact or may request additional evidence in the form of affidavits or depositions on specific facts in dispute.

§ 501.9 Patent protection.

(a) A Government agency, upon determination that an invention coming within the scope of § 501.6(a)(1) or (a)(2) has been made, shall thereupon determine whether patent protection will be sought in the United States by the Agency for such invention. A controversy over the respective rights of the Government and the employee in any case shall not delay the taking of the actions provided for in this section. In cases coming within the scope of § 501.6(a)(2), agency action looking toward

such patent protection shall be contingent upon the consent of the employee.

(b) Where there is an appealed dispute as to whether § 501.6(a)(1) or (a)(2) applies in determining the respective rights of the Government and of an employee in and to any invention, the agency will determine whether patent protection will be sought in the United States pending the Secretary's decision on the dispute and, if it decides that an application for patent should be filed, will take such rights as are specified in § 501.6(a)(2), but this shall be without prejudice to acquiring the rights specified in paragraph (a)(1) of that section should the Secretary so decide.

(c) Where an agency has determined to leave title to an invention with an employee under § 501.6(a)(2), the agency will, upon the filing of an application for patent take the rights specified in that paragraph without prejudice to the subsequent acquisition by the Government of the rights specified in paragraph (a)(1) of that section should the Secretary so decide.

§ 501.10 Dissemination of this part and of implementing regulations.

Each Government agency shall disseminate to its employees the provisions of this part, and any appropriate implementing agency regulations and decisions. Copies of any such regulations shall be sent to the Secretary. If the Secretary identifies an inconsistency between this part and the agency regulations or delegation, the agency, upon being informed by the Secretary of the inconsistency, shall take prompt action to correct it.

[F.R. Doc. 88-23239 Filed 10-7-88; 8:45 am]
Billing Code 3510-EA-M

(101) Practitioner's Responsibility to Avoid Prejudice to the Rights of a Client/Patent Applicant

Under 37 CFR Part 10, a practitioner is responsible for taking reasonable steps to avoid foreseeable prejudice to the rights of a client/patent applicant. This responsibility exists in all circumstances including those where the practitioner is operating through a corporate liaison or foreign agent and has no direct contact with the client/patent applicant, who in most cases is the one being represented.

This notice is intended to clarify the appropriate course of action for a practitioner to follow when the practitioner is operating through such a corporate liaison or foreign agent. In such arrangements, the registered practitioner may rely upon the advice of the corporate liaison or the client/patent applicant's foreign agent as to the action to be taken so long as the practitioner is aware that the client/patent applicant has consented after full disclosure to be represented by the liaison or agent. It will be assumed by the Patent and Trademark Office that the client/patent applicant has an agreement with the liaison or agent, arrived at after full disclosure, to be represented by the liaison or agent. Registered practitioners, if they wish, however, may maintain a copy of the agreement in this regard between the client/patent applicant and the liaison or agent in practitioner's file of the application or other proceeding before the Office. If there is, in fact, no such agreement between the client/patent applicant and the liaison or agent, the registered practitioner must communicate to the client/patent applicant.

In circumstances where the practitioner is aware that there is an agreement between the client/patent applicant and the liaison or agent, the practitioner may fully rely upon the advice of the liaison or agent as to the wishes of the client/patent applicant. For example, if the registered practitioner is instructed by the client/patent applicant's liaison or agent to allow an application to go abandoned rather than to respond to an Office action within a set period for response, the practitioner may properly do so without any further notice to the client/patent applicant.

It is assumed that withdrawal from employment by a practitioner will remain a relatively rare occurrence, particularly in view of this clarification. This notice should not be taken to require or encourage withdrawal. If a practitioner should decide to withdraw, however, the practitioner must take reasonable steps to avoid foreseeable prejudice to the rights of the client/

patent applicant including allowing time for employment of another practitioner (37 CFR 10.40). Therefore, at least thirty days would be required between the date of approval by the Office of the withdrawal and the later of the expiration date of the response period or the expiration date of the period which can be obtained by a petition for extension of time and fee under 37 CFR 1.136(a). This is necessary so that the client/patent applicant would have sufficient time to obtain other representation or to take other action. If a period has been set for response and the period may be extended without a showing of cause pursuant to 37 CFR 1.136(a) by filing a petition for extension of time and fee, the practitioner will not be required to seek such extension of time for withdrawal to be approved. In such a situation, however, withdrawal will not be approved unless at least thirty days would remain between the date of approval and the last date on which such a petition for extension of time and fee could properly be filed.

Dec. 10, 1987

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents
and Trademarks

[1086 OG 457]

(102) Responsibilities of Practitioners Representing Clients in Proceedings Before The Patent and Trademark Office

This notice is intended to remind practitioners of certain aspects of their responsibilities in representing clients in proceedings before the Office. The Notice is also intended to supplement the discussion set forth in the *Official Gazette* Notice published at 1086 *Official Gazette* 457 (Jan. 12, 1988) entitled "Practitioner's Responsibility to Avoid Prejudice to the Rights of a Client/Patent Applicant" and to amplify and supersede the Helpful Hint published at 1084 *Official Gazette* 34 (Nov. 24, 1987) titled "Correspondence Address and/or Fee Address of Maintenance Fees."

Part 10 of title 37, Code of Federal Regulations, sets forth the Patent and Trademark Office (PTO) Code of Professional Responsibility. Each attorney or agent who practices before the PTO is subject to the rules set forth in Part 10 and should carefully study the rules promulgated originally published at 50 *Federal Register* 5158 (Feb. 6, 1985) and at 1052 *Official Gazette* 4 (Mar. 5, 1985) and reproduced as item number 172 in the Consolidated Listing of *Official Gazette* Notices, published at 1086 *Trademark Official Gazette* 3 (Jan. 5, 1988).

Practitioner's Client

During the promulgation of Part 10, 37 CFR, several individuals suggested that "it may be difficult to determine the identity of the 'client' . . . particularly in corporate patent departments." The response to that suggestion was that "[t]he PTO will presume that practitioners know the identities of their clients . . ." 50 *Federal Register* 5163 (Feb. 6, 1985); 1086 *Trademark Official Gazette* 356 (Jan. 5, 1988). For example, in a patent application, practitioner's client is ordinarily the inventor who gives practitioner a power of attorney to prosecute the application (37 CFR 1.31). A practitioner may represent only the assignee of the entire interest in a patent application if the assignee has filed a power of attorney and the assignee is conducting the prosecution of the application to the exclusion of the inventor. (37 CFR 1.32).

In the promulgation of Part 10, 37 CFR, a commenter raised a question of who is the client when an application is filed on behalf of an individual, but the individual's assignee pays practitioner's bill. The question was answered in the following manner:

"Practitioners are expected to know the identities of their clients. If a practitioner is hired by a corporation and wishes to make that fact plain on the record of a patent application, the practitioner may file an assignment and a power of attorney signed by the assignee. If a dispute should then occur between the individual and the assignee, the record would be clear that the assignee is the client." 50 *Federal*

Register 5164 (Feb. 6, 1985); 1086 *Trademark Official Gazette* 357 (Jan. 5, 1988).

In some instances, practitioners deal with a corporate liaison or foreign agent. Such arrangements do not automatically change the person whom practitioner represents, e.g., the inventor or trademark owner. The fact that a U.S. practitioner receives instructions from the inventor or trademark owner through a foreign attorney or agent does not change the fact that the client is still the inventor or trademark owner rather than the foreign attorney or agent. See *Strojirensvi v. Toyoda*, 2 USPQ 2nd 1222 (Comm'r Pat. 1986), which at 1223 cited *Yetter Manufacturing Co. v. Hiniker Co.*, 213 USPQ 119, 120 (D. Minn. 1981) for the principle that "when attorney served as local counsel for a law firm representing Hiniker Co., the attorney represented Hiniker and not the law firm" and also cited *Toulmin v. Becker*, 105 USPQ 511 (Ohio Ct. App. 1954) for the principle that "foreign patent agents or attorneys were not clients of U.S. patent attorney." The PTO expects practitioners to know the identities of their clients and to take reasonable steps to avoid foreseeable prejudice to the rights of their clients.

Obtaining Instructions Through Persons Other Than The Client

In practice, it is common for instructions relating to the application of an inventor or trademark owner, who is the client of the U.S. practitioner, to be passed to the U.S. practitioner through intermediaries, such as corporate liaisons or foreign agents. Clearly, a client may choose to use a corporate liaison or a foreign agent to convey instructions, etc., to a practitioner. In such an arrangement, the practitioner may rely upon instructions of, and accept compensation from, the corporate liaison or the foreign agent as to the action to be taken in a proceeding before the Office so long as the practitioner is aware that the client has consented to have instructions conveyed through the liaison or agent. See 37 CFR 10.68(a) and (b). An agreement between the client and the liaison or agent establishes an agency relationship between the liaison or agent and the client such that the U.S. practitioner can rely upon the liaison or agent as the representative of the client for the purpose of communicating the client's instructions about the proceeding to the U.S. practitioner. The PTO will assume that the client has an agreement with the liaison or agent to be represented by the liaison or agent. It is the responsibility of the client to notify the practitioner that the agency relationship between the client and the liaison or agent has ceased to exist and that instructions from the liaison or agent should no longer be accepted.

A practitioner could secure evidence that such an agreement exists by having a patent or trademark applicant sign a statement to that effect at the same time that the power of attorney is executed. For example, the following language could be inserted in an oath, declaration, or power of attorney form:

"The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned."

Without an agency relationship between the liaison or agent and the client, a practitioner would be bound by 37 CFR 10.68(b) to "not permit a person who recommends, employs, or pays the practitioner to render legal services for another, to direct or regulate the practitioner's professional judgment in rendering such legal services."

Practitioner's Responsibility to a Client After the Client's Patent Issues or Trademark is Registered

The Office has received inquiries from practitioners as to their responsibilities to a client (patent or trademark applicant) after the client's patent was issued or trademark has been registered. In response thereto, it is pointed out that a power of attorney given during prosecution of a patent or trademark application is considered to be viable after the patent is issued

or the trademark is registered. See 50 *Federal Register* 5164 (Feb. 6, 1985); 1086 *Trademark Official Gazette* 357 (Jan. 5, 1988). While the Office considers such a power of attorney to be viable for purposes of the practitioner taking actions in proceedings before the Office if practitioner and the client so desire, the existence of the power of attorney to file and/or prosecute the application through issuance of the patent or registration of the trademark does not establish whether practitioner has a responsibility, and a duty affirmatively in a proceeding before the Office on behalf of the client after the patent issues or the trademark is registered.

Practitioner's responsibility to take affirmative action in a proceeding before the Office after the patent issues or the trademark is registered depends upon whether practitioner still has a practitioner-client relationship with the client which has continued after the patent issued or trademark is registered. The mere existence of the power of attorney to file and/or prosecute the application through issuance of the patent or registration of the trademark would not establish such a practitioner-client relationship in the absence of other facts establishing such a relationship since the purpose for which the power of attorney was originally given has been accomplished.

Practitioner's Responsibility to a Former Client

While practitioner may no longer have a practitioner-client relationship with a client and therefore has no duty to represent the client in a proceeding before the Office, a practitioner nevertheless has certain obligations to a former client. These obligations are placed upon practitioner by the Office rules and are necessary for the proper conduct of proceedings before the Office. Under 37 CFR 10.23(c)(8), practitioners have a duty to inform a client or former client or timely notify the Office of an inability to notify a client or former client of certain correspondence received from the Office and also from the client's or former client's opponent in an *inter partes* proceeding before the Office. Practitioners have an obligation whether the client is a present client or a former client. Included among the items of correspondence of which practitioners have the obligation to inform clients or former clients are notices regarding maintenance fees, reexamination proceedings, and institution of *inter partes* patent and trademark proceedings.

Address to Which Correspondence is Sent Regarding Patent Maintenance Fees and Reexamination Proceedings

Under 37 CFR 1.33(d), a "correspondence address" or a change thereto may be filed with the Office during the enforceable life of a patent. This "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified solely for maintenance fee purposes as provided by 37 CFR 1.363. Practitioners who do not wish to receive correspondence relating to maintenance fees must change the correspondence address in the patented file or provide the PTO with a fee address to which the correspondence should be sent. It is not required that a practitioner file a request for permission to withdraw pursuant to 37 CFR 1.36 solely for the purpose of changing the correspondence address in a patent even though a withdrawal of a practitioner would change the correspondence address.

Since 37 CFR 1.33(c) specifies that all notices, official letters and other communications for the patent owner or owners in a reexamination proceeding will be directed to the attorney or agent of record in the patent file, a request for permission to withdraw pursuant to 37 CFR 1.36 must be filed in the patent if the attorney or agent of record does not desire to receive correspondence relating to reexamination. For information on requests to withdraw, see the discussion in the Jan. 12, 1988 *Official Gazette* Notice cited above.

Contact Points For Information

If a practitioner has questions about the conduct of, or requirements relating to a particular proceeding before the Office, those questions should be directed to the particular area of the Office responsible for the proceeding. If practitioners have questions about their responsibilities to their clients, those questions should be directed to the Office of Enrollment and

Discipline. The telephone number of that Office is (703) 557-2012.

May 25, 1988

DONALD J. QUIGG
*Assistant Secretary and Commissioner
of Patents and Trademarks*

[1091 OG 26]

(103)

Department of Commerce
Patent and Trademark Office
37 CFR § 1.15
[Docket No. 80515 - 8209]

Requests for Identifiable Records

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.

Summary: This final rule sets forth changes that the Patent and Trademark Office (PTO) is making to the rules governing requests for records not disclosed to the public as part of the regular informational activity of the PTO. The prior rule sets out the PTO Freedom of Information Act (FOIA) procedures. The final rule updates these procedures and specifies that FOIA requests will be processed in accordance with Department of Commerce regulations contained in Part 4 of 15 CFR (Public Information).

Effective Date: Dec. 30, 1988.

For Further Information Contact: Albin F. Drost by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: As presently written, 37 CFR 1.15 describes procedures for obtaining documents under the Freedom of Information Act that have been superseded. The purpose of this rule change is to bring the PTO FOIA procedures into conformity with the Department of Commerce FOIA rules. The final rule directly advises requesters that the PTO will follow the Department of Commerce rules for disclosure of information under FOIA.

A notice of proposed rulemaking was published on July 19, 1988 (53 Fed. Reg. 27 177). Interested parties were requested to submit written comments on or before Sept. 20, 1988. No comments were received.

Other Considerations

This rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources. This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. § 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities [Regulatory Flexibility Act, Pub. L. 96-354] because no increase in fees or paperwork should result from this rule change.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12991. The annual effect to the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The PTO has also determined that this notice has no federalism implications affecting the relationship between the

National Government and the states as outlined in Executive Order 12612.

The rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. § 3501 et seq., since no record keeping or reporting requirement within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Records.

For the reasons set out in the preamble and under the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. § 6, the Patent and Trademark Office amends Title 37 of the Code of Federal Regulations as set forth below:

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

AUTHORITY: 35 U.S.C. § 6 unless otherwise noted.

2. Section 1.15 is revised as follows:

§ 1.15 Requests for identifiable records.

(a) Requests for records, not disclosed to the public as part of the regular informational activity of the Patent and Trademark Office and which are not otherwise dealt with in the rules in this part, shall be made in writing, with the envelope and the letter clearly marked "Freedom of Information Request." Each such request, so marked, should be submitted by mail addressed to the "Patent and Trademark Office, Freedom of Information Request Control Desk, Box 8, Washington, D.C. 20231," or hand delivered to the Office of the Solicitor, Patent and Trademark Office, Arlington, Virginia. The request will be processed in accordance with the procedures set forth in Part 4 of Title 15, Code of Federal Regulations.

(b) Any person whose request for records has been initially denied in whole or in part, or has not been timely determined, may submit a written appeal as provided in § 4.8 of Title 15, Code of Federal Regulations.

(c) Procedures applicable in the event of service of process or in connection with testimony of employees on official matters and production of official documents of the Patent and Trademark Office in civil legal proceedings not involving the United States shall be those established in parts 15 and 15a of Title 15, Code of Federal Regulations.

Nov. 21, 1988

DONALD J. QUIGG
*Assistant Secretary and
Commissioner of Patents
and Trademarks*

[1097 OG 15]

(104)

Patent Cooperation Treaty Update**Accession by Mexico**

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Mexico deposited its instrument of accession to the Patent Cooperation Treaty (PCT) on October 1, 1994. Mexico will become the 74th Contracting State of the PCT on January 1, 1995. Consequently, nationals and residents of Mexico are entitled to file international applications under the PCT on and after January 1, 1995, and from the same date it is possible to file international applications designated and electing Mexico (country code: MX).

Listing of PCT Member Countries

Country	Instrument	Date of Deposit of Instrument	Entry into Force ¹
(1) Central African Republic ²	Accession	15 September 1971	24 January 1978
(2) Senegal ²	Ratification	08 March 1972	24 January 1978
(3) Madagascar	Ratification	27 March 1972	24 January 1978
(4) Malawi	Accession	16 May 1972	24 January 1978
(5) Cameroon ²	Accession	15 March 1973	24 January 1978
(6) Chad ²	Accession	12 February 1974	24 January 1978
(7) Togo ²	Ratification	28 January 1975	24 January 1978
(8) Gabon ²	Accession	06 March 1975	24 January 1978
(9) United States of America	Ratification	26 November 1975	24 January 1978
(10) Germany ³	Ratification	19 July 1976	24 January 1978
(11) Congo ²	Accession	08 August 1977	24 January 1978
(12) Switzerland ³	Ratification	14 September 1977	24 January 1978
(13) United Kingdom ³	Ratification	24 October 1977	24 January 1978
(14) France ³	Ratification	25 November 1977	25 February 1978
(15) Russian Federation	Ratification	29 December 1977	29 March 1978
(16) Brazil	Ratification	09 January 1978	09 April 1978
(17) Luxembourg ³	Ratification	31 January 1978	30 April 1978
(18) Sweden ¹	Ratification	17 February 1978	17 May 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark ³	Ratification	01 September 1978	01 December 1978
(21) Austria ³	Ratification	23 January 1979	23 April 1979
(22) Monaco ³	Ratification	22 March 1979	22 June 1979
(23) Netherlands ³	Ratification	10 April 1979	10 July 1979
(24) Romania	Ratification	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein ³	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium ³	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982
(33) Mauritania ²	Accession	13 January 1983	13 April 1983
(34) Sudan	Accession	16 January 1984	16 April 1984
(35) Bulgaria	Accession	21 February 1984	21 May 1984
(36) Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37) Mali ²	Accession	19 July 1984	19 October 1984
(38) Barbados	Accession	12 December 1984	12 March 1985
(39) Italy ³	Ratification	28 December 1984	28 March 1985
(40) Benin ²	Accession	26 November 1986	26 February 1987
(41) Burkina Faso ²	Accession	21 December 1988	21 March 1989
(42) Spain ³	Accession	16 August 1989	16 November 1989
(43) Canada	Ratification	02 October 1989	02 January 1990
(44) Greece ³	Accession	09 July 1990	09 October 1990
(45) Poland	Accession	25 September 1990	25 December 1990
(46) Côte d'Ivoire ²	Ratification	31 January 1991	30 April 1991
(47) Guinea ²	Accession	27 February 1991	27 May 1991
(48) Mongolia	Accession	27 February 1991	27 May 1991
(49) Czech Republic	Declaration ⁴	18 December 1992	01 January 1993
(50) Ireland ¹	Ratification	01 May 1992	01 August 1992
(51) Portugal ³	Accession	24 August 1992	24 November 1992
(52) New Zealand	Accession	01 September 1992	01 December 1992
(53) Ukraine	Declaration ⁴	21 September 1992	25 December 1991
(54) Viet Nam	Accession	10 December 1992	10 March 1993
(55) Slovakia	Declaration ⁴	30 December 1992	01 January 1993
(56) Niger ²	Accession	21 December 1992	21 March 1993
(57) Kazakhstan	Declaration ⁴	16 February 1993	25 December 1991
(58) Belarus	Declaration ⁴	14 April 1993	25 December 1991
(59) Latvia	Accession	07 June 1993	07 September 1993
(60) Uzbekistan	Declaration ⁴	18 August 1993	25 December 1991
(61) China	Accession	01 October 1993	01 January 1994
(62) Slovenia	Accession	01 December 1993	01 March 1994
(63) Trinidad and Tobago	Accession	10 December 1993	10 March 1994
(64) Georgia	Declaration ⁴	18 January 1994	25 December 1991
(65) Kyrgyzstan	Declaration ⁴	14 February 1994	25 December 1991
(66) Republic of Moldova	Declaration ⁴	14 February 1994	25 December 1991
(67) Tajikistan	Declaration ⁴	14 February 1994	25 December 1991
(68) Kenya	Accession	08 March 1994	08 June 1994
(69) Lithuania	Accession	05 April 1994	05 July 1994
(70) Armenia	Declaration ⁴	17 May 1994	25 December 1991
(71) Estonia	Accession	24 May 1994	24 August 1994
(72) Liberia	Accession	27 May 1994	27 August 1994

(73) Swaziland	Accession	20 June 1994	20 September 1994
(74) Mexico	Accession	01 October 1994	01 January 1995

¹Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.
²Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.
³Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.
⁴Declaration of continued application.

November 2, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1168 OG 97]

(105) **Minimum Requirements for Acceptance
of Applications Under 35 U.S.C. 371
(the National Stage of PCT)**

The Patent and Trademark Office is continuing to receive application papers which do not clearly identify whether the papers (1) are being submitted to enter the national stage of the Patent Cooperation Treaty (PCT) under 35 U.S.C. 371 or (2) are being filed as a regular national application under 35 U.S.C. 111.

Attention is directed to the notice in the Official Gazette at 1070 O.G. 11 titled "Unity of Invention Practice in International Applications and National Phase Applications Entered Under 35 U.S.C. 371" wherein at item eight it is stated

"(8) Applicants should clearly indicate on all application papers filed for entry under 35 U.S.C. 371 and 37 CFR 1.61 that the filing is being made under § 35 U.S.C. 371. Otherwise, the application papers will be treated as having been filed under 35 U.S.C. 111."

To clearly indicate an international application is being filed under 35 U.S.C. 371 the applicant should use the "Transmittal Letter for United States Designated Office" (Form PTO-1390) as the transmittal letter.

Alternatively, one of the following indications may be used:

1) the applicant shall clearly state in the transmittal or cover letter that he or she is filing under 35 U.S.C. 371 or entering the national stage under the PCT; or

2) the applicant clearly identifies in the oath or declaration the specification to which it is directed by referring to a particular international application by PCT Serial Number and International Filing Date and that he or she is executing the declaration as, and seeking a U.S. Patent as, the inventor of the invention described in the identified international application.

Applicants are cautioned that the identification of the international application, in the oath or declaration or otherwise, as a prior filed application for priority purposes is not considered to be an indication of an intention to file under 35 U.S.C. 371.

If there are any conflicting instructions as to which section of the statute (371 or 111) is intended the application will be accepted under 35 U.S.C. 111. It is strongly recommended that applicant use the Form PTO-1390 in all cases where a filing under 35 U.S.C. 371 is intended.

Mar. 16, 1987

RENE D. TEGTMEYER
Assistant Commissioner
for Patents

[1077 OG 13]

(106) **Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 10
[Docket No. 920539-2313]
RIN: 0651-AA51**

Revision of Patent Cooperation Treaty Provisions

Agency: Patent and Trademark Office, Commerce

Action: Final Rule

Summary: The Patent and Trademark Office (Office) is amending the rules of practice relating to applications filed under the Patent Cooperation Treaty (PCT): (1) to amend the rules in accordance with revised regulations under the PCT; (2) to bring the rules regarding applications entering the national stage under 35 U.S.C. 371 more in line with existing regulations applicable to national applications filed under 35 U.S.C. 111; and (3) to clarify existing practice under the PCT. The changes will result in more streamlined and simplified procedures for filing and prosecuting international and national stage applications under the PCT.

Effective Date: May 1, 1993.

For Further Information Contact: Vincent Turner by telephone at (703) 305-9384 or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and marked to the attention of Vincent Turner (Crystal Park 2, room 919).

Supplementary Information: The Office published a notice of proposed rulemaking relating to revision of the Patent Cooperation Treaty provisions, in the *Federal Register*, 57 Fed. Reg. 29248 (July 1, 1992) and in the *Official Gazette*, 1140 Off. Gaz. Pat. Office 27 (July 14, 1992). No oral hearing was held. Eight individuals or organizations submitted written comments in response to the notice of proposed rulemaking. The eight written comments are available for public inspection in the Office of the Assistant Commissioner for Patents, room 919, Crystal Park II, 2121 Crystal Drive, Arlington, Va.

Familiarity with the notice of proposed rulemaking is assumed. Changes in the text of the rules published for comment in the notice of proposed rulemaking are discussed. Comments received in writing in response to the notice of proposed rulemaking are discussed.

This rule change will improve filing and processing procedures for applicants both in the filing of international applications and in the filing of national stage applications under 35 U.S.C. 371.

Background

During the first 14 years under the PCT, the annual volume of international patent applications filed in the U.S. Receiving Office has increased from just under 100 to almost 10,000 in fiscal year 1991. The volume of U.S. national stage applications has shown similar growth to the point that the U.S. is now designated more than 10,000 times each year by applicants filing international applications under the PCT. Historically,

approximately 60% of those applicants that designate the U.S. enter the national stage in the United States.

On July 8 to 12, 1991, representatives of the patent offices of the member countries, in a series of meetings held in Geneva, Switzerland, agreed upon several changes to the PCT regulations which are designed to make the PCT more user-friendly. These adopted changes require corresponding changes in Title 37, CFR.

The practice under the revised PCT regulations will permit an applicant to provide, in addition to at least one specified designation, a precautionary designation of all other PCT member countries and regions so that any intended designation which may have been overlooked on filing can be corrected within 15 months of the priority date by confirmation of the designation. Applicants are cautioned, however, that in order for the confirmation of a designation of the U.S. to be valid, the inventor must have been named in the application papers as filed, 37 CFR 1.421(b).

International applications are searched and published prior to the 20-month deadline for entry into the national stage. If a demand for preliminary examination is filed before expiration of 19 months from the priority date the time for entry into the national stage is extended to 30 months from the priority date and the international application will be subject to preliminary examination under Chapter II of the PCT. The practice under the revised PCT regulations permits an applicant to indicate in the demand that preliminary examination is to be based on an accompanying PCT Article 34 amendment and, if the amendment is not received with the demand, the applicant will be notified and given a time period within which to file the missing amendment. This new procedure will ensure that examination will go forward based on the desired PCT Article 34 amendment.

Also, the Office is aware that certain applicants have had difficulty in properly filing national stage applications due to the different requirements in the rules for PCT and U.S. national applications. Some differences cannot be avoided due to different procedures required under the PCT from U.S. national practice. It is desirable, however, to minimize these differences and to simplify national stage filing procedures.

International applications have become abandoned for failure to timely provide an oath or declaration, a filing fee and/or an accurate translation. In national practice under 35 U.S.C. 111, if any of these items was not presented at the time of filing, a notice would be mailed to the applicant setting a period of time to provide the missing item(s) and to pay a fee. The amendments to the rules governing entering the national stage will establish a greater degree of uniformity of practice and requirements for filing an application under 35 U.S.C. 111 and entering the national stage in an international application under 35 U.S.C. 371.

Amending sections 1.494 and 1.495 results in regulations much like the present section 1.53. The major exception is that a notification of any missing parts in sections 1.494 and 1.495 will only be mailed in those instances where the applicant has paid the basic national fee within 20 or 30 months from the priority date depending on whether election of the U.S. under Chapter II of the PCT has been made prior to 19 months. Applicants can no longer pay the basic national fee with a surcharge after the 20/30 months deadline. Failure to pay the basic national fee within 20/30 months from the priority date will result in abandonment of the application. Paying the fee gives a clear indication to the Office that the applicant desires to enter the national stage. If the required oath, declaration or translation has not been filed within 20/30 months from the priority date, as appropriate, the Office will send applicant a notice and provide a period of time to supply the deficiency. Upon paying the basic national fee within 20/30 months from the priority date, the applicant will have the opportunity to inform the Office of a U.S. correspondence address, if any. Thus, the Office will avoid unnecessary handling of approximately 40% of those applications that designate the U.S. but do not enter the national stage, and will be able to send a notice to a U.S. correspondence address in most cases.

Often at 20 or 30 months from the priority date, the only communication which has been received by the Office is a copy of the international application from the International Bureau with the address of the foreign attorney or agent who represented the applicant in the international stage. The foreign

attorney or agent may not be conversant in English or knowledgeable about U.S. practice, factors which often contribute to complicating the processing of applications. Thus, the new practice, which requires payment of the basic national fee on or before 20 or 30 months from the priority date, has several advantages: (1) it will enable the applicant to identify the U.S. attorney or agent for correspondence from the Office; (2) the Office, after a check of the national stage papers at 20 or 30 months, will mail a notice identifying any deficiencies and affording applicant a period for correction of those deficiencies; and (3) as in national practice under section 1.53, it will enable applicants to extend the period of time under section 1.136 for submission of a proper oath, declaration or translation.

The changes to sections 1.494 and 1.495 address the problems which have been most frequently encountered in entering the national stage in the United States. The new practice of notifying applicants of the omission of a proper oath, declaration or translation and setting an extendable period of time for correction will allow applicants greater flexibility in the time for submission of these documents, thus avoiding the consequence of abandonment and potential loss of rights in the United States.

Implementation

The rule changes which reflect corresponding amendments in the PCT regulations were implemented on 01 July 1992 when the amendments became effective. The remaining rule changes will be effective on 01 May 1993. Setting a date for the rules to take effect several months in the future will allow time for applicants to change their procedures to conform to these rules.

Those international applications entering the national stage under section 1.494 where 20 months from the priority date expires on, or before, 30 April 1993 are under the old rule (section 1.494 effective 01 July 1987) and those international applications entering the national stage under section 1.495 where 30 months from the priority date expires on, or before, 30 April 1993 are under the old rule (section 1.495 effective 01 July 1987). Those international applications entering the national stage under section 1.494 where 20 months from the priority date expires on, or after, 01 May 1993 are under the new rule (section 1.494 effective 01 May 1993) and those international applications entering the national stage under section 1.495 where 30 months from the priority date expires on, or after, 01 May 1993 are under the new rule (section 1.495 effective 01 May 1993). For example:

1) If a copy of an international application (which designates the U.S.) that has a priority date of 30 August 1991 is filed in the Office by 30 April 1993 (within 20 months from the priority date), applicant may enter the national stage under 37 CFR 1.494 by submitting any required English translation, the basic national fee and the oath or declaration not later than 30 June 1993. Of course, the payment of the surcharge and processing fee (37 CFR 1.492(e) and (f)) would also be due.

2) If a copy of an international application (which elected the U.S. before expiration of 19 months from the priority date) that has a priority date of 30 October 1990 is filed in the Office by 30 April 1993 (within 30 months from the priority date), applicant may enter the national stage by submitting any required English translation, the basic national fee and the oath or declaration not later than 30 June 1993. Of course, the payment of the surcharge and processing fee (37 CFR 1.492(e) and (f)) would also be due.

3) If a copy of an international application (which designates the U.S.) that has a priority date of 01 September 1991 is filed in the Office by 03 May 1993 (within 20 months from the priority date - 01-02 May 1993 being a Saturday and Sunday, respectively), then applicant must pay the basic national fee by 03 May 1993 to avoid abandonment of the application. If the basic national fee is timely paid, a notice will then be sent to applicant giving a time period within which to file the oath or declaration and any required translation (new section 1.494(c)).

4) Any international application having a priority date of 01 September 1991 or later, is under the new rule. Thus, if applicant files papers for the national stage indicated to

be under the procedure of the old rule (section 1.494) in the Office before 01 May 1993 (i.e., before expiration of 20 months from the priority date) but omits the basic national fee, the application will, nonetheless, become abandoned at midnight on 03 May 1993 (after 20 months from the priority date - 01-02 May 1993 being a Saturday and Sunday, because applications where the 20-month deadline expires on after 01 May 1993 come under the new practice. In accordance with new section 1.494 (i) copy of the international application must be furnished to the Office, and (ii) the basic national fee must be paid before expiration of 20 months from the priority date.

Response to Comments on the Rules

Eight written comments were received in response to the notice of proposed rulemaking. All of the comments were considered in adopting the changes set forth herein. The comments and responses to the comments follow.

Comment 1. One comment stated that "The proposed addition to section 1.431(b)(1) of 'and the papers filed at the time of receipt of the international application [so] indicate' goes beyond the requirements set forth in the PCT and is contrary to PCT Administrative Instructions, Section 329." Two other similar comments were received and urged, in effect, that section 1.431(b)(1) be revised to adopt the procedure set forth in Section 329 of the PCT Administrative Instructions.

Response: The suggestion has not been adopted. The provisions adopted in section 1.431(b)(1) are consistent with, and required by, Article 11 of the PCT as interpreted by the Office. Section 329 of the PCT Administrative Instructions was issued by the International Bureau after the Bureau was advised that the Office believed new section 329 to be inconsistent with requirements of Article 11 of the Treaty and inconsistent with over 13 years of practice in the United States. In the opinion of the Office, PCT Administrative Instruction 329 is inconsistent with PCT Article 11 and Rule 20.4(a), which require the Office to promptly determine whether the applicant does not obviously lack, by reasons of residence or nationality, the right to file an international application. In accordance with PCT Rule 89.1(b), "The Administrative Instructions shall not be in conflict with the provisions of the Treaty, these regulations, . . ." The United States will not follow Administrative Instruction 329.

Comment 2. One comment stated that in section 1.431(c), the reference to "PCT Rule 15.2" should be to "PCT Rule 15" because PCT Rule 15.1 is also relevant, and the reference to section 1.445 "should be changed to refer to" PCT Rules 14 and 16.1" because section 1.445 does not cover the European Patent Office (EPO) search fee which is also paid to the USPTO."

Response: The suggestion has not been adopted. The references to Rule 15.2 and section 1.445 are considered proper in the context in which they are used. The references to Rule 15.2 and section 1.445 are not new and have worked well in directing applicants regarding international application requirements. The EPO search fee is not mentioned in section 1.431, but is published in each issue of the *Official Gazette* for applicant's information.

Comment 3. One comment stated that in section 1.431(d), the words "one designation fee" should be deleted since this is covered by section 1.432(b) and that "timely made" in line 5 be changed to "paid within the one-month period" for clarity.

Response: The first suggestion in the comment is not adopted. The reference to "one designation fee" in section 1.431(d) is repeated in section 1.432(b) to add clarity on this important point. The second suggestion in the comment is not adopted since it would introduce error into section 1.431(d). Indeed, all the fees must be paid timely, and need not be paid within the one-month period set pursuant to section 1.431(c), e.g., some fee(s) may be paid prior to the one-month period. Presumably the one-month period mentioned in the comment refers to a period set pursuant to section 1.431(c) which may not need to be set in every case.

Comment 4. One comment indicated that (in the fourth paragraph of the Supplementary Information section) the discussion of new section 1.432 includes a reference to a "generic" designation of all countries which, instead, should refer to a precau-

tionary designation of all countries except the required specified designation(s).

Response: The appropriate change has been made to the discussion of section 1.432 to clarify that an applicant may provide, in addition to at least one specified designation, a precautionary designation of all other PCT member countries and regions so that any intended designation which may have been overlooked on filing can be corrected within 15 months of the priority date.

Comment 5. One comment stated that in section 1.432(a) and (b) the word "request" should be capitalized in view of section 1.401(d). A corresponding comment was made with respect to section 1.451(a).

Response: This suggestion is adopted since PCT Rule 4.10 requires the designations to appear on the Request (form RO/101) and section 1.432 continues to require that the designation(s) be indicated in the Request on filing. Similarly, with respect to section 1.451(a), the suggestion is adopted.

Comment 6. One comment stated that in section 1.432(a) "or regions" should be changed to "for the purpose of obtaining national or regional patents."

Response: The suggestion is adopted to the extent that section 1.432(a) has been changed by replacing "or regions" with "including an indication that applicant wishes to obtain a regional patent, where applicable." The adopted wording is preferable since it is the same as the wording of PCT Rule 4.9(a)(ii).

Comment 7. One comment objected to the requirement contained in section 1.432(a) that designations in the international application shall be stated as provided in PCT Rule 4.9(a) and Section 115 of the Administrative Instructions Under the PCT. Also, the comment urged that the PCT Administrative Instructions should be reproduced in sections 1.432 and 1.451 so that applicants have access to them.

Response: Section 115 of the PCT Administrative Instructions makes reference to the names and abbreviations of all countries. Inclusion of such a long list would unnecessarily encumber section 1.432(a). The Administrative Instructions are readily available, and a list of countries is provided in the Manual of Patent Examining Procedure (Chapter 200). Applicants using a current Request form will inherently comply with PCT Rule 4.9(a) and Sections 110 and 115 of the PCT Administrative Instructions.

Comment 8. One comment asked "If an applicant does not pay the fee(s) set out in section 1.432(c)(2) or (3), will he/she be given an additional month to pay the fees described in section 1.432(b)(1) and (2)?"

Response: No extension of time is available to the 15-month deadline of section 1.432(c). The time period set under section 1.432(b) does not apply to section 1.432(c). If payment for the designations to be confirmed under section 1.432(c) is not received by 15 months from the priority date, those precautionary designations are considered to be withdrawn, PCT Rule 4.9(b).

Comment 9. One comment suggested adding references to PCT Rule 4.9(a) and (b) in various locations in section 1.432.

Response: The suggestion is adopted by adding appropriate references to PCT Rule 4.9(a) and (b).

Comment 10. One comment suggested that the last sentence in section 1.432(b) be moved to become the second sentence of section 1.432(b) and the third sentence be moved to become the last sentence of section 1.432(b).

Response: These suggestions are not adopted since they would not constitute an improvement to section 1.432(b).

Comment 11. One comment suggested that, in section 1.432(c)(3) unconfirmed designations indicated to be "considered withdrawn" should be changed to "regarded as withdrawn by the applicant."

Response: This suggestion has not been adopted because it does not further clarify section 1.432(c)(3). Unconfirmed designations are considered to be withdrawn by the applicant under PCT Rule 4.9(b)(ii) and are also considered to be withdrawn by the Office.

Comment 12. One comment suggested that section 1.446(d) should be expanded to indicate that a refund of the search fee will be given even after the search copy has been transmitted just so long as the withdrawal is effective before start of the international search.

Response: This suggestion has not been adopted since refunds may or may not be appropriate in the noted instance. For example, if the EPO acting as an international searching authority begins the search after withdrawal but before receipt of the withdrawal from the U.S. receiving office, a refund may not be made.

Comment 13. One comment suggested that in section 1.446(e) "demand" should be capitalized in view of section 1.401(g).

Response: This suggestion is adopted.

Comment 14. One comment suggested that the reference in section 1.451(a) to Section "201" of the Administrative Instructions should be changed to "115."

Response: This suggestion is adopted since Section "201" of the Administrative Instructions has been changed effective July 1, 1992, and is now Section "115."

Comment 15. One comment noted that the proposed change in section 1.455(a) does not reflect that a common representative need not be "appointed."

Response: A new sentence has been inserted into section 1.455(a) to address the situation where no common representative or agent has been appointed. Where no common representative or agent has been appointed, the first mentioned applicant who is entitled to file in the U.S. receiving office is considered to be the common representative, PCT Rules 2.2bis and 90.2(b).

Comment 16. One comment noted that the proposed change in section 1.455(a) does not reflect that if a new common representative is appointed, the previous common representative is automatically revoked.

Response: The last sentence of section 1.455(a) has been changed to reflect that the later appointment of an attorney, agent or common representative revokes any earlier appointment unless otherwise indicated.

Comment 17. One comment suggested that "In sections 1.475(a), 1.488(a) and 1.499(e) reference should be added to PCT Rule 13, Administrative Instructions, Section 206, and possibly to Annex B of the Administrative Instructions."

Response: The suggestion is not adopted because it gives no reasons for the proposed change and it is not evident that the change is needed.

Comment 18. One comment stated that in the Supplementary Information discussion of section 1.475(b), the explanation of "specially adapted" was different from the explanation in Annex B, Part I of the Administrative Instructions.

Response: The discussion of section 1.475(b) has been revised to conform to Annex B, Part I of the Administrative Instructions.

Comment 19. One comment stated that in section 1.484(b) no need is seen for adding the last two sentences because "The provision relates only to International Searching Authority practice and is set forth in more detail by the PCT Rules."

Response: Section 1.484(b) is directed to conduct of the International Preliminary Examining Authority rather than the International Searching Authority. The explanation in section 1.484(b) is retained because, although it parallels PCT Rule 69.1(e), it informs applicants that delay in submission of an amendment will delay the start of examination. Applicants should be aware that, since the time for issuance of the final report is fixed by PCT Rule 69.2 and may not change, any delay in the start of examination may work to applicants' disadvantage. For example, the minimum time may have to be set for response to any opinions, there may be time for only one opinion and/or there may be less time for interviews.

Comment 20. One comment suggested that section 1.485 should be amended to take into account that amendments are permitted under PCT Rule 66.4b even after the time period set by the International Preliminary Examining Authority.

Response: This suggestion is not adopted. Section 1.485 sets forth when an amendment may be filed so that it will be considered. Amendments filed at other times may not be considered.

Comment 21. One comment suggested that the beginning of section 1.492 should be changed to reflect that, in view of H.R. 3531, the national stage fees are under 35 U.S.C. 41(a) rather than under 35 U.S.C. 376.

Response: H.R. 3531 was enacted into law (Public Law 102-204). Accordingly, the suggestion in the comment has been adopted by revising the introductory language in section 1.492 to remove the reference to 35 U.S.C. 376.

Comment 22. One comment urged that in the Discussion of Specific Rules for sections 1.494(b) and 1.495(b), the discussion should be modified to clarify that the applicant need only check "his or her" files to be sure that the Bureau's notice regarding transmittal of a copy of the international application has been received.

Response: The language has been revised to eliminate any ambiguity.

Comment 23. One comment suggested that "as filed" in section 1.494(c) should be set off by commas as in section 1.495(c).

Response: Section 1.494(c) has been changed as suggested.

Comment 24. One comment questioned the phrases "accurate translation" and "proper translation" as used in the Supplementary Information discussion and stated that these phrases do not further explain the word "translation" as used in the statute. Another comment suggested that the rule should provide for correction of errors in the translation without penalty of abandonment or surcharge.

Response: The statute (35 U.S.C. 371(c)(2)) requires that applicant file a translation of the international application to avoid abandonment (35 U.S.C. 371(d)). The Office has received purported translations which include amendments to the text of the international application and other inconsistencies with the text of the non-English language document. It is helpful to explain that a translation must be accurate and a proper translation. The Office does not inspect a purported translation for all errors, it only inspects for errors which are apparent on the face of the document. For example, where the non-English language international application has 6 claims and the purported translation has 8 claims, obviously the requirement for a proper translation has not been met. Submission of inaccurate translations require additional processing by the Office, thus the requirement for a processing fee is appropriate.

Comment 25. One comment stated that in the Supplementary Information discussion of sections 1.494 and 1.495 the reference to the U.S. correspondence address should be modified to add "if any" since none is required.

Response: The suggestion has been adopted.

Comment 26. One comment stated that in the preamble of section 1.495(e) there appears to be a contradiction in that the first sentence suggests a translation of the annex may be filed within the time period set under 1.495(c) whereas the second sentence suggests the translation of the annex must be filed by 30 months or "be considered cancelled."

Response: The sentences are compatible. The first sentence applies to the case where the translation, oath or declaration have not been submitted by 30 months. In such case, they (and any annex) may be submitted within the time period of paragraph (c). The second sentence applies to the case where the translation and oath or declaration have been submitted by 30 months, whereupon no additional time is set under paragraph (c). Thus, in the first instance, if applicants are given additional time to submit the translation or oath or declaration, they may also submit the annex in that same additional time. But where the translation and oath or declaration have been submitted by 30 months, an additional time period will not be provided simply for submitting a translation of the annex. Of course, applicant may submit a preliminary amendment under 37 CFR 1.121 including the subject matter of the annex.

Comment 27. One comment suggested that sections 1.494(b)(3) and 1.495(b)(3) should be amended to permit an extension of time for the basic national fee so that it may be submitted, like the declaration and translation, after 20 and 30 months.

Response: The suggestion is not adopted. Submission of the basic national fee gives the Office a clear indication that applicant intends to enter the national stage. This helps the Office to avoid processing of those 40% of the international applications which designate the U.S. but do not enter the national stage. Also, filing of the basic national fee by 20 or 30 months will ordinarily provide the Office with the correspondence address of the person prosecuting the national stage application. Without this correspondence address, the Office would send any notice of missing parts to the correspondence address in the international application (e.g., the person who prosecuted the international stage and who may not be qualified to prosecute the U.S. national stage). The rules as amended address the greatest hurdle for entry into the national stage

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which has been submission of the oath or declaration by the 22 or 32-month deadline.

Comment 28. One comment suggested that sections 1.494(d) and 1.495(d) should indicate that the PCT Article 19 amendments (which have not been received) are not only considered to be cancelled, but are also "disregarded under PCT Rule 49.5(c-bis)."

Response: The suggestion is not adopted because this additional reference to PCT Rule 49.5(c-bis) is not helpful. The indication that the PCT Article 19 amendments are cancelled is in accordance with 35 U.S.C. 371(d). It is standard practice in the examination of a patent application in the United States to disregard amendments that have been cancelled.

Comment 29. One comment suggested that, with respect to section 1.494, "The proposed rules do not make clear the relationship between paragraphs (c) and (g) as to the time period set for later furnishing of the translation into English."

Response: Paragraph (c) provides that applicant will be provided a period of time to file the translation (if the requirements of paragraph (b) have been met) and paragraph (g) provides that the application becomes abandoned if any required translation is not filed within the time period set in paragraph (c). Thus, where the other requirements have been met but the translation has not been provided, paragraph (c) provides a time period for submission of the translation and paragraph (g) provides the sanction (abandonment) for failing to comply within the set period.

Comment 30. One comment questioned whether the time period for translation of any PCT Article 19 amendments should be extendable with any extension for translation of the international application. A corresponding comment was made with respect to section 1.495.

Response: An extension of time for submission of the translation of any PCT Article 19 amendment is not possible in view of the provisions of 35 U.S.C. 371(d).

Comment 31. One comment suggested that sections 1.494(g) and 1.495(h) should be modified by replacing "the translation" with "any required translation."

Response: The suggestion is adopted. Translations are not required where the international application was filed in English.

Comment 32. One comment suggested that at the beginning of section 1.495(c) after "paragraph (b)" the word "of" should be added.

Response: The suggestion is adopted.

Comment 33. One comment suggested that section 1.495(d) could be deleted since under PCT Rules 70.16 and 74.1 relevant amendments under PCT Article 19 must be annexed to the international preliminary examining report and therefore must be translated under section 1.495(e). It was further noted that superseded PCT Article 19 amendments need not be translated.

Response: The suggestion is not adopted. Section 1.495(d) covers the situation where the PCT Article 19 amendment is not annexed. For example, where applicant enters the national stage in the U.S. and withdraws the international application before issuance of the final report. In this instance, translation of the PCT Article 19 amendments would have to be submitted by the date of commencement of the national stage (which cannot be later than 30 months) or be considered cancelled.

Comment 34. One comment observed that under section 1.495(e) if there is no time period to be set for submission of the translation of the international application and/or the oath or declaration, there is no possibility for extra time (after the 30-month deadline) for submission of translation of the annex. It was suggested that section 1.495(e) be reworded to permit extra time (after the 30-month deadline) for submission of a translation of the annex even where the translation of the international application and/or the oath or declaration had been submitted by 30 months.

Response: The suggestion is not adopted. Where the translation of the international application and/or the oath or declaration have been submitted by 30 months, it is appropriate to promptly forward the application for examination rather than delay examination for a translation of the annex (especially since often it appears that applicant does not wish to proceed on the basis of the annex). Some applicants prefer to submit preliminary amendments under section 1.121 (which may be done even after 30 months) rather than to submit a translation of the annex.

Comment 35. One comment urged that section 1.495(e) is inconsistent in that it states that the 30-month time limit may not be extended, and then states that if the translation of the international application is not filed within 30 months from the priority date additional time may be set under paragraph (c) of this section.

Response: The two statements are not contradictory. The time period for submission of the translation and oath or declaration is a new time period and is not an extension of the 30-month time limit. The fixed time limit for submission of the basic national fee is 30 months from the priority date. If the basic national fee is not paid by this 30-month deadline, the application is abandoned. If, on the other hand, the basic national fee is paid by 30 months from the priority date, the pendency of the international application continues past 30 months. If the translation or oath or declaration have not been filed by the 30-month deadline (but the basic national fee has been paid), the application is not abandoned and a time period is set for submission of the missing translation and oath or declaration.

Comment 36. One comment asked "Is it the intention of the Patent and Trademark Office to affect, in any way, the current practice of assigning a date on which the Section 371(c)(4) requirement (oath or declaration) will be deemed to have been met, if an applicant submits an oath or declaration in response to a Notice of Missing Parts, thereby ultimately affecting the Section 102(e) date to which the eventually granted U.S. patent will be entitled?"

Response: Nothing in the new rule will affect the 35 U.S.C. 102(e) date which will continue to be the date that the last of the 35 U.S.C. 371(c)(1), (2) and (4) requirements are fulfilled.

Comment 37. One comment suggested that section 1.821 be clarified to reflect that the notice requiring compliance with paragraphs (b) through (f) is sent by the international searching authority.

Response: The suggestion is not adopted. Section 1.821 does not specify who will send the notice and there is no need to do so in the rule.

Comment 38. One comment questioned as to section 10.9 whether a pro se applicant from Brazil, who is either an individual or a company, would have the right to practice before the U.S. as an international searching or international preliminary examining authority.

Response: Section 10.9 has been amended to clarify that it is not directed to pro se applicants.

Discussion of Specific Rules

The following is a table correlating PCT Rule changes with the new 37 CFR changes. Sections 1.431(b)(1), 1.431(b)(3)(ii), 1.451(a), 1.482(a)(2)(i), 1.492(e), 1.494 and 1.495, which are also amended, are not shown in the table because they are changes that are not required by PCT Rule changes.

Rule Correlation Table

37 CFR Change	PCT Rule Change
1.431(c)-(e)	16bis, 27.1
1.432(a)	4.1(b)(iv), 4.9
1.432(b)	5.5, 16bis
1.432(c)	15.5
1.434(a)	3.1
1.445(a)(4)	15.5
1.446(d)	15.6, 16.2
1.446(e)	57.6
1.455(a)	90, 2.2bis
1.475	13
1.476(a)	13
1.480(b)	53.1
1.482(b)	57.5
1.484(b)	60.1(g), 66, 69.1
1.485	60.1(g)
1.487	13
1.488(a)	13
1.499	13
1.821(h)	13ter.1(c)
10.9(c)	90

Section 1.431(b)(1) is amended to clarify that an international filing date will be accorded to an International application filed in the United States where at least one applicant is indicated to be a resident or national of the United States in the papers as filed. If the papers, as filed, indicate a residence or nationality for at least one applicant, the United States Receiving Office can promptly determine whether, as required by PCT Article 11, "the applicant does not obviously lack" the requisite residence or nationality to file an international application in the United States Patent and Trademark Office.

Section 1.431(b)(3)(ii) is amended to add a cross-reference to section 1.432 which sets forth the requirements regarding designations.

Section 1.431(c) is amended to reflect that the United States Receiving Office, rather than the International Bureau, will be responsible for collecting fees not paid in full at the time of filing the international application or within one month thereafter. The change reflects the procedural change under the new PCT Regulations that the Receiving Office, rather than the International Bureau, will be responsible for communicating deficiency notices to the applicant and collecting the necessary fees. Under the procedure in paragraph (c), a notice of any fee deficiency will be mailed by the Receiving Office setting a time period of one month for payment of the fee deficiency and a late payment fee equal to the greater of (1) 50% of the amount of the deficient fees up to a maximum amount equal to the basic fee, or (2) an amount equal to the transmittal fee. The time period of one month for response to this notice cannot be extended.

Section 1.431(d) is eliminated as unnecessary since the United States Receiving Office will take over the responsibility for collecting fees in place of the International Bureau.

Section 1.431(e) is redesignated as 1.431(d) and clarifies that the failure to timely pay the fees pursuant to paragraph (c) will result in the withdrawal of the international application.

Section 1.432(a) is amended to clarify that the applicant must specify, on filing, at least one national or regional designation in order to be granted a filing date for the international application. This specific designation is required whether or not all designations are indicated pursuant to paragraph (c) of this section. The reference to Section 201 of the Administrative Instructions has been changed to Section 115 to correspond to the change in the Administrative Instructions.

Section 1.432(b) is amended to establish a procedure for the late payment of fees for designations that were specified on filing an international application, and a procedure, pursuant to PCT Rule 16bis.1(c), in accordance with section 321 of the PCT Administrative Instructions for allocating fees, where the amount paid is insufficient to cover all the fees. The payment of the designation fees with a late payment fee (previously termed a "surcharge") is not new. Under the revised PCT regulations, however, the Receiving Office, rather than the International Bureau, will be responsible for communicating deficiency notices to the applicant. The designation fees may be paid, without necessity for a late payment fee, within one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date. The applicant will be notified and given one month within which to pay any deficient designation fees plus a late payment fee. The amount of the late payment fee is equal to 50% of the deficient fees, but will not be less than the amount of the transmittal fee (currently \$200) and will not exceed the amount of the basic fee (currently \$525). The one-month time limit for payment of the deficient designation fees and late payment fee may not be extended. If, after expiration of the one-month time period, at least one designation fee has not been paid (with any late payment fee which is due), the international application will be withdrawn. If, after expiration of the one-month time period, at least one designation fee has been paid (with any late payment fee which is due) but the amount paid is not sufficient to cover the late payment fee and all the designation fees, the amount paid will be allocated, pursuant to PCT Rule 16bis.1(c), in accordance with section 321 of the Administrative Instructions. Section 321 of the Administrative Instructions provides that the amount will be allocated in accordance with any instructions received from the applicant or, if no instructions have been received, in the order in which the designations appear in the request part of the international

application. Designations for which no designation fee is timely filed will be withdrawn. In section 1.432(b), the reference to parenthetical numbers (1) and (2) used to describe the late payment fee as proposed has been deleted in the final rule to improve clarity.

New section 1.432(c) establishes a procedure wherein, in addition to the designation(s) under paragraph (a), the applicant could indicate, on filing, all designations permitted under the Treaty and confirm desired designations of countries or regions up to 15 months from the priority date. Section 1.432(c) as promulgated requires that applicant's indication of all designations permitted under the Treaty in addition to the designation(s) under paragraph (a) be made in the Request in accordance with PCT Rule 4.9(b). The confirmation must include both a written notice of the countries or regions being confirmed, the appropriate designation fees and a confirmation fee based on the number of countries or regions being confirmed. If the amount of the fees is insufficient, the Receiving Office will allocate the amount paid in accordance with any priority of designations specified by the applicant or, if no priority is specified, in accordance with section 321 of the Administrative Instructions. A notice reminding applicant of the 15-month deadline will not be provided. Unconfirmed designations will be considered withdrawn.

Section 1.434 is amended to allow applicants to develop their own computer-generated Request form so long as the forms comply with the requirements of sections 102(h) and (i) of the Administrative Instructions. Printed Request form will continue to be available from the United States Patent and Trademark Office.

New section 1.445(a)(4) defines the amount of the confirmation fee required for the designations confirmed under section 1.432(c). The confirmation fee is equal to 50% of the sum of the designation fees for the designations being confirmed. For example, a confirmation of four additional designations (at \$127 per designation, or \$508) would require a \$254 confirmation fee. The total amount of the fees due would be \$762, which is the sum of \$508 and \$254.

Section 1.446(d) is amended to clarify that the international (basic and designation, PCT Rule 15.1) and search fees may be refunded under certain circumstances linked to whether the record copy or search copy has been transmitted to the International Bureau or International Searching Authority, respectively. The transmittal fee and any late payment fees will not be refunded, but will be retained to cover Office processing costs. If the record copy or search copy has been transmitted, the Receiving Office cannot refund or authorize the refund of the international or search fees. Any request for a refund filed after the record copy or search copy has been transmitted should be directed to the International Bureau (for the international fee) or the International Searching Authority (for the international searchfee) for consideration of whether a refund should be made.

New section 1.446(e) indicates that a refund of the handling fee by the International Preliminary Examining Authority is permitted only in the situations where the demand is considered not to have been submitted or upon withdrawal of the demand before the demand has been sent to the International Bureau. If the demand has been sent to the International Bureau, requests for refund of the handling fee should be directed to the International Bureau.

Section 1.451(a) is amended to clarify that the applicant must specify, on filing, the priority of a previously filed application in order to be granted priority in the international application. The right to priority is not necessarily lost if the claim is not on the Request form, but will be lost if the claim does not appear in the papers presented on filing of the application.

Section 1.455(a) is amended to clarify that the term "common representative" means an applicant appointed by the other applicants or considered to be the representative of the other applicants. Further, since attorneys and agents are registered to practice before the Office rather than licensed, section 1.455(a) has been amended by replacing the word "licensed" with "registered." The paragraph also clarifies who can represent applicants in an international application before the U.S. International Searching Authority or the U.S. International Preliminary Examining Authority, e.g., (1) an attorney or agent registered to practice before the Office, and (2) an attorney or agent not registered to practice before the Office, but authorized

to practice before the national office with which the international application was filed and for which the United States is an International Searching Authority or International Preliminary Examining Authority. In the latter case, representation is restricted to practicing before the U.S. International Searching Authority and/or the U.S. International Preliminary Examining Authority. For example, if an international application is filed in the Brazilian Patent Office, an agent authorized to practice before the Brazilian Patent Office may prosecute that application before the U.S. International Searching Authority or the U.S. International Preliminary Examining Authority. Paragraph (a) also provides that, unless otherwise indicated, the appointment of an attorney, agent or common representative revokes any earlier appointment as specified in PCT Rule 90.6(b).

Section 1.475 is amended to adopt the unity of invention principles of PCT Rule 13, as amended. Section 1.475 is further amended to reflect that the same unity of invention principles are applied by the international searching and preliminary examining authorities and during the national stage. Duplicative provisions in sections 1.487 and 1.499 are deleted.

The principles of unity of invention are used to determine the types of claimed subject matter and the combinations of claims to different categories of invention that are permitted to be included in a single international or national stage patent application. The basic principle is that an application should relate to only one invention or, if there is more than one invention, that applicant would have a right to include in a single application only those inventions which are so linked as to form a single general inventive concept.

Section 1.475(a) is amended to contain both the definition of the requirement for unity of invention, and the unity of invention criteria that must be satisfied, where a group of inventions is claimed, in order to have a right to include multiple inventions in a single application. A group of inventions is linked to form a single general inventive concept where there is a technical relationship among the inventions that involves at least one common or corresponding special technical feature. The expression "special technical features" is defined as meaning those technical features that define the contribution which each claimed invention, considered as a whole, makes over the prior art. For example, a compound is the common technical feature in an application claiming (1) the compound per se, (2) a method of making the compound and (3) a method of using the compound. A corresponding technical feature is exemplified by a key defined by certain claimed structural characteristics which correspond to the claimed features of a lock to be used with the claimed key.

Section 1.475(b) is amended to define several combinations of different categories of claims which always fulfill the unity of invention requirements of section 1.475(a) where the same or corresponding special technical feature is claimed. There may be other combinations of different categories of claims which fulfill the requirement for unity of invention, but the determination of unity must be made under section 1.475(a), not section 1.475(b).

In section 1.475(b), a process is "specially adapted" for the manufacture of a product if the claimed process inherently produces the claimed product with the technical relationship defined in section 1.475(a) being present between the claimed process and the claimed product. The expression "specially adapted" as used in this section does not imply that the product could not also be manufactured by a different process.

In section 1.475(b), an apparatus or means is "specifically designed" for carrying out the process when the apparatus or means is suitable for carrying out the process with the technical relationship defined in section 1.475(a) being present between the claimed apparatus or means and the claimed process. The expression "specifically designed" does not imply that the apparatus or means could not be used for carrying out another process, nor does it imply that the process could not be carried out using an alternative apparatus or means.

Section 1.475(c) is amended to require that unity of invention might not be present if a combination of categories of invention different from those described in section 1.475(b) are presented in an application. The requirements of section 1.475(a) are always met by the combinations described in section 1.475(b) where the same or corresponding special technical feature is claimed. All other combinations must be tested against the unity of invention standard of section 1.475(a).

Section 1.475(d) is amended by deleting reference to the different combinations of categories of invention that always meet the unity of invention standard (now set forth in section 1.475(b)), and to make reference to the determination of the main invention where multiple products, processes of manufacture or uses are claimed. The significance of determining the main invention is set forth in section 1.476(c).

Section 1.475(e) is amended to require that the determination regarding unity of invention be made without regard to whether a group of inventions is claimed in separate claims or as alternatives within a single claim. The basic criteria for unity of invention are the same, regardless of the manner in which applicant chooses to draft a claim or claims.

Section 1.475(f) is deleted since PCT Rule 13 has been amended and the basic principles of unity of invention are incorporated into other portions of section 1.475.

Section 1.476(a) is amended to delete the reference to section 1.475(f) (which is deleted) and PCT Rule 13.

Section 1.480(b) is amended to allow applicants to develop their own computer-generated Demand form so long as the limitations in sections 102(h) and (i) of the Administrative Instructions are met. Printed Demand forms will continue to be available from the Office.

Section 1.482(a)(2)(i) is amended to clarify that an additional preliminary examination fee may be charged for lack of unity in Chapter II irrespective of whether there was a similar charge in Chapter I. Normally there will be a charge for lack of unity both in Chapter I and in Chapter II. In some instances, although a charge for the search of an additional invention is justified in Chapter I, the examiner chooses to proceed without charging for the search of the additional invention(s). However, circumstances may change (e.g., an amendment submitted with the Demand expanding the claims to the additional invention(s)) in Chapter II so as to warrant the examiner's requirement for an additional fee for examination of the additional invention(s).

Section 1.482(b) is amended to remove the reference to the supplement to the handling fee which had been collected for the benefit of the International Bureau and which has been deleted from the PCT regulations. At present, applicants must pay as many supplements to the handling fee as there are languages into which the elected Offices require translations of the international preliminary examination report. Under the new PCT regulations, all countries will accept an English translation of the international preliminary examination report, thus limiting the International Bureau's translation costs. Accordingly only one handling fee will need to be paid by the applicant, without any supplement, irrespective of the need for a translation of the report.

Section 1.484(b) is amended to permit an applicant to indicate in the demand that international preliminary examination is to begin based on the application as amended rather than on the application as filed. If a PCT Article 19 amendment is not received by the Office by 20 months from the priority date, preliminary examination will proceed. Where the demand indicates examination is to be based on an accompanying PCT Article 34 amendment, but the PCT Article 34 amendment has not been provided to the Office with the demand, the applicant will be notified and given a time period to submit the amendment. Thus, if the applicant wishes preliminary examination based on an amended version of the international application, the demand must so indicate and the amendment (PCT Article 19 or 34) must (1) accompany the demand; or (2) in the case of a PCT Article 19 amendment, be received by 20 months from the priority date; or (3) in the case of a PCT Article 34 amendment, be submitted within the non-extendable time period set by the Office.

Section 1.485 is amended to be consistent with section 1.484 and provides for amendments to be filed with the demand or within a time period set by the International Preliminary Examining Authority.

Section 1.487 is removed as unnecessary because the amendments to section 1.475 address the unity of invention principles to be applied by the International Preliminary Examining Authority.

Section 1.488(a) is amended to replace the reference to section 1.487, which is removed, with a reference to section 1.475.

Section 1.492 is amended to revise the introductory clause to eliminate the reference to 35 U.S.C. 376.

Section 1.492(e) is amended to eliminate the surcharge for filing the basic national fee after 20 or 30 months from the priority date. In accordance with the new practice under sections 1.494 and 1.495, the basic national fee must be filed no later than 20 months, or 30 months if a timely election was filed, from the priority date in order to avoid abandonment of the application.

Sections 1.494 and 1.495 is amended to modify the practice for entering the national stage as a designated or elected office by more closely aligning it with national application practice under section 1.53.

Section 1.494(a) is amended to clarify that absence of a Demand form is no longer the controlling event, but rather failure to elect the United States within 19 months of the priority date will trigger the time periods set forth in paragraphs (b) and (c) of this section.

Section 1.494(b) is amended to require that the basic national fee and a copy of the international application must be filed with the Office by 20 months from the priority date to avoid abandonment. The 22-month period for filing the basic national fee with a surcharge in previous rule 1.494(c) has been eliminated. The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the International Bureau notifies the applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage and applicant has received the notice from the International Bureau, applicant need only pay the basic national fee by 20 months from the priority date. The 20-month time limit for submission of the basic national fee and a copy of the international application is not extendable.

Section 1.494(c) is amended to provide that applicants who have provided the basic national fee and a copy of the international application by 20 months from the priority date but who omit a proper translation, oath or declaration will receive a notification setting a time period for submission of the omitted requirements. The time period set in the notice can be extended pursuant to section 1.136. Filing of the oath or declaration later than 20 months will require the payment of the surcharge set forth in section 1.492(e). Filing of the translation later than 20 months will require the payment of the processing fee set forth in section 1.492(f).

Section 1.494(d) is amended to clarify the existing practice that PCT Article 19 amendments must be submitted by 20 months from the priority date, which time may not be extended. Of course, the failure to do so does not result in loss of the subject matter of the PCT Article 19 amendments. The applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected.

Section 1.494(g) is removed in view of the amendments to sections (b), (c) and (d).

Section 1.494(h) is redesignated as 1.494(g) and is amended to specify when an application that fails to enter the national stage becomes abandoned. Abandonment occurs at 20 months from the priority date if the basic national fee and a copy of the international application have not been provided to the Office. If they have been provided to the Office within 20 months and the translation and/or oath or declaration are not filed timely, abandonment occurs upon expiration of the time limit set in the notification pursuant to paragraph (c). Thus, in the latter situation, abandonment would occur at the expiration of the time period set in the notice to file the missing translation, and/or oath or declaration. The phrase "where the United States has been designated but not elected prior to 19 months from the priority date" (emphasis added) has been changed to "where the United States has been designated but not elected by the expiration of 19 months from the priority date" (emphasis added) for clarity. A corresponding change has been made in section 1.495(h).

Section 1.495(a) is amended to clarify that the election of the U.S. need not be made in the Demand, but can be made subsequently if filed before expiration of 19 months from the priority date to start the time periods set forth in paragraphs (b) and (c) of this section.

Section 1.495(b) is amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment. The 32-month period for filing the basic national fee with a surcharge in previous rule 1.495(c) has been eliminated. The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time the International Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date. The 30-month time limit for submission of the basic national fee and a copy of the international application is not extendable.

Section 1.495(c) is amended to provide that applicants who have provided the basic national fee and a copy of the international application by 30 months from the priority date, but who omit a proper translation, oath or declaration, will receive a notification setting a time period for submission of the omitted requirements. The time period set in the notice can be extended pursuant to section 1.136. Filing of the oath or declaration later than 30 months will require the payment of the surcharge set forth in section 1.492(e). Filing of the translation later than 30 months will require the payment of the processing fee set forth in section 1.492(f).

Section 1.495(d) is amended to clarify the existing and continuing practice that the PCT Article 19 amendments must be submitted by 30 months from the priority date. The deadline for submitting PCT Article 19 amendments may not be extended. The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected.

Section 1.495(e) is amended to specify that a translation into English of any annexes to the international preliminary examining report which are not received by 30 months from the priority date may only be submitted within the time period set in paragraph (c) for submission of any omitted translation of the international application, or oath or declaration. If any required translation of the international application and oath or declaration have been provided to the Office by 30 months, a notice under paragraph (c) will not be sent, and if the translation of annexes is not submitted within 30 months, the annexes will be considered cancelled.

Section 1.495(h) is removed in view of the amendments to sections (b), (c), (d) and (e).

Section 1.495(i) is redesignated as 1.495(h) and specifies when an application that fails to enter the national stage becomes abandoned if the United States was elected prior to 19 months from the priority date. Abandonment occurs at 30 months from the priority date if the basic national fee and a copy of the international application have not been provided to the Office. If they have been provided to the Office within 30 months and the translation and/or oath or declaration are not filed timely, abandonment occurs upon expiration of the time limit set in the notification pursuant to paragraph (c). Thus, in the latter situation, abandonment would occur at the expiration of the time period set in the notice to file the missing translation, and/or oath or declaration.

Section 1.499 is amended by removing paragraphs (a) through (e) because the amendments to section 1.475 address the unity of invention principles to be applied in the national stage. The reference to the official action being called a requirement for restriction has been eliminated as unnecessary.

Section 1.821(h) is amended to provide that if applicant fails to timely provide the required computer-readable form, the United States International Searching Authority shall search only to the extent that a meaningful search can be carried out.

Section 10.9 is amended to add a new paragraph (c) to be consistent with section 1.455, clarifying that an attorney or agent having the right to act before the national office with which the international application is filed may represent the applicant before the U.S. International Searching Authority or

the U.S. International Preliminary Examining Authority. An individual who has the right to practice before the national office with which an international application is filed, and who is not registered under section 10.6, may not prosecute patent applications in the national stage in the Office.

Other Considerations:

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601, *et seq.*, Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the rules provide more streamlined and simplified procedures for filing and prosecuting international and national stage applications under the PCT.

The Patent and Trademark Office has determined that these rule changes are not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers; individual industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, *et seq.* The paperwork burden imposed by adherence to the PCT is currently approved by the Office of Management and Budget under control number 0651-0021.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office amends Title 37 of the Code of Federal Regulations as set forth below.

List of Subjects 37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 10

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements, Trademarks.

For the reasons set forth in the preamble, 37 CFR Parts 1 and 10 are amended as follows:

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.431 is amended by removing paragraph (e) and revising paragraphs (b)(1) through (b)(3)(ii), (c) and (d) to read as follows:

§ 1.431 International application requirements

(b) An international filing date will be accorded by the United States Receiving Office, at the time of receipt of the international application, provided that:

(1) At least one applicant (§ 1.421) is a United States resident or national and the paper filed at the time of receipt of the international application so indicate (35 U.S.C. 361(a), PCT Art. 11(1)(i)).

(2) The international application is in the English language (35 U.S.C. 361(c); PCT Art. 11(1)(ii)).

(3) The international application contains at least the following elements (PCT Art. 11(1)(iii)):

(i) An indication that it is intended as an international application (PCT Rule 4.2);

(ii) The designation of at least one Contracting State of the International Patent Cooperation Union (§ 1.432);

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§ 1.445) may be made in full at the time the international application papers required by paragraph (b) of this section are deposited or within one month thereafter. If the basic, transmittal and search fees are not paid within one month from the date of receipt of the international application, applicant will be notified and given one month within which to pay the deficient fees plus a late payment fee equal to the greater of (1) 50% of the amount of the deficient fees up to a maximum amount equal to the basic fee, or (2) an amount equal to the transmittal fee (PCT Rule 16bis). The one-month time limit set in the notice to pay deficient fees may not be extended.

(d) If the payment needed to cover the transmittal fee, the basic fee, the search fee, one designation fee and the late payment fee pursuant to paragraph (c) of this section is not timely made, the Receiving Office will declare the international application withdrawn under PCT Article 14(3)(a).

Section 1.432 is revised to read as follows:

§ 1.432 Designation of States and payment of designation fees.

(a) The designation of States including an indication that applicant wishes to obtain a regional patent, where applicable, shall appear in the Request upon filing and must be indicated as set forth in PCT Rule 4.9 and Section 115 of the Administrative Instructions. Applicant must specify at least one national or regional designation on filing of the international application for a filing date to be granted.

(b) If the fees necessary to cover all the national and regional designations specified in the Request are not paid by the applicant within one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date, applicant will be notified and given one month within which to pay the deficient designation fees plus a late payment fee equal to the greater of 50% of the amount of the deficient fees up to a maximum amount equal to the basic fee, or an amount equal to the transmittal fee (PCT Rule 16bis). The one-month time limit set in the notification of deficient designation fees may not be extended. Failure to timely pay at least one designation fee will result in the withdrawal of the international application. The one designation fee may be paid:

(1) within one year from the priority date,

(2) within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date, or

(3) with the late payment fee defined in this paragraph within the time set in the notification of the deficient designation fees. If after notification of deficient designation fees the applicant makes timely payment, but the amount paid is not sufficient to cover the late payment fee and all designation fees, the Receiving Office will, after allocating payment for the basic, search, transmittal and late payment fees, allocate the amount paid in accordance with PCT Rule 16bis.1(c) and withdraw the unpaid designations. The notification of deficient designation fees pursuant to this paragraph may be made simultaneously with any notification pursuant to § 1.431(c).

(c) On filing the international application, in addition to specifying at least one national or regional designation under PCT Rule 4.9(a), applicant may also indicate under PCT Rule 4.9(b) that all other designations permitted under the Treaty

are made. The latter indication under PCT Rule 4.9(b) must be made in a statement on the Request that any designation made under this paragraph is subject to confirmation (PCT Rule 4.9(c)) not later than the expiration of 15 months from the priority date by:

(1) filing a written notice with the United States Receiving Office specifying the national and/or regional designations being confirmed;

(2) paying the designation fee for each designation being confirmed; and

(3) paying the confirmation fee specified in § 1.445(a)(4). Unconfirmed designations will be considered withdrawn. If the amount submitted is not sufficient to cover the designation fee and the confirmation fee for each designation being confirmed, the Receiving Office will allocate the amount paid in accordance with any priority of designations specified by applicant. If applicant does not specify any priority of designations, the allocation of the amount paid will be made in accordance with PCT Rule 16bis.1(c).

4. Section 1.434 is amended by revising paragraph (a) to read as follows:

§ 1.434 The request.

(a) The request shall be made on a standardized form (PCT Rules 3 and 4). Copies of printed Request forms are available from the Patent and Trademark Office. Letters requesting printed forms should be marked "Box PCT."

5. Section 1.445 is amended by adding new paragraph (a)(4) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a) *****

(4) A confirmation fee (PCT Rule 96) equal to 50% of the sum of designation fees for the national and regional designations being confirmed (§ 1.432(c)).

6. Section 1.446 is amended by revising paragraph (d) and adding paragraph (e) to read as follows:

§ 1.446 Refund of international application filing and processing fees.

(d) The international and search fees will be refunded if no international filing date is accorded or if the application is withdrawn before transmittal of the record copy to the International Bureau (PCT Rules 15.6 and 16.2). The search fee will be refunded if the application is withdrawn before transmittal of the search copy to the International Searching Authority. The transmittal fee will not be refunded.

(e) The handling fee (§ 1.482(b)) will be refunded (PCT Rule 57.6) only if:

(1) the Demand is withdrawn before the Demand has been sent by the International Preliminary Examining Authority to the International Bureau, or

(2) the Demand is considered not to have been submitted (PCT Rule 54.4(a)).

7. Section 1.451 is amended by revising paragraph (a) to read as follows:

§ 1.451 The priority claim and priority document in an international application.

(a) The claim for priority must be made on the Request (PCT Rule 4.10) in a manner complying with Sections 110 and 115 of the Administrative Instructions.

8. Section 1.455 is amended by revising paragraph (a) to read as follows:

§ 1.455 Representation in international applications.

(a) Applicants of international applications may be represented by attorneys or agents registered to practice before the Patent and Trademark Office or by an applicant appointed as a common representative (PCT Art. 49, Rules 4.8 and 90 and § 10.10). If applicants have not appointed an attorney or agent or one of the applicants to represent them, and there is more than one applicant, the applicant first named in the request and who is entitled to file in the U.S. Receiving Office shall be considered to be the common representative of all the applicants. An attorney or agent having the right to practice before a national office with which an international application is filed and for which the United States is an International Searching Authority or International Preliminary Examining Authority may be appointed to represent the applicants in the international application before that authority. An attorney or agent may appoint an associate attorney or agent who shall also then be of record (PCT Rule 90.1(d)). The appointment of an attorney or agent, or of a common representative, revokes any earlier appointment unless otherwise indicated (PCT Rule 90.6(b) and (c)).

9. Section 1.475 is revised to read as follows:

§ 1.475 Unity of invention before the International Searching Authority, the International Preliminary Examining Authority and during the national stage.

(a) An international and a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

(b) An international or a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories:

(1) a product and a process specially adapted for the manufacture of said product; or

(2) a product and a process of use of said product; or

(3) a product, a process specially adapted for the manufacture of the said product, and a use of the said product; or

(4) a process and an apparatus or means specifically designed for carrying out the said process or

(5) a product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

(c) If an application contains claims to more or less than one of the combinations of categories of invention set forth in paragraph (b) of this section, unity of invention might not be present.

(d) If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application and the first recited invention of each of the other categories relate thereto will be considered as the main invention in the claims, see PCT Article 17(3)(a) and § 1.476(c).

(e) The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim.

10. Section 1.476 is amended by revising paragraph (a) to read as follows:

§ 1.476 Determination of unity of invention before the International Searching Authority.

(a) Before establishing the international search report, the International Searching Authority will determine whether the international application complies with the requirement of unity of invention as set forth in § 1.475.

11. Section 1.480 is amended by revising paragraph (b) to read as follows:

§ 1.480 Demand for international preliminary examination.

(b) The Demand shall be made on a standardized form. Copies of printed Demand forms are available from the Patent and Trademark Office. Letters requesting printed Demand forms should be marked "Box PCT".

12. Section 1.482 is amended by revising paragraphs (a)(2)(i) and (b) to read as follows:

§ 1.482 International preliminary examination fees.

(a) ***

(2) An additional preliminary examination fee when required, per additional invention:

(i) Where the International Searching Authority for the international application was the United States Patent and Trademark Office.....\$140.00

(b) The handling fee is due on filing the Demand.

13. Section 1.484 is amended by revising paragraph (b) to read as follows:

§ 1.484 Conduct of international preliminary examination.

(b) International preliminary examination will begin promptly upon receipt of a Demand which requests examination based on the application as filed, or as amended by an amendment which has been received by the United States International Preliminary Examining Authority. Where a Demand requests examination based on a PCT Article 19 amendment which has not been received, examination may begin at 20 months without receipt of a PCT Article 19 amendment. Where a Demand requests examination based on a PCT Article 34 amendment which has not been received, applicant will be notified and given a time period within which to submit the amendment. Examination will begin after the earliest of:

(1) receipt of the amendment;

(2) receipt of applicant's statement that no amendment will be made; or

(3) expiration of the time period set in the notification.

No international preliminary examination report will be established prior to issuance of an international search report.

14. Section 1.485 is revised to read as follows:

§ 1.485 Amendments by applicant during international preliminary examination.

(a) The applicant may make amendments at the time of filing of the Demand and within the time limit set by the International Preliminary Examining Authority for response to any notification under § 1.484(b) or to any written opinion. Any such amendments must:

(1) Be made by submitting a replacement sheet for every sheet of the application which differs from the sheet it replaces unless an entire sheet is cancelled, and

(2) Include a description of how the replacement sheet differs from the replaced sheet.

(b) If an amendment cancels an entire sheet of the international application, that amendment shall be communicated in a letter.

15. Section 1.487 is removed.

§ 1.487 [Removed]

16. Section 1.488 is amended by revising paragraph (a) to read as follows:

§ 1.488 Determination of unity of invention before the International Preliminary Examining Authority.

(a) Before establishing any written opinion or the international preliminary examination report, the International Preliminary Examining Authority will determine whether the international application complies with the requirement of unity of invention as set forth in § 1.475.

17. Section 1.492 is amended by revising the introductory clause and paragraph (e) to read as follows:

§ 1.492 National stage fees.

The following fees and charges are established for international applications entering the national stage under 35 U.S.C. 371:

(e) Surcharge for filing the oath or declaration later than 20 months from the priority date pursuant to § 1.494(c) or later than 30 months from the priority date pursuant to § 1.495(c):

By a small entity (§ 1.9(f)) \$65.00

By other than a small entity \$130.00

18. Section 1.494 amended by removing paragraph (h) and by revising paragraphs (a), (b), (c), (d) and (g) to read as follows:

§ 1.494 Entering the national stage in the United States of America as a Designated Office.

(a) Where the United States of America has not been elected by the expiration of 19 months from the priority date (see § 1.495), the applicant must fulfill the requirements of PCT Article 22 and 35 U.S.C. 371 within the time periods set forth in paragraphs (b) and (c) of this section in order to prevent the abandonment of the international application as to the United States of America. International applications for which those requirements are timely fulfilled will enter the national stage and obtain an examination as to the patentability of the invention in the United States of America.

(b) To avoid abandonment of the application, the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 20 months from the priority date:

(1) a copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the United States Patent and Trademark Office; and

(2) the basic national fee (see § 1.492(a)).

The 20-month time limit may not be extended.

(c) If applicant complies with paragraph (b) of this section before expiration of 20 months from the priority date but omits (1) a translation of the international application, as filed, into the English language, if it was originally filed in another language (35 U.S.C. 371(c)(2)) and/or (2) the oath or declaration of the inventor (35 U.S.C. 371(c)(4); see § 1.497), applicant will be so notified and given a period of time within which to file the translation and/or oath or declaration in order to prevent abandonment of the application. The payment of the processing

fee set forth in § 1.492(f) is required for acceptance of an English translation later than the expiration of 20 months after the priority date. The payment of the surcharge set forth in 1.492(e) is required for acceptance of the oath or declaration of the inventor later than the expiration of 20 months after the priority date. A copy of the notification mailed to applicant should accompany any response thereto submitted to the Office.

(d) A copy of any amendments to the claims made under PCT Article 19, and a translation of those amendments into English, if they were made in another language, must be furnished not later than the expiration of 20 months from the priority date. Amendments under PCT Article 19 which are not received by the expiration of 20 months from the priority date will be considered to be cancelled. The 20-month time limit may not be extended.

(g) An international application becomes abandoned as to the United States 20 months from the priority date if the requirements of paragraph (b) of this section have not been complied with within 20 months from the priority date where the United States has been designated but not elected by the expiration of 19 months from the priority date. If the requirements of paragraph (b) of this section are complied with within 20 months from the priority date but any required translation of the international application as filed and/or the oath or declaration are not timely filed, an international application will become abandoned as to the United States upon expiration of the time period set pursuant to paragraph (c) of this section.

19. Section 1.495 is amended by removing paragraph (i) and by revising paragraphs (a), (b), (c), (d), (e) and (h) to read as follows:

§ 1.495 Entering the national stage in the United States of America as an Elected Office.

(a) Where the United States of America has been elected by the expiration of 19 months from the priority date, the applicant must fulfill the requirements of 35 U.S.C. 371 within the time periods set forth in paragraphs (b) and (c) of this section in order to prevent the abandonment of the international application as to the United States of America. International applications for which those requirements are timely fulfilled will enter the national stage and obtain an examination as to the patentability of the invention in the United States of America.

(b) To avoid abandonment of the application the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date:

(1) a copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the United States Patent and Trademark Office; and

(2) the basic national fee (see § 1.492(a)).

The 30-month time limit may not be extended.

(c) If applicant complies with paragraph (b) of this section before expiration of 30 months from the priority date but omits:

(1) a translation of the international application, as filed, into the English language, if it was originally filed language (35 U.S.C. 371(c)(2)) and/or

(2) the oath in another or declaration of the inventor (35 U.S.C. 371(c)(4); see § 1.497), applicant will be so notified and given a period of time within which to file the translation and/or oath or declaration in order to prevent abandonment of the application. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than the expiration of 30 months after the priority date. The payment of the surcharge set forth in § 1.492(e) is required for acceptance of the oath or declaration of the inventor later than the expiration of 30 months after the priority date. A copy of the notification mailed to applicant should accompany any response thereto submitted to the Office.

(d) A copy of any amendments to the claims made under PCT Article 19, and a translation of those amendments into English, if they were made in another language, must be furnished not later than the expiration of 30 months from the priority date. Amendments under PCT Article 19 which are

not received by the expiration of 30 months from the priority date will be considered to be cancelled. The 30-month time limit may not be extended.

(e) A translation into English of any annexes to the international preliminary examination report, if the annexes were made in another language, must be furnished not later than the expiration of 30 months from the priority date. Translations of the annexes which are not received by the expiration of 30 months from the priority date may be submitted within any period set pursuant to paragraph (c) of this section accompanied by the processing fee set forth in § 1.492(f). Annexes for which translations are not timely received will be considered cancelled. The 30-month time limit may not be extended.

(h) An international application becomes abandoned as to the United States 30 months from the priority date if the requirements of paragraph (b) of this section have not been complied with within 30 months from the priority date and the United States has been elected by the expiration of 19 months from the priority date. If the requirements of paragraph (b) of this section are complied with within 30 months from the priority date but any required translation of the international application as filed and/or the oath or declaration are not timely filed, an international application will become abandoned as to the United States upon expiration of the time period set pursuant to paragraph (c) of this section.

20. Section 1.499 is revised to read as follows:

§ 1.499 Unity of invention during the national stage.

If the examiner finds that a national stage application lacks unity of invention under § 1.475, the examiner may in an Office action require the applicant in the response to that action to elect the invention to which the claims shall be restricted. Such requirement may be made before any action on the merits but may be made at any time before the final action at the discretion of the examiner. Review of any such requirement is provided under § 1.143 and 1.144.

21. Section 1.821 is amended by revising paragraph (h) to read as follows:

§ 1.821 Nucleotide and/or amino acid sequence disclosures in patent applications.

(h) If any of the requirements of paragraphs (b) through (f) of this section are not satisfied at the time of filing, in the United States Receiving Office, an international application under the Patent Cooperation Treaty (PCT), applicant has one month from the date of a notice which will be sent requiring compliance with the requirements, or such other time as may be set by the Commissioner, in which to comply. Any submission in response to a requirement under this paragraph must be accompanied by a statement that the submission does not include new matter or go beyond the disclosure in the international application as filed. Such a statement must be a verified statement if made by a person not registered to practice before the Office. If applicant fails to timely provide the required computer readable form, the United States International Searching Authority shall search only to the extent that a meaningful search can be performed.

22. The authority citation for 37 CFR Part 10 will continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

23. Section 10.9 is amended by adding new paragraph (c) to read as follows:

10.9 Limited recognition in patent cases.

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OFFICIAL GAZETTE

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(c) An individual not registered under § 10.6 may, if appointed by applicant to do so, prosecute an international application only before the U.S. International Searching Authority and the U.S. International Preliminary Examining Authority, provided: the individual has the right to practice before the national office with which the international application is filed (PCT Art. 49, Rule 90 and § 1.455).

Jan. 7, 1993

DOUGLAS B. COMER
Acting Assistant Secretary
and Acting Commissioner
of Patent and Trademarks

[1147 OG 29]

(107) Information Disclosure Statements In PCT
National Stage Applications

The purpose of this notice is to announce a change in practice with regard to the need for applicants in a national stage application to file an information disclosure statement with respect to documents cited in an international search report under certain circumstances.

When an international application is filed under the Patent Cooperation Treaty (PCT), prior art documents may be cited by the examiner in the international search report and/or the international preliminary examination report. When a national stage application is filed under 35 U.S.C. 371, or a national application is filed under 35 U.S.C. 111 claiming benefit of the filing date of the international application, it is often desirable to have the examiner consider the documents cited in the international application when examining the national application.

As a result of an agreement among the European Patent Office (EPO), Japanese Patent Office (JPO) and the United States Patent and Trademark Office (USPTO), copies of documents cited in the international search report issued by any one of these International Searching Authority Offices generally are being sent to the other Offices when designated in the international application. Accordingly, in many national stage applications where the international search was conducted by the EPO, JPO, or USPTO, copies of the documents cited in the international search report are made available to the examiner in the national stage application.

At this time, when all the requirements for a national stage application have been completed, applicant is notified (Form PCT/DO/EO/903) of the acceptance of the application under 35 U.S.C. 371, including an itemized list of the items received. The itemized list includes an indication of whether a copy of the international search report and copies of the references cited therein are present in the national stage file. The examiner will consider the documents cited in the international search report, without any further action by applicant under 37 CFR 1.97 and 1.98, when both the international search report and copies of the documents are indicated to be present in the national stage file. Otherwise, applicant must follow the procedures set forth in 37 CFR 1.97 and 1.98 in order to ensure that the examiner considers the documents cited in the international search report.

This notice applies only to documents cited in the international search report relative to a national stage application filed under 35 U.S.C. 371. It does not apply to documents cited in an international preliminary examination report that are not cited in the search report. It does not apply to applications filed under 35 U.S.C. 111 claiming the benefit of an international application filing date.

Practice relating to documents cited in a search report in an international application filed under the Patent Cooperation Treaty as set forth in § 609 of the Manual of Patent Examining Procedure will be modified in accordance with this notice.

Oct. 27, 1993

CHARLES E. VAN HORN
Patent Policy and Projects Administrator
Office of the Assistant Commissioner for Patents

[1156 OG 91]

(108)

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 10
[Docket No. 940547-4147]
RIN: 0651-AA72

Revision of Patent Cooperation Treaty Provisions

Agency: Patent and Trademark Office, Commerce

Action: Notice of proposed rulemaking

Summary: The Patent and Trademark Office (Office) proposes to amend the rules of practice relating to applications filed under the Patent Cooperation Treaty (PCT) in accordance with revised regulations under the PCT. The proposed changes will result in a procedure whereby international applications improperly filed in the United States Receiving Office (RO/US) will, for a fee, be forwarded for processing by the International Bureau as Receiving Office.

Dates: Written comments must be submitted on or before Aug. 29, 1994.

Addresses: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Charles Pearson, Crystal Park II, Room 919, or by Fax to (703) 308-6459. No oral hearing will be held.

For Further Information Contact: Charles Pearson by telephone at (703) 308-6515 or by mail marked to his attention and addressed as above.

Supplementary Information: These proposed rule changes will improve filing and processing procedures for applicants in the filing of international applications.

On September 20 to 29, 1993, representatives of the patent offices of the member countries, in a series of meetings held in Geneva, Switzerland, agreed upon several changes to the PCT regulations which are designed to make the PCT more user-friendly. One of the significant changes to the PCT regulations was the addition of a new section (PCT Rule 19.4) which provides for transmittal of an international application to the International Bureau, acting in its capacity as Receiving Office, in certain instances. Several other changes were agreed upon including modifications to certain existing regulations. Some of these adopted changes require corresponding changes in Title 37, CFR.

Under the regulations currently in effect, an applicant is required, on filing the international application in the United States, to specify an applicant who is a resident or national of the United States.

The practice under the revised PCT regulations permits an international application filed with the United States Receiving Office to be forwarded to the International Bureau for processing in its capacity as a receiving office if the international application has an applicant who is a resident or national of a PCT Contracting State or has no residence or nationality indicated, but does not have an applicant who is indicated as being a U.S. resident or national. The Receiving Office of the International Bureau will consider the international application to be received as of the date accorded by the United States Receiving Office. This practice will avoid the loss of a filing date in those instances where the United States Receiving Office is not competent to act, but where the international application is filed by an applicant who is a national or resident of a PCT Contracting State. Where questions arise regarding residence or nationality, e.g., where residence and nationality are not clearly set forth, the application will be forwarded to the International Bureau as Receiving Office. If all of the applicants are indicated to be residents and nationals of non-PCT Contracting States, PCT Rule 19.4 does not apply and the application is denied an international filing date.

Discussion of Specific Rules

Section 1.412 (c)(6), if added as proposed, would reflect that the United States Receiving Office, where it is not a competent Receiving Office under PCT Rule 19.1 or 19.2, could transmit the international application to the International Bureau for processing in its capacity as a Receiving Office.

Section 1.421(a), if amended as proposed, would clarify that applications filed by applicants who are not residents or nationals of the United States, but who are residents or nationals of a PCT Contracting state or who indicate no residence or

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(108)

nationality, will, upon timely payment of the proper fee, have their application forwarded to the International Bureau for processing in its capacity as a Receiving Office.

Section 1.445(a)(5), if added as proposed, would establish a fee equivalent to the transmittal fee in paragraph (a)(1) of this section for transmittal of an international application to the International Bureau for processing in its capacity as a Receiving Office.

Section 10.9, if amended as proposed, would add a new provision to be consistent with the change to PCT Rule 90.1, clarifying that an attorney or agent having the right to act before the International Bureau when acting as Receiving Office may represent the applicant before the U.S. International Searching Authority or the U.S. International Preliminary Examining Authority. An individual who has the right to practice before the International Bureau when acting as Receiving Office, and who is not registered under section 10.6, may not prosecute patent applications in the national stage in the Office.

Other Considerations:

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. This proposed rule has been determined to be not significant for the purposes of E.O. 12866.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the proposed rules would affect only a small number of international applications and would provide more streamlined and simplified procedures for filing and prosecuting international applications under the PCT.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the National government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The paperwork burden imposed by adherence to the PCT is currently approved by the Office of Management and Budget under control number 0651-0021.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 10

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements, Trademarks.

For the reasons set forth in the preamble, 37 CFR Parts 1 and 10 are proposed to be amended as follows, with removals indicated by brackets ([]) and additions by arrows (►):

Part I - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.412 is proposed to be amended by adding new paragraph (c)(6) to read as follows:

§ 1.412 The United States Receiving Office.

(c) The major functions of the Receiving Office include:

►(6) Reviewing and, where the United States Receiving Office is not the competent Receiving Office under 1.421(a) and PCT Rule 19.1 or 19.2, transmitting the international application to the International Bureau for processing in its capacity as a competent Receiving Office (PCT Rule 19.4).◄

3. Section 1.421 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.421 Applicant for International Application

(a) Only residents or nationals of the United States of America may file international applications in the United States Receiving Office. ►If an international application does not include an applicant who is indicated as being a resident or national of United States of America, and at least one applicant:

(1) has indicated a residence or nationality in a PCT Contracting State, or

(2) has no residence or nationality indicated;

applicant will be so notified and, if the international application includes a fee amount equivalent to that required by § 1.445(a)(5), the international application will be forwarded for processing to the International Bureau acting as a Receiving Office. (See also 1.412(c)(6)).◄

4. Section 1.445 is proposed to be amended by adding new paragraph (a)(5) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a)

►(5) A fee equivalent to the transmittal fee in paragraph (a)(1) of this section for transmittal of an international application to the International Bureau for processing in its capacity as a competent Receiving Office (PCT Rule 19.4).◄

5. The authority citation for 37 CFR Part 10 would continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

6. Section 10.9 is proposed to be amended by revising paragraph (c) to read as follows:

§ 10.9 Limited recognition in patent cases.

(c) An individual not registered under § 10.6 may, if appointed by applicant to do so, prosecute an international application only before the U.S. International Searching Authority and the U.S. International Preliminary Examining Authority, provided: the individual has the right to practice before the national office with which the international application is filed (PCT Art. 49, Rule 90 and § 1.455) ► or before the International Bureau when acting as Receiving Office (PCT Rule 90.1).◄

June 23, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1164 OG 77]

**TRADEMARK APPLICATION
EXAMINATION AND CONTENT**

(109) Interviews Involving Trademark Application

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

July 6, 1964

HORACE B. FAY, JR.
*Assistant Commissioner
of Patents*

This supersedes the notice of Feb. 10, 1958. (728 O.G. TM 1)

[804 O.G. TM 147]

**(110) Trademark Examining Procedure for
Amended Applications; Reporting Oldest
Dates of Amended Trademark Applications**

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the *Official Gazette* (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

July 15, 1971

RENE D. TEGTMEYER
Assistant Commissioner

[889 O.G. TM 6]

(111) Trademark Office Actions

Effective immediately Applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

Feb. 7, 1972

ROBERT GOTTSCHALK
Commissioner of Patents

[895 O.G. TM 238]

(112)

**Petition to Make Trademark
Applications Special**

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer v. Lewry*, 89 O.G. 1861, 1899 C.D. 230, and *Wilputte v. Van Ackeren*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

Mar. 13, 1972

ROBERT GOTTSCHALK
Commissioner of Patents

[897 O.G. TM 2]

(113)

**Title 37-Patents, Trademarks,
and Copyrights**

Chapter I-Patent Office, Department of Commerce

Parts 2 and 6-Rules of Practice in Trademark Cases
International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise § 6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the

JANUARY 3, 1995

U.S. PATENT AND TRADEMARK OFFICE

1170 OG 263
(114)

original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new § 6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act of all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the *Official Gazette*, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§ 6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the *Official Gazette* when the List is available from local sources of the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom.

May 14, 1973

ROBERT GOTTSCHALK
Commissioner of Patents

BETSY ANCKER-JOHNSON
*Assistant Secretary for
Science and Technology*

Published in 38 F.R. 41681, June 4, 1973

[911 O.G. TM 210]

(Note: Rule 2.85 (Classification schedules) was revised and Rule 6.1 (International schedule of classes of goods and services) was established as of September 1, 1973 by this notice: prior U.S. schedule of classes was redesignated as Rule 6.2.)

**(114) Wording In Verification or Declaration of
Trademark Application**

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

—that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto as to be likely when applied to the goods of such other person, to cause confusion, or cause likely, mistake, or to deceive: —

The wording emphasized conforms to the language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance. Examiners will not require new verifications or declarations. When the obsolete

wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

Mar. 25, 1974

RENE D. TEGTMEYER
*Assistant Commissioner
for Trademarks*

[921 O.G. TM 186]

(115)

Standardized Disclaimers

Beginning with the Nov. 9, 1982 issue of the *Official Gazette*, disclaimers in marks published for opposition and in those registered on the Supplemental Register will be printed in a standardized form, regardless of the text submitted. Certificates of registration for marks issued on the Supplemental Register will also contain the standardized disclaimer as of that date. Certificates of registration for marks issued on the Principal Register will contain the uniform statement beginning Feb. 1, 1983. The disclaimed matter will be taken from the disclaimer of record and inserted into a standardized disclaimer for printing and data base purposes. The new disclaimer text will take the following form:

No claim is made to the exclusive right to use
apart from the mark as shown.

Aug. 30, 1982

MARGARET M. LAURENCE
*Assistant Commissioner
for Trademarks*

[1022 TMOG 44]

(116) Trademark "Revivals" and "Reinstatements"

It would be of great assistance to the Office if the heading or caption of "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications carried the following identifying data:

1. Address Paper to the Attention of:
Office of Director, Trademark Examining Operation
2. Serial Number
3. Mark
4. Applicant's Name
5. A title indicating the nature of the paper

Use of this heading for "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications will help ensure that the papers are promptly routed to the proper Office, which will prevent needless delay in its consideration.

Aug. 13, 1984

MARK M. NEWMAN
*Director, Trademark
Examining Operation*

[1046 TMOG 13]

(117) T-Search Printouts as Section 2(d) References

As part of its ongoing automation program, the PTO is pleased to announce that on or about July 1, 1986, Trademark Examining Attorneys will use the automated Trademark search system (T-Search) exclusively for searching word marks. The Examining Attorneys will use computer printouts to advise applicants about Section 2(d) references. The printouts will include computer-generated facsimiles of the drawing where appropriate. The printouts will be used for word marks, whether the word is depicted in a typed drawing or in stylized form. Photocopies of certificates of registration will continue to be used for design marks.

The Patent and Trademark Office, in consultation with the Public Advisory Committee for Trademark Affairs, has established accuracy standards for the computerized data. Data elements which are not essential for examiner searching are being systematically checked and corrected. The following data elements which are essential for examiner searching purposes are essentially complete:

1. MARK
2. SERIAL NUMBER
3. REGISTRATION NUMBER
4. FILING DATE
5. REGISTRATION DATE
6. GOODS AND SERVICES
7. INTERNATIONAL CLASS
8. U.S. CLASS

Subject to the above caveat, the printouts will contain all the information that appears on the certificate of registration with one exception. If an application for registration was based on Section 44, 15 U.S.C. 1126, the printout will indicate that the registration or application was filed under the provisions of Section 44 (using the notation "SECT 44"). The printout will also show the priority date if the application was filed under the provisions of Section 44(d). However, it will not indicate the country or certificate number of the foreign registration on which the U.S. registration was based.

The printouts will also contain additional registration information which was not provided under the non-automated system, as follows:

- A. Change in registration—This will indicate that a registration was changed after registration, such as by an amendment of the mark or identification of goods/services. The current information will be displayed in the printout.
- B. Affidavits—This indicates that a Section 8 affidavit of continued use was accepted, that a Section 15 affidavit of incontestability was acknowledged, or that a mark was republished under the provisions of Section 12(c).
- C. Renewals—Applicable renewal information, such as "1st Renewal" or "2nd Renewal" will be shown.
- D. Owner—In addition to listing the original registrant, the last known owner, as the change of ownership is acknowledged by the Office by virtue of examining an affidavit or renewal, will be included.

The following provides an explanation of the terms/symbols used in the printout:

1. Goods or services appearing in double parentheses "(())" were not included in a Section 15 affidavit.
2. Goods or services appearing in brackets "[]" were deleted after registration by amendment, correction, restriction or at the time of renewal.
3. Dates will appear as year, month and day. For example, June 20, 1983 will appear as 1983.06.20.
4. Goods and services will be indicated with the international class (IC), the prior U.S. classification (US), the identification, date of first use and date of first use in commerce.
5. Registrants (OWNER) will be listed showing the owner's name, entity designation (e.g., individual, partnership, corporation), country of citizenship or state or country of incorporation, and address.
6. Pseudo mark—This material is merely a search aid and has no bearing on the registration information.
7. Design search code—This is also merely an aid for computerized searching of design marks, by which a number is assigned to describe a particular design element. It has no bearing on the registration information.
8. Mark drawing code—This indicates the appearance of the mark, and again is not part of the registration data. There are six mark drawing codes.
 - 1—typed drawing
 - 2—design only
 - 3—words, letters and/or numbers and design

- 4—words, letters and/or number in block form (block letters; not typed drawing)
- 5—words, letters and/or numbers in a stylized form
- 6—sound marks

An example of a computer printout and a facsimile of a stylized word mark follow.

June 23, 1986

MARGARET M. LAURENCE
*Assistant Commissioner
for Trademarks*

Document 1 of 1 for SS 1: FD 1351766/RH,EN

WORD MARK
TRANSLATION

GOODS AND SERVICES

MARK DRAWING CODE

SERIAL NUMBER
FILING DATE
CHANGE IN REGISTRATION
REGISTRATION NUMBER
REGISTRATION DATE
OWNER NAME AND ADDRESS

SECTION 44 INDICATOR
FOREIGN PRIORITY DATES
DISCLAIMER

TYPE OF MARK
REGISTER

LINEA ADRIANO
THE WORDS "LINEA ADRIANO" IN THE MARK MAY BE
TRANSLATED INTO ENGLISH AS "LINE MADRIAN"
IC 025; US 039; G & S; ARTICLES OF CLOTHING
FOR MEN, NAMELY JACKETS, COATS, SUITS,
TROUSERS, JUMPERS, SHIRTS AND TIES
(5) WORDS, LETTERS, AND/OR NUMBERS IN
STYLIZED FORM

73-446250
1983.10.06
CHANGE IN REGISTRATION HAS OCCURRED:
1351766
1985.07.20
(REGISTRANT) RITEX AG KLEIDERFABRIK ZOFINGEN
CORPORATION SWITZERLAND FUNKENSTRASSE 10
ZOFINGEN AARGAU SWITZERLAND
SECT 44
1983.06.20
NO CLAIM IS MADE TO THE EXCLUSIVE RIGHT TO
USE "LINEA" APART FROM THE MARK AS SHOWN
TRADEMARK
PRINCIPAL

(118) Nonregistrability of Misleading Geographic Indications—Amendment of the Trademark Act by the North American Free Trade Agreement Implementation Act

Article 1712 of the North American Free Trade Agreement (NAFTA) requires the United States, Canada and Mexico to prohibit the use or Trademark registration of geographical indications in connection with goods that do not originate in the indicated territory, region or locality, if the public would be misled as to the geographical origin of the goods.¹

President Clinton signed the "North American Free Trade Agreement Implementation Act," Public Law 103-182, 107 Stat. 2057, on Dec. 8, 1993. The legislation, amending Sections 2(e), 2(f) and 23(a) of the Trademark Act, applies to applications filed on or after Dec. 8, 1993, and took effect on Jan. 1, 1994. The Act, entitled "An Act to provide for the registration and protection of trademarks in commerce, to carry out the provisions of certain international conventions, and for other purposes," approved July 5, 1946, commonly referred to as the Trademark Act of 1946, has been amended as indicated. Amendments are shown in italics:

I. Subsection 2(e) (15 U.S.C. 1052(e)):

"(e) Consists of a mark which (1) when used on or in connection with the goods of the applicant is merely descriptive or deceptively misdescriptive of them, (2) when used on or in connection with the goods of the applicant is primarily geographically descriptive of them, except as indications of regional origin may be, registrable under section 4, (3) when used on or in connection with the goods of the applicant is primarily geographically deceptively misdescriptive of them, or (4) is primarily merely a surname."

II. Subsection (f) (15 U.S.C. 1052(f)):

"(f) Except as expressly excluded in paragraphs (a), (b), (c), (d), and (e)(3) of this section, nothing herein shall prevent the registration of a mark used by the applicant which has become distinctive of the applicant's goods in commerce. The Commissioner may accept as prima facie evidence that the mark has become distinctive, as used on or in connection with the applicant's goods in commerce, proof of substantially exclusive and continuous use thereof as a mark by the applicant in commerce for the five years before the date on which the claim of distinctiveness is made. Nothing in this section shall prevent the registration of a mark which, when used on or in connection with the goods of the goods of the applicant, is primarily geographically deceptively misdescriptive of them, and which became distinctive of the applicant's goods in commerce before the date of the enactment of the North American Free Trade Agreement Implementation Act."

III. Section 23(a)(15 U.S.C. 1091(a)):

"(a) In addition to the principle register, the Commissioner shall keep a continuation of the register provided in paragraph (b) of section 1 of the Act of March 19, 1920, entitled "An Act to give effect to certain provisions of the convention for the protection of trademarks and commercial names, made and signed in the city of Buenos Aires, in the Argentine Republic, August 20, 1910, and for other purposes", to be called the supplemental register. All marks capable of distinguishing applicant's goods or services and not register herein provided, except those declared to be unregistrable under subsections (a), (b), (c), (d), and (e)(3) of section 2 of this Act, which are in lawful use in commerce by the owner thereof, on or in connection with any goods or services may be registered on the supplemental register upon the payment of the prescribed fee and compliance with the provisions of subsections (a) and (e) of section 1 so far as they are applicable. Nothing in this section shall prevent the registration on the supplemental register of a mark, capable of distinguishing the applicant's goods or services and not registrable on the principal register under this Act, that is declared to be unregistrable under section 2(e)(3), if such mark has been in lawful use in commerce by the owner thereof, on or in connection with any goods or

services, since before the date of the enactment of the North American Free Trade Agreement Implementation Act."

A mark which is unregistrable on the Principal Register under 2(e)(3) of the Trademark Act, as amended, on the ground that it is primarily geographically deceptively misdescriptive of the goods or services, may be registered under 2(f) only if it became distinctive of the goods or services in commerce before December 8, 1993. Similarly, such a mark, capable of distinguishing the applicant's goods or services, may be registered on the Supplemental Register only if it has been in lawful use in commerce by the owner since before December 8, 1993. A mark that is unregistrable under 2 (e)(3) because it contains matter which is primarily geographically deceptively misdescriptive of the goods or services will not be rendered registrable by a disclaimer of the geographically deceptively misdescriptive component. Matter which is primarily geographically deceptively misdescriptive may be omitted or deleted from the drawing in appropriate cases.

1 The Article also prohibits any use constituting unfair competition within the meaning of Article 10bis (Unfair Competition) of the Paris Convention.

April 1, 1994

ROBERT ANDERSON
Acting Assistant Commissioner
for Trademarks

[1162 TMOG 15]

(119)

Trademark Drawings

Effective July 3, 1989, the requirement of Trademark Rule 2.52(c) (37 CFR 2.52(c)) that drawings in trademark applications be limited in size to 4 inches by 4 inches will be strictly enforced for the purpose of assigning a filing date, pursuant to Trademark Rule 2.21(a)(3) (37 CFR § 2.21(a)(3)). [This notice rescinds the prior notice concerning this issue in the *Official Gazette* of June 30, 1987, at 1079 TMOG 12.]

The drawing size limitation is necessary to permit entry of the drawing in the automated trademark search system (T-Search) as soon as possible after receipt of the application by the Patent and Trademark Office (PTO). Oversized or poor quality drawings require additional processing before they can be digitized (copied) and entered in T-Search. If the PTO must reduce a drawing, not only is there often a loss of detail and overall drawing quality, but drawing reduction processing lengthens the time before the mark and information about the application are available to the public. Furthermore, an oversized drawing that is not reduced by the PTO cannot be scanned in its entirety for entry in T-Search, resulting in the possible loss of portions of the mark.

Enforcement of the drawing size limitation rule as a requirement for receipt of a filing date will permit the PTO to expedite application processing and permit the applicant to control the reduction process and, thus, control the quality of the representation of the mark as it will appear in T-Search, in the *Official Gazette*, and on the registration certificate.

The Trademark Law Revision Act of 1988 [Title 1 of Pub. L. 100-667, 102 Stat. 3935 (15 U.S.C. 1051)] will be implemented on Nov. 16, 1989. Two important provisions of the new law are that (1) an application for registration of the Principal Register may be filed based upon a bona fide intention to use a mark in commerce (15 U.S.C. 1051(b), as amended), and (2) for all applications filed on or after Nov. 16, 1989, upon the registration of a mark on the Principal Register, the application filing date becomes a constructive date of first use of the mark (15 U.S.C. 1057(c), as amended). Therefore, expedited processing to permit timely public notification of the filing of an application on the Principal Register will be particularly important.

Apr. 3, 1989

JEFFERY M. SAMUELS
Assistant Commissioner
for Trademarks

[1102 TMOG 6]

**(120) Trademark Drawing Requirements
Trademark Rule 2.52, 37 C.F.R. § 2.52**

For an application to satisfy the filing date requirement under Trademark Rule 2.21(a)(3), 37 C.F.R. § 2.21(a)(3), it must include a drawing of the mark substantially meeting all the requirements of Trademark Rule 2.52, 37 C.F.R. § 2.52. Because the granting of a filing date to an application potentially establishes a date of constructive use of the mark, timely public notification of the filing of applications is important. Marks must be accurately and expeditiously entered into the automated search system and filed in the Trademark Search Library.

The purpose of this notice is to identify recurring problems which have resulted in the loss of filing dates for failure to comply with Rule 2.21(a)(3).

Color in the Mark

Rule 2.52(a) requires that every line and letter in a drawing, including color lining and lines used for shading, must be black. Color in a mark can be shown only by using the linings depicted in the color chart in Rule 2.52(e). This requirement is strictly enforced. The Office denies filing dates to applications where color appears on the drawing.

Drawing Size

The requirement of Rule 2.52(c) that the mark on a drawing be limited in size to 4 inches wide by 4 inches high continues to be strictly enforced. *In re Fuller-Jeffrey Broadcasting Corp. of Santa Rosa*, 16 USPQ2d 1456 (Comm'r Pats. 1990). See *Official Gazette Notice* at 1102 TMOG 6.

Two Drawings Submitted With One Application

A single application may seek registration of only one mark. Therefore, as a matter of policy, the Office denies a filing date to any application which is accompanied by two drawings, each displaying a different mark.

Heading

Rule 2.52(d) requires that the drawing include a heading which lists the applicant's name and address, the goods and services, the dates of first use of the mark for an application based on use in commerce under 15 U.S.C. § 1051(a), and the priority filing date for an application based upon a foreign application under 15 U.S.C. § 1126(d). If the heading is omitted in its entirety, a filing date is denied to the application. See *In re Hacknack*, 16 USPQ2d 1895 (Comm'r Pats. 1990).

Two Page Drawings in Trademark Applications

The Office denies a filing date to any application in which the mark does not appear on the first page of the drawing.

Rule 2.52(d) requires that the drawing include a heading which lists, among other things, the goods and services for which registration is sought; and Rule 2.52(c) requires that there be a margin of at least one inch on the sides and bottom of the paper, and at least one inch between the mark and the heading.

Implicit in Rule 2.52 is a requirement that the mark and heading appear on a single page, in all but the most exceptional circumstances. There is an administrative need for a filing system that utilizes single page drawings, to expedite filing of mark drawings in the Trademark Search Library and entry of accurate information into the automated database. More importantly, there is a risk that the individual pages from multi-page drawings might become detached and separated in the Index of Pending Applications.

Historically, the Office has permitted the filing of drawings in which the heading continues onto a second page only where

the goods and services covered by the application are so numerous that they cannot be listed within the heading margins on a single page. *Trademark Manual of Examining Procedure* § 807.02.

Although the Office prefers that the identification of goods or services in such cases be abbreviated so that the entire drawing will fit onto one page, the Office will continue to accept drawings on which the list of goods or services continues onto a second page, in appropriate circumstances.

If the goods and services are abbreviated in the drawing heading, as recommended here, this will in no way limit the goods and services covered by the application. For purposes of determining the goods and services covered by an application, the written application is always controlling. See *In re Tokiwa Mfg. Co. Ltd.*, 21 USPQ2d 1395 (Comm'r Pats. 1991).

If an applicant deems it to be necessary, the heading of a drawing may be continued onto a second page. However, in all cases, the mark and a portion of the heading must appear on the first sheet. The Office denies a filing date to any application which fails to display the mark, in accordance with the size and margin requirements of Rule 2.52(c), on the first page of the drawing. This requirement is strictly enforced.

May 8, 1992

JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

[1139 TMOG 24]

(121) Wavier of Trademark Rule 2.76(a)

Trademark Rule 2.76(a) now provides that an intent-to-use application under Section 1(b) of the Trademark Act may be amended to allege use of the mark in commerce, under Section 1(c) of the Act, at any time between the filing date of the application and either (1) the date the examining attorney approves the mark for publication or (2) the date of the expiration of the six-month period after issuance of a final refusal. Thus, if the examining attorney issues a final refusal and the applicant files an appeal to the Trademark Trial and Appeal Board six months thereafter, any amendment to allege use filed subsequently is considered untimely.

The Patent and Trademark Office has now had several years' experience with intent-to-use applications and with the filing of amendments to allege use and has had an opportunity to observe the effect of this rule in connection with the appeal process. We have found that the strict time limit set by the rule has forced some applicants to pursue appeals that might otherwise have been dismissed as moot. Thus, a Section 1(b) intent-to-use applicant cannot under the present rule, obtain a remand of its application from the Board to the examining attorney to allow consideration of an amendment to the Supplemental Register or a claim of acquired distinctiveness under Section 2(f). Even though such a remand is likely to lead to registration or to publication of the mark for opposition the Board may not grant the request for remand unless the applicant filed an amendment to allege use before the expiration of the unable to grant remand, because use of the mark is a prerequisite to registration on the Supplemental Register and Rule 2.76(a) precludes the applicant from filing an amendment to allege use. The same result would follow where an intent-to-use applicant sought to assert acquired distinctiveness under Section 2(f). Because the Board has no discretion to remand applications in such situations, the rule has worked to delay or frustrate the registration process.

Accordingly, application of Rule 2.76(a) is hereby waived, in pertinent part, to eliminate the time limit during which an amendment to allege use may be filed after the examining attorney's final refusal to register. It should be noted that, although an amendment to allege use will now be considered timely even if filed during the pendency of an ex parte appeal, the Board retains jurisdiction over the application once an appeal is filed. The Board may, in its discretion, suspend action on the appeal and remand the application to the examining attorney for consideration of the amendment to the allege use; or it may continue action on the appeal, thus deferring examina-

tion of the amendment to allege use until after disposition of the appeal.

The Patent and Trademark Office will, in due course, publish a notice of proposed rulemaking to amend Trademark Rule 2.76(a).

Oct. 6, 1993

ROBERT M. ANDERSON
*Acting Assistant Commissioner for
Trademarks*

[1156 TMOG 12]

(122)

Questions and Answers

I. New Trademark Application Filing Requirements

The Trademark Law Revision Act of 1988, which was implemented on Nov. 16, 1989, contains the most significant amendments to the Lanham Act since its enactment in 1947. The Patent and Trademark Office has significantly revised the Trademark Rules of Practice to reflect the changes in the law. Additionally, the PTO has issued a supplement to Revision 7 of the *Trademark Manual of Examining Procedure* that reflects the changes in the law, rules, and Office policy and is available from the Government Printing Office.

The PTO's Office of the Assistant Commissioner for Trademarks has prepared a series of "Questions and Answers" about Office practice under the new law and rules. This first in the series concerns the requirements for the initial filing of an application. Subsequent "Questions and Answers" will address various examination issues, the statement of use, requests for extension of time to file the statement of use, the amendment to allege use and notice of allowance.

Q. What is an intent-to-use application?

A. The Trademark Law Revision Act of 1988 became effective on Nov. 16, 1989. It amended the Trademark Act to add a new basis for filing an application for Federal trademark registration on the Principal Register. A party with a bona fide intention to use a specific mark in commerce in relation to specific goods or services may now file an application. However, before the mark will be registered, the applicant must use the mark in commerce in connection with the specified goods or services and submit specimens evidencing use and a verified allegation concerning that use.

First, an intent-to-use application will be examined in relation to all substantive and procedural requirements, except use-related issues, and, if acceptable, published for opposition. If there is no opposition, or any opposition is resolved in the applicant's favor, the applicant will receive a notice of allowance.

The applicant must submit a statement of use within six months of that date, or request a six-month extension of time. The applicant may then request up to four additional six-month extensions of time in which to file the statement of use. The grant of such extensions is predicated, in part, upon the applicant's showing of "good cause" as to why the mark has not yet been used. Thus, an applicant may have up to 36 months from the mailing of the notice of allowance within which to file a statement of use. (See Trademark Rules 2.88 and 2.89 concerning the requirements for a statement of use and extension requests.) Upon filing, the statement of use will be examined and, if accepted, the mark will register.

Q. How does an intent-to-use application differ from an application based upon use in commerce?

A. The primary difference between the two types of applications is the basis for filing. Because of that difference, the filing requirements and processing of the two types of applications differ.

A party may not file an application based upon use of a mark in commerce until after that use has occurred. Instead of asserting a bona fide intent to use the mark in commerce, the use-based application must include allegations concerning dates of use and specimens evidencing use as a filing requirement.

The use-based application will be examined and, if acceptable, published for opposition. If the mark is not opposed, or any opposition is resolved in the applicant's favor, the mark will register. This procedure differs from the application procedure for an intent-to-use application, as noted above.

However, in all other respects the legal reasons for refusing registration (such as descriptiveness, likelihood of confusion, etc.) and the procedural requirements (such as specificity of identifications of goods, signature by applicant, etc.) are exactly the same for the two types of applications. Additionally, upon registration, the filing date of any application on the Principal Register is a constructive date of first use of the mark.

Q. What are the requirements for filing an intent-to-use application?

A. A complete intent-to-use application consists of a written application, a drawing of the mark, and the required filing fee for each class of goods. The requirements for a written intent-to-use application are set forth in Trademark Rule 2.33. The application must be made to the Commissioner of Patents and Trademarks, must include a request for registration, and must be signed and verified (sworn to) by the applicant.

The application must specify: the name and address of the applicant; information about the applicant's legal entity; a claim that the applicant has a bona fide intention to use the mark in commerce; the particular goods or services on or in connection with which the applicant has a bona fide intention to use the mark; the class of goods or services according to the official classification, if known to the applicant; and the intended mode, manner or method of applying, affixing or otherwise using the mark on or in connection with the goods or services specified.

The applicant must sign a verification of the application which includes, in part, averments that the applicant is believed to be entitled to use the mark sought to be registered; that to the best of the declarant's knowledge and belief no other entity has the right to use the mark in commerce, either in the identical form or in such near resemblance as to be likely, when applied to the goods or services of such other entity, to cause confusion, or to cause mistake, or to deceive; and that the facts set forth in the application are true.

Please note that Rule 2.33 differs from section 1(b) of the Act because the rule requires the above verification to include a statement that "the applicant is the owner of the mark" rather than that "the applicant believes it is entitled to use the mark." This specific requirement of the rule should be disregarded to the extent that it differs from the statute. The rule will be amended in due course.

Q. What are the minimum requirements for receipt of a filing date for an intent-to-use application?

A. Trademark Rule 2.21 sets forth the minimum requirements for receipt of a filing date for intent-to-use applications, as well as other types of applications. These minimum formal requirements do not include all of the requirements which may ultimately be necessary to obtain registration, but merely those which must be satisfied to receive a filing date.

An intent-to-use application must include the following elements in order to receive a filing date: the name of the applicant, the name and address to which communications can be directed, a drawing of the mark substantially meeting all of the requirements of Trademark Rule 2.52, an identification of goods or services, a claim of a bona fide intention to use the mark in commerce, a verification or declaration under Trademark Rule 2.33(b) signed by the applicant, and the required filing fee for at least one class of goods or services. If an application lacks any one of these elements, it will be denied a filing date and all papers will be returned to the applicant as informal.

Q. Is there any change in the requirements for applications based upon either use in commerce or Section 44 of the Trademark Act?

A. Yes. Effective Nov. 16, 1989, an application must be signed in order to receive a filing date. Trademark Rule 2.21 has been amended to require that an application include a verification or declaration in accordance with Trademark Rule 2.33(b), signed by the applicant, to receive a filing date. This require-

ment applies to all applications filed after Nov. 16, 1989, regardless of the basis for filing. Unsigned applications will be returned to the applicant as informal. A verified assertion, signed by the applicant, of the basis for filing, is believed to be essential because of the importance of the filing date as a constructive date of first use of the mark for registration of the Principal Register.

All other filing requirements for use-based applications remain unchanged.

Concerning Section 44 which permits, under certain circumstances, the filing of an application in the United States based upon an application or registration in another country, there are two additional changes. Effective Nov. 16, 1989, an application filed under Section 44(d) or Section 44(e) of the Trademark Act must include an allegation that the applicant has a bona fide intention to use the mark in commerce. However, Section 44 applicants will still be exempt from any use requirement as a condition to registration. In other words, Section 44 applicants are not required to file specimens evidencing use of the mark or an allegation of use in order to obtain registration.

As a requirement for obtaining a filing date, an application filed pursuant to Section 44(d) must include in the heading of the drawing the date of the foreign filing which forms the basis of its priority claim.

Q. Who can sign an application?

A. There are two issues that may arise with respect to the signature on an application: (1) whether the signature is sufficient for receipt of a filing date, and (2) whether the signature is that of the applicant.

The following persons can properly sign an application for an applicant: an individual applicant, a general partner of a partnership, or an officer of a corporation or association.

If an application is signed by an improper party, but the improper party had "color of authority" to act for applicant, the Office will require re-execution of the application, but will not invalidate the filing date. (See Trademark Rule 2.71(c) concerning "color of authority.") The Examining Attorney will determine whether the signatory had color of authority to sign the application for the applicant. A person has such color of authority if he or she has firsthand knowledge of the relevant facts and implied or actual authority to act on behalf of the applicant. A general manager may qualify under this standard. *The applicant's attorney will not ordinarily be regarded as possessing color of authority to sign on behalf of a client.* Attorneys, who are not employees of a corporate applicant, do not usually have firsthand knowledge of a client's business or the authority to act on behalf of a client, other than as legal representative.

If the signature is acceptable for the purpose of receiving a filing date (i.e., if the signatory had color of authority), but is not the signature of the applicant, a substitute verification by the applicant of the facts in the application will be required. If the person who signed did not have even color of authority, the Examining Attorney will refuse registration because the applicant did not meet the minimum requirements of Rule 2.21 for receipt of a filing date. An application signed by a party without color of authority is void *ab initio* and cannot be corrected by submission of a substitute declaration.

Q. Are "fax" copies of signatures acceptable?

A. The Trademark Operation does not have the equipment to accept documents transmitted by "fax" for purposes of receiving a filing date. However, the signature on a properly filed application may be a photocopy or "fax" copy of the original signature. The subsequent submission of the original document will be required by the Examining Attorney.

Q. What is the significance of the filing date?

A. Section 7 of the Trademark Act has been amended to provide that the filing date of an application of the Principal Register is a constructive date of first use of the mark in commerce, provided the application matures into a registration. Thus, filing affords the applicant nationwide priority over others, with the exception of parties who had used the mark before the applicant's filing date, parties who had filed before the applicant,

or parties who are entitled to an earlier priority filing date based upon the filing of a foreign application under Section 44(d) of the Trademark Act.

Q. Can an application be based upon both use and intent-to-use?

A. No. Section 1(a) of the Trademark Act provides for the filing of applications based upon actual use in commerce, while Section 1(b) provides for the filing of applications based upon intent-to-use. Trademark Rule 2.33(d) states that an applicant may not file under both Sections 1(a) and 1(b) of the Act in a single application, nor may an applicant in an application under Section 1(a) of the Act amend to seek registration under Section 1(b). Any application filed under both Sections 1(a) and 1(b) of the Trademark Act will be denied a filing date and returned to the applicant.

Q. Can an applicant assert both a Section 44 claim and an intent-to-use or use claim in the same application?

A. Yes. Section 44(d) provides for applications based upon an application for registration filed in an applicant's country of origin, and section 44(e) provides for applications based upon a registration in applicant's country of origin. An application may be based upon both a foreign application or registration under Section 44 and either use in commerce under Section 1(a) or intent-to-use under Section 1(b).

Q. Since a Section 44 application contains a statement of a bona fide intent to use the mark in commerce, isn't this also an intent-to-use application?

A. No. The statement of a bona fide intent to use a mark is one of the statutory requirements for a Section 44 filing and the PTO will not consider the mere inclusion of such a statement to constitute the assertion of a basis for filing under Section 1(b) of the Act. In other words, once the requirements for Section 44 are met and the application successfully completes the opposition period, the mark will register (rather than a notice of allowance issuing in the application).

A Section 44 applicant may also assert an intent-to-use basis by explicitly stating, after its statement of a bona fide intent to use the mark in commerce, that it is also asserting a Section 1(b) basis for filing.

Q. Can an intent-to-use application be filed on the Supplemental Register?

A. No. An intent-to-use application initially filed on the Supplemental Register will be denied a filing date and returned to the applicant. No amendment of an intent-to-use application to the Supplemental Register will be accepted until after use has commenced and after the filing and acceptance of an amendment to allege use or a statement of use. In such a case, the effective filing date of the application will be changed to the date on which the applicant filed the amendment to allege use under Section 1(c) of the Trademark Act or the statement of use under Section 1(d) of the Act.

Q. Must an intent-to-use applicant begin using the mark before a registration will issue?

A. Yes. An intent-to-use application may not mature into a registration until use of the mark has begun. After use begins, the applicant must verify such use in either (1) an amendment to allege use or (2) a statement of use. In addition, applicant must submit specimens evidencing use and a fee of \$100 per class of goods or services in the application.

Q. What is the difference between an amendment to allege use and a statement of use?

A. The primary difference between the amendment to allege use and the statement of use is the time of filing. The amendment to allege use may be filed during initial examination of the application, i.e., after the filing date of the application and before the date on which the Examining Attorney approves the mark for publication. If the amendment to allege use is accepted,

the application will then be processed for publication and issuance in the same manner as a use-based application.

If no amendment to allege use is filed before the Examining Attorney approves the mark for publication, the mark will be published for opposition. After the successful completion of the opposition period, the PTO will issue a notice of allowance. The applicant will then have six months from the date of the notice of allowance in which it must file a statement of use, or file a written request for an extension of time in which to file the statement of use. Successive extensions of time, aggregating no more than 36 months from the notice of allowance, may be obtained pursuant to Trademark Rule 2.89.

Nov. 27, 1989

JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

[1110 TMOG 622]

(123) **Receipt of a Filing Date Under Section 44
of the Trademark Act -
Claim of a Bona Fide Intention
to Use the Mark in Commerce Required**

For purposes of receiving a filing date, applications filed in the United States based on prior registrations in an applicant's country of origin under Section 44(e) of the Trademark Act, 15 U.S.C. § 1126(e), and applications claiming the benefit of a priority filing date in the United States based on prior application in a Paris Convention country under Section 44(d) of the Act, 15 U.S.C. § 1126(d), must include a statement "that the applicant has a bona fide intention to use the mark in commerce." 15 U.S.C. 1126(d) and (e); Trademark Rules 2.21(a) (5) (ii) and (iii); 37 C.F.R. § 2.21(a) (5) (ii) and (iii).

The claim of a bona fide intention to use the mark in commerce is expressly required by the statute and cannot be waived by the Commissioner for any reason. The claim is required in all applications filed under Section 44, even if the applicant has commenced use of the mark in commerce, and even if the applicant is also filing on the basis of use in commerce under Section 1(a) of the Act.

Where a Section 44 applicant has used the mark in commerce, it may choose to submit for the record an additional statement regarding actual use. For example, an applicant could state that it "has a bona fide intention to use the mark in commerce, as evidenced by the fact that actual use in commerce with the United States has commenced." In this way, the application will contain the statutorily required language of a "bona fide intention to use the mark in commerce," as well as the additional clarifying language that, in this particular instance, the mark is actually in use in commerce.

Jan. 8, 1992

JEFFREY M. SAMUELS
Assistant Commissioner
for Trademark

[1135 TMOG 44]

(124) **Reminders Concerning the Revised Rules
of Practice in Trademark Cases**

The Office offers the following reminders concerning certain requirements under the revised Rules of Practice in Trademark Cases to ensure proper and efficient processing of trademark papers.

1. Statement of A Bona Fide Intention to Use in Commerce

The Office has received a number of applications filed based on Trademark Act Section 44 which contain no claim of bona fide intention to use the mark in commerce. Sections 44(d)(2) and 44(e), and revised Trademark Rule 2.21 state the requirements for filing a trademark application based on a foreign application or registration. These sections require, among other things, that all applications filed pursuant to Section 44 state

a bona fide intention to use the mark in commerce. Therefore if the application is filed based only on Section 44, and applicant has not recited a claim of bona fide intention to use the mark in commerce, the application will not be accorded a filing date and will be returned to the applicant.

This statement must include the words "in commerce." The statement should be set forth in its entirety prominently in the opening statement of the application to ensure that the application is accorded a filing date. The applicant may repeat the statement in the application declaration, if desired.

2. Assertion of Two Bases

If the applicant wishes to file based on both a bona fide intention to use the mark in commerce under Trademark Act Section 1(b) and a foreign application or registration under Trademark Act Section 44, the applicant must clearly indicate its intention to do so. In a Section 44 filing the Office will not presume Trademark Act Section 1(b) as an additional basis for filing by the mere statement of a bona fide intention to use the mark in commerce. If the applicant wishes to claim an additional basis under Section 1(b) of the Act it should indicate its intention with a separate statement claiming a basis under Section 1(b).

3. Filing Papers Before Notification of Serial Number

The Office recommends that applicants wait until they have received the filing fee receipt before filing any papers related to a trademark application. The filing fee receipt includes the assigned application serial number. The applicant should refer to the serial number in filing any paper to ensure that the paper is associated with the correct application file. For example, if applicant has filed a photocopy of its application in order to receive a filing date and follows up the photocopy with an original document, the applicant should wait for the filing fee receipt in order to have a serial number with which to reference the second document. Without the reference number, the papers may be returned to the applicant or the papers may be identified as a new filing, and accorded a new serial number.

In the same manner, it is preferable that amendments to allege use under Trademark Act Section 1(c) should not be filed until a filing fee receipt has issued and applicant can reference the serial number of the appropriate application when it submits its amendment to allege use.

The filing of an amendment to allege use has important ramifications in the publication of the mark and production of the *Official Gazette*. Therefore it is especially important that the Office be able to identify and process those papers promptly.

If the applicant files an amendment to allege use along with other amendments, it would be helpful if the applicant provides some indication that the filing is both an amendment to allege use and other amendments.

4. Section 8 Affidavit Requirements

Trademark Act Section 8, as amended, and revised Trademark Rule 2.162 requires, among other things, that registrants set forth the "goods or services recited in the registration on or in connection with which the mark is in use in commerce." The goods and services must also be set forth in any affidavit asserting excusable nonuse. Formerly, applicants were not required to set forth the specific goods and services. Applicant may meet the requirement to specify the goods or services either by listing the goods or services or by incorporating the goods and services by reference, e.g., "The registered mark is in use in commerce with all the goods and services listed in the registration." The list of goods and services or applicant's incorporation of the goods and services by reference should appear somewhere in the body of the affidavit.

Applicants should also take note of the revised requirement for a specimen or facsimile for each class of goods or services in the registration. The specimen or facsimile for each class must be filed prior to the end of the sixth year. Failure to meet

these revised requirements may result in cancellation of all or part of a registration.

5. Filing of Miscellaneous Papers

Every paper filed with the Office which relates to an application or registration should include the serial number of the application or the registration number of the registration. The best practice would be to have the application number or registration number appear on every single sheet of paper which an applicant or registrant files with the Office, including any substitute specimens which applicant may file. Those papers filed with the Office which do not have the application serial number or the registration number reference on them must be identified by Office personnel using alternative means such as looking up the mark or owner in the automated search system. However, if papers become detached, the information which the Office needs to join a particular piece of correspondence to the correct file may not be available.

6. Time for Filing Corrections to Amendments to Allege Use

Applicants should note that Rule 2.76(a) provides that filing an amendment to allege use of a mark in commerce under section 1(c) is only permitted between the time of filing the application and the time the examiner approves the mark for publication. If applicant's amendment to allege use fails to meet the minimum requirements for an amendment to allege use as set out in Rule 2.76(e)(3), applicant must correct those defects prior to approval of the mark for publication or the application will be published without any consideration of the amendment to allege use. If the file is approved for publication before applicant can correct its amendment to allege use, applicant will be required to wait until a notice of allowance issues before it can file its affidavit of use. In these circumstances the fee applicant submitted for its original amendment to allege use will not be refunded or applied to the later filed statement of use.

Apr. 12, 1990

JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

[1114 TMOG 31]

(125) **DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 2
Docket No: 930508-3327
RIN 0651-AA61**

Revision of Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule

Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in trademark cases. The PTO is announcing that the fee for filing a trademark application is \$245, in accordance with the applicable provisions of Patent and Trademark Office Authorization Act of 1993. No other fees will be affected by this rulemaking.

Effective Date: Dec. 3, 1993. **For Further Information Contact:** Robert Kopson by telephone at (703) 305-8510 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This rules change adjusts the fee for filing a trademark application in accordance with the provisions of Public Law 103-179. The trademark fee increase is required to address long-term funding needs of the trademark functions of the PTO which cannot be satisfied with the current fee structure.

Statutory Provisions: Section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113), authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for all other services and materials furnished by the PTO relating to trademarks and other marks.

Public Law 103-179 established the fee for filing a trademark application at \$245 per class. Public Law 103-179 took effect on Dec. 3, 1993.

Recovery Level Determinations: The existing fee schedule, along with the adjustment to the trademark application fee, will recover \$518,692,000 in fiscal year 1994, of which \$4,830,000 is attributable to the increase in the trademark application fee. The enacted 1994 budget is \$504,021,000. An additional \$14,671,000 of patent statutory fees will be collected in 1994 and will be deposited to the Fee Surcharge Fund.

Patent statutory fees are subject to the provisions of the Omnibus Budget Reconciliation Act of 1990, as amended by Public Law 102-204. Of the total amount of income expected to be collected in 1994 under 35 U.S.C. 41(a) and (b), \$103,000,000 must be deposited to the Fee Surcharge Fund for deficit reduction purposes in lieu of seeking general taxpayer funds from the U.S. Treasury. The \$103,000,000 is deposited in a special account in the U.S. Treasury, reserved exclusively for use by the PTO, and is made available to the PTO through the appropriation process. For 1994, the Congress appropriated \$88,329,000 from the Fee Surcharge Fund.

General Procedures: There will be a grace period of 60 days, beginning Dec. 3, 1993, and ending Jan. 31, 1994. During the grace period, any party who submits a trademark application, which is otherwise sufficient, with a fee of at least \$210, but less than \$245, will be notified of the fee deficiency and permitted to supplement it within a 30-day period set by the notice of the insufficient fee. If the applicant submits the amount by which the fee is deficient within the 30-day period, the application will retain its original filing date. If the amount by which the fee is deficient is not submitted within 30 days, the application papers and fee will be returned to the applicant. Any trademark application submitted after Jan. 31, 1994 with a deficient fee payment will be returned to the applicant.

Discussion of Specific Rules

37 CFR 2.6 Trademark fees.

Section 2.6, subparagraph (a)(1), is revised to adjust the fee authorized by the Trademark (Lanham) Act of 1946 in accordance with the provisions of Public Law 103-179.

Other Considerations: This rule change is in conformity with the requirements of Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements relating to patent and trademark fee rules.

This regulation was reviewed by the Office of Information and Regulatory Affairs of the Office of Management and Budget under Executive Order 12866.

The PTO has determined that this rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

Notice and opportunity for comment are unnecessary under 5 U.S.C. 553(6)(b) because this rule change merely restates a Congressionally-mandated fee change. Because notice of proposed rulemaking is not required for this rule, the Regulatory Flexibility Act (5 U.S.C. 601 et seq.) does not apply. The PTO published a notice of proposed rulemaking on July 21, 1993, (58 FR 39102) to increase the trademark fee to \$245 based on pending legislation that would have given PTO the authority to raise trademark fees in excess of the Consumer Price Index. The legislation as passed (Pub L. 103-179) simply increased the trademark application filing fee to \$245 effective the date of enactment.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure. Courts, Lawyers, Trademarks.

For the reasons set forth in the preamble, the PTO is amending title 37 of the Code of Federal Regulations, Chapter 1, as set forth below.

Part 2-Rules of Practice in Trademark Cases

1. The authority citation for Part 2, continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.6 is amended by revising paragraph (a)(1) to read as follows:

§ 2.6 Trademark fees.

(a) Trademark process fees.

1. For filing an application, per class\$245.00

Dec. 23, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1158 TMOG 387]

TRADEMARK POST REGISTRATION

(126) Trademark Rule 2.165 Requirement Where A Section 8 Affidavit Or Declaration Is Held Insufficient

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (a) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least respond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (b) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from

the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

Dec. 12, 1977

BERNARD A. MEANY
Assistant Commissioner
for Trademarks.

[966 TMOG 80]

(127)

Late-Filed Renewal Fees

Sections 9 and 31 of the Lanham Act (15 U.S.C. §§ 1095 and 1113) require that an additional five dollar (\$5.00) fee be submitted by a registrant who files a renewal application during the three-month period following expiration of its registration. The language of the statute requires that this additional fee be submitted within the three-month grace period. A number of registrants who have failed to submit the additional fee within the prescribed period have petitioned the Commissioner to allow their renewal applications. The Commissioner has granted petitions of this kind where the registrant or its attorney maintained a Patent and Trademark Office deposit account which contained, on the date the renewal application was filed, sufficient funds to cover the additional fee. Specifically, the Commissioner has exercised discretion under Trademark Rules 2.146(a)(3) and 2.147 to deem the authorizations to charge the deposit accounts to have taken place at the time the registrants filed their renewal applications, even though the authorizations were not confirmed until a later date. This Office policy was established by the Commissioner's decision in *In re Ralston Purina Co.*, 191 USPQ154 (Comr. Pats. 1976).

The policy established by the *Ralston Purina* decision is being changed. Henceforth, the Commissioner will no longer exercise discretion to charge deposit accounts *nunc pro tunc* for trademark renewal application fees. To allow an authorization to charge a deposit account to relate back to a date on which no actual authorization existed is, in effect, to allow late payment. It is inequitable to permit those registrants who have deposit accounts (or those whose attorneys have such accounts) to make late payment of renewal fees, while those without deposit accounts may not.

Petitions relying on *Ralston Purina* will, after the date of this notice, be denied, unless the events that gave rise to those petitions occurred before publication of this notice.

Feb. 20, 1981

MARGARET M. LAURENCE
Assistant Commissioner
for Trademarks

[1004 O.G. 29]

(128)

Renewal Applications and Section 8 Affidavits

There has been a noticeable increase in the number of petitions requesting provisional acceptance of defectively executed Section 8 Affidavits and Renewal Applications under 35 U.S.C. § 26, the most common problem being a lack of notarization or a Rule 2.20 declaration. Often, such petitions are necessitated by the failure of registration owners to file the documents early enough to leave time in which to correct should they prove defective.

Section 8 Affidavits may be filed beginning with the fifth anniversary of the registration. The period for filing expires on the sixth anniversary of the registration. The period for filing Renewal Applications begins six months before the twentieth

anniversary of the registration and extends three months beyond the expiration of the twenty year term. While the Post Registration Division may allow up to six months to respond to a notice of defect, it may not allow corrective action beyond the period for filing established by the Trademark Act. It is therefore in the registrant's best interest to file such documents as close to the opening date as possible to allow time for correction, if necessary. Provisional acceptance under 35 U.S.C. § 26 has been, and will continue to be, given narrow application. Registrants should not rely on 35 U.S.C. § 26 as a means of acquiring an extension of time.

We have also become aware of many delays caused by defects in the chain of title. Registrants are encouraged to keep Patent and Trademark Office assignment records current with regard to ownership of registrations.

The filing of Post Registration documents at the earliest date and maintenance of assignment records will help to avoid the cancellation or expiration of registrations of trademarks currently in use, and will result in a savings of time and expense for both the registrant and the Patent and Trademark Office.

Apr. 19, 1983

MARGARET M. LAURENCE
Assistant Commissioner
for Trademarks

[1030 TMOG 37]

(129) Trademark Examining Operation

Effective Dec. 1, 1983, all requests presented to the Patent and Trademark Office under the provisions of Section 7 of the trademark statute (15 U.S.C. 1057) will be considered by the Post Registration Section of the Trademark Examining Operation.

Necessary telephone inquiries concerning procedure or status should be directed to 703-557-1986.

Dec. 2, 1983

MARGARET M. LAURENCE
Assistant Commissioner
for Trademarks

[1038 TMOG 256]

(130)

Helpful Hints

• *Trademark Post Registration - Failure to Specify Type of Commerce in Section 8 Affidavits or Declarations*—Section 8(a) of the Trademark Act requires that before the end of the sixth year following registration, an affidavit must be filed showing that the "mark is in use in commerce." [15 U.S.C. 1058a].

The Trademark Rules require that all Section 8(a) affidavits or declarations "state that the registered mark is in use in commerce and specify the nature of such commerce." [37 C.F.R. Section 2.162(e)].

The affidavit or declaration must be filed between the fifth and sixth year following the date of registration and it must contain a statement that the "mark is in use in commerce," with evidence thereof. There may be no extensions of time beyond the sixth year for submission of this statement and evidence of use of the mark in commerce. However, if the timely-filed affidavit or declaration does not set forth the type of commerce, the registrant will be given six months to submit that information even though the sixth year may have expired. The rules do not provide for any further extensions of time beyond the six months. (Carlisle Walters, 703-557-3061)

• *Backlogs in Trademark Renewals and Section 8 Affidavits and Declarations*—Registrants are advised that a backlog currently exists in the processing of Trademark Renewals and Section 8 affidavits and declarations. While the Patent and Trademark Office conducts a preliminary review of critical elements in order to notify registrants of statutory defi-

ciencies prior to the expiration of the statutory period for the submission of required documents, the ultimate responsibility for complying with the requirements of the statute and the rules rests with the registrant. (Carlisle Walters, 703-557-3061)

July 1, 1988

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1092 TMOG 11]

(131)

Section 8 Requirements For Trademark Registrations

Any registrant who files in the Patent and Trademark Office, on or after November 16, 1989, an affidavit or declaration under Section 8 of the Trademark Act will be required to comply with the requirements of the Trademark Law Revision Act of 1988 [Title 1 of Pub. L. 100-667, 102 Stat. 3935 (15 U.S.C. 1051)], which takes effect on November 16, 1989. The Trademark Law Revision Act amends 15 U.S.C. 1058(a) by adding the requirement that a registrant submit an affidavit "setting forth those goods or services recited in the registration on or in connection with which the mark is in use in commerce and attaching to the affidavit a specimen or facsimile showing current use of the mark...."

For Section 8 affidavits or declarations filed on or after November 16, 1989, the Patent and Trademark Office will require registrants to specify the goods and services to which the Section 8 affidavit or declaration pertains. The registrant may comply with the requirement for specification of its goods and services by listing each of the goods and services to which the Section 8 affidavit or declaration pertains or by making an all-encompassing reference to the goods and services recited in the registration (e.g., "The mark is in use in connection with all the goods and services recited in the registration." or "The mark is in use in connection with all the goods and services recited in the registration, with the exception of..."). The Patent and Trademark Office prefers that the registrant use an all-encompassing reference to its goods and services as the method of specification, especially where the mark is registered for numerous goods and services.

If the registrant fails to file, before the end of the sixth year following registration, a Section 8 affidavit or declaration that sets forth goods and services in connection with which the mark is in use, the registration will be cancelled. Similarly, those goods or services recited in the registration but not specified in a Section 8 affidavit or declaration filed before the end of the sixth year following registration will be deleted from the registration. After the end of the sixth year following registration, the Patent and Trademark Office will not accept a substitute Section 8 affidavit or declaration filed to correct registrant's failure to specify, or to specify completely, the goods and services on or in connection with which the mark is in use.

A Section 8 affidavit or declaration filed on or after November 16, 1989 must include a specimen or facsimile showing current use of the registered mark. The registrant will be required to file one specimen or facsimile for each class of goods or services to which the registration pertains. For a single-class registration covering multiple goods or services, only one specimen or facsimile showing current use of the mark on one of the goods or services in that class will be required. Similarly, for a multiple-class registration, the registrant will be required to file, for each class of goods or services covered by the multiple-class registration, one specimen or facsimile showing current use of the mark on one of the goods or services in that class.

If the registrant fails to file, before the end of the sixth year following registration, an affidavit or declaration that includes a proper specimen or facsimile for each class of goods or services to which the registration pertains, the registration will be cancelled as to that class of goods or services. After the end of the sixth year following registration, the Patent and Trademark Office will not accept a substitute Section 8 affidavit

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JANUARY 3, 1995

or declaration filed to correct the omission of a proper specimen or facsimile.

June 15, 1989
Jeffery M. Samuels
Assistant Commissioner for Trademarks
[1104 TMOG 22]

The present practice of notification of renewal will continue. However, the updated renewal certificate issued by the PTO will be modified to specifically indicate the length of the renewal period. The notice of renewal appearing in the *Trademark Official Gazette* will be modified to indicate the date of the acceptance of renewal.

August 16, 1989
JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

(132) **Renewal of Trademark Registrations
(Revised)**

[1106 TMOG 25]

This supersedes the notice that appeared in the *Official Gazette* on May 2, 1989; (1102 TMOG 5):

The Trademark Law Revision Act of 1988 [Title 1 of Pub. L. 100-667, 102 Stat. 3935 (15 U.S.C. 1051)], which takes effect on November 16, 1989, amends 15 U.S.C. 1059(a) to reduce the renewal term of a registration from twenty years to ten years from the end of the expiring period of the registration.

Any registration whose expiration date is prior to November 16, 1989, shall be renewed, upon proper application, from the end of the expiring period for:

- (a) twenty years if the renewal is granted prior to November 16, 1989, or
- (b) ten years if the renewal is granted on or after November 16, 1989, regardless of the renewal application filing date.

Any registration whose expiration date is on or after November 16, 1989, shall be renewed, upon proper application, for ten years from the end of the expiring period, regardless of the renewal application filing date.

**TRADEMARK INFORMATION AND
CORRESPONDENCE**

(133) **Powers of Attorney in Registered
Trademark Files**

On and after Feb. 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

Jan. 30, 1967
C.M. WENDT
Director

[835 TMOG 95]

(134) **PATENT AND TRADEMARK OFFICE (PTO)
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For updates to and suggestions for this publication, please contact:

Ernestine McCloud
Director's Office
Center for Patent and Trademark Information
Crystal Plaza 3, Room 2C04
U.S. Patent and Trademark Office
Washington, D.C. 20231

JANUARY 3, 1995

U.S. PATENT AND TRADEMARK OFFICE

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The following special departments should be used only for their specified purpose. Address mail as follows:

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Washington, D.C. 20231

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- Box 7 - Reissue applications for patents involved in litigation and subsequently filed related papers.
- Box 8 - All papers for the Office of the Solicitor except communications relating to pending litigation. Papers relating to pending litigation must be mailed to: Office of the Solicitor, P.O. Box 15667, Arlington, Va. 22215.
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- Box AF - Expedited procedure for processing amendments and other responses after final rejection.
- Box Assignment - All assignment documents except those filed with new applications.
- Box DAC - Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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The following special departments should be used for **Trademark-related** mail. Address mail as follows:

Assistant Commissioner for Trademarks
Box
2900 Crystal Drive
Arlington, Va. 22202-3513

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Government Printing Office
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(202) 783-3238

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Manual, Sale of or Subscription to

Address Inquiries for Printed Manual to:Superintendent of Documents
Government Printing Office
Washington, DC 20402
(202) 783-3238

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For contact information on them see *Official Gazette* issues (Notices section) or call the PTDLP.

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Address Mail to:Commissioner of Patents and Trademarks
Box PCT
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Address Requests for the Electronic Ordering Service to:

Commissioner of Patents and Trademarks
Box 11
Washington, D.C. 20231

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Law Office 15	308-9115
	(FAX) 308-7195

Mail

Address "Intent-to-Use" Documents Except Initial Applications and Amendments to Allege Use, to:

Assistant Commissioner for Trademarks
Box ITU
2900 Crystal Drive
Arlington, Va. 22202-3513

Address "Non-Fee" Trademark Mail to:

Assistant Commissioner for Trademarks
Box 5
2900 Crystal Drive
Arlington, Va. 22202-3513

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(Requires Touch-Tone Telephone. Hours: Weekdays,

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Additional Information Recommended for Inclusion in Information Contacts

Submit to:

Ernestine McCloud
Director's Office
Center for Patent and Trademark
Information
Crystal Plaza 3, Room 2C04
U.S. Patent and Trademark Office
Washington, D.C. 20231

[1165 TMOG 113]

(135) Patent and Trademark Office Services

In order to provide improved services to trademark applicants, registrants, and the general public, the Patent and Trademark Office plans to implement a pilot program called the "Trademark Assistance Center." The Center will provide general information about the trademark registration process and will respond to inquiries pertaining to the status of specific trademark applications and registrations. The location of the Center is 2900 Crystal Drive, 4B10, Arlington, Va. 22202-3513. Assistance may be obtained in-person or by dialing (703) 308-9000, Monday through Friday, 8:30 a.m. to 5:00 p.m. Eastern time, except holidays. Opening of the Center is planned for October 3, 1994. Please note that personal assistance concerning trademark as well as patent matters will continue to be available at 308-HELP and recorded information will continue to be available at (703) 557-INFO. Also, automated information about the status of trademark applications and registrations will continue to be available at (703) 305-8747.

September 7, 1994

PHILIP G. HAMPTON, II
Assistant Commissioner
for Trademarks

[1167 TMOG 27]

(136) Initial Processing of Application

On Feb. 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the for-

warding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under § 2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective Feb. 1, 1972.

Jan. 11, 1972

RICHARD A. WAHL
*Acting Commissioner of Patents*JAMES H. WAKELIN, JR.
*Assistant Secretary for
Science and Technology**Published in 37 F.R. 942; Jan. 21, 1972*

[895 O.G. TM 193]

(137) Dissemination Of Trademark Information

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703-557-3268.

Feb. 15, 1978

BERNARD A. MEANY
*Assistant Commissioner
for Trademarks*

[968 TMOG 9]

(138) Responsibility to Diligently Monitor
Trademark Applications and Registrations

The purpose of this notice is to remind trademark applicants and registrants of their responsibility to monitor the status of their application or registration in cases where a notice or action from the PTO is expected; and to apprise these parties that the *Trademark Manual of Examining Procedure*, (TMEP), will be revised to indicate that inquiries regarding the status of pending matters should be made within six months of the filing or receipt of any document for which further action by the Office is expected.

The TMEP is under revision in its entirety. As a part of that revision, Section 411, entitled "Status Inquiries," will be amended. The current language of § 411 indicates that a party awaiting action by the Office should file a status inquiry within eighteen months from the filing date of the application, or from the filing of a response to an Office action. This eighteen-month period was based on Office pendency in 1971, which was approximately fourteen months to mailing of the first Office action. Currently, the Office is mailing first actions within three months. Accordingly, the eighteen month period is no longer appropriate and is being reduced to six months to more realistically reflect Office pendency. Adoption of a six-month due diligence standard may have implications with respect to filing petitions and requests for other relief.

The Office of the Assistant Commissioner for Trademarks receives a number of requests to reactivate applications and registrations occasioned by the loss of papers mailed to or from the PTO. In many of these cases, the applicant or registrant may have proof that papers mailed to the PTO were actually received, or can aver that notices sent from the PTO were never received. However, in some of these cases the request will be denied because the party seeking relief has waited too long before investigating the problem. The rationale for denial is that third parties may have relied to their detriment on the information available in the PTO files and databases that an

application was abandoned or that a registration has been cancelled or expired.

The PTO generally processes applications, responses and other papers in the order in which they are received in the Office. Accordingly, applicants and registrations can expect to receive notice concerning these filings within predictable time periods. For example, a party filing an application for registration should expect to receive a filing receipt within four to six weeks and, in most cases, a "first action" within four to five months of the date of filing. Similarly, a registrant should expect to receive a notice of acceptance or rejection of a Section 8 affidavit of use or excusable nonuse within four to five months of submission, and a notice of acceptance or rejection of a renewal application within two to three months of submission. Only in rare cases would any of these time periods be longer than six months.

Since it is reasonable to expect some notice from the PTO about a pending matter within six months of the filing or receipt of any document, a party who has not received the expected written action or telephone call from the PTO within that time frame should be put on notice that the filing may have become lost. The party awaiting notification has the burden of inquiring as to the cause of the delay. **In order to be considered diligent in the monitoring of its application or registration, the party expecting notification from the PTO should inquire within six months.** Waiting until the end of the six-month period is not recommended. Parties should inquire as soon as they suspect that a problem exists.

Written status inquiries are discouraged. Whenever possible, status inquiries should be made by calling the Trademark Status Line, at (703) 305-8747 through 8752. The Status Line provides the current status and status date of all active federal applications and registrations, and is available from 6:30 a.m. until midnight, Eastern Time, Monday through Friday.

Examples of Situations Requiring Diligent Action

Applicant/registrant files an application, Section 8 affidavit, or Section 9 renewal application, accompanied by an acknowledgment postcard:

(a) No acknowledgement postcard, filing receipt or other acknowledgment is received within a reasonable time.

Diligent Action: Inquire within six months of mailing of the document to PTO.

(b) Acknowledgement post card received but no filing receipt or other acknowledgment is received within a reasonable time.

Diligent Action: Inquire within six months of receipt of the acknowledgement postcard.

(c) A filing receipt for the application is received but no Office action, telephone call from the examining attorney, or notice of publication is received within a reasonable time.

Diligent Action: Inquire within six months of receipt of the filing receipt.

(d) A response to an Office action is mailed to the PTO but no further Office action, telephone call, notice of publication, or other acknowledgment is received within a reasonable time.

Diligent Action: Inquire within six months of mailing of the response.

(e) A notice of publication is received for an application under Section 1(b), 15 U.S.C. § 1051(b) but no Notice of Allowance or notification of potential opposition is received within a reasonable time.

Diligent Action: Inquire within a six months of receipt of the notice of publication.

In the event that the party discovers that its application or registration is no longer active, or that a required paper has not been received by the PTO, the applicant or registrant should promptly file a petition to the Commissioner or take other appropriate action to rectify the situation. The time limits for filing petitions are strictly applied. A certificate of mailing in accordance with Trademark Rules 1.8 or 1.10, 37 C.F.R. §§ 1.8 or 1.10, is recommended.

To summarize, applicants and registrants have a duty to monitor the status of their applications and registrations. If nothing has been heard from the PTO within a six month period, the party awaiting notification has the burden of inquiring as to the status. Status inquiries should be made via the Trademark Status Line. Should the status inquiry reveal that the relevant document is lost, or some other problem exists, a petition to the Commissioner or other required action should be filed

within 60 days. Trademark Rule 2.146(d), 37 C.F.R. § 2.146(d). Failure to act diligently and follow up with the appropriate action may result in denial of the requested relief.

Oct. 2, 1992

JEFFREY M. SAMUELS
*Assistant Commissioner
for Trademarks*

[1143 TMOG 73]

(139) Availability of Trademark Status Line

Beginning on Feb. 20, 1990, the U.S. Patent and Trademark Office provided access, via push button telephone, to current status and status date information for all federal trademark application and registration records maintained in the automated Trademark Reporting and Monitoring (TRAM) System. The Trademark Status Line will be available on (703)557-8747 from 6:30 a.m. until midnight, Eastern Time, Monday through Friday.

The Trademark Status Line may be used from any push button telephone by entering a seven-digit registration number and the "#" symbol or an eight-digit serial number and the "#" symbol after the welcoming message and the tone. All calls will be answered in the order received. Callers may request information for up to five serial number or registration number records per call.

When requesting information for registration numbers under one million, add sufficient leading zeros to the registration number so that a total of seven digits are entered. For example, to get status information for Reg. No. 88,725 enter 0088725#.

When requesting information for applications, enter an eight-digit serial number that consists of the two-digit series code followed by the six-digit serial number PTO. The series code is determined by the filing date of the application. All applications filed before Mar. 31, 1905 are series code 70. Applications filed between Apr. 1, 1905 and Dec. 31, 1955 are series code 71. Applications filed between Jan. 1, 1956 and Aug. 31, 1973 are series code 72. Applications filed between Sept. 1, 1973 and Nov. 15, 1989 are series code 73. All applications filed on or after November 16, 1989 are series code 74.

When requesting information for serial numbers under 100,000 in any series code, add sufficient leading zeros to the serial number so that a total of six digits are entered after the series code. For example, to get status information for serial number 92,132 in series code 73, enter 73092132#.

The TRAM System contains records for all active federal trademark registration and pending applications. The TRAM System also contains records for all federal trademark registrations and applications which became inactive after Mar. 31, 1982. Some earlier inactive records are also available.

The Trademark Status Line will provide current status information for all federal trademark application and registration records included in the TRAM System. The date that the record entered the current status is provided also. If additional information regarding the status of a trademark application or registra-

tion is required, call the Trademark Services division at (703)557-5249 and request a status check.

Feb. 8, 1990

JEFFREY M. SAMUELS
*Assistant Commissioner
for Trademarks*

[1112 TMOG 49]

(140) New Telephone Numbers for the
Trademark Status Line

On November 18, 1991, the local telephone company in Arlington, Va. will change many of the telephone numbers used by the U.S. Patent and Trademark Office, including the numbers for the Trademark Status Line. Effective on that date, the new telephone numbers for the Trademark Status Line will be (703) 305-8747 through (703) 305-8752.

The Trademark Status Line provides access, via touch tone telephone, to current status and status date information for all federal trademark application and registration records maintained in the automated Trademark Reporting and Monitoring (TRAM) System. The Trademark Status Line is available from 6:30 a.m. until midnight, Eastern Time, Monday through Friday.

The Trademark Status Line may be used from any touch tone telephone by entering a seven-digit registration number and the "#" symbol or an eight-digit serial number and the "#" symbol after the welcoming message and the tone. All calls will be answered in the order received. Callers may request information for up to five serial number or registration number records per call. If additional information regarding the status of a trademark application or registration is required, call the Office of Trademark Services at (703) 308-9400 and request a status check.

Oct. 23, 1991

JEFFREY M. SAMUELS
*Assistant Commissioner
for Trademarks*

[1132 OG 33]

(141) TRADEMARK STATUS INFORMATION
AVAILABLE ON THE TRADEMARK STATUS LINE

The Trademark Status Line (703) 557-8747 provides status and status date information for all Trademark applications and registrations to users with touch tone telephones. The Trademark Status Line is available from 6:30 A.M. to midnight (Eastern Standard Time), Monday through Friday.

The following is a listing of the status text provided by the Trademark Status Line for each corresponding status code in the TRAM system and the usual location of the file when it is in each status. All information in parenthesis is explanatory and is not part of the status text. All status codes followed by a "*" are within the blackout period for filing Amendments to Allege Use in Intent to Use applications. All status codes followed by a "^" apply to Intent to Use applications only.

Status Code	Status Text	Usual File Location
600	Abandoned-Incomplete Response	Warehouse
601	Abandoned-Express	Warehouse
602	Abandoned-Failure to Respond	Warehouse
603	Abandoned-After ex parte Appeal	Warehouse
604	Abandoned-After inter partes decision	Warehouse
605	Abandoned-After Publication	Warehouse
606^	Abandoned-No Statement of Use filed	Warehouse
607^	Abandoned-Defective Statement of use	Warehouse
608	Abandoned-After Petition Decision	Warehouse
609	Abandoned-Defective Divided Application	Warehouse
612	Petition to Revive-received	TMO Dir
614	Abandoned-Petition to revive denied	Warehouse
616	Revived-Awaiting Further Action	Law Office
618	Abandoned File-Backfile	Warehouse

620	(Indicates the application existed when the TRAM database was created and it is abandoned but the reason for the abandonment is unknown.) Backfile application added to database Status not recorded.	
622	(Indicates the application existed when the TRAM database was created and the status is unknown at this time.) Misassigned Serial Number (Indicates that the subject serial number was assigned in error and cancelled. File contents were returned to submitter or transferred to another serial number.)	File Cover Destroyed
624	Registered-Backfile (Indicates the registration existed when the TRAM database was created and remains registered at this time.)	Warehouse
625	Registration added to the data base Status unclear (Indicates the registration status is unknown at this time.)	Warehouse
626	Registered-Backfile cancelled or expired (Indicates the registration is no longer active but the reason for this is unknown.)	Warehouse
630	New Application-Record initialized not assigned to examiner	Law Office
631	New Application-Divided-Initial processing (Indicates a divisional request has been received and is being processed.)	ITU Unit
632	Informal Application (Indicates that the application filed was incomplete.)	Pre-Exam
638	New Application-Assigned to an examiner	Law Office
640	Non-final action counted-Not mailed	Law Office
641	Non-final action-Mailed	Law Office
643	Previous action/approval count withdrawn (Indicates the Examiner has withdrawn an Office Action or approval.)	Law Office
644	Final refusal counted-Not mailed	Law Office
645	Final refusal-Mailed	Law Office
646	Examiner's amendment counted-Not mailed	Law Office
647	Examiner's amendment-Mailed	Law Office
648	Action continuing Final counted-Not mailed	Law Office
649	Action continuing Final-Mailed	Law Office
650	Suspension inquiry counted-Not mailed	Law Office
651	Suspension inquiry-Mailed	Law Office
652	Suspension letter counted-Not mailed	Law Office
653	Suspension letter-Mailed	Law Office
654	Report completed suspension check-Case still suspended	Law Office
661	Response after non-Final action-Entered	Law Office
663	Response after Final rejection-Entered	Law Office
665	Notice of unresponsive amendment-Counted	Law Office
666	Notice of unresponsive amendment-Mailed	Law Office
667	Refusal withdrawal letter-Counted (Refers to an Office Action which withdraws a refusal after an ex parte appeal has been filed.)	Law Office
668	Refusal withdrawal letter-Mailed (Refers to an Office Action which withdraws a refusal after an ex parte appeal has been filed.)	Law Office
672	Reinstated-Awaiting further action (Refers to an application which was reinstated after an abandonment due to PTO error.)	Law Office
680*	Approved for publication (By the examiner)	Law Office
681*	Publication/Registration review complete (By the Law Office Clerk)	Pub. and Issue
686*	Published for Opposition	Pub. and Issue
688^	Notice of Allowance-Issued	ITU Unit
689**	Notice of Allowance-Withdrawn	Pub. and Issue
690**	Notice of Allowance-Cancelled	Pub. and Issue
692*	Withdrawn from publication	
693*	Withdrawn from registration-Jurisdiction restored (To Examiner)	Law Office
694*	Withdrawn from registration	
700	Registered	Warehouse
701	Section 8-Accepted	Post Reg.
702	Section 8 and 15-accepted and acknowledged	Post Reg.
703	Section 15-acknowledged	Post Reg.
704	Partial Section 8 accepted	Post Reg.
705	Partial Section 8 and 15 accepted and acknowledged	Post Reg.

710	Cancelled-Section 8	Warehouse
711	Cancelled-Section 7(d)	Warehouse
712	Cancelled by court Order under Section 37	Warehouse
713	Cancelled-Section 18	Warehouse
714	Cancelled-Section 24	Warehouse
715	Cancelled-Restored to Pendency (Indicates the subject registration number was assigned in error and correction requires restoration of the application to pendency)	Law Office
716	Inadvertently issued registration number-Cancelled (Indicates the subject registration number was assigned in error and has been cancelled.)	
718^	Request for first extension-Filed	ITU Unit
719^	Request for second extension-Filed	ITU Unit
720^	Request for third extension-Filed	ITU Unit
721^	Request for fourth extension-Filed	ITU Unit
722^	Request for fifth extension-Filed	ITU Unit
724^	Extension request refusal-Counted not mailed	ITU Unit
725^	Extension request refusal-Mailed	ITU Unit
730^	First Extension-Granted	ITU Unit
731^	Second Extension-Granted	ITU Unit
732^	Third Extension-Granted	ITU Unit
733^	Fourth Extension-Granted	ITU Unit
734^	Fifth Extension-Granted	ITU Unit
740	Post registration paper filed-Assigned to paralegal	Post Reg.
744^	Statement of Use-Filed	ITU Unit
745^	Statement of Use-Informal-Letter mailed	ITU Unit
746^	Statement of Use-Informal-Response entered	ITU Unit
747^	Statement of Use-ITU processing complete (Indicates pre-exam processing of the Statement of Use at the ITU Unit is complete.)	Law Office
748^	Statement of Use-To examiner(For Examination)	Law Office
752^	Statement of Use-Examiner statement counted-Not mailed	Law Office
753^	Statement of Use-Examiner Statement-Mailed	Law Office
756	Examiner statement counted-Not mailed	Law Office
757	Examiner statement-Mailed	Law Office
760	Ex parte appeal pending	TTAB
762	Ex parte appeal-Refusal reversed	TTAB
763	Ex parte appeal-Refusal affirmed	TTAB
764	Ex parte appeal dismissed as moot	TTAB
765*	Concurrent use proceeding terminated-Granted	TTAB
766*	Concurrent use proceeding terminated-Denied	TTAB
771*	Concurrent use proceeding pending	TTAB
772*	Interference proceeding pending	TTAB
773*	Interference proceeding terminated	TTAB
774*	Opposition pending	TTAB
775*	Opposition dismissed	TTAB
777*	Opposition terminated-Sec TTAB records	TTAB
778	Cancellation dismissed	TTAB
779*	Opposition sustained	TTAB
780	Cancellation terminated-Sec TTABrecords	TTAB
782^	Statement of Use-Opposition Decided-Entry of Judgement Deferred	TTAB
783^	Statement of Use-Cancellation Decided-Entry of Judgement Deferred	TTAB
784^	Statement of Use-Interference Decided-Entry of judgement deferred	TTAB
785^	Statement of Use-Concurrent Use Decided-Entry of Judgement Deferred	TTAB
790	Cancellation Pending	TTAB
794	Jurisdiction restored to examiner	Law Office
800	Renewed	Post Reg.
801*	Opposition instituted	TTAB
802*	Request for extension of time to file opposition	TTAB
803*	Amendment after publication	TM Service Division
806^	Statement of Use-Non-final action counted-Not mailed	Law Office
807^	Statement of Use-Non-final action-Mailed	Law Office
808^	Statement of Use-Final refusal counted-Not mailed	Law Office
809^	Statement of Use-Final refusal-Mailed	Law Office
810^	Statement of Use-Examiner's amendment counted-Not mailed	Law Office
811^	Statement of Use-Examiner's amendment-Mailed	Law Office
812^	Statement of Use-Action continuing final counted-Not mailed	Law Office
813^	Statement of Use-Action continuing final-Mailed	Law Office
814^	Statement of Use-Response after non-final action-Entered	Law Office

815 [^]	Statement of Use-Response after final rejection-Entered	Law Office
816 [^]	Statement of Use-Notice of unresponsive amendment-Counted-Not mailed	Law Office
817 [^]	Statement of Use-Notice of unresponsive amendment-Mailed	Law Office
818 [^]	Statement of Use accepted-Approved for Registration (By the Examiner)	Law Office
819 [^]	Statement of Use-Registration review complete (By the Law Office Clerk)	Pub. and Issue
900	Expired (Refers to registration that were not renewed.)	Warehouse

December 3, 1990

JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

[1122 TMOG 568]

(142) **Transmittals for Use of Deposit Accounts**

When statutory fees are to be charged to a deposit account, the processing of the application can be facilitated by submitting the applicant's transmittal letter or other correspondence specifying the account to be charged in triplicate. Submission of these documents in triplicate will eliminate the need for the Mail Room to photocopy the document and thereby reduce the processing time of incoming mail.

received on the answering machine 24 hours a day, seven days a week.

Oct. 31, 1991

BRADFORD HUTHER
Assistant Commissioner for Finance and Planning

[1132 OG 48]

Nov. 21, 1983

THERESA A. BRELSFORD
Assistant Commissioner for Administration

[1037 TMOG 15]

(143) **Availability of Deposit Account Status Line**

Beginning on February 20, 1990, the U.S. Patent and Trademark Office will provide access, via push button telephone, to the current account balance information, and last deposit for the current month, if any. The Deposit Account status line will be available on (703)557-8735 or (703)557-8746 from 6:30 A.M. until midnight, Eastern time, Monday thru Friday.

The Deposit Account status line may be used from any push button telephone by entering your six digit account number and the pound sign after being told to do so by the greeting message that you receive whenever you dial in. All six digits and the pound sign must be entered.

Questions that may arise pertaining to the information received thru use of the status line must be referred to the Deposits Account Division at (703) 557-3227 during the hours 8 A.M. until 5 P.M. Eastern time, Monday thru Friday, except for Federal holidays.

Feb. 5, 1990

BRADFORD HUTHER
Assistant Commissioner for Finance and Planning

[1112 TMOG 49]

(144) **Telephone Changes for Deposit Account Status Line**

Effective Nov. 18, 1991, new telephone exchange numbers will be made for the Deposit Account Status Line. On that date, Deposit Account Balance information can be obtained by calling (703) 305-8735 or (703) 305-8746 from 6:30 a.m. until midnight, Eastern time, Monday thru Friday, except for Federal holidays.

Questions that may arise pertaining to the information received through use of the status line may be referred to the Deposit Account Division at (703) 308-0902. Calls will be

(145) **Notices of Abandonment**

The Trademark Operation has begun notifying trademark applicants when their pending applications have been abandoned by the Office. Under this new procedure, a computer-generated post card bearing the notice, serial number, applicant name and abandonment date will be sent to the correspondence address designated by the applicant. The post cards will be mailed within 2 to 4 weeks after the application is declared abandoned.

Jan. 13, 1986

MARGARET M. LAURENCE
Assistant Commissioner for Trademarks

[1063 TMOG 4]

(146) **Change of Correspondence Address in Trademark Applications**

Applicants are reminded that when an application is filed and a correspondence address is entered in the Official record, correspondence will continue to be sent to such address until the applicant or party, or the attorney-at-law or other authorized representative of the applicant or party, indicates in writing that correspondence is to be sent to another address. 37 CFR Section 2.18. The filing of a response to an Office action on letterhead stationery that indicates a different address from the correspondence address of record is insufficient notice that correspondence is to be sent to another address. Specific language is needed which can reasonably be interpreted to be a request to change the address. See TMEP Section 603.

If a power of attorney has been filed in an application, a subsequently filed power of attorney will be regarded as a written request to change the correspondence address, even if there is no specific language changing the address or revoking the prior power of attorney. See TMEP Section 603.

May 15, 1986

MARGARET M. LAURENCE
Assistant Commissioner for Trademarks

[1067 TMOG 7]

(147) **Use of Restricted Deposit Account for Electronic Ordering of Patent and Trademark Copies**

Effective July 1, 1986, the restricted deposit account will be made available to those members of the public who wish to use it for electronic ordering of patent and trademark copies. The restricted deposit account requires maintenance of a minimum balance of \$300.00 at the end of each month, as compared to the unrestricted account which requires a minimum balance of \$1,000.00.

In FY 1986, the Office established the restricted deposit account for use in charging subscriptions for copies of newly issued patents by subject matter classification. Establishment of a PTO deposit account is a prerequisite for subscription service.

Recently, the Office established an electronic ordering service (EOS), a method of ordering copies of patents and trademarks through the use of a computer terminal and modem. EOS is available only to PTO deposit account holders.

Many people who are interested in using EOS to order copies of patents and trademarks and who do not have PTO deposit accounts find the \$1,000.00 balance required for the unrestricted account prohibitive. Therefore, the use of restricted account is being expanded to incorporate EOS ordering. Subscriptions and EOS ordering are the only two services for which restricted accounts may be used. If you have any questions on subscriptions or EOS, please call Mary Brown on (703) 557-3236. If you have questions on deposit accounts, please call Delores Riley on (703) 557-3227.

June 23, 1986

THERESA A. BRELSFORD
Assistant Commissioner for Administration

[1068 TMOG 4]

(148) **CD-ROM PRODUCTS NOW AVAILABLE FROM THE U.S. PATENT AND TRADEMARK OFFICE****Trademark Information on CD-ROM**

The U.S. Patent and Trademark Office is pleased to announce the availability of trademark information on Compact Disc-Read Only Memory (CD-ROM). These discs, previously available only at U. S. Patent and Trademark Depository Libraries, may now be purchased by the general public. Subscription to any trademark title below will begin with the first disc issued after October 1, 1994. Orders may be placed now.

Trademark Registrations: Contains the text of all active registered trademarks from 1884 through the date specified with each issue. Twenty-nine search fields are available, including Word Mark, International and U. S. Classifications, Goods & Services, Design Search Code, Dates of Filing, Publication for Oppositions, and Registration, and more. Cost: \$300/subscription.

Trademarks Pending: Contains the text of trademark applications which have been filed but not yet approved for registration as of the date specified with each issue. Twenty-four search fields are available, including most of the same fields present on the Trademark Registrations disc. Cost: \$300/subscription.

Trademark Assignments: Contains the text of bibliographic data from trademark assignment deeds recorded at the U.S. Patent and Trademark Office from 1955 through the date specified with each issue. Ten search fields are available, including Assignor, Assignee, Mark, Date Recorded, and others. Cost: \$300/subscription.

All Trademark CD-ROM products also currently contain the *Trademark Manual of Examining Procedure* and a Goods and Services manual which are updated when electronic versions of revisions are made available. All search results can be viewed on screen, printed, or downloaded to diskette.

Each product title will be sold individually on a yearly subscription basis consisting of approximately six discs. Updated

discs issue approximately every two months. Back issues are not available once superseded by current issues.

SNAP (Serial Numbers for Allowed Patents) CD-ROM

This CD-ROM provides a concordance between U.S. patent numbers and their application serial number. Kinds of patent documents included are: utility, design, plant, reissue, Statutory Invention Registration and Defensive Publication, filed after December 31, 1976, which were granted by the U.S. Patent and Trademark Office through the date specified with each disc. Search fields are: Serial Number, Application Year, Series Code, Patent Title and Patent Number. Updated discs issues on an irregular basis. Cost per disc: \$50. Back issues are not available once superseded by an updated disc. Orders may be placed now for the next disc to issue.

USAPat

USAPat contains facsimile images on CD-ROM of all documents issued weekly by the U.S. Patent and Trademark Office. These include: utility patents, design patents, plant patents, reissue patents, reexamined patents, Statutory Invention Registrations, and Certificates of Correction. Each week's issue consists of 2 or 3 discs.

This product allows users to view and print all patents. Images shown on the screen can be "zoomed" for better viewing. Excellent copies can be obtained using a laser printer.

As a document delivery system, patents on CD-ROM offer advantages over traditional formats. Storage requirements will be reduced, fast retrieval of documents will be possible, and excellent laser-printed copies will be available immediately for your use.

USAPat will be sold on a calendar year subscription basis at a cost of \$2,400. You may elect to begin your subscription with the first issue of 1995, or with the first issue of 1994.

The price for all CD-ROM products includes the discs, retrieval software, and appropriate printed user documentation, which are the only user support available from the PTO. The discs are mailed first class domestic or air mail overseas. Payment may be made by check or money order payable to the Commissioner of Patents and Trademarks, or charged to your PTO deposit account. Cash, credit cards and purchase orders are not accepted.

For further information or to request an order form, please contact:

U.S. Patent and Trademark Office
Office of Information Products Development
Crystal Plaza 2, Room 9D30
Washington, D.C. 20231

Voice: (703) 308-0322
Fax: (703) 308-0493

[1165 TMOG 112]

(149) **Filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit in the Patent And Trademark Office**

This notice supersedes a notice entitled Filing of a Notice of Appeal to the Federal Circuit and Service of Court Papers on the Commissioner of Patents and Trademarks published at 1079 Off. Gaz. Office 72 (June 30, 1987).

A notice of appeal to the Court of Appeals for the Federal Circuit may be filed in the Patent and Trademark Office in any one of the following ways:

A. By first-class mail addressed as follows, in which case the notice of appeal must actually reach the Patent and Trademark Office by the due date:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

B. By "Express Mail" (U.S. Postal Service only) under 37 CFR § 1.10 addressed as follows, in which case the notice of appeal is deemed filed on the date of the Express Mail certificate:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

C. By hand (on or before the due date) to the Office of the Solicitor. The Office of the Solicitor is located at:

Crystal Park II
Suite 918
2121 Crystal Drive
Arlington, Va.

D. By facsimile transmission to the Office of the Solicitor. The telephone number for accessing the Office of the Solicitor facsimile machine is (703) 557-9373. A notice of appeal will be deemed timely filed on the date the facsimile transmission is received by the Office of the Solicitor, provided an original notice of appeal is subsequently received in either of the following ways:

(1) An original, signed copy of the notice of appeal is actually received in the Office of the Solicitor within five calendar days of the facsimile transmission; or,

(2) An original, signed copy of the notice of appeal is mailed by "Express Mail" (U.S. Postal Service only) under 37 CFR § 1.10 on the day of the facsimile transmission.

The facsimile machine for receiving a notice of appeal is located in the Office of the Solicitor and is staffed during the business hours of 8:30 a.m. to 5:00 p.m., Monday through Friday, excluding holidays. Due to possible equipment failure or maintenance requirements, precautions must be taken when relying on the availability of this service near the end of the time for filing a notice of appeal.

March 22, 1990

FRED E. McKELVEY
Solicitor

[1113 TMOG 29]

(150) Service of Court Papers on the Commissioner of Patents and Trademarks

Court papers other than a notice of appeal to the U.S. Court of Appeals for the Federal Circuit may be served on the Commissioner in either of the following ways:

A. By hand between 8:30 a.m. and 5:00 p.m. at the Office of the Solicitor, located in Crystal Park II, Suite 918, 2121 Crystal Drive, Arlington, Va.

B. By mail in an envelope addressed as follows:
Office of the Solicitor
P.O. Box 15667
Arlington, Va. 22215

While the above mail service address may be supplemented to include the name of the particular attorney assigned to the court case, it must not be supplemented to refer to either the Commissioner of Patents and Trademarks or the U.S. Patent and Trademark Office (PTO).

Court papers mailed to an address other than the above mail service address and court papers delivered by hand are deemed to have been served on the Commissioner when actually received in the Office of the Solicitor.

Papers which are not court papers and are intended to be filed in the PTO in connection with an application or other proceeding pending in the Office shall not be mailed to the Solicitor's mail service address. Any such papers which are mailed to the Solicitor's mail service address will not be consid-

ered to have been filed in the PTO. Instead, all such papers will be returned. No exceptions will be made to this policy.

Mar. 22, 1990

FRED E. McKELVEY
Solicitor

[1113 TMOG 30]

(151) Appeals to the Federal Circuit from the PTO

This notice was originally prepared by the Solicitor and Associate Solicitor Richard E. Schafer for presentation at the Eighth Annual Judicial Conference of the U.S. Court of Appeals for the Federal Circuit. The notice discusses litigation philosophy of the Office of the Solicitor of the Patent and Trademark Office and other matters which may be helpful to appellants and others seeking judicial review of PTO decisions in the U.S. Court of Appeals for the Federal Circuit.

October 5, 1990

FRED E. McKELVEY
Solicitor

I. Introduction

This notice discusses the philosophy of the Office of the Solicitor when representing the Commissioner before the Federal Circuit and other courts. The notice is also designed to assist appellants and others seeking judicial review of Patent and Trademark Office (PTO) decisions in the Federal Circuit. Much of what is said in the notice is also applicable to those instances where judicial review is sought of PTO decisions in a district court.

II. Solicitor's litigation philosophy

The Office of the Solicitor and its attorneys start with the proposition that justice is done when the right result is reached. The Solicitor is not an advocate who needs to win to be satisfied. Rather, the public interest is served when:

- (1) a patent issues on a patentable invention;
- (2) a patent is refused on an unpatentable invention;
- (3) a trademark is registered if entitled to registration under Title 15;
- (4) a trademark is refused registration if not entitled to registration under Title 15; or
- (5) PTO rules are properly applied within PTO and by reviewing courts.

Our litigation philosophy is expressed in *Berger v. United States*, 295 U.S. 78, 88 (1935):

The . . . [Government attorney] is the representative not of an ordinary party to a controversy, but of a sovereignty whose obligation to govern impartially is as compelling as its obligation to govern at all; and whose interest . . . is not that it shall win a case, but that justice shall be done. As such, he is in a peculiar and very definite sense the servant of the law, the twofold aim of which is that guilt shall not escape or innocence suffer.

The Office of the Solicitor does more than simply "defend" an appeal. Rather, it will determine whether:

- (a) appeals are ripe for judicial consideration;
- (b) there are steps a party might take in PTO to obviate the appeal, e.g., amendments which might be made to claims to conform an argument to the subject matter being claimed - we often find that arguments in a brief are based on limitations which do not appear in the claims;
- (c) there is material not in the record which might provide a full answer to an argument - particularly a new one - made in a brief; and/or
- (d) the deciding official or board should be approached to see if it wishes to reevaluate its decision in view of a change in the law, credible argument that the decision may not be correct, or a matter which may have been overlooked.

Most of the time, it takes more effort to implement this philosophy than it would take simply to brief and argue a matter.

Generally, in a Federal Circuit matter, the Office of the Solicitor - apart from designating an appendix - does not "get deeply into" a case until appellant's brief is filed. Exceptions occur, i.e., *inter partes* patent and trademark cases where the board opinion is reviewed to see if an *amicus* brief might be appropriate to assist the Federal Circuit with PTO practice.¹ This is not to say that an appellant should not feel free to discuss an appeal with an attorney in the Solicitor's Office. But, ordinarily in an *ex parte* case, we do not spend time until we see appellant's brief. The reason is that a large number of appeals are simply dismissed without the need for us to do much, if any, work.

Table 1, below, shows the disposition of appeals from October 1985 through April 1990. About 23%, i.e., 146, of the cases were dismissed with little, if any, work having been done by the Office of the Solicitor on the appeal. If we conducted a review of all appeals when filed, our Federal Circuit "workload" would increase about 23%. We do not have the resources to effectively carry on 23% more work.

We find a lot of cases are not ripe or otherwise ready for judicial review. When we determine that more work needs to be done before the Federal Circuit should consider a case, we generally move to remand. Fed. Cir. R. 27(c) provides that a remand generally should be requested prior to briefing. However, since we generally cannot efficiently take up cases until appellant's brief is filed, we now file motions to remand along with our brief. A merits panel is then in a position to evaluate whether it should hear the case on the merits or order a remand. There are a variety of reasons why we seek remands.

Table 1
Disposition of cases in the Courts of Appeals
in which the Solicitor has appeared
October 1985 through September 1990

	Pat	TM	Total
Disposed cases:			
Affirmed	300	47	347
Modified	10	0	10
Reversed	47	17	64
Remanded ²	40	8	48
Dismissed	120	26	146
Amicus/intervene	7	2	9
Examiner testimony	1	0	1
Transfer	6 ³	0	6
Mandamus granted	0	0	0
Mandamus granted-in-Part	1	0	1
Mandamus denied	6	2	8
Mandamus dismissed	3	0	3
Totals:	541	102	643

A.

An appellant may argue that a certain feature of a claim is not shown in the prior art. Such an argument may prompt us to determine whether the feature is known. If we find the feature, we will probably ask for a remand for the purpose of making an additional rejection.⁴ In like manner, based on our respective backgrounds or other cases handled by the Office

of the Solicitor, we may know of prior art which strengthens a rejection.⁵

B.

Similarly, an appellant may argue that a certain fact is true. Upon looking into the matter, we have found literature from the appellant's assignee or other evidence which, in our opinion, demonstrates that the argument may not be factually correct.⁶ Since the literature or other evidence is not part of the record, we have asked for a remand so that the case may be fully developed before a merits panel is required to consider the case. We have also filed a brief on the merits asking the Federal Circuit to take judicial notice of a fact while concurrently filing a contingent motion to remand in the event the merits panel believes that judicial notice is not appropriate.⁷

C.

We have had cases where the sole issue is whether a Rule 131, 37 CFR § 1.131, affidavit is sufficient to antedate a reference. When the sufficiency of a Rule 131 affidavit is in issue, we search for a foreign or other equivalent statutory bar. When an equivalent statutory bar is found, we move to remand suggesting that the issue on appeal may well be moot.⁸

D.

In re Steele, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), suggests that indefiniteness should be taken care of prior to considering obviousness. There have been cases in which the claims are so indefinite that judicial review of an obviousness issue simply would not make sense. Remands, over appellant's objection, have been ordered.⁹

E.

There have been occasions where the Board, TTAB, or the Commissioner decides to change or reconsider a decision. A change of decision can occur, *inter alia*, due to:

1. new "law" as announced in a court or administrative decision,¹⁰ or
2. a deciding official or tribunal determines that:
 - (a) a decision may not be correct,
 - (b) a matter was overlooked,¹¹ or
 - (c) a decision otherwise needs to be reconsidered.¹²

F.

There have been cases where, although not argued by the appellant, it did not make sense to apply existing law in a particular context. We have moved to remand. In one instance, the Board reconsidered its position, established new law, and granted relief.¹³

G.

In its opinion, the Board - without entering a new ground of rejection under Rule 196(b), 37 CFR § 1.196 - may suggest that if there is to be further prosecution, an examiner may wish to look into several possible rejections. Generally in such a case the appellant will abandon or refile under 35 U.S.C. § 120. On occasion, however, an appellant will seek judicial review. Ordinarily, we seek remands in such a case in order to avoid piecemeal judicial review.¹⁴

H.

¹See e.g., *In re Trogon*, Fed. Cir. No. 85-2724, *Flexiwall v. Quigg*, Civil Action No. 86-2666 (D.D.C.), *In re Nilssen*, Fed. Cir. No. 87-1349, *In re Nilssen*, Fed. Cir. No. 87-1392, and *Hepar Chimie v. Mossinghoff*, Civil Action No. 85-1912 (D.D.C.).

²*In re Weitz*, Fed. Cir. No. 85-879; *In re Lowrance Electronics, Inc.*, Fed. Cir. No. 88-1180.

³*In re Klang*, Fed. Cir. No. 85-2825.

⁴*In re Lockner*, Fed. Cir. No. 86-1269.

⁵*In re Jacobs*, Fed. Cir. No. 85-2210.

⁶*In re Eustis*, Fed. Cir. No. 90-1439.

⁷*In re Giordano*, Fed. Cir. No. 87-1029, *In re Raleigh Stores Corp.*, Fed. Cir. No. 87-1183, *In re Whaleco*, Fed. Cir. No. 87-1522.

⁸*In re Brown*, Fed. Cir. No. 86-617; *Graz v. Quigg*, Civil Action No. 87-1340 (D.D.C.); *London Laboratories v. Commissioner*, Civil Action No. 86-0914 (D.D.C.); *Hashimoto v. Quigg*, Civil Action No. 86-1595 (D.D.C.); and *Katrapat AG v. Quigg*, Civil Action No. 87-0250 (D.D.C.).

⁹*Papst-Motoren GmbH & Co. v. Quigg*, Civil Action No. 86-1168 (D.D.C.). The Board's decision on remand is published. *Ex Parte Papst-Motoren*, 1 USPQ2d 1655 (Bd. Pat. App. & Int. 1986).

¹⁰See *Tofe v. Winchell*, 645 F.2d 58, 63 [headnote 6], 209 USPQ 379, 384 (CCPA 1981). See also *Paradis v. Quigg*, Civil Action No. 87-1486 (D.D.C.) and *Claugh v. Quigg*, Civil Action No. 87-2304 (D.D.C.).

¹See e.g., *Fujie v. Verhagen*, Fed. Cir. No. 89-1126; *Hahn v. Wong*, 13 USPQ2d 1211 (Bd. Pat. App. & Int.), *aff'd*, 892 F.2d 1028, 13 USPQ2d 1313 (Fed. Cir. 1989); *Perkins v. Kwon*, 886 F.2d 325, 12 USPQ2d 1308 (Fed. Cir. 1989); and *Winkler v. Guglielmino*, Fed. Cir. No. 89-1571. See also *Copelands' Enterprises, Inc. v. CNV, Inc.*, 887 F.2d 1065, 12 USPQ2d 1562 (Fed. Cir. 1989) (en banc) and *Kellogg Co. v. Pack'em Enterprises, Inc.*, Fed. Cir. No. 90-1336.

²Approximately 80% of the remands were ordered based on motions to remand filed by the Office of the Solicitor. See the discussion on remands, *infra*.

³All transfers were from a regional court of appeals to the Federal Circuit.

⁴*In re Yashuhara*, Fed. Cir. No. 85-889. The reference added on remand was relied upon by the Federal Circuit in a later decision affirming the rejection made on remand. *In re Yashuhara*, Fed. Cir. No. 86-1634. See also *In re Merz*, Fed. Cir. No. 86-615, and *R. D. Werner Co. v. Quigg*, Civil Action No. 85-0945 (D.D.C.).

We had one case in which an appellant "dropped" an appeal as to all but a dependent claim - only the independent claim had been discussed in appellant's brief to the Board and the Board discussed only the independent claim. We sought a remand - after the appellant's brief had been filed - so that PTO could articulate a rationale as to the sole claim left in appeal.¹⁵ Alternatively, we could have argued the appeal on the basis of the independent claim. However, in the context of the particular case, that alternative did not make sense.

I.

We had a case where the application on appeal was deemed to be abandoned. We moved to remand to clarify the status of the application.¹⁶ We also had a trademark appeal in which registration in the United States could not occur until registration took place abroad.¹⁷ Obviously, there was no reason to proceed in the Federal Circuit until registration occurred in the foreign country. When an appeal is taken in a trademark case, we always check to be sure that the registration relied upon is "alive." Appellant also should be sure that the registration has not expired. In one trademark appeal, the likelihood of confusion issue became moot on appeal when we discovered that the registration cited against the appellant expired without being renewed.

Most attorneys representing appellants will agree to a remand when approached by an attorney in the Office of the Solicitor - regardless of the time a suggestion to remand is made. A remand saves appellant, the Federal Circuit and our office time and money and in the long run contributes to the effective administration of justice within PTO and the Federal Circuit. In some cases, our motions to remand have been opposed. In one published opinion, an opposed motion was granted notwithstanding appellant has filed its principal brief;¹⁸ in another opinion, relief was denied.¹⁹ It appears the Federal Circuit has adopted, as a general rule, the latter opinion. See Fed. Cir. R. 27(c).

We will not attempt to reconcile Fed. Cir. R. 27(c) with what we regard to be the better policy expressed in *In re Gould*. We will point out, however, that if an appeal proceeds in the face of a motion to remand,

(a) an appellant will have to spend money to have its attorney appear for oral argument,

(b) the merits panel will have to spend time preparing for oral argument, holding oral argument, and writing an opinion,

(c) PTO will have to expend resources preparing for and presenting oral argument, and

(d) prosecution on the merits may be reopened after a mandate is entered if a viable rejection remains to be considered.

It is possible, of course, that we might prevail on the merits, thereby obviating any need for a remand. However, if we do not prevail, PTO can - and often does - reopen prosecution of the application upon entry of the Federal Circuit's mandate to consider the matter raised by a motion to remand.²⁰

Sometimes an appellant will decide to file a second application, i.e., a continuation application or another trademark application, and simultaneously pursue the appeal. We believe appellant has a responsibility to call our attention to the fact that a second application has been filed. Knowledge of the second application is material to steps we might take.

First, perhaps any appeal (or civil action) should be suspended pending outcome of proceedings on the second application or dismissed without prejudice to another appeal in the event a final adverse Board decision is entered in the second application. In effect, by filing a second application, appellant admits that there are available administrative remedies and that those remedies have not been exhausted.

¹⁵*In re Hyatt*, Fed. Cir. No. 85-2224.

¹⁶*In re Goodman*, Fed. Cir. No. 87-1056. The Commissioner's decision reviving the application is reported. *In re Goodman*, 3 USPQ2d 1866 (Comm'r Pat. 1987). See also *In re Grevin*, Fed. Cir. No. 87-2341.

¹⁷*In re Matsushita Electric*, Fed. Cir. No. 89-1526.

¹⁸*In re Gould*, 673 F.2d 1385, 213 USPQ 628 (CCPA 1982). Relief in this case was ultimately granted in PTO. *Ex parte Gould*, 6 USPQ2d 1680 (Bd. Pat. App. & Int. 1987).

¹⁹*In re Hester*, 838 F.2d 1193, 5 USPQ2d 1832 (Fed. Cir. 1988). Relief on the merits was ultimately granted by the Federal Circuit in an unpublished opinion.

²⁰*In re Rischig*, 379 F.2d 990, 154 USPQ 118 (CCPA 1967); *In re Fisher*, 448 F.2d 1406, 171 USPQ 292 (CCPA 1971).

Second, it is in PTO's best interest that the examiner handling the second application be aware of the existence of an appeal. The examiner may ask our office for assistance, as may the Board, during prosecution of the second application.

III. Notice of appeal

Recent amendments have been made to conform PTO practice as much as possible to Fed. R. App. 4. See 54 Fed. Reg. 29548 (July 13, 1989), reprinted in, 1105 Off. Gaz. Pat. Office 5 (Aug. 1, 1989).

A. Time for appeal

If an appeal from a PTO decision to the Federal Circuit is authorized by law, the time for filing a notice of appeal in PTO was changed in August 1989 to two (2) months or 60 days, whichever is longer. The time for seeking judicial review by civil action under 35 U.S.C. 145 or 146 is also two (2) months or 60 days, whichever is longer.

The filing of a request for reconsideration in PTO tolls the time for filing a notice of appeal. After a decision on reconsideration is entered in PTO, the two month period begins to run.

The time for appeal to the Federal Circuit is set by the Commissioner. 35 U.S.C. § 142; 15 U.S.C. § 1071(a)(2). The period for appeal must be at least 60 days. A notice of final rule was effective in August 1989 setting the time for appeal to two months or 60 days - whichever is longer. The dichotomy which used to exist between the 60-day period for initial decisions and the 30-day period for decisions on reconsideration²¹ no longer exists.

B. Cross appeals

In *inter partes* cases, a cross-appeal may be filed within fourteen (14) days of service of an appeal or two months after the PTO decision being appealed, whichever is later.

C. Requests to extend time to appeal

A request for an extension of time to file a notice of appeal before the appeal period expires can be granted by the Commissioner upon a showing of good cause.

A request after the appeal period expires must establish excusable neglect. The "excusable neglect" standard applied by PTO is the same as that applied by the courts of appeals.

All requests for an extension of time to appeal should be directed to the attention of the Office of the Solicitor.

D. Where to file a notice of appeal

The original notice must be filed in PTO - filing only in the Federal Circuit does not perfect an appeal. However, a copy must also be filed in the Federal Circuit. Fed. Cir. R. 15. A copy of the decision being appealed, and any decision on reconsideration, should be attached to the copy of the notice of appeal filed in PTO and with the Federal Circuit.

The original notice may be filed in any of the following ways:

1. By hand-delivery to the Office of the Solicitor between 8:30 a.m. and 5:00 p.m. at:
Office of the Solicitor
2121 Crystal Drive
Suite 918
Arlington, Virginia

2. By first-class mail addressed to:
Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

3. By Express Mail under 37 CFR § 1.10 addressed to:
Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

A certificate of mailing under 37 CFR § 1.8 cannot be used to file a notice of appeal. A notice of appeal filed in PTO using a certificate of mailing under 37 CFR § 1.8 is deemed filed

²¹37 CFR § 1.304(a) (1989); 37 CFR 2.145(d) (1989).

when received in PTO. *In re Thrifty Corp.*, 231 USPQ 560 (Comm'r Pat. 1986).

A notice of appeal mailed to the Solicitor's Postal Box in Arlington, Virginia is deemed filed when received in the Office of the Solicitor.

E. Content of notice of appeal

A notice of appeal should identify all parties appealing. Fed. R. App. P. 15(a). See *Torres v. Oakland Scavenger Co.*, 487 U.S. 312, 317 (1988) [construing similar requirement of Fed. R. App. P. 3(c)].

Thus, in a case where there are joint inventors, the notice of appeal should identify all inventors. The notice of appeal should not identify John Doe et al. as appellants; rather, it should identify as appellants all named inventors, i.e., "John Doe and Richard Roe appeal . . ."

A notice of appeal need simply state that:

John Doe and Richard Roe appeal to the U.S. Court of Appeals for the Federal Circuit from a final decision entered by the Board of Patent Appeals and Interferences on June 15, 1990, and from a decision on reconsideration entered by the Board on July 15, 1990.

There is no need to give reasons in the notice of appeal. See 37 CFR §§ 1.4 and 1.5 for material which should appear in the "heading" of the notice of appeal.

IV. Transmittal of certified list

After a notice of appeal is received, a determination is made whether the notice was timely filed.

Appellant will be advised if the appeal is untimely. Fed. Cir. R. 15(b)(1) governs proceedings when a notice of appeal is not timely filed:

If the Commissioner notifies the clerk that the notice of appeal was not timely, the clerk shall order the appellant to show cause why the appeal should not be dismissed, and thereupon refer the response to the court.

In order to properly respond to the Federal Circuit, an appellant may wish to file a request for an extension of time, which should be filed in the Office of the Solicitor, and establish that the untimely filing of the notice of appeal was a result of excusable neglect. Any decision on the request will be copied to the Clerk of the Federal Circuit for such action as may be appropriate. A decision by the Commissioner granting a request to extend the time for filing the notice of appeal will discharge the show cause order entered by the Clerk.

A certified list, consisting of the contents of the application, interference, opposition, cancellation, or other proceeding is copied and forwarded to the Federal Circuit with a statement indicating whether the notice of appeal was considered timely filed. In *ex parte* patent appeals the certified list usually does not include the contents to any "parent" applications unless the application involved in the appeal is a "file wrapper continuation" under 37 CFR § 1.62.

A copy of the certified list is mailed to the appellant or, in the case of an *inter partes* proceeding, all parties.

In *ex parte* patent or trademark appeals, an attorney in the Office of the Solicitor is assigned to the appeal at the time the certified list is forwarded to the Federal Circuit. Counsel for appellant should initiate a discussion with the Solicitor's Office attorney assigned to the case to determine the contents of the appendix.

Upon receipt of the certified list, the appeal will be docketed by the Federal Circuit. An appeal number is assigned to each appeal by the Federal Circuit. Appellant's 60-day period for filing a brief runs from the later of the date the appeal is docketed by the Federal Circuit or the certified list is served. Fed. Cir. R. 31(a). Since the appeal is docketed after the certified list is served in the case of PTO appeals, the 60-day period almost always runs from the date the appeal is docketed.

V. Service of court papers on the Solicitor

The mail service address for the Solicitor is:

Office of the Solicitor
P. O. Box 15667
Arlington, Virginia 22215

Only litigation papers should be mailed to the Post Office box address. Other papers intended for filing in PTO should be addressed as specified in 37 CFR § 1.1. Non-litigation papers will be returned and will not be forwarded to the Mail Room.

Litigation papers not served by hand must be mailed to our Post Office box. Litigation papers mailed or delivered to the Mail Room of PTO, left in PTO's night deposit box, or left with a PTO employee in an office other than the Office of the Solicitor, are deemed served when received in the Office of the Solicitor.

The Office of the Solicitor is open from 8:30 a.m. to 5:00 p.m. Litigation papers served by hand must be delivered between 8:30 a.m. and 5:00 p.m. to:

Office of the Solicitor
2121 Crystal Drive
Suite 918

Arlington, Virginia

Unless permitted by court rules or order, delivery does not include facsimile transmission.

VI. Motions

Motions are inevitable in Federal Circuit and other court practice. Before a motion is filed, appellant should contact the Solicitor's Office to see if there is agreement on the requested relief and the proposed order. If there is no opposition to a procedural order, it can be entered by the Clerk, thereby obtaining prompt relief and obviating the need for a judge or motions panel to consider the matter.

VII. Appendix

A. Designation

The Office of the Solicitor typically designates the following items for inclusion in the appendix in addition to the mandatory items specified in Fed. Cir. R. 30.

In *ex parte* patent cases, we generally designate:

- (1) the specification;
- (2) any drawings;
- (3) the prior art supporting the rejection;
- (4) the final rejection and any Office action referenced in the final rejection;
- (5) the examiner's answer; and
- (6) any evidence submitted to support patentability.

In *ex parte* trademark cases, we generally designate:

- (1) the trademark application, including the drawing;
- (2) specimens;
- (3) the trademark examining attorney's statement; and
- (4) registrations supporting the refusal and any other evidence relied upon by the examining attorney or the TTAB.

It should be noted that Fed. Cir. R. 30(a)(2)(iii) prohibits the inclusion of briefs filed by an applicant in PTO without leave of the court. However, the examiner's answer and examining attorney's statement may be designated and included without leave. Fed. Cir. R. 30(a)(2).

While the items in the appendix differ from case to case, a typical appendix in an *ex parte* patent appeal contains the following items in the following order:

- (1) table of contents;
- (2) the initial decision of the Board;
- (3) any decision on reconsideration;
- (4) a copy of the certified list, which corresponds to the docket entries mentioned in Fed. R. App. P. 29(a)(1);
- (5) the specification;
- (6) the final rejection;
- (7) the examiner's answer;
- (8) any prior art relied upon by PTO;
- (9) any rebuttal evidence, e.g., affidavits under Rule 131, 37 CFR § 1.131, or Rule 132, 37 CFR § 1.132; and
- (10) a copy of the rejected claims.

With respect to the last item, Fed. Cir. R. 30(a)(3) provides:

In appeals from . . . [PTO], the appendix shall, unless the parties mutually agree to the contrary, include a copy of all rejected claims in an *ex parte* patent appeal, a copy of all counts in a patent interference appeal, and both a copy of the trademark sought to be registered or cancelled and a copy of any registration relied upon to refuse or oppose registration or to seek cancellation of a registered mark in an *ex parte* or an *inter partes* trademark appeal.

If the material designated as the appendix exceeds 100 pages, a draft copy of the appendix, with page numbers, should be

sent to the Office of the Solicitor. Upon receipt, if we see any problem with the appendix, including any failure to comply with Federal Circuit rules, we promptly advise appellant. Preparation of a draft appendix will also insure that all briefs properly refer to pages of the appendix.

B. Page numbering

Fed. Cir. R. 30(c)(2) requires that page numbers be centered in the bottom margin of each page and that other pagination marks be redacted if necessary to avoid confusion. Numbering the appendix pages with a format such as "0001" generally avoids confusion with other page numbers.

If the designated appendix is less than 100 pages (which should be copied on both the front and back), the appendix is bound with appellant's principal brief. If the designated appendix is more than 100 pages, the appendix is filed separately within seven (7) days of the date the last reply brief is filed. Fed. Cir. R. 30(a)(4).

C. Legible materials

An appendix will often contain copies of materials which are illegible. In cases where counsel for an appellant does not have legible copies of materials which are available in PTO, contact the Office of the Solicitor and we will arrange to send a legible copy.

Handwritten notes in the margin of counsel's copy of Office actions should be removed. The proper place to argue a case is in a brief — not in notes in the margin.

VIII. Briefs

A. Statement of the facts

Fed. R. App. P. 28(a)(3) requires that an appellant file a statement of facts relevant to the issues presented for review. Fed. Cir. R. 28(b) provides that the appellee's statement of the case should be limited to the specific areas of disagreement with those of the appellant. Absent disagreement the appellee shall not include a statement of the case in his brief. *Id.* In our view these rules place the responsibility to provide a complete and neutral statement of facts on the appellant. Appellant should remember that it *lost* below. Hence, the "facts" are not those the appellant would like them to be; rather, the "facts" are those found by the Board. The statement of the facts in a brief is not the place to *argue* that the Board was clearly erroneous in making a finding of fact.

In our experience, appellants' statement of the facts invariably include argument; fail to describe all the facts relevant to the issues; state the facts in a light most favorable to appellant despite contrary findings below; or state conclusions — often without citation to the appendix. As a result, we typically find it necessary to include a detailed and, we believe, a complete and neutral statement of facts — with full citations to the appendix.

We particularly note that when "new" counsel is retained to handle the Federal Circuit appeal, the arguments on appeal often bear no resemblance to the arguments made to the Board. As a matter of logic, it would seem that the Board could not possibly have erred below on the basis of an argument made for the first time in the Federal Circuit. *See Keebler Co. v. Murray Bakery Products*, 866 F.2d 1386, 9 USPQ2d 1736 (Fed. Cir. 1989) (since Keebler failed to tell the TTAB it was interested in Murray's "intent," it could not use intent as a basis for showing "error" by the TTAB; prescience is not a required characteristic of the board and the board need not divine all possible afterthoughts of counsel that might be asserted for the first time on appeal).

B. References in brief to the appendix

All factual assertions made in the brief should be supported with citation to the appendix. How the Federal Circuit is supposed to know that an assertion is correct, when no reference is made to the appendix in support of the assertion, is something we have not been able to figure out. The Federal Circuit has often noted, with apparent disapproval, the absence of a citation to the appendix in support of a party's position.²² Failure to cite to the appendix may affect an attorney's credibility before

the Federal Circuit and diminish the impact of otherwise meritorious arguments. If counsel feels that it is necessary to make factual assertions and cannot point to the specific portion of the appendix supporting the assertion, consideration should be given to refiling the application. Argument which depends on factual assertions not supported by the record cannot have any relevance to any error in the decision under review.

Moreover, to the extent that we have influence within PTO to bring about a favorable result by way of settlement, we need to be convinced. Allegations, not supported by references to the appendix, are not likely to convince any attorney in the Office of the Solicitor of the merits of an appellant's position.

IX. Oral argument

A. When we appear

An attorney from the Solicitor's Office will appear and present argument in cases in which the appellant intends to present oral argument. We will submit on the briefs only (1) where appellant submits on brief and (2) no reply brief has been filed or we conclude that the reply brief does not require comment at the oral hearing. On the other hand, if a reply brief raises a substantial issue, particularly a "new" issue, we will appear even if appellant waives oral argument.

B. Discussing the [alleged] error

An appellant has a burden of showing that the Board erred in its decision.²³ Factual findings below must be shown to be clearly erroneous,²⁴ while legal conclusions are reviewed for correctness or error as a matter of law.²⁵ Having only a short time for oral hearing, typically fifteen minutes, appellants should direct their remarks to the purported errors in the Board's decision. Based upon the 60 to 80 cases we argue annually, we can assure appellants that Federal Circuit merits panels are familiar with the record and the proceedings under review. Counsel may not want to use part of the 15 minutes normally allocated for oral argument by:

(1) explaining that the case is an appeal from the Patent and Trademark Office (the merits panel already knows that because the briefs have been read);

(2) identifying the appellant or assignee (because it is essentially irrelevant);

(3) reviewing the facts of the case, etc.

However, counsel should be thoroughly familiar with the record and be prepared to identify the portions which support their arguments.

We suggest oral argument by an appellant should start by saying "The error below was . . ." and here's why.

C. Visual aides

Fed. Cir. R. 34(c) encourages the use of visual aids. If the visual aid was not used during the administrative proceeding, written notice of the proposed use must be given at least 15 days prior to the hearing. Any written objections must be filed at least 5 days before the hearing. The rule also provides that counsel may agree on the use of visual aids.

Whether or not we will agree depends on the particular facts. We ordinarily do not disagree with enlargements ("blow-ups") of portions of the record. Where the proposed visual aid is not part of the record, we will not agree until we have had an opportunity to see the visual aid.

X. Petitions for rehearing

Petitions for rehearing can be useful if properly used. But, in our experience, petitions for rehearing filed by appellants simply reargue the case. We do not believe this is a proper function of a petition for rehearing.

Generally we will file a petition for rehearing only when (a) we believe the merits panel has made a genuine mistake — not merely a "judgment" call which happens to differ from our

²²*In re Durden*, 763 F.2d 1406, 1409, 226 USPQ 359, 361 (Fed. Cir. 1985) (The burden is on appellant to persuade the court that the Board was wrong).

²³*Stock Pot Restaurant v. Stockpot, Inc.*, 737 F.2d 1576, 1578, 222 USPQ 665, 667 (Fed. Cir. 1984) (findings of fact of the TTAB are reviewed under the clearly erroneous standard); *In re Caveney*, 761 F.2d 671, 674, 225 USPQ 1, 3 (Fed. Cir. 1985) (findings of fact by the Board of Patent Appeals and Interferences are reviewed under the clearly erroneous standard).

²⁴*In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

judgment, or (b) even where the result is correct, an opinion contains language which we believe will seriously and adversely affect PTO's ability to properly and effectively administer the patent or trademark laws. *See Markey*, "Semantic Antics in Patent Cases," 88 F.R.D. 103, 108 (1980) (suggesting rehearing should be requested to modify opinion language which confuses the law of patents).

We suggest, and do not believe, that there is such a thing as a "routine" petition for rehearing. A truly extraordinary situation must exist before a petition for rehearing can be deemed proper.²⁶ The Office of the Solicitor has been relatively successful with petitions for rehearing. In a 20-year period before the CCPA and Federal Circuit, we can recall filing approximately 12 petitions for rehearing. Some form of relief has been granted in nine, i.e., claims found patentable in the original decision were found unpatentable on rehearing,²⁷ language was changed in the opinion,²⁸ relief was granted in part,²⁹ etc.

XI. Issuance of mandates/termination of proceedings

As provided in Fed. R. App. P. 41(a), the Court's mandate usually issues 21 days after the entry of its decision. A request for rehearing stays the mandate until seven days after an order by the merits panel denying rehearing. Unless there are allowable claims or the Court's decision requires further proceedings by the Office, the receipt of the mandate by PTO "terminates the proceedings" for purposes of continuity under 35 U.S.C. § 120. 37 CFR § 1.197(c), 54 Fed. Reg. 29548, 29552 (July 13, 1989) reprinted in, 1105 Off. Gaz. Pat. Office 5, 9 (Aug. 1, 1989). If an appellant contemplates filing a "continuing application, it should be filed prior to the receipt of the mandate by PTO to preserve the benefit of the filing date of the parent application. Proceedings terminate on receipt of the mandate, not upon the expiration of the period for applying for certiorari to the Supreme Court.³⁰

XII. Costs

In *ex parte* patent and trademark appeals from PTO, costs are not awarded for or against the Commissioner. *See* Fed. Cir. Practice Note to Fed. Cir. R. 39.³¹ Hence, we do not file bills of costs in *ex parte* cases.

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Helpful Hints

• *Correspondence with Certificate of Mailing Delivered by Commercial Carrier*—The benefits of 37 CFR 1.8 or 1.10 apply only to documents delivered to the PTO by the U.S. Postal Service.

A number of instances have been uncovered where individuals are certifying that documents were deposited with the U.S. Postal Service when, in fact, the documents were hand carried or delivered to the PTO via commercial mail service, e.g.,

²⁶In the case of a suggestion for rehearing en banc, we obtain approval from the Solicitor General.

²⁷*In re Tiffin*, 448 F.2d 791, 171 USPQ 294 (CCPA 1971).

²⁸*Parks v. Fine*, 773 F.2d 1577, 227 USPQ 432 (Fed. Cir. 1985), opinion amended, 783 F.2d 1036, 228 USPQ 677 (Fed. Cir. 1986).

²⁹*Newman v. Quigg*, 877 F.2d 1575, 11 USPQ2d 1340 (Fed. Cir.), reh'g on costs granted in part, 886 F.2d 329 (Fed. Cir. 1989).

³⁰*In re Jones*, 542 F.2d 65, 69, 191 USPQ 249, 252 (CCPA 1976) (when PTO receives CCPA mandate, proceedings in patent application are terminated); *Continental Can Co. v. Schuyler*, 326 F. Supp. 283, 168 USPQ 625 (D.D.C. 1970) (proceedings terminate within meaning of 35 U.S.C. § 120 when mandate of CCPA was issued). See also *In re Willis*, 537 F.2d 513, 515, 190 USPQ 327, 329 (CCPA 1976). Once a mandate is issued, it is our experience that a motion to withdraw the mandate to secure "competency" with a continuation will not be granted. *In re Iwashita*, Fed. Cir. No. 90-1162, *In re Nakahama*, Fed. Cir. No. 90-1166, and *In re Nakahama*, Fed. Cir. No. 90-1187.

³¹See also *In re Kochan*, Fed. Cir. No. 83-502 (May 25, 1983); *In re Lobdell*, Fed. Cir. No. 83-674 (Sept. 22, 1983); *In re Piascecki*, Fed. Cir. No. 84-775 (Nov. 9, 1984); *In re Shivers*, Fed. Cir. No. 85-1544 (Dec. 19, 1985); *In re Wrenn*, Fed. Cir. No. 86-743 (July 17, 1986); and *In re Dow Chemical*, Fed. Cir. No. 87-1406 (Feb. 11, 1988).

[1080 TMOG 6]

(153)

Helpful Hints

• *Certificate of Mailing AND Return Post Card*—Use of the Certificate of Mailing Procedure is strongly encouraged.

37 CFR 1.8(a) provides for the use of a Certificate of Mailing on most correspondence with the PTO, whereby the correspondence (and/or fee) will be considered as timely filed if deposited with the U.S. Postal Service within the set time period. Consistent use of this procedure is extremely beneficial to practitioners, whether or not the Post Card Receipt provision of MPEP 503 is used.

In those instances where the PTO never receives the correspondence, no post card receipt will be available to evidence the filing and/or timeliness of the correspondence. However, in those instances where a Certificate of Mailing is properly used, 37 CFR 1.8(b) provides relief, even if the correspondence is not received in the PTO at all. Under 37 CFR 1.8(b) the party who forwarded the correspondence need only (1) inform the PTO of the previous mailing of the correspondence, (2) supply a copy of the previously mailed correspondence and Certificate, and (3) include a declaration which adequately attests to the previous timely mailing.

[1082 TMOG 8]

(154)

DEPARTMENT OF COMMERCE

Patent and Trademark Office

Change of Address For Trademark Applications and Trademark Related Papers

Agency: Patent and Trademark Office, Commerce.

Action: Notice.

Summary: Commencing July 5, 1994, trademark applications and other trademark-related mail, except for trademark-related documents sent to the Assignment Branch for recordation and requests for certified copies of trademark documents, should be addressed to: Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Va. 22202-3513.

Dates: This new address will be effective July 5, 1994.

For Further Information Contact: Lynne G. Beresford at (703) 305-9464 or by mail marked to her attention and addressed to: Assistant Commissioner for Trademarks, Washington, D.C. 20231. After July 5, 1994, mail should be addressed to: Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Va. 22202-3513.

Supplemental Information: As part of its emphasis on better service for trademark applicants and registrants, the responsibility for receiving, opening and routing of trademark mail is being transferred to the Assistant Commissioner for Trademarks. In order to more efficiently process the mail, the Assistant Commissioner has determined that trademark-related mail, except for trademark-related documents sent to the Assignment Branch for recordation and requests for certified copies of trademark application and registration documents, should be sent directly to the Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Va. 22202-3513, which is the location of the Trademark Operation. Having mail sent directly to that address should speed up processing and reduce the amount of lost or misrouted mail. The mail room at the South Tower Building will begin to receive and process mail on July 5, 1994. For a period after July 5, 1994, the Patent and Trademark Office (Office) will receive trademark-related mail at both the old address, Commissioner of Patents and Trademarks, Washington, D.C. 20231, and at the new address, Assistant Commis-

²²*See e.g., Datacube Corp. v. SMEC, Inc.*, 879 F.2d 820, 827, 11 USPQ2d 1321, 1325 (Fed. Cir. 1989), cert. denied, 110 S.Ct. 729 (1990).

sioner for Trademarks, 2900 Crystal Drive, Arlington, Va., 22205-3513. The Office is currently preparing a notice of proposed rulemaking to formally change the address for trademark-related papers. The Office will continue to maintain the following special boxes, Box Trademark Application, Box ITU, Box AAU, and Box 5, for expedited processing and distribution of specific types of documents. The Office encourages the continued use of these boxes with the new address.

People may continue to file both patent and trademark-related papers directly at the Attorneys' Window located in Room 1B03 of Crystal Plaza Building 2, Arlington, Va.

Sections 1.8 and 1.10 of Title 2 of Section 37 of the Code of Federal Regulations are waived, to the extent that, on or after July 5, 1994, a certificate of mailing under §§ 1.8 or 1.10, for trademark applications and other trademark-related mail, except for trademark-related documents sent to the Assignment Branch for recordation and requests for certified copies of trademark application and registration documents, may be addressed either to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, or to the Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Va., 22202-3513. Patent-related mail should continue to be sent to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Authority: 35 U.S.C. 6, 15 U.S.C. 1123

May 26, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1163 TMOG 80]

(155) **Special Boxes And "Fee/No Fee" Indicators
For Trademark-Related Mail
And**

**Guidelines For Filing Requests To Extend Time To Oppose
With The Trademark Trial And Appeal Board (TTAB)**

On July 5, 1994, the Patent and Trademark Office opened a mailroom to receive mail related to trademark applications, registrations and matters before the Trademark Trial and Appeal Board at the following addresses:

Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

To facilitate mail-handling in the new mailroom, the special box designations have been expanded so that incoming mail can be presorted more efficiently. In addition to these box designations, filers are encouraged to indicate whether the contents of an envelope contain a "FEE" or "NO FEE." As shown below, the "FEE" and "NO FEE" indicators should be set forth on the line below the box designation for easy visibility. Envelopes will be batched based on the "FEE/NO FEE" indicator and box designation and sent unopened to the appropriate employee in the Pre-exam area for processing.

The "SPECIAL BOXES FOR MAIL" page in the *Official Gazette* will be changed. Please note that the "BOX 5" designation for "'No fee' mail related to trademarks" has been discontinued. Furthermore, the box designation "Box Trademark Application" has been changed to "BOX NEW APP."

The following box designations and "FEE/NO FEE" indicators will now be available:

BOX NEW APP FEE for any new trademark application.
[All applications require fees; therefore a "NO FEE" indicator should not be used.]

BOX ITU FEE for papers such as Statements of Use (SOU), and extensions requests therefor, to be filled with the Intent to Use (ITU) Unit.
[All ITU papers require fees; therefore a "NO FEE" indicator should not be used.]

BOX TTAB FEE for papers such as oppositions, cancellation petitions and ex parte appeals filed with the Trademark Trial and Appeal Board (TTAB).

BOX TTAB NO FEE for TTAB papers with no fee, such as extension requests, interferences and motions.

BOX STATUS NO FEE for written status inquiries.
[Status inquiries do not require a fee; therefore a "FEE" indicator should not be used.]

BOX POST REG FEE for post registration documents such as Section 8 affidavits and Section 9 renewals.

BOX RESPONSES NO FEE for responses to Examining Attorneys' Office actions; and for responses to Post Registration Examiners' rejections.

For best results, these box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document. However, although not preferred procedure, filers may continue to include documents destined for more than one location in a single envelope, provided each document references the box designation and "FEE/NO FEE" indicator on the cover sheet or first page of the document; and provided each complete filing is stapled or secured in some fashion. The envelope should list all the box designations and "FEE/NO FEE" indicators for its contents.

This notice does not apply to trademark-related documents intended for recordation with the Assignment Branch or for requests for certified and uncertified copies of trademark application and registration documents. These papers and patent-related mail should continue to be sent to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Labeling First Requests for Extensions of Time to Oppose

Although the Trademark Trial and Appeal Board reports to the Office of the Deputy Assistant Secretary of Commerce and Deputy Assistant Commissioner of Patents and Trademarks, it is located and receives its mail at the Arlington address of the Assistant Commissioner for Trademarks. As noted above, requests for extensions of time to oppose should be sent to BOX TTAB, including the "NO FEE" indicator.

Because first requests for extensions of time to oppose are critically time-sensitive documents, filers are encouraged to indicate on the cover sheet or first page of the extension request that the paper is a first request. The suggested title for these documents is: **First Request for Extension of Time to File a Notice of Oppositions.**

October 25, 1994

PHILIP G. HAMPTON, II
Assistant Commissioner
for Trademarks

[1168 TMOG 89]

(156) **Changes in How Papers May be Filed
in the Patent and Trademark Office**

Beginning April 21, 1992, an improved service will be offered to people who wish to file papers directly with the Patent and Trademark Office (PTO) by extending the hours of operation for the Attorneys' Window located in Room 1B03 of Crystal Plaza Building 2, Arlington, Virginia. The current hours of operation are from 8:30 a.m. to 5:00 p.m., Monday through Friday, except Federal holidays within the District of Columbia. The change will extend the hours of operation until 12:00 midnight on Monday through Friday, except holidays, on a trial basis. If, after six months, usage does not warrant retaining operations until midnight, the hours of operation will be reduced.

This change will provide walk-up, personalized service to firms and individuals who are filing documents with the PTO. The PTO will continue to stamp postcard-type receipts to acknowledge the receipt of papers filed at the Attorneys' Window.

Also, effective on April 21, 1992, the PTO is discontinuing the use of drop boxes in the lobby of Crystal Plaza Building 3, Arlington, Virginia, and at the main entrance of the Department of Commerce Building, Washington, D.C. (37 CFR 1.6(c)) as means for receiving papers.

These changes will provide improved services with respect to receipt and processing of documents while, at the same time, overcoming problems with the present arrangement.

Problems encountered with the present arrangement for the drop boxes have occasionally made it difficult to determine the dates of actual deposit of papers. For example, there have been many incidents of papers being found outside of the drop boxes (e.g., on the floor of the main lobby of the Department of Commerce Building, on the guard's desk, on a nearby table, etc.). On occasion, the PTO and/or filers have been denied access to the drop box at the Department of Commerce by building security guards due to a special event taking place in the lobby.

Provisions are also available for filing papers through the use of the certificate of mailing (37 CFR 1.8) and the Express Mail (37 CFR 1.10) procedures.

March 17, 1992

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1137 TMOG 7]

(157) **DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 2 and 10**

[Docket No. 90671-3225]
RIN 0651-AA55

**Changes in Signature and Filing Requirements for
Correspondence Filed in the Patent and Trademark Office**

Agency: Patent and Trademark Office, Commerce.

Action: Final Rule.

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent and trademark cases to: specify the types of correspondence which will no longer require original signatures; provide for facsimile transmission of certain correspondence to the Office; discontinue use of the drop boxes at Crystal Plaza Building 3 and at the Department of Commerce Building in Washington, D.C.; and clarify other provisions with respect to practice before the Office.

Effective Date: November 22, 1993. These rules will be applicable to all correspondence filed with the Office on or after the effective date.

For Further Information Contact: Abraham Hershkovitz by telephone at (703) 305-9282, by facsimile transmission at (703) 305-8825, or by mail marked to his attention and addressed to Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231.

Supplementary Information: In a Notice of Proposed Rulemaking published in the Federal Register at 57 FR 36034 (August 12, 1992) and in the Patent and Trademark Office Official Gazette at 1142 Off. Gaz. Pat. Office 8-13 (September 1, 1992), the Office proposed to amend the rules of practice in patent and trademark cases to simplify the manner in which correspondence may be transmitted to the Office and clarify other provisions with respect to practice before the Office. This rulemaking includes changes to expand those situations where a party can use the Certificate of Mailing or Transmission procedure, and minor technical modifications in Part 2 of Title 37 of the Code of Federal Regulations which were not part of the proposed rulemaking. This rule making also expands the acceptability of facsimile transmissions to certain trademark documents which were not part of the proposed rulemaking.

Written comments were submitted by twenty-two law firms, five individuals, nine corporations, two organizations and three agencies. An oral hearing was not conducted.

The following includes a discussion of the rules being changed and the reasons for those changes, and an analysis of the comments received in response to the notice of proposed rulemaking.

Discussion of Specific Sections to be Changed or Added:

(1) **Types of Correspondence No longer Requiring Original Signatures (Section 1.4)**

Section 1.4 is amended to include a new paragraph (d) to specify that most correspondence filed in the Office, which requires a person's signature, may be an original, or a copy thereof. See §§ 1.4 (e) and (f) for types of correspondence where the original must be filed in the Office. The word original, as used in this rulemaking, is defined as correspondence which is personally signed in permanent ink by the person whose signature appears thereon. Where copies of correspondence are acceptable, photocopies or facsimile transmissions may be filed. For example, a photocopy or facsimile transmission of an original of an amendment, declaration, petition, issue fee transmittal form, authorization to charge a deposit account, etc., may be submitted in a patent or trademark application. Furthermore, where copies are permitted, second and further generation copies (i.e., copy of a copy) are acceptable. The original, if not submitted to the Office, should be retained as evidence of proper execution in the event that questions arise as to the authenticity of the signature reproduced on the photocopy or facsimile-transmitted correspondence. If a question of authenticity arises, the Office may require submission of the original.

Section 1.4(e) identifies types of correspondence in which an original must be submitted to the Office. Where an original is required, copies are not acceptable and will not be accorded a receipt date. Correspondence, as referred to in this section, includes application forms for registration to practice before the Office and data sheets for the register of patent attorneys and agents.

Section 1.4(f) provides that when a document that is required by statute to be certified must be filed (such as a certified copy of a foreign patent application, pursuant to 35 U.S.C. 119; a certified copy of an international application, pursuant to 35 U.S.C. 365; a certified copy of a foreign trademark registration, pursuant to 15 U.S.C. 1126(e); a certified copy of a final court order, pursuant to 15 U.S.C. 1119; or a certified copy of a U.S. trademark registration), a copy of the certification, including a photocopy or facsimile transmission, will not be acceptable. The requirement for an original certification does not apply to certifications such as required under §§ 1.8, 1.10, 1.60, 1.97(e) and 3.73(b), since these certifications are not required by statute.

(2) **Identification of Applications (Section 1.5)**

Section 1.5(a) is amended to make reference to the certificate procedure under § 1.8 consistent with the new title for § 1.8.

(3) **Receipt of Correspondence (Section 1.6)**

A descriptive heading is added to each paragraph of § 1.6 to identify the content of that paragraph.

The phrase "correspondence" is used in § 1.6 since the terms "papers", "letters" and "fees" all fall within the generic definition of "correspondence".

Section 1.6(a) is amended to clarify that correspondence transmitted by facsimile on weekends or Federal holidays within the District of Columbia, will be accorded the next business day as the date of receipt.

Sections 1.6 (b) and (c) are amended to clarify that weekdays refer to any day except a Saturday, Sunday, or Federal holiday within the District of Columbia.

Section 1.6(c) is amended to delete reference to the box locations in the lobby of Crystal Plaza Building 3, Arlington, Virginia, and at the Department of Commerce Building in Washington, D.C. The use of the drop boxes was discontinued on April 21, 1992, and the hours of operation for the attorney's window were extended to midnight, the same hours the drop boxes were available. The public can now deposit correspondence with the Office and obtain an acknowledgment of receipt after normal business hours. See "Changes in How Papers May Be Filed in the Patent and Trademark Office", 1137 Off. Gaz. Pat. Office 7 (April 7, 1992).

Use of the drop boxes at Crystal Plaza Building 3 and Department of Commerce Building locations had caused problems for both the public and the Office. Occasionally, it had been difficult to determine the dates of actual deposit of correspondence in the boxes. On occasion, Office employees and/or members of the public had been denied access to the drop box at the Department of Commerce by building security guards due to a special event taking place at the Department. Additionally, there were instances of correspondence being found outside of the drop boxes (e.g., on the floor of the main lobby of the Department of Commerce Building, on the guard's desk, on a nearby table, etc.). As a result, on occasion, the Office lacked confidence in assigning correct dates of receipt to correspondence deposited in the boxes at Crystal Plaza Building 3 and at the Department of Commerce Building. Given these difficulties, and the fact that the necessity for these boxes has been greatly diminished as a result of the facsimile transmission and certificate of mailing procedures, § 1.6(c) is amended by deleting reference to the drop boxes at Crystal Plaza Building 3 and the Department of Commerce Building.

A new section 1.6(d) is added to specify the types of correspondence which may be transmitted by facsimile and former § 1.6(d) is revised to be consistent with § 1.8(b) and redesignated as § 1.6(e). The widespread use of facsimile transmission and the resulting time saved in correspondence between applicants and the Office prompted the Office to establish a trial program to accept facsimile transmission of certain correspondence. The policy on "Filing of Certain Papers and Authorizations to Charge Deposit Accounts by Facsimile Transmission" was published at 1096 Off. Gaz. Pat. Office 30 (November 15, 1988) and was supplemented in the notice "Filing of Certain Papers with the Board of Patent Appeals and Interferences by Facsimile Transmission" published at 1108 Off. Gaz. Pat. Office 15 (November 14, 1989). The policy on "Filing of Certain Trademark Papers and Authorizations to Charge Deposit Accounts by Facsimile Transmission" was published at 1123 Off. Gaz. TM. Office 18 (February 12, 1991). In light of the success of the trial program, a policy on acceptance of facsimile transmission is incorporated into § 1.6(d). The situations where transmission of correspondence by facsimile is permitted have been increased over those permissible under the trial program outlined above. The situations where transmissions by facsimile remain prohibited are identified in § 1.6(d)(1)-(9). Prohibitions cover situations where originals are required as specified in §§ 1.4 (e) and (f), and situations where accepting a facsimile transmission would be unduly burdensome on the Office. As a courtesy, the Office will attempt to notify senders whenever correspondence is sent to the Office by facsimile transmission that falls within one of these prohibitions. Senders are cautioned against submitting correspondence by facsimile transmission which is not permitted under § 1.6(d) since such correspondence will not be accorded a receipt date.

This final rulemaking expands the acceptability of facsimile transmission to certain patent interference proceedings, not included in the proposed rulemaking, to reflect the practice set forth at 1108 Off. Gaz. Pat. Office 15 (November 14, 1989).

This final rulemaking also expands the acceptability of facsimile transmission to certain trademark documents, not include in the proposed rulemaking. These additional documents are:

- (1) An affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8 (a) or (b) or section 12(c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c);
- (2) An application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059;
- (3) In an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1).

The Certificate of Mailing or Transmission provisions of § 1.8 do not apply to correspondence listed in (1)-(3) above, nor to the filing of correspondence in an international application before the U.S. Receiving Office, the U.S. International Searching Authority, or the U.S. International Preliminary Examining Authority or to the filing, in an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), of a request under section 1(d)(2) of the Trademark Act, 15 U.S.C.

1051 (d)(2), for an extension of time to file a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051 (d)(1). See § 1.8 (a)(2)(i)(E) and 1.8 (a)(2)(ii)(B), (C), (E) and (F). If the transmission of any of these documents is completed after midnight (Eastern time) of the due date, the papers are untimely.

Under § 1.6(d)(4) as adopted in this final rulemaking, drawings submitted under §§ 1.81, 1.83-1.85, 1.152, 1.165, 1.174, 1.437, or 2.21 may not be filed by facsimile in patent and trademark applications. The experience of the Office is that the quality of the drawings received by facsimile transmission is generally not sufficient to comply with the drawing requirements set forth in these rules. However, applicants may submit by facsimile transmission proposed drawing corrections for approval by the Office.

In trademark proceedings, the facsimile transmission of specimens in response to an Office action will be permitted. Facsimile-transmitted specimens must be legible in order to be accepted and examined as specimens. This final rulemaking also expands the acceptability of specimens filed in conjunction with amendments to allege use under section 1(c); statements of use under section 1(d); affidavits of use or excusable nonuse under section 8 (a) or (b) or 12(c); and applications for renewal under section 9 of the Trademark Act, 15 U.S.C. 1051 (c) and (d); 1058 (a) and (b); 1062(c) and 1059.

The date of receipt accorded to any correspondence permitted to be sent by facsimile transmission is the date the complete transmission is received by an Office facsimile unit, unless the transmission is completed on a Saturday, Sunday, or Federal holiday within the District of Columbia. Correspondence for which transmission was completed on a Saturday, Sunday, or Federal holiday within the District of Columbia, will be accorded a receipt date of the next succeeding day which is not a Saturday, Sunday, or Federal holiday within the District of Columbia. For example, a facsimile transmission to the Office from California starting on a Friday at 8:45 p.m. Pacific time and taking 20 minutes, would be completed at 9:05 p.m. Pacific time. The complete transmission would be received in the Office around 12:05 a.m. Eastern time on Saturday. The receipt date accorded to the correspondence is the date of the following business day, which in this case, would be Monday (assuming that Monday was not a Federal holiday within the District of Columbia).

The following lists itemize types of correspondence which may not be filed by facsimile transmission, and, if submitted by facsimile, will not be accorded a date of receipt:

Correspondence Relative to Patents and Patent Applications Where Filing by Facsimile Transmission is Not permitted

- (1) A document that is required by statute to be certified;
- (2) A national patent application specification and drawing or other correspondence for the purpose of obtaining an application filing date;
- (3) Drawings submitted under §§ 1.81, 1.83-1.85, 1.152, 1.165, 1.174, or 1.437;
- (4) Correspondence in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail";
- (5) Agreements between parties to an interference under 35 U.S.C. 135(c);
- (6) Correspondence to be filed in an interference proceeding which consists of a preliminary statement under § 1.621; a transcript of a deposition under § 1.676 or of interrogatories, cross-interrogatories, or recorded answers under § 1.684(c); or an evidentiary record and exhibits under § 1.653;
- (7) Correspondence to be filed in a patent application subject to a secrecy order under §§ 5.1-5.8 of this chapter and directly related to the secrecy order content of the application;
- (8) An international application for patent;
- (9) A copy of the international application and the basic national fee necessary to enter the national stage, as specified in § 1.494(b) or § 1.495(b);
- (10) A request for reexamination under § 1.510.

Correspondence Relative to Trademark Registrations and Trademark Applications Where Filing by Facsimile Transmission is Not Permitted

- (1) The filing of a trademark application;
- (2) Drawings submitted under § 2.21;
- (3) A petition to cancel a registration of a mark under section 14, subsection (1) or (2) of the Trademark Act, 15 U.S.C. 1064;
- (4) Request for cancellation or amendment of a registration under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e); and certificates of registration surrendered for cancellation or amendment under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e);
- (5) Correspondence to be filed with the Trademark Trial and Appeal Board, except the notice of ex parte appeal.

Correspondence Relative to Practitioner Registrations, Investigations, and Disciplinary Proceedings Where Filing by Facsimile Transmission is Not Permitted

Correspondence requiring a person's signature and relating to:

- (1) Registration to practice before the Patent and Trademark Office in patent cases;
 - (2) Enrollment and disciplinary investigations; or
 - (3) Disciplinary proceedings.
- (4) Certificate of Mailing or Transmission Procedure (Section 1.8)

The title of § 1.8 is changed from Certificate of Mailing to Certificate of Mailing or Transmission so as to include facsimile transmission.

Section 1.8(a) prescribes procedures for the use of a certificate of mailing or transmission to file papers or fees in the Office by first class mail or by facsimile transmission. The description of the Certificate of Mailing or Transmission practice is set forth in § 1.8(a)(1), and the list of exceptions to the certificate practice is found in § 1.8(a)(2). The phrase "papers or fees" in § 1.8(a) is changed to "correspondence" since both "papers" and "fees" fall within the generic definition of "correspondence". Paragraphs (a) and (b) of § 1.8 are amended to include correspondence transmitted by facsimile. In the event that correspondence is filed by facsimile transmission, it is recommended that the sending facsimile machine generate a report confirming transmission for each transmission session. This report should be retained by the applicant, along with the correspondence used as the original, as evidence of content and date of transmission. Paragraph (a)(2) of § 1.8 is amended to include separate headings for correspondence which relate to patents, trademarks and disciplinary proceedings. The sequence of some of the paragraphs found in § 1.8(a)(2) has been changed in order to have those paragraphs listed under the appropriate heading. The ability to use the Certificate of Mailing or Transmission procedures has been expanded to the filing of an affidavit under section 15, subsection (3) of the Trademark Act, 15 U.S.C. 1065(3), the filing of a notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or 15 U.S.C. 1071(a)(1), in response to another party's appeal to the Court of Appeals for the Federal Circuit, the filing of a notice and reasons of appeal under 35 U.S.C. 142 or a notice of appeal under 15 U.S.C. 1071(a)(2), and the filing of a statement under 42 U.S.C. 2182 or 42 U.S.C. 2457(c).

Paragraph (a)(2)(vi) of § 1.8 is redesignated as paragraph (a)(2)(x) and amended to refer to section 14(1) or 14(2) of the Trademark Act, 15 U.S.C. 1064, to conform with the numbering of the Trademark Law Revision Act of 1988. Other sections of paragraph (a)(2) of § 1.8 are amended to identify the types of correspondence which will not receive the benefit of a certificate of mailing or transmission.

Paragraph (b) of § 1.8 outlines procedures to be followed to document the timely filing of correspondence in accordance with § 1.8(a) where such correspondence is not received by the Office. The phrase "correspondence or fees" in § 1.8(b) is changed to "correspondence" since "fees" fall within the generic definition of "correspondence". Before adoption of this final rule, § 1.8(b) required that the party forwarding the correspondence or fee include a declaration, under §§ 1.68 or 2.20 of this chapter, attesting to the previous timely mailing or transmission. In order to be consistent with other sections in Parts 1 and 2 of this chapter, the practice under § 1.8(b) is amended to permit a practitioner, as defined in § 10.1(r), to submit a statement rather than an oath or declaration under §§ 1.68 or 2.20 of this chapter. New paragraph (c) of § 1.8 is

added to explicitly provide for a requirement for additional evidence relating to the mailing or transmission of correspondence in accordance with paragraph (a) of this section. The Office may invoke this requirement when it is deemed appropriate to establish an actual date of mailing or transmission. See, e.g., *In re Klein*, 6 USPQ2d 1547 (Comm'r Pat. 1987), *aff'd sub nom. Klein v. Peterson*, 696 F. Supp. 695, 8 USPQ2d 1434 (D.D.C. 1988), *aff'd* 866 F.2d 412, 9 USPQ2d 1558 (Fed. Cir.), *cert. denied*, 490 U.S. 1091 (1989).

(5) Time for Appeal or Civil Action (Section 1.304) In section 1.304, paragraphs (a) and (c) are amended to delete a statement that use of the certificate procedure under § 1.8 is prohibited so as to be consistent with changes to § 1.8. Also, a cross reference to 1.658 in paragraph (a) is clarified.

(6) Submission of Maintenance Fees (Section 1.366) Section 1.366(b) is amended by deleting the words "of mailing" to conform with the new title for § 1.8.

(7) Filing Date of Application for Extension of Patent Term Section 1.741(a) Section 1.741(a) is amended to conform with the new title for the certificate procedure under § 1.8.

(8) Appeal to Court and Civil Action (Section 2.145) Sections 2.145(c)(3) and 2.145(d)(1) are amended to conform with the revised list of types of correspondence excluded from the certificate of mailing or transmission procedure set out in § 1.8. Formerly, the notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or section 21(a)(1) of the Trademark Act, 15 U.S.C. 1071(a)(1), and the filing of notice and reasons of appeal under 35 U.S.C. 142 or a notice of appeal under section 21(a)(2) of the Trademark Act, 15 U.S.C. 1071(a)(2), were specifically excluded, under §§ 1.8(a)(2) (viii) and (ix), respectively, from the certificate of mailing procedure. Since these notices are no longer excluded under amended § 1.8(a)(2), sections 2.145(c)(3) and 2.145(d)(1) are amended to conform with § 1.8 by deleting the last sentence which provided that the certificate of mailing procedure was not available.

(9) Reconsideration of Affidavit or Declaration (Section 2.165) Section 2.165(a)(1) is amended to refer to the new title for the certificate procedure under § 1.8 of this chapter.

(10) Signature and Certificate of Practitioner (Section 10.18) Section 10.18 is modified to clarify signature requirements for correspondence signed by practitioners. The reference to § 1.4 of this chapter will make it apparent that copies, including photocopies or facsimile transmissions, of correspondence signed by practitioners will be accepted under appropriate circumstances.

(11) Misconduct (Section 10.23(c)) Section 10.23(c) is amended to refer to the new title for the certificate procedure under § 1.8 of this chapter.

Response to Comments on the Rules

The comments received in response to the notice of proposed rulemaking have been given careful consideration and a number of the suggested modifications have been adopted. The comments and responses are discussed below.

Comment: In order to clarify how the Office will treat a copy of a paper, one comment suggested changing the second sentence in proposed § 1.4(d) to indicate that, except as provided in §§ 1.4 (e) and (f), a copy would be treated by the Office as if the original had been filed.

Response: While the suggested language was not adopted, the rule was modified to clarify that, except as provided in §§ 1.4 (e) and (f), an original or a copy thereof may be filed. The rules as stated in this final rulemaking are clear that, where an original is not required, a paper filed will be treated in the same way regardless of whether it is an original or a copy.

Comment: Five comments objected to a perceived requirement in § 1.4(d) that the color of ink used for signing a paper be different from the printing on the paper.

Response: Proposed § 1.4(d) did not require that the color of ink used for signing a paper be different from the printing on the paper. The suggested use of different colors of ink is a preferred procedure for distinguishing between an original and a copy. However, in order to avoid further confusion, the suggestion that a different color of ink be used has been deleted.

Comment: One comment recommended that the issue of signature authenticity end upon issuance of a patent in order to reduce the need to keep files in storage for long periods of

time and to remove the burden on applicants of having to retrieve files from storage.

Response: Once a patent issues, the Office is not likely to inquire into any matters related to signature authenticity of correspondence filed in that patent application. Nevertheless, on rare occasions, a question of signature authenticity might arise after issuance of a patent. Applicants must therefore make their own decisions as to how long to retain originals.

Comment: Two comments questioned the justification for proposed § 1.4(e) requiring originals to be submitted in international patent applications.

Response: Section 1.4(e), as adopted, does not prohibit the filing of photocopies in an international patent application. With regard to facsimile transmissions, Patent Cooperation Treaty (PCT) Rule 92.4, as revised on July 1, 1992, permits the filing by facsimile of certain correspondence related to an international patent application. However, as indicated in §§ 1.6(d)(3), 1.8(a)(2)(iv) and 1.8(a)(2)(vi), the filing by facsimile is not permitted in the following situations relative to international applications for patent: (1) the filing of an international application for patent and (2) the filing of a copy of the international application and the basic national fee necessary to enter the national stage, as specified in §§ 1.494(b) or 1.495(b).

Applicants are cautioned, however, that the Certificate of Mailing or Transmission provisions of § 1.8 do not apply to correspondence filed in an international application before the U.S. Receiving Office, the U.S. International Searching Authority, or the U.S. International Preliminary Examining Authority, regardless of whether the correspondence was filed by mail or facsimile transmission. See § 1.8(a)(2)(5).

Comment: One comment suggested that, in applications filed under § 1.60, the certification that the application and papers being filed are true copies of those filed in the parent application should be excluded from the original signature requirement.

Response: Filing of copies of statements under § 1.60 as well as certifications under §§ 1.8, 1.10, 1.97(e) and 3.73(b) will be permitted. The certified documents referred to in § 1.4(f) are those which are required to be certified by statute (e.g., certified documents under 35 U.S.C. 119).

Comment: One comment questioned whether routine papers could be photocopied with a practitioner's signature thereon with appropriate information being filled in later by another person.

Response: Section 10.18(a) states that the signature of a practitioner, on correspondence filed, constitutes a certificate that the correspondence has been read by the practitioner. Accordingly, the photocopying of papers with a practitioner's signature thereon and subsequently having appropriate information filled in by another person, is not authorized or permitted under the rules.

Comment: One comment questioned whether a docket clerk could use a signature stamp of a registered attorney on a transmittal letter.

Response: Section 10.18(a) states that correspondence filed by a practitioner must be personally signed by that practitioner. Accordingly, use of a signature stamp of a registered attorney by a docket clerk would not be permitted.

Comment: Two comments suggested that the facsimile transmission practice be further liberalized to permit scanned-in signatures to be affixed to facsimile or electronically transmitted correspondence. The personal, handwritten signature would be affixed on a copy of the transmitted correspondence which would be kept by the applicant or his or her representative.

Response: The Office is actively considering acceptance of electronically filed applications and papers related thereto. See "Electronic Filing of Patent and Trademark Applications" published at 57 FR 56537 (November 30, 1992) and 1145 Off. Gaz. Pat. Office 378 (December 22, 1992). Until an acceptable program is established, every paper, requiring a signature, filed in the Office, regardless of the manner in which it was transmitted, will have to be a paper which was signed by the person whose signature appears thereon, or be a copy thereof. Scanned signatures affixed to papers which were not personally signed will not be permitted at this time.

Comment: One comment indicated that proposed § 1.5(a) appeared to be contrary to PCT Article 27(1) in that it added the additional requirement not set forth in the PCT of requiring correspondence concerning an international application to identify the international application number.

Response: PCT Rule 92.1 requires any paper relating to an international application to identify the international application to which it relates. In order to ensure prompt and proper association of correspondence with the intended application file, it is essential to use the application number on all papers. The practice (which was not a new one added in this rulemaking) is a mere implementation of the requirement in PCT Rule 92.1 and is not contrary to PCT Article 27(1) as no additional requirement is being placed on applicants.

Comment: Two comments recommended an increase from two weeks to 30 days or one month in the period provided in § 1.5(a) for resubmission of correspondence.

Response: The two-week period provided in § 1.5(a) is to enable applicants to provide the necessary identifying data where such data was not provided during the original submission. This is intended to permit immediate resubmission and no additional time is deemed to be necessary. Extending this period to 30 days would unnecessarily delay prosecution of applications.

Comment: Section 1.5(a) suggests that all letters directed to the Office concerning applications for patents should also state "Patent Application". One comment suggested that § 1.5(a) be amended to replace the restrictive reference to a "Patent Application" to read "identifying the correspondence relating to a patent application".

Response: In order to make it easier for Office employees handling incoming correspondence to direct mail, § 1.5(a) recommends that letters relating to a patent application should state "Patent Application". The suggestion in the comment was not adopted since uniformity in the reference to "Patent Application" is desirable. Furthermore, this suggested labeling is not a requirement as evidenced by the use of the word "should" rather than "must".

Comment: Section 1.5(a) states that "No correspondence relating to an application should be filed prior to when notification of the application number is received from the Patent and Trademark Office". One comment suggested that the phrase "notification of the application number" was not adequately defined as it was not clear if applicants had to wait for the official filing receipt before information disclosure statements or other papers could be filed.

Response: The phrase "notification of the application number" as used in § 1.5(a) includes any manner in which an applicant becomes aware of the application number. The phrase is purposely broad and is not limited to the mailing of an official filing receipt. Rather, it includes a return post card which has an application number stamped thereon. The reasoning behind the statement in § 1.5(a) that no correspondence should be filed prior to notification of the application number is that correspondence received without an application number is difficult to match with the appropriate file. Further defining the phrase "notification of the application number" in § 1.5(a) is not warranted.

Comment: One comment suggested defining a business day as Monday through Friday, except for Federal holidays in the District of Columbia.

Response: It is not clear which section the comment was directed to, but § 1.6 indicates that no correspondence will be received by the Office on Saturdays, Sundays or Federal holidays within the District of Columbia. Since the language has not created problems in the past, the suggestion will not be adopted.

Comment: Two comments suggested amending § 1.6(c) to indicate the hour of operation of the "walk-up window".

Response: Specifying in the regulations the hours of operation of the "walk-up window" is unnecessary. The hours of operation have been published in Official Gazette announcements and if those hours are changed in the future, the new schedule will be published. Should the hours of operation of the "walk-up window" be changed due to unforeseen circumstances (i.e., snow emergency, etc.), a sign will be posted at the "walk-up window" giving an alternate location to deposit correspondence for the Office.

Comment: Two comments requested that the Office reconsider and withdraw the proposal to eliminate the mail drop box at the guard's desk at the Department of Commerce Building in Washington, D. C.

Response: As indicated in the notice of proposed rulemaking, members of the public were occasionally denied access to the drop box at the Department of Commerce. Additionally, the

Office lacked confidence in assigning correct dates of receipt to correspondence deposited in the box as a result of instances when correspondence was found outside of the drop box. Further, since there are many ways to file papers with the Office (i.e., certificate of mailing or transmission, Express Mail, facsimile transmission, longer hours at the "walk-up window"), there is no need to maintain an off-site drop box.

Comment: One comment suggested that the Office publish phone numbers for facsimile machines at various locations, (i.e., Publishing Division, various examining groups, etc.), in order to enable the public to direct their transmissions to a particular location, rather than a central location.

Response: The suggestion has been adopted. See "Patent and Trademark Office (PTO) Information Contacts", 1149 Off. Gaz. Pat. Office 67 (April 27, 1993). The Office will publish in the Official Gazette periodic updates of this list.

Comment: Three comments advocated a further expansion of the facsimile transmission practice to permit transmission of any paper which did not require an original signature. According to the comment, it was difficult to understand why the Office would not permit facsimile transmission of certain papers directly to the Office, but would accept those same papers if transmitted by facsimile to a third party who then hand-delivered the papers to the Office.

Response: The only papers, not requiring an original signature or certification, which the Office will not accept by facsimile transmission are those which, for various reasons, would cause an undue burden on the Office. For example, papers submitted for the purpose of obtaining an application filing date are often rather voluminous difficult to collate and would create inefficiencies in tying up the Office facsimile machines for long periods of time. In addition, there is a time and content criticality to papers filed for the purpose of obtaining a filing date which is not shared by other types of papers. Another example would be drawings submitted under §§ 1.81, 1.83-1.85, 1.152, 1.165, 1.174, 1.437, or 2.21. Experience has shown that the quality of drawings received by facsimile transmission would typically result in an objection by the Official Draftsman. Disputes might arise at that point as to whether the cause of the poor quality was applicant's transmitting unit or the receiving unit of the Office. Hence, the Office will continue to prohibit facsimile transmission of certain papers as specified in § 1.6(d). However, the suggestion has been adopted to the extent that the office will accept, via facsimile transmission, an affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8(a) or (b) or section 12 (c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c); an application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059; and in an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051 (d)(1).

Comment: Section 1.6(d) states that the receipt date accorded to a paper transmitted by facsimile will be the date on which the complete transmission is received in the Office. Three comments objected to this language by arguing that this practice discriminated against West Coast practitioners and gave an advantage to East Coast practitioners because the West Coast practitioners had only until 9 P.M. to complete a transmission in order to receive the benefit of that day's filing.

Response: The facsimile transmission practice is similar to regular mail practice. Thus, a West Coast practitioner depositing correspondence with the local postal service without a certificate of mailing will receive as a receipt date the date on which the Office receives the correspondence, rather than the date on which the correspondence was deposited. Similarly, a paper transmitted by facsimile will be accorded, as the date of receipt, the date on which the complete transmission was received in the Office, unless the date of receipt is a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case, the date of receipt will be the next business day.

The certificate practice provided in § 1.8, on the other hand, permits the sender to indicate on the correspondence the date of mailing or transmission from the sender's perspective, which date would then be effective to meet a deadline set for response. Use of the certificate of mail or transmission is applicable to correspondence submitted by mail and correspondence trans-

mitted by facsimile. If transmitted by facsimile, the person signing the certificate certifies the expectation that the transmission would be initiated before midnight, local time.

By way of example, a West Coast practitioner preparing a response on the last day of the period for response would have to use the § 1.8 certificate of mailing procedure or the § 1.10 Express Mail procedure, for the response to be considered timely, if the correspondence was sent by way of the U. S. Postal Service. If the practitioner chose to send the correspondence by facsimile on the last day for response and the transmission was started before 9:00 p.m. Pacific time, but was completed after 9:00 p.m. Pacific time, the Office would accord that correspondence a receipt date as of the next business day, which would be after the period for response expired because the Office would have received the correspondence after midnight Eastern time of the last day for response. However, if the practitioner affixed a certificate of transmission to the correspondence sent by facsimile transmission, indicating that the correspondence was being transmitted on the last day in the period for response, then the correspondence would be considered timely filed.

As another example, a transmission started before midnight, Pacific time, on the last day for response and having a certificate of transmission affixed thereto, would be considered timely filed even though the transmission was completed after midnight, Pacific time and was received in the Office the day after the deadline for response.

Comment: One comment suggested replacing "drawings" in § 1.6(d)(4) with "formal drawings" for clarity.

Response: The suggestion has not been adopted because the phrase "formal drawings" does not find support or antecedent basis in sections referred to in § 1.6(d)(4).

Comment: One comment objected to the perceived requirement for a certificate of transmission in order for a facsimile-transmitted document to be accorded a date of receipt.

Response: The receipt date accorded to correspondence eligible for facsimile transmission, whether containing a certificate of transmission or not, will be the date of receipt in the Office of the complete transmission (unless that date is a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case the date accorded will be the next business day). The certificate of transmission, if used, is for purposes of establishing timely filing if the correspondence is transmitted within the period for response but is (1) received in the Office after expiration of the period for response, or (2) lost or (3) not received by the Office.

Comment: One comment requested clarification as to what constituted a "complete transmission" as used in §§ 1.6(d).

Response: The context in which the phrase "complete transmission" was used in § 1.6(d) was to indicate that the transmission was finished. For example, if page 1 of a ten-page facsimile transmission is received in the Office at 11:55 p.m. on a Tuesday and page 10 of that transmission is received at 12:05 a.m. Wednesday, the receipt date accorded to that correspondence will be the date of that Wednesday. (This example assumes that Wednesday is not a Federal holiday within the District of Columbia).

Comment: One comment questioned whether a confirmation in the sender's facsimile machine that the entire facsimile was received constituted sufficient proof that a transmission was complete.

Response: A confirmation by the sender's facsimile machine is evidence that a transmission was made. As such, the confirmation will be considered together with any other evidence presented when questions of filing by facsimile transmission arise. It is therefore suggested that a certificate of transmission be used to enable the sender to rely on the procedures set forth in § 1.8(b).

Comment: One comment requested clarification as to what constituted an incomplete, faulty or illegible facsimile. Also, if an incomplete transmission was sent near the end of the period for response, will the sender be able to rely on the date the facsimile was initially transmitted, or would the sender have to rely on § 1.137 to revive the application if it became abandoned?

Response: If an incomplete, faulty or illegible facsimile transmission is received, that correspondence will be treated by the Office in the same manner that a comparably incomplete, faulty or illegible piece of correspondence would be treated if the correspondence were hand-delivered or mailed to the Office.

Whether the application would be held abandoned upon receipt of an incomplete facsimile transmission or whether an opportunity would be provided to complete the transmission will be decided on a case-by-case basis using the same standards that are currently used - for example, for incomplete responses to Office actions, see § 1.135(c).

Comment: One comment indicated that the proposed practice of not accepting papers related to international applications if transmitted by facsimile and the indication that papers transmitted by facsimile, when prohibited, may be disposed of is contrary to PCT practice wherein PCT expressly provides for facsimile transmission of such papers and when not acceptable, an opportunity to correct is provided.

Response: PCT does not mandate acceptance of facsimile transmissions; it merely authorizes their acceptance. See PCT Rule 92.4(h). Additionally, as indicated above, the suggestion that the Office permit facsimile transmission of correspondence relative to an already filed international application has been adopted to a large extent.

There is no provision in PCT to provide an opportunity for correction when correspondence is filed by facsimile in spite of a refusal by a national Office to accept that type of correspondence by facsimile. As with national applications, the Office will attempt to notify senders whenever a facsimile transmission received is of a type which the Office has not agreed to accept by facsimile. Senders are cautioned against submitting such correspondence by facsimile transmission since the correspondence will not be accorded a filing date or date of receipt in the Office.

Comment: One comment suggested changing the phrase "Certificate of Transfer" in § 1.8 to "Certificate of Transmittal" or "Certificate of Sending" because "transfer" typically implies transfer of ownership interest in patents or trademarks.

Response: While each phrase has its own advantages and drawbacks, the suggestion will not be adopted. Nevertheless, in order to avoid confusion, this rulemaking leaves the old "Certificate of Mailing" intact, while adding "or Transmission" to include correspondence filed by facsimile transmission.

Comment: In the notice of proposed rulemaking, it was recommended that the facsimile machine transmission report be retained by the sender along with the correspondence used as the original, as evidence of content and date of transfer. One comment indicated that the correspondence used as the original can only be retained using the older stand-alone type of facsimile machine, since there is no such physical document with the newer in-computer facsimile cards.

Response: Section 1.4(d)(2) provides for submission of copies, e.g., by facsimile, of originals as defined in § 1.4(d)(1). Section 1.4(d)(2) does not provide for transmission of unsigned correspondence from a computer. While § 1.4(d)(2) does not require the sender to retain the original, there may be occasions when the sender will have to document the date and content of a document previously filed by facsimile transmission. The recommendation made in the notice of proposed rulemaking will apply to any situation where a paper document served as the original from which a facsimile was transmitted. If a facsimile transmission by using a computer is desired, a paper copy of the document to be transmitted may be printed out, signed and retained by the sender as evidence of content of the document transmitted. Once signed, if filing of a copy is permitted, the document could be scanned into the computer and facsimile transmitted to the Office.

Comment: In proposed section 1.8(a)(1) published in the Federal Register, paragraphs (i) and (ii) were joined with the alternative "or" to indicate that correspondence could be filed by being deposited with the U. S. Postal Service or transmitted by facsimile. This same section was published in the Official Gazette, by having paragraphs (i) and (ii) joined with the connective "and". Numerous comments, received apparently from individuals who saw the proposed rules in the Official Gazette, objected to the requirement that, in order to receive benefits under § 1.8, correspondence transmitted by facsimile also had to be mailed.

Response: Section 1.8(a)(1) as published in the Federal Register was correct, while the version published in the Official Gazette contained a typographical error. Hence, §§ 1.8(a)(1)(i) (A) and (B), as adopted in this rulemaking, make clear that the certificate of mailing or transmission practice will be applicable to correspondence mailed or sent by facsimile. The Office discourages

the practice of having the same papers submitted by both methods as this practice would result in unnecessary duplication of papers and processing requirements.

Comment: One comment indicated that since all facsimile transmissions include the date and time of the actual facsimile transmission, the Office should not require a certificate of transmission, in order to get the benefit of an earlier filing date under § 1.8(a), when correspondence is transmitted by facsimile.

Response: The Office is concerned that some older machines may not print the date and time of the actual transmission. Furthermore, even on the new machines the date and time printed by the sending unit may not always be correct, particularly after a temporary electrical disconnection, change in time, etc. Hence, for purposes of being considered timely filed, if the sender wishes to obtain the benefits of a date earlier than the date the complete transmission is received in the Office, the correspondence must include a certification in accordance with § 1.8(a). A suggested format for a Certificate of Mailing and a Certificate of Transmission under § 1.8, to be included with the correspondence, is reproduced below:

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
on _____

Date _____ Signature _____

Typed or printed name
of person signing certificate

Certificate of Transmission

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office:

on _____ Date _____ Signature _____

Typed or printed name
of person signing certificate

OTHER CONSIDERATIONS

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to incorporate existing Office policy into the regulations, permit the filing of certain correspondence without an original signature and permit the filing of certain correspondence by facsimile transmission.

The Office has determined that these rule changes are not major rules under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individuals, industries, Federal, state or local government agencies, or geographic regions because most of the changes reduce procedural burdens. There will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Office has also determined that these changes have no Federalism implications affecting the relationship between the

National Government and the States as outlined in Executive Order 12612.

These rule changes contain collection-of-information requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., which have previously been approved by the Office of Management and Budget under Control Nos. 0651-0009 and 0651-0011. The public reporting burden for these collections of information for Certificates of Mailing or Transmission is estimated to average 0.1 hours each, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collections of information. Send comments regarding these burden estimates, or any other aspect of these collections of information, including suggestions for reducing the burden, to Abraham HersHKovitz, Office of the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503 (ATTN: Paperwork Reduction Act Projects 0651-0009 and 0651-0011).

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Freedom of information, Inventions and patents, Reporting and record keeping requirements.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

37 CFR Part 10

Administrative practice and procedure, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set out in the preamble, and pursuant to the authority contained in 15 U.S.C. 1123 and 35 U.S.C. 6, parts 1, 2 and 10 of title 37 of the Code of Federal Regulations are amended as set forth below:

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. In Section 1.4, the title is revised and paragraphs (d) through (f) are added to read as follows:

§ 1.4 Nature of correspondence and signature requirements.

(d) Each piece of correspondence, except as provided in paragraphs (e) and (f) of this section, filed in a patent or trademark application, reexamination proceeding, patent or trademark interference proceeding, patent file or trademark registration file, trademark opposition proceeding, trademark cancellation proceeding, or trademark concurrent use proceeding, which requires a person's signature, must either:

(1) be an original, that is, have an original signature personally signed in permanent ink by that person; or

(2) be a copy, such as a photocopy or facsimile transmission (§ 1.6(d)), of an original. In the event that a copy of the original is filed, the original should be retained as evidence of authenticity. If a question of authenticity arises, the Patent and Trademark Office may require submission of the original.

(e) Correspondence requiring person's signature and relating to registration to practice before the Patent and Trademark Office in patent cases, enrollment and disciplinary investigations, or disciplinary proceedings must be submitted with an original signature personally signed in permanent ink by that person.

(f) When a document that is required by statute to be certified must be filed, a copy, including a photocopy or facsimile transmission, of the certification is not acceptable.

3. Section 1.5(a) is revised to read as follows:

§ 1.5 Identification of application, patent or registration.

(a) No correspondence relating to an application should be filed prior to when notification of the application number is received from the Patent and Trademark Office. When a letter directed to the Patent and Trademark Office concerns a previously filed application for a patent, it must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number, e.g., 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. Any correspondence not containing such identification will be returned to the sender where a return address is available. The returned correspondence will be accompanied with a cover letter which will indicate to the sender that if the returned correspondence is resubmitted to the Patent and Trademark Office within two weeks of the mail date on the cover letter, the original date of receipt of the correspondence will be considered by the Patent and Trademark Office as the date of receipt of the correspondence. Applicants may use either the Certificate of Mailing or Transmission procedure under § 1.8 or the Express Mail procedure under § 1.10 for resubmissions of returned correspondence if they desire to have the benefit of the date of deposit in the United States Postal Service. If the returned correspondence is not resubmitted within the two-week period, the date of receipt of resubmission will be considered to be the date of receipt of the correspondence. The two-week period to resubmit the returned correspondence will not be extended. If for some reason returned correspondence is resubmitted with proper identification later than two weeks after the return mailing by the Patent and Trademark Office, the resubmitted correspondence will be accepted but given its date of receipt. In addition to the application number, all letters directed to the Patent and Trademark Office concerning applications for patent should also state "PATENT APPLICATION," the name of the applicant, the title of the invention, the date of filing the same, and if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

4. In section 1.6, is revised, to read as follows:

§ 1.6 Receipt of correspondence.

(a) Date of receipt and Express Mail date of deposit. Correspondence received in the Patent and Trademark Office is stamped with the date of receipt except as follows:

(1) No correspondence is received in the Patent and Trademark Office on Saturdays, Sundays or Federal holidays within the District of Columbia;

(2) Correspondence filed in accordance with § 1.10 will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or Federal holiday within the District of Columbia in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or Federal holiday within the District of Columbia;

(3) Correspondence transmitted by facsimile to the Patent and Trademark Office will be stamped with the date on which the complete transmission is received in the Patent and Trademark Office unless that date is a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or Federal holiday within the District of Columbia.

(b) Patent and Trademark Office Post Office pouch. Mail placed in the Patent and Trademark Office pouch up to midnight on any day, except Saturdays, Sundays and Federal holidays within the District of Columbia, by the post office at Washington, D.C., serving the Patent and Trademark Office, is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch by the U.S. Postal Service.

(c) Correspondence delivered by hand.

In addition to being mailed, correspondence may be delivered by hand during hours the Office is open to receive correspondence.

(d) Facsimile transmission.

Except in the cases enumerated below, correspondence, including authorizations to charge a deposit account, may be transmitted by facsimile. The receipt date accorded to the correspondence will be the date on which the complete transmission is received in the Patent and Trademark Office, unless that date is a Saturday, Sunday, or Federal holiday within the District of Columbia. See § 1.6(a)(3). To facilitate proper processing, each transmission session should be limited to correspondence to be filed in a single application or other proceeding before the Patent and Trademark Office. The application number of a patent or trademark application, the control number of a reexamination proceeding, the interference number of an interference proceeding, the patent number of a patent, or the registration number of a trademark should be entered as a part of the sender's identification on a facsimile cover sheet. Facsimile transmissions are not permitted and if submitted, will not be accorded a date of receipt, in the following situations:

(1) Correspondence as specified in § 1.4(e), requiring an original signature;

(2) Certified documents as specified in § 1.4(f);

(3) Correspondence which cannot receive the benefit of the certificate of mailing or transmission as specified in § 1.8(a)(2)(i)(A) through (D) and (F); 1.8 (a)(2)(ii)(A) and (D); and 1.8 (a)(2)(iii)(A);

(4) Drawings submitted under §§ 1.81, 1.83 through 1.85, 1.152, 1.165, 1.174, 1.437, 2.51, 2.52, or 2.72;

(5) A request for reexamination under § 1.510;

(6) Correspondence to be filed in a patent application subject to a secrecy order under §§ 5.1 through 5.8 of this chapter and directly related to the secrecy order content of the application;

(7) Requests for cancellation or amendment of a registration under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e); and certificates of registration surrendered for cancellation or amendment under section 7(e) of the Trademark Act, 15 U.S.C. 1057(e);

(8) Correspondence to be filed with the Trademark Trial and Appeal Board, except the notice of ex parte appeal;

(9) Correspondence to be filed in an interference proceeding which consists of a preliminary statement under § 1.621; a transcript of a deposition under § 1.676 or of interrogatories, cross-interrogatories, or recorded answers under § 1.684(c); or an evidentiary record and exhibits under § 1.653.

(e) Interruptions in U.S. Postal Service.

If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any correspondence which is:

(1) Promptly filed after the ending of the designated interruption or emergency; and

(2) Accompanied by a statement indicating that such correspondence would have been filed on that particular date if it were not for the designated interruption or emergency in the United States Postal Service. Such statement must be a verified statement if made by a person other than a practitioner as defined in § 10.1(r) of this chapter.

5. Section 1.8 is revised to read as follows:

§ 1.8 Certificate of mailing or transmission.

(a) Except in the cases enumerated in paragraph (a)(2) of this section, correspondence required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if the procedure described in this section is followed. The actual date of receipt will be used for all other purposes.

(1) Correspondence will be considered as being timely filed if:

(i) the correspondence is mailed or transmitted prior to expiration of the set period of time by being:

(A) deposited with the U.S. Postal Service with sufficient postage as first class mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231; or

(B) transmitted by facsimile to the Patent and Trademark Office in accordance with § 1.6(d); and

(ii) the correspondence includes a certificate for each piece of correspondence stating the date of deposit or transmission. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed or transmitted on or before the date indicated.

(2) The procedure described in paragraph (a)(1) of this section does not apply to, and no benefit will be given to a Certificate of Mailing or Transmission on the following:

(i) Relative to Patents and Patent Applications

A. The filing of a national patent application specification and drawing or other correspondence for the purpose of obtaining an application filing date;

B. The filing of correspondence in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail";

C. The filing of agreements between parties to an interference under 35 U.S.C. 135(c);

D. The filing of an international application for patent;

E. The filing of correspondence in an international application before the U.S. Receiving Office, the U.S. International Searching Authority, or the U.S. International Preliminary Examining Authority;

F. The filing of a copy of the international application and the basic national fee necessary to enter the national stage, as specified in § 1.494(b) or § 1.495(b).

(ii) Relative to Trademark Registrations and Trademark Applications

A. The filing of a trademark application;

B. The filing of an affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8 (a) or (b) or section 12(c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c);

C. The filing of an application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059;

D. The filing of a petition to cancel a registration of a mark under section 14, subsection (1) or (2) of the Trademark Act, 15 U.S.C. 1064;

E. In an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c); or the filing of a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1);

F. In an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), the filing of a request under section 1(d)(2) of the Trademark Act, 15 U.S.C. 1051(d)(2), for an extension of time to file a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1).

(iii) Relative to Disciplinary Proceedings

A. Correspondence filed in connection with a disciplinary proceeding under Part 10 of this chapter.

B. Reserved.

(b) In the event that correspondence is considered timely filed by being mailed or transmitted in accordance with paragraph (a) of this section, but not received in the Patent and Trademark Office, and the application is held to be abandoned or the proceeding dismissed, terminated, or decided with prejudice, the correspondence will be considered timely if the party who forwarded such correspondence:

(1) informs the Office of the previous mailing or transmission of the correspondence promptly after becoming aware that the Office has no evidence of receipt of the correspondence;

(2) supplies an additional copy of the previously mailed or transmitted correspondence and certificate, and

(3) includes a statement which attests on a personal knowledge basis or to the satisfaction of the Commissioner to the previous timely mailing or transmission. Such statement must be a verified statement if made by a person other than a practitioner as defined in § 10.1(r) of this chapter. If the correspondence was sent by facsimile transmission, a copy of the sending unit's report confirming transmission may be used to support this statement.

(c) The Office may require additional evidence to determine if the correspondence was timely filed.

6. Section 1.304 paragraphs (a) and (c) are revised to read as

follows:

§ 1.304 Time for appeal or civil action.

(a)(1) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (§ 1.302) or for commencing a civil action (§ 1.303) is two months from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time period provided under § 1.197(b) or § 1.658(b), the time for filing an appeal or commencing a civil action shall expire two months after action on the request. In interferences, the time for filing a cross-appeal or cross-action expires:

(i) 14 days after service of the notice of appeal or the summons and complaint, or

(ii) Two months after the date of decision of the Board of Patent Appeals and Interferences, whichever is later.

(a)(2) The time periods set forth in this section are not subject to the provisions of §§ 1.136, 1.550(c) or § 1.645 (a) or (b).

(a)(3) The Commissioner may extend the time for filing an appeal or commencing a civil action:

(i) For good cause shown if requested in writing before the expiration of the period for filing an appeal or commencing a civil action, or

(ii) Upon written request after the expiration of the period for filing an appeal or commencing a civil action upon a showing that the failure to act was the result of excusable neglect.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Appeals for the Federal Circuit and an adverse party has filed notice under 35 U.S.C. 141 electing to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141. The time for filing a cross-action expires 14 days after service of the summons and complaint.

7. Section 1.366(b) is revised to read as follows:

§ 1.366 Submission of maintenance fees.

(b) A maintenance fee and any necessary surcharge submitted for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid and may be paid in the manner set forth in § 1.23 or by an authorization to charge a deposit account established pursuant to § 1.25. Payment of a maintenance fee and any necessary surcharge or the authorization to charge a deposit account must be submitted within the periods set forth in § 1.362 (d), (e) or (f). Any payment or authorization of maintenance fees and surcharges filed at any other time will not be accepted and will not serve as a payment of the maintenance fee except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner in an expired patent pursuant to a petition filed under § 1.378. Any authorization to charge a deposit account must authorize the immediate charging of the maintenance fee and any necessary surcharge to the deposit account. Payment of less than the required amount, payment in a manner other than that set forth in § 1.23, or the filing of an authorization to charge a deposit account having insufficient funds will not constitute payment of a maintenance fee or surcharge on a patent. The certificate procedures of either, § 1.8 or § 1.10 may be utilized in paying maintenance fees and any necessary surcharges.

8. Section 1.741, paragraph (a) is revised to read as follows:

§ 1.741 Filing date of application.

(a) The filing date of an application for extension of patent term is the date on which a complete application is received in the Patent and Trademark Office or filed pursuant to the "Certificate of Mailing or Transmission" provisions of 37 CFR 1.8 or "Express Mail" provisions of 37 CFR 1.10.

PART 2- RULES OF PRACTICE IN TRADEMARK CASES

9. The authority citation for 37 CFR Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

10. Section 2.145 is amended by revising Paragraphs C(3) and D(1) to read as follows:

§ 2.145 Appeal to Court and Civil Action.

(c) ***

(3) Any adverse party to an appeal taken to the U.S. Court of Appeals for the Federal Circuit by a defeated party in an inter partes proceeding may file a notice with the Commissioner within twenty days after the filing of the defeated party's notice of appeal to the court (paragraph (b) of this section), electing to have all further proceedings conducted as provided in section 21(b) of the Act. The notice of election must be served as provided in § 2.119.

(d) Time for appeal or civil action.

(1) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is two months from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration or modification of the decision is filed within the time specified in §§ 2.127(b), 2.129(c) or § 2.144, or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire two months after action on the request. In inter partes cases, the time for filing a cross-action or a notice of a cross-appeal expires (i) 14 days after service of the notice of appeal or the summons and complaint; or

(ii) two months from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, whichever is later.

11. Section 2.165(a)(1) is revised to read as follows:

§ 2.165 Reconsideration of Affidavit or Declaration

(a)(1) If the affidavit or declaration filed pursuant to § 2.162 is insufficient or defective, the affidavit or declaration will be refused and the registrant will be notified of the reason. Reconsideration of the refusal may be requested within six months from the date of the mailing of the action. The request for reconsideration must state the grounds for the request. A supplemental or substitute affidavit or declaration required by section 8 of the Act of 1946 cannot be considered unless it is filed before the expiration of six years from the date of the registration or from the date of publication under section 12(c) of the Act. The Certificate of Mailing or Transmission procedure provided by § 1.8 does not apply to affidavits or declarations or to supplemental or substitute affidavits or declarations filed under section 8(a) or (b) of the Act, but the certificate by "Express Mail" procedure provided by § 1.10 does apply thereto.

PART 10- REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

12. The authority citation for 37 CFR Part 10 continues to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32 41.

13. Section 10.18, is revised to read as follows:

§ 10.18 Signature and certificate of practitioner.

(a) Except where a copy, including a photocopy or facsimile transmission, of a personally signed piece of correspondence is permitted to be filed pursuant to § 1.4 of this chapter, every piece of correspondence filed by a practitioner on behalf of himself or herself or representing an applicant or a party to a proceeding in the Patent and Trademark Office must bear an original signature personally signed in permanent ink by such practitioner except for correspondence which is required to be signed by the applicant or party. The signature of a practitioner on correspondence filed by the practitioner, regardless of whether the correspondence has an original signature or is a copy, including a photocopy or facsimile transmission, of correspondence bearing an original signature, constitutes a certificate that:

- (1) The correspondence has been read by the practitioner;
 - (2) The filing of the correspondence is authorized;
 - (3) To the best of practitioner's knowledge, information, and belief, there is good ground to support the correspondence, including any allegations of improper conduct contained or alleged therein; and
 - (4) The correspondence is not interposed for delay.
- (b) Any practitioner knowingly violating the provisions of this section is subject to disciplinary action. See § 10.23(c)(15).

14. Section 10.23, paragraph (c)(9), is revised to read as follows:

§ 10.23 Misconduct

(c) ***

(9) Knowingly misusing a "Certificate of Mailing or Transmission" under § 1.8 of this chapter or a certificate of "Express Mail" under § 1.10 of this chapter.

Oct. 15, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce
and Commissioner of Patents
and Trademarks

1157 TMOG 87)

(158)

Unpaid Fee Checks

Beginning Dec. 1, 1987, the Office will change the procedure for handling fee checks of attorneys and agents that are returned to the Office unpaid. Presently, when a check submitted as payment for an application, a processing, an issue or any other fee is returned to the Office unpaid, the Office of Finance sends a letter to the attorney or agent who represents the applicant, or to the applicant if unrepresented by an attorney or agent, enclosing the check and calling attention to the fact that the check was returned unpaid. Beginning Dec. 1, 1987, the Office of Finance will send a copy of its letter to the applicant if the letter is addressed to an attorney or agent. The prohibition of 37 CFR §§ 1.33 and 2.18 against double correspondence is waived in view of the submission of a check that is returned unpaid to the Office.

A registered patent attorney or agent who repeatedly submits checks that are returned unpaid through no fault of the bank may expect to have the matter referred to the Office of Enrollment and Discipline.

Oct. 5, 1987

DONALD W. PETERSON
Deputy Commissioner

11083 TMOG 7)

(159)

**Weekly Summaries of
Trademark Trial
and Appeal Board Final Decisions**

The Patent and Trademark Office will begin publishing, in each issue of the Trademark Official Gazette, a weekly summary of final decisions issued by the Trademark Trial and Appeal Board. Publication of the summary is being undertaken on a discretionary basis, as a courtesy to interested members of the public.

Mar. 21, 1988

JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

11091 TMOG 6)

(160) Filing Receipt for Trademark Applications

Effective immediately, the Trademark Examining Operation will replace its existing "FILING RECEIPT FOR TRADEMARK APPLICATIONS," PTO Form 100 (Rev. 8/78), with a filing receipt using a new format. The revised filing receipt will be printed on a single sheet of 8 1/2" x 11" paper and will contain information regarding the mark, applicant, International and U.S. classes, goods and/or services, and dates of use. If all of the information relating to a new application cannot be printed on the 8 1/2" x 11" filing receipt, it will be noted that additional information was contained in the application but was not printed. The addressee's name and address will be printed on the back of the filing receipt.

Sept. 6, 1988

JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

11095 TMOG 6)

**(161) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 and 2
[Docket No. 90363-9221]
RIN: 0651-AA40**

Patent and Trademark Automated Search System Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule

Summary: The Patent and Trademark Office (Office) is amending the rules of practice in patent and trademark cases, Parts 1 and 2 of Title 37, Code of Federal Regulations, to set forth fees for public access to the text data bases resident on the Automated Patent System (APS) and the automated trademark search system (T-Search). Pub. L. 100-703, enacted on November 19, 1988, allows the Commissioner to establish reasonable fees for on-line access to the automated search systems.

The Office will provide on-line access to its USPAT data base (full text of U.S. patents issued after 1974), the U.S. classification data from 1790 to the present, and to English abstracts of Japanese and Chinese patents (to the extent they are available), hereinafter referred to as APS-Text, in its Patent Search Room and to T-Search in its Trademark Search Library, located in Arlington, Virginia. Except for a series of pilot experiments which may occur over the next one or two years, the Office does not plan to provide routine remote on-line access to these data bases at any other facilities at the present time. A separate rulemaking process will be followed when the Office determines to provide such remote on-line access.

Both search systems have been made available to the public free of charge since April 3, 1989, for the purposes of education and training (familiarization).

The paper and/or microfilm collections of U.S. patents, foreign patents documents and U.S. trademark registrations continue to be available to the public free of charge, as provided by section 104(b) of Pub. L. 100-703. The Office reaffirms its

commitment to hold a public hearing prior to making any decision concerning the elimination of the paper files.

This final rule establishes fees for use of the on-line automated search systems. In addition, procedures for public use of the automated search systems, including training and charging of fees, are presented.

In response to the notice of proposed rulemaking published in the *Federal Register* on May 3, 1989 (54 FR 18907), and at a public hearing held on June 30, 1989, the Office received many comments regarding problems encountered by the public in the use of T-Search. The Office believes that T-Search has proven effective for searches performed by Trademark examining attorneys in connection with their examination of applications for the registration of marks. Although the Office is establishing a fee for accessing the T-Search system, the Commissioner is immediately suspending collection of that fee to provide additional time for the public to familiarize themselves with T-Search. The Office will provide the public with sixty days notice before starting to collect the fee.

Effective Date: February 12, 1990. Rule 2.6(w) will take effect February 12, 1990 but immediately be suspended by the Commissioner. The Office will provide written notice in the *Federal Register* sixty days before starting to collect fees for accessing T-Search.

For Further Information: Frances Michalkewicz by telephone at (703) 557-1610 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The purpose of this final rule is to establish new fees for the on-line use by the public of APS-Text, and T-Search that are to be provided in the Office's facilities in Arlington, Virginia. This final rule is consistent with the Office's Electronic Data Dissemination Policies and Guidelines, which were published in final form in the *Federal Register* on May 3, 1989, at 54 FR 18920. Establishment and adjustment of patent fees is provided for by section 6 and section 41 of Title 35, United States Code, and section 103(b) of Pub. L. 100-703. Establishment and adjustment of trademark fees is authorized by section 31 of the Trademark (Lanham) Act 1946, as amended (15 U.S.C. 1113), and section 103(a) of Pub. L. 100-703. Information on the procedures for public use of the automated systems, including training, waivers, and the charging of fees, also is presented.

Background: In response to Pub. L. 96-517, the 1980 legislation which amended patent and trademark laws, the Office prepared and submitted a plan for the automation of its operations to Congress on December 13, 1982. The plan centered on two basic concepts: the creation of electronic data bases that (1) would eventually replace the Office's all-paper patent and trademark files, and thereby improve the integrity and quality of Office records; and (2) would support searches, examinations, Office actions and other Office functions through electronic workstations which would provide text and image retrieval capabilities and perform other automation functions.

Over 700,000 active Federal trademark registrations have been converted to an electronic data base of textual and digital image data. A computer system has been installed to enable trademark examining attorneys to search the data base for registered and pending trademarks and associated textual data, including marks containing designs, and to retrieve, display and print all information as a substitute for paper file searches. Trademark examining attorneys have been using T-Search exclusively since January 1988 via a network of approximately 40 terminals. After a six-month experimental T-Search evaluation program conducted between June and December 1988, the capability was deployed for public use in the Trademark Search Library on April 3, 1989.

The T-Search "dead data base", trademarks cancelled, expired or abandoned since March 1984, also is available to the public, but approximately 17,000 images are missing and an additional 184,000 registrations and applications have not been quality checked. Trademark examining attorneys do not search this data base in connection with examining activities.

An Automated Patent System (APS) was installed for test and evaluation purposes, using one patent examining group as an operational testbed. Major operational components of APS, that is, large scale computers with conventional magnetic storage devices, a high-speed local data communications network, and electronic workstations equipped with two high reso-

lution graphic displays and laser printers were interconnected on July 1, 1986, to enable system test and evaluation to begin in the testbed group.

On-line access to the full-text of all U.S. patents granted after 1974 and then to English language abstracts of Japanese patents was deployed to the patent examining staff beginning in 1986. On-line access to APS-Text permits examiners to search the text of approximately one million U.S. patents containing more than five billion words. Today, all examiners have been trained in the use of the full-text searching tool, and it has become a routine part of the patent examination process for many examiners. Searches are conducted from approximately 71 single screen text terminals located throughout the Office. The APS-Text capability was deployed to the public in the Patent Search Room on April 3, 1989.

The Office intends to enter the text of virtually all U.S. patents issued after 1970. In addition, selected tubular data and chemical and mathematical equations will be added to the current full text file. Ultimately, approximately 1.2 million U.S. patents will be available to both patent examiners and the public for search in full text form.

Public evaluation of the APS full-text search capability was conducted between January 11 and April 15, 1988. Forty-two (42) public users were trained an APS-Text during January 1988, and allowed first-come/first-serve access to several terminals. Reactions of public users to APS-Text were positive. Public users found APS-Text useful for pre-application and state-of-the-art searches. A total of 38 public users were trained on T-Search during a public evaluation period conducted between June and December 1988. Preliminary review indicated that public users considered T-Search to be useful both as a source for registrability searching and for verifying paper searches. In addition, T-Search was found to facilitate searches by class and ownership.

Pub. L. 100-703, enacted on November 19, 1988, allows the Commissioner to establish reasonable fees for public access to the automated search systems while it continues the requirements that no more than 30 percent of automation resources may be from user fees and that the Office may not enter into exchange agreements relating to automatic data processing resources.

Section 104(c) of Pub. L. 100-703 allows the Commissioner to waive the payment by an individual of fees for accessing the automated search systems upon a showing of need or hardship, and if such waiver is in the public interest.

The information contained in the automated data bases, which will be available to the public at the Patent and Trademark Office in Arlington, Virginia, is available free of charge at that location in paper form, and is substantially available through commercial vendors. The Office believes it to be in the public interest to waive the fee for public access to its text data bases in situations where access to the data base is needed for a personal, educational purpose by an individual or member of an educational or non-profit organization, or where payment of the fee would pose a genuine financial hardship to the user.

A personal, educational purpose is one in which the person using the data base is attempting to satisfy a personal need, and is not conducting a search or otherwise using the data base for compensation in any form. Examples of appropriate waiver situations would include students or teachers doing a term paper, a university professor collecting background information for the preparation of an application for a research grant. An example of a situation where a waiver would not be appropriate would include an individual doing work for remuneration - e.g., a law student doing a pre-examination or infringement search for a law firm.

The Commissioner will further consider a fee waiver based on a genuine financial hardship. The person requesting a waiver will be required to provide information that would demonstrate a clear inability to pay the fee.

A waiver for the payment of fees is intended to be granted sparingly, and generally only when terminals are available. It is not anticipated that fees will be waived for any one individual more than once or twice each year. The Commissioner reserves the authority to control access to the data bases and deny a waiver to any individual. The waiver policy would apply only to use of the automated system, and not to the printing or sale of copies. Any abuse of the waiver policy could lead to a ban on the use of any public search facility for that individual.

Cost Calculations: The Office calculated unit costs for all fees based on OMB Circular A-25 "User Fees", and OMB Circular A-130, "Management of Federal Information Resources." Costs were determined from the best available records (for example, financial statements for the Office) and included direct and indirect costs to the Office of carrying out the activity, as directed by OMB Circular A-25. User charges for both APS-Text and T-Search were based on the marginal costs of providing these services to the public.

In calculating the costs of providing access to T-Search and APS-Text to the public, the Office followed Congressional direction that fees be reasonable by reflecting the marginal cost for providing the new service and not include the costs of designing or installing the automated system for use by Office examiners, or the development of the new systems.

Prior to preparation of this final rule, all of the cost assumptions and cost calculations were reviewed and modified to ensure that they included the Office's best estimates and projections.

APS-Text

The Office is establishing the \$40.00 fee for each hour of terminal session time on APS-Text. The marginal costs for one hour terminal session time on APS-Text include a portion of the lease cost of a new computer mainframe which originally was to be acquired in fiscal year 1990 for use by Office patent examiners. To meet public search requirements, the mainframe is being leased earlier than originally planned. That portion of lease costs for the three (3) month period March 1990 through May 1990 over and above the lease costs for a mainframe sized to meet only examiner needs is being passed on to the user. After May 1990, the mainframe was intended to be procured and installed to support APS. Therefore, no costs are being passed on to the public user after that time. When public usage reaches the level where a mainframe dedicated for public use is required, fee adjustments will be proposed to pass all of the costs of that mainframe on to the public.

The level of public use will affect the amount of main memory needed to support the additional search sessions. It is projected that an additional increment of main memory will be required in fiscal years 1991 and 1992. This increment would not be required to support the examiner workload alone.

The fee calculations for public access also include the costs for equipment: network interface units, text terminals, printer noise dampeners and text terminal printers.

Other costs include a portion of the license fees that must be paid to Chemical Abstracts Service for its proprietary text and structure search software; additional personnel for the Patent Search Room, and the Office of Information Systems; computer installation costs; supplies and equipment dedicated to public use; and general and administrative overhead.

The Office is providing free access time during training on the automated search systems in accordance with 104(c) of Public Law 100-703 which reads, "...a limited amount of free access shall be made available to all users of the systems for purposes of education and training."

The usage rate estimates are based on the three-month public user study performed from January through March 1988. For this study, 42 frequent Patent Search Room users were selected to be trained in the use of APS-Text. Three text terminals were made available to the trained public users at no charge. During the three-month study period, use of the three terminals averaged approximately 50 percent. While it is impossible to accurately predict future use by a more diverse group of public users, the cost calculations attempted to take into account the following factors and assumptions:

1. Future public users, on average, would use APS-Text less frequently than the 42 frequent users selected for the 1988 study, many of whom routinely used commercially available automated text search tools.

2. Collection of a fee for use (as opposed to the absence of any charge during the study) would reduce demand for text search services when compared with usage data obtained during the study period.

3. The potential universe of public users is expected to average no more than 300 per day.

4. The average length of a public user search session is projected to be approximately 22 minutes - the average length of a search session during the 1988 test of public use.

5. Based on the preceding assumptions, if all 300 potential public users conducted a single search session during a workday, a total of 110 hours of access would be required. Twenty-five text terminals available five days a week, twelve hours a day, would provide a maximum potential of 300 hours of available text search time. Under these assumptions, the number of text terminals appeared to be adequate for the foreseeable future.

6. For purposes of actual use of available text terminals, the following estimates were used:

(a) In fiscal year 1990, between four (4) and six (6) terminals would be available during the first quarter. An estimate of 45 percent utilization of available text terminal time was projected. By increasing the number of text terminals to 10 in January 1990 and 20 in April 1990, an estimate of 40 percent utilization of available text terminal time was projected. By increasing the number of text terminals to 25 in July 1990, an estimate of 35 percent utilization of available text terminal time was projected.

(b) During fiscal year 1991 and beyond, stable levels of usage were projected to be achieved, yielding an estimated 35 percent average utilization of the 25 available terminals. This utilization rate equates to 105 session hours per day, or an average of 4.2 session hours per terminal per day. At an average of 22 minutes per session, a total of 286 search sessions per day.

Although usage rates since the system was made available to the public in April 1989 have been higher than projected, the Office believes these projections are valid for the three-year fee cycle.

A summary of the fee calculations is as follows:

APS-Text Marginal Cost of One-Hour of Terminal Session Time (December 1989-November 1992)	
Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$ 918,196
Hardware & Maintenance	\$ 691,289
Software (license fees)	\$ 295,676
Site Preparation	\$ 38,118
Non-capital Furniture	\$ 8,750
Supplies & Forms	\$ 3,500
Sub-Total	\$ 1,955,529
General & Administrative Overhead	\$ 361,773
TOTAL COST	\$ 2,317,302
Estimated Use (hours)	65,946
UNIT COST (per hour)	\$ 35.14

The marginal cost for one hour of Office staff search assistance on APS-text includes the costs of personnel compensation and benefits.

A summary of the fee calculation is as follows:

APS-Text Marginal Cost of One-Hour of Office Staff Search Assistance (December 1989-November 1992)	
Cost Element	Public Share (Marginal Cost)
Personnel: Annual Compensation and Benefits	
TOTAL COST	\$ 45,659
Work Hours (per annum)	1,776
UNIT COST (per hour)	\$ 25.71

The marginal cost for a printed copy generated from APS-Text includes costs for compensation and benefits, printers, furniture for the printers, supplies and forms, and general and administrative overhead.

A summary is as follows:

APS-Text Marginal Cost of Each Printed Page (December 1989-November 1992)	
Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$ 173,472
Hardware & Maintenance	\$ 13,483
Non-capital Furniture	\$ 5,000
Supplies & Forms	\$ 35,882
Sub-Total	\$ 227,837
General & Administrative Overhead	\$ 42,150
TOTAL COST	\$ 269,987
Estimated Use (pages)	4,496,325
UNIT COST (per page)	\$0.060

T-Search

The marginal cost for one hour of terminal session time on T-Search includes the costs of personnel in the Trademark Search Library, maintenance of the T-Search terminals, routine site preparation, supplies and forms, and general and administrative overhead. The Office is establishing the \$40.00 fee for each hour of terminal session time on T-Search, but is immediately suspending collection of that fee in order to provide public users additional time to familiarize themselves with the system.

The comments submitted in response to the proposed rule-making indicate that the public users have not adequately adjusted to the T-Search system. During the period collection of the fee is suspended, the public will have an opportunity to better learn the system so as to perform more effective searches than they may be experiencing now. The Office will publish a notice in the *Federal Register* sixty days before it begins collecting a fee for public access to T-Search.

Usage rates for T-Search during fiscal years 1990-1992 were projected to be 28 percent of the hours the system would be available to the public. This rate was extrapolated from actual usage rates during the T-Search public user pilot program which was conducted from June through December 1988. A total of 38 members of the public were trained on T-Search, and about 24 to 28 public users were active on T-Search each month. The overall usage rate of these active users was 14 percent of the hours the system was available to the public. In projecting usage rates on which to base a fee amount, it was anticipated that the overall number of users and the usage rate would double once T-Search was made available in the Trademark Search Library to all users of that search facility and training was provided on a routine basis. Although usage rates since the system was made available to the public in April 1989 have been higher projected, the Office believes these projections are valid for the three-year fee cycle.

A summary of the fee calculations are as follows:

T-Search Marginal Cost of One-Hour of Terminal Session Time (December 1989-November 1992)	
Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$ 154,451
Hardware & Maintenance	\$ 28,809
Site Preparation	\$ 1,000
Supplies & Forms	\$ 3,298
Sub-Total	\$ 187,558
General & Administrative Overhead	\$ 34,698
TOTAL COST	\$ 222,256
Estimated Use (hours)	5,985
UNIT COST (per hour)	\$ 37.14

The marginal cost for a printed copy generated from T-

Search includes costs for compensation, and supplies and forms. A summary of the costs is as follows:

T-Search Marginal Cost of Each Printed Page (December 1989-November 1992)	
Cost Element	Public Share (Marginal Cost)
Personnel: Compensation and Benefits	\$ 27,862
Hardware & Maintenance	\$ 5,274
Supplies & Forms	\$ 3,579
Sub-Total	\$ 36,715
General & Administrative Overhead	\$ 6,792
TOTAL COST	\$ 43,507
Estimated Use (pages)	448,875
UNIT COST (per page)	\$ 0.097

The proposed fee of \$25.00 for each hour of Office staff search assistance to conduct a search using T-Search has been withdrawn. The T-Search system can be used by the public with routine assistance provided by the regular staff of the Trademark Search Library. This is similar to assistance on how to use the paper files now provided free of charge by the Trademark Search Library staff. Office employees will neither work one-on-one with members of the public in conducting searches, nor conducted searches for members of the public.

Rounding Procedures: Fee amounts were rounded so that the amount rounded would be de minimis and convenient to the user. This procedure is consistent with section 103(b) of Pub. L. 100-703 which allows the Office to adjust patent fees in the aggregate, and with section 103(a) of Pub. L. 100-703 which allows the Office to adjust trademark fees in the aggregate. The Office has detailed cost calculation worksheets for each fee item, which are available for public inspection in Suite 904 of Building 2, Crystal Park at 2121 Crystal Drive, Arlington, Virginia.

PROCEDURES FOR PUBLIC USE OF APS-TEXT AND T-SEARCH

Patent Search Room Configuration

Initially four (4) text search terminals will be installed and available for public use in the Patent Search Room. A printer will be associated with each text search terminal. An additional terminal will be located in Patent Search Room employee office space for control and administrative activities. Up to twenty-one (21) more terminals and printers are planned to be added for public use during fiscal year 1990, if necessary.

Trademark Search Library Configuration

Initially three (3) T-Search terminals with associated printers all be installed and available for public use in the Trademark Search Library. The terminals will be clustered in one area of the Trademark Search Library. An additional terminal will be located in Trademark Search Library employee office space for control and administration activities. Additional terminals and printers will be added as demand warrants and space permits.

Training

To enable prospective public users to become effective on APS-Text, approximately fourteen (14) hours of free basic training is being offered. For those familiar with automated search systems, a shorter course of six (6) hours is provided. Ten (10) members of the public can be trained during each class. Training is being held at the Office's Arlington, Va. complex during normal work hours.

Four (4) hours of basic training is being offered on the use of T-Search. For those familiar with automated search systems, a shorter course of one (1) hour is available. T-Search training is being held in the Office's Arlington, Va. complex during morning, evening and weekend hours.

Enrollment in all training classes initially was on a lottery basis. Public users who wished to be trained on APS-Text or T-Search were required to submit an application form. The Office is now accepting requests for training and adding the names to the list. As of August 31, 1989, 696 people or 70 percent of all those requesting training have been trained.

System Use and Fee Procedures

To ensure equity of public access to the automated systems, as well as efficient operations, rules for use will be posted at the terminals. Users of the systems will be expected to comply with the rules and with all other regulations regarding the use of facilities.

Users are strongly encouraged to register in advance for system use. Each week, the next week's schedule will be available in the Patent Search room and the Trademark Search Library. Should requests for blocks of terminal time exceed the availability of terminals, limits on the amount of reserved time may be instituted. Up to three (3) of the initial four (4) terminals in the Patent Search Room and up to two (2) of the initial three (3) terminals in the Trademark Search Library will be allocated to public users with advance reserved times. The remaining terminal in the Patent Search Room will be available for walk-up users and for assisted searches for infrequent users. The remaining terminal in the Trademark Search Library will be available for walk-up users. The terminal time reservation system and the number of terminals available for walk-up public use and for assisted searches (in the Patent Search Room) is subject to change based upon operational experience.

All public use of APS-Text and T-Search, with the exception of scheduled training classes, is on a pre-payment basis. In pre-paying for use of the systems, the public may use a blank signed check, major credit card or charge to a deposit account. At the end of the search or the pre-paid amount of time, users will receive an accounting from Patent Search Room or Trademark Search Library staff for terminal time used and prints produced. The user must then finalize payment.

Discussion of Specific Rules

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21 is amended to add new paragraph (o) to set the fees for access to the Automated Patent System full-text search capability (APS-Text) and to provide for the waiver of fees under certain circumstances.

Section 1.21 is amended to add new paragraph (p) to set the fees for APS-Text search assistance by Office staff.

Section 1.21 is amended to add new paragraph (q) to set the fee for a printed copy from APS-Text.

37 CFR 2.6 Trademark fees

Section 2.6 is amended to add new paragraph (w) to set the fees for access to the automated trademark search system (T-Search) and to provide for the waiver of fees under certain circumstances.

Section 2.6 is amended to add new paragraph (x) to set the fee for a printed copy from T-Search.

A final rule package establishing two new fees under the provisions of Pub. L. 100-667, the Trademark Law Revision Act of 1988, has been published which added paragraphs (u) and (v) to section 2.6. Therefore, the rule has been modified from the proposal to add paragraphs (w) and (x) instead of paragraphs (u), (v) and (w).

Response to Comments on the Rules

A notice of proposed rulemaking to establish a basis for the charges for use of the on-line automated search systems in the Patent Search Room and Trademark Search Library located at the Patent and Trademark Office in Arlington, Virginia was published in the *Federal Register* on May 3, 1989, at 54 FR 18907. Corrections were published in the *Federal Register* on May 12, 1989, at 54 FR 20670. A notice also was published on May 30, 1989, in volume 1102 of the *Official Gazette* of the United States Patent and Trademark Office, pages 94 through 98 for patents, and pages 96 through 100 for trademarks.

A public hearing was conducted on June 30, 1989. A total of 25 comments were received; 24 respondents submitted written comments and five people presented oral testimony (four of whom also submitted written comments) at the public hearing. On the 25 comments, twelve (12) were from individuals, seven (7) from libraries, five (5) from organizations and one (1) from business. All of the written and oral comments were considered in adopting the rules set forth herein.

Many of the comments from the representatives of the Patent Depository Libraries raised questions or commented on the proposed rules from the perspective of their impact on Patent Depository Libraries. The proposed rules and policies set forth in the *Federal Register* Notice of May 3, 1989 are applicable only to the automated search systems provided in PTO's facilities located in Arlington, Virginia. When the Office is prepared to offer the automated search systems at the Patent Depository Libraries, a proposed notice will be published for public comment. Therefore, any comments relating to procedures for accessing the automated search systems in the Patent Depository Libraries will not be addressed at this time.

Comment: Overall, nine respondents acknowledged the usefulness of the automated search systems, particularly APS-Text. Although seven respondents alleged that T-Search is not adequate to meet the needs of the public, that its response time is too slow, and that it is not sufficiently accurate to meet the specific needs of the commentator, most of these respondents acknowledged that T-Search had the potential for being a useful tool. Documentation of specific problems, for example, those associated with conducting a phonetic search, were provided. Two respondents said that T-Search is flawed and the decision to require examiners to use the system on an exclusive basis was ill-advised and regrettable.

Response: Trademark examining attorneys have been using T-Search for word mark searches since August 1987, and for word mark and design searches since January 1988. The public has been using the system since April 3, 1989.

The minutes to the September 27, 1988, meeting of the Public Advisory Committee for Trademark Affairs, express the view that: "...T-Search searches are more thorough than manual searches." The transcript to that meeting contains the following comments: "I don't think there is any question, but a T-Search [sic] properly done gives an excellent result" and "...from the corporate point of view, ... I am pleased to say that I like what I see. I like the very fast action we're getting on the first action." From the transcript to the February 23, 1988 meeting: "I'd like to start with a glowing report. I think that the registration process is working very well. From my own personal experience in terms of what the examiners are doing, they get an A plus. They're really doing a good job."

The consensus of the management of the Trademark Examining Operation is that the T-Search system meets the needs of the Office at this time. There is no indication in any records or activities in the PTO which would indicate that the use of T-Search has caused a deterioration in the quality of searches conducted by Trademark examining attorneys.

The difference between the perceptions of the Trademark examining attorneys and the public may be attributed to several factors; Trademark examining attorneys use the system on a daily basis; they know what the system can do and what it cannot do and avoid the latter; and they know how to utilize the system's functionalities to perform the best search possible. Further, Trademark examining attorneys do different types of searches, and have different needs, than the public. T-Search use statistics for the period April 1989 through August 1989 demonstrate that the public is making extensive use of the system. Following is a summary of those statistics:

Month	Available Hours	Hours Used By Public	Rate of Usage	Average Session Time
April	513	108	21%	13.02 min.
May	513	126	24%	12.25 min.
June	627	183	29%	10.84 min.
July	570	186	33%	12.51 min.
August	656	217	33%	9.66 min.

This usage rate compares favorably to the projected usage rate of 28 percent.

Comment: Seven respondents claimed that the paper Trademark files have been allowed to deteriorate and, therefore, are not reliable for use by the public.

Response: The Office contracts for file maintenance services in both the Trademark Search Library and the Patent Search Room. Among the tasks performed by the contractor in the Trademark Search Library are maintaining the pending files, filing newly registered Trademarks, pulling erroneous registrations from the file, etc. The contract for the Trademark Search Library includes a monitoring system based on MIL-STD 105, which is a sampling plan that provides a 97 percent accuracy level. Once the contractor completes a task, Office staff check the required sample levels to ensure that filing was performed accurately. The Office is constantly monitoring the status of the paper files, but notes that maintenance of paper file integrity is subject to inherent limitations.

Comment: In view of the above comments about the inadequacy of the Trademark paper search files and T-Search, six respondents advocated the need for T-Search, at no charge to the user, as an adjunct or back-up to the paper files. One respondent suggested a similar arrangement in the Patent Search Room.

Response: The Office has adopted the \$40.00 fee amount for one hour of terminal session time on both APS-Text and T-Search. In order to give the public more time to become familiar with the T-Search system, the Commissioner is immediately suspending collection of that fee. This will enable users to learn the system so as to perform more effective searches. The Office will publish a notice in the *Federal Register* announcing its decision regarding the imposition of the fee at least 60 days before starting to collect the fee amount. At that time, the Office also will publish validated cost estimates based on usage rates and actual costs documented from the present time to the time the decision to collect a fee is made.

Comment: Two respondents claimed that the objective of automation necessarily contemplated a free search system to give meaning to the constructive notice provisions of the Trademark Act.

Response: Registration of a trademark constitutes constructive notice and records of all active trademark registrations and pending applications are available for searching free of charge in the paper file and on TRAM (Trademark Reporting and Monitoring System) data base.

Comment: One respondent claimed that PTO is required to provide access to disclosed patent information as the information is made public; four respondents were opposed to the Office charging fees for accessing the automated search systems; two other respondents commented that the Office should not charge fees for using systems designed to be the sole searching source of the public records which the Office is charged by law to provide; and one respondent commented that the proposal to limit access to the automated data bases only to those who can pay a fee is deplorable policy at a time when there is concern about industrial competitiveness with Japan.

Response: The Office will continue to make the paper and/or microfilm collections of U.S. patents, foreign patent documents and U.S. trademark registrations available for public access free of charge. The Office also has adopted a policy whereby the hourly terminal session fee for access to the data base can be waived when it is needed for a personal, educational purpose by an individual or member of an educational or non-profit organization, or where payment of the fee would pose a genuine financial hardship to the user. In this way, the Office will continue to provide public access to all available information free of charge.

Comment: One respondent commented that user fees for electronic data is a form of dual taxation when information was gathered, organized and produced at taxpayers expense; and two respondents claimed that users of information have contributed up to 30 percent of the \$120 million for development of the APS system to date — in other words, the public already has paid for APS.

Response: In calculating the proposed fees, the Office is consistent with the Office of Management and Budget's proposed policy on user charges for Government information products, as clarified in the June 15, 1989 *Federal Register* notice entitled "Second Advance Notice of Further Policy Development on Dissemination of Information." In that notice, OMB's stated policy is that user charges for Government Information

products should be no higher than a level sufficient to recover the costs of disseminating, not collecting, the information.

The costs associated with the fees for accessing APS-Text and T-Search are directly related to the public's use of the systems; for example, the costs associated with the acquisition of the APS-Text terminals that are being used by the public. No costs associated with designing or installing the automated system for use by Office examiners, or the development of the new systems have been included. Neither have costs been included for gathering, organizing or producing information.

The *Federal Register* notice of June 15, 1989 (54 FR 25554, 25558) dealing with policy development on dissemination of information states that: "As to double taxation, OMB notes that user charges policy has a basis in statute (31 U.S.C. 9701), and the Congress has not viewed user charges as double taxation because they are applied when the recipient receives special benefits."

Comment: Two respondents stated that Government information is the same, whether it is provided in printed or electronic form.

Response: Charging fees for access to the automated search systems is consistent with PTO's fee policy. For example, fees are charged for manual search services (e.g., for a search of Office records or for a search of assignment records), and for printed copies of patents and trademarks and for copies of Office documents.

Comment: The Japanese system is available at four locations at no cost, and includes U.S. information made available at U.S. taxpayer expense.

Response: The Japanese automated search system, like the automated search systems in the PTO's search facilities, is being made available free of charge at the present time. The costs of such use, however, are being paid from general fee revenues collected by the Japanese Patent Office. Additionally, the APS-Text system currently includes Japanese English language abstracts and the Office is in the process of acquiring Japanese patent information in digital facsimile form.

Comment: One respondent commented that PTO has no responsibility to provide an expensive, complex, internal Government on-line value-added computer service, that this is far beyond the requirements of public access to patent files; and another respondent commented that it is in the public interest to have the same system that is being used by the examiners also available to the public.

Response: The Office agrees that it is in the public interest to provide the same search system capability to the public that is being used by the examiners.

Comment: One respondent stated that providing free access is not competing with the private sector, and that there always is a place for the private sector to provide value-added information.

Response: The user charges adopted for public access to the APS-Text and T-Search systems are consistent with OMB Circulars A-25 "User Charges" and A-130 "Management of Federal Information Resources", and with the PTO's Electronic Data Dissemination Policies and Guidelines. The PTO's user's fees are designed to recover the marginal costs associated with providing access to the automated search systems to the public.

Comment: Five respondents stated that the proposed fees are not "reasonable" and the Office does not have documented cost estimates and usage rates to support the proposed fee amounts.

Response: The Office is meeting Congressional direction to establish "reasonable" fees by recovering only the marginal costs associated with providing public access to the automated search systems. Costs and projected usage rates were determined from the best available records, for example, financial statements for the Office and the results of the public evaluations of the APS-Text and T-Search systems. A summary of the costs used in the fee calculations is included above under "Cost Calculations." Full details of these cost calculations are available for public inspection at the Patent and Trademark Office in Suite 904 of Building 2, Crystal Park, at 2121 Crystal Drive, Arlington, Virginia.

Comment: Two respondents questioned the proposed fees for search assistance. If the search assistance is similar to that which is provided free now, there should be no fee. If the search assistance entails doing searches, the Office should not be getting into that business.

Response: The PTO is withdrawing the proposed fee for staff search assistance to conduct a search using T-Search capabilities. The fee for staff search assistance to conduct a search using APS-Text capabilities is being adopted, because an untrained user cannot conduct a search without significant help from Office staff. Users of course, have the option of obtaining free training on the system.

Comment: One respondent commented that user fees cannot be justified under the theory that electronic search provides a new service or offers an enhancement to the public's ability to search the patent data base, and that the public has an option of paying the fee or using the paper files. Another respondent commented that APS-Text and T-Search represent enhancements to services already provided.

Response: The fees are specifically authorized under § 104 (c) of Pub. L. 100-703 and are calculated to allow recovery of only the marginal cost for providing the system to the public.

Comment: Two respondents claimed that the Office should ask Congress for funding to offer free access here and at the PDLs.

Response: It continues to be PTO policy, consistent with OMB Circular A-130, that costs for access to the automated search systems be borne by those who actually use the automated search systems.

Comment: One respondent claimed that the accuracy of the trademark data base is suspect.

Response: All of the backfile data base elements (registrations issued prior to September 9, 1980) have been corrected except owner information. As originally planned, the owner field will be cleaned up the active registrations issued prior to September 9, 1980. It is projected that this owner field will be cleaned up by the third quarter of fiscal year 1991.

Comment: Three respondents claimed that the public requires access to the dead data base.

Response: The Office will consider this proposal further. The dead data base is now available in electronic format for all applications and registrations that were active on January 1, 1983 and are now inactive. However, many of these records are of poor quality. Costs for cleaning up these records would be significant, and those costs would likely be reflected in the T-Search user fee.

Comment: Four respondents addressed the fee waiver policy. The proposal to waive fee appears inconsistent with PTO's position that the free paper search files provide an equal and viable resource to anyone not wanting to pay for the automated files. If paper records are inferior, then anyone seeking access to T-Search should be able to qualify for the fee waiver. If the paper records are adequate, then there should be no need to waive the access fee for anyone.

Response: The waiver policy authorized by Pub. L. 100-703 is designed for those individuals who, for some reason in the public interest, such as an educational purpose, need the capabilities of the automated system, for example, to manipulate the data.

Comment: One respondent commented that the procedure to enroll people in training classes by the use of a lottery was unfair and that everyone who wants to be trained should be enrolled.

Response: The lottery was a method for establishing the initial schedules to provide training. Everyone who requests training will be trained. As of August 31, 1989, 449 out of 623 people requesting training on APS-Text, and 247 out of 376 people requesting training on T-Search have been trained.

Comment: One respondent commented that advance registration is an unrealistic approach for many searchers.

Response: At least one terminal in the Patent Search Room and one in the Trademark Search Library will be available for walk-up users. The other terminals will be available first for users with a reservation and then, if needed, for walk-up users. The system is designed to ensure equity of public access to the automated systems.

Comment: Two respondents asked for information justifying that this is not a "Major Rule" as defined by Executive Order 12291, and that the rule will not have a significant adverse impact on small entities.

Response: The no "major rule" determination and no significant adverse impact on small entities was based on the fact that the automated systems are being offered only at the Patent and Trademark Office's public search facilities located in

Arlington, Virginia. The total number of users of these facilities averages less than 400 a day, and many of these users are members of law firms or commercial search services. The annual effect on the economy is expected to be about \$1 million, far less than the \$100 million annual threshold specified in the Executive Order. The fees for accessing the automated search systems are reasonable and should not burden small entities and, at the same time, the Office is continuing to maintain the paper search files which are available to the public free of charge. Finally, there should be no significant adverse effects on competition, because the systems are being offered only at one location, the Patent and Trademark Office in Arlington, Virginia, and the public may continue to use paper files without payment of any fee.

Comment: Five respondents commented that user fees burden small entities and run counter to a fundamental objective of the patent system which is to advance technology through dissemination of the technical information contained in patents.

Response: The Office does not believe that the fee amounts adopted will burden small entities or negatively impact the dissemination of technical information. The Office also will continue to maintain the paper search files using taxpayer funds, and provide access to the public free of charge. Further, the Office has adopted a fee waiver policy whereby the fee amount can be waived where access to the data base is needed for a personal, educational purpose by an individual or member of an educational or non-profit organization, or where payment of the fee would pose a genuine financial hardship to the user. Full details are included above under "Background".

Comment: One respondent commented that the Office needs a policy to ensure that no user of the patent and trademark information is disenfranchised due to an inability to pay for the services necessary to its access.

Response: The Commissioner will consider a fee waiver for users with a genuine financial hardship.

Other Considerations:

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements relating to patent and trademark fee rules.

The Office has determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The rules make the Office's on-line, automated patent full-text search and trademark search systems available to the public at rates significantly less than commercial systems.

The Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Parts 1 and 2

37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Reporting and record keeping requirements, Small businesses.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks.

For the reasons set forth in the permeable, the Office is proposing to amend Title 37 of the code of Federal Regulations, Chapter 1, as set forth below.

PART 1-RULES OF PRACTICE IN PATENT CASES.

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.21 is amended by adding new paragraphs (o)-(q).

§ 1.21 Miscellaneous fees and charges.

(o) Marginal cost, paid in advance, for each hour of terminal session time, including print time, using Automated Patent System full-text search capabilities, prorated for the actual time used. The Commissioner may waive the payment by an individual for access to the Automated Patent System full-text search capability (APS-Text) upon a showing of need or hardship, and if such waiver is in the public interest\$40.00

(p) Marginal cost, paid advance, for each hour of Office staff search assistance to conduct a search using Automated Patent System full-text search capabilities (APS-Text), prorated for the actual time used \$25.00

(q) Marginal cost, for each printed page generated from the Automated Patent System text terminal..... \$0.10

PART 2-RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.6 is amended by adding new paragraphs (w)-(x).

§ 2.6 Trademark fees

(w) Marginal cost, paid in advance, for each hour of terminal session time, including print time, using T-Search capabilities, prorated for the actual time used. The Commissioner may waive the payment by an individual for access to T-Search upon a showing of need or hardship, and if such waiver is in the public interest \$40.00

(x) Marginal cost, for each printed page generated from the T-Search terminal..... \$0.10

Dec. 4, 1989

JEFFREY M. SAMUELS
Acting Commissioner of Patents
and Trademarks

[1110 TMOG 601]

(162) DEPARTMENT OF COMMERCE Patent and Trademark Office 37 CFR Part 2 Patent and Trademark Automated Search System Fees

Agency: Patent and Trademark Office, Commerce

Action: Listing of suspension of final rule

Summary: The Patent and Trademark Office (Office), on December 11, 1989, amended the rules of practice in patent and trademark cases, Parts 1 and 2 of Title 37, Code of Federal Regulations, setting forth the fees for public access to the Office's text data bases: the Automated Patent System (APS) and the automated trademark search system (T-Search). 54 FR 50942. That final rule became effective on February 12, 1990. On that date, 37 CFR 2.6(w), dealing with T-Search fees, took effect, but was immediately suspended by the Commissioner.

The collection of the fee was initially suspended to permit users to become familiar with the T-Search system. The T-Search system has been available to the public since April

1989, a sufficient time for users to become familiar with the system. Therefore, as provided in the final rule, the Office now gives notice that the suspension is lifted. The Office will begin to collect the fees set forth in 37 CFR 2.6(w) sixty (60) days from the date of this notice. Cost estimates based on usage and actual costs are available for inspection in the Office of Long-Range Planning and Evaluation, Room 507, Crystal Park 1, Crystal Drive, Arlington, Virginia.

Dates: The suspension of 37 CFR 2.6(w) is lifted as of Nov. 13, 1990. The collection of fees under 37 CFR 2.6(w) will begin on November 13, 1990.

For Further Information Contact: Frances Michalkewicz by telephone at (703) 557-1610 or by mail to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

September 4, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1119 TMOG 6]

(163) Automated Trademark System (X-Search) Training for Public Users

X-Search, an enhanced automated trademark searching system, is scheduled to become available in July 1993.

Several free training classes will be offered to the public. A four-hour class, consisting of a lecture session and hands-on instruction, will be conducted once a month from 4:00 to 8:00 p.m. This class is for users who have no experience with automated trademark searching. A two-hour class will be conducted three times a week for users who have experience with automated trademark searching techniques. These classes will be held from 5:30 to 7:30 p.m. on Tuesdays and Thursdays and from 9:00 to 11:00 a.m. on Saturdays.

Space in all sessions will be limited. A lottery-type drawing will be held to determine specific class assignments. To enter the lottery drawing, a completed application form including all information shown below may be deposited in the Trademark Search Library or submitted via mail or telefax. Applications received on or before June 25, 1993, will be included in the lottery for classes beginning in July.

Trainees who fail to appear at their scheduled class will not be reassigned until all persons scheduled on the original lottery have been accommodated. Subsequent lotteries will be offered periodically if demand requires.

Training for the new system is recommended, but not required. In addition to the formal training described above, informal demonstrations will take place during business hours in the Trademark Search Library, 2900 Crystal Drive, room 2B30. These sessions will be available for the first ten days following introduction of the X-Search system and will not require a reservation. Specific dates will be posted in the Trademark Search Library.

Patent and Trademark Office Automated Trademark System (X-Search) Application Form for Training

Name _____
First Last MI

Mailing Address _____

Phone Number: _____
(Area Code)

Employer: _____

Prefer: Two-Hour Saturday Class Two-Hour Tuesday Class

Two-Hour Thursday Class Four-Hour Class

Applications should be deposited in the Trademark Search

Library of forwarded via mail or telefax to:

Commissioner of Patents and Trademarks
Box PUTB
Washington, D.C. 20231
FAX: 703/305-7786

May 17, 1993

THERESA A. BRELSFORD
Assistant Commissioner for
Public Services and
Administration

[1151 TMOG 52]

(164) DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 2, and 10
[Docket No. 921061-2261]
[RIN 0651-AA50]

Electronic Filing of Patent and Trademark Applications

Agency: Patent and Trademark Office Commerce

Action: Advance Notice of Proposed Rulemaking

Summary: This advance notice of proposed rulemaking is to inform the public that the Patent and Trademark office (PTO) is considering amending its rules of practice: (1) to allow for electronic filing of patent applications and trademark applications; and (2) to require applications filed in paper form to follow a prescribed order and format.

The PTO anticipates that permitting electronic filing of applications will improve the accuracy of the information relied upon in the examination of patent and trademark applications, eliminate delays caused by mailing and data entry, and, as a first step toward a fully-automated processing system, ultimately provide considerable cost savings. The cost savings realized could be used to help reduce the need for future fee adjustments and/or fund improvements in the delivery of services. Requiring applications filed on paper to follow a prescribed order and format will enable the PTO to convert these applications to electronic format.

The purposes of this notice are to: (1) invite interested parties to participate in pilot programs involving electronic filing of patent and trademark applications; and (2) encourage comments on this topic, in the form of responses to the questions posed in this notice, from industry, the patent and trademark bars, and members of the public.

Dates: Comments should be received on or before Feb. 28, 1993.

Addresses: Written comments should be addressed, if sent by mail, to the attention of Edward R. Kazenske, Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, c/o Commissioner of Patents and Trademarks, Washington, D.C. 20231. If delivered by hand, comments should be brought to the Office of the Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, Room 906, Crystal Park 2, 2121 Crystal Drive, Arlington, Va. For Further Information Contact: Edward R. Kazenske, Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, (703) 305-8600.

SUPPLEMENTARY INFORMATION:**1. Pilot Programs**

Currently, the PTO accepts patent and trademark applications delivered by mail or in person. These applications are in paper form or, in the case of patent applications for nucleotide sequences, a combination of computer-readable (see 37 CFR 1.821-1.825) and paper form.

The PTO is initiating a pilot program that would permit electronic filing of patent and trademark applications, using software now under consideration by the PTO. Initially, it is anticipated that participants in the pilot program would be required to use the PTO software to create a diskette, which would then be mailed to the PTO along with the paper application generated by the diskette. The diskette would serve the

limited function of eliminating the initial data entry of applications into the PTO databases.

As part of a second pilot program, a separate group of participants is being solicited to file paper applications following a prescribed order and format. The paper applications would then be scanned and converted to electronic format. Data collected from the pilot programs will be evaluated to determine whether requiring submission of a paper application in a certain order and format facilitates data entry; whether any modifications to the electronic filing software are required; and more fundamentally, whether electronic filing is a feasible, cost-effective alternative to filing in paper form.

2. Paper Applications

The PTO contemplates that paper applications will be required to follow the order and format of the data elements (e.g., inventor, foreign priority information, in the case of a patent application; applicant, mark, in the case of a trademark application) entered in the electronic filing system. This would enable the PTO to scan and convert paper applications to electronic applications upon receipt at the PTO. Once the paper application is converted into electronic form, processing of the application will be done in a purely electronic format. The electronic form of the application would become the official file.

3. Electronic Filing

The PTO contemplates that applicants filing by electronic means would be required to use an "Authoring Program" developed by the PTO, which will be available to facilitate the preparation of an electronic submission and record the submission on electronic media. This "Authoring Program" will include a validation feature so that applicants, themselves, can test whether an electronic submission complies with all requirements.

The "Authoring Program" software under consideration by the PTO will be designed to be compatible with computers capable of creating files of standard ASCII (American Standard Code for Information Interchange) text within one or more of the major operating systems environments (e.g., DOS, Windows, Unix®, and Apple Macintosh®).

The format for text in patent applications will specify a set of mandatory data elements, similar to those required under the Patent Cooperation Treaty. The format for text in trademark applications will specify a set of mandatory data elements, similar to those required of a "written application" under 15 U.S.C. 1051. In both the patent and trademark software, specific formats will be required for non-textual elements, such as drawings, formulas, tables and specimens. These non-textual elements would be submitted in separate computer files called "Presentations," similar to the presentation of nucleotide sequence information in accordance with 37 CFR 1.821-1.825.

The PTO also contemplates that certain individuals be designated by the agency as qualified "electronic application transmitters." Upon application to the PTO, unlimited parties meeting specified requirements may be issued Personal Identification Numbers to enable them to transmit applications in electronic form on behalf of themselves or other individuals.

In an effort to facilitate public comment to the questions set forth below, the following background information is provided:

4. Background Specific to Electronic Patent Applications*Signature*

Under 35 U.S.C. 111, a patent application must include an oath by the applicant. 35 U.S.C. 25 permits a declaration in lieu of oath. The applicant's signed oath or declaration is not required for receipt of a filing date, but may be submitted, upon payment of a surcharge, within a prescribed period.

Certified Copy of Foreign Patent Application

Under 35 U.S.C. 119, a U.S. patent application may be based on a foreign patent application, thus, potentially, conferring the benefit of the earlier foreign patent application's filing date.

A certified copy of the foreign patent application is required to be filed in the PTO before the patent is granted.

5. Background Specific to Electronic trademark Applications*Signature*

Under 15 U.S.C. 1051, a trademark application must be verified by the applicant. Prior to implementation of the Trademark Law Revision Act of 1988 (TLRA) on Nov. 16, 1989, the PTO permitted verification of the application to be provided at any time during the examination process. With implementation of the TLRA, the PTO amended its regulations with respect to the verification of an application. 37 CFR 2.21, which sets forth the minimum requirements for an application to receive a filing date, was amended to require that the application be signed by the applicant at the time of filing.

Specimen

Under 15 U.S.C. 1051, a trademark application based on "use in commerce" must include specimens or facsimiles of the mark as used. 37 CFR 2.21(a)(5) requires at least one specimen or facsimile to be included with the "use" application in order to receive a filing date. Applications filed based upon a "bona fide" intention to use the mark in commerce, under 15 U.S.C. 1051(b), must be supplemented with specimens or facsimiles before the registration issues. In order to meet the minimum requirements for filing an amendment to allege use or statement of use, one specimen or facsimile must be submitted. 37 CFR 2.76(e)(2) and 2.88(e)(2).

Certification or Certified Copy of Foreign Registration

Under 15 U.S.C. 1126(e), "an application [based on a foreign registration] shall be accompanied by a certification or a certified copy of the registration of the country of origin of the applicant." 37 CFR 2.21(a)(5) requires the certification or certified copy to be included with the application in order to receive a filing date.

6. Comments on the following Questions and Any Other Related Matters Are Solicited*Questions Common to Patent and Trademark Applications*

- What benefits do you foresee for the applicant if electronic filing is adopted? What disadvantages do you foresee?
- Should the PTO require paper applications to be filed in a specific order and format to facilitate conversion to electronic format? What advantages and disadvantages do you foresee?
- Should the electronic file become the official agency file?
- Should electronic filing be expanded to encompass amendments and other submissions to the PTO?
- Should paper or electronic application filings receive a filing date only if they meet order and format requirements, or should compliance be subject to a surcharge?
- Should the PTO accept electronic filing by diskette, on-line, or both?
- Should applications filed in paper form be converted to electronic form by the PTO? Should the PTO charge a fee for this service?
- If paper applications are converted to electronic form by the PTO, should the PTO destroy or retain the paper applications?
- Should fees be processed electronically?
- Should the PTO create a registry of "electronic application transmitters" capable of transmitting patent and trademark applications for others? If so, what, if any, criteria should be established before one could be "registered" as an "electronic application transmitter"?

Questions Related Solely to Patent Issues

- Should the PTO require the oath or declaration to an electronically filed patent application be filed on paper to authenticate that applicants believe themselves to be original and first

inventors of the subject matter of the electronically filed application?

If not, how should the filing of the oath or declaration be accomplished?

- How should the filing of certified copies of foreign patent applications be accomplished for an electronically filed patent application?

Questions Related Solely to Trademark Issues

- Should the PTO require electronically filed applications to include a scanned, signed declaration in order to receive a filing date? Should the PTO accept declarations in electronic form with some type of electronic signature?

If not, should 37 CFR 2.21 be amended to permit unverified applications to be accorded a filing date? If so, within what time period must an unverified application be ratified by the submission of a signed declaration?

How long should the PTO retain the signed declaration after it has been scanned and merged into the electronic file?

- Should "use" applications submitted without a specimen be given a filing date?

If so, within what time period after filing must the specimens be submitted?

Should the number of required specimens be reduced?

How long should the PTO keep the specimens after they are scanned and merged into the electronic file?

- Should Section 44(e) of the Trademark Act (15 U.S.C. 1126(e)) be amended to permit applicants to submit a facsimile of the certification or certified copy of the foreign registration?

Alternatively, should the statute be amended to permit Section 44(e) applicants to obtain a filing date absent a certification or certified copy of the foreign registration? If so, within what time period must a Section 44(e) application be supplemented with a certificate or certified copy of the foreign registration?

How long should the PTO retain the certification or certified copy after it has been scanned and merged into the electronic application?

7. Candidates for the Pilot Programs

Any person interested in participating in one of the pilot programs identified above is requested to contact Edward R. Kazenske, Executive Assistant to the Commissioner and Director of Interdisciplinary Programs, c/o Commissioner of Patents and Trademarks, Washington, D.C. 20231. If delivered by hand, written statements of interest should be brought to Suite 906, Crystal Park 2, 2121 Crystal Drive, Arlington, Va. 22202. Telephone: (703) 305-8600. Please indicate which pilot program you wish to participate in and please be certain to include a telephone number where you may be reached.

Nov. 23, 1992

DOUGLAS B. COMER
Acting Assistant Secretary
and Acting Commissioner
of Patents and Trademarks

[1145 TMOG 9]

(165) **United States Postal Service
Interruption and Emergency in Los Angeles**

The January 17, 1994, Los Angeles earthquake has caused a service interruption in United States Postal Service (USPS) in the greater Los Angeles area. Normal postal delivery and collection operations of the USPS were impacted by the earthquake throughout the greater Los Angeles area to varying degrees from January 17, 1994, through January 21, 1994.

The Patent and Trademark Office (PTO) is designating the interruption in the service of the USPS in the greater Los Angeles area and the overall destruction caused by the earthquake as a postal service interruption and an emergency within the meaning of 35 U.S.C. 21(a). Any request to accept a paper or fee delayed by this emergency should be directed to Jeffrey V. Nase, Director, Office of Petitions, (703) 305-9285, PK3-704, for patent-related matters, and to Lynne G. Beresford,

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Trademark Legal Administrator, (703) 305-9464, PK2-910, for trademark-related matters.

February 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1160 TMOG 39]

TRADEMARK PUBLICATIONS

(166) Separation of the Patent and Trademark Sections of the Official Gazette

Effective February 2, 1971, the *Official Gazette* will be separated into two parts to be known as the *Patent Official Gazette* and the *Trademark Official Gazette*.

Orders for subscriptions should be addressed to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Also effective February 2, 1971, the *Official Gazette* will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the *Official Gazette* will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the *Patent Official Gazette* and the *Trademark Official Gazette* will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the *Gazette* decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

Dec. 29, 1970

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents

[882 O.G. TM 33]

(167) Changes in Format for Publishing Trademarks for Opposition

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see *Official Gazette* of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the *Official Gazette* of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the *Official Gazette* entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see *Official Gazette* of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.

A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification-Application in more than one class

Section 2. International classification-Application in one class

Section 3. Prior United States classification-Application in more than one class

Section 4. Prior United States classification-Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

Mar. 22, 1974

RENE D. TEGTMEYER
Assistant Commissioner
for Trademarks

[92] O.G. TM 122]

(168) Change in Official Gazette Entry to Show Cancellation of Fewer Than All Classes in a Multiple Class Registration

Effective with the *Official Gazette* issue of December 16, 1980, there will be a change in the *Official Gazette* listing entitled "Trademark Registrations Cancelled." Beginning with that issue, "Trademark Registrations Cancelled" will list:

- (1) single class registrations cancelled;
- (2) multiple class registrations cancelled in all classes;
- (3) multiple class registrations cancelled in fewer than all classes.

For every entry in the listing, the specific classes cancelled will be included in parentheses, next to the registration number and mark.

For a single class registration and for a multiple class registration in which every class has been cancelled, the class number(s) shown in parentheses will represent every class to which the registration applied.

For a multiple class registration in which fewer than all classes have been cancelled, the *Official Gazette* entry will include the word "only" following the notation of classes in parentheses, for example: (Int. Cls. 12 and 20, only). In this example, the addition of the word "only" would indicate that

there are classes in the registration in addition to Classes 12 and 20, but only Classes 12 and 20 have been cancelled.

Oct. 29, 1980.

MARGARET M. LAURENCE
Assistant Commissioner
for Trademarks

[1000 TM 21]

(169) Single Copies of the Trademark Official Gazette

Members of the public ordering single copies of the Trademark Official Gazette from the Superintendent of Documents are reminded they must specify the date of the issue being ordered.

The date of the issue in which a mark will be published for opposition is shown on The Notice of Publication form mailed to applicants approximately two weeks before the publication date. This date must be included on each single copy order.

Orders received without an issue date may be filled from current weekly stock. The Superintendent of Documents cannot check on whether a particular mark is published in the issue then in stock. If the stock is exhausted at the time the order is received, the order will be returned unfilled.

Mar. 3, 1981

MARGARET M. LAURENCE
Assistant Commissioner
for Trademarks

[1004 O.G. 36]

(170) Inadvertently Issued Registration Numbers

Effective Jan. 3, 1984, a new sub-section identified as "Inadvertently Issued Registration Numbers" will exist as the last category of cancellations listed under the "Trademark Registrations Cancelled" section of the *Official Gazette*.

This new sub-section will provide public notice of the cancellation of registration numbers which have been inadvertently issued by the Patent and Trademark Office.

Nov. 15, 1983

MARGARET M. LAURENCE
Assistant Commissioner
for Trademarks

[1037 TMOG 16]

(171) Ordering the TMEP (2nd Edition)

The U.S. Government Printing Office (GPO) is accepting orders for the *Trademark Manual of Examining Procedure* (TMEP), 2nd edition. The second edition replaces the first edition (revision 7) and incorporates all changes in policy and procedure through March 1993.

New orders should be sent to:

Superintendent of Documents
United States Government Printing Office
P.O. Box 371954
Pittsburgh, Pa. 15250-7954

Stock Number - 903-010-00000-2
Price - \$19.00

Orders may also be placed by phone using MASTER-CARD® or VISA® by calling (202) 783-3238.

If there are any problems with an order, please call the Customer Adjustment Department of the GPO at (202) 512-2457.

July 9, 1993

ROBERT M. ANDERSON
Acting Assistant Commissioner
for Trademarks

[1153 TMOG 13]

(172) Notice to Subscribers

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the *Official Gazette*, *Manual of Patent Examining Procedures* Revisions, *Annual Indices*, or other patent and trademark publications. All correspondence and inquiries concerning subscription services including requests for reinstatement or renewal of subscriptions should be directed to:

Mr. Michael F. DiMario
Assistant Public Printer
Superintendent of Documents (SD)
U.S. Government Printing Office
Washington, D.C. 20401

Furthermore, the Superintendent of Documents advises that expiration notices are sent out approximately three months before the expiration date. However, subscribers should not rely on this schedule. If a notice is not received within two months of the expiration date, the subscriber should renew the subscription with the Superintendent of Documents. Attach a label from the envelope in which the publication is received, together with a check covering the amount of the subscription, if a deposit account with the Superintendent of Documents is to be used, include the deposit account number with the renewal.

This notice is effective with the publication date and supersedes the notice published on this subject in 969 O.G. 2, dated Mar. 14, 1978.

Aug. 3, 1984

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1045 TMOG 24]

(173) Printing of Use in Another Form Claims

Effective immediately, all claims of prior use of the subject mark in another form contained in applications for Trademark registrations will be printed in the *Official Gazette* and on the registration certificates according to the following formats:

First used in another form on
First used in commerce in another form on

July 15, 1986

MARGARET M. LAURENCE
Assistant Commissioner
for Trademarks

[1069 TMOG 4]

(174) Error in Code of Federal Regulations (C. F. R.) Rule 1.8, 37 C. F. R. 1.8

The following C. F. R. Correction appeared in the *Federal Register*, at 56 FR 14648, on April 11, 1991:

In the July 1, 1990 revision of title 37 of the Code of Federal Regulations, on page 14, column two, § 1.8, paragraphs (a)(2)(xiv), (xv), and (xvi) were inadvertently placed after paragraph (b). These paragraphs should be correctly placed after paragraph (a)(2)(xiii) and before paragraph (b), in column one. Rule 1.8 (37 C. F. R. § 1.8), which is entitled "Certificate of Mailing," sets out the conditions for the timely filing by

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first-class mail of papers utilizing the Certificate of Mailing procedure. Under Rule 1.8(a)(2), certain papers are excluded from the Certificate of Mailing procedure and will not be considered timely filed if received after the due date, unless deposited as Express Mail in compliance with Rule 1.10 (37 C. F. R. § 1.10). There are sixteen (16) exclusions, numbered 1.8(a)(2)(i) through (xvi). However, the list of exclusions, as printed in the July 1, 1990 revision of the C. F. R., is interrupted at 1.8(a)(2) (xiii) by paragraph 1.8(b), before it resumes with 1.8(a)(2)(xiv) through (xvi). Therefore, at first glance, it appears that there are only thirteen (13) exclusions. The exclusions for statements of use under Rule 2.88; extension requests under Rule 2.89 for filing a statement of use; and amendments to allege use in commerce under Rule 2.76 were inadvertently placed after paragraph (b).

Any applicant who relied to its detriment on the July 1, 1990 revision of the C. F. R. and utilized a Rule 1.8 Certificate of Mailing when filing either a statement of use or an extension request for filing a statement of use, resulting in abandonment of the application, may petition the Commissioner to revive its application. Further, any applicant who filed an amendment to allege use and relied to its detriment on the July 1, 1990 revision to the C. F. R., resulting in its amendment to allege use being considered untimely, may also petition the Commissioner for relief.

Pursuant to Rules 2.66 and 2.146(c), applicant must support its statement of detrimental reliance with an affidavit or declaration in accordance with Rule 2.20, averring that on a specific date between July 1, 1990 and the date of publication of this notice in the *Official Gazette*, petitioner filed one of the three relevant documents pursuant to Rule 1.8; relied on the 1990 revision of the C. F. R.; and believed that the relevant document was not excluded from filing under Rule 1.8 the petition fee is \$100 per application. Rule 2.6(k).

May 15, 1991

JEFFREY M. SAMUELS
*Assistant Commissioner
for Trademarks*

[1127 TMOG 48]

TRADEMARK MISCELLANEOUS

(175) Recording of Documents Affecting Title

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

June 16, 1971

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents

Published in 36 F.R. 13231; July 16, 1971

[889 O.G. TM 2]

(176) International Protection of Government Emblems and Seals

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one department seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of Dec. 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary.

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However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by Sept. 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1 1/2 inches in diameter.

These seals will then be forwarded to WIPO for protection under Article 6 of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Aug. 18, 1976

C. MARSHALL DANN
*Commissioner of Patents
and Trademarks*

Published in 41 F.R. 35741

[950 O.G. TM 114]

(177) Recording of "Territorial Assignments" in the Assignment Division of the Patent and Trademark Office

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and therefore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

Oct. 7, 1977

BERNARD A. MEANY
*Assistant Commissioner
for Trademarks*

[964 TMOG 8]

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Helpful Hints

Assignment Cover Sheets

The Office developed PTO Form 1594, Recordation Form Cover Sheet (Trademarks), and PTO Form 1595, Recordation Form Cover Sheet (Patents), to facilitate submitting data required to record an assignment. The first versions of these forms have been available since Sept. 1992, and most assignments are now received with them. Both forms and their instructions will be updated later this year to remove ambiguities and incorporate suggestions received from customers. Until the revisions are completed, the Office will continue to work with practitioners to improve the utility of the current forms.

A practitioner recently noted that the current cover sheets for both patent and trademark assignments are not clear as to the proper entry of different execution dates (Item 3) when there are multiple assignors shown (Item 1). Pending redesign of the forms, the Office suggests when there are multiple assignors named in Item 1, number each assignor, and in Item 3, preface each execution date with the corresponding number, if all assignor information cannot be entered in the space provided

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for Item 1, enter "See Attached List" and proceed in the same manner. This will enable Assignment Branch staff to associate the correct date with the appropriate assignor.

Another practitioner called to our attention the fact that although the forms indicate "Total number of pages comprising cover sheet" (Item 9), Assignment Branch staff frequently cross out that entry and replace it with the total number of pages submitted, both in cover sheets and the assignment instrument itself. Soon after the forms were printed, Assignment Branch staff found they were better able to verify document integrity by using the total number of pages per submission. This number is then used as a cross-check as the assignment moves through the recordation process, receives reel and frame numbers, is microfilmed, and returned to the customer. Pending revisions to the forms, the preferred procedure is to indicate the total number of pages submitted, both in cover sheets and the attached assignment.

Additional comments or suggestions for improving either or both assignment cover sheets should be directed to Audrey Britt, Chief, Assignment Branch, at (703) 308-9706.

Mar. 8, 1993

THERESA A. BRELSFORD
*Assistant Commissioner for
Public Services and
Administration*

[1148 TMOG 304]

(179) Indexing Against a Recorded Assignment

It has been the practice of the Patent and Trademark Office (PTO) to process requests for indexing against a recorded document by adding the newly requested property to the data base record for the previously recorded document, except if the previously recorded document was an assignment. The PTO only required a transmittal letter with the recording fee and not a copy of the previously recorded document to process the indexing request. While indexing the additional properties resulted in the assignment data base being updated, the indexing request itself was never microfilmed to become part of the official record.

Effective immediately, the PTO will no longer process such indexing requests. Such indexing requests do not comply with

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THE RETENTION SCHEDULE FOR TRADEMARK RECORDS

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.

Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.

Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.

Canceled Trademark Registration Files. Consists of original application and all related correspondence.

Expired Trademark Registration Files. Consists of original application and all

37 CFR 3.11, 3.28, and 3.31 which require that each request for recordation include the document to be recorded and a cover sheet. Instead of filing an indexing request, a party should submit a cover sheet in conformance with 37 CFR 3.31, a true copy of the document, and the recording fee. PTO will assign a new recording date to that submission, update the assignment data base, and microfilm the cover sheet and document to become part of the official record.

Nov. 3, 1993

THERESA A. BRELSFORD
*Assistant Commissioner for
Public Services and
Administration*

[1157 TMOG 12]

(180)

Flexible Working Hours

On Jan. 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

Dec. 13, 1978

DONALD W. BANNER
*Commissioner of Patents
and Trademarks*

[978 TMOG 141]

PERMANENT. Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.

PERMANENT. Transfer to FRC after 5 years. Offer to National Archives when 25 years old.

The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.

Destroy 2 years after the date of cancellation.

Destroy 2 years after expiration of registra-

related correspondence.

Abandoned Trademark Application Files. Consists of original application and all related correspondence.

Trademark Renewal Index. Index to trademark registration that are renewed.

Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.

A. Applicant's Index.

B. Serial Index.

Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.

Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.

Trademarks Published in Official Gazette. Clippings of marks from Official Gazette.

a. Those which have been opposed.

b. All others.

Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.

Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.

Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.

Public Advisory Committee for Trademark Affairs Files.

a. Agenda, minutes, correspondence, reports and related supporting files.

b. Paper and reference materials.

Seminar in Trademark Practice and Procedure Files. Record set of training materials used in training trademark examiners.

Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.

a. Original Petitions in trademark case file.

b. Other copies.

Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.

International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.

a. Records that supplement the International Property Activities Case Files (Item 103).

b. Other materials.

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning

tion.

Destroy 2 years after date of abandonment.

PERMANENT. Offer to National Archives when no longer needed for reference.

PERMANENT. Offer to National Archives when no longer needed for reference.

PERMANENT. Offer to National Archives when no longer needed for reference.

Destroy 3 years after termination of the proceeding.

PERMANENT. Offer to National Archives when no longer needed for reference.

Retain in agency until no longer needed for reference.

Destroy when mark is registered.

PERMANENT. Offer to National Archives when no longer needed for reference.

Destroy after information transferred to magnetic media.

PERMANENT. Offer to National Archives when no longer needed for reference.

PERMANENT. Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.

Destroy when 10 years old or no longer needed for reference, whichever is sooner.

PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.

Dispose of with related case file.

Destroy when 2 years old.

Destroy when no longer needed or when three years old, whichever is earlier.

PERMANENT. Transfer to office responsible for international affairs after case is closed.

Destroy 5 years after close of case or sooner if no longer needed.

PERMANENT. Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.

PERMANENT. Transfer to FRC after 5 years. Offer to National Archives when 25

the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents, trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.

Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.

Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state:

1. That they be made of material suitable for being placed inside a manila file wrapper.
2. That they be capable of being arranged flat, such as being folded.
3. That they be of a size not to exceed 8 1/2 inches wide by 13 inches long. (Rule 2.56).

These requirements provide for specimens which will fit inside the application file wrapper, which is 9 x 14 inches in size and which will conveniently expand to about one inch thickness.

Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.

February 28, 1979

years old.

Destroy 30 days after applicant is notified that the specimens are unacceptable, unless picked up sooner by the applicant.

SAUL LEFKOWITZ
Acting Assistant Commissioner
for Trademarks

[980 TMOG 16]

(182) **Proposed Records Control Schedule**

As with most government agencies, the Patent and Trademark Office periodically updates the schedule it uses to dispose of old files, papers and records. Set forth below is a recent update of the Patent and Trademark Office's Records Control Schedule. The schedule is currently being reviewed by the National Archives and Records Administration and, following its approval, will constitute the basis for disposing of Patent and Trademark Office records.

Any comments or questions related to the proposed schedule should be directed to John Hassett, (703) 557-0183. Written comments should be mailed to:

John Hassett, Director
Patent and Trademark Office
Crystal Plz. 1, Lobby
Washington, D.C. 20231

June 17, 1986

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

Commissioner's and Deputy Commissioner's Records

1. *Commissioner's Correspondence and Subject Files.* Correspondence to and from other public officials, members of the public, and the Patent and Trademark Office staff; reports; special investigations and survey reports; and related materials. (See index under Item 3).

PERMANENT. Transfer to Federal Records Center when 5 years old. Offer to National Archives when 25 years old.

2. *Reports to the Commissioner.* Reports received by the Commissioner from the Patent and Trademark Office staff and maintained as separate series.

PERMANENT. Transfer to Federal Records Center when 5 years old. Offer to National Archives when 25 years old.

3. *Index to Commissioner's Correspondence and Subject Files.* Card index to records described under Item 1.

PERMANENT. Transfer to Federal Records Center with

related files. Offer to National Archives with related files.

4. *Deputy Commissioner's Correspondence and Subject Files.* Correspondence to and from other public officials, members of the public, and the Patent and Trademark Office staff, with related materials (exclusive of records retained in Item 1).

PERMANENT. Transfer to Federal Records Center when 5 years old. Offer to National Archives when 25 years old.

5. *Policy Documentation Files.* Formal policy and procedural issuances, current and obsolete, such as organizational charts, regulations, orders, circulars, manuals, and other types of directives, with related forms, recommendations, endorsements, clearances and comments.

PERMANENT. Transfer to FRC when obsolete. Offer to National Archives when 25 years old.

6. *Work-Flow Control and/or Statistical Reports Files.* Various periodic statistical reports used to show the flow of work through the Patent and Trademark Office and the printers, such as PALM, TRAM, PMS Statistical Reports on Patents to printers, and similar reports.

Destroy when 5 years old or sooner if no longer needed.

7. *Production and Pendency Reports Files.* Quarterly, monthly, and biweekly statistical reports prepared to show the production and quality output of examiners and clerks and the status of the assigned projects. Reports are mainly used to evaluate the efficiency of personnel for promotion purposes.

a. Office of Assistant Commissioners or equivalent.

Transfer to FRC when 5 years old. Destroy when 10 years.

b. Other Offices.

Destroy when updated report is received.

8. *Special Studies Files.* Report on special studies surveys, and inspections of operations, management and systems with related papers showing their inception, scope, procedure and results.

PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 25 years old.

9. *Narrative and Statistical Reports Files.* Annual or other periodic narrative and statistical reports.

a. Reports to the Office of the Commissioner and the Offices of the Assistant Commissioners.

- PERMANENT. Transfer to FRC when 10 years old. Offer to the National Archives when 25 years old.
- b. Other Offices.
Destroy when 5 years old.
10. *Internal Administrative Files*. Administrative operations files of organizational offices, consisting of:
- a. Correspondence concerning routine or temporary internal administrative matters.
Destroy when 2 years old.
- b. Office personnel files.
Destroy after separation of employee.
- c. Completed requisitions for services, supplies and equipment, and travel documents.
Destroy 1 year after action is completed.
- d. Records pertaining to charity drives, bond campaigns, blood donations, and other voluntary activities.
Destroy on completion of program.
- e. Hand receipt files.
Destroy when property is accounted for.
- f. Suspense files.
Destroy when purpose is served.
- g. Chronological files.
Destroy when 2 years old.
11. *Program Planning and Evaluation Files*. Files showing the overall development of Patent and Trademark Office plans and the evaluation of their effectiveness. Included are one copy of each staff study, evaluation report, system study, and related correspondence and background materials.
PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 30 years old.
12. *Surplus Property Case Files*. Case files on disposal of surplus real and related personal property.
Transfer to FRC 3 years after close of file. Destroy 10 years after close of file.
13. *Excess Real Property Reports*. Reports of real property with related papers.
Destroy when 10 years old.
14. *Budget Policy and Procedure Correspondence Files*. Correspondence files showing Patent and Trademark Office policy and procedure governing budget administration, and reflecting expenditures for Patent and Trademark Office programs.
PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 25 years old.
15. *Budget Estimates Files*. File copies of budget estimated comprising appropriation language sheets, narrative statements, and related schedules and data.
PERMANENT. Transfer to FRC after 10 years. Offer to National Archives when 25 years old.
16. *Records Disposition Files*. Descriptive inventories, disposal authorizations, schedules for retirement of records and correspondence or memoranda relating to revisions.
PERMANENT. Offer to National Archives when 25 years old or when no longer needed, whichever is longer.
17. *Forms Files*. One copy of each form with data showing the inception and scope of the form, the program or administrative purpose of the form, and the related procedure instituted, revised, superseded, or canceled.
PERMANENT. Offer to National Archives when 25 years old or when no longer needed, whichever is longer.
18. *Systems Development Program Files*. Program documents, schedules, and correspondence pertaining to the execution, review, and analysis of Patent Office research and development programs, and relating to the general planning and supervision of the programs.
PERMANENT. Transfer to FRC 5 years after completion to program. Offer to National Archives 20 years later or when 25 years old, whichever is sooner.
19. *Systems Development Task Force, Committee, and Board Files*. Agendas, directives, minutes of meetings, and related papers, of Task Forces, Committees, Board, etc. of which the Patent Office serves as Secretary, or Chairman thereof.
PERMANENT. Transfer to FRC 5 years after close of file. Offer to National Archives 20 years later or after 25 years old, whichever is sooner.
20. *Technical Report Files*. One copy of each technical report of unpublished manuscript or report prepared in connection with a project, terminal narratives, statistical and graphic complications, summarizations, analyses, and related papers.

- PERMANENT. Transfer to FRC when 5 years old. Offer to National Archives when 25 years old.
21. *Systems Development Project Case Files*. Project case files reflecting a complete history of each project from initiation through research, development, design, and testing to completion.

PERMANENT. Transfer to FRC 5 years after completion or termination of project. Offer to National Archives when 25 years old.

ADP Records (also in GRS 20)

22. *ADP Planning Documents Files*. Planning documents consisting of master plan, feasibility studies with associated charts and diagrams, and supporting data that reflect on characteristics of the data automation activity.
PERMANENT. When no longer needed or used offer to National Archives with related materials.
23. *ADP Program Management Files*. Program management documents consisting of the development of plans, policy, and procedures governing the conversion of electrical machine operations and the supervision, control, coordination, and operation of the mechanization program.
PERMANENT. Offer to National Archives with related materials.
24. *ADP Standardizations Files*. Standardization files consisting of data elements and codes, standardization requests, and justification for all data systems developed by or for the Patent Office.
PERMANENT. Offer to National Archives with related materials.
25. *ADP Data Systems Planning Files*. Documents containing definition of the system.
PERMANENT. Offer to National Archives with related materials.
26. *ADP Information Retrieval System Master Reference File*. Magnetic media containing an index to patents and trademarks and publications.
PERMANENT. Offer to National Archives on termination of Patent and Trademark Office.
27. *Publication Tape File*. Magnetic media which are reproduced and disseminated as publication or used for reproducing a printed publication.
PERMANENT. Offer to National Archives when publication needs cease.

Patent Records

28. *Advertising Files*. Copies of proposed advertising matter, circulars, letters, cards, and related correspondence intended to solicit patent business and submitted by registrants as required by regulations.
Destroy when 25 years old.
29. *Complaint Files*. Case files relating to complaints made against attorneys registered to practice before the Patent Office.
Destroy on death of attorney.
30. *Board of Appeals Decisions Files*. Copies of Board of Appeals decisions with related background materials.
a. Cases patented.
Destroy 10 years after patent issued.
b. All others.
Destroy 10 years after appeal is decided.
31. *Indexes to Appeal Cases*. Indexes, arranged in various ways, to the appeal cases.
Destroy 30 years after date of appeal.
32. *Declaration of Assistance Received Files*. Form received from applicants showing assistance received, if any, in the preparation of application for patent (PTOL-284).
33. *Academy Lecture Files*. Lectures prepared by the Staff for presentation at the Academy. (These lectures are updated periodically to reflect the changing views of the Patent and Trademark Office)
a. Historical Sample
PERMANENT. Retain 1 copy of each basic lecture and of any major changes made to it. Offer to NARS when 25 years old.

- b. All other copies.
Destroy when obsolete.
34. *Academy Training Sessions Files*. Background materials relating to each session of the Patent Office Academy, including names of attendees and instructors, schedule of classes, evaluation sheets, and related materials.
PERMANENT. Offer to National Archives when 25 years old.
35. *Academy Examinations Files*. Completed examinations of persons attending the Academy.
Destroy when 1 year old.
36. *Academy Application Files*. Applications for training in the Academy, including memoranda of agreement and personal history statements.
Destroy when 2 years old.
37. *Academy Correspondence File*. Correspondence relating to the courses offered by the Patent Office Academy.
Destroy when 5 years old.
38. *Disclosure Document File*. Documents submitted by inventors as evidence of the date of conception of an invention.
a. Disclosure Documents referred to in a separate letter in a related patent application filed within two years.
Dispose of with related patent application.
b. Disclosure Documents not referred to.
Destroy when 2 years old.
39. *Disclosure Documents Index*. Cross-reference index to Disclosure Documents maintained by inventor's name and includes DD number and date of receipt.
Destroy with related DD's.
40. *Index to Patents Available for License or Sale*. Index created when a patent is made available for license or sale, issued to the U.S. Government or dedicated to the Public.
Destroy when no longer needed for reference.
41. *General Correspondence File*. Consists mainly of inquiries and requests for information and publications. Also includes correspondence regarding the "Register of Patents Available for License or Sale."
Destroy when 3 years old.
42. *Foreign Filing Licensing Documents*. Petitions to the Commissioner of Patents and Trademarks for license to file applications for patents in foreign countries.
Destroy 25 years after date of issue.
43. *Indexes to Foreign Filing Licensing Documents*. Indexes to licensing documents described in Item 43.
Destroy 25 years after issue.
44. *Transmittals to Other Agencies Files*. Copies of transmittal letters to other agencies enclosing correspondence and related enclosures sent to the Patent and Trademark Office for services rendered by other agencies, such as copyright information and requests for publications from the Government Printing Office.
Destroy when 1 year old.
45. *D-I Files*. Files relating to patent applications which may have a bearing on national security. Files usually consist of form listing serial number of application filing date, examining unit, title of invention, attorney assignee, and the concurrences listing the recommendation, signature, agency, and date; a memorandum summary indicating whether a secrecy order is required; the defense agency's request for a secrecy order; the secrecy order issued; and related materials.
Destroy 35 years after date of receipt for review.
46. *Drawing Correction Slips*. Index arranged by serial number of application and used to locate orders for correction of drawings.
Destroy when 2 years old.
47. *Inventor's Index to Patent Applications*. Index arranged alphabetically by name of the inventor. Each slip shows the inventor's name and residence, title of the invention, name and address of the attorney, application serial number and the filing date of the application.
PERMANENT. Offer to National Archives when no longer needed for reference.
48. *Numerical (serial) Index to Patent Applications*. Index arranged by the serial number assigned to the application.
PERMANENT. Offer to National Archives when no longer needed for reference.
49. *Assignment Document Files and Index*. Copies of documents assigning and transferring from one party to another the rights, title, and interest to trademarks and inventions and the letters patent obtained therefrom with related indexes.
PERMANENT. Offer to the National Archives when no longer needed for current business.
50. *Indexes to Government Interests*. Indexes to patents in which the Federal government has an interest by virtue of either of ownership of the application or resulting patent, thru assignment, or receipt of a license.
a. Government Agency Index.
PERMANENT. Offer to National Archives when no longer needed for reference.
b. Patent Number Index.
Destroy when no longer needed for reference.
c. Assignor Index.
Destroy when no longer needed for reference.
51. *Petitions to the Commissioner*. Petitions to the Commissioner concerning patent applications.
a. Original petitions in patent case file.
Dispose of with related case file.
b. Other copies.
Destroy when 2 years old.
52. *Patent Protest Letters*. Protest to the grant of a patent (Rule 291).
a. Letters filed in patent case file.
Dispose of with related case file.
b. Others.
Destroy when 5 years old.
53. *Patent Docket Cards*. Cards used to control patent applications.
Destroy when 6 months old.
54. *Classifications Definitions Files*. One copy of each issuance of Classifications Definitions, with related background papers.
PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 30 years old.
55. *Canceled Drawings*. Drawings that were canceled because they did not meet Patent and Trademark Office specifications. Copy of drawing is filed with application.
Destroy 5 years after filing date.
56. *Abandoned Patent Application Files*. Patent applications that did not result in a patent.
a. Those that are retained because they are referred to in another application that may have become patented.
Dispose of with patent file in which cited.
b. All others.
Destroy when 20 years old.
57. *Patent Files*. Case files showing the prosecution of application for, and the granting of, a patent. Includes the original application, copy of drawing, and all material relating to the prosecution of the application and subsequent actions by the Patent and Trademark Office.
a. Files selected by the Commissioner of Patents and Trademarks or the Archivist of the U.S.
PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 40 years old.
b. All others.
Destroy when 35 years old.
58. *Patent File Charge-out Records*. Record showing name of person charging out a patent file.
Destroy after file is returned and all papers are determined to be in file.
59. *Statistical Reports on Patents to Printers Files*. Weekly statistical report to management concerning the number of patents sent to the printers and the amount of backlog.
a. Original Report.
Destroy when 5 years old.
b. Operating Unit Copy.
Destroy when 2 years old.
60. *Quality Review of Sample of Allowed Applications*. Records relating to the examination of allowed applications sampled for quality review, includes query to the examining group and their reply.
Destroy 1 year after ultimate disposition of related case.
61. *Sample Pull-Rate Files*. Form showing which of the allowed applications are to be selected for the quality review sample, includes the pull rate and list of applications by serial number.
Destroy when 1 year old.

62. *Printer-Waiting Register Files*. Register showing status of Query Disposition Records return to a group for reply.
Destroy when 1 year old.
63. *Query Disposition Record Files*. Form used to return printer-waiting cases to a group for answer to a specific query.
Destroy 6 months after query is returned.
64. *Batch Control Sheet for Allowed Cases Files*. Form uses as input to PALM System showing routing control and batch contents, such as PTO Form 1238-1.
Destroy when 1 year old.
65. *Checklist for Applications Allowed by Examiner File*. Form used in completing a final review of allowed applications before sending to the printer, such as PTO Form 1167.
Destroy when 1 year old.
66. *Patent Interference Files*. Case files produced in the process of resolving of adjudicating conflicts arising between parties in this matter of priority of invention.
a. Cases that reach the hearing stage.
PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 40 years old.
b. Cases that are abandoned before reaching a hearing.
Destroy when 40 years old.
67. *Board of Interference Decisions*. Copies of Board of Interference Decisions.
PERMANENT. Offer to the National Archives when 40 years old.
68. *Index to Patent Interferences*. Arranged numerically by interference number. Shows names of parties involved, application serial number and/or patent numbers involved, subject of interference, sections, date of hearings, decisions rendered, and other remarks.
PERMANENT. Offer to National Archives when 40 years old.
69. *Index to Interference Exhibits*. Describes exhibits in each interference.
Destroy when 40 years old.
70. *Proceedings Under AEC and NASA Acts*. Separate series of interference files relating to the SEC and NASA Acts.
Dispose of with related patent files.
71. *Settlement Agreements*. Files relating to the settlement agreed to by parties in the interference.
Dispose of with related interference case file.
72. *Court Cases*. Proceedings in cases where the Commissioner is a party of a civil suit.
a. Cases selected by the Solicitor as being precedent setting or of historical or political significance.
PERMANENT. Offer to the National Archives when 30 years old.
b. All other cases.
Destroy when 30 years old.
73. *Index to Court Cases*. Card index to cases described under Item 72.
Retain in agency until no longer needed for reference.
74. *Roster of Registered Patent Attorneys and Agents*. Printout listing registered patent attorneys and agents.
Destroy after undated listing is received.
75. *Case Folders of Registered Attorneys and Agents*. Application folders of the attorneys, agents, or firms registered to practice before the Patent and Trademark Office.
Destroy on death of attorney or agent.
76. *Unsuccessful Application for Registration to Practice before the Patent and Trademark Office*. Application folders of those applicants who failed to be registered.
Destroy 5 years after date of examination.
77. *Examination Papers of Applicants for Registration*. Examination answer papers to applications for registration to practice before the Patent and Trademark Office.
Destroy after grades are recorded.

Trademark Records

78. *Trademark Examiners Work Reports*. Records showing amount of work processed by examiners in a given time. Used to evaluate examiners work and progress.
Destroy when 5 years old.
79. *Trademark Adversary Proceedings Files*. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.

- Destroy when 25 years old. Check with the Chairman of the Trademark Trial and Appeal Board before destruction. General Services should generate a list of files to be destroyed and send to the Search Room to destroy matching cards in Adversary Proceeding file.
80. *Canceled Trademark Registration Files*. Consists of original application and all related correspondence.
Destroy 2 years after the date of cancellation.
81. *Expired Trademark Registration Files*. Consists of original application and all related correspondence.
Destroy 2 years after expiration of registration.
82. *Abandoned Trademark Application Files*. Consists of original application and all related correspondence.
Destroy 2 years after date of abandonment.
83. *Trademark Renewal Index*. Index to trademark registrations that are renewed.
PERMANENT. Offer to National Archives when no longer needed for reference.
84. *Indexes to Trademark Applications*. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.
a. Applicant's Index.
PERMANENT. Offer to National Archives when no longer needed for reference.
b. Serial Index.
PERMANENT. Offer to National Archives when no longer needed for reference.
85. *Proceedings Index to Trademark Adversary Proceedings*. Index in the Trademark Public Search Library arranged by type of proceeding.
Destroy card from list sent by the Warehouse after matching Adversary Proceeding file is destroyed.
86. *Trademark Adversary Proceedings Records*. Card file maintained at the Trademark Trial and Appeal Board, showing records of Trademark Adversary Proceedings, with information on mark, parties, disposition, termination date, etc.
PERMANENT. Offer to National Archives when no longer needed for reference.
87. *Trademark Registrant's Index*. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.
PERMANENT. Offer to National Archives when no longer needed for reference.
88. *Index to Trademark Trial and Appeal Board Ex Parte Cases*. Record of Trademark Trial and Appeal Board cases in ex parte appeals.
PERMANENT. Offer to National Archives when no longer needed for references.
89. *Public Advisory Committee for Trademark Affairs Files*. Agenda, minutes, correspondence, reports, working papers, reference materials, and related supporting files.
Destroy when 10 years old or no longer needed for reference.
90. *Trademark Petitions Files*. Petitions and decisions to the Commissioner relating to trademarks, with related materials.
a. Original Petitions in trademark case file.
Dispose of with related case file.
b. Copies of petition decisions in petition number order and in subject order in the Assistant Commissioner's Office.
PERMANENT. Offer to the National Archives when no longer needed for references.
c. Other copies.
Destroy when 2 years old.
91. *Trademark Protest Letters*. Letters of protest to the Commissioner related to trademarks.
Destroy when no longer needed or when three years old, whichever is earlier.

Public Information and Service Records

92. *International Intellectual Property Activities Case Files*. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the

- world; and other materials relating to international affairs.
PERMANENT. Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
93. *Proposed Intellectual Property Legislation Files*. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.
PERMANENT. Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
94. *Printed Articles Files*. Articles submitted for clearance and printed in magazines, journals, and other information media, including related background materials.
Destroy when 10 years old.
95. *Public Affairs Report*. Weekly, monthly, and quarterly reports relating to public affairs activities prepared for the Department of Commerce.
Destroy when 6 months old.
96. *Speakers Files*. Correspondence, schedules, travel material and related records concerning the scheduling of Patent and Trademark Office speakers.
Destroy when 3 years old.
97. *Exhibit Files*. Correspondence, photographs, reports and related materials concerning major exhibits developed by the Patent and Trademark Office, such as the 175th anniversary exhibit.
PERMANENT. Transfer to FRC when 10 years old. Offer to the National Archives when 30 years old.
98. *Photograph Files*. Photographs of key Patent and Trademark Office officials, major exhibits and other subjects that related to the functioning of the Patent and Trademark Office. Includes the negative and one positive print.
PERMANENT. Offer for transfer to the National Archives when 20 years old.
99. *Publications Files*. Official record copy of each publication that contributes to an understanding of the organization and functioning of the Patent and Trademark Office.
PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 30 years old.
100. *Speech Files*. Official records copy of each speech given by the Commissioner and other Patent and Trademark Office executives.
PERMANENT. Transfer to FRC when 10 years old. Offer to the National Archives when 30 years old.
101. *News Release Files*. Official records copy of each new release.
PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 30 years old.
102. *Patents Received and Files Register*. Register showing date and number of patent cases received in search room and date filed.
Destroy 2 years after date of last entry in volume.
103. *Reports on Search Room Activities Files*. Weekly, monthly and other periodic reports showing production and general activities of the public search room, with related background papers.
a. Original Report.
Destroy when 1 year old.
b. Operating Office Copy.
Destroy when 2 years old.
104. *Patent and Trademark Reproduction Copy Files*. The master copy of patents and trademarks used for the photoreproduction of sales copies, includes original drawings and specifications.
Transfer to FRC when 10 years old. Destroy when 20 years old.
105. *Reprint Requisition File*. Requisitions, such as PTO Form 228, used for ordering the reprint or printed patents or trademarks after current stock is depleted.
Destroy when 1 year old.
106. *Sales Journal*. Shows statistical information on sales of copies of patents and trademarks.
Destroy when 5 years old.
107. *Correspondence and Sale Control Records*. Records used to control the flow of correspondence and sale of printed materials.
Destroy when 1 year old.
108. *Requests for Publications*. Correspondence requesting copies of certain publications and other printed materials.
Return requests with ordered materials.
109. *Microform Files*. Microform copies of applications as filed, printed patent files and printed trademark files.
a. Master microfilm files. (Certified as processed under 41 CFR 101-11.504)
PERMANENT. Transfer to classified site. Offer to National Archives when 25 years old.
b. All other microform copies
Non-Records
110. *Charged-Out Slips File*. Slips recording the charge-out of records to Patent and Trademark Office employees and the public, such as PTO Forms 124, 125, and 271.
Destroy when records are returned.
111. *Binding Instructions*. Cards showing instructions on how the various publications received by the library are to be bound.
Destroy when no longer needed.
112. *Charge-out Files of Library Materials*. Sets of 3"x 5" cards showing records of library materials on temporary or indefinite loan to researchers or Patent and Trademark Office staff.
Destroy when obsolete or on return of book.
113. *Interlibrary Loans Files*. Records of books borrowed from other libraries.
Destroy 2 years after return of book.
114. *Library Serial Order Cards*. 3"x 5" cards used to record purchase of journals, magazines, etc.
Destroy when no longer needed for reference.
115. *Library Book Order Cards*. 3"x 5" cards showing book purchases.
Destroy when no longer needed for reference.
116. *Foreign Patent Accession Register*. Bound volumes arranged by country. Each shows the patent number and the date that copy was received in the Patent and Trademark Office.
Destroy when no longer needed for reference.
117. *Inventor's Index*. Arranged alphabetically by name of inventor. Shows name and address of inventor, title of invention, serial number of application, patent number, date of issuance, attorney, and assignee.
PERMANENT. Offer to National Archives when no longer needed for reference.
118. *PTO Procurement Files*. Contract, requisition, purchase order, lease, and bond and surety records, including correspondence and related papers pertaining to award, administration, receipt, inspection and payment (other than those covered in Items 1, 2, 13, and 15).
a. Procurement or purchase organization copy, and related papers.
1. Transactions of more than \$10,000 and all construction contracts exceeding \$2,000.
Destroy 6 years and 3 months after final payment.
2. Transactions of \$10,000 or less and construction contracts under \$2,000.
Destroy 3 years after final payment. (Close file at the end of the fiscal year, retain 3 years and destroy, except that files on which actions are pending shall be brought forward to the next fiscal year's files for destruction therewith.)
b. Obligation copy.
Destroy when funds are obligated.
c. Other copies of record described above used by component elements of a procurement office for administrative purposes.
Destroy upon termination or completion.
119. *Solicited and Unsolicited Bids and Proposals Files*.
a. Successful bids and proposals.
Destroy with related contract case files (see item 118 of this schedule.)
b. Solicited and unsolicited unsuccessful bids and proposals.
1. When filed separately from contract case files.
Destroy when related contract is completed.
2. When filed with contract case files.
Destroy with related contract case files (see item 118 of this schedule.)
c. Cancelled Solicitations Files.
1. Formal solicitations of offers to provide products or services (e.g., Invitations for Bids, Requests for Pro-

- posals, Requests for Quotations) which were cancelled prior to award of a contract. The files include presolicitation documentation on the requirement, any offers which were opened prior to the cancellation, documentation on any government action up to the time of cancellation, and evidence of the cancellation.
Destroy 5 years after date of cancellation.
2. Unopened Bids.
Return to bidder.
d. Lists or Card Files of Acceptable Bidders.
Destroy when superseded or obsolete.
120. *Public Printer Files*. Records relating to requisitions on the Printer, and all supporting papers.
a. Printing procurement unit copy of requisition, invoice, specifications, and related papers.
Destroy 3 years after completion or cancellation of requisition.
b. Accounting copy of requisition.
Destroy 3 years after period covered by related account.

Non Record Materials

The Records Disposal Act of 1943, as amended, states that "library and museum material made or acquired and preserved solely for reference or exhibition purposes, extra copies of documents preserved only for convenience of reference, and stocks of publications and of processed documents are not included within the definition of the word 'records' as used in this Act." Non-record material is disposed of as soon as its purpose is served. The following list consists of those non-record materials that are unique to the Patent and Trademark Office.

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[1068 TMOG 5]

(183) **U.S. DEPARTMENT OF COMMERCE**
Office of the Assistant Secretary and Commissioner
of Patents and Trademarks

**PUBLIC ADVISORY COMMITTEE
FOR TRADEMARK AFFAIRS**

Agency: Patent and Trademark Office, Commerce
Action: Notice of Committee Charter Amendment
Summary: In accordance with the provisions of the Federal Advisory Committee Act, 5 U.S.C. App. (1976), and after consultation with GSA, it has been determined that an amendment of the charter of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law. The charter amendment was signed on December 3, 1990.

The charter has been amended as follows to: (1) broaden the topics that the Committee may address to include international trademark law, (2) allow the membership of the Committee to be drawn from a wider range of the trademark community rather than solely from the regular, associate and supplementary membership of the United States Trademark Association (USTA), (3) increase the number of members on the Committee from 15 to 18, (4) provide for the direct selection of the members and appointment of the chairman of the Committee by the Assistant Secretary and Commissioner of Patents and Trademarks rather than by the president of the USTA, and (5) set the term of membership at two years.

For Further Information Contact: Lynne Beresford, Committee Control Officer, Office of the Assistant Commissioner for Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231, telephone: (703) 557-7464, or Jan Jivatodi, Committee Management Analyst, U.S. Department of Commerce, Washington, D.C. 20230, telephone: (202) 377-4217.
Supplementary Information: The Committee was first established in September 1970, and the latest charter renewal was signed on April 4, 1990. The charter amendment was approved on December 3, 1990, and provides for the following:

(1) The amendment broadens the objectives and duties of the Committee to specifically embrace international trademark law. The previous charter permitted the Committee to advise the Patent and Trademark Office only on the steps which could be taken to increase the efficiency and effectiveness of the administration of the Trademark Act and to provide a continuing source of knowledge from the private sector to the Government. Given the increased interest within the trademark community and the Patent and Trademark Office in international trademark law, especially in the Madrid Protocol and harmonization, it is desirable that the charter refer explicitly to international trademark law.

(2) Section 5(b)(2) of the Federal Advisory Committee Act requires that the membership of advisory committees be "fairly balanced in terms of the points of view represented...." The amendment furthers that goal by permitting the membership to be drawn from a wide range of the trademark community including users of the public search room, academia, members of the public at large, and the business community.

(3) The amendment increases the number of members on the Committee from 15 to 18. The increase was needed to permit additional members, from different sectors of the trademark community, to be added to the Committee without having to displace any of the current Committee members.

(4) Section 5(b)(2) of the Federal Advisory Committee Act requires that "the membership be fairly balanced in terms of

the points of view represented...." The amendment furthers that goal by permitting the chairman to be appointed, and the members of the Committee to be selected by the Assistant Secretary and Commissioner of Patents and Trademarks.

(5) The charter of the Public Advisory Committee for Trademark Affairs did not set terms for members. In order to promote more orderly administration of the Committee, the amendment sets the terms of the members at two years. Members will serve at the discretion of the Assistant Secretary and Commissioner of Patents and Trademarks. Appointments, when vacancies occur, shall be for the remainder of the unexpired term.

Jan. 16, 1991 **HARRY F. MANBECK, Jr.**
*Assistant Secretary and Commissioner
of Patents and Trademarks*

[1123 TMOG 20]

(184) **U.S. Department of Commerce**
**Office of the Assistant Secretary and Commissioner
of Patents and Trademarks**

Public Advisory Committee for Trademark Affairs

Agency: Patent and Trademark Office, Commerce
Action: Notice of Renewal

Summary: In accordance with the provisions of the Federal Advisory Committee Act, 5 U.S.C. App. (1976), and after consultation with GSA, it has been determined that the renewal of the charter of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.
Supplementary Information: The Committee was first established in September 1970, and its latest renewal was signed on April 3, 1992. The Committee's purpose is to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing source of knowledge from the private sector to the Government in the area of international and domestic trademark law.

Committee members are drawn from the trademark bar, business and industry, academia, the public at large, and users of the public search room, and are selected by the Assistant Secretary of Commerce and the Commissioner of Patents and Trademarks to assure a balanced representation among members of the trademark community. The Committee will function solely as an advisory body, and in compliance with the provisions of the Federal Advisory Committee Act.

For Further Information Contact: Lynne Beresford, Committee Control Officer, Office of the Assistant Commissioner for Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231, telephone: (703) 305-9464, or Jan Jivatodi, Committee Management Analyst, U.S. Department of Commerce, Washington, D.C. 20230, telephone: (202) 377-4299.

April 24, 1992 **HARRY F. MANBECK, Jr.**
*Assistant Secretary and Commissioner
for Patents and Trademarks*

[1138 TMOG 58]

JANUARY 3, 1995

U.S. PATENT AND TRADEMARK OFFICE

1170 OG 337
(185)

(185) **Advisory Committee for Patents and
Trademarks; Establishment**

In accordance with the provisions of the Federal Advisory Committee Act (5 U.S.C. App. 2.) and General Services Administration Interim Rule on Federal Advisory Committee Management, 41 CFR Part 101-6, as amended, and after consultation with GSA, the Secretary of Commerce has determined that the establishment of the Advisory Committee for Patents and Trademarks is in the public interest in connection with the performance of duties imposed on the Department by law.

1. The Committee will advise the Patent and Trademark Office on broad policy issues involving both patents and trademarks, and the overall operation of the Office including matters concerning office-wide Automation programs.

2. The Committee will consist of at least 10 but no more than 18 members to be appointed by the Assistant Secretary and Commissioner of Patents and Trademarks to assure a balanced representation among patent and trademark attorneys, corporate executives, technical research directors, inventors, the judiciary, professional patent and trademark searchers, information specialists and publishers, automation experts, consumer groups, entrepreneurs, and educators. The Committee will function solely as an advisory body and in compliance with the provisions of the Federal Advisory Committee Act. Its charter will be filed under the Act, 15 days from the date of the publication of this notice.

Interested persons are invited to submit comments regarding the establishment of the Advisory Committee for Patents and Trademarks. Such comments, as well as any inquiries, may be addressed to the Executive Assistant to the Assistant Secretary and Commissioner of Patents and Trademarks, U.S. Department of Commerce, Washington, D.C. 20231, phone: 703-557-3071, or the Department's Committee Management Analyst, phone: 202-377-4217.

Nov. 14, 1986 **DONALD J. QUIGG**
*Assistant Secretary and
Commissioner of Patents and Trademarks*

[FR Doc. 86-26451 Filed 11-21-86; 8:45 am]
BILLING CODE 3510-16-M

[1073 TMOG 5]

(186) **Patent and Trademark Office
Performance Review Board Membership**

Agency: Patent and Trademark Office, Commerce

Action: Announcement of Membership of the Patent and Trademark Office Performance Review Board

Summary: In conformance with the Civil Service Reform Act of 1978, 5 U.S.C. 4314 (c) (4), the Patent and Trademark Office is modifying the composition of its Performance Review Board to achieve the maximum possible degree of fairness and equity in the process of appraising, rating and rewarding the performance of senior executives and employees in the Senior-Level and Administratively-Determined pay categories.

This notice (1) announces the appointments of three new members of the Performance Review Board; and (2) establishes rotational term limits for each member to assure consistency, stability and objectivity in the performance appraisal process.
Address: Comments should be addressed to Director, Office of Human Resources, Patent and Trademark Office, One Crystal Park, Suite 700, Washington, D.C. 20231.

For Further Information Contact: Colleen Woodard at the above address or telephone (703) 305-8062.

Supplementary Information: The Patent and Trademark Office Performance Review Board is comprised of the following individuals:

Bradford R. Huther, Chairperson
Associate Commissioner
and Chief Financial Officer
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1996

Theodore Morris (New Member)
Director, Patent Examining Group 1500
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1996

Carol C. Darr
Associate Administrator,
Office of International Affairs
National Telecommunications
and Information Administration
Department of Commerce
Washington, D.C. 20230
Term - expires September 30, 1995

Nicholas P. Godici (New Member)
Director, Patent Examining Group 3200
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1996

Paula J. Schneider (New Member)
Principal Associate Director for Programs
Office of the Director
Bureau of the Census
Washington, D.C. 20233
Term - expires September 30, 1996

J. O. Thomas
Deputy Assistant Commissioner
for Patent Process Services
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1995

Karl E. Bell
Deputy Director of Administration
National Institute of Standards
and Technology
Gaithersburg, Md. 20899
Term - expires September 30, 1995

Belkis Leong-Hong
Director, Center for Information Management
Defense Information Systems Agency
Falls Church, Va. 22041
Term - expires September 30, 1996

Gerald R. Lucas
Director, Eastern Administrative
Support Center
Department of Commerce
Norfolk, Va. 23510
Term - expires September 30, 1996

BRADFORD R. HUTHER
*Acting Assistant Secretary of Commerce and
Acting Commissioner of Patents and Trademarks*

[1167 TMOG 97]

(187) **Certified Copies of Trademark
Applications/Registrations**

The Trademark Operation is in the process of microfilming its records and, as this proceeds, requests for certified copies of applications and, eventually, registrations, will be furnished from the microfilmed records. Such certified copies will not contain copies of the file jacket.

Jan. 17, 1984 **MARGARET M. LAURENCE**
*Assistant Commissioner
for Trademarks*

[1039 TMOG 140]

(188) **Notice of a Change in Procedure Regarding Requests for Certification Services**

The purpose of this notice is to inform the trademark community of a change of address for all requests for certification services and to amend in part a previous notice entitled "Expedited Services for Certified Copies of Trademark Registration" published at 1070 TMOG 4 (Sept. 16, 1986).

All requests for certified and uncertified copies of trademark documents pertaining to applications and registrations (i.e., application files, file wrappers, trademark title and status reports, registrations, etc.) must now go to the Certification Division, Office of Public Records, at the following mailing address:

Commissioner of Patents and Trademarks
Box 10, Certification Division
Washington, D.C. 20231

Requests can also be **hand-carried** to any of the following three locations:

Attorney's Window
Crystal Plaza 4, First Floor
Arlington, Virginia 22202

Attorney's Window
South Tower, Second Floor
2900 Crystal Drive
Arlington, Virginia 22202

Office of Public Records
North Tower, Tenth Floor
2800 Crystal Drive
Arlington, Virginia 22202

In addition, requests with deposit account orders can be transmitted by **facsimile transmission** to (703) 308-7048.

There will no longer be a limit on the number of requests for certified trademark documents.

Turnaround times for all requests, except requests for regular service for certified copies of trademark registrations, will remain unchanged and will be based upon the date of receipt by the Certification Division. Requests for certified copies of trademark registrations will be processed and mailed back to the requester within ten calendar days from the date of receipt by the Certification Division from the Patent and Trademark Office mail room. Requests for expedited services for certified copies of trademark registrations will continue to be processed and mailed back to the requester within three working days after they are received by the Certification Division from the Patent and Trademark Office mail room.

Requests for **negative certificates** will continue to be handled by the Post Registration Section of the Office of Trademark Services.

Requests mailed to the prior address will be forwarded to the Certification Division. General inquiries should be made to the above mailing address or to the Special Handling Section, Certification Division, at (703) 308-9726.

July 1, 1994 PHILIP G. HAMPTON, II
Assistant Commissioner
for Trademarks

[1165 TMOG 13]

(189) **Change in Legal Holidays**

The Commissioner's Notice of Sept. 25, 1979, "Change in Legal Holidays," is hereby rescinded in view of Public Law 98-144, enacted Nov. 2, 1983, which amended the listing of legal public holidays in 5 USC § 6103. That amendment took effect in 1986 and added a new legal holiday relating to the birthday of Martin Luther King, Jr. This new holiday is designated for the third Mon. in Jan.

Section 6103, as amended, reads as follows:

New Year's Day, Jan. 1
Birthday of Martin Luther King, Jr., the third Mon. in Jan.
Washington's Birthday, the third Mon. in Feb.
Memorial Day, the last Mon. in May
Independence Day, July 4
Labor Day, the first Mon. in Sept.
Columbus Day, the second Mon. in Oct.
Veterans Day, Nov. 11
Thanksgiving Day, the fourth Thurs. in Nov.
Christmas Day, Dec. 25.

Each of the holidays enumerated will constitute a "Federal holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code. In accordance with 37 CFR 1.6(a) and 1.10(a), the Patent and Trademark Office will not receive papers on these holidays. Actions required to be taken on such days may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

July 15, 1986

DONALD J. QUIGG
Assistant Secretary and
Commissioner of Patents
and Trademarks

[1069 TMOG 5]

(190) **Filing of Papers During Unscheduled Closings of the Patent and Trademark Office**

When the Patent and Trademark Office is officially closed by Executive Order of the President or by the Office of Personnel Management for an entire day because of some unscheduled event, such as adverse weather conditions, the Patent and Trademark Office will consider that day as a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on the next succeeding business day on which the Patent and Trademark Office is open. When the Patent and Trademark Office is open for business during any part of a business day between 8:30 a.m. and 5:00 p.m., papers are due on that day even though the Office may be officially closed for some period of time during the business day because of an unscheduled event. The procedures of 37 CFR 1.8 or 1.10 may be used, as appropriate, for the filing of papers. On any day the Office is open for at least part of the day, papers may also be deposited up to midnight in any boxes which are provided by the Patent and Trademark Office under 37 CFR 1.6(c).

Feb. 11, 1987

DONALD W. PETERSON
Acting Assistant Secretary
and Commissioner of Patents
and Trademarks

[11076 TMOG 6]

(191) **Closing of Patent and Trademark Office on Thursday, January 20, 1994 and Friday, February 11, 1994**

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on January 20, 1994 and February 11, 1994, the Patent and Trademark Office will consider each of those days a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due on either of those days will be considered as timely for the purpose of, e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on the next succeeding business day on which the Patent and Trademark Office was

open (i.e., Friday, January 21, 1994, and Monday, February 14, 1994, respectively).

March 10, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1161 TMOG 12]

(192) **Closing of Patent and Trademark Office on Wednesday, April 27, 1994**

In view of the fact that Federal government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, were officially closed on April 27, 1994, the day proclaimed by President Clinton as a National Day of Mourning, the Patent and Trademark Office will consider April 27, 1994 a "holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due that day will be considered as timely for the purposes of e.g., 35 U.S.C. §§ 119, 133 and 151, if the action is taken, or fee paid, on April 28, 1994.

May 2, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1162 TMOG 104]

(193) **New Telephone Numbers for Patent and Trademark Office Organizations Located in North and South Tower Buildings**

With the exception of the Office of the Assistant Commissioner for Trademarks, all offices of the trademark section of the U.S. Patent and Trademark Office are relocating to buildings known as the South Tower and North Tower, respectively located at 2900 and 2800 Crystal Drive, Arlington, Va. 22202. New telephone numbers have been assigned to all of the relocated offices, as follows:

SOUTH TOWER BUILDING

ORGANIZATION	FLOOR	TELEPHONE NUMBER
Director, Trademark Examining Operation	10	(703) 308-9000
Law Office 3	4	(703) 308-9103
Law Office 4	5	(703) 308-9104
Law Office 5	5	(703) 308-9105
Law Office 6	5	(703) 308-9106
Law Office 7	6	(703) 308-9107
Law Office 8	6	(703) 308-9108
Law Office 9	6	(703) 308-9109
Law Office 10	7	(703) 308-9110
Law Office 11	7	(703) 308-9111
Law Office 12	7	(703) 308-9112
Law Office 13	8	(703) 308-9113
Law Office 14	8	(703) 308-9114
Law Office 15	8	(703) 308-9115

Trademark Trial and Appeal Board 9 (703) 308-9300

Applications Section; Publication and Issue Section 3 (703) 308-9400

ITU/Divisional Unit; Post-Registration Section; Trademark Services Division 10 (703) 308-9500

Trademark Search Library 2 (703) 308-9800

Trademark Assignment Search Room (for information on obtaining certified copies of trademark assignments) (703) 308-9850

(trademark assignment search information) (703) 308-9855

NORTH TOWER BUILDING

Office of Trademark Quality Review 9 (703) 308-9600

Applicants and attorneys should continue to address correspondence to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, as the official address of the Office will remain the same. The telephone number for the Trademark Status Line, (703) 557-8747, is unchanged.

April 17, 1991 JEFFREY M. SAMUELS
Assistant Commissioner
for Trademarks

[1126 TMOG 21]

(194) **Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities and Enforcement Procedures**

Agency: Patent and Trademark Office, Department of Commerce

Action: Notice

Summary: The Patent and Trademark Office is revising its regulations relating to use of Patent and Trademark Office records or search facilities and procedures for enforcing these regulations. These regulations and their enforcement are necessary to promote an atmosphere conducive to research and to maintain the integrity of the files and records in the Patent and Trademark Office.

Effective Date: July 1, 1987

For Further Information Contact: Theresa A. Brelsford, Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557-2290.

Supplementary Information: The procedures will apply to all visitors to the Patent and Trademark Office.

Visitors are reminded that unauthorized removal of government material or property may be prosecuted as a criminal felony under the provisions of 18 U.S.C. 2071, in addition to the imposition of administrative sanctions contained in these procedures.

Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities

These regulations are established for all persons using the facilities of the Patent and Trademark Office (PTO), and will be appropriately enforced as specified herein.

Smoking within PTO is prohibited except in designated areas (41 CFR 101-20.109-10).

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge of the General Services Administration which appear in 41 CFR Subpart 101-20.3 (41 CFR §§ 101-20.300 through 101-20.315).

Packages, briefcases and other personal effects brought into the PTO, as well as storage lockers provided for general use, are subject to search by authorized personnel for reasonable cause under the provisions of 41 CFR 101-20.301.

Unauthorized removal of PTO files, documents, reference materials, or any government property is prohibited. In addition to the administrative sanctions specified in these regulations, violators may also be subject to arrest and prosecution under the provisions of 18 U.S.C. 2071 which carries a possible "fine of \$2,000 or imprisonment for not more than three years, or both", and/or the violator may be subject to discipline under the PTO Code of Professional Responsibility if he or she is a practitioner as defined in 37 CFR 10.1(r).

All persons must comply with posted Official Notices and with verbal requests made by PTO personnel for compliance with these regulations.

1. User Passes

- Individuals visiting any area of the PTO must obtain a valid, non-transferable user pass and wear it visibly displayed at all times while on the premises. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first Permanent User Pass is issued at no charge. Permanent User Passes subsequently issued as replacements will be provided at a charge of \$5.00 per Pass. The holder of a Permanent User Pass may be issued one (1) Temporary User Pass, within a ninety (90) day period at no charge. A request for a second Temporary User Pass during the same ninety day period will require the purchase of a Permanent User Pass at the required replacement fee.
- Temporary User Passes may be obtained by visitors at no charge from the managers of the Patent or Trademark Public Search Rooms and are valid through the expiration date stamped thereon.
- Permanent and Temporary User Passes must be surrendered to the PTO upon request for cause.

2. Use of Search Areas

- The Patent and Trademark Office facilities may be used by visitors only during the hours specified, Monday through Friday, and are closed to the public on Saturdays, Sundays and Legal Holidays:
 Patent Public Search Rm.,
 Mezzanine and Microfilm
 Center 8:00 a.m.-8:00 p.m.*
 Trademark Public Search Rm., 8:00 a.m.-5:30 p.m.*
 Assignment Search Rm.,
 Public Service Center, and Scientific
 Library 8:30 a.m.-5:00 p.m.*
 Patent Examining Organizations
 Trademark Examining
 Law Offices and all other public access areas of the
 PTO 8:30 a.m.-5:00 p.m.*

* Cleaning of these areas would begin prior to this time to ensure all visitors are out of the building by the time designated.

- Materials available for search purposes in the Patent and Assignment Search Rooms and patent application file histories shall not be removed from those areas.
- Trademark registrations in the Trademark Search Library shall not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.
- Trademark files shall not be removed from PTO space in Crystal Plz. Bldg. 2.
- Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
- Visitors to a Patent Examining Group Search Area must register with the designated Group Search Area representative indicating the times entering and leaving the area, User Pass number, and the class(es) and subclass(es) to be searched.

- Documents removed from the files of Patent Examining Group search areas must be immediately returned to their proper location after use. Documents shall not be removed from the area in which they were obtained without specific written authorization from a Group Director or Supervisory Patent Examiner in the Examining Group where the material(s) reside. Such authorization will not be given for U.S. Patents and other material readily available through the Scientific Library.

3. PROHIBITIONS

The following are prohibited:

- Conduct which is rude or abusive to PTO employees or others.
- Smoking and consumption of food or beverages in other than designated areas.
- Loud talking or any conduct which may be disruptive to others.
- Use of radios, televisions, typewriters, photographic equipment, dictation equipment and other mechanical, electrical or electronic items without specific authorization from an Assistant Commissioner of the PTO.
- Improper use, mutilation, destruction or unauthorized removal of PTO records, documents or government property.
- Reserving seats or work areas.
- Affixing messages to walls, telephone booths or other government property, except designated message boards.
- Use of the PTO as a mailing address, use of PTO stationery, and use of PTO emblem or seal.
- Use of PTO telephones and other office equipment, such as copiers, etc., except where specifically provided for public use. This includes the use of PTO telephones to receive incoming calls.
- Use of any computer terminal other than the TRAM terminals provided for public use in the Trademark Search Library, and the CASPIR and FOUR-PHASE terminals (or CASSIS terminal if the FOUR-PHASE terminals are not operating) provided in the Patent Public Search Room for public use.
- Placing PTO files or documents, government property or government owned reference materials in rental storage lockers.
- Use of rental storage lockers without depositing the required fee or holding the key to a storage locker beyond the specified maximum period of use.

[1079 TMOG 7]

(195) Procedures for Enforcement of the Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities

Under applicable statutes and regulations, including 40 U.S.C. 486(c), 41 CFR 101-20.3, and appropriate sections of Department Organization Orders 10-14 and 30-3 of the Department of Commerce, the procedures appearing below are established.

- Violations involving unauthorized removal of PTO files, documents, records or government property.
 - Each observed or reported violation will be investigated.
 - Persons found in possession of PTO material or government property, other than in areas or under circumstances where possession is specifically authorized, shall be required to immediately surrender the material or property and if appropriate, their User Pass. An oral explanation for the possession of such material or property will be requested by the PTO.
 - Each incident involving unauthorized possession of PTO material or government property shall be immediately reported by telephone or in person to the Office or Group Director of the area from which the material or property was taken.

- If it appears to the Office or Group Director that possession of the materials was inadvertent or otherwise unintentional, no further action will be taken. The materials will be replaced appropriately and the person's User Pass will be returned.
- If it appears to the Office or Group Director that possession of the materials was intentional, all persons involved shall be required to submit written statements detailing the circumstances and, in the case of a PTO User/visitor, show cause why the User Pass and visitor privileges should not be suspended or revoked. Statements will also be obtained from other witnesses where appropriate. The material or property shall be secured for possible use as evidence by the Office or Group Director, if appropriate.
- If the involved person possesses a Permanent User Pass, it shall be retained and forwarded with the written statements to the Assistant Commissioner for Administration. A Temporary User Pass may be issued as replacement by the Assistant Commissioner for Administration, pending action on an alleged violation.
- If the involved person possesses only a Temporary User Pass it shall be retained and forwarded with the written statements to the Assistant Commissioner for Administration within two weeks of the incident. No replacement will be provided pending action by the Assistant Commissioner for Administration.

2. Other violations of public use regulations.

- Each observed or reported violation will be investigated. The persons involved shall be informed of the nature of the violation and requested to comply with regulations.
- If it appears that the violation was inadvertent or otherwise unintentional and the involved person immediately conforms to the regulations, no further action will be taken.
- If the violation appears to be intentional or if the person involved refuses to comply with a verbal request from a PTO employee or continues to violate the regulations after being requested to comply, the person shall be required to surrender his or her User Pass to the PTO. A written report of each violation and the User Pass will be submitted to the Assistant Commissioner for Administration for a final decision. User Pass replacement procedures shall be as specified in paragraphs 1.f. or 1.g.
- If the Assistant Commissioner for Administration determines that a reported violation was inadvertent or otherwise not intentional, the User Pass will be returned and no further action will be taken. In all other cases, the Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass and visitor privileges should not be suspended or revoked.
- A written decision will be rendered by the Assistant Commissioner for Administration after consideration of any timely submitted response.
- In the case of a written decision by the Assistant Commissioner for Administration adverse to a practitioner as defined by 37 CFR 10.1(r), a copy of the written decision will be forwarded to the Director of the Office of Enrollment and Discipline for whatever further action, including sanctions, as may be appropriate under the PTO Code of Professional Responsibility.

3. Factors to be Considered in Assessing Penalties.

- Penalties will be determined on a case by case basis.
- Prior violations of regulations will be considered when assessing whether any violation is willful, deliberate or intentional, and when determining the penalty to be imposed.
- Penalties may be assessed as follows, depending on circumstances:
 - For a first offense: from a written warning to a 30 day suspension of the User Pass and visitor privileges.
 - For a second offense: a suspension of the User Pass and visitor privileges from 5 days to one year.
 - For a third or subsequent offense: from a suspension of 30 days to permanent revocation of the User Pass and visitor privileges.

- For any single serious or aggravated violation: suspension of the User Pass and visitor privileges for up to one year or permanent revocation of the User Pass and visitor privileges. A serious or aggravated violation is defined as any instance involving multiple violations of regulations during a single event or acts which also constitute a violation of Federal or local criminal law.

4. Record of Penalties Imposed.

A record of penalties imposed for given violations will be maintained by the Assistant Commissioner for Administration. These records will be made available to the public upon request.

5. Use of Public Facilities During Suspension or After Revocation of User Pass.

No individual will be permitted to use the facilities specified in these regulations while his or her User Pass is suspended or revoked.

6. Absence of Assistant Commissioner for Administration.

In the absence of the Assistant Commissioner for Administration, the Deputy Assistant Commissioner for Administration will carry out the responsibilities assigned by these regulations.

7. Absence of Designated PTO Officials.

In the absence of any Designated PTO Official, a Deputy or Acting Official will carry out the responsibilities assigned by these regulations.

8. Assistance.

PTO employees may, when necessary, request the Security Officer of the Patent and Trademark Office or the Federal Protective Service or their contractors to provide assistance in carrying out their assigned responsibilities in paragraphs 1 and 2.

9. Appeals.

Decisions rendered by the Assistant Commissioner for Administration may be reviewed on petition to the Commissioner.

May 11, 1987

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

[1079 TMOG 8]

(196) Rules Concerning Conduct on Patent and Trademark Premises

1. Applicability

These rules apply to all premises under the charge and control of the U.S. Patent and Trademark Office (PTO) through the General Services Administration and to all persons entering such premises.

2. Admission to Property

Patent and Trademark Office facilities are closed to the public outside of normal working hours. During normal working hours, a valid User Pass is required to enter PTO premises.

The individual's User Pass must be displayed at all times while on PTO premises.

3. Preservation of Property/Conduct on PTO Premises

The following activities are prohibited on PTO premises:

- Improperly disposing of rubbish; willfully destroying or damaging property; theft of property; creating a hazard to

persons or things; and placing Government documents or materials in storage lockers.

b. The willfull and unlawfull concealment, removal, mutilation, obliteration or destruction, or attempts to do so, or, with intent to do so, or taking and carrying away of any record, book, paper, document, or other things from the facilities shall result in a fine of not more than \$2,000 or imprisonment of not more than 3 years, or both. See 18 U.S.C. § 2071.

c. Removal of papers, materials, or other Government property from designated areas. Within a designated area, papers or other Government property must be returned to its proper location after use, unless otherwise posted.

d. Using PTO premises and facilities as a place of business. It is prohibited to reserve work areas, use PTO as a mailing address, use PTO stationery, or a PTO telephone number as a personal telephone number.

4. Inspection

Packages, briefcases, storage lockers and other containers in the possession of visitors, employees, or other persons arriving at, working at, visiting, or departing from the PTO are subject to inspection. See 41 CFR § 101-20.301.

5. Disturbances

Disorderly conduct or nther conduct which creates a loud or unusual noise or a nuisance which impedes or disrupts the performance of official duties by Government employees or which prevents the public from obtaining the administrative services provided on the property in a timely manner is prohibited. See 41 CFR § 101-20.305.

6. Conformity with signs and directions

Persons on the PTO premises shall at all times comply with the official signs of a prohibitory, regulatory or directory nature and with the lawful direction of PTO employees.

No rude or abusive conduct to PTO employees and fellow users.

No food or beverages are permitted.

No smoking except in designated areas.

No mechanical or electronic equipment such as radios, televisions, typewriters, computers, or photographic equipment may be used without prior permission from the Assistant Commissioner for Administration.

No use of PTO telephone and office equipment, except as specifically designated for public use.

7. Penalties and other laws.

Nothing in these rules shall be construed to abrogate any other Federal laws or regulations or any State and local laws and regulations applicable to any area in which property under the charge and control of the PTO through the U.S. General Services Administration is situated. See 40 U.S.C. §§ 318(c) and 486(c).

41 CFR § 101-20.315 provides that whoever is found guilty of violating the rules of conduct on Federal property contained in 41 CFR § 101-20.3 while on any property under the charge and control of the U.S. General Services Administration is subject to a fine of not more than \$50, imprisonment of not more than 30 days, or both. See 40 U.S.C. § 318c.

Failure to follow these rules may result in immediate removal from the premises, suspension of user privileges,

and/or enforcement of any criminal sanctions that may apply.

Aug. 30, 1991

THERSA A. BRELSFORD
Assistant Commissioner for
Administration

[1131 TMOG 7]

(197) DEPARTMENT OF COMMERCE

Patent and Trademark Office

Effect of December 1, 1993 Amendments to the Federal Rules of Civil Procedures on Trademark Trial and Appeal Board Inter Partes Proceedings

Trademark Rule 2.116(a) provides that, except as otherwise provided, and wherever applicable and appropriate, procedure and practice in Trademark Trial and Appeal Board (Board) inter partes proceedings shall be governed by the Federal Rules of Civil Procedures. Trademark Rule 2.120(a) provides, in part, that the provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in opposition, cancellation, interference, and concurrent use registration proceedings except as otherwise provided in Trademark Rule 2.120; and that the opening of discovery is governed by the Federal Rules of Civil Procedure. Thus, where the Board has its own rule concerning a particular matter of practice or procedure, that rule governs; if there is no Board rule concerning the matter, the Federal Rules of Civil Procedure apply, where applicable and appropriate.

On December 1, 1993, certain of the rules in the Federal Rules of Civil Procedures were amended, and one new rule was added. Specifically, Rules 1, 4, 5, 11, 12, 15, 16, 26, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 50, 52, 53, 54, 58, 71A, 72, 73, 74, 75, and 76 were amended, and new Rule 4.1 was added. Included in the amendments are changes in the discovery rules to require that the parties to a civil action: (1) make a series of automatic disclosures, during the pretrial stages of the proceedings, of certain evidence; (2) file the disclosures with the court; (3) meet, early in the proceeding, to discuss, inter alia, the automatic disclosure and to develop a plan for discovery; and, (4) transmit to the court a written report outlining the discovery plan. The timing of some of these matters is tied to the timing of a scheduling conference to be held, or a scheduling order to be issued, by the court. The timing and sequence of other of the matters depends upon the direction of the court. Further, parties are prohibited from seeking any of the traditional forms of discovery until after they have met and developed their discovery plan.

The Patent and Trademark Office (Office) believes that the application of the cited provisions in inter partes proceedings before the Board would increase the complexity and cost of the proceedings and would be unduly burdensome both to the Board and the parties. For these reasons, the Office is now of the opinion that these provisions would have a detrimental effect on, and are not appropriate for, Board proceedings. Moreover, the Office's Public Advisory Committee for Trademark Affairs has recommended that incorporation of the amendments in Board practice be deferred until the Office can evaluate the effects of the amendments on civil actions. On the other hand, some of the provisions added by the amendments are not objectionable, and others so clearly do not apply in, and/or are not appropriate for, Board proceedings that they need not be mentioned.

Accordingly, application of Rule 2.120(a) is hereby waived, in pertinent part, to the extent that the following provisions of the Federal Rules of Civil Procedure, as amended, which otherwise arguably would apply in Board proceedings, and which would, in the opinion of the Office, have a detrimental effect on those proceedings, shall not be applied therein unless and until further notice is given:

1. **Rule 16(b)** [requirement that court issue a scheduling order, after consulting with parties by scheduling conference, telephone, mail, or other suitable means]

2. **Rules 26(a)(1)-26(a)(4)** [requirements for series of automatic disclosures of evidence]

3. **Rule 26(b)(4)** [requirements for taking discovery from a person identified, in automatic disclosure, as an expert whose opinions may be presented at trial]

4. **Rule 26(d)**, first sentence [prohibition against the taking of discovery before the parties have met to discuss, inter alia, the automatic disclosures and to develop a plan for discovery]

5. **Rule 26(e)(1)** [requirement for supplementation of automatic disclosures]

6. **Rule 26(f)** [requirement that the parties meet, early in the proceeding, to discuss, inter alia, the automatic disclosure and to develop a plan for discovery]

7. **Rule 26(g)(1)** [signature requirements for automatic disclosures]

8. **Rule 30(a)(2)(C)** [requirement that a party obtain leave of court or written stipulation to take a deposition prior to the Rule 26(f) meeting of the parties]

9. **Rule 33(a)**, last sentence [requirement that a party obtain leave of court or written stipulation to serve interrogatories prior to the Rule 26(f) meeting of the parties]

10. **Rule 34(b)**, last sentence of first paragraph [requirement that a party obtain leave of court or written stipulation to serve request for production of documents and things prior to the Rule 26(f) meeting of the parties]

11. **Rule 36(a)**, last sentence of first paragraph [requirement that a party obtain leave of court or written stipulation to serve request for admission prior to the Rule 26(f) meeting of the parties]

12. **Rule 37(a)(2)(A)** [provision of motion to compel disclosure and for sanctions for failure to make automatic disclosure]

13. **Rule 37(c)(1)** [description of sanctions which may be imposed for failure to make, or supplement, automatic disclosure]

14. **Rule 37(g)** [provision of sanctions for failure to participate in good faith in the framing of a discovery plan]

Discovery in Board inter partes proceedings will continue to open as it did prior to December 1, 1993 amendments to the Federal Rules of Civil Procedure, that is, as provided in those rules as they existed on November 30, 1993. Thus, interrogatories, requests for production of documents and things, and requests for admission may be served upon the plaintiff after the proceeding commences (i.e., after the notice of opposition or petition for cancellation is filed, and after the mailing by the Board of the notice of institution in an interference or concurrent use proceeding), and upon the defendant with or after service of the complaint by the Board. Discovery depositions generally may be taken by any party after commencement of the proceeding. Board's permission to take a discovery deposition must be obtained in certain situations, including a situation in which the plaintiff seeks to take a deposition prior to the expiration of 30 days after service of the complaint by the Board upon any defendant, except where a defendant has served a notice of taking deposition or otherwise sought discovery or where the notice of deposition: (1) states that the proposed deponent is about to go out of the United States and will be unavailable for examination unless the person's deposition is taken before expiration of the 30-day period, and, (2) sets forth facts to support the statement.

Similarly, the practice embodied in Rules 33(a), 34(b), and 36(a) of the Federal Rules of Civil Procedure, as they read on November 30, 1993, that a defendant may serve responses to interrogatories, requests for production of documents and things, and requests for admission either within 30 days after service of a discovery request [35 days if service of the request for discovery is made by first-class mail, "Express Mail," or

overnight courier—Trademark Rule 2.119(c)], or within 45 days after service of the complaint upon it by the Board, which ever is later, will continue to be followed in Board proceedings.

The Patent and Trademark Office will, in due course, publish a notice of proposed rule making to amend, as may be necessary, the trademark rules governing practice and procedure in inter partes proceedings before the Board.

Jan. 15, 1994

ROBERT M. ANDERSON
Acting Assistant Commissioner
for Trademarks

[1159 TMOG 14]

(198) Interlocutory Decisions by the Trademark Trial and Appeal Board

Only final decisions of the Trademark Trial and Appeal Board are subject to judicial review. Some confusion may exist in *inter partes* trademark proceedings as to whether certain decisions of the Board are "final" for purpose of judicial review.

An example where confusion may arise is a case in which (1) an opposition is filed, (2) applicant counterclaims for cancellation of a registration relied upon by an opposer, and (3) the Board renders a decision (generally on summary judgment) on the opposition, but sets the counterclaim for trial. Under these circumstances, there is no final order of the Board, because a decision has not been entered on the counterclaim.

The party losing the opposition may feel compelled to seek judicial review within two months of the Board's decision to "preserve" its rights. But such an appeal appears to be premature under *Copeland's Enterprises, Inc. v. CNV, Inc.* 887 F.2d 1065, 12 USPQ2d 1563 (Fed. Cir. 1989) (in banc). *Copeland's* is not the only appeal which has been dismissed because it was taken from an interlocutory decision of the Board. See *Cortex Corporation v. W.L. Gore & Associates, Inc.*, No. 91-1016 (Fed. Cir. January 14, 1991) (unpublished), and *Kellogg Co. v. Pack'em Enterprises, Inc.*, No. 90-1336 (Fed. Cir. Sept. 27, 1990) (unpublished).

In an effort to (1) minimize disruption in proceeding pending before the Board, (2) eliminate unnecessary appeals and filing of civil actions, only to have the appeal or civil action dismissed as premature, and (3) provide some certainty to parties and their attorneys as to when an appeal is timely, the Board will, when resolving a merits issue prior to final judgement, generally indicate that it has entered an "interlocutory" order in the proceeding and further set the time for seeking judicial review of the "interlocutory" order to expire two months from the date a final order is entered in the proceeding.

Jan. 22, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner
of Patents and Trademarks

[1123 TMOG 36]

(199) Patent and Trademark Office Trademark Trial and Appeal Board

New Title for Members of Trademark Trial and Appeal Board

The Chairman and Members of the Trademark Trial and Appeal Board have been authorized to use the respective titles Chief Administrative Trademark Judge and Administrative Trademark Judge for signing all correspondence and decisions, and for other business-related activities.

The respective titles of Chairman and Member will continue to be the official titles for personnel, budget and fiscal purposes.

Oct. 15, 1993

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1156 TMOG 32]

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**Patent and Trademark Office
37 CFR Part 10
Cross Appeals in Patent and Trademark
Office Disciplinary Proceedings**

Agency: Patent and Trademark Office, Commerce.
Action: Notice of proposed rulemaking.

Summary: The Patent and Trademark Office (PTO) proposes to amend its rules of practice in practitioner disciplinary proceedings. The proposed rule change provides for a time period for a party to a disciplinary proceeding to file a cross-appeal, after the other party (the respondent or the Director of the Office of Enrollment and Discipline) to the proceeding has appealed from an initial decision of the administrative law judge to the Commissioner. Currently, PTO rules do not provide for a time period for filing a cross-appeal in a disciplinary case. A party in a disciplinary case may be interested in appealing only if the other party has appealed. Allowing a time period for filing a cross-appeal will give parties to disciplinary cases more flexibility after an initial decision by the administrative law judge. A party need not file a contingent appeal simply to preserve rights in the event the other party files an appeal.

Dates: Written comments must be received on or before Aug. 20, 1993 to ensure consideration. An oral hearing will not be conducted.

Addresses: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of Fred E. McKelvey, Solicitor. Written comments will be available for public inspection in suite 918, on the 9th floor of Crystal Park II, located at 2121 Crystal Drive, Arlington, Va.

For Further Information Contact: Fred E. McKelvey by telephone at (703) 305-9035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Pursuant to 37 CFR § 10.132 *et seq.*, the Director of the Office of Enrollment and Discipline within the PTO may initiate a disciplinary proceeding against a practitioner. If the proceeding is contested by the practitioner and the Director continues to prosecute, an administrative law judge for the Department of Commerce enters an initial decision which includes findings of fact, conclusions of law and an order. 37 CFR § 10.154.

Either party to the proceeding may appeal from the initial decision of the administrative law judge to the Commissioner within thirty (30) days of the date of the decision. 37 CFR § 10.155(a). However, § 10.155(a) does not currently address the filing of a cross-appeal. That is, no period of time is specified for the non-appealing party to file a cross-appeal.

With regard to interference proceedings, 37 CFR § 1.304(a) addresses the filing of cross-appeals by stating in pertinent part that:

the time for filing a cross-appeal [to the Court of Appeals for the Federal Circuit] or cross-action [in a district court] expires (1) 14 days after service of the notice of appeal or the summons and complaint or (2) two months after the date of decision of the Board of Patent Appeals and Interferences, whichever is later.

The proposed rule change is similar to the cross-appeal authorized in interference proceedings.

OTHER CONSIDERATIONS

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule change will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principle impact of the proposed change is to provide a time period to file a cross-appeal in a PTO disciplinary proceeding.

The PTO has determined that the proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than \$100 million. There will be no major increase in costs or prices for consumers;

individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The PTO has also determined that this notice has no federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The proposed rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 35 CFR Part 10

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements

For the reasons set out in the preamble, and pursuant to the authority contained in 35 U.S.C. 6, the PTO proposes to amend 37 CFR part 10 as follows, wherein deletions are indicated by brackets ([]) and additions by arrows (▶◀):

PART 10-REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

1. The authority citation for 37 CFR part 10 would continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

2. Section 10.155 is proposed to be amended by revising paragraph (a) to read as follows:

§ 10.155 Appeal to the Commissioner.

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under § 10.154, either party may appeal to the Commissioner. ▶ If an appeal is taken, the time for filing a cross-appeal expires (1) 14 days after service of the appeal or (2) 30 days after the date of the initial decision of the administrative law judge, whichever is later. ◀ An appeal ▶ or cross-appeal ◀ by the respondent will be filed with the Director in duplicate and will include exceptions to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal ▶ or cross-appeal ◀, the Director shall serve a copy of the appeal ▶ or cross-appeal ◀. Within thirty (30) days after receipt of an appeal ▶, cross-appeal ◀ or copy thereof, the other party may file a reply brief, in duplicate with the Director. If the Director files the reply brief, the Director shall serve a copy of the reply brief. Upon the filing of an appeal ▶, cross-appeal, if any, ◀ and [a]reply brief ▶ s ◀, if any, the Director shall transmit the entire record to the Commissioner.

July 15, 1993

MICHAEL K. KIRK
Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks

[1153 TMOG 33]

**(201) Request for Information to Aid in the
Implementation of the Recordation Requirements
of Section 8 of the Fastener Quality Act**

Agency: Patent and Trademark Office, Commerce
Action: Notice; Request for Information

Summary: The Patent and Trademark Office (PTO) is seeking information concerning alphanumeric designations currently in use by manufacturers or distributors of industrial fasteners. These alphanumeric designations may be used to signify the physical characteristics, strength, chemical content, size or other information about the fastener upon which they appear or they may be used as common law trademarks to identify

**(202) FEDERAL REGISTER NOTICE
DEPARTMENT OF COMMERCE
Patent and Trademark Office**

**Notice of Hearings and Request for Comments on
Preliminary Draft of the Report of the Working Group on
Intellectual Property Rights**

Agency: Patent and Trademark Office, Commerce

Action: Notice of hearings and request for public comments.
Summary: The Working Group on Intellectual Property Rights of the White House Information Infrastructure Task Force has issued a preliminary draft of its report, "Intellectual Property and the National Information Infrastructure," and is soliciting public comment. Copies of the preliminary report may be obtained by calling the U.S. Patent and Trademark Office at (703) 305-9300 or by sending a written request to the Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231, marked to the attention of Terri A. Southwick, Office of Legislative and International Affairs. The Working Group will hold public hearings on the preliminary report in Washington, D.C., Chicago and Los Angeles.

Dates: The public hearing in Chicago will be held on September 14, 1994, from 9 a.m. to 5 p.m. The public hearing in Los Angeles will be held on September 16, 1994, from 9 a.m. to 5 p.m. The public hearing in Washington, D.C., will be held on September 22 and 23, 1994 from 9 a.m. to 5 p.m. Requests to present oral testimony at the Chicago or Los Angeles hearings must be received on or before September 7, 1994. Requests to present oral testimony at the Washington, D.C., hearings must be received on or before September 15, 1994. As announced in the previous notice regarding the submission of written comments on the preliminary report, published at 59 Fed. Reg. 35912 (July 14, 1994), all written comments must be submitted on or before September 7, 1994. Comments in reply to initial written comments may be submitted no later than September 28, 1994.

Addresses: The hearing in Chicago will be held at the University of Chicago, Ida Noyes Hall, 1212 East 59th Street, Chicago, Illinois. The hearing in Los Angeles will be held at the University of California at Los Angeles, 1100 Schoenberg Hall, 405 Hilgard Avenue (Southeast side of UCLA Campus), Los Angeles, California. The hearings in Washington, D.C. will be held at the Andrew W. Mellon Auditorium, Constitution Avenue between 12th and 14th Streets, N.W., Washington, D.C. Requests to present oral testimony should be submitted to the Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231, marked to the attention of Terri A. Southwick, Attorney-Advisor, Office of Legislative and International Affairs. Requests should specify the date and location of the hearing at which the requester wishes to present oral testimony, and should include the name, address, telephone number, fax number and professional affiliation, if any, of the requester.

The transcripts of the hearings will be made available for public inspection 10 days after the hearings at the Scientific and Technical Information Center of the Patent and Trademark Office, Room 2C01, Crystal Plaza 3/4, 2021 Jefferson Davis Highway, Arlington, Virginia, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except holidays. Information about obtaining copies of transcripts of the hearings may be obtained by calling (703) 305-9300 no sooner than 10 days after the hearings.

For Further Information Contact: Terri A. Southwick or Michael O'Neil, Office of Legislative and International Affairs, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231. Telephone: (703) 305-9300; Fax: (703) 305-8885.

Supplementary Information: The Working Group on Intellectual Property Rights, chaired by Assistant Secretary of Commerce and Commissioner of Patents and Trademarks Bruce A. Lehman, was established as part of the White House Information Infrastructure Task Force. The Task Force, chaired by Secretary of Commerce Ronald H. Brown, was created to work with Congress and the private sector to develop comprehensive telecommunications and information policies aimed at articulating and implementing the Administration's vision for the National Information Infrastructure (NII).

and distinguish the manufacturer or distributor of such fasteners. The PTO needs information concerning these alphanumeric designations in order to administer the proposed fastener recordal system published on Aug. 17, 1992, at 57 F.R. 37060, 37061 to implement the requirements of Section 8 of the Fastener Quality Act, Public Law 101-592. Therefore, the PTO is requesting from fastener industry associations, standards bodies, or individual manufacturers or distributors, any general or specific information available concerning alphanumeric designations currently in use within the industry, whether as unregistered trademarks, as marks required by a standard, or for any other purpose.

Date: Comments should be submitted on or before Sept. 27, 1993. Comments received after this date will be considered if possible.

Addresses: All comments concerning alphanumeric designations should be addressed to Lynne G. Beresford, Trademark Legal Administrator, Commissioner of Patents and Trademarks, Washington, D.C. 20231, telephone number (703) 305-9464.

For Further Information Contact: Lynne G. Beresford, Trademark Legal Administrator, (703) 305-9464.

Supplementary Information: In 1990, Congress enacted the Fastener Quality Act, Public Law 101-592 (the Act) to protect public safety, deter introduction of non-conforming fasteners into commerce, improve the tracing of fasteners used in critical applications, and provide customers with greater assurance that fasteners meet stated specifications. The Act requires that certain fasteners sold in commerce conform to the specifications to which they are represented to be manufactured; provides for accreditation of laboratories engaged in fastener testing; and requires the inspection, testing and certification (in accordance with standardized methods) of fasteners covered by the Act.

Section 8 of the Act prohibits offering fasteners for sale that are required by an applicable standard or specification to bear a raised or depressed insignia identifying the manufacturer or private label distributor unless such manufacturer or distributor has complied with the requirements of a program of the Secretary of Commerce for the recordation of such insignia in order to ensure that the fasteners can be traced to the manufacturer or distributor.

The program for recordation of fastener insignias, established by the Secretary of Commerce and administered by the Patent and Trademark Office, will allow the owner of a mark, which is the subject of a duly filed trademark application or registration, to apply for recordal of that mark as its fastener insignia. However, if the manufacturer or private label distributor does not wish to use a trademark as its fastener insignia, it will be permitted to apply for a unique alphanumeric designation for that purpose.

The PTO wants to ensure that it does not inadvertently issue an alphanumeric designation that is either already in use by a manufacturer or distributor as its identifying insignia, or a designation already in use by the industry to signify the physical characteristics, strength, chemical content, size or other information about the fastener. For that reason, the PTO is requesting from fastener industry associations, standards bodies, or individual manufacturers or distributors, any general or specific information available concerning alphanumeric designations currently in use within the industry, whether as unregistered trademarks, as marks required by a standard, or for any other purpose. The PTO does not need information concerning specific registered alphanumeric trademarks, as that information is readily available from the PTO's database.

(Authority: 15 USC 5407)

July 15, 1993

MICHAEL K. KIRK
Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks

[1154 TMOG 9]

"Intellectual Property and the National Information Infrastructure: A Preliminary Draft of the Report of the Working Group on Intellectual Property Rights" represents the Working Group's examination and analysis to date of the intellectual property implications of the NII, and includes the Group's draft findings and recommendations. While it addresses each of the major areas of intellectual property law, including patent, trademark and trade secret, the preliminary report focuses primarily on copyright law and its application and effectiveness in the context of the NII.

The Working Group solicited written comments from the public on the preliminary report in a notice published at 59 Fed. Reg. 35912 on July 14, 1994.

Dated: Aug. 12, 1994

Bruce A. Lehman
*Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks*

[1166 TMOG 17]

(203) Iraqi Sanctions Regulations

On Jan. 18, 1991, the Department of the Treasury, Office of Foreign Assets Control (OFAC), published the Iraqi Sanctions Regulations (Regulations) (31 CFR Part 575). 56 Fed. Reg. 2112. The regulations implement Executive Orders 12722 (Aug. 2, 1990) and 12724 (Aug. 9, 1990) relating to certain property and transactions in which the Government of Iraq and persons in Iraq may have an interest.

It appears that the provisions of the Executive Orders and Regulations prohibit transactions relating to the filing or prosecution of applications for patents or for registration of trademarks, where an Iraqi interest is involved. The prohibited transactions, however, may be authorized by a specific license issued pursuant to the procedures described in Section 575.801 of Subpart H of the Regulations.

This notice is intended to alert practitioners and applicants to the prohibitions which may apply to matters before the Patent and Trademark Office, (PTO) if Iraqi interests are involved. This notice is further intended to advise that where such interests or potential interests come to the attention of the PTO, an appropriate specific license from OFAC may be required.

Jan. 29, 1991

HARRY F. MANBECK, Jr.
*Commissioner of Patents
and Trademarks*

[1123 TMOG 36]

(204) Notice Regarding Patent and Trademark Rights in the Russian Federation

Representatives of the Russian Federation met with representatives of the U.S. Government on Monday, February 24, 1992, at the U.S. Patent and Trademark Office. The Russian delegation sought information about the operation of the U.S. patent and trademark systems and provided information about the treatment of inventions, industrial designs, utility models, trademarks, service marks, and appellations of origin in the Russian Federation.

Following is the text of a statement from the Chairman of the Committee for Patents and Trademarks (ROSPATENT), outlining the status of industrial property protection in the Russian Federation and the plans for the future.

INFORMATION

by the Committee for Patents and Trademarks

Due to the fact that the draft laws on patents and on trademarks were approved in the first hearing by the Supreme Soviet of the Russian Federation and taking into account numerous

questions of domestic inventors, foreign patent offices and patent attorneys, the Committee for Patents and Trademarks (Rospatent) of the Ministry of Science, Higher School and Technical Policy of the Russian Federation hereby informs that:

1. Until the Patent Law and Trademark Law become effective, the provisions of the USSR Laws on Inventions, Industrial Designs and Trademarks, that are adopted as the normative base by the States party to the Provisional Agreement on the Industrial Property Protection, as signed in Minsk on Dec. 27, 1991, are applied in the territory of the Russian Federation.

According to the Provisional Agreement, the Russian Federation, as well as the other States party to it, recognizes the validity of titles of protection issued earlier pursuant to the USSR Laws in the territory of the Russian Federation.

Rospatent has submitted to the Government of the Russian Federation its proposals on issuing a normative act which is to certify the adoption by the Russian Federation of the said obligations arising out of the Provisional Agreement.

2. The applicants, who have filed applications for inventions, industrial designs and trademarks with the former USSR Gospatent, may, without losing the priority dates, wait until the Provisional Agreement on the Industrial Property Protection becomes effective, the Interstate Patent Office is established and its working procedures for issuing interstate titles of protection are elaborated.

3. In accordance with the abovesaid proposals by Rospatent, as submitted to the Government of the Russian Federation, any applicant wishing to obtain a patent (a trademark certificate) of the Russian Federation will be given the right to seek, on the basis of an application filed, for provisional protection in the territory of the Russian Federation.

Such provisional protection will be granted to inventions, industrial designs and trademarks claimed in the applications in respect of which the examiners have taken decisions on the possibility of issuing patents (certificates), and will last from the date when the data on an application are published in a special gazette to the date of issuance of a patent (certificate) of the Russian Federation.

The provisional protection in the territory of the Russian Federation will not impose legal barriers to obtaining, by the applicant, an interstate patent (certificate) after the Provisional Agreement on the Industrial Property Protection becomes effective. The priority date will still be considered as the date of filing the application either with the former USSR Gospatent or with Rospatent, with due regard to the conventional priority.

4. According to the Provisional Agreement on the Industrial Property Protection signed on Dec. 27, 1991, an inventor's certificate issued in the former USSR may not be exchanged for patents of the individual States party to the Provisional Agreement. The question of exchanging inventor's certificates for interstate patents will be finally resolved in the course of developing and concluding an Interstate Convention.

In this connection, Rospatent does not exchange inventors' certificates for patents if a petition to this extent was filed after Dec. 27, 1991.

V. Rassokhin
Chairman of Rospatent

Copies of unofficial translations of the draft laws referred to in the statement are available from Box 4, U.S. Patent and Trademark Office, Washington, DC 20231. The charge is \$4.00 to cover the cost of duplication. Checks should be made payable to the Commissioner of Patents and Trademarks.

March 2, 1992

HARRY F. MANBECK, Jr.
*Assistant Secretary and Commissioner
of Patents and Trademarks*

[1136 TMOG 216]

(205) Regarding Industrial Property Protection in Ukraine

The following announcement of Ukraine was furnished by the World Intellectual Property Organization of Geneva, Switzerland.

ANNOUNCEMENT ON THE PROVISIONAL REGULATION CONCERNING THE LEGAL PROTECTION OF INDUSTRIAL PROPERTY IN UKRAINE

The President of Ukraine, by his Decree of Sept. 18, 1992, approved the Provisional Regulation on Legal Protection of Objects of Industrial Property and Rationalization Proposals in Ukraine ("Regulation"). The Regulation entered into force on Sept. 18, 1992.

The situation of industrial property protection in Ukraine, as resulting in particular from the transitional provisions of the Regulation, is summarized below.

1. The Transitional Provisions Concerning Priority and, in Respect of Applications for Patents of Inventions, the Carrying Out of Examination

(1) Any priority claimed within six months from the entry into force of the Regulation, i.e., until Mar. 18, 1993, on the basis of the first filing in a State party to the Paris Convention for the Protection of Industrial Property, will be recognized even if it is claimed after twelve months from the first filing in the case of patents for inventions, or six months from the first filing in the case of industrial designs or trademarks, provided that it is claimed not later than twenty-seven months from the first filing in the case of patents for inventions, or not later than twenty-one months from the first filing in the case of industrial designs and trademarks.

(2) The applicant or any other person may submit to the State Patent Office of Ukraine within five years from the filing date a request for the substantive examination of an application for a patent for invention. The request must be accompanied by a search report established by an International Searching Authority under the Patent Cooperation Treaty (PCT) or an organization registered with the State Patent Office of Ukraine as a Searching Authority, or by evidence that an action to grant a patent has been taken by a Patent Office which has a substantive examination system for granting patents.

II. Applications for Industrial Property Rights Filed with the Patent Office of the Soviet Union

(3) An applicant of an application for a patent for invention, for an inventor's certificate, for an industrial design patent or certificate or for a trademark certificate filed with the Patent Office of the Soviet Union may request the State Patent Office of Ukraine within six months from the date of entry into force of the Regulation, i.e., until Mar. 18, 1993, that the said application be further processed according to the Regulation. The request must be accompanied by a copy of said application, including a copy of the request showing the filing date as sent back by the Patent office of the Soviet Union to the applicant, and by any available evidence showing that the said application still had effect on Dec. 24, 1991. The filing date and any priority date of the said application will be maintained.

III. Industrial Property Rights Granted by the Patent Office of the Soviet Union

(4) Patents for inventions, industrial design patents and trademark certificates granted by the Patent Office of the Soviet Union prior to Dec. 25, 1991, will, after their registration by the State Patent Office of Ukraine at the request of the owner and upon furnishing of a document for payment of the prescribed fee (see paragraph (11), below), be considered as having the same effects for the remaining period of their validity as a patent for invention, industrial design patent or trademark certificate granted in accordance with the Regulation by the State Patent Office of Ukraine. The duration of the said validity is 20 years from the filing date of the application in the case of a patent for invention, 15 years from the filing date of the application in the case of an industrial design patent and, in the case of a trademark certificate, 10 years from the filing date of the application (if the period of validity of the certificate had not yet been extended by Dec. 24, 1991) or from the date of the request for extension of the period of validity (if the period of validity of the certificate had already been extended by Dec. 24, 1991). The request must be filed within six months from

the date of entry into force of the Regulation, i.e., until Mar. 18, 1993, and must be accompanied by a copy of the patent or certificate granted by the Patent Office of the Soviet Union.

(5) As regards inventors' certificates and industrial design certificates granted by the Patent Office of the Soviet Union in relation to which a 20-year term in the case of inventions, or a 15-year term in the case of industrial designs, both counted from the filing date of the application, has not expired before the entry into force of the Regulation, i.e., prior to Sept. 18, 1992, the State Patent Office of Ukraine will grant, at the request of the inventor (inventors) and with the consent of the applicant, a Ukrainian patent to the inventor himself, or to any other physical or legal person, with their consent, indicated in the request, or to the Ukrainian Inventions Foundation. In the case of inventions, if the said request is not made within the period of one year after the entry into force of the Regulation, i.e., until Sept. 18, 1993, inventors' certificates granted by the Patent Office of the Soviet Union shall be exchanged for Ukrainian patents granted to the Ukrainian Inventions Foundation. Any Ukrainian patent to which this paragraph applies will be valid until the expiration of 20 years from the filing date of the application in the case of inventions, and 10 years from the filing date of the application, with an opportunity of subsequent extension, upon request of the owner, but not longer than for another 5-year period in the case of industrial designs.

IV. Effects in Ukraine of International Applications under the Patent Cooperation Treaty (PCT)

(6)(a) On Sept. 21, 1992, Ukraine deposited a declaration of continuation the effect of which is that the Patent Cooperation Treaty (PCT) is applied by Ukraine. Nationals and residents of Ukraine can therefore file international applications, and Ukraine can be designated and elected in international applications filed, from that date.

(b) On Sept. 29, 1992, the Assembly of the PCT Union adopted, with effect on Oct. 1, 1992, new Rules 32.1 and 32.2 in the Regulations under the PCT, concerning the extension of international applications to certain successor States.

(c) For the purpose of determining the status of international applications with respect to Ukraine, one has to distinguish between

(i) international applications designating the Soviet Union which were filed prior to Dec. 25, 1991 (see (d), below);

(ii) international applications—irrespective of the designations, they contain—which were filed between Dec. 25, 1991, and Nov. 23, 1992 (see (e) to (g), below);

(iii) international applications designating Ukraine filed on or after Sept. 21, 1992 (see (h), below).

(d) As regards any international application whose international filing date is prior to Dec. 25, 1991, and in which the Soviet Union has been designated, the "national filing effect" of any such application under Article 11(4) of the PCT will, pursuant to the deposit by Ukraine of its declaration of continuation, be recognized in Ukraine (provided that the international application has not lost its effect in the Soviet Union by Dec. 24, 1991). The conditions under which any such international application, or any patent or inventor's certificate resulting therefrom and granted by the Patent Office of the Soviet Union, may continue to have effect in Ukraine are the following:

(i) if a patent for invention or an inventor's certificate has been granted by the Patent Office of the Soviet Union on the basis of the international application, the conditions described in paragraphs (4) and (5), above, are applicable;

(ii) if the applicant has entered the national phase before the Patent Office of the Soviet Union but a patent for invention or an inventor's certificate had not been granted by the Patent Office of the Soviet Union without the application having been rejected by that Office, the applicant must, until Mar. 18, 1993,

—furnish to the State Patent Office of Ukraine a copy of the Russian translation submitted to the Patent Office of the Soviet Union and any available evidence showing that the application still had effect on Dec. 24, 1991.

—file the request referred to in paragraph (3), above, with the State Patent Office of Ukraine, and
—furnish to the State Patent Office of Ukraine a document for payment of the prescribed fee (see paragraph 11, below);
(iii) if the applicant has not entered the national phase before the Patent Office of the Soviet Union and the time limit for entering the national phase before that Office had not expired on Dec. 24, 1991, the applicant must, until Mar. 18, 1993, furnish to the State Patent Office of Ukraine a translation of the international application into Ukrainian or Russian and a document for payment of the prescribed fee (see paragraph 11, below).

(e) As regards any international application whose filing date is later than Dec. 24, 1991, and earlier than Nov. 24, 1992¹, its effects may be extended to Ukraine (irrespective of the designations it contains) through the performance by the applicant of the following acts:

- (i) filing with the International Bureau of the World Intellectual Property Organization (WIPO) a request for extension;
- (ii) paying to the International Bureau of WIPO an extension fee of 185 Swiss francs, payable in Swiss francs.

(f) The applicant in respect of each and every international application referred to in (e), above, or his agent or common representative if there is one, will receive a written notification from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request for extension, extend the effects of the international application to Ukraine. The notification will, in particular, specify the modes of payment of the extension fee of 185 Swiss francs. The request for extension must contain the identification of the international application by its international application number. A form which may be used for the purpose of requesting the extension to Ukraine will be attached to the notification. The request for extension must be in English or French, and may be sent by telefax or telex. The request for extension and the corresponding payment must reach the International Bureau of WIPO before the expiration of three months from the date of the notification sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. It is recommended that applicants await the notification from the International Bureau of WIPO and use the form attached to it, but requests and payments may be made without waiting for the notification from the International Bureau of WIPO.

(g) If the conditions described in (e) and (f), above, are fulfilled, Ukraine will be considered as having been designated in the international application on its international filing date. For entering the national phase before the State Patent Office of Ukraine, the applicant must furnish to that Office a translation of the international application into Ukrainian or Russian and a document for payment of the prescribed fee (see paragraph 11, below) until Dec. 31, 1993, or within the following time limit if that time limit expires after Dec. 31, 1993:

- (i) before the expiration of 21 months from the priority date if Ukraine is not elected under Chapter II of the PCT within 19 months from the priority date;
- (ii) before the expiration of 31 months from the priority date if Ukraine is elected under Chapter II of the PCT within 19 months from the priority date.

(h) As regards any international application whose international filing date is later than Sept. 20, 1992, and in which Ukraine has been designated, the applicant, in order to enter the national phase before the State Patent Office of Ukraine, must furnish to that Office a translation of the international application into Ukrainian or Russian and a document for payment of the prescribed fee (see paragraph 11, below) to that Office within the following time limit:

- (i) before the expiration of 21 months from the priority date if Ukraine is not elected under Chapter II of the PCT within 19 months from the priority date;
- (ii) before the expiration of 31 months from the priority date if Ukraine is not elected under Chapter II of the PCT within 19 months from the priority date.

V. Effects in Ukraine of International Registrations under the Madrid Agreement Concerning the International Registration of Marks

(7)(a) On Sept. 21, 1992, Ukraine deposited a declaration of continuation the effect of which is that the Madrid Agreement Concerning the International Registration of Marks is applied by Ukraine.

(b) On Sept. 29, 1992, the Assembly of Madrid Union adopted, with effect on Oct. 1, 1992, a new Rule 38 in the Regulations under the Madrid agreement, concerning the effect of international registrations in certain successor States.

(c) Pursuant to the deposit of the declaration of continuation and to the decision of the Assembly, certain international registrations may have effect in Ukraine subject to the conditions described below. Those international registrations are those which have territorial extension to the Soviet Union effective from a date prior to Dec. 25, 1991.

(d) The conditions referred to above are the following:

- (i) the filing with the International Bureau of the World Intellectual Property Organization (WIPO) of a request;
- (ii) the payment to the International Bureau of WIPO of a fee, the amount which is 62 Swiss francs per international registration.

(e) The owner of each and every international registration concerned, or his representative (if the owner has a representative whose name appears in the International Register), will receive a written notice from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request, continue the effect of the international registration to Ukraine. The notice will, in particular, specify the modes of payment of the fee. The request must contain the identification of the international registration concerned by its international registration number. A form (in French) will be attached to the notice and may be used. The request must be in English or French, and may be sent by telefax or must reach the International Bureau of WIPO before the expiration of six months from the date of the notice sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. Requests and payments may be made without waiting for the notice of the International Bureau of WIPO.

(f) If the conditions described above are fulfilled, the international registration concerned will, with respect to Ukraine, have effect as from the effective date of the territorial extension to the Soviet Union and benefit from any priority validly claimed in regard to such extension.

(g) For each international registration which has no territorial extension to the Soviet Union or whose international registration date is later than Dec. 24, 1991, protection in Ukraine can only be obtained by filing, through the intermediary of the national Office of the country of the owner, a request for territorial extension under Rule 20 of the Regulations under the Madrid Agreement. It is to be noted that requests for territorial extension to Ukraine are possible at present.

VI. Prior User Right

(8) Enterprises, organizations and institutions which have already started to use inventions or industrial designs for which protection can be obtained according to paragraph (5), above, prior to the entry into force of the Regulation, i.e., prior to Sept. 18, 1992, will have the right to a continued use of such inventions and industrial designs, but without increasing the volume of their utilization.

VII. New Applications

(9) From the date of entry into force of the Regulation, i.e. from Sept. 18, 1992, onward, applications for patents for inventions, for industrial design patents and for trademark cer-

tificates can be filed with the State Patent Office of Ukraine. The request as a part of the application must be filed in Ukrainian and be accompanied on the filing date by the prescribed fees. Other parts of the application may be presented in Ukrainian or Russian. They may also be presented in English, French or German, provided that a translation into Ukrainian is presented upon request of the state Patent Office of Ukraine.

VIII. Procedural Provisions

(10) If an applicant does not have his ordinary residence or principal place of business in Ukraine, he must authorize a representative in Ukraine, and all applications and requests referred to in the present announcement must be filed through the intermediary of such a representative. The list of the persons who can act as representatives is available at the State Patent Office of Ukraine.

(11) The amounts of the fees which are referred to as "prescribed fees" in the present announcement as well as the kind of document which constitutes a "document for payment of the prescribed fee" will be published in a separate announcement.

IX. Address of the Patent Office

State Patent Office of Ukraine
4, Karl Leibknecht Street
252008 Kiev
Ukraine
Tel.: (7044) 293-2188
Fax.: (7044) 268-2588

Dec. 11, 1992

DOUGLAS B. COMER
Acting Assistant Secretary and
Acting Commissioner of
Patents and Trademarks

[1146 TMOG 680]

(206) Regarding Industrial Property Protection in the Czech Republic and the Slovak Republic

The following announcements concerning industrial property protection in the Czech Republic and the Slovak Republic were furnished by the World Intellectual Property Organization (WIPO).

Announcement on the Protection of Industrial Property in the Czech Republic

In view of the fact that Czechoslovakia ceased to exist on Dec. 31, 1992, and that the Czech Republic and the Slovak Republic became independent States on Jan. 1, 1993, the situation of industrial property protection in the Czech Republic is summarized below.

I. Legal Basis

(1) The respective legal acts on the protection of industrial property of Czechoslovakia remain applicable in the Czech Republic.

II. Applications for Industrial Property Rights Filed with the Federal Office for Inventions of Czechoslovakia and Industrial Property Rights Granted by that Office.

(2) Applications for industrial property rights filed with the Federal Office for Inventions of Czechoslovakia and industrial property rights granted by that Office maintain their legal effect in both the Czech Republic and the Slovak Republic, it being understood that the next fees which are to be paid must be paid, for protection in both the Czech Republic and the Slovak Republic, to both the Industrial Property Office of the Czech Republic and the Industrial Property Office of the Slovak Republic.

III. International Treaties

(3) The Czech Republic has deposited, with effect on Jan. 1, 1993, a declaration the effect of which is that all those treaties administered by WIPO to which Czechoslovakia was party continue to be applicable as far as the Czech Republic is concerned. Those treaties are: the Convention Establishing the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property, the Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods, the Madrid Agreement Concerning the International Registration of Marks, the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, the Locarno Agreement Establishing an International Classification for Industrial Designs, the Patent Cooperation Treaty (PCT), the Strasbourg Agreement Concerning the International Patent Classification, the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the Berne Convention for the Protection of Literary and Artistic Works, and the Treaty on the International Registration of Audiovisual Works.

IV. Effects in the Czech Republic of International Applications under the Patent Cooperation Treaty (PCT)

(4)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, nationals and residents of the Czech Republic can file international applications, and the Czech Republic can be designated and elected in international applications filed, on or after Jan. 1, 1993.

(b) Rules 32.1 and 32.2 of the Regulations under the PCT permit the extension of international applications to the Czech Republic.

(c) For the purpose of determining the status of international applications with respect to the Czech Republic, one has to distinguish between

(i) international applications specifically¹ designating Czechoslovakia which were filed prior to Jan. 1, 1993 (see (d), below);

(ii) international applications not specifically¹ designating the Czech Republic—irrespective of the other designations they contain—filed between Jan. 1, 1993, and Feb. 21, 1993 (see (e) to (g) below);

(iii) international applications specifically¹ designating the Czech Republic filed on or after Jan. 1, 1993 (see (h) below).

(d) As regards any international application whose international filing date is prior to Jan. 1, 1993, and in which Czechoslovakia is specifically designated, the "national filing effect" of any such application under Article 11(4) of the PCT will, pursuant to the deposit by the Czech Republic of its declaration of continuation, be recognized in the Czech Republic (provided that the international application had not lost its effect in Czechoslovakia by Dec. 31, 1992). The conditions under which any such international application, or any patent resulting therefrom and granted by the Federal Office for Inventions of Czechoslovakia, may continue to have effect in the Czech Republic are the following:

(i) if a patent has been granted by the Federal Office for Inventions of Czechoslovakia on the basis of the international applications, paragraph (2), above, is applicable;

(ii) if the applicant has entered the national phase before the Federal Office for Inventions of Czechoslovakia but a patent for invention has not been granted by the Office without the application having been rejected by it, paragraph (2), above, is applicable;

(iii) if the applicant has not entered the national phase before the Federal Office for Inventions of Czechoslovakia and the time limit for entering the national phase had not expired on Dec. 31, 1992, the applicant must, before the expiration of the applicable time limit under PCT Article 22 or 39(1), furnish to the Industrial Property Office of the Czech Republic a transla-

¹In this announcement, an international application is regarded as "specifically" designating a State either if that State has been designated under Rule 4.9(a) of the Regulations under the PCT or if the designation of that State has been confirmed under Rule 4.9(c) of those Regulations.

¹With the exception of any such international application whose international filing date is later than Sept. 21, 1992, and in which Ukraine has been designated under Rule 4.9(a) of the Regulations under the PCT in such a case, the procedure described in (e) to (g) is not applicable, and the procedure described in (h) is applicable. It should be noted that only those international applications filed on or after Sept. 21, 1992, can specifically designate Ukraine.

tion of the international application into the Czech language and pay the prescribed fee.

(e) As regards any international application whose *international filing date is later than Dec. 31, 1992, and earlier than Feb. 22, 1993*,² and in which the *Czech Republic is not specifically designated*, its effects may be extended to the Czech Republic (irrespective of the other designations it contains) through the performance by the applicant of the following acts:

(i) filing with the International Bureau of the World Intellectual Property Organization (WIPO) a request for extension;

(ii) paying to the International Bureau of WIPO an extension fee of 185 Swiss francs, payable in Swiss francs.

(f) The applicant in respect of each and every international application referred to in (e), above, or his agent or common representative if there is one, will receive a written notification from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request for extension, extend the effects of the international application to the Czech Republic. The notification will, in particular, specify the modes of payment of the extension fee of 185 Swiss francs. The request for extension must contain the identification of the international application by its international application number. A form which may be used for the purpose of requesting the extension to the Czech Republic will be attached to the notification. The request for extension must be in English or French, and may be sent by telefax or telex. The request for extension and the corresponding payment must reach the International Bureau of WIPO before the expiration of three months from the date of the notification sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. It is recommended that applicants await the notification from the International Bureau of WIPO and use the form attached to it, but requests and payments may be made without waiting for the notification from the International Bureau of WIPO.

(g) If the condition described in (e) and (f), above, are fulfilled, the Czech Republic will be considered as having been designated in the international application on its international filing date. For entering the national phase before the Industrial Property Office of the Czech Republic, the applicant must furnish to that Office a translation of the international application into the Czech language and pay the prescribed fee within three months from the date of the request for extension or, if it expires later, within the following time limit:

(i) before the expiration of 21 months from the priority date if the Czech Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Czech Republic is elected under Chapter II of the PCT within 19 months from the priority date.

(h) As regards any international application whose *international filing date is later than Dec. 31, 1992*, and in which the *Czech Republic is specifically designated*, the applicant, in order to enter the national phase before the Industrial Property Office of the Czech Republic, must furnish to that Office a translation of the international application into the Czech language and pay the prescribed fee to that Office within the following time limit:

(i) before the expiration of 21 months from the priority date if the Czech Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Czech Republic is elected under Chapter II of the PCT within 19 months from the priority date.

V. Effects in the Czech Republic of International Registrations under the Madrid Agreement Concerning the International Registration of Marks.

(5)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, and pursuant to Rule 38 of the Regulations under the Madrid Agreement, any interna-

tional registration with a territorial extension to Czechoslovakia effective from a date prior to Jan. 1, 1993, may have effect in the Czech Republic subject to the following conditions:

(i) the filing with the International Bureau of the World Intellectual Property Organization (WIPO) of a request;

(ii) the payment to the International Bureau of WIPO of a fee, the amount of which is 62 Swiss francs per international registration.

(b) The owner of each and every international registration concerned, or his representative (if the owner has a representative whose name appears in the International Register), will receive a written notice from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request, obtain a continuation of the effect of the international registration in the Czech Republic. The notice will contain a request form (in French) and specify the modes of payment of the fee. The request must contain the identification of the international registration concerned by its international registration number. The request must be made in English or French, and may be sent by telefax or telex. The request and the corresponding payment must reach the International Bureau of WIPO before the expiration of six months from the date of the notice sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. Requests and payments may be made without waiting for the notice of the International Bureau of WIPO.

(c) If the conditions described above are fulfilled, the international registration concerned will, with respect to the Czech Republic, have effect as from the effective date of territorial extension to Czechoslovakia and benefit from any priority validly claimed in regard to such extension.

(d) For each international registration which has no territorial extension to Czechoslovakia or whose international registration date is later than Dec. 31, 1992, protection in the Czech Republic can only be obtained by filing, through the intermediary of the national Office of the country of the owner, a request for territorial extension under Rule 20 of the Regulations under the Madrid Agreement. It is to be noted that requests for territorial extension to the Czech Republic are possible at present.

VI. New Applications for Industrial Property Rights

(6) Applications for industrial property rights filed from Jan. 1, 1993, with the Industrial Property Office of the Czech Republic have no effect in the Slovak Republic. However, unless it is clear that the applicant does not seek protection in the Slovak Republic, the Industrial Property Office of the Czech Republic will, during a transitory period of a few months, invite the applicant to specify, within a time limit which will be fixed in the invitation, whether he wants to obtain protection in the Czech Republic only or both in the Czech Republic and in the Slovak Republic. In the latter case, the Industrial Property Office of the Czech Republic will transmit a copy of the application to the Industrial Property Office of the Slovak Republic and the filing date of the application with the Industrial Property Office of the Czech Republic will be recognized by the Industrial Property Office of the Slovak Republic.

(7) Applications requesting protection in the Czech Republic must be filed in the Czech language.

VII. General Provisions

(8) The fees to be paid to the Industrial Property Office of the Czech Republic are of the same amount as the fees which were payable to the Office of Czechoslovakia before Jan. 1, 1993.

(9) If an applicant does not have his ordinary residence or principle place of business in the Czech Republic, he must authorize a representative in the Czech Republic, and all applications to be filed with the Industrial Property Office of the Czech Republic must be filed through the intermediary of such a representative. The list of persons who can act as representatives is available at the Industrial Property Office of the Czech Republic.

VIII. Address of the Industrial Property Office of the Czech Republic

Industrial Property Office of the Czech Republic
Revolucni ulice 7
11346 Prague 1
Czech Republic
Tel.: (2) 28 96 (operator service)
Fax.: (2) 231 92 30
Teleprinter: 123 109 FUV

Announcement on the Protection of Industrial Property in the Slovak Republic

In view of the fact that Czechoslovakia ceased to exist on Dec. 31, 1992, and that the Czech Republic and the Slovak Republic became independent States on Jan. 1, 1993, the situation of industrial property protection in the Slovak Republic is summarized below.

I. Legal Basis

(1) Pending the enactment of new legislation, the respective legal acts on the protection of industrial property of Czechoslovakia remain applicable in the Slovak Republic.

II. Applications for Industrial Property Rights Filed with the Federal Office for Inventions of Czechoslovakia and Industrial Property Rights Granted by that Office

(2) Applications for industrial property rights filed with the Federal Office for Inventions of Czechoslovakia and industrial property rights granted by that Office maintain their legal effect in both the Czech Republic and the Slovak Republic, it being understood that the next fees which are to be paid must be paid, for protection in both the Czech Republic and the Slovak Republic, to both the Industrial Property Office of the Czech Republic and the Slovak Republic.

III. International Treaties

(3) The Slovak Republic has deposited, with effect on Jan. 1, 1993, a declaration the effect of which is that all those treaties administered by WIPO to which Czechoslovakia was party continue to be applicable as far as the Slovak Republic is concerned. Those treaties are: the Convention Establishing the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property, the Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods, the Madrid Agreement Concerning the International Registrations of Marks, the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, the Locarno Agreement Establishing an International Classification for Industrial Designs, the Patent Cooperation Treaty (PCT), the Strasbourg Agreement Concerning the International Patent Classification, the Budapest Treaty on the International Recognition of the Deposit of Micro-organisms for the Purposes of Patent Procedure, the Berne Convention for the Protection of Literary and Artistic Works, and the Treaty on the International Registration of Audiovisual Works.

IV. Effects in the Slovak Republic of International Applications under the Patent Cooperation Treaty (PCT)

(4)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, national and residents of the Slovak Republic can file international applications, and the Slovak Republic can be designated and elected in international applications filed, on or after Jan. 1, 1993.

(b) Rules 32.1 and 32.2 of the Regulations under the PCT permit the extension of international applications to the Slovak Republic.

(c) For the purpose of determining the status of international applications with respect to the Slovak Republic, one has to distinguish between

(i) international applications specifically¹ designating Czechoslovakia which were filed prior to Jan. 1, 1993 (see (d), below);

(ii) international applications not specifically¹ designating the Slovak Republic—irrespective of the other designations they contain—filed between Jan. 1, 1993 and Mar. 6, 1993 (see (e) to (g), below);

(iii) international applications specifically¹ designating the Slovak Republic filed on or after Jan. 1, 1993 (see (h), below).

(d) As regards any international application whose *international filing date is prior to Jan. 1, 1993*, and in which *Czechoslovakia is specifically designated*, the "national filing effect" of any such application under Article 11(4) of the PCT will, pursuant to the deposit by the Slovak Republic of its declaration of continuation, be recognized in the Slovak Republic (provided that the international application had not lost its effect in Czechoslovakia by Dec. 31, 1992). The conditions under which any such international application, or any patent resulting therefrom and granted by the Federal Office for Inventions of Czechoslovakia, may continue to have effect in the Slovak Republic are the following:

(i) if a patent has been granted by the Federal Office for Inventions of Czechoslovakia on the basis of the international application, paragraph (2), above, is applicable;

(ii) if the applicant has entered the national phase before the Federal Office for Inventions of Czechoslovakia but a patent for invention has not been granted by the Office without the application having been rejected by it, paragraph (2), above, is applicable;

(iii) if the applicant has not entered the national phase before the Federal Office for Inventions of Czechoslovakia and the time limit for entering the national phase had not expired on Dec. 31, 1992, the applicant must, before the expiration of the applicable time limit under PCT Article 22 or 39(1), furnish to the Industrial Property Office of the Slovak Republic a translation of the international application into the Slovak language and pay the proscribed fee.

(e) As regards any international application whose *international filing date is later than Dec. 31, 1992, and earlier than Mar. 7, 1993*,² and in which the *Slovak Republic is not specifically designated*, its effects may be extended to the Slovak Republic (irrespective of the other designations it contains) through the performance of the following acts:

(i) filing with the International Bureau of the World Intellectual Property Organization (WIPO) a request for extension;

(ii) paying to the International Bureau of WIPO an extension fee of 185 Swiss francs, payable in Swiss francs.

(f) The applicant in respect of each and every international application referred to in (e), above, or his agent or common representative if there is one, will receive a written notification from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request for extension, extend the effects of the international application to the Slovak Republic. The notification will, in particular, specify the modes of payment for the extension fee of 185 Swiss francs. The request for extension must contain the identification of the international application by its international application number. A form which may be used for the purpose of requesting the extension to the Slovak Republic will be attached to the notification. The request for the extension must be in English or French, and may be sent by telefax or telex. The request for extension and the corresponding payment must reach the International Bureau of WIPO before the expiration of three months from the date of the notification sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. It is recommended that applicants await the notification from the International Bureau of WIPO and use the form attached to it, but requests and payments may be made without waiting for the notification from the International Bureau of WIPO.

(g) If the condition described in (e) and (f), above, are fulfilled, the Slovak Republic will be considered as having been designated in the international application on its international filing date. For entering the national phase before the Industrial Property Office of the Slovak Republic, the applicant must furnish to that Office a translation of the international application into the Slovak language and pay the proscribed fee within three months from the date of the request for the extension or, if it expires later, within the following time limit:

²With the exception of any international application whose international filing date is later than Dec. 31, 1992, and in which the Czech Republic is specifically designated, in such a case, the procedure described in (e) to (g) is not applicable, and the procedure described in (h) is applicable.

(i) before the expiration of 21 months from the priority date if the Slovak Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Slovak Republic is elected under Chapter II of the PCT within 19 months from the priority date.

(h) As regards any international application whose *international filing date is later than Dec. 31, 1992*, and in which the *Slovak Republic* is specifically designated, the applicant, in order to enter the national phase before the Industrial Property Office of the Slovak Republic, must furnish to that Office a translation of the international application into the Slovak language and pay the prescribed fee to that Office within the following time limit:

(i) before the expiration of 21 months from the priority date if the Slovak Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Slovak Republic is elected under Chapter II of the PCT within 19 months from the priority date.

V. Effects in the Slovak Republic of International Registrations under the Madrid Agreement Concerning the International Registration of Marks

(5)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, and pursuant to Rule 38 of the Regulations under the Madrid Agreement, any international registration with a territorial extension to Czechoslovakia effective from a date prior to Jan. 1, 1993, may have effect in the Slovak Republic subject to the following conditions:

(i) the filing with the International Bureau of the World Intellectual Property Organization (WIPO) of a request;

(ii) the payment to the International Bureau of WIPO of a fee, the amount of which is 62 Swiss francs per international registration.

(b) The owner of each and every international registration concerned, or his representative (if the owner has a representative whose name appears in the International Register), will receive a written notice from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request, obtain a continuation of the effect of the international registration in the Slovak Republic. The notice will contain a request form (in French) and specify the modes of payment of the fee. The request must contain the identification of the international registration concerned by its international registration number. The request must be made in English or French, and may be sent by telefax or telex. The request and the corresponding payment must reach the International Bureau of WIPO before the expiration of six months from the date of the notice sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. Requests and payments may be made without waiting for the notice of the International Bureau of WIPO.

(c) If the conditions described above are fulfilled, the international registration concerned will, with respect to the Slovak Republic, have effect as from the effective date of the territorial extension to Czechoslovakia and benefit from any priority validly claimed in regard to such extension.

(d) For each international registration which has no territorial extension to Czechoslovakia or whose international registration date is later than Dec. 31, 1992, protection in the Slovak Republic can only be obtained by filing, through the intermediary of the national Office of the country of the owner, a request for territorial extension under Rule 20 of the Regulations under the Madrid Agreement. It is to be noted that requests for territorial extension to the Slovak Republic are possible at present.

VI. New Applications for Industrial Property Rights

(6) From Jan. 1, 1993, it is possible to file applications for industrial property rights with the Industrial Property Office of the Slovak Republic. Applications filed with the Industrial Property Office of the Czech Republic have no effect in the Slovak Republic. However, the following procedure will apply, during a transitory period of a few months, to applications filed with the Industrial Property Office of the Czech Republic: unless it is clear that the applicant does not seek protection in

the Slovak Republic, the Industrial Property Office of the Czech office will invite the applicant to specify, within a time limit which will be fixed in the invitation, whether he wants to obtain protection in the Czech Republic only or both in the Czech Republic and the Slovak Republic. In the latter case, the Industrial Property Office of the Czech Republic will transmit a copy of the application to the Industrial Property Office of the Slovak Republic and the filing date of the application with the Industrial Property Office of the Czech Republic will be recognized by the Industrial Property Office of the Slovak Republic.

(7) Applications requesting protection in the Slovak Republic must be filed in the Slovak language.

VII. General Provisions

(8) The fees to be paid to the Industrial Property Office of the Slovak Republic are of the same amount as the fees which were payable to the Office of Czechoslovakia before Jan. 1, 1993.

(9) If an applicant does not have his ordinary residence or principal place of business in the Slovak Republic, he must authorize a representative in the Slovak Republic, and all applications to be filed with the Industrial Property Office of the Slovak Republic must be filed through the intermediary of such a representative. The list of persons who can act as representatives is available at the Industrial Property Office of the Slovak Republic.

VIII. Address of the Industrial Property Office of the Slovak Republic

Industrial Property Office of the Slovak Republic
Nam. Slobody 29
81312 Bratislava
Slovakia
Tel: (7) 33 00 57
Fax.: (7) 31 44 61

Jan. 28, 1993

DOUGLAS B. COMER
Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks

[1147 TMOG 72]

(207) **Regarding Industrial Property Protection in Kazakhstan**

The following announcement was furnished by the World Intellectual Property Organization of Geneva, Switzerland.

ANNOUNCEMENT OF THE PROTECTION OF INDUSTRIAL PROPERTY IN KAZAKHSTAN

The situation of industrial property protection in Kazakhstan is summarized below.

I. Legislation

(1) On Aug. 5, 1992, the Patent Law of Kazakhstan entered into force. This Law deals with preliminary patents and patents for inventions, preliminary patents and patents for industrial designs and patents for utility models.

(2) The Law on Trade Marks, Service Marks and Appellations of Origin of Kazakhstan was adopted on Jan. 18, 1993. This said Law entered into force on Feb. 23, 1993.

(3) The National Patent Office of Kazakhstan was established on June 23, 1992. It is under the supervision of the Cabinet of Ministers.

II. Membership in Treaties

(4) The Government of Kazakhstan deposited on Feb. 16, 1993, a declaration to the effect that the Convention Establishing the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property, the Madrid Agreement Concerning the International Registration of Marks

and the Patent Cooperation Treaty continue to be applicable to Kazakhstan.

III. Applications for Industrial Property Rights Filed with the National Patent Office of Kazakhstan

(5) Applications for the grant of patents for inventions, patents for industrial designs and patents for utility models and applications for the registration of marks and appellations of origin have been able to be filed with the National Patent Office of Kazakhstan since Aug. 27, 1992.

IV. Industrial Property Rights Granted by the Patent Office of the Soviet Union

(6) A patent for invention or inventor's certificate, an industrial design patent or industrial design certificate, or a trademark certificate, which was issued by the Patent Office of the Soviet Union may be registered by the National Patent Office of Kazakhstan at the request of the owner. Upon registration, such industrial property rights will be considered as having the same effects as a patent for invention, industrial design patent or trademark certificate issued by the National Patent Office of Kazakhstan. The duration is 20 years from the filing date of the application in the case of a patent for invention, 10 years from the filing date of the application in the case of an industrial design patent with the right to extend registration in the case of a trademark certificate. The filing date and any Dec. 1, 1993, in the case of inventions and industrial designs, and before Nov. 1, 1993, in the case of trademarks. It must be accompanied by the original or a copy, certified by a notary or any other competent authority, of the patent or certificate issued by the Patent Office of the Soviet Union and evidence that the prescribed fees have been paid to the National Patent Office of Kazakhstan.

V. Applications for Industrial Property Rights Filed with the Patent Office of the Soviet Union or with the Patent Office of the Russian Federation Before Oct. 14, 1992

(7) The applicant of an application for a patent for invention or an inventor's certificate, for an industrial design patent or an industrial design certificate or for a trademark certificate which had been filed with the Patent Office of the Soviet Union or with the Patent Office of the Russian Federation before Oct. 14, 1992, may request the National Patent Office of Kazakhstan before Dec. 1, 1993, in the case of an application for a patent for invention or an inventor's certificate, or for an industrial design patent or certificate, and before Nov. 1, 1993, in the case of an application for a trademark certificate, that the said application be further processed according to the Kazakh legislation. The request for further processing by the National Patent Office of Kazakhstan must be accompanied by a copy of the said application, including a copy of the request part of the said application showing the filing date as sent back to the applicant by the Patent Office of the Soviet Union or by the Patent Office of the Russian Federation, by a declaration that the said application is, to the best knowledge of the applicant, still pending before the Patent Office of the Russian Federation, and by an application filed according to the Kazakh legislation.

(8) If the applicant has received from the Patent Office of the Soviet Union or from the Patent Office of the Russian Federation in respect of an application filed before Oct. 14, 1992, a decision on grant of protection, the request needs only to be accompanied by a copy, certified by a notary or any other competent authority, of the said decision, as well as, in the case of inventions, by the description, any drawings and the claims on which the decision is based and an abstract of the invention or, in the case of industrial designs, by five photographs, one of which must be certified by a notary or any other competent authority, and any drawings. The filing date and any priority date of the application filed with the Patent Office of the Soviet Union or the Patent Office of the Russian Federation will be maintained.

VI. Effects in Kazakhstan of International Applications under the Patent Cooperation Treaty (PCT)

(9)(a) On Feb. 16, 1993, Kazakhstan deposited a declaration of continuation the effect of which is that the Patent Cooperation Treaty (PCT) is applied by Kazakhstan. Nationals and residents of Kazakhstan can therefore file international applications, and Kazakhstan can be designated and elected in international applications filed, from the date.

(b) On Sept. 29, 1992, the Assembly of the PCT Union adopted, with effect on Oct. 1, 1992, new Rules 32.1 and 32.2 of the Regulations under the PCT, concerning the extension of international applications to certain successor States.

(c) For the purpose of determining the status of international applications with respect to Kazakhstan, one has to distinguish between:

(i) international applications designating the Soviet Union which were filed before Dec. 25, 1991 (see (d), below);

(ii) international applications—irrespective of the designations they contain—which were filed between Dec. 25, 1991, and Apr. 16, 1993 (see (e) to (g), below);

(iii) international applications specifically* designating Kazakhstan filed on or after Feb. 16, 1993 (see (h), below).

(d) As regards any international application whose international filing date is before Dec. 25, 1991, and in which the Soviet Union has been designated, the "national filing effect" of any such application under Article 11(4) of the PCT will, pursuant to the deposit by Kazakhstan of its declaration of continuation, be recognized in Kazakhstan. The conditions under which any such international application, or any patent or inventor's certificate resulting therefrom and granted by the Patent Office of the Soviet Union or by the Patent Office of the Russian Federation, may continue to have effect in Kazakhstan are the following:

(i) if a patent for invention or an inventor's certificate has been granted by the Patent Office of the Soviet Union or by the Patent Office of the Russian Federation on the basis of international application, the conditions referred to in paragraph (6) above, are applicable;

(ii) if the applicant has entered the national phase before the Patent Office of the Soviet Union or the Patent Office of the Russian Federation but a patent for invention or an inventor's certificate has not been granted by any of those Offices, the conditions referred to in paragraph (7), above, are applicable, provided that the applicant must, before Dec. 1, 1993, file with the National Patent Office of Kazakhstan a request that the international application be further processed according to the Kazakh legislation; the request must be accompanied by a copy of the Russian translation of the international application submitted to the Patent Office of the Soviet Union or the Patent Office of the Russian Federation and a declaration that the application is still pending before the Patent Office of the Russian Federation; however where a decision to grant a patent has issued, only the requirements referred to in paragraph (8), above, apply;

(iii) if the applicant has not entered the national phase before the Patent Office of the Soviet Union or the Patent Office of the Russian Federation and the time limit for entering the national phase had not expired on Dec. 24, 1991, the applicant must, before Dec. 1, 1993, or, if Kazakhstan is elected under Chapter II of the PCT within 19 months from the priority date, before Dec. 1, 1993, or the expiration of 31 months from the priority date whichever is later, furnish to the National Patent Office of Kazakhstan a translation of the international application into Kazakh or Russian and evidence that the prescribed fee (see paragraph (12), below) has been paid to the latter Office.

(e) As regards any international application whose international filing date is later than Dec. 24, 1991, and earlier than Apr. 17, 1993,** its effect may be extended to Kazakhstan

*In this announcement, an international application is regarded as "specifically" designating Kazakhstan either if Kazakhstan has been designated under Rule 4.9(a) of the Regulations under the PCT or if the designation of Kazakhstan has been confirmed under Rule 4.9(c) of those Regulations.

**With the exception of any such international application international filing date is on or after Feb. 16, 1993, and in which Kazakhstan is specifically designated: in such a case, the procedure described in (e) to (g) is not applicable, and the procedure described in (h) applies. It should be noted that Kazakhstan can be specifically designated only in those international applications filed on or after Feb. 16, 1993.

(irrespective of the designations it contains) through the performance by the applicant of the following acts:

(i) filing with the International Bureau of the World Intellectual Property Organization (WIPO) a request for extension;

(ii) paying to the International Bureau of WIPO an extension fee of 185 Swiss francs, payable in Swiss francs.

(f) The applicant in respect of each and every international application to in (e), above, or his agent or common representative if there is one, will receive a written notification from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request for extension, extend the effects of the international application to Kazakhstan. The notification will, in particular, specify the modes of payment of the extension fee of 185 Swiss francs. The request for extension must contain the identification of the international application by its international application number. A form which may be issued for the purpose of requesting the extension to Kazakhstan will be attached to the notification. The request for extension must be English or French, and may be sent by telefax or telex. The request for extension and the corresponding payment must reach the International Bureau of WIPO before the expiration of three months from the date of the notification sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. It is recommended that applicants await the notification from the International Bureau of WIPO and use the form attached to it, but requests and payments may be made without waiting for the notification from the International Bureau of WIPO.

(g) If the conditions described in (e) and (f), above, are fulfilled, Kazakhstan will be considered as having been designated in the international application on its international filing date. For entering the national phase before the National Patent Office of Kazakhstan, the applicant must furnish, within the following time limit, to that Office both a translation of the international application into Kazakh or Russian and evidence that the prescribed fee (see paragraph (12), below) was paid:

(i) before Dec. 1, 1993, or the expiration of 21 months from the priority date, whichever is later, if Kazakhstan is not elected under Chapter II of the PCT before the expiration of 19 months from the priority date and item (iii) does not apply;

(ii) before Dec. 1, 1993, or the expiration of 31 months from the priority date, whichever is later, if Kazakhstan is elected under Chapter II of the PCT before the expiration of 19 months from the priority date;

(iii) before Dec. 1, 1993, or the expiration of 31 months from the priority date, whichever is later, if a request for extension to Kazakhstan is made after, but the demand was made before, the expiration of 19 months from the priority date, and a later election of Kazakhstan is made together with the request for extension or within three months from the date of the request for extension.

(h) As regards any international application whose international filing date is on or after Feb. 16, 1993, and in which Kazakhstan is specifically designated, the applicant, in order to enter the national phase before the National Patent Office of Kazakhstan, must furnish, within the following time limit, to that Office both a translation of the international application into Kazakh or Russian and evidence that the prescribed fee (see paragraph (12), below) has been paid to the said Office:

(i) before the expiration of 21 months from the priority date if Kazakhstan is not elected under Chapter II of the PCT with 19 months from the priority date;

(ii) before the expiration of 31 months from the priority date if Kazakhstan is elected under Chapter II of the PCT within 19 months from the Priority date.

VII. Effects in Kazakhstan of International Registrations under the Madrid Agreement Concerning the International Registration of Marks

(10) (a) On Feb. 16, 1993, Kazakhstan deposited a declaration of continuation the effect of which is that the Madrid Agreement Concerning the International Registration of Marks is applied by Kazakhstan.

(b) on Sept. 29, 1992, the Assembly of the Madrid Union adopted, with effect on Oct. 1, 1992, a new Rule 38 in Regulations under the Madrid Agreement, concerning the effect of international registrations in certain successor States.

(c) Pursuant to the deposit of the declaration of continuation and to the decision of the Assembly, certain international registrations may have effect in Kazakhstan subject to the conditions described below. Those international registrations are those which have territorial extensions to the Soviet Union effective from a date prior to Dec. 25, 1991.

(d) The conditions referred to above are the following:

(i) the filing with the International Bureau of the World Intellectual Property Organization (WIPO) of a request;

(ii) the payment to the International Bureau of WIPO of a fee, the amount of which is 62 Swiss francs per international registration.

(e) The owner of each and every international registration concerned, or his representative (if the owner has a representative whose name appears in the International Register), will receive a written notice from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request, obtain the continuation of the effect of the international registration in Kazakhstan. The notice will, in particular, specify the modes of payment of the fee. The request must contain the identification of the international registration concerned by its international registration number. A form (in French) will be attached to the notice and may be used. The request must be in English or French, and may be sent by telefax or telex. The request and the corresponding payment must reach the International Bureau of WIPO before the expiration of six months from the date of the notice sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. Requests and payments may be made without waiting for the notice of the International Bureau of WIPO.

(f) If the conditions described above are fulfilled, the international registration concerned will, with respect to Kazakhstan, have effect as from the effective date of the territorial extension to the Soviet Union and benefit from any priority validly claimed in regard such extension.

(g) For each international registration which has territorial extension to the Russian Federation effective from a date prior to Apr. 17, 1993, the owner may request the National Patent Office of Kazakhstan before Nov. 1, 1993, that the said registration be processed as an application under the Kazakh legislation. The request must be accompanied by an extract from the International Register established by the International Bureau of WIPO, by a declaration that, to the best knowledge of the owner, the international registration still has effect in the Russian Federation, and by an application filed according to the Kazakh legislation.

(h) For each international registration not covered by (c) or (g), above, namely, for each international registration which has no territorial extension to the Soviet Union or to the Russian Federation or whose international registration date is later than Apr. 16, 1993, protection in Kazakhstan can only be obtained by filing, through the intermediary of the national Office of the country of the owner, a request for territorial extension under Rule 20 of the Regulations under the Madrid Agreement. It is noted that requests for territorial extension to Kazakhstan are possible at present.

VIII. Procedural Provisions

(11) If an applicant does not have his ordinary residence or principal place in business in Kazakhstan, he must authorize a representative in Kazakhstan, and all requests, applications and other documents must be filed through the intermediary of such a representative.

(12) The list of the persons who can act as representatives and the official fees applicable to the procedures referred to under paragraphs (5), (6), (7), (8), (9) and (10)(g) are available from the National Patent Office of Kazakhstan.

(13) The request part of any application referred to under paragraph (5), above, any request referred to under paragraphs (6), (7), (9)(d)(ii) and (10)(g), above, and any declaration referred to under paragraphs (7), (9)(d)(ii) and (10)(g), above, must be filed in Kazakh or Russian. Other parts of any application referred to under paragraph (5), above, may be presented in other languages, provided that a translation into Kazakh or Russian is presented within two months from the filing date.

(14) If an applicant, due to circumstances beyond his control, was unable to observe a time limit applicable under paragraph

(6), (7), (9)(d), 10(g) or (13), above, the time limit may, upon request, be extended by two months by the National Patent Office of Kazakhstan.

IX. Address of the National patent Office of Kazakhstan

National Patent Office
Ablai-khan avenue 93/95
480091 Alma-Ata
Kazakhstan
Telex: (064) 251244 orlan su

June 11, 1993

MICHAEL K. KIRK
*Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks*

[1153 TMOG 23]

(208) Regarding Industrial Property Protection in Belarus

The following announcement was furnished by the World Intellectual Property Organization of Geneva, Switzerland.

ANNOUNCEMENT OF THE PROTECTION OF INDUSTRIAL PROPERTY IN BELARUS

The situation of industrial property protection in Belarus is summarized below.

I. Legislation

(1) On Feb. 5, 1993, the Law on Patents for Inventions, the Law on Patents for Industrial Designs and the Law on Trademarks and Service Marks of Belarus and the respective Parliamentary Decrees putting the said laws into effect were adopted and entered into force.

II. Membership in Treaties

(2) The Government of Belarus deposited on Apr. 14, 1993, a declaration to the effect that the Paris Convention for the Protection of Industrial Property, the Madrid Agreement Concerning the International Registration of Marks and the Patent Cooperation Treaty continue to be applicable to Belarus. Belarus was already party to the Convention Establishing the World Intellectual Property Organization.

III. Industrial Property Rights Granted by the Patent Office of the Soviet Union

(3) A patent for invention, an industrial design patent or trademark certificate, which was issued by the Patent Office of the Soviet Union may be registered by the State Patent Office of Belarus at the request of the owner. Upon registration, such industrial property rights will be considered as having the same effects as a patent for invention, industrial design patent or trademark certificate issued by the State Patent Office of Belarus. The duration is 20 years from the filing date of the application with the patent Office of the Soviet Union in the case of a patent for invention, 15 years from the filing date of the application with the Patent Office of the Soviet Union in the case of an industrial design patent, and 10 years from the filing date of the request for registration by the State Patent Office of Belarus in the case of a trademark certificate, the latter request to be filed before the expiry of the 10-year term from the filing date of the application with the Patent Office of the Soviet Union. The filing date and any priority date of the application with the Patent Office of the Soviet Union will be maintained.

(4) As regards inventors' certificates and industrial design certificates granted by the Patent Office of the Soviet Union in relation to which a 20-year term in the case of inventions, or a 15-year term in the case of industrial designs, both counted from the filing date of the application, has not expired, the State Patent Office of Belarus will grant for the remaining term

a Belarusian patent for invention or industrial design patent upon the joint request of the applicant and the inventor (inventors). Failing the agreement between the applicant and the inventor (inventors), no patent will be granted.

(5) The request for registration by the State Patent Office of Belarus must be filed before Feb. 5, 1994, in the case of inventions and industrial designs, and before Oct. 5, 1993, in the case of trademarks. It must be accompanied by the original or a copy, certified by a the patent owner, or the applicant, or the patent attorney, of the patent or certificate issued by the Patent Office of the Soviet Union, and also by a copy of the document attesting that the fee for the preceding term has been paid.

(6) Any inventor's certificate which is not exchanged for a patent for invention will enjoy the legal status which had been applicable to the invention in question in the Soviet Union before July 1, 1991.

IV. Applications for Industrial Property Rights Filed with the Patent Office of the Soviet Union or with the Patent Office of the Russian Federation Before Feb. 5, 1993

(7) The applicant of an application for a patent for invention or an inventor's certificate, or of an application for an industrial design patent or an industrial design certificate which had been filed with the Patent Office of the Soviet Union or with the Patent Office of the Russian Federation before Feb. 5, 1993, and in respect of which a decision to grant has been taken, may request the State Patent Office of Belarus to issue a Belarusian patent for invention or industrial design patent. The request must be filed before Aug. 5, 1993.

(8) The applicant of an application for a patent for invention or an inventor's certificate, of an application for an industrial design patent or an industrial design certificate, or of an application for a trademark certificate, which had been filed with the Patent Office of the Soviet Union or with the Patent Office of the Russian Federation before Feb. 5, 1993, and the processing of which has not been completed and in respect of which patents or certificates have not been granted, may request the State Patent Office of Belarus before Aug. 5, 1993, that the said application be further processed according to the Belarusian legislation and that the priority date of the said application be maintained, provided that the request is filed before the expiry of 27 months from the filing date of the first application in the case of inventions, and before the expiry of 21 months from the filing date of the first application in the case of industrial designs and trademarks.

V. Applications for Industrial Property Rights Filed, Before Apr. 14, 1993, with the Industrial Property Offices of States Party to the Paris Convention for the Protection of Industrial Property

(9) The State Patent Office of Belarus will recognize the priority date of the first application filed in a State party to the Paris Convention, provided that, in the case of inventions, the request for the grant of a Belarusian patent based on the said application is filed with the State Patent Office of Belarus before the expiry of 27 months from the filing date of the first application or, in the case of industrial designs and trademarks, the request for the grant of a Belarusian industrial design patent, or for the grant of a Belarusian trademark certificate, based on said application, is filed with the State Patent Office of Belarus before the expiry of 21 months from the filing date of the first application.

VI. Effects in Belarus of International Applications under the Patent Cooperation Treaty (PCT)

(10) (a) As mentioned in paragraph (2), above, on Apr. 14, 1993, Belarus deposited a declaration of continuation, the effect of which is that the Patent Cooperation Treaty (PCT) is applied by Belarus. Nationals and residents of Belarus can therefore file international applications, and Belarus can be designated and elected in international applications filed, from that date.

(b) Rules 32.1 and 32.2 of the Regulations under the PCT, allow the extension of international applications to certain successor States.

(c) For the purpose of determining the status of international applications with respect to Belarus, one has to distinguish between:

(i) international applications designated the Soviet Union which were filed before Dec. 25, 1991 (see (d), below);
(ii) international applications irrespective of the designations they contain which were filed between Dec. 25, 1991, and June 22, 1993 (see (e) to (g), below);

(iii) international applications specifically* designated Belarus filed on or after Apr. 14, 1993 (see (h), below).

(d) As regards any international application whose international filing date is before Dec. 25, 1991, and in which the Soviet Union has been designated, the "national filing effect" of any such application under Article 11(4) of the PCT will, pursuant to the deposit by Belarus of its declaration of continuation, be recognized in Belarus. The conditions under which any such international application, or any patent or inventor's certificate resulting therefrom and granted by the Patent Office of the Soviet Union or by the Patent Office of the Russian Federation, may continue to have effect in Belarus are the following:

(i) if a patent for invention or an inventor's certificate has been granted by the Patent Office of the Soviet Union or by the Patent Office of the Russian Federation on the basis of international application, the conditions referred to in paragraph (3) to (6) above, are applicable;

(ii) if the applicant has entered the national phase before the Patent Office of the Soviet Union or the Patent Office of the Russian Federation but a patent for invention or an inventor's certificate has not been granted by either of those Offices, the conditions referred to in paragraphs (7) and (8), above, are applicable, provided that the applicant, before Aug. 5, 1993, files with the State Patent Office of Belarus a request that the international application be further processed according to the Belarusian legislation; the request must be accompanied by a copy of the Russian translation of the international application submitted to the Patent Office of the Soviet Union or the Patent Office of the Russian Federation and a declaration that the application is still pending before the Patent Office of the Russian Federation, except where a decision to grant a patent has been made, in which case only the requirements referred to in paragraph (7), above, apply;

(iii) if the applicant has not entered the national phase before the Patent Office of the Soviet Union or the Patent Office of the Russian Federation and the time limit for entering the national phase had not expired on Dec. 24, 1991, the applicant must furnish to the State Patent Office of Belarus, within the following time limit, a translation of the international application into Belarusian or Russian and evidence that the prescribed fee (see paragraph (13), below) has been paid to the latter Office.

—before Aug. 5, 1993, or before the expiration of 21 months from the priority date, whichever is later, if Belarus is not elected under Chapter II of the PCT within 19 months from the priority date;

—before Aug. 5, 1993, or before the expiration of 31 months from the priority date, whichever is later, if Belarus is elected under Chapter II of the PCT within 19 months from the priority date.

(e) As regards any international application whose international filing date is later than Dec. 24, 1991, and not later than June 22, 1993,** its effect may be extended to Belarus (irrespective of the designations it contains) through the performance by the applicant of the following acts:

(i) filing with the International Bureau of the World Intellectual Property Organization (WIPO) a request for extension;

*In this announcement, an international application is regarded as "specifically" designating Belarus either if Belarus has been designated under Rule 4.9(a) of the Regulations under the PCT or if the designation of Belarus has been confirmed under Rule 4.9(c) of those Regulations.

**With the exception of any such international application whose international filing date is on or after Apr. 14, 1993, and in which Belarus is specifically designated: in such a case, the procedure described in (e) to (g) is not applicable, and the procedure described in (h) applies. It should be noted that Belarus can be specifically designated only in those international applications filed on or after Apr. 14, 1993.

(ii) paying to the International Bureau of WIPO an extension fee of 185 Swiss francs, payable only in Swiss francs.

(f) The applicant in respect of each and every international application referred to in (e), above, or his agent or common representative if there is one, will receive a written notification from the International Bureau of WIPO drawing his attention to the fact that he can, by filing a written request for extension, extend the effects of the international application to Belarus. The notification will, in particular, specify the modes of payment of the extension fee of 185 Swiss francs. The request for extension must contain the identification of the applicant's international application by its international application number. A form which may be issued for the purpose of requesting the extension to Belarus will be attached to the notification. The request for extension must be in English or French, and may be sent by telefax or telex. The request for extension and the corresponding payment must reach the International Bureau of WIPO before the expiration of three months from the date of the notification sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. It is recommended that applicants await the notification from the International Bureau of WIPO and use the form attached to it, but requests and payments may be made prior to receipt of the notification from the International Bureau of WIPO.

(g) If the conditions described in (e) and (f), above, are fulfilled, Belarus will be considered as having been designated in the international application on its international filing date. In order to enter the national phase before the State Patent Office of Belarus, the applicant must furnish to that Office, within the following time limit, both a translation of the international application into Belarusian or Russian and evidence that the prescribed fee (see paragraph (13), below) has been paid:

(i) before Aug. 5, 1993, or before the expiration of 21 months from the priority date, whichever is later, if Belarus is not elected under Chapter II of the PCT within 19 months from the priority date and item (iii) does not apply;

(ii) before Aug. 5, 1993, or the expiration of 31 months from the priority date, whichever is later, if Belarus is elected under Chapter II of the PCT within 19 months from the priority date;

(iii) before Aug. 5, 1993, or the expiration of 31 months from the priority date, whichever is later, if a request for extension to Belarus is made after, but the demand for international preliminary examination was made before, the expiration of 19 months from the priority date, and a later election of Belarus is made together with the request for extension or within three months from the date of the request for extension.

(h) As regards any international application whose international filing date is on or after Apr. 14, 1993, and in which Belarus is specifically designated, the applicant, in order to enter the national phase before the State Patent Office of Belarus, must furnish to that Office, within the following time limit, both a translation of the international application into Belarusian or Russian and evidence that the prescribed fee (see paragraph (13), below) has been paid to the said Office:

(i) before the expiration of 21 months from the priority date if Belarus is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 31 months from the priority date if Belarus is elected under Chapter II of the PCT within 19 months from the Priority date.

VII. Effects in Belarus of International Registrations under the Madrid Agreement Concerning the International Registration of Marks

(11) (a) As mentioned in paragraph (2), above, On Apr. 14, 1993, Belarus deposited a declaration of continuation, the effect of which was that the Madrid Agreement Concerning the International Registration of Marks is applied by Belarus.

(b) Pursuant to the deposit of the declaration of continuation and to Rule 38 of the Regulations under the Madrid Agreement, certain international registrations may have effect in Belarus subject to the conditions described below. The international registrations are those which have a territorial extension to the Soviet Union effective from a date prior to Dec. 25, 1991.

(c) The conditions referred to above are the following:

(i) the filing with the International Bureau of the World Intellectual Property Organization (WIPO) of a request;

(ii) the payment to the International Bureau of WIPO of a fee, the amount of which is 62 Swiss francs per international registration.

(d) The owner of each and every international registration concerned, or his representative (if the owner has a representative whose name appears in the International Register), will receive a written notice from the International Bureau of WIPO drawing his attention to the fact that he can, by filing a written request, obtain the continuation of the effect of the international registration in Belarus. The notice will, in particular, specify the modes of payment of the fee. The request must contain the identification of the international registration concerned by its international registration number. A form (in French) will be attached to the notice and may be used. The request must be in English or French, and may be sent by telefax or telex. The request and the corresponding payment must reach the International Bureau of WIPO before the expiration of six months from the date of the notice sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. Requests and payments may be made upon receipt of the notice of the International Bureau of WIPO.

(e) If the conditions described above are fulfilled, the international registration concerned will, with respect to Belarus, have effect as of the effective date of the territorial extension to the Soviet Union and benefit from any priority validly claimed with regard to such extension.

(f) For each international registration which has a territorial extension to the Russian Federation effective as of a date between Dec. 25, 1991 and Apr. 14, 1993, the owner may request the State Patent Office of Belarus, before Aug. 5, 1993, that the said registration be processed as an application under the Belarusian legislation. The request must be accompanied by an extract from the International Register established by the International Bureau of WIPO, by a declaration that, to the best knowledge of the owner, the international registration still has effect in the Russian Federation, and by an application filed according to the Belarusian legislation.

(g) For each international registration not covered by (b) or (f), above, namely, for each international registration which has no territorial extension to the Soviet Union or to the Russian Federation or whose international registration date is later than Apr. 14, 1993, protection in Belarus can only be obtained by filing, through the intermediary of the national Office of the country of the owner, a request for territorial extension under Rule 20 of the Regulations under the Madrid Agreement. It is noted that requests for territorial extension to Belarus are possible at present.

VIII. Procedural Provisions

(12) If an applicant does not have his ordinary residence or principal place in business in Belarus, he must authorize a representative in Belarus, and all requests, applications and other documents must be filed through the intermediary of such a representative.

(13) The official fees applicable to the procedures referred to under paragraphs (3), (4), (5), (7), (8), (10) and (11)(f) are available from the State Patent Office of Belarus.

(14) Any request referred to under paragraphs (3), (4), (5), (7), (8), (10)(d)(ii) and (11)(f), above, and any declaration referred to under paragraphs (10)(d)(ii) and (11)(f), above, must be filed in Belarusian or Russian.

IX. Address of the National Patent Office of Belarus

State Patent Office of Belarus
66, pr. Skoriny
Minsk 220072
Belarus
Tel.: (70172) 395 840
Fax.: (70172) 394 130

June 11, 1993

MICHAEL K. KIRK
Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks

[1152 TMOG 23]

(209) Regarding Patent and Trademark Rights in the Republic of Lithuania

The State Patent Bureau of the Republic of Lithuania has provided the U.S. Patent and Trademark Office with information regarding the protection of inventions, industrial designs, and trademarks in the Republic of Lithuania.

Following is the unedited text of the SUMMARY OF INDUSTRIAL PROPERTY PROTECTION IN LITHUANIA, provided in English translation by the Government of Lithuania, outlining the status of industrial property protection in Lithuania pending enactment of new legislation.

"The system of industrial property protection in Lithuania functioned reasonably well until 1940 ('Law on Protection of Trademarks' of Jan. 27, 1925, 'Law on the Protection of Inventions and Improvements' of May 14, 1928, 'Law on the Protection of Industrial Models and Designs').

• Since 1940 industrial property protection in Lithuania had been based on legal acts of the Soviet Union.

• After Lithuania has declared its independence it started establishing an independent national industrial property legislation. On Apr. 12, 1991, the Government of the Republic of Lithuania established the Lithuanian Patent Office, which is functioning under the name of the State Patent Bureau. On Dec. 1, 1991, the State Patent Bureau has proceeded the registration of Company Names of the Republic of Lithuania under the Regulations of Company Names.

Since Apr. 30, 1992 the Republic of Lithuania is a member of the World Intellectual Property Organization (WIPO).

• In order to ensure legal protection of industrial property (inventions, industrial designs and trademarks), rights of inventors; patent owners and investors on May 20, 1992 the Government of the Republic of Lithuania adopted a Decree No 362 on provisional measures until the laws of the Republic of Lithuania on inventions, industrial designs and trademarks are adopted. The contents of the provisional measures and their main consequences are summarized below.

INDUSTRIAL PROPERTY RIGHTS GRANTED BY THE PATENT OFFICE OF THE FORMER SOVIET UNION

1. Valid patents for inventions, as well as valid inventor's certificates, granted by the Patent Office of the former Soviet Union on the basis of applications filed beginning with Jan. 1, 1978, shall be registered as patents of the Republic of Lithuania for a period not longer than 15 years from the date of filing an application, provided that the inventor together with the applicant or the patent owner files a request to that effect with the State Patent Bureau no later than Sept. 30, 1993 and pays the prescribed State fee. Failing such a request, the patent or inventor's certificate will not have any effect in the Republic of Lithuania.

2. Industrial design for which valid industrial design patent or industrial design certificates granted by the Patent Office of the former Soviet Union on the basis of applications filed beginning with Jan. 1, 1983 shall be registered as industrial designs in the Republic of Lithuania for a period of 5 years with a possibility of renewing the registration for 5 consecutive years but not longer than for a period of 10 years from the date of filing an application provided that the creator of the industrial design together with the applicant or the patent owner files a request to that effect with the State Patent Bureau not later than Sept. 30, 1993 and pays the prescribed State fee. Failing such a request, the industrial design patent or certificate shall not have any effect in Lithuania.

3. A patent or industrial design, which has been registered under paragraph 1 or 2 above, will have no effect against any person who in the Republic of Lithuania, prior to the date of the request for registration was using the invention or industrial design protected by inventor's certificate or certificate or was making effective and serious preparation for such use.

4. Trademarks for which valid trademark certificates were granted by the Patent Office of the former Soviet Union shall be registered as trademarks in the Republic of Lithuania for a period of 10 years, provided that the owner of the trademark certificate files a request to that effect with the State Patent Bureau not later than Sept. 30, 1993 and pays the prescribed State fee. The same applies to international trademark registration effected under Madrid Agreement concerning the Interna-

tional Registration of Marks, for which valid trademark certificates had the territorial extension to the Former Soviet Union. Failing such a request, the trademark certificate will not have any effect in the Republic of Lithuania.

5. Priority rights may be claimed from May 20, 1992 onwards, but not later than Apr. 30, 1993, on the basis of previous patents, industrial design and trademark applications filed with the Patent Office of the former Soviet Union after Jan. 1, 1990, and which were pending on Jan. 31, 1992. Such priority rights are governed by the provisions of Article 4 of the Paris Convention for the Protection of Industrial Property.

6. Information regarding patents for inventions and industrial designs and trademark certificates shall be published in the OFFICIAL GAZETTE of the State Patent Bureau of the Republic of Lithuania.

NEW APPLICATIONS FOR INDUSTRIAL PROPERTY RIGHTS FILED WITH THE STATE PATENT BUREAU OF THE REPUBLIC OF LITHUANIA

7. Pending the enactment of industrial property legislation in Lithuania, it is possible to file patent applications and applications for the registration of industrial designs and of trademarks with the State Patent Bureau on the basis of legal acts of the Republic of Lithuania.

Foreign natural and legal persons, having their ordinary residence or principle place of business outside Lithuania, shall file requests and applications only through a patent attorney, registered in the Register of patent attorneys of the Republic of Lithuania.

Copies of the list of fees of the State Patent Bureau of the Republic of Lithuania and of the list of registered patent attorneys are available from Box 4, U.S. Patent and Trademark Office, Washington, D.C. 20231

July 7, 1993

MICHAEL K. KIRK
*Acting Assistant Secretary
and Acting Commissioner of
Patents and Trademarks*

[1153 TMOG 4]

(210) Regarding Industrial Property Rights in the Republic of Slovenia

The Industrial Property Protection Office of the Republic of Slovenia has provided the U.S. Patent and Trademark Office (USPTO) with a consolidated text, in English, of the Law on Industrial Property of the Republic of Slovenia which regulates the grant and protection of patents, model rights and design rights, trademarks and service marks, and appellations of origin. In addition, the Industrial Property Protection Office has notified the USPTO that it has entered into an "extension agreement" with the European Patent Organisation that will enter into force in January 1994. After entry into force of the agreement, it will be possible to obtain patent protection in Slovenia through obtaining a European patent. The Republic of Slovenia also plans to ratify the Patent Cooperation Treaty administered by the World Intellectual Property Organization.

A copy of the consolidated text of the Slovenian industrial property law can be obtained by writing to the U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231.

BRUCE A. LEHMAN
*Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks*

[1154 TMOG 39]

(211) Regarding Industrial Property Rights In The Republic Of Croatia

The State Patent Office of the Republic of Croatia has provided the U.S. Patent and Trademark Office with information regarding the protection of inventions, industrial designs, and trademarks and appellations of origin in the Republic of Croatia.

Following is the unedited text of the document provided in English translation by the Government of Croatia, outlining the status of industrial property protection.

"I. INTELLECTUAL PROPERTY IN THE REPUBLIC OF CROATIA

MEMBERSHIP IN INTERNATIONAL ORGANIZATIONS, CONVENTIONS AND TREATIES

The Republic of Croatia is a party to the following conventions:

- the Convention Establishing the World Intellectual Property Organization;
- the Paris Convention for the Protection of Industrial Property;
- the Madrid Agreement Concerning the International Registration of Marks;
- the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks;
- the Locarno Agreement Establishing an International Classification for Industrial Designs;
- the BERNE Convention for the Protection of Literary and Artistic Works based on the notifications confirmed by the Director General of the World Intellectual Property Organization, in his letter of 29, July, 1992, considered to be effective from 8, October, 1991, the date of independence declaration of the Republic of Croatia.

This fact grants the continuity of membership of the Republic of Croatia in the aforementioned conventions, starting from the found state of former Socialist Federal Republic of Yugoslavia.

II. INDUSTRIAL PROPERTY IN THE REPUBLIC OF CROATIA

1. MAIN FEATURES OF INDUSTRIAL PROPERTY LAW IN THE REPUBLIC OF CROATIA

Industrial Property Law comprises:

- patents;
- designs;
- trademarks and service marks;
- appellations of origin.

According to this Law, which is basically in accordance with the aforementioned conventions and arrangements, the validity of patent is 20 years, and the validity of designs and marks 10 years upon the submission of the patent application. The validity of marks can be renewed without limitations. Foreign legal and physical persons are obliged to protect their industrial property rights in the Republic of Croatia by means of an authorized representative, either a Croatian citizen or a local legal entity.

3. INDUSTRIAL PROPERTY IN THE REPUBLIC OF CROATIA-PROSPECTS

A new law on industrial property is expected to be passed during 1994, conceding the use of the institution of complete examination of conditions for the grant of patents. Within general activities aimed at harmonization and unification of the legal provisions governing industrial property rights, the State Patent Office will take up the activities concerning the admission to PCT and the European Patent Convention.

4. INDUSTRIAL PROPERTY RIGHTS GRANTED OR APPLIED FOR BY SUBMITTING AN APPLICATION, TO THE FORMER FEDERAL PATENT OFFICE FOR THE TERRITORY OF FORMER YUGOSLAVIA (SFYR)

4.1. The Industrial property rights granted through the former Federal Patent Office up to 8 October, 1991 are regulated in Article 10, paragraph 1 and 2 of the Law on Changes and Amendments of the Law on Protection of Inventions, Technical Improvements and Distinctive Signs ("Official Gazette of the Republic of Croatia", 2 April, 1992): "All rights of industrial property which are granted by the decisions of the former Federal Patent Office up to 8 October 1991 are valid on the territory of the Republic of Croatia up to their expiration. Upon the request of the rightful claimants from the aforementioned

paragraph, the State Patent Office will enter this particular right into the corresponding register."

4.2. Rights acquired in former Yugoslavia by the international registration of marks (International Bureau of WIPO, Geneva)

The Assembly of the Madrid Union on 29 September, 1992 adopted the new Rule No. 38, which apart from the Republic of Croatia applies to Slovenia and Ukraine, of the Regulations under the Madrid Arrangement, according to which the internationally registered marks with the territorial sign YU with the dates earlier 1 December, 1992 can be effective in the Republic of Croatia, provided that:

- a request is submitted to the International Bureau of WIPO, Geneva (on the basis of the written notification of the International Bureau of WIPO);
- a fee in the amount of 62 Swiss francs for each internationally registered mark is paid to the International Bureau.

The International Bureau will by the end of 1992 notify in written form each of the owners of the internationally registered mark with the sign YU, with the appeal to utilize the possibility provided by the Rule No. 38 prior to March 1, 1994.

4.3. The Industrial property rights applied for by submitting the application at the former Federal Patent Office before 8 October, 1991, which were not granted or declined, can be effected in the Republic of Croatia by submitting the same applications to the State Patent Office until 4 November, 1993 (this period was prolonged by the Regulation of the Government of the Republic of Croatia of 14 April, 1993)."

The address of the State Patent Office is:

State Patent Office
of the Republic of Croatia
Avenija Vukovar 78 41000 Zagreb
CROATIA

The State Patent Office of the Republic of Croatia has also provided a copy of the fees charged and a list of patent attorneys authorized to practice. Copies of these can be provided on request. Please send request to U.S. Patent and Trademark Office, Office of Legislation and International Affairs, Box 4, Washington, D.C. 20231.

Nov. 4, 1993

BRUCE A. LEHMAN
*Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks*

[1156 TMOG 112]

(212) Regarding Patent And Trademark Rights In The Former Yugoslav Republic Of Macedonia

The Ministry of Development of the former Yugoslav Republic of Macedonia has provided the U.S. Patent and Trademark Office with information regarding the status of industrial property protection within the former Yugoslav Republic of Macedonia.

Following is the unedited text of the ANNOUNCEMENT ON THE PROTECTION OF INDUSTRIAL PROPERTY IN THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA, provided in English translation by the Ministry of Development.

"The present situation of industrial property protection in the former Yugoslav Republic of Macedonia is summarized below.

I. Legislation

(1) On July 14, 1993, the Industrial Property Act entered into force. An Office for the Protection of Industrial Property of the former Yugoslav Republic of Macedonia will be set up within a few months.

(2) Pending the setting-up of the said Office, applications for

patents for inventions, utility models, industrial designs, trademarks, service marks and appellations of origin may be filed with the Ministry of Development in order to establish a filing or priority date. Applications so filed will not, however, be processed to grant or refusal until the said Office has been established.

II. Application of International Treaties

(3) On July 23, 1993, the former Yugoslav Republic of Macedonia deposited a declaration the effect of which is that all those treaties administered by WIPO to which Yugoslavia was party continue to be applicable as far as the former Yugoslav Republic of Macedonia is concerned. Those treaties are: the Convention Establishing the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property, the Madrid Agreement Concerning the International Registration of Marks, the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, the Locarno Agreement Establishing an International Classification for Industrial Designs and the Berne Convention for the Protection of Literary and Artistic Works.

(4) A further announcement will be made on the procedure to be followed to confirm the effect of international registrations to Rule 38 of the Regulations under the Madrid Agreement.

III. Applications for Industrial Property Rights Previously Filed with the Former Federal Patent Office in Belgrade and Industrial Property Rights Granted by the Former Federal Patent Office in Belgrade

(5) The applicant of any application for an industrial property right filed with the former Federal Patent Office in Belgrade prior to April 26, 1992, may file with the Office for the Protection of Industrial Property of the former Yugoslav Republic of Macedonia, after its establishment and prior to July 7, 1994, a request that the application be further processed.

(6) The owner of any industrial property right granted by the former Federal Patent Office in Belgrade and valid on July 7, 1993, may file with the Office for the Protection of Industrial Property of the former Yugoslav Republic of Macedonia, after its establishment and prior to July 7, 1995, a request to the effect that the granted industrial property right be considered for the remaining period of its validity as an industrial property right granted by the Office for the Protection of Industrial Property of the former Yugoslav Republic of Macedonia.

IV. Address of the Ministry of Development

Ministry of Development
Bote Bocevski 9
91000 Skopje
The former Yugoslav Republic of Macedonia

Telephone (3891) 220 678
Telefax (3891) 223 027

Nov. 4, 1993

BRUCE A. LEHMAN
*Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks*

[1156 TMOG 113]

(213) Regarding Industrial Property In The Kyrgyz Republic

The following notice is reprinted from the December 1993 edition of "Industrial Property" published by the World Intellectual Property Organization, giving the status of industrial property protection in the Kyrgyz Republic:

The present situation of industrial property protection in the Kyrgyz Republic is summarized below.

I. Legislation

(1) Pending the enactment of the industrial property laws, the Government of the Kyrgyz Republic adopted, on August 2, 1993, the Provisional Regulations on Industrial Property, which cover inventions, utility models, industrial designs and trademarks. It is possible, as of August 2, 1993, to file applications for the grant of patents for inventions and for the registration of utility models, industrial designs and trademarks with the Patent Department of the State Committee on Science and New Technologies of the Kyrgyz Republic.

II. Application of International Treaties

(2) The Kyrgyz Republic intends to become party to the Convention Establishing the World Intellectual Property Organization (WIPO), to the Paris Convention for the Protection of Industrial Property, to the Madrid Agreement Concerning the International Registration of Marks, to the Patent Cooperation Treaty (PCT) and to the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks.

(3) Announcements will be made as soon as the Kyrgyz Republic becomes party to the treaties mentioned in paragraph (2), above, or to any other treaties administered by WIPO. Details will be given at that stage of the procedures to be followed to confirm the application to the Kyrgyz Republic of certain international applications under the PCT and certain international registrations under the Madrid Agreement.

III. Reregistration of Industrial Property Titles Granted by the Patent Office of the Soviet Union and Further Processing of Pending Applications

(4) The owner of a patent for invention, an inventor's certificate, an industrial design patent or certificate granted by the Patent

Office of the Soviet Union and still in force may file directly with the Patent Department of the State Committee on Science and New Technologies of the Kyrgyz Republic before May 1, 1994, a request for the grant of a Kyrgyz patent for invention, design patent or trademark certificate.

(5) An applicant of an application for a patent for invention, for an industrial design patent or for a trademark certificate filed before August 2, 1993, with the express or implied intention of obtaining protection also in the Kyrgyz Republic and pending with the Patent Office of the Russian Federation may file with Patent Department of the State Committee on Science and New Technologies of the Kyrgyz Republic before May 1, 1994, a request that the application be further processed under Kyrgyz legislation.

IV. Procedural Provisions

(6) The procedures referred to in paragraphs (1), (4) and (5) are subject to payment of the prescribed fees.

V. Address of the Patent Office

Patent Department of the State Committee on Science and New Technology
87, Isanov St.
720001 Bishkek
Kyrgyz Republic
Telephone: (3312) 21 54 86
21 54 94

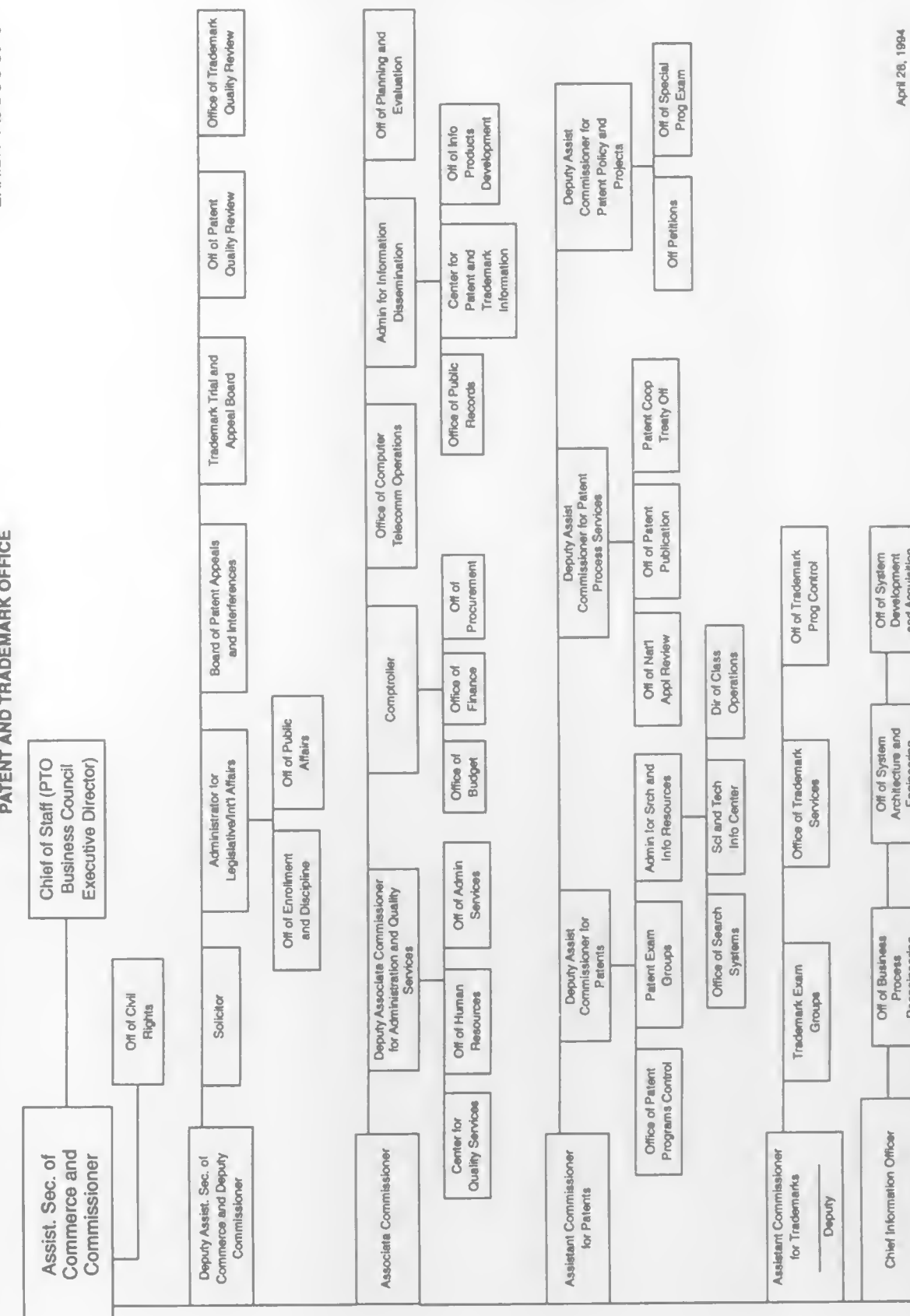
Facsimile: (3312) 21 25 91

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

[1160 TMOG 14]

EXHIBIT 1 to DOO 30-3

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE



April 26, 1994

Office of the Assistant Commissioner
for Patents

Assistant Commissioner for Patents	
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Policy and Projects, Stephen G. Kunin.....	305-8850
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Editor, J. Michael Thesz.....	305-8813
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Chemical Examining Groups	
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Group 1300, Director, Richard V. Fisher..	308-1193
Group 1500, Director, Theodore Morris..	308-2359
Group 1800, Director,	
Barry S. Richmond	308-1123
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Group 2100, Director, Stewart Levy.....	308-0658
Group 2200, Director, Robert E. Garrett ..	308-0753
Group 2300, Director, Bobby R. Gray	305-9700
Group 2400, Director, Gerald Goldberg ...	308-0777
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Group 2600, Director, Nicholas Godici	305-4800
Mechanical Examining Groups	
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Frederick R. Schmidt.....	308-1134
Group 3200, Director, Carlton R. Croyle ..	308-1078
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Group 3400, Director, Donald G. Kelly ...	308-0975
Group 3500, Director, Al L. Smith.....	308-1028
Deputy Assistant Commissioner for Patent	
Process Services, James O. Thomas	308-2359
Office of National Application Review	
Director, Anne Kelly	308-0910
Application Processing Division	
Ronald Adams	308-0921
Micrographics Division	
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PCT International Division	
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Assistant Commissioner, Philip G. Hampton, II	305-8900 X40
Deputy Assistant Commissioner, Robert M. Anderson	305-8900 X22
Office of Quality Review, Director, Charles J. Condro	308-9600
Trademark Trial and Appeal Board, Chairman, J. David Sams	308-9300
Trademark Examining Groups Director, David E. Bucher	308-9000 ext. 19
Administrator for Trademark Policy and Procedures, James T. Walsh	308-9000 ext. 45
Administrator for Petitions and Classification	

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

International Application (PCT Chapter I) fees:

Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00

International fees

Basic fee	604.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	147.00
—For each designation in excess of 10 offices	No Charge

Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	147.00
—Confirmation fee	73.50

International Application (PCT Chapter II) fees associated

with filing a Demand for Preliminary Examination:	
Handling fee	185.00
Preliminary examination fee	

USPTO as International Preliminary
Examining Authority (IPEA)

—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
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Basic National fee

USPTO was IPEA

—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00

Other National fees

—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20 ..	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or decla- ration after the time limit appli- cable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Dec. 12, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Status of Appeal Cases

The Date of Examiner's Answer of Oldest
Ex Parte Appeals Awaiting Assignment to Panel for
a Decision Without a Hearing as of
November 30, 1994.

Chemical Discipline -	October 13, 1992
Mechanical Discipline -	July 1, 1994
Electrical Discipline -	November 1, 1993

The Date of Examiner's Answer of Oldest
Ex Parte Appeals Awaiting the Setting of Hearing
Date as of November 30, 1994.

Chemical Discipline -	November 3, 1992*
Mechanical Discipline -	December 1, 1993*

Electrical Discipline -

October 4, 1993

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*These cases were recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on December 31, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,075,897 through 5,077,835
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 29, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,715,066 through 4,716,593
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 27, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,422,183 through 4,423,522
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))\$480.00
By other than a small entity.....\$960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec.

12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))\$965.00
By other than a small entity.....\$1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,450.00
By other than a small entity.....\$2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))\$65.00
By other than a small entity.....\$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable\$640.00
(2) unintentional.....\$1,500.00

**Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fee**

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

**PATENTS WHICH EXPIRED October 26, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES**

Patent Number	Serial Number	Issue Date
Re. 32,688 (4,617,733)	07/053,250 (06/791,471)	06/07/88 (10/21/86)
4,355,427	06/215,979	10/26/82
4,355,438	06/235,263	10/26/82
4,355,449	06/269,188	10/26/82
4,355,454	06/260,579	10/26/82
4,355,466	06/236,142	10/26/82
4,355,468	06/247,273	10/26/82
4,355,470	06/224,432	10/26/82
4,355,484	06/299,806	10/26/82
4,355,498	06/272,728	10/26/82
4,355,502	06/219,687	10/26/82
4,355,519	06/255,467	10/26/82
4,355,534	06/221,570	10/26/82
4,355,589	06/244,037	10/26/82
4,355,599	06/263,010	10/26/82
4,355,601	06/305,755	10/26/82
4,355,613	06/221,139	10/26/82
4,355,655	06/304,716	10/26/82
4,355,658	06/216,811	10/26/82
4,355,659	06/223,513	10/26/82
4,355,671	06/229,106	10/26/82
4,355,683	06/262,047	10/26/82

Patent Number	Serial Number	Issue Date	4,356,432	06/238,143	10/26/82
4,355,688	06/229,399	10/26/82	4,356,435	06/259,342	10/26/82
4,355,690	06/217,717	10/26/82	4,356,444	06/216,385	10/26/82
4,355,700	06/235,089	10/26/82	4,356,466	06/265,864	10/26/82
4,355,730	06/243,926	10/26/82	4,356,507	06/220,864	10/26/82
4,355,737	06/225,788	10/26/82	4,356,515	06/260,850	10/26/82
4,355,768	06/254,650	10/26/82	4,356,525	06/222,412	10/26/82
4,355,783	06/235,357	10/26/82	4,356,543	06/273,240	10/26/82
4,355,789	06/229,579	10/26/82	4,356,584	06/302,508	10/21/86
4,355,804	06/282,877	10/26/82	4,356,688	06/779,833	10/21/86
4,355,875	06/255,493	10/26/82	4,356,689	06/667,302	10/21/86
4,355,877	06/233,233	10/26/82	4,356,691	06/746,451	10/21/86
4,355,906	06/250,773	10/26/82	4,356,693	06/783,510	10/21/86
4,355,925	06/231,037	10/26/82	4,356,694	06/652,844	10/21/86
4,355,926	06/231,112	10/26/82	4,356,696	06/757,042	10/21/86
4,355,955	06/251,292	10/26/82	4,356,698	06/738,495	10/21/86
4,355,966	06/260,006	10/26/82	4,356,700	06/583,506	10/21/86
4,355,972	06/234,813	10/26/82	4,356,706	06/759,863	10/21/86
4,355,973	06/277,747	10/26/82	4,356,710	06/738,767	10/21/86
4,356,005	06/249,553	10/26/82	4,356,718	06/638,368	10/21/86
4,356,011	06/267,024	10/26/82	4,356,720	06/681,793	10/21/86
4,356,016	06/274,946	10/26/82	4,356,721	06/660,235	10/21/86
4,356,018	06/299,412	10/26/82	4,356,723	06/566,411	10/21/86
4,356,021	06/221,681	10/26/82	4,356,726	06/678,740	10/21/86
4,356,022	06/227,018	10/26/82	4,356,732	06/687,622	10/21/86
4,356,031	06/244,154	10/26/82	4,356,736	06/637,038	10/21/86
4,356,048	06/242,154	10/26/82	4,356,737	06/717,627	10/21/86
4,356,049	06/242,166	10/26/82	4,356,739	06/690,793	10/21/86
4,356,051	06/268,529	10/26/82	4,356,742	06/713,864	10/21/86
4,356,070	06/274,574	10/26/82	4,356,745	06/709,863	10/21/86
4,356,082	06/217,879	10/26/82	4,356,748	06/707,023	10/21/86
4,356,090	06/305,994	10/26/82	4,356,751	06/667,490	10/21/86
4,356,092	06/298,263	10/26/82	4,356,754	06/732,853	10/21/86
4,356,101	06/254,708	10/26/82	4,356,759	06/682,099	10/21/86
4,356,104	06/277,796	10/26/82	4,356,762	06/514,512	10/21/86
4,356,106	06/255,818	10/26/82	4,356,763	06/632,376	10/21/86
4,356,116	06/250,800	10/26/82	4,356,764	06/737,190	10/21/86
4,356,121	06/305,662	10/26/82	4,356,765	06/556,179	10/21/86
4,356,125	06/256,671	10/26/82	4,356,768	06/755,334	10/21/86
4,356,141	06/240,918	10/26/82	4,356,770	06/654,647	10/21/86
4,356,148	06/243,399	10/26/82	4,356,773	06/836,981	10/21/86
4,356,158	06/315,575	10/26/82	4,356,775	06/647,045	10/21/86
4,356,160	06/254,667	10/26/82	4,356,776	06/456,080	10/21/86
4,356,163	06/334,879	10/26/82	4,356,778	06/810,773	10/21/86
4,356,168	06/262,013	10/26/82	4,356,786	06/641,049	10/21/86
4,356,171	06/300,928	10/26/82	4,356,788	06/736,669	10/21/86
4,356,178	06/332,234	10/26/82	4,356,791	06/657,629	10/21/86
4,356,180	06/245,463	10/26/82	4,356,796	06/713,209	10/21/86
4,356,182	06/230,206	10/26/82	4,356,798	06/596,293	10/21/86
4,356,189	06/235,326	10/26/82	4,356,801	06/803,549	10/21/86
4,356,199	06/290,059	10/26/82	4,356,802	06/724,659	10/21/86
4,356,204	06/289,570	10/26/82	4,356,804	06/824,552	10/21/86
4,356,222	06/308,089	10/26/82	4,356,805	06/790,948	10/21/86
4,356,238	06/313,556	10/26/82	4,356,807	06/752,556	10/21/86
4,356,239	06/226,060	10/26/82	4,356,808	06/808,650	10/21/86
4,356,241	06/280,957	10/26/82	4,356,810	06/762,553	10/21/86
4,356,244	06/236,653	10/26/82	4,356,812	06/666,745	10/21/86
4,356,249	06/316,630	10/26/82	4,356,820	06/763,055	10/21/86
4,356,257	06/298,640	10/26/82	4,356,821	06/701,217	10/21/86
4,356,279	06/286,400	10/26/82	4,356,823	06/698,030	10/21/86
4,356,285	06/304,063	10/26/82	4,356,824	06/747,808	10/21/86
4,356,286	06/246,838	10/26/82	4,356,827	06/705,641	10/21/86
4,356,296	06/237,838	10/26/82	4,356,828	06/717,401	10/21/86
4,356,297	06/225,108	10/26/82	4,356,830	06/731,212	10/21/86
4,356,310	06/280,168	10/26/82	4,356,831	06/642,953	10/21/86
4,356,315	06/245,466	10/26/82	4,356,835	06/631,445	10/21/86
4,356,317	06/222,200	10/26/82	4,356,836	06/629,972	10/21/86
4,356,327	06/316,193	10/26/82	4,356,838	06/597,609	10/21/86
4,356,330	06/284,905	10/26/82	4,356,840	06/561,717	10/21/86
4,356,332	06/316,197	10/26/82	4,356,849	06/623,170	10/21/86
4,356,334	06/236,430	10/26/82	4,356,850	06/404,526	10/21/86
4,356,341	06/243,676	10/26/82	4,356,854	06/617,113	10/21/86
4,356,344	06/228,187	10/26/82	4,356,859	06/752,533	10/21/86
4,356,377	06/235,811	10/26/82	4,356,864	06/774,350	10/21/86
4,356,391	06/220,085	10/26/82	4,356,865	06/763,274	10/21/86
4,356,394	06/230,076	10/26/82	4,356,868	06/680,196	10/21/86
4,356,396	06/217,452	10/26/82	4,356,870	06/726,094	10/21/86
4,356,404	06/267,165	10/26/82	4,356,871	06/774,876	10/21/86
			4,356,872	06/762,577	10/21/86

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4,617,878	06/757,623	10/21/86	4,618,128	06/659,708	10/21/86
4,617,880	06/780,436	10/21/86	4,618,129	06/603,150	10/21/86
4,617,884	06/635,044	10/21/86	4,618,130	06/619,361	10/21/86
4,617,888	06/683,510	10/21/86	4,618,131	06/738,137	10/21/86
4,617,889	06/721,767	10/21/86	4,618,132	06/613,739	10/21/86
4,617,891	06/647,113	10/21/86	4,618,133	06/687,437	10/21/86
4,617,905	06/713,605	10/21/86	4,618,134	06/704,867	10/21/86
4,617,910	06/719,804	10/21/86	4,618,136	06/603,437	10/21/86
4,617,911	06/607,269	10/21/86	4,618,142	06/693,134	10/21/86
4,617,918	06/657,287	10/21/86	4,618,151	06/609,792	10/21/86
4,617,921	06/694,877	10/21/86	4,618,158	06/529,372	10/21/86
4,617,923	06/694,349	10/21/86	4,618,161	06/754,612	10/21/86
4,617,924	06/693,016	10/21/86	4,618,165	06/693,730	10/21/86
4,617,926	06/574,922	10/21/86	4,618,166	06/652,507	10/21/86
4,617,934	06/759,024	10/21/86	4,618,175	06/576,333	10/21/86
4,617,936	06/763,724	10/21/86	4,618,178	06/751,639	10/21/86
4,617,945	06/507,787	10/21/86	4,618,179	06/742,472	10/21/86
4,617,947	06/650,281	10/21/86	4,618,180	06/646,528	10/21/86
4,617,948	06/511,202	10/21/86	4,618,181	06/772,126	10/21/86
4,617,952	06/756,198	10/21/86	4,618,185	06/709,229	10/21/86
4,617,958	06/758,760	10/21/86	4,618,186	06/777,263	10/21/86
4,617,959	06/783,993	10/21/86	4,618,189	06/691,840	10/21/86
4,617,960	06/730,705	10/21/86	4,618,200	06/764,226	10/21/86
4,617,962	06/649,684	10/21/86	4,618,203	06/705,113	10/21/86
4,617,966	06/755,154	10/21/86	4,618,209	06/720,648	10/21/86
4,617,969	06/675,003	10/21/86	4,618,215	06/662,854	10/21/86
4,617,973	06/704,763	10/21/86	4,618,217	06/729,766	10/21/86
4,617,976	06/622,335	10/21/86	4,618,221	06/689,681	10/21/86
4,617,977	06/509,812	10/21/86	4,618,222	06/437,069	10/21/86
4,617,984	06/749,772	10/21/86	4,618,223	06/644,599	10/21/86
4,617,992	06/730,049	10/21/86	4,618,224	06/537,194	10/21/86
4,617,996	06/726,195	10/21/86	4,618,232	06/699,704	10/21/86
4,617,997	06/769,226	10/21/86	4,618,233	06/685,086	10/21/86
4,618,005	06/641,997	10/21/86	4,618,249	06/736,431	10/21/86
4,618,006	06/616,139	10/21/86	4,618,252	06/742,828	10/21/86
4,618,008	06/642,864	10/21/86	4,618,255	06/714,745	10/21/86
4,618,009	06/638,700	10/21/86	4,618,259	06/745,641	10/21/86
4,618,012	06/691,388	10/21/86	4,618,261	06/718,358	10/21/86
4,618,013	06/698,087	10/21/86	4,618,263	06/570,918	10/21/86
4,618,017	06/676,394	10/21/86	4,618,264	06/670,865	10/21/86
4,618,022	06/818,688	10/21/86	4,618,266	06/780,134	10/21/86
4,618,023	06/678,973	10/21/86	4,618,267	06/501,009	10/21/86
4,618,024	06/470,664	10/21/86	4,618,268	06/661,843	10/21/86
4,618,028	06/812,825	10/21/86	4,618,273	06/691,410	10/21/86
4,618,030	06/641,343	10/21/86	4,618,274	06/796,792	10/21/86
4,618,031	06/687,477	10/21/86	4,618,275	06/600,892	10/21/86
4,618,032	06/590,165	10/21/86	4,618,276	06/704,422	10/21/86
4,618,035	06/721,440	10/21/86	4,618,277	06/679,928	10/21/86
4,618,045	06/634,038	10/21/86	4,618,284	06/789,342	10/21/86
4,618,046	06/696,359	10/21/86	4,618,287	06/613,799	10/21/86
4,618,050	06/657,531	10/21/86	4,618,289	06/637,127	10/21/86
4,618,052	06/742,638	10/21/86	4,618,293	06/599,727	10/21/86
4,618,055	06/694,511	10/21/86	4,618,298	06/699,187	10/21/86
4,618,057	06/664,228	10/21/86	4,618,299	06/595,406	10/21/86
4,618,062	06/784,470	10/21/86	4,618,302	06/587,135	10/21/86
4,618,069	06/650,272	10/21/86	4,618,305	06/585,029	10/21/86
4,618,072	06/644,229	10/21/86	4,618,306	06/554,776	10/21/86
4,618,073	06/728,523	10/21/86	4,618,308	06/758,847	10/21/86
4,618,074	06/659,647	10/21/86	4,618,309	06/579,415	10/21/86
4,618,075	06/578,420	10/21/86	4,618,311	06/690,797	10/21/86
4,618,081	06/775,797	10/21/86	4,618,312	06/511,734	10/21/86
4,618,082	06/738,085	10/21/86	4,618,314	06/695,726	10/21/86
4,618,084	06/744,386	10/21/86	4,618,321	06/670,410	10/21/86
4,618,090	06/603,354	10/21/86	4,618,322	06/749,318	10/21/86
4,618,091	06/718,872	10/21/86	4,618,325	06/669,905	10/21/86
4,618,092	06/676,320	10/21/86	4,618,326	06/713,182	10/21/86
4,618,104	06/804,393	10/21/86	4,618,328	06/733,121	10/21/86
4,618,110	06/673,468	10/21/86	4,618,329	06/815,814	10/21/86
4,618,112	06/485,294	10/21/86	4,618,332	06/636,167	10/21/86
4,618,115	06/656,362	10/21/86	4,618,333	06/735,668	10/21/86
4,618,116	06/621,452	10/21/86	4,618,334	06/757,561	10/21/86
4,618,117	06/559,177	10/21/86	4,618,335	06/660,968	10/21/86
4,618,120	06/705,319	10/21/86	4,618,336	06/707,234	10/21/86
4,618,121	06/640,899	10/21/86	4,618,337	06/662,617	10/21/86
4,618,122	06/694,641	10/21/86	4,618,338	06/710,141	10/21/86
4,618,123	06/710,265	10/21/86	4,618,344	06/383,433	10/21/86
4,618,125	06/769,399	10/21/86	4,618,347	06/690,491	10/21/86
			4,618,350	06/479,912	10/21/86
			4,618,351	06/642,671	10/21/86

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4,618,369	06/684,556	10/21/86	4,618,670	06/713,586	10/21/86
4,618,372	06/672,430	10/21/86	4,618,678	06/809,962	10/21/86
4,618,373	06/584,428	10/21/86	4,618,680	06/325,166	10/21/86
4,618,379	06/754,539	10/21/86	4,618,686	06/655,279	10/21/86
4,618,380	06/745,977	10/21/86	4,618,687	06/724,549	10/21/86
4,618,384	06/530,544	10/21/86	4,618,689	06/756,481	10/21/86
4,618,386	06/752,488	10/21/86	4,618,691	06/688,101	10/21/86
4,618,387	06/709,874	10/21/86	4,618,692	06/579,570	10/21/86
4,618,391	06/636,763	10/21/86	4,618,698	06/743,533	10/21/86
4,618,394	06/661,165	10/21/86	4,618,706	06/364,945	10/21/86
4,618,395	06/661,165	10/21/86	4,618,707	06/801,443	10/21/86
4,618,403	06/735,312	10/21/86	4,618,708	06/715,764	10/21/86
4,618,405	06/729,787	10/21/86	4,618,709	06/229,844	10/21/86
4,618,406	06/726,244	10/21/86	4,618,711	06/717,341	10/21/86
4,618,407	06/443,530	10/21/86	4,618,716	06/796,472	10/21/86
4,618,409	06/578,581	10/21/86	4,618,721	06/714,308	10/21/86
4,618,410	06/691,001	10/21/86	4,618,722	06/742,677	10/21/86
4,618,411	06/794,590	10/21/86	4,618,723	06/448,466	10/21/86
4,618,412	06/741,078	10/21/86	4,618,724	06/700,655	10/21/86
4,618,414	06/760,835	10/21/86	4,618,728	06/704,434	10/21/86
4,618,415	06/741,765	10/21/86	4,618,732	06/735,983	10/21/86
4,618,416	06/646,657	10/21/86	4,618,734	06/522,605	10/21/86
4,618,429	06/787,449	10/21/86	4,618,737	06/808,705	10/21/86
4,618,431	06/682,441	10/21/86	4,618,738	06/760,077	10/21/86
4,618,432	06/689,818	10/21/86	4,618,739	06/736,019	10/21/86
4,618,447	06/601,274	10/21/86	4,618,742	06/479,026	10/21/86
4,618,451	06/791,147	10/21/86	4,618,746	06/741,292	10/21/86
4,618,453	06/594,014	10/21/86	4,618,750	06/743,697	10/21/86
4,618,454	06/739,354	10/21/86	4,618,753	06/679,017	10/21/86
4,618,454	06/751,873	10/21/86	4,618,755	06/737,941	10/21/86
4,618,460	06/585,625	10/21/86	4,618,757	06/647,799	10/21/86
4,618,461	06/517,180	10/21/86	4,618,759	06/701,167	10/21/86
4,618,470	06/445,934	10/21/86	4,618,766	06/773,721	10/21/86
4,618,475	06/771,061	10/21/86	4,618,769	06/689,104	10/21/86
4,618,480	06/641,020	10/21/86	4,618,774	06/639,798	10/21/86
4,618,489	06/529,163	10/21/86	4,618,775	06/593,020	10/21/86
4,618,497	06/757,396	10/21/86	4,618,777	06/673,110	10/21/86
4,618,499	06/701,684	10/21/86	4,618,781	06/246,019	10/21/86
4,618,503	06/711,492	10/21/86	4,618,783	06/602,675	10/21/86
4,618,504	06/706,989	10/21/86	4,618,789	06/630,474	10/21/86
4,618,506	06/587,793	10/21/86	4,618,792	06/654,627	10/21/86
4,618,508	06/682,352	10/21/86	4,618,800	06/467,343	10/21/86
4,618,509	06/614,894	10/21/86	4,618,804	06/745,275	10/21/86
4,618,512	06/749,905	10/21/86	4,618,809	06/742,204	10/21/86
4,618,515	06/720,504	10/21/86	4,618,810	06/464,114	10/21/86
4,618,520	06/584,169	10/21/86	4,618,820	06/621,274	10/21/86
4,618,522	06/562,800	10/21/86	4,618,824	06/631,285	10/21/86
4,618,526	06/757,692	10/21/86	4,618,826	06/635,600	10/21/86
4,618,530	06/831,045	10/21/86	4,618,827	06/648,567	10/21/86
4,618,532	06/641,118	10/21/86	4,618,830	06/681,597	10/21/86
4,618,545	06/747,438	10/21/86	4,618,834	06/753,468	10/21/86
4,618,548	06/712,978	10/21/86	4,618,835	06/675,425	10/21/86
4,618,549	06/653,241	10/21/86	4,618,845	06/655,561	10/21/86
4,618,555	06/686,991	10/21/86	4,618,848	06/681,518	10/21/86
4,618,568	06/661,336	10/21/86	4,618,851	06/643,065	10/21/86
4,618,581	06/637,524	10/21/86	4,618,853	06/704,766	10/21/86
4,618,594	06/821,843	10/21/86	4,618,857	06/622,560	10/21/86
4,618,596	06/759,202	10/21/86	4,618,858	06/548,434	10/21/86
4,618,604	06/620,412	10/21/86	4,618,859	06/584,360	10/21/86
4,618,607	06/448,576	10/21/86	4,618,864	06/575,642	10/21/86
4,618,611	06/565,901	10/21/86	4,618,867	06/620,722	10/21/86
4,618,613	06/749,716	10/21/86	4,618,880	06/588,393	10/21/86
4,618,617	06/469,511	10/21/86	4,618,881	06/716,338	10/21/86
4,618,618	06/685,617	10/21/86	4,618,887	06/589,656	10/21/86
4,618,619	06/589,613	10/21/86	4,618,891	06/515,044	10/21/86
4,618,624	06/628,058	10/21/86	4,618,892	06/715,441	10/21/86
4,618,625	06/636,201	10/21/86	4,618,907	06/695,965	10/21/86
4,618,627	06/609,146	10/21/86	4,618,910	06/664,659	10/21/86
4,618,628	06/680,660	10/21/86	4,618,916	06/683,255	10/21/86
4,618,632	06/699,373	10/21/86	4,618,917	06/645,840	10/21/86
4,618,633	06/772,662	10/21/86	4,618,923	06/682,899	10/21/86
4,618,643	06/585,520	10/21/86	4,618,924	06/655,185	10/21/86
4,618,644	06/724,361	10/21/86	4,618,929	06/491,455	10/21/86
4,618,651	06/766,592	10/21/86	4,618,931	06/591,715	10/21/86
4,618,655	06/677,656	10/21/86	4,618,932	06/593,823	10/21/86
4,618,658	06/734,516	10/21/86	4,618,933	06/506,410	10/21/86
4,618,660	06/771,393	10/21/86	4,618,940	06/459,376	10/21/86
4,618,667	06/724,692	10/21/86	4,618,944	06/594,276	10/21/86

Patent Number	Serial Number	Issue Date	4,964,412	07/220,153	10/23/90
4,618,950	06/570,908	10/21/86	4,964,415	07/380,524	10/23/90
4,618,952	06/551,882	10/21/86	4,964,418	07/157,035	10/23/90
4,618,961	06/450,195	10/21/86	4,964,419	07/388,480	10/23/90
4,618,963	06/693,165	10/21/86	4,964,421	07/388,008	10/23/90
4,618,965	06/713,295	10/21/86	4,964,425	07/184,458	10/23/90
4,618,973	06/794,048	10/21/86	4,964,428	07/413,204	10/23/90
4,618,978	06/544,090	10/21/86	4,964,430	07/351,576	10/23/90
4,618,982	06/421,884	10/21/86	4,964,435	07/344,971	10/23/90
4,618,988	06/634,410	10/21/86	4,964,436	07/458,080	10/23/90
4,618,990	06/671,746	10/21/86	4,964,443	07/366,628	10/23/90
4,618,992	06/678,789	10/21/86	4,964,445	07/376,637	10/23/90
4,618,993	06/490,018	10/21/86	4,964,447	07/437,589	10/23/90
4,618,998	06/537,011	10/21/86	4,964,448	07/407,175	10/23/90
4,619,000	06/654,201	10/21/86	4,964,449	07/499,748	10/23/90
4,964,172	07/366,611	10/23/90	4,964,450	07/451,014	10/23/90
4,964,173	07/366,649	10/23/90	4,964,465	07/432,011	10/23/90
4,964,175	07/372,755	10/23/90	4,964,472	07/462,887	10/23/90
4,964,176	07/474,502	10/23/90	4,964,473	07/322,835	10/23/90
4,964,181	07/200,229	10/23/90	4,964,477	07/355,171	10/23/90
4,964,182	07/468,366	10/23/90	4,964,482	07/314,016	10/23/90
4,964,183	07/262,167	10/23/90	4,964,487	07/462,081	10/23/90
4,964,188	07/376,415	10/23/90	4,964,488	07/297,695	10/23/90
4,964,191	07/177,565	10/23/90	4,964,498	07/372,895	10/23/90
4,964,199	07/399,114	10/23/90	4,964,501	07/387,150	10/23/90
4,964,205	07/335,313	10/23/90	4,964,502	07/388,140	10/23/90
4,964,206	07/507,855	10/23/90	4,964,503	07/282,546	10/23/90
4,964,211	07/366,292	10/23/90	4,964,507	07/442,737	10/23/90
4,964,215	07/361,214	10/23/90	4,964,510	07/389,762	10/23/90
4,964,221	07/367,777	10/23/90	4,964,511	07/392,556	10/23/90
4,964,222	07/467,186	10/23/90	4,964,514	07/301,554	10/23/90
4,964,223	07/230,470	10/23/90	4,964,518	07/485,487	10/23/90
4,964,233	07/473,473	10/23/90	4,964,520	07/390,521	10/23/90
4,964,235	07/379,090	10/23/90	4,964,523	07/445,807	10/23/90
4,964,237	07/216,822	10/23/90	4,964,526	07/387,990	10/23/90
4,964,241	07/405,890	10/23/90	4,964,528	07/395,755	10/23/90
4,964,245	07/283,283	10/23/90	4,964,531	07/437,675	10/23/90
4,964,252	07/426,099	10/23/90	4,964,535	07/367,765	10/23/90
4,964,261	07/301,506	10/23/90	4,964,536	07/260,093	10/23/90
4,964,264	07/467,924	10/23/90	4,964,537	07/206,589	10/23/90
4,964,267	07/426,281	10/23/90	4,964,545	07/307,362	10/23/90
4,964,268	07/390,752	10/23/90	4,964,549	07/330,437	10/23/90
4,964,277	07/461,574	10/23/90	4,964,550	07/326,323	10/23/90
4,964,282	07/447,236	10/23/90	4,964,553	07/326,911	10/23/90
4,964,284	07/451,216	10/23/90	4,964,554	07/397,773	10/23/90
4,964,285	07/268,283	10/23/90	4,964,560	07/319,143	10/23/90
4,964,286	07/381,667	10/23/90	4,964,565	07/412,339	10/23/90
4,964,287	07/281,703	10/23/90	4,964,569	07/299,509	10/23/90
4,964,291	06/861,648	10/23/90	4,964,572	07/437,069	10/23/90
4,964,295	06/878,649	10/23/90	4,964,573	07/369,458	10/23/90
4,964,300	07/369,490	10/23/90	4,964,574	07/408,048	10/23/90
4,964,307	07/229,422	10/23/90	4,964,581	07/254,406	10/23/90
4,964,309	07/311,467	10/23/90	4,964,584	07/370,844	10/23/90
4,964,310	07/311,057	10/23/90	4,964,585	07/495,389	10/23/90
4,964,316	06/636,985	10/23/90	4,964,589	07/348,043	10/23/90
4,964,318	07/145,568	10/23/90	4,964,593	07/389,174	10/23/90
4,964,319	07/407,919	10/23/90	4,964,596	07/133,164	10/23/90
4,964,326	07/424,041	10/23/90	4,964,600	07/353,982	10/23/90
4,964,330	07/419,115	10/23/90	4,964,601	07/326,310	10/23/90
4,964,338	07/301,654	10/23/90	4,964,603	07/228,920	10/23/90
4,964,340	07/254,601	10/23/90	4,964,604	07/456,462	10/23/90
4,964,342	07/446,998	10/23/90	4,964,607	07/310,765	10/23/90
4,964,343	07/391,626	10/23/90	4,964,610	07/415,968	10/23/90
4,964,345	07/281,532	10/23/90	4,964,612	07/348,360	10/23/90
4,964,349	07/304,220	10/23/90	4,964,613	07/423,155	10/23/90
4,964,355	07/054,841	10/23/90	4,964,614	07/415,615	10/23/90
4,964,357	07/362,080	10/23/90	4,964,617	07/410,747	10/23/90
4,964,358	07/327,293	10/23/90	4,964,618	07/420,613	10/23/90
4,964,361	07/192,384	10/23/90	4,964,626	07/309,426	10/23/90
4,964,379	07/348,248	10/23/90	4,964,636	07/312,988	10/23/90
4,964,382	07/414,169	10/23/90	4,964,637	07/371,924	10/23/90
4,964,393	07/494,311	10/23/90	4,964,644	07/435,159	10/23/90
4,964,395	07/268,004	10/23/90	4,964,648	07/394,641	10/23/90
4,964,396	07/476,312	10/23/90	4,964,650	07/240,676	10/23/90
4,964,400	07/318,811	10/23/90	4,964,655	07/449,755	10/23/90
4,964,402	07/233,273	10/23/90	4,964,660	07/363,685	10/23/90
4,964,403	07/132,937	10/23/90	4,964,663	07/425,487	10/23/90
4,964,410	07/271,572	10/23/90	4,964,664	07/378,700	10/23/90
			4,964,665	07/372,018	10/23/90

Patent Number	Serial Number	Issue Date	4,964,987	07/205,456	10/23/90
4,964,667	07/261,261	10/23/90	4,964,996	07/312,486	10/23/90
4,964,669	07/435,983	10/23/90	4,964,997	07/312,485	10/23/90
4,964,674	07/320,117	10/23/90	4,964,999	07/268,251	10/23/90
4,964,683	07/536,952	10/23/90	4,965,002	07/148,828	10/23/90
4,964,684	07/291,113	10/23/90	4,965,004	07/342,136	10/23/90
4,964,687	07/414,016	10/23/90	4,965,007	07/192,753	10/23/90
4,964,709	07/331,861	10/23/90	4,965,008	07/421,131	10/23/90
4,964,713	07/392,976	10/23/90	4,965,010	07/263,426	10/23/90
4,964,715	07/310,486	10/23/90	4,965,011	07/417,134	10/23/90
4,964,716	07/462,758	10/23/90	4,965,013	07/345,972	10/23/90
4,964,724	07/407,718	10/23/90	4,965,017	07/218,151	10/23/90
4,964,725	07/339,498	10/23/90	4,965,019	07/295,334	10/23/90
4,964,731	07/189,752	10/23/90	4,965,020	07/010,610	10/23/90
4,964,744	07/411,648	10/23/90	4,965,023	07/339,250	10/23/90
4,964,745	07/389,262	10/23/90	4,965,025	07/169,630	10/23/90
4,964,746	07/330,311	10/23/90	4,965,043	07/328,584	10/23/90
4,964,747	07/462,744	10/23/90	4,965,050	07/299,708	10/23/90
4,964,753	07/207,854	10/23/90	4,965,053	07/310,044	10/23/90
4,964,754	07/398,254	10/23/90	4,965,054	07/388,261	10/23/90
4,964,757	07/390,200	10/23/90	4,965,056	07/507,474	10/23/90
4,964,758	07/422,579	10/23/90	4,965,068	07/370,118	10/23/90
4,964,759	07/333,322	10/23/90	4,965,076	07/032,946	10/23/90
4,964,767	07/271,291	10/23/90	4,965,077	07/027,143	10/23/90
4,964,768	07/351,934	10/23/90	4,965,081	07/265,737	10/23/90
4,964,769	07/348,600	10/23/90	4,965,092	07/345,379	10/23/90
4,964,771	07/350,004	10/23/90	4,965,093	07/219,693	10/23/90
4,964,772	07/457,669	10/23/90	4,965,099	07/428,183	10/23/90
4,964,775	07/200,913	10/23/90	4,965,101	07/280,689	10/23/90
4,964,776	07/265,839	10/23/90	4,965,104	07/261,449	10/23/90
4,964,779	07/339,389	10/23/90	4,965,106	07/396,973	10/23/90
4,964,781	07/112,533	10/23/90	4,965,110	07/368,015	10/23/90
4,964,783	07/266,117	10/23/90	4,965,112	07/317,677	10/23/90
4,964,793	07/447,208	10/23/90	4,965,115	07/293,301	10/23/90
4,964,798	07/351,198	10/23/90	4,965,119	06/892,678	10/23/90
4,964,800	07/328,337	10/23/90	4,965,128	07/168,631	10/23/90
4,964,803	07/327,191	10/23/90	4,965,135	07/133,595	10/23/90
4,964,808	07/342,301	10/23/90	4,965,138	07/409,910	10/23/90
4,964,821	07/357,888	10/23/90	4,965,141	07/431,210	10/23/90
4,964,822	07/295,830	10/23/90	4,965,155	07/279,083	10/23/90
4,964,824	07/361,252	10/23/90	4,965,164	07/306,979	10/23/90
4,964,825	07/385,657	10/23/90	4,965,165	07/359,069	10/23/90
4,964,826	07/373,460	10/23/90	4,965,172	07/289,848	10/23/90
4,964,827	07/370,641	10/23/90	4,965,185	07/209,632	10/23/90
4,964,828	07/389,724	10/23/90	4,965,186	07/209,574	10/23/90
4,964,829	07/319,220	10/23/90	4,965,190	06/892,227	10/23/90
4,964,830	07/443,452	10/23/90	4,965,200	07/370,488	10/23/90
4,964,832	07/385,827	10/23/90	4,965,207	07/083,805	10/23/90
4,964,833	07/360,606	10/23/90	4,965,214	07/224,810	10/23/90
4,964,836	07/467,960	10/23/90	4,965,225	07/413,916	10/23/90
4,964,838	07/348,351	10/23/90	4,965,236	07/335,651	10/23/90
4,964,840	07/478,046	10/23/90	4,965,259	07/292,450	10/23/90
4,964,843	07/381,125	10/23/90	4,965,263	07/310,505	10/23/90
4,964,844	07/430,927	10/23/90	4,965,265	07/336,925	10/23/90
4,964,849	06/816,562	10/23/90	4,965,269	07/454,049	10/23/90
4,964,850	07/361,729	10/23/90	4,965,273	07/278,638	10/23/90
4,964,852	07/415,936	10/23/90	4,965,275	07/316,056	10/23/90
4,964,855	07/331,245	10/23/90	4,965,277	07/378,898	10/23/90
4,964,857	07/425,130	10/23/90	4,965,282	07/501,898	10/23/90
4,964,858	07/293,504	10/23/90	4,965,284	07/341,862	10/23/90
4,964,862	07/401,221	10/23/90	4,965,292	07/438,903	10/23/90
4,964,863	07/328,032	10/23/90	4,965,304	07/215,177	10/23/90
4,964,868	07/089,865	10/23/90	4,965,316	07/237,472	10/23/90
4,964,871	07/342,926	10/23/90	4,965,318	07/218,977	10/23/90
4,964,876	07/353,587	10/23/90	4,965,324	07/440,550	10/23/90
4,964,880	07/364,741	10/23/90	4,965,330	07/256,212	10/23/90
4,964,899	07/188,843	10/23/90	4,965,332	07/352,825	10/23/90
4,964,901	07/354,257	10/23/90	4,965,343	07/149,261	10/23/90
4,964,905	06/826,608	10/23/90	4,965,352	07/364,530	10/23/90
4,964,920	07/451,054	10/23/90	4,965,365	07/356,013	10/23/90
4,964,929	07/395,379	10/23/90	4,965,370	07/396,208	10/23/90
4,964,937	07/410,787	10/23/90	4,965,376	07/340,035	10/23/90
4,964,943	07/155,715	10/23/90	4,965,380	07/412,322	10/23/90
4,964,948	07/435,703	10/23/90	4,965,381	07/289,073	10/23/90
4,964,961	07/388,494	10/23/90	4,965,395	07/324,569	10/23/90
4,964,970	07/253,624	10/23/90	4,965,401	07/444,828	10/23/90
4,964,971	07/180,459	10/23/90	4,965,415	07/324,413	10/23/90
4,964,985	07/355,124	10/23/90	4,965,417	07/328,895	10/23/90
		10/23/90	4,965,418	07/292,717	10/23/90

Patent Number	Serial Number	Issue Date	4,965,606	07/311,833	10/23/90
4,965,422	07/344,561	10/23/90	4,965,610	07/399,655	10/23/90
4,965,424	07/357,337	10/23/90	4,965,611	07/327,078	10/23/90
4,965,425	07/109,529	10/23/90	4,965,624	07/211,256	10/23/90
4,965,426	07/318,625	10/23/90	4,965,634	07/437,515	10/23/90
4,965,429	07/396,262	10/23/90	4,965,637	07/379,366	10/23/90
4,965,433	07/281,985	10/23/90	4,965,642	06/851,838	10/23/90
4,965,448	06/855,851	10/23/90	4,965,649	07/417,388	10/23/90
4,965,451	07/366,741	10/23/90	4,965,656	07/314,246	10/23/90
4,965,456	07/355,272	10/23/90	4,965,670	07/393,998	10/23/90
4,965,459	07/125,260	10/23/90	4,965,701	07/475,411	10/23/90
4,965,461	07/220,618	10/23/90	4,965,704	07/364,709	10/23/90
4,965,464	07/409,577	10/23/90	4,965,729	07/204,328	10/23/90
4,965,471	07/371,164	10/23/90	4,965,734	07/436,113	10/23/90
4,965,479	07/504,065	10/23/90	4,965,740	07/292,419	10/23/90
4,965,488	07/328,639	10/23/90	4,965,749	07/374,252	10/23/90
4,965,491	07/030,026	10/23/90	4,965,753	07/485,861	10/23/90
4,965,492	07/273,055	10/23/90	4,965,756	07/255,770	10/23/90
4,965,499	07/288,651	10/23/90	4,965,760	07/341,696	10/23/90
4,965,500	07/350,471	10/23/90	4,965,771	07/085,409	10/23/90
4,965,509	07/310,806	10/23/90	4,965,799	07/228,687	10/23/90
4,965,510	07/298,868	10/23/90	4,965,808	07/317,393	10/23/90
4,965,519	07/311,348	10/23/90	4,965,817	07/145,096	10/23/90
4,965,544	07/459,896	10/23/90	4,965,818	07/420,770	10/23/90
4,965,547	07/363,829	10/23/90	4,965,827	07/195,323	10/23/90
4,965,551	07/279,878	10/23/90	4,965,828	07/333,709	10/23/90
4,965,553	07/344,220	10/23/90	4,965,831	07/249,497	10/23/90
4,965,567	07/288,179	10/23/90	4,965,835	07/359,955	10/23/90
4,965,571	07/360,114	10/23/90	4,965,848	07/319,006	10/23/90
4,965,578	07/257,051	10/23/90	4,965,856	07/355,460	10/23/90
4,965,583	07/346,582	10/23/90	4,965,866	07/409,533	10/23/90
4,965,598	07/320,443	10/23/90	4,965,870	07/374,002	10/23/90
			4,965,880	07/215,844	10/23/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,475,740	06/258,149	10/09/84	04/27/81	11/10/94
4,510,772	06/476,051	04/16/85	03/17/83	10/11/94
4,599,136	06/657,277	07/08/86	10/03/84	11/17/94
4,600,837	06/557,491	07/15/86	12/01/83	11/17/94
4,601,913	06/814,581	07/22/86	12/27/85	11/17/94
4,602,828	06/736,488	07/29/86	05/20/85	11/14/94
4,799,264	07/101,395	01/17/89	09/28/87	11/21/94
4,831,393	07/131,828	05/16/89	12/11/87	11/17/94
4,935,906	07/141,693	06/19/90	01/04/88	11/17/94
4,939,022	07/328,991	07/03/90	03/27/89	11/21/94
4,945,509	07/168,031	07/31/90	03/14/88	11/17/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,635,168, Re. S.N. 08/338,259, Nov. 14, 1994, Cl. 408/20, LIGHT FIXTURE MOUNTING PEDESTAL AND METHOD OF INSTALLING SAME, Charles H. Crowley, Owner of Record: *Inventor*, Attorney or Agent: Thomas N. Young, Ex. Gp.: 3202

4,928,536, Re. S.N. 08/336,830, Nov. 9, 1994, Cl. 73/863.83, FLUID SAMPLE APPARATUS FEATURING INTEGRAL CONSTRUCTION WITH A MOTOR DRIVEN SAMPLING SYSTEM, Brian H. Welker, Owner of Record: *Welker Engineering Co., Sugarland, Tex.*, Attorney or Agent: Mark D. Perdue, Ex. Gp.: 2605

5,088,484, Re. S.N. 08/335,981, Nov. 8, 1994, Cl. 602/44, ORTHOPEDIC CASTING BANDAGE, Horace L. Freeman, et. al., Owner of Record: *Johnson & Johnson, Raynham, Mass.*, Attorney or Agent: Francis A. Paintin, Ex. Gp.: 3302

5,089,318, Re. S.N. 08/335,985, Nov. 8, 1994, Cl. 428/212, IRIDESCENT FILM WITH THERMOPLASTIC ELASTOMERIC COMPONENTS, Ramakrishna S. Shetty, et. al., Owner of Record: *Mearl Corp., Ossining, N.Y.*, Attorney or Agent: Edward A. Meilman, Ex. Gp.: 1509

5,125,485, Re. S.N. 08/266,568, June 28, 1994, Cl. 477/187, MOTOR VEHICLE MOVEMENT CONTROL, Ernest U. Lang, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 3502

5,128,784, Re. S.N. 08/271,400, July 6, 1994, Cl. 359/58, ACTIVE MATRIX LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PRODUCTION THEREOF, Katsuni

Suzuki, et. al., Owner of Record: *Seiko Epson Corp., Tokyo, Japan*, Attorney or Agent: Lawrence Rosenthal, Ex. Gp.: 2515

5,136,690, Re. S.N. 08/285,363, Aug. 3, 1994, Cl. 395/161, DYNAMIC GRAPHICAL ANALYSIS OF NETWORK DATA, Richard Alan Becker, et. al., Owner of Record: *American Telephone and Telegraph Co., New York, N.Y.*, Bell Telephone Laboratories Incorporated, Murray Hill, N.J., Attorney or Agent: Fredrick B. Luludis, Ex. Gp.: 2301

5,150,392, Re. S.N. 08/310,444, Sept. 22, 1994, Cl. 378/34, X-RAY MASK CONTAINING A CANTILEVERED TIP FOR GAP CONTROL AND ALIGNMENT, Fritz J. Hohn, et. al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.*, Attorney or Agent: Stephen S. Strunck, Ex. Gp.: 2506

5,151,878, Re. S.N. 08/312,589, Sept. 27, 1994, Cl. 365/189.01, SEMICONDUCTOR MEMORY DEVICE, Toshio Yamada, et. al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaka, Japan*, Attorney or Agent: Steven H. Meyer, Ex. Gp.: 2511

5,157,944, Re. S.N. 08/327,024, Oct. 21, 1994, Cl. 62/515, EVAPORATOR, Gregory G. Hughes, et. al., Owner of Record: *Modine Manufacturing Co.*, Attorney or Agent: William A. Van Santen, Ex. Gp.: 3404

5,163,438, Re. S.N. 08/336,178, Nov. 8, 1994, Cl. 128/677, METHOD AND APPARATUS FOR CONTINUOUSLY AND NONINVASIVELY MEASURING THE BLOOD PRESSURE OF A PATIENT, Deborah C. Gordon, et. al., Owner of Record: *Vital Insite, Inc., Portola Valley, Calif.*, Attorney or Agent: David C. Ashby, Ex. Gp.: 3305

5,163,786, Re. S.N. 08/340,701, Nov. 16, 1994, Cl. 406/41, CYCLONE SEPARATOR WITH FILTER ASSEMBLY FOR PNEUMATIC CONVEYOR, Roy O. Christianson, Owner of Record: *Christianson Systems, Inc., Bloomington, Minn.*, Attorney or Agent: Dennis R. Daley, Ex. Gp.: 3102

5,277,297, Re. S.N. 08/334,402, Nov. 4, 1994, Cl. 198/626, CONTROLLABLE LENGTH CONVEYOR, Sidney S. Tolson, Owner of Record: *Ossid Corp., Rocky Mountain, N.C.*, and *Ibarki Seiki Machinery Co., Ltd., Osaka, Japan*, Attorney or Agent: B. B. Olive, Ex. Gp.: 3101

5,318,705, Re. S.N. 08/335,633, Nov. 8, 1994, Cl. 210/360.1, APPARATUS FOR USE IN EXTRACTING LIQUID FROM CLOTH OR OTHER WATER-ABSORBING GOODS, Norvin L. Pellerin, Owner of Record: *Pellerin Milnor Corp., Kenner, La.*, Attorney or Agent: Marvin B. Eickenroht, Ex. Gp.: 1308

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,808,425, Reexam. No. 90/003,629, Nov. 10, 1994, Cl. 426/399, METHOD FOR THE ULTRAPASTEURIZATION OF LIQUID WHOLE EGG PRODUCTS, Kenneth R. Swartzel, et. al., Owner of Record: *North Carolina State University, Raleigh, N.C.*, Attorney or Agent: Kenneth D. Sibley, Bell, Seltzer, Park & Gibson, Raleigh, N.C., Ex. Gp.: 1302, Requester: Dergosits & Noah, San Francisco, Calif.

4,957,759, Reexam. No. 90/003,630, Nov. 10, 1994, Cl. 426/399, METHOD FOR THE ULTRAPASTEURIZATION OF LIQUID WHOLE EGG PRODUCTS, Kenneth R. Swartzel, et. al., Owner of Record: *North Carolina State University,*

Raleigh, N.C., Attorney or Agent: Kenneth D. Sibley, Bell, Seltzer, Park & Gibson, Raleigh, N.C., Ex. Gp.: 1302, Requester: Dergosits & Noah, San Francisco, Calif.

4,994,291, Reexam. No. 90/003,631, Nov. 10, 1994, Cl. 426/399, METHOD FOR THE ULTRAPASTEURIZATION OF LIQUID WHOLE EGG PRODUCTS, Kenneth R. Swartzel, et. al., Owner of Record: *North Carolina State University, Raleigh, N.C.*, Attorney or Agent: Kenneth D. Sibley, Bell, Seltzer, Park & Gibson, Raleigh, N.C., Ex. Gp.: 1302, Requester: Dergosits & Noah, San Francisco, Calif.

Re. 34,308, Reexam. No. 90/003,632, Nov. 14, 1994, Cl. 340/679, RUPTURE DISC ALARM SYSTEM, Leonard K. Thompson, et. al., Owner of Record: *Continental Disc Corp., Kansas City, Mo.*, Attorney or Agent: Paul Krieger, Pravel, Hewitt, Kimball & Krieger, Houston, Tex., Ex. Gp.: 2617, Requester: BS & B Safety Systems, Tulsa, Okla.

4,691,750, Reexam. No. 90/003,633, Nov. 14, 1994, Cl. 144/208, BARKING MACHINE, Junichi Nakajima, Owner of Record: *Fuji Kogyo Kabushiki Kaisha, Fujieda-Shi, Japan*, Attorney or Agent: Browdy & Neimark, Washington, D.C., Ex. Gp.: 3201, Requester: Nixon & Vanderhye, Arlington, Va.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED NOVEMBER 21, 1994 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
95,412	71/072,411	02/17/1914
95,436	71/073,451	02/17/1914
95,459	71/049,621	02/17/1914
95,469	71/073,316	02/17/1914
95,473	71/071,139	02/17/1914
307,572	71/328,529	10/31/1933
310,059	71/342,731	02/13/1934
310,060	71/342,722	02/13/1934
310,070	71/342,608	02/13/1934
310,076	71/342,105	02/13/1934
310,078	71/342,092	02/13/1934
310,080	71/342,088	02/13/1934
310,082	71/342,078	02/13/1934
310,090	71/341,988	02/13/1934
310,093	71/341,970	02/13/1934
310,104	71/342,548	02/13/1934
310,105	71/342,544	02/13/1934
310,106	71/342,532	02/13/1934
310,115	71/342,563	02/13/1934
310,121	71/342,052	02/13/1934
310,122	71/342,603	02/13/1934
310,136	71/342,328	02/13/1934
310,137	71/342,331	02/13/1934
310,175	71/342,207	02/13/1934
310,179	71/339,218	02/13/1934
310,180	71/339,219	02/13/1934
310,196	71/341,715	02/13/1934
310,200	71/341,816	02/13/1934
310,210	71/338,253	02/13/1934
310,239	71/330,040	02/13/1934

Reg. Number	Serial Number	Reg. Date	72/443,283	02/12/1974
310,242	71/342,281	02/13/1934	72/443,416	02/12/1974
310,247	71/340,854	02/13/1934	72/445,658	02/12/1974
310,258	71/341,534	02/13/1934	72/445,896	02/12/1974
310,276	71/341,678	02/13/1934	72/461,158	02/12/1974
444,794	71/508,860	02/16/1954	72/395,826	02/12/1974
578,629	71/639,810	08/11/1953	72/403,323	02/12/1974
580,702	71/621,917	10/06/1953	72/414,737	02/12/1974
585,602	71/580,229	02/16/1954	72/419,295	02/12/1974
585,609	71/595,153	02/16/1954	72/436,729	02/12/1974
585,614	71/606,968	02/16/1954	72/438,078	02/12/1974
585,623	71/613,989	02/16/1954	72/440,556	02/12/1974
585,624	71/614,411	02/16/1954	72/440,562	02/12/1974
585,625	71/616,258	02/16/1954	72/440,564	02/12/1974
585,636	71/621,664	02/16/1954	72/440,566	02/12/1974
585,639	71/622,022	02/16/1954	72/403,250	02/12/1974
585,640	71/623,146	02/16/1954	72/437,517	02/12/1974
585,641	71/623,319	02/16/1954	72/437,519	02/12/1974
585,648	71/625,579	02/16/1954	72/437,521	02/12/1974
585,650	71/626,492	02/16/1954	72/437,523	02/12/1974
585,657	71/627,494	02/16/1954	72/437,524	02/12/1974
585,664	71/629,527	02/16/1954	72/440,046	02/12/1974
585,681	71/632,586	02/16/1954	72/446,950	02/12/1974
585,686	71/633,632	02/16/1954	72/451,534	02/12/1974
585,702	71/636,068	02/16/1954	72/391,096	02/12/1974
585,710	71/637,054	02/16/1954	72/407,103	02/12/1974
585,736	71/640,464	02/16/1954	72/414,911	02/12/1974
585,762	71/643,453	02/16/1954	72/421,238	02/12/1974
585,769	71/644,073	02/16/1954	72/423,401	02/12/1974
585,782	71/645,020	02/16/1954	72/437,447	02/12/1974
585,787	71/645,312	02/16/1954	72/440,735	02/12/1974
585,792	71/645,729	02/16/1954	72/402,025	02/12/1974
585,801	71/646,222	02/16/1954	72/421,888	02/12/1974
585,804	71/646,355	02/16/1954	72/434,759	02/12/1974
585,812	71/646,915	02/16/1954	72/435,526	02/12/1974
585,819	71/647,059	02/16/1954	72/435,858	02/12/1974
585,821	71/647,105	02/16/1954	72/436,699	02/12/1974
585,826	71/647,286	02/16/1954	72/437,167	02/12/1974
585,827	71/647,289	02/16/1954	72/437,168	02/12/1974
585,838	71/648,192	02/16/1954	72/437,675	02/12/1974
585,840	71/648,358	02/16/1954	72/439,671	02/12/1974
585,848	71/601,847	02/16/1954	72/440,641	02/12/1974
585,852	71/614,114	02/16/1954	72/447,934	02/12/1974
585,864	71/632,163	02/16/1954	72/452,212	02/12/1974
585,869	71/636,491	02/16/1954	72/426,416	02/12/1974
585,879	71/640,967	02/16/1954	72/443,483	02/12/1974
585,882	71/648,801	02/16/1954	72/446,071	02/12/1974
964,552	72/399,902	07/24/1973	72/455,823	02/12/1974
978,363	72/443,115	02/12/1974	72/446,023	02/12/1974
978,365	72/423,116	02/12/1974	72/446,068	02/12/1974
978,366	72/439,984	02/12/1974	72/446,380	02/12/1974
978,371	72/425,487	02/12/1974	72/415,434	02/12/1974
978,372	72/441,814	02/12/1974	72/421,112	02/12/1974
978,373	72/446,952	02/12/1974	72/394,409	02/12/1974
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978,401	72/434,802	02/12/1974	72/445,467	02/12/1974
978,402	72/435,117	02/12/1974	72/446,371	02/12/1974
978,403	72/435,246	02/12/1974	72/395,458	02/12/1974
978,414	72/444,198	02/12/1974	72/426,075	02/12/1974
978,417	72/444,500	02/12/1974	72/435,379	02/12/1974
978,424	72/433,909	02/12/1974	72/442,294	02/12/1974
978,429	72/433,567	02/12/1974	72/444,420	02/12/1974
978,432	72/440,150	02/12/1974	72/444,868	02/12/1974
978,434	72/456,983	02/12/1974	72/445,878	02/12/1974
978,437	72/426,092	02/12/1974	72/448,897	02/12/1974
978,441	72/449,053	02/12/1974	72/449,233	02/12/1974
978,446	72/462,577	02/12/1974	72/450,911	02/12/1974
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978,718	72/428,775	02/12/1974
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978,721	72/434,636	02/12/1974
978,722	72/437,489	02/12/1974
978,726	72/447,579	02/12/1974
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978,729	72/450,939	02/12/1974
978,737	72/453,487	02/12/1974
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978,750	72/460,056	02/12/1974
978,752	72/442,270	02/12/1974
978,758	72/412,029	02/12/1974
978,766	72/397,933	02/12/1974
978,768	72/415,542	02/12/1974
978,770	72/417,197	02/12/1974
978,771	72/417,833	02/12/1974
978,772	72/419,864	02/12/1974
978,773	72/420,305	02/12/1974
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978,780	72/442,995	02/12/1974
978,782	72/398,410	02/12/1974
978,786	72/414,727	02/12/1974
978,791	72/429,079	02/12/1974
978,796	72/431,783	02/12/1974
978,802	72/445,684	02/12/1974
978,805	72/425,369	02/12/1974
978,807	72/436,363	02/12/1974
978,816	72/445,948	02/12/1974
978,817	72/418,494	02/12/1974
978,825	72/442,790	02/12/1974
978,826	72/446,667	02/12/1974
978,828	72/440,627	02/12/1974
978,829	72/431,033	02/12/1974
978,831	72/365,461	02/12/1974
978,833	72/438,143	02/12/1974
978,834	72/445,611	02/12/1974

**Department of Commerce
Patent and Trademark Office**

37 CFR Parts 1 and 3

[Docket No. 941120-4320]

RIN: 0651-AA76

**Changes to Implement 20-Year Patent Term and
Provisional Applications**

Agency: Patent and Trademark Office, Commerce.

Action: Notice of proposed rulemaking.

Summary: The Patent and Trademark Office (Office) is proposing to amend the rules of practice in patent cases to implement the changes related to patent term in title 35, United States Code, contained in the Uruguay Round Agreements Act (S. 2467 and H.R. 5110), which was recently passed by Congress, and to simplify the rules. Among the changes that are contained in S. 2467 and H.R. 5110 are the conversion to a 20-year patent term measured from the date of filing an application in the U.S., and the introduction of provisional applications. The changes apply to utility and plant patents. They do not apply to design patents. S. 2467 was passed by the Senate on

December 1, 1994, and the House passed H.R. 5110 on November 29, 1994. The President has indicated that he will sign the bills. Since a Public Law number is not available, the rule package refers to the Senate and House bill numbers for convenience. The amendments to title 35 relating to 20-year patent term and provisional applications will be effective on the date which is 6 months after the date of enactment.

Dates: Written comments must be submitted on or before February 17, 1995. A public hearing will be held Thursday, February 16, 1995, at 9:30 a.m., in the Commissioner's Conference Room 912, Crystal Park 2, 2121 Crystal Drive, Arlington, Virginia. Requests to present oral testimony should be received on or before February 14, 1995.

Addresses: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Stephen G. Kunin, Deputy Assistant Commissioner for Patent Policy and Projects, Crystal Park 2, Suite 919, or by fax to (703)305-8825.

For Further Information Contact: Magdalen Y. Greenlief or John F. Gonzales, Special Program Examiners, Office of the Deputy Assistant Commissioner for Patent Policy and Projects, at (703)305-9285 or by mail marked to their attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This proposed rule change is designed primarily to implement the changes in practice related to patent term provided for in S. 2467 and H.R. 5110. In addition, it is proposed to simplify the procedures for filing continuation and divisional applications which will benefit both the Office and the public.

Section 154 of title 35, United States Code, currently provides that every patent (other than a design patent) shall be granted for a term of seventeen years from the patent issue date, subject to the payment of maintenance fees as provided for in title 35. S. 2467 and H.R. 5110 amend 35 U.S.C. 154 by establishing a 20-year patent term from the date of filing of the application. Specifically, the legislation provides that the patent term will begin on the date on which the patent issues and will end twenty years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term will end twenty years from the date on which the earliest application relied on was filed. As amended by S. 2467 and H.R. 5110, 35 U.S.C. 154 excludes from determination of the patent term any application on which priority is claimed under 35 U.S.C. 119, 365(a) or 365(b).

S. 2467 and H.R. 5110 further provide that the term of a patent may be extended, for a maximum of five years, where the issuance of a patent is delayed because of (1) proceedings under 35 U.S.C. 135(a), (2) placement of the application under a secrecy order pursuant to 35 U.S.C. 181, and/or, under certain circumstances, (3) appellate review by the Board of Patent Appeals and Interferences or by a federal court. The total extension available is limited to five years regardless of whether there were delays due to more than one of the reasons covered by the legislation. This extension is separate from and in addition to the patent term extension available under 35 U.S.C. 156.

In addition, S. 2467 and H.R. 5110 establish a domestic priority system. In accordance with the provisions of the Paris Convention for the Protection of Industrial Property, the term of a patent cannot include the Paris Convention priority period. The legislation provides a mechanism to enable domestic applicants to quickly and inexpensively file provisional applications. Applicants will be entitled to claim the benefit of priority in a given application based upon the previously filed provisional application in the United States. The domestic priority period will not count in the measurement of the term. Thus, under the legislation, domestic applicants will be placed on an equal footing with foreign applicants with respect to the patent term.

35 U.S.C. 111 is amended by S. 2467 and H.R. 5110 to provide for the filing of a provisional application. 35 U.S.C. 41(a)(1) is amended to provide a \$150.00 filing fee for each provisional application, subject to a 50 percent reduction for a small entity. The requirements for obtaining a filing date for

a provisional application are the same as those which previously existed for an application filed under 35 U.S.C. 111, except that no claim or claims as set forth in 35 U.S.C. 112, second paragraph, is required. Moreover, no oath/declaration as set forth in 35 U.S.C. 115 is required. The provisional application is also not subject to the provisions of 35 U.S.C. 131, 135 and 157, i.e., a provisional application will not be examined for patentability, placed in interference or made the subject of a statutory invention registration. Further, the provisional application will automatically be abandoned twelve (12) months after its filing date and will not be subject to revival to restore it to pending status thereafter. Benefit of the filing date of the copending provisional application may be claimed pursuant to 35 U.S.C. 119(e), as contained in S. 2467 and H.R. 5110, in a continuing application during these 12 months. A provisional application will not be entitled to claim priority benefits based on any other application under 35 U.S.C. 119, 120, 121 or 365.

Also, S. 2467 and H.R. 5110 amend 35 U.S.C. 119 to allow an applicant to claim benefits of the filing date of the provisional application in a later filed U.S. application. However, since 35 U.S.C. 154 excludes from the determination of the patent term any application on which priority is claimed under 35 U.S.C. 119, 365(a) or 365(b), the filing date of a provisional application will not be considered in determining the term of any patent.

S. 2467 and H.R. 5110 further include transitional provisions for limited reexamination in certain applications pending for 2 years or longer as of the effective date of 35 U.S.C. 154(a)(2), taking into account any reference to any earlier application under 35 U.S.C. 120, 121 or 365(c). The transitional provisions also permit examination of more than one independent and distinct invention in certain applications pending for 3 years or longer as of the effective date of 35 U.S.C. 154(a)(2), taking into account any reference to any earlier application under 35 U.S.C. 120, 121 or 365(c). These transitional provisions are not applicable to any application which is filed on or after the effective date of 35 U.S.C. 154(a)(2), regardless of whether the application is a continuing application.

In addition, this proposed rule change will simplify the procedures by eliminating the processing and retention fee practice set forth in existing sections 1.53(d) and 1.78(a)(1). The processing and retention fee practice allows applicants to file an application without the filing fee and to pay the processing and retention fee of \$130.00 in order for the application to be used as a basis for foreign filing and for priority under 35 U.S.C. 120. The processing and retention fee practice is seldom used and will be unnecessary in view of the legislation which provides for the filing of a provisional application with a filing fee of \$150.00/\$75.00. The result achieved by the use of the processing and retention fee practice can be achieved by the use of the provisional application practice at about the same fee level.

In order to simplify the procedures for filing continuation and divisional applications, it is proposed that section 1.60 be deleted. The procedures set forth in section 1.60 are unnecessary in view of the recent rule change to section 1.6(d) which permits the filing of a copy of an oath or declaration. Applicants may use the procedures set forth in section 1.53 to file a continuation or divisional application under 35 U.S.C. 111(a), as contained in S. 2467 and H.R. 5110, by providing the Office with a copy of the prior application as filed. The issue of a stale oath or declaration would be eliminated by amending Office practice since neither the statute nor the rules require a recent date of execution to appear on the oath or declaration. The subject matter of the application would have been executed by the inventor(s) and the duty of candor and good faith including the duty of disclosure requirements of section 1.56 would be continuous and would apply to the continuing application.

Clarifying amendments are proposed to be made to sections 1.16, paragraphs (a) and (f); and 1.17, paragraphs (h) and (i). These proposed amendments do not affect the substance of the rules.

The fees set forth in current section 1.17, paragraphs (i)(1) and (i)(2), are proposed to be consolidated into a new paragraph (i).

Discussion of Specific Rules

If Title 37 of the Code of Federal Regulations, Parts 1 and 3, are amended as proposed:

Section 1.1 would provide a special "Box Provisional Patent Application" address to assist the Mail Room in separating and processing provisional applications and mail relating thereto.

Section 1.9 would have current paragraph (a) redesignated as subparagraph (a)(1). A new subparagraph (a)(2) would be added to define the term "provisional application" as a U.S. national application filed under 35 U.S.C. 111(b).

Sections 1.12 and 1.14 would have the reference to 37 CFR 1.17(i)(1) replaced with a reference to 37 CFR 1.17(i) because it is proposed that 37 CFR 1.17(i)(1) and (i)(2) be consolidated into a new paragraph (i) since the petition fees provided in existing paragraphs (i)(1) and (i)(2) are the same.

Section 1.16 would list the basic filing fee for a provisional application as \$75.00 for a small entity (see section 1.9(c)-(f)) or \$150.00 for other than a small entity as contained in S. 2467 and H.R. 5110. Since the filing fee for a provisional application is established by S. 2467 and H.R. 5110 as a 35 U.S.C. 41(a) fee, the filing fee for a provisional application will be subject to the 50 percent reduction provided for in 35 U.S.C. 41(h). A complete provisional application does not require claims since no examination on the merits will be given to a provisional application. However, provisional applications may be filed with one or more claims as part of the application. Nevertheless, no additional claim fee or multiple dependent claim fee will be required in a provisional application.

Also, proposed section 1.16 paragraph (l), would establish the surcharge required by proposed section 1.53(d)(2) for filing the basic filing fee or the cover sheet required by proposed section 1.51(a)(2) for a provisional application at a time later than the provisional application filing date as \$25.00 for a small entity or \$50.00 for other than a small entity. The \$50.00/\$25.00 surcharge set forth in proposed paragraph (l) for a provisional application is less than the \$130.00/\$65.00 surcharge set forth in paragraph (e) for all other types of patent applications. A reduced surcharge for a provisional application is proposed in view of the lower filing fee required for a provisional application and in an attempt to minimize applicant's overall cost of filing a provisional application.

Clarifying changes would be made to section 1.16. These changes do not affect the substance of the rule. It is proposed to insert the words "basic fee" in paragraph (f) of section 1.16. Paragraph (e) currently refers to "the basic filing fee". Current Office practice allows a design application to be filed without the design filing fee or the oath/declaration as set forth in current section 1.53(d). The change to section 1.16(f) is merely for clarification. In addition, it is proposed to replace the word "cases" found in paragraph (a) with the word "applications", since the word "applications" is used elsewhere in the rule.

Section 1.17 would amend paragraph (h) to provide that the \$130.00 petition fee for filing a petition for correction of inventorship under 37 CFR 1.48 applies to all patent applications, except provisional applications which would be covered by new paragraph (q).

The reference to section 1.60 in section 1.17(i)(1) would be deleted, since it is proposed that section 1.60 be removed.

The words "of this part", in section 1.17, paragraphs (h) and (i), would be deleted, since the paragraphs currently refer to sections in parts other than Part 1. No substantive change is intended by this proposal.

Section 1.17(i) would be amended to clarify that petitions relating to the grant of a filing date under section 1.53 are for applications other than provisional applications. Proposed paragraph (q) would address petitions relating to provisional applications.

In addition, the rules would be simplified by combining current section 1.17(i)(1) and (i)(2) into new paragraph (i), since the petition fees provided in current paragraphs (i)(1) and (i)(2) are the same. No substantive change is intended by this proposal.

A new section 1.17(q) would be added to establish the fee for filing a petition for correction of inventorship under section 1.48 in a provisional application as \$25.00 for a small entity or \$50.00 for other than a small entity. The \$50.00/\$25.00 petition fee would also be required by proposed section 1.53 for filing a petition to accord a provisional application a filing date or to convert an application filed under proposed section 1.53(b)(1) to a provisional application.

New sections 1.17(r) and (s) would be added to establish the fee for filing a submission after final rejection under section

1.129(a) and for each additional invention requested to be examined under section 1.129(b), respectively. These fees have been set at \$730.00 to cover the costs of processing the submission after final rejection and each additional invention requested to be examined.

Paragraph (l) would be deleted from section 1.21 since the processing and retention fee required in existing section 1.53(d) would be eliminated and the reference to section 1.60 in paragraph (n) would be deleted since section 1.60 would be removed.

Section 1.28(a) would have the references to section 1.60 deleted since section 1.60 would be removed. Section 1.28(a) would be amended to delete the references to section 1.62 and to specify the procedure for establishing small entity status in continuation, divisional and continuation-in-part applications where small entity status has been established in a parent application. Where the status as a small entity has been established in a parent application and is still proper, applicant could include, in a continuation, divisional or continuation-in-part application, either a reference to a verified statement claiming small entity status in the parent application or a copy of the verified statement filed in the parent application.

Section 1.45(c) would state that each inventor named in a joint provisional application must have made a contribution to the subject matter disclosed in the application. The existing language of paragraph (c) refers to "the subject matter of at least one claim" which would be inappropriate for provisional applications, since provisional applications may be filed without claims.

Section 1.48, paragraphs (a)-(c), would specify that the procedures for correcting an error in inventorship set forth in those paragraphs relate to applications other than provisional applications. A new paragraph (d) would establish a simplified procedure for adding the name of an inventor in a provisional application, where the name was originally omitted without deceptive intent. Proposed paragraph (d) would not require the verified statement of facts by the original inventor or inventors, the oath or declaration by each actual inventor in compliance with section 1.63 or the consent of any assignee as currently required in paragraph (a). The procedure would require the filing of a petition identifying the name or names of the inventors to be added and including a statement that the name or names of the inventors were omitted through error without deceptive intention on the part of the actual inventor(s). The statement would be required to be verified if made by a person not registered to practice before the Office. The statement could be signed by a registered practitioner acting in a representative capacity under section 1.34(a). The \$50.00/\$25.00 petition fee set forth in proposed section 1.17(q) would also be required.

Under 35 U.S.C. 119(e), as contained in S. 2467 and H.R. 5110, a later filed complete application may claim priority benefits based on a copending provisional application so long as the applications have at least one inventor in common. An error in naming a person as an inventor in a provisional application would not require correction by deleting the erroneously named inventor from the provisional application since this would have no effect upon the ability of the provisional application to serve as a basis for a priority claim. Therefore, proposed section 1.48(d) would not provide a procedure for deleting a named inventor. Any request to delete a named inventor filed in a provisional application would be properly treated as a petition under section 1.182. As a condition to granting any petition to delete a named inventor in a provisional application and in order to protect the rights of the inventors/assignees involved, the Office may require a statement from all of the named inventors and/or the written consent of any assignee.

Section 1.51 would include a new subparagraph (a)(2) identifying the required parts of a complete provisional application. The complete provisional application would include a cover sheet, a specification as prescribed in 35 U.S.C. 112, first paragraph, any necessary drawings and the provisional application filing fee. A suggested cover sheet format for a provisional application will be available from the Office free of charge to the public. The cover sheet as set forth by proposed subparagraph (a)(2)(i) would identify (1) the application as a provisional application, (2) the name or names of the inventor or inventors, (3) the title of the invention, (4) the name and registration number of the attorney or agent (if applicable), (5) the docket

number used by the person filing the application to identify the application (if applicable), and (6) the correspondence address, all of which is information required in order to properly prepare the provisional application filing receipt.

The Office currently receives thousands of papers and fees every work day. Most papers filed in the Office are received in the Correspondence and Mail Division which must identify and route each paper to the appropriate area for consideration. Among the papers which may currently be filed in the Office are disclosure documents, which may comprise a written description and drawings, and applications for patent, some of which may be incomplete because claims are omitted. Further, applications for patent are frequently received in the Office without the filing fee or the oath/declaration required by section 1.63. With the inception of provisional application practice, the Office will begin receiving another type of document resembling either a disclosure document or an incomplete application for patent and which may comprise nothing more than a written description and drawings. The potential for Office error, e.g., misinterpreting a paper intended as a provisional application as some other type of document, will obviously increase. Further, with the inception of a twenty-year patent term, it will be highly desirable for the Office to process applications, as well as all other papers which the Office receives, quickly and correctly.

While the name or names of the inventors are required in order to accord a provisional application a filing date, a provisional application is not required to be signed by the inventor or the assignee. No oath or declaration is required. Presumably, most provisional applications will be filed by a registered practitioner without a power of attorney being filed. If an essential part, e.g., the drawings, of the provisional application is omitted or if the filing fee did not accompany the application, the Office will need a correspondence address to notify the applicant of the omission.

The cover sheet required in section 1.51 would provide the Correspondence and Mail Division with a paper specifically identifying the document as a provisional application and would provide the Application Processing Division with most of the information it will need to promptly and properly process the provisional application and to prepare the official filing receipt. The cover sheet would also provide applicants and practitioners with a checklist prior to the filing of the provisional application.

Since no substantive examination would be given to any provisional application, the filing of an information disclosure statement in a provisional application is unnecessary and will not be permitted. Therefore, paragraph (b) of section 1.51 would make it clear that the Office will not accept an information disclosure statement in a provisional application. Any information disclosure statements filed in a provisional application would either be returned or disposed of at the convenience of the Office.

Section 1.53 would have the title and paragraph (a) revised to refer to application number, rather than application serial number. The term "application number" is found in current section 1.5(a).

A new paragraph (b)(2) would be added to section 1.53 setting forth the requirements for obtaining a filing date for a provisional application. Existing paragraph (b) would be redesignated as paragraph (b)(1) and would be amended to: (1) refer to section 1.17(i) rather than 1.17(i)(1) to conform to the proposed change therein; (2) delete the reference to section 1.60 which is proposed to be removed; and (3) clarify that continuations, divisions and continuations-in-part may be filed under either section 1.53 or 1.62. Paragraph (b)(2) would state that a filing date would be accorded to a provisional application as of the date the written description, any necessary drawings and the names of all inventors are filed in the Office. The filing date requirements for a provisional application set forth in new paragraph (b)(2) parallel the existing requirements set forth in current paragraph (b), except that no claim would be required. In order to keep the cost of processing provisional applications down and to reduce the handling of the provisional applications, amendments, other than those required to make the provisional application comply with applicable regulations, would not be permitted after the filing date of the provisional application.

New section 1.53(b)(2)(i) would require all provisional applications to be filed with a cover sheet identifying the application as a provisional application. The paragraph would also indicate

that the Office will treat an application as having been filed under paragraph (b)(1), unless the application is identified as a provisional application. This proposal is similar to the current requirement in section 1.62 that the application include a specific request for an application under section 1.62. The cover sheet with identification that a provisional application is intended should greatly assist the Correspondence and Mail Division in distinguishing provisional applications from other types of applications. A provisional application, which is identified as such, but which does not have a complete cover sheet as required by section 1.51(a)(2)(i) would be treated as a provisional application. The complete cover sheet and a surcharge would be required to be submitted at a later date.

Section 1.53(b)(2)(ii) would establish a procedure for converting an application filed under section 1.53(b)(1) to a provisional application. The procedure would require the filing of a petition requesting the conversion and the \$50.00/\$25.00 petition fee set forth in section 1.17(q). Filing of the petition in the application would be required prior to the payment of the issue fee or prior to 12 months after its filing date, whichever event is earlier. The grant of any such petition would not entitle applicant to a refund of the fees properly paid in the application filed under section 1.53(b)(1).

Section 1.53(b)(2)(iii) is intended to call attention to the provisions of S. 2467 and H.R. 5110 which prohibit any provisional application from claiming a right of priority under 35 U.S.C. 119 or 365(a) or the benefit of an earlier filing date under 35 U.S.C. 120, 121 or 365(c) of any other application. Attention would be called to the provisions of the legislation which provide that no claim for benefit of an earlier filing date may be made in a design application based on a provisional application and that no request for a statutory invention registration may be filed in a provisional application. Section 1.53(b)(2)(iii) would specify that the requirements of section 1.821(e), relating to the filing of a copy of the "Sequence Listing" in computer readable form, are not applicable to a provisional application. It is noted that all other sequence requirements as set forth in sections 1.821 through 1.823 and 1.825 are applicable to a provisional application.

Section 1.53(c) would require that any request for review of a refusal to accord an application a filing date be made by way of a petition accompanied by the fee set forth in section 1.17(i), i.e., \$130.00, if the application was filed under section 1.53(b)(1), or by the fee set forth in section 1.17(q), i.e., \$50.00/\$25.00, if the application was filed under section 1.53(b)(2). This reflects the current practice set forth in section 506.02 of the Manual of Patent Examining Procedure (MPEP) with regard to any request for review of a refusal to accord a filing date for an application. The Office would continue its current practice of refunding the petition fee, if the refusal to accord the requested filing date is found to have been an Office error.

Current paragraph (d) of section 1.53 would be redesignated as paragraph (d)(1) and would be amended to delete the references to the processing and retention fee practice which would be eliminated by this proposal in view of the proposed provisional application practice. Under proposed paragraph (d)(2), the provisional application could be filed without the basic filing fee (set by S. 2467 and H.R. 5110 as \$150.00 for other than a small entity, subject to a 50 percent reduction for small entity) and without the complete cover sheet required by proposed section 1.51(a)(2). In such a case, the proposed rule provides that the applicant will be notified and be given a period of time in which to file the missing fee, and/or cover sheet and to pay the surcharge set forth in proposed section 1.16(l).

Section 1.53(e)(2) would be added to indicate that a provisional application would not be given a substantive examination and would be abandoned no later than twelve (12) months after its filing date as set forth in S. 2467 and H.R. 5110.

Section 1.55 would have the reference to 35 U.S.C. 119 replaced with a reference to 35 U.S.C. 119(a)-(d) and would specify that a provisional application is not entitled to the right of foreign priority under proposed 35 U.S.C. 119(a)-(d). S. 2467 and H.R. 5110 amend 35 U.S.C. 119 by assigning letters (a), (b), (c) and (d) to the existing paragraphs of 35 U.S.C. 119. These paragraphs are directed to claims for foreign priority. In addition, 35 U.S.C. 111 is amended to provide that a provisional application may not claim or be entitled to the right of foreign priority of any other application under 35 U.S.C. 119.

Therefore, provisional applications are not included in section 1.55. In addition, the reference to 37 CFR 1.17(i)(1) would be replaced by 37 CFR 1.17(i) to be consistent with the proposed change to section 1.17. No substantive change is intended by this proposal.

Section 1.59 would delete the reference to the processing and retention fee which is proposed to be eliminated from section 1.53(d).

Section 1.60 would be removed and reserved. The procedures set forth in section 1.60 for filing a continuation or divisional application are unnecessary in view of the recent rule change to section 1.6(d) which permits the filing of a copy of the signed oath or declaration. This is appropriate since neither the statute nor the rules require a recent date of execution to appear on the oath or declaration and the duty of disclosure requirements under section 1.56 would apply to the continuing application. The issue of a stale oath or declaration would be eliminated by appropriately amending the procedures set forth in the Manual of Patent Examining Procedure.

The Office currently receives a number of petitions requesting that an application filed under section 1.60 be accepted even though at the time of filing of the application, applicant failed to comply with all the requirements of section 1.60 due to inadvertent error on the part of the applicant. The deletion of section 1.60 will help reduce the number of petitions and will simplify the procedures for filing an application for both the Office and patent practitioners. Applicants may use the procedures set forth in section 1.53 to file a continuation or divisional application under 35 U.S.C. 111(a) by providing the Office with a copy of the prior application. Failure to submit a complete copy of the prior application may be corrected by way of a petition under section 1.182.

Section 1.62 would state that the procedure could be used for filing a continuation, division or continuation-in-part of a complete application filed under section 1.53(b)(1) but not a provisional application under section 1.53(b)(2). The section would specifically preclude the use of the file wrapper continuing procedures set forth in section 1.62 for filing the first complete application under 35 U.S.C. 111(a) which claims the benefit of an earlier filing date of a provisional application. In view of the relatively small filing fee for a provisional application and the fact that the provisional application will not be examined, Office handling must be kept to a minimum and these provisional applications, once complete, will be sent to the Files Repository for storage rather than being kept in the examination area of the Office. It would be burdensome for the Office to retrieve these provisional applications so that an applicant could use the procedures set forth in section 1.62. Furthermore, since claims and an oath or declaration are not required in a provisional application and the first complete application would most likely contain additional subject matter not disclosed in the provisional application, the procedures set forth in section 1.53 for filing an application will meet applicants' needs.

Reference to 37 CFR 1.17(i)(1) in section 1.62(e) would be replaced by 37 CFR 1.17(i) to be consistent with the proposed change to section 1.17. Furthermore, the phrase "Serial number, filing date" in section 1.62(a) and the term "application serial number" in section 1.62(e) would be changed to "application number." The term "application number" is found in current section 1.5(a).

Section 1.63(a) would have the reference to section 1.51(a)(2) replaced with a reference to section 1.51(a)(1)(ii) in order to conform with the proposed changes in section 1.51.

Section 1.67(b) would have the reference to section 1.53(d) replaced with a reference to section 1.53(d)(1) in order to conform with the proposed changes in section 1.53. Furthermore, the references to sections 1.53(b) and 1.118 would be deleted to make clear that the new matter exclusion applies to all applications including those filed under section 1.62.

Section 1.78(a)(1) and (a)(2) would specifically preclude a provisional application from claiming the benefit of an earlier filing date of a prior copending application filed in the United States under section 1.53(b)(1) or 1.62. S. 2467 and H.R. 5110 amend 35 U.S.C. 111 to provide that a provisional application is not entitled to the benefit of an earlier filing date in the United States under 35 U.S.C. 120, 121 or 365(c). Furthermore, the reference in section 1.78(a)(1) to the processing and retention fee required in existing section 1.53(d) would be deleted.

The use of serial number and filing date in section 1.78(a)(2) as an identifier for a prior application would be eliminated to avoid any confusion as to whether an application identified by its serial number and filing date is an application filed under proposed section 1.53(b)(1) or 1.62, or a design application since there is a different series code assigned to each of these types of applications.

In addition, new subparagraphs (a)(3) and (a)(4) would be added to section 1.78 to set forth the procedures for claiming the benefit of an earlier filing date based on a prior filed copending provisional application. The later filed application must be an application other than for a design patent and must be copending with the provisional application, which will be abandoned by operation of law no later than 12 months after filing. There must be a common inventor named in both the prior provisional application and the later filed application. The prior provisional application must be complete as set forth in proposed section 1.51(a)(2), or entitled to a filing date as set forth in proposed section 1.53(b)(2) and include the basic filing fee. Newly added subparagraphs (a)(3) and (a)(4) parallel the existing requirements set forth in subparagraphs (a)(1) and (a)(2) for other than a provisional application.

Section 1.83 would have current paragraph (a) redesignated as subparagraph (a)(1) and would clarify that this paragraph relates to the content of the drawings in applications other than provisional applications. A new subparagraph (a)(2) would set forth the required content of the drawings filed in a provisional application. Since claims would not be required in a provisional application, the drawings filed in a provisional application would be required to show every feature of the invention disclosed in the description, rather than specified in the claims as in subparagraph (a)(1), where necessary to understand the subject matter of the invention. In addition, the reference to paragraph (a) in section 1.83(c) would be replaced by a reference to paragraph (a)(1).

Section 1.97(d) would have the reference to section 1.17(i)(1) replaced with a reference to section 1.17(i) to be consistent with the proposed change to section 1.17. No substantive change is intended by this proposal.

Section 1.101(a) would indicate that provisional applications filed under section 1.53(b)(2) would not be examined.

Section 1.102(d) would have the reference to section 1.17(i)(2) replaced with a reference to section 1.17(i) to be consistent with the proposed change to section 1.17. No substantive change is intended by this proposal.

Section 1.103(a) would have the reference to section 1.17(i)(1) replaced with a reference to section 1.17(i) to be consistent with the proposed change to section 1.17. No substantive change is intended by this proposal.

Section 1.129 would be added to set forth the procedure for implementing certain transitional provisions contained in S. 2467 and H.R. 5110. These transitional provisions are not applicable to any application which is filed on or after the effective date of 35 U.S.C. 154(a)(2) or to any design or reissue application. Paragraph (a) of proposed section 1.129 would provide for limited reexamination in certain applications pending for 2 years or longer as of the effective date of 35 U.S.C. 154(a)(2), taking into account any reference to any earlier application under 35 U.S.C. 120, 121 or 365(c). Under the proposed procedure, an applicant would be entitled to have a first submission entered and considered on the merits after final rejection if (1) the submission is filed prior to or simultaneously with the filing of a notice of appeal and prior to abandonment of the application and (2) the \$730.00 fee set forth in proposed section 1.17(r) is paid within one month of any written notification from the Office refusing entry of the first submission and prior to abandonment of the application. If applicant complies with the requirements of the proposed rule, the finality of the previous rejection would be withdrawn and the submission would be entered and considered on the merits to the extent that the submission would have been considered if made prior to final rejection. The subsequent Office action could be made final under existing Office practice. If a subsequent final rejection is made in the application, applicant would be entitled to have a second submission entered and considered on the merits under the same conditions set forth for consideration of the first submission. Paragraph (a) would also define the term "submission" as including, but not limited to, an information disclosure statement, an amendment to the written description,

claims or drawings and a new substantive argument or new evidence in support of patentability. For example, the submission may include an amendment, a new substantive argument and an information disclosure statement. In view of the \$730.00 fee required in proposed section 1.17(r), any information disclosure statement previously refused consideration in the application because of applicant's failure to provide the certification under section 1.97(e) or to pay the fee set forth in section 1.17(p) or which is filed as part of either the first or second submission would be treated as though it had been filed within one of the time periods set forth in section 1.97(b) and would be considered without the petition and petition fee required in section 1.97(d), if it complies with the requirements of section 1.98.

Paragraph (b) of proposed section 1.129 would provide for examination of more than one independent and distinct invention in certain applications pending for 3 years or longer as of the effective date of 35 U.S.C. 154(a)(2), taking into account any reference to any earlier application under 35 U.S.C. 120, 121 or 365(c). Under the proposed procedure, a requirement for restriction or for the filing of divisional applications would only be made or maintained in the application after the effective date of 35 U.S.C. 154(a)(2) if: (1) the requirement was made in the application or in an earlier application relied on under 35 U.S.C. 120, 121 or 365(c) more than two months prior to the effective date; (2) the examiner has not issued any Office action in the application due to actions by the applicant; or (3) the required fee for examination of each additional invention was not paid. If the application contains claims to more than one independent and distinct invention, and no requirement for restriction or for the filing of divisional applications can be made or maintained as a result of proposed section 1.129(b), applicant will be notified and given a one month time period to pay the \$730.00 fee set forth in proposed section 1.17(s) for each independent and distinct invention claimed in the application in excess of one. The fee set forth in proposed section 1.17(s) would not be subject to the 50 percent reduction for a small entity. The additional inventions for which the required fee under section 1.17(s) has not been paid would be withdrawn from consideration under section 1.142(b). An applicant who desires examination of an invention so withdrawn from consideration can file a divisional application under 35 U.S.C. 121.

Section 1.139 would be added to set forth the procedures for reviving a provisional application where the delay was unavoidable or unintentional. Paragraph (a) would address the revival of a provisional application where the delay was unavoidable and paragraph (b) would address the revival of a provisional application where the delay was unintentional.

Applicant may petition to have an abandoned provisional application revived as a pending provisional application for a period of no longer than twelve months from the filing date of the provisional application where the delay was unavoidable or unintentional. It would be permissible to file a petition for revival later than twelve months from the filing date of the provisional application but only to revive the application for the twelve-month period following filing. Thus, even if the petition were granted to reestablish the pendency up to the end of the twelve-month period, the provisional application would not be considered pending after twelve months from its filing date. The requirements for reviving an abandoned provisional application set forth in this new rule parallel the existing requirements set forth in section 1.137.

Sections 1.177, 1.312(b), 1.313(a), 1.314 and 1.666 would have the reference to section 1.17(i)(1) replaced with a reference to section 1.17(i) to be consistent with the proposed change to section 1.17. No substantive change is intended by these proposals.

Section 1.701 would be added to provide for the extension of patent term where the issuance of a patent on an application filed after the implementation date of the 20-year patent term provisions of S. 2467 and H.R. 5110, other than for designs, was delayed due to certain causes of prosecution delay. By virtue of 35 U.S.C. 173, the term of a patent and patent term extension under proposed 35 U.S.C. 154 do not apply to patents for designs.

The provisions for patent term extension under proposed section 1.701 are separate from and in addition to the patent term extension provisions of 35 U.S.C. 156. The patent term

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extension provisions of S. 2467 and H.R. 5110 are designed to compensate the patent owner for delays in issuing a patent, whereas the patent term extension provisions of 35 U.S.C. 156 are designed to restore term lost to premarket regulatory review after the grant of a patent. In order to prevent a term extension under proposed section 1.701 from precluding a term extension under 35 U.S.C. 156, S. 2467 and H.R. 5110 amend 35 U.S.C. 156(a)(2) to provide that the term has never been extended under 35 U.S.C. 156(e)(1).

Under proposed 35 U.S.C. 154(b)(1), if the issuance of a patent is delayed due to proceedings under 35 U.S.C. 135(a) and/or the application is placed under a secrecy order under 35 U.S.C. 181, the term of a patent could be extended for the period of delay up to five years. Proceedings under 35 U.S.C. 135(a) include any appeal to federal court. Under proposed 35 U.S.C. 154(b)(2), if the issuance of a patent is delayed due to appellate review by the Board of Patent Appeals and Interferences or by a federal court and the patent was issued pursuant to a decision reversing an adverse determination of patentability and if the patent is not subject to a terminal disclaimer due to the issuance of another patent claiming subject matter that is not patentably distinct from that under appellate review, the term of the patent could be extended for the period of delay up to five years. Pursuant to 35 U.S.C. 154(b)(4), as contained in S. 2467 and H.R. 5110, the term of a patent could only be extended under 35 U.S.C. 154(b)(1) and (b)(2) for a maximum of five years regardless of whether there were delays due to more than one of the reasons covered under 35 U.S.C. 154(b)(1) and (2). Proposed subparagraph (c)(1) of section 1.701 sets forth the method for calculating the period of delay where the delay was a result of proceedings under 35 U.S.C. 135(a). Proposed subparagraph (c)(2) sets forth the method for calculating the period of delay where the delay was a result of the application being placed under a secrecy order. Proposed subparagraph (c)(3) sets forth the method for calculating the period of delay where the delay was a result of appellate review. Pursuant to proposed section 1.701(d)(1), the period of delay set forth in subparagraph (c)(3) shall be reduced by any time calculated under subparagraph (c)(3) before the expiration of three years from the filing date of the first national patent application presented for examination. The filing date for the purpose of section 1.701(d)(1) would be the earliest effective U.S. filing date but not including the filing date of a provisional application or the international filing date of a PCT application. For PCT applications entering the national stage, the filing date for the purpose of section 1.701(d)(1) would be the date on which applicant has complied with the requirements of section 1.494(b), or section 1.495(b) if applicable. Pursuant to proposed section 1.701(d)(2), the period of delay set forth in subparagraph (c)(3) shall also be reduced by any time, as determined by the Commissioner, during which the applicant did not act with due diligence. The standard for determining due diligence is whether the applicant exhibited that degree of timeliness as may reasonably be expected from, and which is ordinarily exercised by, a person during the pendency period of the application. Examples of what may constitute lack of due diligence for this purpose include requests for extensions of time to respond to Office communications, submission of a response which is not fully responsive to an Office communication, and filing of informal applications. Applicants need not file a request for the extension of patent term under proposed section 1.701. The extension of patent term is automatic by operation of law. It is currently anticipated that applicant would be advised as to the length of any patent term extension at the time of receiving the Notice of Allowance and Issue Fee Due. Review of any determination as to the length of patent term extension would be by way of petition under section 1.181.

Section 3.21 would eliminate the use of serial number and filing date as an identifier for national patent applications in assignment documents. This proposal would eliminate any confusion as to whether an application identified by its serial number and filing date in an assignment document is an application filed under proposed section 1.53(b)(1) or 1.62 or a design application or a provisional application since there is a different series code assigned to each of these types of applications. If an assignment was executed after the filing of the national application, the assignment would be required to identify the application by the application number, consisting of the series code and serial number, e.g., 07/123,456 (for applications filed

under proposed section 1.53(b)(1) or 1.62), 29/123,456 (for design applications) or 59/123,456 (for provisional applications filed under proposed section 1.53(b)(2)). The series code would be required since it would clearly identify the application to which the assignment document is directed.

Section 3.21 would be further clarified to indicate that existing requirements relating to assignments executed before the filing of the application refer to applications other than provisional applications. Section 3.21 would be further amended to specify the requirements for identifying a provisional application in an assignment executed before the filing of the provisional application. The assignment would be required to identify the provisional application by name of each inventor and the title of the invention. The date of execution of the provisional application would not be required since a provisional application need not be executed by the inventors.

Section 3.81 would have the reference to section 1.17(i)(1) replaced with a reference to section 1.17(i) to be consistent with the proposed change to section 1.17. No substantive change is intended by this proposal.

Other Considerations

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. This proposed rule has been determined to be not significant for the purposes of E.O. 12866.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The principal impact of these changes is to provide a procedure for domestic applicants to quickly and inexpensively file a provisional application. The filing date of the provisional application will not be used to measure the term of a patent granted on an application which claims the earlier filing date of the provisional application.

The Patent and Trademark Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in E.O. 12612.

These proposed rules contain collections of information subject to the requirements of the Paperwork Reduction Act (Act). The provisional application has been approved by the Office of Management and Budget under control numbers 0651-0031 and 0651-0032. The cover sheet is necessary to expedite the processing of a provisional application and improve quality. Public reporting burden for the collection of information on the cover sheet is estimated to average 12 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to the Office of Assistance Quality and Enhancement Division, Patent and Trademark Office, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 36, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 3

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements.

For the reasons set forth in the preamble, 37 CFR Parts 1 and 3 are proposed to be amended as follows, with removals (other than section 1.60 which is proposed to be removed and

reserved) indicated by brackets ([]) and additions by arrows (cb):

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.1 is proposed to be amended by adding new paragraph (i) to read as follows:

§ 1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

(c) The filing of all provisional applications and any communications relating thereto should be additionally marked "Box Provisional Patent Application."b

3. Section 1.9 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.9 Definitions.

(a)(1)b a national application as used in this chapter means a U.S. national application for patent which was either filed in the Office under 35 U.S.C. 111 or which resulted from an international application after compliance with 35 U.S.C. 371.

(a)(2) A provisional application as used in this chapter means a U.S. national application for patent filed in the Office under 35 U.S.C. 111(b).b

4. Section 1.12 is proposed to be amended by revising paragraph (c) to read as follows:

§ 1.12 Assignment records open to public inspection.

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in secrecy under § 1.14, or any information with respect thereto, must

(1) Be in the form of a petition accompanied by the petition fee set forth in § 1.17(i)(1), or

(2) Include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

5. Section 1.14 is proposed to be amended by revising paragraph (e) to read as follows:

§ 1.14 Patent applications preserved in secrecy.

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or any papers relating thereto, must

(1) Be in the form of a petition and be accompanied by the petition fee set forth in § 1.17(i)(1), or

(2) Include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record.

6. Section 1.16 is proposed to be amended by revising para-

graphs (a)-(g) and by adding new paragraphs (k) and (l) to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except cprovisional,b design or plant applicationsb [cases]:

By a small entity (§ 1.9(f))\$365.00
By other than a small entity730.00

(b) In addition to the basic filing fee in an original application, cexcept provisional applications,b for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f)).....38.00
By other than a small entity76.00

(c) In addition to the basic filing fee in an original application, cexcept provisional applications,b for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§ 1.9(f))11.00
By other than a small entity22.00

(d) In addition to the basic filing fee in an original application, cexcept provisional applications,b if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f))120.00
By other than a small entity240.00

(If the additional fees required by paragraphs (b), (c), and (d) of this section are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the applicationc, except provisional applicationsb:

By a small entity (§ 1.9(f))65.00
By other than a small entity130.00

(f) cBasic fee for filing each design application:

By a small entity (§ 1.9(f))150.00
By other than a small entity300.00

(g) Basic fee for filing each plant applicationc, except provisional applications,b:

By a small entity (§ 1.9(f))245.00
By other than a small entity490.00

(k) Basic fee for filing each provisional application:

By a small entity (§ 1.9(f))75.00
By other than a small entity150.00

(l) Surcharge for filing the basic filing fee or cover sheet (§ 1.51(a)(2)(i)) on a date later than the filing date of the provisional application:

By a small entity (§ 1.9(f))25.00
By other than a small entity50.00b

7. Section 1.17 is proposed to be amended by revising paragraphs (h) and (i)(1), by removing paragraph (i)(2), and by adding new paragraphs (q), (r) and (s) to read as follows:

§ 1.17 Patent application processing fees.

(h) For filing a petition to the Commissioner under a section [of this part] listed below which refers to this paragraph.....130.00

§ 1.47 - for filing by other than all the inventors or a person not the inventor.

§ 1.48 - for correction of inventorship, except in provisional applications.

§ 1.182 - for decision on questions not specifically provided for.

§ 1.183 - to suspend the rules.

§ 1.295 - for review of refusal to publish a statutory invention registration.

§ 1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.

§ 1.378(e) - for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent.

§ 1.644(e) - for petition in an interference.

§ 1.644(f) - for request for reconsideration of a decision on petition in an interference.

§ 1.666(c) - for late filing of interference settlement agreement.

§§ 5.12, 5.13 & 5.14 - for expedited handling of a foreign-filing license.

§ 5.15 - for changing the scope of a license.

§ 5.25 - for retroactive license.

(i)[(1)] For filing a petition to the Commissioner under a section [of this part] listed below which refers to this paragraph.....130.00

§ 1.12 - for access to an assignment record.

§ 1.14 - for access to an application.

§ 1.53 - to accord a filing date, except in provisional applications.

§ 1.55 - for entry of late priority papers.

[§ 1.60 - to accord a filing date.]

§ 1.62 - to accord a filing date.

§ 1.97(d) - to consider an information disclosure statement.

c§ 1.102 - to make application special.

§ 1.103 - to suspend action in application.

§ 1.177 - for divisional reissues to issue separately.

§ 1.312 - for amendment after payment of issue fee.

§ 1.313 - to withdraw an application from issue.

§ 1.314 - to defer issuance of a patent.

§ 1.666(b) - for access to interference settlement agreement.

§ 3.81 - for patent to issue to assignee, assignment submitted after payment of the issue fee.

[(2) For filing a petition to the Commissioner under § 1.102 of this part to make application special.....130.00]

c(q) For filing a petition to the Commissioner under a section listed below which refers to this paragraph:

By a small entity (§ 1.9(f)).....25.00

By other than a small entity.....50.00

§ 1.48 - for correction of inventorship in a provisional application.

§ 1.53 - to accord a provisional application a filing date or to convert an application filed under § 1.53(b)(1) to a provisional application.

(r) For filing a submission after final rejection under § 1.129(a).....730.00

(s) For each additional invention requested to be examined under § 1.129(b).....730.00b

8. Section 1.21 is proposed to be amended by removing paragraph (l), by revising paragraph (n), and republishing the introductory text to read as follows:

§ 1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(l) c[Reserved]b [For processing and retaining any application abandoned pursuant to § 1.53(d) unless the required basic filing fee has been paid.....\$130.00]

(n) For handling an incomplete or improper application under § 1.53(c)[, § 1.60] or § 1.62.....\$130.00

9. Section 1.28 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§ 1.9(f) and 1.27 of this part) in any application or patent prior to paying, or at the time of paying, any fee precludes payment of the fee in the amount established for small entities. A refund pursuant to § 1.26 of this part, based on establishment of small entity status, of a portion of fees timely paid in full prior to establishing status as a small entity may only be obtained if a verified statement under § 1.27 and a request for a refund of the excess amount are filed within two months of the date of the timely payment of the full fee. The two-month time period is not extendable under § 1.136. Status as a small entity is waived for any fee by the failure to establish the status prior to paying, at the time of paying, or within two months of the date of payment of, the fee. Status as a small entity must be specifically established [by a verified statement filed] in each application or patent in which the status is available and desired[, except those applications filed under § 1.60 or § 1.62 of this part where the status as a small entity has been established in a parent application and is still proper]. c[Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. Applications filed as continuations, divisions or continuations-in-part of a parent application must include a reference to a verified statement in the parent application or include a copy of the verified statement filed in the parent application if status as a small entity is still proper and desired.] b Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to § 1.27 of this part unless the Office is notified of a change in status. [Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under § 1.60 or § 1.62 of this part. Applications filed under § 1.60 or § 1.62 of this part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.]

10. Section 1.45 paragraph (c) is proposed to be revised to read as follows:

§ 1.45 Joint inventors.

(c) If multiple inventors are named in an application, other than a provisional application under § 1.53(b)(2), b each named inventor must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and the application will be considered to be a joint application under 35 U.S.C. 116. cIf multiple inventors are named in a provisional application, each named inventor must have made

a contribution, individually or jointly, to the subject matter disclosed in the provisional application and the provisional application will be considered to be a joint application under 35 U.S.C. 116.b

11. Section 1.48 is proposed to be revised to read as follows:

§ 1.48 Correction of inventorship.

(a) If the correct inventor or inventors are not named in an application for patent c, other than a provisional application, b through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by:

(1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred;

(2) an oath or declaration by each actual inventor or inventors as required by § 1.63;

(3) the fee set forth in § 1.17(h); and

(4) the written consent of any assignee. When the application is involved in an interference, the petition shall comply with the requirements of this section and shall be accompanied by a motion under § 1.634.

(b) If the correct inventors are named in the application c, other than a provisional application, b when filed and the prosecution of the application results in the amendment or cancellation of claims so that less than all of the originally named inventors are the actual inventors of the invention being claimed in the application, an amendment shall be filed deleting the names of the person or persons who are not inventors of the invention being claimed. The amendment must be diligently made and shall be accompanied by:

(1) A petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application, and

(2) The fee set forth in § 1.17(h).

(c) If an application other than a provisional application b discloses unclaimed subject matter by an inventor or inventors not named in the application, the application may be amended pursuant to paragraph (a) of this section to add claims to the subject matter and name the correct inventors for the application.

c(d) If the name or names of an inventor or inventors were omitted in a provisional application for patent filed under § 1.53(b)(2) through error without any deceptive intention on the part of the actual inventor or inventors, the provisional application may be amended to add the name or names of the actual inventor or inventors. Such amendment must be accompanied by:

(1) a petition including a statement that the error occurred without deceptive intention on the part of the actual inventor or inventors, which statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office; and

(2) the fee set forth in § 1.17(q).b

12. Section 1.51 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.51 General requisites of an application.

(a) Applications for patents must be made to the Commissioner of Patents and Trademarks.

c(1)b A complete application cfiled under § 1.53(b)(1)b comprises:

c(i)b[(1)] A specification, including a claim or claims, see §§ 1.71 to 1.77;b

c(ii)b[(2)] An oath or declaration, see §§ 1.63 and 1.68;c;b

c(iii)b[(3)] Drawings, when necessary, see §§ 1.81 to 1.85b[1.88];c; andb

c(iv)b[(4)] The prescribed filing fee, see § 1.16.

c(2) A complete provisional application filed under § 1.53(b)(2) comprises:

(i) A cover sheet identifying:

(A) The application as a provisional application.

(B) The name or names of the inventor or inventors, (see § 1.41).

(C) The title of the invention.

(D) The name and registration number of the attorney or agent (if applicable).

(E) The docket number used by the person filing the application to identify the application (if applicable), and

(F) The correspondence address;

(ii) A specification as prescribed by 35 U.S.C. 112, first paragraph, see § 1.71;

(iii) Drawings, when necessary, see §§ 1.81 to 1.85; and

(iv) The prescribed filing fee, see § 1.16.b

(b) Applicants are encouraged to file an information disclosure statement c in national applications other than provisional applications. b See §§ 1.97 and 1.98. cNo information disclosure statement may be filed in a provisional application filed under § 1.53(b)(2).b

13. Section 1.53 paragraphs (a) - (e) are proposed to be revised to read as follows:

§ 1.53 [Serial] cApplicationb number, filing date, and completion of application.

(a) Any application for a patent received in the Patent and Trademark Office will be assigned can applicationb [a serial] number for identification purposes.

(b)c(1)b The filing date of an application for patent filed under this section, except for a provisional application, b is the date on which: [(1)] a specification containing a description pursuant to § 1.71 and at least one claim pursuant to § 1.75; and [(2)] any drawing required by § 1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by § 1.41. No new matter may be introduced into an application after its filing date (§ 1.118). If all the names of the actual inventor or inventors are not supplied when the specification and any required drawing are filed, the application will not be given a filing date earlier than the date upon which the names are supplied unless a petition with the fee set forth in § 1.17(i)[(1)] is filed which sets forth the reasons the delay in supplying the names should be excused. A continuationc, b divisional cor continuation-in-part application (filed under the conditions specified in 35 U.S.C. 120 or 121 and § 1.78(a)) may be filed cunderb [pursuant to] this section[, § 1.60] or § 1.62. [A continuation-in-part application may be filed pursuant to this section or § 1.62.]

c(2) The filing date of a provisional application is the date on which: a specification as prescribed by 35 U.S.C. 112, first paragraph; and any drawing required by § 1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by § 1.41. No amendment, other than to make the provisional application comply with all applicable regulations, may be made to the provisional application after the filing date of the provisional application. If all the names of the actual inventor or inventors are not supplied when the specification and any required drawing are filed, the provisional application will not be given a filing date earlier than the date upon which the names are supplied unless a petition with the fee set forth in § 1.17(q) is filed which sets forth the reasons the delay in supplying the names should be excused.

(i) A provisional application must also include a cover sheet identifying the application as a provisional application. Otherwise, the application will be treated as an application filed under § 1.53(b)(1).

(ii) An application for patent filed under § 1.53(b)(1) may be treated as a provisional application and be accorded the original filing date provided that a petition requesting the conversion, with the fee set forth in § 1.17(q), is filed prior to the earlier of either the payment of the issue fee or the expiration of 12 months after the filing date of the provisional application. The grant of any such petition will not entitle applicant to a refund of the fees which were properly paid in the application filed under § 1.53(b)(1).

(iii) A provisional application shall not be entitled to the right of priority under § 1.55 or 35 U.S.C. 119 or 365(a) or to

the benefit of an earlier filing date under § 1.78 or 35 U.S.C. 120, 121 or 365(c) of any other application. No claim for priority under § 1.78(a)(3) may be made in a design application based on a provisional application. No request under § 1.293 for a statutory invention registration may be filed in a provisional application. The requirements of § 1.821(e) regarding sequence listings in computer readable form are not applicable to a provisional application.b

(c) If any application is filed without the specification, drawing or name, or names, of the actual inventor or inventors required by paragraph (b)(1) or (b)(2)b of this section, applicant will be so notified and given a time period within which to submit the omitted specification, drawing, name, or names, of the actual inventor, or inventors, in order to obtain a filing date as of the date of filing of such submission. A copy of the "Notice of Incomplete Application" form notifying the applicant should accompany any response thereto submitted to the Office. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less the handling fee set forth in § 1.21(n). cAny request for review of a refusal to accord an application a filing date must be by way of a petition accompanied by the fee set forth in § 1.17(i), if the application was filed under § 1.53(b)(1), or by the fee set forth in § 1.17(q), if the application was filed under § 1.53(b)(2).b

(d)(1)b If an application which has been accorded a filing date pursuant to paragraph (b)(1)b of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified, if a correspondence address has been provided and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in § 1.16(e) in order to prevent abandonment of the application. A copy of the "Notice to File Missing Parts" form mailed to applicant should accompany any response thereto submitted to the Office. If the required filing fee is not timely paid, [or if the processing and retention fee set forth in § 1.21(l) is not paid within one year of the date of mailing of the notification required by this paragraph,] the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which [neither] the required basic filing fee [nor the processing and retention fee] has cnotb been paid. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. If no correspondence address is included in the application, applicant has two months from the filing date to file the basic filing fee, oath or declaration and to pay the surcharge as set forth in § 1.16(e) in order to prevent abandonment of the application; or, if no basic filing fee has been paid, one year from the filing date to pay the processing and retention fee set forth in § 1.21(l) to prevent disposal of the application].

b(2) If a provisional application which has been accorded a filing date pursuant to paragraph (b)(2) of this section does not include the appropriate filing fee or the cover sheet required by § 1.51(a)(2), applicant will be so notified if a correspondence address has been provided and given a period of time within which to file the fee, cover sheet and to pay the surcharge as set forth in § 1.16(l) in order to prevent abandonment of the application. A copy of the "Notice to File Missing Parts" form mailed to applicant should accompany any response thereto submitted to the Office. If the required filing fee is not timely paid, the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which the required basic filing fee has not been paid. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. If no correspondence address is included in the application, applicant has two months from the filing date to file the basic filing fee, cover sheet and to pay the surcharge as set forth in § 1.16(l) in order to prevent abandonment of the application.b

(e)(1)b An application for a patent cfiled under paragraph (b)(1) of this sectionb will not be placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required.

c(2) A provisional application for a patent filed under paragraph (b)(2) of this section will not be placed upon the

files for examination and will become abandoned no later than twelve months after its filing date pursuant to 35 U.S.C. 111(b)(1).b

14. Section 1.55 is proposed to be revised to read as follows:

§ 1.55 Claim for foreign priority.

(a) An applicant cin an application other than a provisional applicationb may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119c(a) - (d)b and 172. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63. The claim for priority and the certified copy of the foreign application specified in [the second paragraph of] 35 U.S.C. 119c(b)b must be filed:

(1) in the case of an interference (§ 1.630);
(2) when necessary to overcome the date of a reference relied upon by the examiner;

(3) when specifically required by the examiner; and
(4) in all other cases, before the patent is granted. If the claim for priority or the certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in § 1.17(i)[(1)]. If the certified copy filed is not in the English language, a translation need not be filed except in the case of interference; or when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119c(d)b, [last paragraph (as amended July 28, 1972),] the applicant or his or her attorney or agent, when submitting a claim for such right as specified in paragraph (a) of this section, shall include an affidavit or declaration including aspecific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

15. Section 1.59 is proposed to be revised to read as follows:

§ 1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to § 1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which [either] the required basic filing fee (§ 1.16) [or the processing and retention fee § 1.21(l)] has been paid. See § 1.618 for return of unauthorized and improper papers in interferences.

16. Section 1.60 is proposed to be removed and reserved.

§ 1.60 c[Reserved]b [Continuation or divisional application for invention disclosed in a prior application.]

17. Section 1.62 is proposed to be amended by revising paragraphs (a) and (e) to read as follows:

§ 1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declara-

tion from a prior complete application [(§ 1.51(a))cas defined by § 1.51(a)(1) (not a prior complete provisional application as defined by § 1.51(a)(2)), andb which is to be abandoned, may be filed cunder this sectionb before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the [Serial Number, filing date,]capplication numberb and applicant's name of the prior complete application. If the continuation, continuation-in-part, or divisional application is filed by less than all the inventors named in the prior application a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation, continuation-in-part, or divisional application.

(e) An application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application [serial] number. Changes to the prior application must be made in the form of an amendment to the prior application as it exists at the time of filing the application under this section. No copy of the prior application or new specification is required. The filing of such a copy or specification will be considered improper, and a filing date as of the date of deposit of the request for an application under this section will not be granted to the application unless a petition with the fee set forth in § 1.17(i)[(1)] is filed with instructions to cancel the copy or specification.

18. Section 1.63 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.63 Oath or declaration.

(a) An oath or declaration filed under § 1.51(a)[(2)]c(1)(ii)b as a part of an application must:
(1) Be executed in accordance with either § 1.66 or § 1.68;
(2) Identify the specification to which it is directed;
(3) Identify each inventor and the residence and country of citizenship of each inventor; and
(4) State whether the inventor is a sole or joint inventor of the invention claimed.

19. Section 1.67 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.67 Supplemental oath or declaration. *****

(b) A supplemental oath or declaration meeting the requirements of § 1.63 must be filed: (1) When a claim is presented for matter originally shown or described but not substantially embraced in the statement of invention or claims originally presented; and (2) When an oath or declaration submitted in accordance with § 1.53(d)c(1)b after the filing of the specification and any required drawings specifically and improperly refers to an amendment which includes new matter. No new matter may be introduced into an application after its filing date even if a supplemental oath or declaration is filed[(§ 1.53(b); § 1.118)]. In proper cases the oath or declaration here required may be made on information and belief by an applicant other than inventor.

20. Section 1.78 is proposed to be amended by revising paragraphs (a)(1) and (a)(2) and by adding new paragraphs (a)(3) and (a)(4) to read as follows:

§ 1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a)(1) An application cother than a provisional applicationb

may claim an invention disclosed in a prior filed copending national application cfiled under § 1.53(b)(1) or § 1.62 (not a provisional application (see paragraph (a)(3) of this section))b or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must name as an inventor at least one inventor named in the later filed application and disclose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior application must be

(i) complete as set forth in § 1.51(a)(1); or
(ii) entitled to a filing date as set forth in § 1.53(b)c(1) or § 1.62b and include the basic filing fee set forth in § 1.16; or]

[(iii) entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(l) within the time period set forth in § 1.53(d)].

(2) Any application claiming the benefit of a prior filed copending national or international application cother than a provisional applicationb must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by application number (consisting of the series code and serial number), or serial number and filing date] or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See § 1.14(b).)

c(3) An application other than for a design patent may claim an invention disclosed in a prior filed copending provisional application filed under § 1.53(b)(2). A provisional application can be pending for no more than twelve months. In order for an application to claim the benefit of a prior filed copending provisional application, the prior provisional application must name as an inventor at least one inventor named in the later filed application and disclose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior provisional application must be

(i) complete as set forth in § 1.51(a)(2); or
(ii) entitled to a filing date as set forth in § 1.53(b)(2) and include the basic filing fee set forth in § 1.16(k).

(4) Any application claiming the benefit of a prior filed copending provisional application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior provisional application, identifying it as a provisional application, and including the provisional application number (consisting of series code and serial number) and indicating the relationship of the applications.b

21. Section 1.83 is proposed to be amended by revising paragraphs (a) and (c) to read as follows:

§ 1.83 Content of drawing.

(a)(1)b The drawing cin an application other than a provisional applicationb must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g. a labeled rectangular box).

c(2) The drawing in a provisional application filed under § 1.53(b)(2) must show every feature of the invention disclosed in the description where necessary to understand the subject matter of that invention. However, conventional features disclosed in the description, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g. a labeled rectangular box).b

(c) Where the drawings do not comply with the requirements of paragraphs (a)(1)b and (b) of this section, the

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examiner shall require such additional illustration within a time period of not less than two months from the date of the sending of a notice thereof. Such corrections are subject to the requirements of § 1.81(d).

22. Section 1.97 is proposed to be amended by revising paragraph (d) to read as follows:

§ 1.97 Filing of information disclosure statement.

(d) An information disclosure statement shall be considered by the Office if filed after the mailing date of either:

- (1) A final action under § 1.113 or
- (2) A notice of allowance under § 1.311, whichever occurs first, but before payment of the issue fee, provided the statement is accompanied by:

- (i) A certification as specified in paragraph (e) of this section,
- (ii) A petition requesting consideration of the information disclosure statement, and
- (iii) The petition fee set forth in § 1.17(i)(1).

23. Section 1.101 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications, except for provisional applications filed under § 1.53(b)(2) which are not examined, are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to § 1.102. See § 1.496 for order of examination of International applications in the national stage.

24. Section 1.102 is proposed to be amended by revising paragraph (d) to read as follows:

§ 1.102 Advancement of examination.

(d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the petition fee set forth in § 1.17(i)(2).

25. Section 1.103 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.103 Suspension of action.

(a) Suspension of action by the Office will be granted for good and sufficient cause and for a reasonable time specified upon petition by the applicant and, if such cause is not the fault of the Office, the payment of the fee set forth in § 1.17(i)(1). Action will not be suspended when a response by the applicant to an Office action is required.

26. A new, undesignated center heading and new section 1.129 are proposed to be added to Subpart B-National Processing Provisions to read as follows:

cTRANSITIONAL PROVISIONS

§ 1.129 Transitional procedures for limited examination after final rejection and restriction practice.

(a) An applicant in an application, other than for reissue or a

design patent, that has been pending for at least two years as of the effective date of 35 U.S.C. 154(a)(2), taking into account any reference made in such application to any earlier filed application under 35 U.S.C. 120, 121 and 365(c), is entitled to have a first submission entered and considered on the merits after final rejection under the following circumstances: The Office will consider such a submission, to the extent that it would have been entered and considered if made prior to final rejection, if the first submission is filed prior to or simultaneously with the filing of a notice of appeal and prior to abandonment of the application and the fee set forth in § 1.17(r) is paid within one month of any written notification from the Office refusing entry of the first submission and prior to abandonment of the application. If a subsequent final rejection is made in the application, applicant is entitled to have a second submission entered and considered on the merits after the subsequent final rejection under the following circumstances: The Office will consider such a submission, to the extent that it would have been entered and considered if made prior to final rejection, if the second submission is filed prior to or simultaneously with the filing of a notice of appeal of the subsequent final rejection and prior to abandonment of the application and a second fee set forth in § 1.17(r) is paid within one month of any written notification from the Office refusing entry of the second submission and prior to abandonment of the application. Any submission filed after a final rejection made in an application subsequent to the fee set forth in § 1.17(r) having been twice paid will be treated as set forth in § 1.116. A submission as used in this paragraph includes, but is not limited to, an information disclosure statement, an amendment to the written description, claims or drawings and a new substantive argument or new evidence in support of patentability.

(b)(1) In an application, other than for reissue or a design patent, that has been pending for at least three years as of the effective date of 35 U.S.C. 154(a)(2), taking into account any reference made in the application to any earlier filed application under 35 U.S.C. 120, 121 and 365(c), no requirement for restriction or for the filing of divisional applications shall be made or maintained in the application after the effective date, except where:

- (i) the requirement was first made in the application or any earlier filed application under 35 U.S.C. 120, 121 and 365(c) more than two months prior to the effective date;
- (ii) the examiner has not issued any Office action in the application due to actions by the applicant; or
- (iii) the required fee for examination of each additional invention was not paid.

(2) If the application contains more than one independent and distinct invention and a requirement for restriction or for the filing of divisional applications cannot be made or is withdrawn pursuant to this paragraph, applicant will be so notified and given a time period of one month from the notice to pay the fee set forth in § 1.17(s) for each independent and distinct invention claimed in the application in excess of one. If applicant does not pay the required fee for each additional invention in a timely manner, only the first claimed invention and those additional inventions for which the fee has been paid will be searched and examined. The additional inventions for which the required fee has not been paid will be withdrawn from consideration under § 1.142(b). An applicant who desires examination of an invention so withdrawn from consideration can file a divisional application under 35 U.S.C. 121.

The provisions of this section shall not be applicable to any application filed on or after the effective date of 35 U.S.C. 154(a)(2).b

27. Section 1.139 is proposed to be added to read as follows:

c§ 1.139 Revival of provisional application.

(a) A provisional application which has been accorded a filing date and abandoned for failure to timely respond to an Office requirement may be revived so as to be pending for a period of no longer than twelve months from its filing date if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. Under no circumstances will the provisional application be pending after twelve months from its filing date. A petition to revive an abandoned provisional application must be promptly filed after the applicant is notified of, or otherwise

becomes aware of, the abandonment, and must be accompanied by:

- (1) the required response unless it has been previously filed;

- (2) the petition fee as set forth in § 1.17(l); and
- (3) a showing that the delay was unavoidable. The showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) A provisional application which has been accorded a filing date and abandoned for failure to timely respond to an Office requirement may be revived so as to be pending for a period of no longer than twelve months from its filing date if the delay was unintentional. Under no circumstances will the provisional application be pending after twelve months from its filing date. A petition to revive an abandoned provisional application must be:

- (1) accompanied by the required response unless it has been previously filed;
- (2) accompanied by the petition fee as set forth in § 1.17(m);
- (3) accompanied by a statement that the delay was unintentional. The statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay was unintentional; and

(4) filed either:

- (i) within one year of the date on which the provisional application became abandoned; or
- (ii) within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date on which the provisional application became abandoned.

(c) Any request for reconsideration or review of a decision refusing to revive a provisional application upon petition filed pursuant to paragraphs (a) or (b) of this section, to be considered timely, must be filed within two months of the decision refusing to revive or within such time as set in the decision.

(d) The time periods set forth in this section cannot be extended, except that the three-month period set forth in paragraph (b)(4)(ii) of this section and the time period set forth in paragraph (c) of this section may be extended under the provisions of § 1.136.b

28. Section 1.177 is proposed to be revised to read as follows:

§ 1.177 Reissue in divisions.

The Commissioner may, in his or her discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for each division. Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts, subject to the provisions of §§ 1.83 and 1.84. On filing divisional reissue applications, they shall be referred to the Commissioner. Unless otherwise ordered by the Commissioner upon petition and payment of the fee set forth in § 1.17(i)(1), all the divisions of a reissue will issue simultaneously; if there be any controversy as to one division, the others will be withheld from issue until the controversy is ended, unless the Commissioner shall otherwise order.

29. Section 1.312 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.312 Amendments after allowance.

(b) Any amendment pursuant to paragraph (a) of this section filed after the date the issue fee is paid must be accompanied by a petition including the fee set forth in § 1.17(i)(1) and a showing of good and sufficient reasons why the amendment is necessary and was not earlier presented.

30. Section 1.313 is proposed to be amended by revising para-

graph (a) to read as follows:

§ 1.313 Withdrawal from issue.

(a) Applications may be withdrawn from issue for further action at the initiative of the Office or upon petition by the applicant. Any such petition by the applicant must include a showing of good and sufficient reasons why withdrawal of the application is necessary and, if the reason for the withdrawal is not the fault of the Office, must be accompanied by the fee set forth in § 1.17(i)(1). If the application is withdrawn from issue, a new notice of allowance will be sent if the application is again allowed. Any amendment accompanying a petition to withdraw an application from issue must comply with the requirements of § 1.312.

31. Section 1.314 is proposed to be revised to read as follows:

§ 1.314 Issuance of patent.

If payment of the issue fee is timely made, the patent will issue in regular course unless—(a) The application is withdrawn from issue (§ 1.313), or (b) Issuance of the patent is deferred.

Any petition by the applicant requesting a deferral of the issuance of a patent must be accompanied by the fee set forth in § 1.17(i)(1) and must include a showing of good and sufficient reasons why it is necessary to defer issuance of the patent.

32. Section 1.666 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.666 Filing of interference settlement agreements.

(b) If any party filing the agreement or understanding under paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in § 1.17(i)(1) and on a showing of good cause.

33. Section 1.701 is proposed to be added to Subpart F to read as follows:

c§ 1.701 Extension of patent term due to prosecution delay.

(a) A patent, other than for designs, issued on an application filed on or after [the implementation date] is entitled to extension of the patent term if the issuance of the patent was delayed due to:

- (1) proceedings under 35 U.S.C. 135(a), and/or
- (2) the application being placed under a secrecy order under 35 U.S.C. 181, and/or

(3) appellate review by the Board of Patent Appeals and Interferences or by a federal court under 35 U.S.C. 141 or 145, if the patent was issued pursuant to a decision reversing an adverse determination of patentability and if the patent is not subject to a terminal disclaimer due to the issuance of another patent claiming subject matter that is not patentably distinct from that under appellate review.

(b) The term of a patent entitled to extension under paragraph (a) of this section shall be extended for the sum of the periods of delay calculated under paragraphs (c)(1), (c)(2) and (c)(3) of this section, to the extent that these periods are not overlapping, up to a maximum of five years. The extension will run from the original expiration date of the patent unless an earlier expiration date is set by terminal disclaimer (§ 1.321).

(c)(1) The period of delay under paragraph (a)(1) of this section for an application is the sum of the following periods, to the extent that the periods are not overlapping:

- (i) with respect to each interference, if any, in which the application was involved, the number of days in the period

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(d) The period of delay set forth in paragraph (c)(3) shall be reduced by:

(1) any time calculated pursuant to paragraph (c)(3) of this section before the expiration of three years from the filing date of the first national application for patent presented for examination, and

(2) any time, as determined by the Commissioner, during which the applicant for patent did not act with due diligence. In determining the due diligence of an applicant, the Commissioner will examine the facts and circumstances of the applicant's actions during the pendency period of the application to determine whether the applicant exhibited that degree of timeliness as may reasonably be expected from, and which is ordinarily exercised by, a person during the pendency period of an application.

PART 3—ASSIGNMENT, RECORDING, AND RIGHTS OF ASSIGNEE

34. The authority citation for 37 CFR Part 3 would continue to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6.

35. Section 3.21 is proposed to be revised to read as follows:

§ 3.21 Identification of patents and patent applications.

An assignment relating to a patent must identify the patent by the patent number. An assignment relating to a national patent application must identify the national patent application by the application number (consisting of the series code and the serial number, e.g., 07/123,456)[or the serial number and filing date]. An assignment relating to an international patent application which designates the United States of America must identify the international application by the international application number (e.g., PCT/US90/01234). If an assignment of a patent application filed under § 1.53(b)(1) or § 1.62b is executed concurrently with, or subsequent to, the execution of the patent application, but before the patent application is filed, it must identify the patent application by its date of execution, name of each inventor, and title of the invention so that there can be no mistake as to the patent application intended. If an assignment of a provisional application is executed before the provisional application is filed, it must identify

18-Month Publication of Patent Applications
Agency: Patent and Trademark Office, Commerce

Action: Notice of public hearing and request for public comments

Summary: The Patent and Trademark Office (PTO) requests public comment on issues associated with the 18-month publication of patent applications. Interested members of the public are invited to testify at a public hearing and to present written comments on procedures for implementing 18-month publication, including the topics outlined in the supplementary information section of this notice.

Dates: A public hearing will be held on Wednesday, February 15, 1995, in Room 912, Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia, starting at 10:00 a.m. Those wishing to present oral testimony must request an opportunity to do so no later than February 13, 1995. Written comments on the topics presented in the supplementary section of this notice will be accepted by the PTO until February 17, 1995.

Addresses: Those interested in presenting written comments on the topics presented in the supplementary information, or any related topics, may mail their comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of Stephen G. Kunin, Deputy Assistant Commissioner for Patent Policy and Projects, or send them by facsimile transmission to (703) 305-8825.

Written comments should include the following information:

- name and affiliation of the individual responding;
- an indication of whether comments offered represent views of the respondent's organization or are the respondent's personal views; and
- if applicable, information on the respondent's organization, including the type of organization (e.g., business, trade group, university, non-profit organization).

Parties offering testimony or written comments are asked to provide their comments in machine readable format. Machine-readable submissions may be provided as electronic mail messages sent over the Internet to early-pub@uspto.gov, or on a

publication provision similar to S. 1854 and S. 2488 will be introduced in the 104th Congress. In addition, the Secretary of Commerce and the Japanese Ambassador to the United States have exchanged letters in which the United States committed, among other things, to introduce legislation to provide for the publication of pending patent applications 18 months after their effective filing date. The Japanese Government also committed to significant changes in its patent system. The United States committed to begin publishing patent applications by January 1, 1996. If Congress enacts this change, the PTO will need to implement the legislation quickly to meet the January 1, 1996, date set out in the exchange of letters. In the event legislation with an 18-month publication provision is enacted next year, public comments will greatly assist the PTO in formulating any notice of proposed rulemaking implementing the legislation. Specifically, the PTO is considering ways to implement possible legislative changes which would require the PTO to publish all patent applications at 18 months from the filing date, including the earliest filing date for which a benefit is desired under 35 U.S.C. §§ 119, 120, 121, and/or 365. The PTO would publish sufficient information about pending applications to enable a knowledgeable reader to determine whether the technology described is relevant to the reader's interest. If such legislation is enacted, certain changes will be required in the way business is conducted both with and within the PTO. Accordingly, it is appropriate that the public be given an opportunity to comment prior to any rules being proposed.

Currently, national patent applications are maintained in confidence by the PTO until a patent is granted as required by 35 U.S.C. § 122. In accordance with 37 C.F.R. § 1.14(a), information regarding the status of any such application may be given to a third party when "the application has been identified by serial number in a published patent document or the United States of America has been indicated as a Designated State in a published international application, in which case status information such as whether it is pending, abandoned or patented may be supplied." If legislation similar to S. 1854 or S. 2488 is enacted into law, all pending applications filed on or after the effective date of the legislation, except for those under a 35 U.S.C. § 181 secrecy order, will be published at 18 months from the earliest filing date for which a benefit is sought, unless the application has already issued as a patent.

The earliest filing date for which a benefit is sought for purposes of 18-month publication of the application should not

(a Patent Application Notice) containing similar information will be created for placement in the search files. It is further contemplated that public access will be provided to at least the bibliographical and technical content of the application (specification including claims and drawings) upon publication.

The creation of an electronic data base which mirrors the content of the paper application file will provide the greatest degree of public access to the application, while causing the least disruption to the examination process. It is the PTO's intention to have such an electronic data base in operation when the proposed legislation becomes effective. However, provisions for providing access to the paper application file may be necessary in the event that the electronic data base is not fully operational when applications are first published. Accordingly, some access to the paper application file may be necessary for a short period of time.

II. Issues for Public Comment

Any interested member of the public is invited to testify and/or present written comments on any topic related to 18-month publication. The public was invited to comment on the advisability of introducing an 18-month publication procedure into the patent system of the United States in a public hearing conducted in October 1993. Accordingly, the public is encouraged to limit comments to the procedures that the PTO should adopt if an 18-month publication regime is enacted. Questions included at the end of this section are intended to illustrate the types of issues upon which the PTO is particularly interested in obtaining public comment.

A. Creation of the Electronic Data Base

1. Data Capturing Operation

A data capturing operation will enable the creation of a data base containing image and text equivalent to the content of a paper application file. It is currently contemplated that those application materials not submitted in machine readable format will be image and/or optical character recognition (OCR) scanned by the PTO for entry into this electronic data base. The PTO currently contemplates that the content of the application as originally deposited in the PTO will be captured after the application is serialized, and application-related materials subsequently submitted will be captured after identification as directed to an existing application. Currently, the PTO accepts, either by hand-carried delivery or facsimile transmission, appli-

cation related materials (e.g., amendments, petitions) in locations other than the central mailroom (e.g., the various Examining Groups). Unless the PTO requires that all official application-related materials be submitted at a central location (e.g., the mailroom), the PTO will have to either (1) forward such application-related materials to a central data capturing facility, or (2) provide data capturing facilities at every location at which application materials may be filed in the PTO. Notwithstanding the cost of either providing and operating numerous data capturing facilities, or routing all application-related materials to a central data capturing facility, the PTO is concerned that a decentralized operation will cause some application-related materials to elude capture onto this data base. See Question #1.

2. Standard Application Format

The creation of an electronic data base which mirrors the content of the paper application file will be facilitated if papers filed in the PTO are either (1) submitted in machine readable format or (2) specifically arranged for image and/or OCR scanning by the PTO for entry into this electronic data base. To facilitate the scanning of papers not submitted in machine readable format, the PTO is considering requiring some type of standard application format to increase scanning accuracy and significantly reduce data capture costs. The PTO requests comments on the advisability of a standard format and on the type or extent of a standard format. This standard format could take the form of (1) requiring only bibliographic data (e.g., title, inventor(s) name(s), address(es), etc.), representative, correspondence address, priority claims, be arranged in a standard format, (2) requiring bibliographic data and portions of the technical content of the application such as the abstract, claims, and drawings be arranged in a standard format, or (3) requiring that the entire application be arranged in a standard format. In addition, the standard format could include requiring standard paper sizes (8 1/2 by 11 inches and/or A4 only) for all application papers and/or requiring (1) that claims be located on a separate page from the specification, (2) special numbering for and/or spacing between each claim, or (3) that each claim be located on a separate page. See Question #2.

B. Publication

1. Publication Content

The PTO has considered a number of options regarding what the pre-grant publication might contain. These options included publishing the following:

- Only the title and certain limited bibliographical data.
- Something similar to what the *Official Gazette* provides for an issued patent: a drawing figure, representative claim and certain bibliographical data, perhaps also including the abstract or the abstract rather than a representative claim (a *Gazette Entry*).
- The entire application as filed.
- The entire application file as it exists at a fixed time before publication.

Options (i) and (ii) contemplate that, subsequent to publication, access will be made available on demand to the content of the application (specification, claims and drawings), hereinafter "application content," as of the filing date or some fixed time before publication.

Option (iii) would require printing the entire application as filed (specification, claims, and drawings), costing substantially the same as the printing of the patent, and taking up considerable space in the search files. The costs and space requirements of option (iv) would be greater than those of option (iii), but option (iv) would provide the greatest amount of published information. At present, it is believed that implementation of option (ii), with access to the application content, will best serve the interests of both the PTO and the public. Costs will be minimized by keeping the published information to a single page and the impact on the public and examiners' search files will be minimal, as compared to options (iii) and (iv). Furthermore, the information provided by option (ii) should be sufficient to enable the reader to make an educated decision as to whether "detailed access" to the application itself is necessary. Option (i), although somewhat lower in cost, would most likely cause unnecessary requests for review of the application file

since the published information would be limited to a title, which may not be reasonably indicative of the technical disclosure of the application, much less what is actually being claimed. Present thinking is to publish a *Gazette Entry* in a separate *Gazette of Patent Application Notices*, provide access to the application content, and create a Patent Application Notice containing similar information for placement in the search files. See Question #3.

The PTO also requests comments as to whether separate delivery of a copy of the published application information, i.e., the *Gazette Entry* or the Patent Application Notice, to the applicant is desirable. As the published information will be available in the *Gazette of Patent Application Notices*, and applicants will know from their own files what is published, it is unclear that the additional delivery of a copy of such information to the applicant justifies the additional costs, and thus fees, for providing such information. See Question #4.

2. Publication Cut-Off Date

The PTO is currently considering establishing a firm cut-off date at which time applicants must decide whether or not they wish their applications to be published, with the only alternative to publishing being abandonment of the application. Present thinking, based on experiences in the publishing of patents and SIRs, is that a cut-off time of 15 months from the earliest filing date for which a benefit is sought would be necessary to assure publication at 18 months. An applicant would have to notify the PTO of his or her wish to not publish, and thus abandon, the application by this cut-off date. The PTO recognizes that in certain instances an applicant may desire to maintain the invention as a trade secret if the protection to be afforded, in light of the prior art considered by the examiner, is limited in nature. Examination before the examiner in most non-continuing United States origin applications should be concluded, and a first Office action should be issued in most applications, by this cut-off date. Nevertheless, in certain circumstances, an applicant may request accelerated examination such that in a non-continuing United States origin application, prosecution before the examiner should be complete by the cut-off date.

3. Accelerated Examination

Currently, the PTO will accelerate the examination of (make special) an application under the conditions set forth in 37 C.F.R. § 1.102, as described in M.P.E.P. § 708.02 and Petitioning to Make Applications Relating to Biotechnology Special, 1092 *Off. Gaz. Pat. Office* 55 (July 15, 1988). It is contemplated that some applicants will desire an accelerated examination of their respective applications to obtain a final patentability determination prior to the critical publication cut-off date, when an applicant must decide whether to have the application published. Of course, increasing the number of accelerated examinations may diminish the availability or speed of accelerated examination to an individual applicant, as there will be more applications receiving an accelerated examination. This will further delay the examination of applications not provided with accelerated examination. In view of the potential value of an accelerated examination to an individual applicant, thought must be given as to whether (1) the current requirements for receiving an accelerated examination are adequate, (2) accelerated examination also should be provided for a substantial fee, or (3) there is another alternative that would meet the needs of all applicants. See Question #5.

4. Recovery of Publication Costs

The PTO estimates that 82 percent of the applications filed in Fiscal 1996 would be published under the proposed legislation, and that it would require about \$14 million in Fiscal 1996 to recover the costs of publishing these applications in accordance with option (ii) discussed above. If the proposed legislation provides the flexibility to the Commissioner to recover the costs of publication by adjusting the filing, issue, and maintenance fees, or by charging a separate publication fee, or by any combination of these methods, how should this cost be allocated among the various fees? Should the cost of publication be recovered through a separate publication fee *per se*, or should all or part be distributed among the filing, issue, and maintenance fees? In addition, fees assessed under 35 U.S.C. §§ 41(a) and (b), such as filing, issue and maintenance

fees, are subject to a 50 per cent small entity discount, whereas a publication fee may or may not be subject to a small entity discount. Accordingly, the manner of allocating the costs of publication will dictate the relative proportion of the costs paid by large and small entities. See Question #6.

5. Procedures for Collecting a Publication Fee

If the legislation provides for charging a publication fee, how should the fee be collected, and what safeguards should be provided to ensure timely publication and prevent unnecessary loss of potential patent rights? The PTO contemplates that such a publication fee, if instituted, will be required prior to 15 months from the earliest filing date for which a benefit is sought, or, on filing, whichever is later, and that failure to timely submit this fee will result in abandonment and non-publication of the application. The PTO may institute a regimen under which (1) an application will not be published unless the applicant affirmatively requests publication by paying the publication fee, or alternatively, (2) an application will be published unless the applicant affirmatively indicates that the application is not to be published, regardless of whether the publication fee is timely submitted. The PTO recognizes that provisions for the acceptance of an unavoidably/unintentionally delayed payment of this fee, *vis-a-vis* 37 C.F.R. § 1.316, would be desirable.

Under either option, any applicant who did not timely submit the publication fee must petition for acceptance of a late publication fee to revive the application. Under option (2), the costs of publishing applications lacking the publication fee, but also lacking an affirmative statement that the applicant does not desire publication, will be passed to other applicants, unless the application is subsequently revived; however, this option will avoid the delay in publication inherent where an application is not published until a delayed publication fee is submitted for the application. See Question #7. Finally, there is a question as to whether the PTO should develop procedures for the withdrawal (and abandonment) of an application from publication subsequent to payment of the publication fee.

C. Priority Rights

It had been proposed in S. 2488 that "each application for patent shall be published ... as soon as possible after the expiry of a period of 18 months from the earliest filing date for which a benefit is sought under this title." Both 35 U.S.C. §§ 119 and 120, as proposed in S. 2488, provided that the Commissioner (PTO) may determine the period within which a claim for priority must be filed; however, 35 U.S.C. § 119 expressly requires that this period be during the pendency of the application. To enable the PTO to publish applications as soon as possible after 18 months from the earliest priority date, the PTO must be aware of any claims for priority under 35 U.S.C. §§ 119 or 120 as early as possible, preferably on filing of the application. The PTO contemplates requiring applicants to state any claim for priority under 35 U.S.C. §§ 119 or 120 on filing, but accepting late claims for priority with a surcharge. The PTO further contemplates establishing, by regulation, a fixed period, such as within 3 months of filing, within which late claims for priority under 35 U.S.C. §§ 119 or 120 will be accepted with a surcharge to avoid the loss of such claim for priority. The time period for claiming priority under 35 U.S.C. § 119 should be distinguished from the time period for perfecting such claims, i.e., submitting a certified copy of the priority document, which would remain as set forth in 37 C.F.R. § 1.55(a). In view of the potential for delaying the publication of an application by delaying the filing of a claim for priority, the PTO is considering a requirement that any late claim for priority be accompanied by a verified statement that the delay in submitting such claim was unintentional. See Question #8.

D. Prior Art Effect of Published Application

It had been proposed in S. 2488 that 35 U.S.C. § 102(e) will include "an application for patent, published pursuant to section 122(b), by another filed in the United States before the invention thereof by the applicant for patent" within its scope. Accordingly, a published application would have constituted prior art under 35 U.S.C. § 102(e) by the express terms in S. 2488. A published application will also constitute prior art for its entire disclosure as a "printed publication" under 35 U.S.C. §§ 102(a) and (b) as of its publication date. Thus, a published application

would have constituted prior art under 35 U.S.C. § 102(e) by the express terms in S. 2488 as of its filing date, and also it would constitute prior art under 35 U.S.C. §§ 102(a) and (b) as of its publication date. Of course, the published application also would be available as prior art under 35 U.S.C. § 103. While the PTO does not currently contemplate publication of the entire application, the application content will be accessible to the public. In addition, the *Gazette Entry* in the *Gazette of Patent Application Notices* will categorize the application (title, abstract and/or claim, U.S. classification) so as to make the application sufficiently accessible to those interested in the art. *In re Hall*, 781 F.2d 897, 900, 228 USPQ 453, 456 (Fed. Cir. 1986); see also, *In re Wyer*, 655 F.2d 221, 210 USPQ 790 (CCPA 1981) (application available to the public as prior art, with an abstract, claim, and classification published); and compare, *In re Cronyn*, 890 F.2d 1158, 13 USPQ2d 1070 (Fed. Cir. 1989) (undergraduate student thesis not available as prior art where the thesis, while accessible to the public, was indexed or categorized only by the author's name, rather than by subject matter).

As discussed above, it is currently contemplated that a Patent Application Notice will be placed in the search files. The PTO is undecided as to whether this Patent Application Notice should be removed from the search files if and when the application issues as a patent, or whether to include publication information on the issued patent. See Question #9.

E. Access to Published Applications

1. Degree of Access

Providing the public with access to the application content as originally filed will serve the legislative purpose of more rapid dissemination of the technical content of a patent application. Additional access to papers filed by an applicant, or issued by the PTO, will not add to the disclosure of the technical content of an application, but would be useful for (1) determining the metes and bounds of the invention claimed in an application, such that persons could ascertain their potential liability for infringement should the application issue as a patent, and (2) participating in the prosecution of the application, e.g., submitting prior art or a protest in the application. Unless the contemplated electronic data base is in operation when the proposed legislation becomes effective, or contingency arrangements permitting equivalent access to the application content are developed, any access to a pending application will require the removal of the application file from the examiner to allow copying of the accessible portions. The degree of access provided to pending applications may well have an adverse impact on the examination process by increasing the pendency of applications. Balancing the desires for reasonable access to applications subsequent to publication with the continued desirability for limiting pendency of applications, the PTO currently contemplates that access will be limited to the content of the originally filed application papers as amended prior to the 15th month from the earliest filing date for which a benefit is sought, or, on filing, whichever is later. In other words, publication of the application at 18 months would entitle any member of the public to purchase a copy of the application (specification, claims, and drawings) as amended at a point in time prior to publication. Other options regarding access to the application file after publication include access to the entire content of the application file from filing up to the date of publication, or continuing access to the application file after publication, including all papers contained in the file wrapper from filing to grant of the patent. As access is increased, more information about the course of prosecution is available to the public, but the opportunity for disruption of the examination process, and the opportunity for increased costs and pendency, also increases. See Question #10. Finally, the PTO also requests comments on whether, subsequent to publication, access should be provided to (1) the assignment records of an application, or (2) the deposit of biological materials as set forth in 37 C.F.R. § 1.802 *et seq.* See Questions #11 and #12. The PTO currently contemplates that access fees, either for copying the paper application file, or searching and copying information from an electronic data base, will be required to compensate for the costs of providing these services.

2. Submission of Amendments

The current procedures for entering amendments into applications sometimes cause errors in the entry of amendments into applications and in the printing of applications as patents. To facilitate the accurate entry of amendments into applications and the printing of applications as patents, as well as the understanding of the applications (specification, claims, and drawings) by a person seeking access, the PTO is also considering altering the current procedures for entering amendments into applications. The procedures for entering amendments into an application could take the form of requiring (a) substitute paragraphs of specification and the complete rewriting of any amended claim, (b) substitute pages or sheets of specification, drawings or claims, or (c) replacement of the entire application. See Question #13.

F. Third Party Activity

The current protest practice as provided for in 37 C.F.R. § 1.291 and M.P.E.P. § 1901 *et seq.* requires that the protest identify the application under protest by application number or serial number and filing date and include a listing of all patents, publications or other information relied upon, a concise explanation of the relevance of each listed item, an English translation of non-English language documents and be accompanied by a copy of each document. In addition, the protest papers must reflect that a copy of the same has been served upon the applicant or upon the applicant's attorney or agent of record, or be filed with the PTO in duplicate in the event that service is not possible. It is important that any protest against a pending application specifically identify the application with as much detail as possible.

In 1974, a Trial Voluntary Protest Program (TVPP), which included two trial programs, was undertaken by the PTO. A total of 6,745 applicants were given the opportunity to participate in the TVPP. In response, 1,970 or 29.2 percent of the applicants elected to participate. Protests were subsequently filed in 128, or 6.5 percent, of the 1,970 published applications. Prosecution was re-opened in eighty, or 62.5 percent, of the protested applications. The pendency of published applications which were not protested was delayed by 6 to 8 months. The pendency of protested applications was further delayed for varying periods.

As noted above, 6.5 percent of all of the TVPP applications were protested. If we assume that ten (10) percent of the published applications are protested this would lead to a dramatic increase of protests. In fact, the ten (10) percent figure may be on the low side, since the claims in the TVPP applications were in allowable condition. As of the contemplated cut-off date, many of the applications may not, as yet, have isolated the metes and bounds of allowable subject matter.

The PTO requests comments as to when the submission of prior art by third parties should be permitted subsequent to publication of the application. Traditionally, applications are maintained in secrecy during their entire prosecution, thus rendering the entire prosecution of an application *ex parte*. Nevertheless, the third party submission of prior art may improve the quality of issued patents by providing examiners with the best prior art. Should it be considered desirable to substantially maintain the *ex parte* nature of application prosecution, it is unclear as to what limits should be placed on the submission of prior art by third parties.

As the prosecution of an application may be closed (under final rejection or Notice of Allowance) at the time of publication, the time periods for the submission of prior art by third parties must be limited to avoid delays in prosecution. In addition, the PTO requests comments on whether to stay the proceedings for a set period following the publication of the applications to permit the third party submission of prior art. Providing any time period subsequent to the publication of an application for the submission of prior art by third parties could result in the reopening of prosecution in an application. Such continued prosecution of applications, if permitted, would lead to increases in pendency, the adverse effects of which will be further exacerbated under a 20-year patent term regime.

If the submission of prior art in a pending application by third parties is considered desirable, what procedures should be adopted to accommodate such submission and take advantage of its potential benefits? In addition, a specific time period, e.g., the earlier of the mailing of a Notice of Allowance in the application or two months after publication of the application, must be established during which prior art may be submitted

to ensure its consideration. The PTO currently contemplates that prior art submitted outside this time period by third parties would simply be placed in the application file. Finally, the PTO does not currently contemplate providing third parties with any opportunity that would amount to an opposition proceeding. See Question #14.

III. Questions

1. Should the PTO require that all official application-related materials be delivered to a central location? Specifically, what problems would a requirement that all official application-related materials be delivered to a central location cause?

2. Should the PTO adopt a standard application format? If so, what portions of the application papers should the PTO require be submitted in a standard size and/or format, and what sanction (e.g., surcharge) should be established for the failure to comply with these requirements?

3. Assuming that the entire application is not published, what information concerning the application should be published in the *Gazette of Patent Application Notices*?

4. Should the patent applicant receive a copy of the published application — either published notice and/or application content at time of publication?

5. Should the PTO permit an accelerated examination? If so, under what conditions?

6. Since the cost for publishing applications must be recovered from fees, how should the cost of publication be allocated among the various fees, including the possibility of charging a separate publication fee?

7. Should the PTO require an affirmative communication from a patent applicant indicating that the applicant does not wish the application to be published, or should failure to timely submit a publication fee be taken as instruction not to publish the application? That is, should an application be published unless the applicant affirmatively indicates that the application is not to be published, regardless of whether a publication fee has been submitted? What latitude should the PTO permit for late submission of a publication fee?

8. The delayed filing of either a claim for priority under 35 U.S.C. §§ 119 or 120 may result in the delayed publication of the application. Should priority or benefit be lost if not made within a reasonable time after filing? What latitude should the PTO permit for late claiming of priority or benefit?

9. Once the patent has issued, should the paper document containing information similar to that published in the *Gazette of Patent Application Notices*, i.e., the Patent Application Notice, be removed from the search files, and should publication information be included on the issued patent?

10. After publication, should access to the content of the application file be limited to the originally filed application papers? If not, what degree of access should be permitted? Should access be limited to the content before publication, or should it extend to materials added after publication?

11. After publication, should assignment records of a published application also be made accessible to the public?

12. After publication, should access include the deposit of biological materials as set forth in 37 C.F.R. § 1.802 *et seq.*?

13. What types of problems will be encountered if all amendments must be made by (a) substitute paragraphs and claims, (b) substitute pages, or (c) replacement of the entire application?

14. Should protest procedures be modified to permit the third party submission of prior art only prior to a specific period after publication of the application? What actions should be taken with respect to untimely submissions by a third party?

Dec. 5, 1994

MICHAEL K. KIRK
Deputy Assistant Secretary of Commerce
and Deputy Commissioner of Patents
and Trademarks

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,623,688, Thomas P. Flanagan, REMOIST-ENABLE HOT MELT ADHESIVES, Interference No. 102,191, final judgment adverse to the patentee rendered Oct. 31, 1994, as to claims 1-10.

Patent No. 4,663,077, Nuno M. Rei, Ronald C. Wilson, MICROBIOCIDAL COMPOSITIONS COMPRISING AN ARYL ALKANOL AND A MICROBIOCIDAL COMPOUND DISSOLVED THEREIN, Interference No. 102,030, final judgment adverse to the patentees rendered July 13, 1993, as to claims 1-3, 6-8 and 63.

Patent No. 4,889,812, Perry W. Guinn, Gary N. Mills, Robert A. Bedient, Martin O. Greeley, BIOREACTOR APPARATUS, Interference No. 103,096, final judgment adverse to the patentees rendered Nov. 29, 1994, as to claim 9.

Patent No. 5,022,144, Prem R. Hingorany, METHOD OF MANUFACTURE POWER HYBRID MICROCIRCUIT, Interference No. 103,391, final judgment adverse to the patentee rendered Nov. 29, 1994, as to claims 2-10.

Patent No. 5,024,926, Hisato Itoh, Katashi Enomoto, Takahisa Oguchi, Tsutomu Nishizawa, ALKYLPHTHALOCYANINE NEAR-INFRARED ABSORBERS AND RECORDING/DISPLAY MATERIALS USING THE SAME, Interference No. 102,905, final judgment adverse to the patentees rendered Nov. 16, 1994, as to claims 1 and 2.

Patent No. 5,043,483, Lorin Sogli, Raffaele Ungarelli, L. Lawrence Chapoy, PROCESS FOR THE ALKYLATION OF PHENOLS, Interference No. 102,965, final judgment adverse to the patentees rendered Nov. 29, 1994, as to claims 1-16.

Patent No. 5,065,540, William S. Potter, Jr., STRIKING ROD HOLDER, Interference No. 103,253, final judgment adverse to the patentee rendered July 19, 1994, as to claims 1-4, 8, 11, 14, 19, 29, 30 and 32.

Patent No. 5,114,480, Edward F. Cassidy, Herbert R. Gillis, Malcolm Hannaby, Alain Parfondry, INTERNAL MOULD RELEASE COMPOSITIONS, Interference No. 103,431, final judgment adverse to the patentees rendered Oct. 12, 1994, as to claims 1-6.

Patent No. 5,124,247, Wilhelm Ansorge, PROCESS FOR SEQUENCING NUCLEIC ACIDS, Interference No. 103,142, final judgment adverse to the patentee rendered Oct. 12, 1994, as to claims 1, 3, 8-19, 22-25.

Patent No. 5,133,492, Franz X. Wohrstein, Roger Paulman, METHOD AND APPARATUS FOR SEPARATING THIN-WALLED, MULTIPORT MICROEXTRUSIONS, Interference No. 103,325, final judgment adverse to the patentees rendered Oct. 25, 1994, as to claims 1-14.

Patent No. 5,145,890, Clay B. Frederick, John R. Udinsky, METHOD FOR REDUCING THE CARBOXYLESTER CONTENT OF AN EMULSION POLYMER, Interference No. 103,377, final judgment adverse to the patentees rendered Oct. 18, 1994, as to claims 1-24.

Patent No. 5,218,060, William M. Rolfe, Michael R. Thoseby, CALIXERENE EPOXIDE RESINS AND HARDENERS, Interference No. 103,382, final judgment adverse to the patentees rendered Nov. 9, 1994, as to claims 1-7.

Patent No. 5,222,881, Fumiaki Sano, Masahiko Oide, Toshiyuki Nakamura, Hiroshi Ogawa, Norihide Kobayashi, Yoshinori Shirafuji, Takashi Yamamoto, Keiji Sakano, SCROLL TYPE COMPRESSOR HAVING CURVED SURFACE PORTIONS BETWEEN THE SHAFT AND BEARING MEANS, Interference No. 103,372, final judgment adverse to the patentees rendered Nov. 7, 1994, as to claim 1.

Patent No. 5,262,503, Shiroh Gotoh, RANDOM COPOLYMERS AND CROSSLINKED PRODUCTS OF THE SAME,

Interference No. 103,373, final judgment adverse to the patentee rendered Oct. 18, 1994, as to claims 1-4.

OLIVIA M. DUVALL
Board of Patent Appeals
& Interferences
(703) 603-3299

Department of Commerce Patent and Trademark Office

Grant of Certificate of Interim Extension of the term of U.S. Patent No. 4,062,848; Remeron

Agency: Patent and Trademark Office, Commerce
Action: Notice of Interim Patent Term Extension
Summary: The Patent and Trademark Office has issued a certificate under 35 U.S.C. § 156(d)(5) for a one-year interim extension of the term of U.S. Patent No. 4,062,848 that claims the human drug product known as Remeron.

For Further Information Contact: Gerald A. Dost by telephone at (703) 305-9282; or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Office of the Deputy Assistant Commissioner for Patent Policy and Projects, Office of Special Programs, Washington, D.C. 20231.

Supplementary Information: Section 156 of Title 35, United States Code, generally provides that the term of a patent may be extended for a period of up to 5 years if the patent claims a product, or a method of making or using a product, that has been subject to certain defined regulatory review. Under section 156, a patent is eligible for term extension only if regulatory review of the claimed product was completed before the original patent term expired.

On December 3, 1993, section 156 was amended by Pub. L. No. 103-179 to provide that if the owner of record of the patent or its agent reasonably expects the applicable regulatory review period to extend beyond the expiration of the patent, the owner or its agent may submit an application to the Commissioner of Patents and Trademarks for an interim extension of the patent term. If the Commissioner determines that, except for permission to market or use the product commercially, the patent would be eligible for a statutory extension of the patent term, the Commissioner shall issue to the applicant a certificate of interim extension for a period of not more than one year.

On November 25, 1994, the patent owner Akzona Incorporated filed an application under 35 U.S.C. § 156(d)(5) for interim extension of the term of U.S. Patent No. 4,062,848. The application states that the patent claims the active ingredient mirtapazine in the human drug product Remeron. The application indicates that the product is currently undergoing a regulatory review before the Food and Drug Administration for permission to market or use the product commercially. The original term of the patent is set to expire on December 13, 1994. Applicant requests an interim extension of the term of the patent for a period of one year.

Review of the application indicates that, except for permission to market or use the product commercially, the subject patent would be eligible for an extension of the patent term under 35 U.S.C. § 156. Since it is apparent that the regulatory review period may extend beyond the expiration of the original patent term, an interim extension of the patent term under 35 U.S.C. § 156(d)(5) is appropriate. Accordingly, an interim extension under 35 U.S.C. § 156(d)(5) of the term of U.S. Patent No. 4,062,848 has been granted for a period of one year from the original expiration date of the patent.

December 5, 1994

MICHAEL K. KIRK
Acting Assistant Secretary of Commerce
and Acting Commissioner of Patents
and Trademarks

Availability of Patent In Computer Program Training

1. Training In Washington, D.C. Friday, January 20, 1995 and Friday, February 24, 1995

The Patent and Trademark Office (PTO) has developed a computer program, called PatentIn, that will facilitate compliance with the Requirements for Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures (sequence rules: 37 CFR 1.821 through 1.825). (Final rules were published in the Federal Register, 55 Fed. Reg. 18230 (May 1, 1990), and in the *Official Gazette*, 1114 O.G. 29 (May 15, 1990).)

Two one-day training sessions will be held on the use of the PatentIn Computer Program on Friday, January 20, 1995 and Friday, February 24, 1995. Each session will be conducted from 10:00 am to 4:00 pm. The training will be held at the Department of Agriculture Graduate School Training Facility. The School is located at 600 Maryland Ave., S.W., Washington, D.C. at the L'Enfant Plaza Metro stop.

The training will be hands on, using personal computer equipment and will include (1) the use of PatentIn to prepare the sequence listing file of information, and (2) the use of word processing software to prepare the PatentIn sequence listing file for inclusion as part of the application papers. The class will also include training on the basic file editing and manipulation skills that may be necessary for preparing sequence information for importing into PatentIn.

Because of the limited number of computers available, the class will be limited to no more than 17 participants.

Requests to attend the class should be made in writing, addressed to the Commissioner of Patents and Trademarks; Washington, D.C. 20231; Attention: Arthur F. Purcell, Office of the Administrator for Search and Information Resources; Crystal Park Building 3, Suite 702. Requests should include a check for \$100, made payable to the Commissioner of Patents and Trademarks, or an authorization to charge a PTO Deposit Account. Requests authorizing charges to Deposit Accounts may also be sent via facsimile to 703-308-6879.

2. Training On Request

On request from a sponsoring organization, PatentIn training, as well as training on the sequence Rules, can also be provided by qualified PTO instructors at remote locations under the following conditions:

- A request for such training should be directed to the Commissioner of Patents and Trademarks, Patent and Trademark Office, Washington, D.C. 20231, by the sponsoring organization. The request should reference this Notice.

- Because the number of qualified instructors is very limited, sponsoring organizations normally should submit requests at least three months in advance of the desired training session date and should be flexible as regards scheduling of training sessions.

- If the sponsoring organization is other than a non-profit entity or membership association, e.g., the sponsoring organization is a private company or firm, that organization must specify that the training opportunity will also be made available to individuals not employed by the company or firm.

- The sponsoring organization must agree to pay for all travel related expenses of the instructor(s) plus a fixed fee of \$500 per instructor per instruction day to cover salary, overhead and training materials costs.

- The sponsoring organization must provide the physical facilities and any equipment necessary to conduct the training. Since these will vary according to the circumstances and number of trainees, such arrangements should be made in consultation with the instructor.

Any questions concerning this notice should be directed to Arthur F. Purcell, by telephone at (703) 308-6856, or by FAX at (703) 308-6879.

WILLIAM S. LAWSON
Administrator
Search and Information Resources

Certificates of Correction For Week of January 3, 1995

P.P. 8,871	5,266,630	5,318,042	5,344,108
D. 328,024	5,269,910	5,318,113	5,344,145
4,786,503	5,270,481	5,318,219	5,344,306
4,827,750	5,271,012	5,318,513	5,344,626
4,840,776	5,272,016	5,319,226	5,344,706
4,844,790	5,272,382	5,319,297	5,346,110
4,900,982	5,272,685	5,319,433	5,346,243
4,926,826	5,273,889	5,319,509	5,346,583
4,939,604	5,274,181	5,320,917	5,346,626
4,968,968	5,275,836	5,321,801	5,346,894
4,991,106	5,275,925	5,322,061	5,346,933
5,006,239	5,277,684	5,322,125	5,346,986
5,008,448	5,280,414	5,322,839	5,347,258
5,010,091	5,280,484	5,322,942	5,347,533
5,023,082	5,281,693	5,323,202	5,347,543
5,023,401	5,282,468	5,323,304	5,347,873
5,047,785	5,283,099	5,324,496	5,347,894
5,051,764	5,283,174	5,325,091	5,348,453
5,055,606	5,283,253	5,325,219	5,348,861
5,057,549	5,284,599	5,325,288	5,348,884
5,062,935	5,286,065	5,325,327	5,348,925
5,067,231	5,288,160	5,325,564	5,349,211
5,077,951	5,288,671	5,326,336	5,349,490
5,080,398	5,289,435	5,326,585	5,349,617
5,090,149	5,289,465	5,326,824	5,349,819
5,100,900	5,290,555	5,326,877	5,350,042
5,113,140	5,291,353	5,327,011	5,350,118
5,123,162	5,292,315	5,327,120	5,350,572
5,124,822	5,292,686	5,327,453	5,350,638
5,127,817	5,292,884	5,327,539	5,351,104
5,129,718	5,293,744	5,327,818	5,351,115
5,132,367	5,294,533	5,327,916	5,351,235
5,138,149	5,295,759	5,328,550	5,351,509
5,147,452	5,296,925	5,328,751	5,351,568
5,150,966	5,297,146	5,329,076	5,351,573
5,171,534	5,298,507	5,329,322	5,351,827
5,174,937	5,298,781	5,329,391	5,351,841
5,179,268	5,298,986	5,329,403	5,352,068
5,179,613	5,302,286	5,329,452	5,352,266
5,180,716	5,303,719	5,329,555	5,353,035
5,184,408	5,305,089	5,329,825	5,353,088
5,185,308	5,305,183	5,329,858	5,353,251
5,192,563	5,305,260	5,331,188	5,353,288
5,197,171	5,305,613	5,331,804	5,353,565
5,201,132	5,307,413	5,332,625	5,353,740
5,205,534	5,307,891	5,332,859	5,353,891
5,208,737	5,308,219	5,333,125	5,354,239
5,208,770	5,308,778	5,333,354	5,354,271
5,211,789	5,308,838	5,333,529	5,354,535
5,220,032	5,308,875	5,334,288	5,354,711
5,224,770	5,309,180	5,334,393	5,354,940
5,224,908	5,309,344	5,334,438	5,355,218
5,226,597	5,310,608	5,334,490	5,355,375
5,230,313	5,310,665	5,334,841	5,355,817
5,231,101	5,310,810	5,334,891	5,355,844
5,231,677	5,310,912	5,335,256	5,355,983
5,232,610	5,311,259	5,336,538	5,356,070
5,232,704	5,311,345	5,336,598	5,356,382
5,236,892	5,312,713	5,336,860	5,356,399
5,237,234	5,313,055	5,337,250	5,356,852
5,237,506	5,313,222	5,338,340	5,356,940
5,239,091	5,314,517	5,339,250	5,357,199
5,242,669	5,314,535	5,339,336	5,357,341
5,242,903	5,315,416	5,339,351	5,357,368
5,243,510	5,315,635	5,339,368	5,357,614
5,245,364	5,316,104	5,339,671	5,357,777
5,250,733	5,316,219	5,340,218	5,357,792
5,253,064	5,316,268	5,340,239	5,358,323
5,254,637	5,316,326	5,340,608	5,358,376
5,257,265	5,316,601	5,340,714	5,358,886
5,257,341	5,317,081	5,340,808	5,358,898
5,259,106	5,317,308	5,341,356	5,358,912
5,260,072	5,317,546	5,342,291	5,358,919
5,260,579	5,317,803	5,342,739	5,359,356
5,260,608	5,317,810	5,343,219	5,359,430
5,264,048	5,317,943	5,343,868	5,359,810

5,360,018	5,360,608	5,361,177	5,361,556	5,361,903	5,362,249	5,362,894	5,363,431
5,360,257	5,360,670	5,361,406	5,361,778	5,362,124	5,362,808	5,363,350	5,363,498
5,360,579	5,360,798						

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 7 Box 12 Box 313b	Reissue applications for patents involved in litigation and subsequently filed related papers. Contributions to the Examiner Education Program. Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF Box DAC	Expedited procedure for processing amendments and other responses after final rejection. Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD Box FWC Box Interference Box Issue Fee	Disclosure Documents or material related to the Disclosure Document Program. Requests for File Wrapper Continuation Applications (under 37 CFR 1.62). Communications relating to interferences and applications and patents involved in interference. All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee Box MPEP Box Non-Fee-Amendment Box PATENT APPLICATION Box Pat. Ext. Box PCT Box Reconstruction Box Reexam Box Sequence Box SN	Correspondence related to a patent that is subject to the payment of a maintenance fee. Submissions concerning the Manual of Patent Examining Procedures. Non-fee amendments to patent applications. (Use Box AF for responses after final rejection). New patent application and associated papers and fees. Applications for patent term extension. Mail related to applications filed under the Patent Cooperation Treaty. Correspondence pertaining to the reconstruction of lost patent files. Requests for Reexamination for <i>original</i> request papers <i>only</i> . Submission of diskette for biotechnical application. For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications <i>prior</i> to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or "NO FEE")
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE Box ITU FEE Box TTAB FEE Box TTAB NO FEE Box STATUS NO FEE Box POST REG FEE Box RESPONSES NO FEE	New trademark applications and fees. Statements of Use (SOU's), and extension requests. Oppositions, Cancellation petitions, and ex parte appeals. Interferences, motions and extension requests. Written status inquiries. Affidavits, renewals, corrections, and amendments. Responses to Examining Attorneys' Office actions and Post Registration actions.

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
November 1-4, 1994

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
11-1	EX	74/252,262	Parcel Consultants, Inc.	2(d); 2(e)(1)	Refusal Affirmed (on 2(d) ground)		"AGENCY SERVICES" (discounted long distance telephone services, not including wide area transport line services (WATS))	"AGENCY WATS" (telecommunications services)	No
11-1	EX	74/281,984	Consolidated Cigar Co.	2(e)(1)	Refusal Affirmed		"MELLO BLEND" (pipe tobacco and cigars)		No
11-2	EX	74/221,951	Kadabell GmbH & Co. KG	2(d)	Request for Reconsideration Denied (Refusal Affirmed)		"ULTRAPERM" (permanent hair wave lotions for cold, warm and hot permanents; hair fixatives; hair styling preparations; hair sprays; hair neutralizers; and dyes for hair, eyebrows, and eyelashes)	"ULTRA WAVE" (preparation for straightening the hair; hair cream oil and hair rinses); "ULTRA CURL" (hair gel activator, curling cream, neutralizing solution, curl booster, waving lotion, detangling shampoo and protein conditioner) et al.	No
11-3	EX	74/289,164	Baldwin Hardware Corp.	2(e)(4) (surname)	Refusal Affirmed		"GLENNON" (door hardware)		No
11-4	CANC	21,231	Pacer Technology v. Beauty Points Int'l, Inc.	2(d)	Petition to Cancel Granted	"NAIL ZAP" (fingernail cosmetic products) et al.	"ZAP-DRY" (nail polish top coat)		No

(1) EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES APPLICABLE TO BOTH PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below. Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor <i>except</i> communications relating to <i>pending litigation</i> ; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks
Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	Name of Library	Telephone Contact
North Carolina North Dakota Ohio	New York Public Library (The Research Libraries)	(212) 930-0917
	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
Oklahoma	Toledo/Lucas County Public Library	(419) 259-5212
	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
	Salem: Oregon State Library	(503) 378-4239
Oregon Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
	Providence Public Library	(401) 455-8027
Rhode Island South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
Tennessee	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
Texas	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Utah Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
	Seattle: Engineering Library, University of Washington	(206) 543-0740
Washington	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
West Virginia	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
Wisconsin	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100— JOHN E. KITTLE, Director	308-0661	12/23/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	10/21/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	03/08/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	01/06/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/15/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/16/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/17/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300— BOBBY R. GRAY, Director	305-9600	11/23/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	308-0771	11/29/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500— JANICE A. HOWELL, Director	308-0956	09/13/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/06/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/02/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	12/06/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/16/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	12/23/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	07/02/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/23/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during December 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151. Patents..... Numbers 4,060,852 to 4,065,811 inclusive Plant Patents4,161 to 4,173

TRADEMARK OPERATION

Bruce Lehman, Commissioner
 Phillip G. Hampton II, Assistant Commissioner
 Robert M. Anderson, Deputy Assistant Commissioner
 David E. Bucher, Director, Trademark Examining Operation
 Condition of Trademark Applications as of Nov. 1, 1994

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/06/94	10/12/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/23/94	08/08/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/09/94	07/01/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/01/94	07/11/94
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/12/94	08/17/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/24/94	08/24/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/19/94	07/27/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings—Int. Classes 22, 23, 24, 25, 26, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/24/94	08/09/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/15/94	08/08/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/25/94	08/23/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/31/94	08/08/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/16/94	09/09/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—Int. Classes 17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/26/94	07/27/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes).....	05/24/94	—0—
Renewals (All Classes)	09/01/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

- ** Assigned to each law office
- Applicants with inquiries concerning the status of their applications and a touch tone phone should call (703) 308-8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
- * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

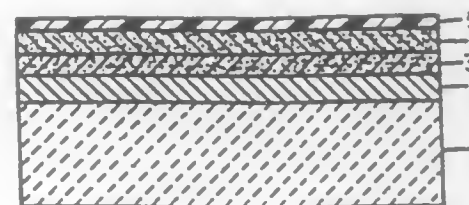
REEXAMINATIONS

JANUARY 3, 1995

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,971,932 (2447th)
MAGNETIC MEMORY STORAGE DEVICES
 James W. Alpha, Corning; Walter L. Morgan, Painted Post, and Linda R. Pinckney, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
 Reexamination Request No. 90/003,293, Dec. 30, 1993.
 Reexamination Certificate for Patent No. 4,971,932, issued Nov. 20, 1990, Ser. No. 314,883, Feb. 24, 1989.
 Int. Cl.⁶ C03C 10/14

U.S. Cl. 501—3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

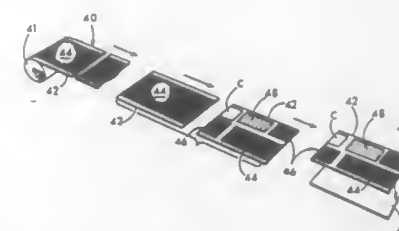
Claims 2-5 and 13-16 are cancelled.

Claims 1 and 12 are determined to be patentable as amended.

Claims 6-11 and 17-21 dependent on an amended claim, are determined to be patentable.

1. In a magnetic memory storage device consisting essentially of a head pad and a rigid information disk, said disk consisting essentially of a rigid substrate having a coating of magnetic media on the surface thereof facing said magnetic head, the improvement which comprises using a disk having a modulus of rupture ranging from about 15,000-40,000 psi and having a textured surface roughness of about $R_a = 1.5-5$ nm, in which said substrate consists essentially of a glass-ceramic wherein the predominant crystal phase present has a microstructure [selected from the group consisting of a sheet silicate and] of a chain silicate.

B1 5,059,279 (2448th)
SUSCEPTOR FOR MICROWAVE HEATING
 David Wilson, Mississauga, Canada, assignor to Golden Valley Microwave Foods, Inc., Edina, Minn.
 Reexamination Request No. 90/002,902, Dec. 7, 1992.
 Reexamination Certificate for Patent No. 5,059,279, issued Oct. 22, 1991, Ser. No. 529,229, May 25, 1990, Continuation of Ser. No. 369,193, Jun. 21, 1989, Pat. No. 4,959,120.
 The portion of the term of this patent subsequent to Sep. 25, 2007 has been disclaimed. Int. Cl.⁶ B44C 1/22; C23F 1/02
 U.S. Cl. 156—651



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 5, 8-11, 14, 16, 18, 20, 21, 24, 27, 28, 31-35 and 37-39 are cancelled.

Claims 1, 3, 4, 6, 12, 13, 15, 17, 19, 22, 23, 25, 26, 29, 30, 36 and 40 are determined to be patentable as amended.

Claim 7, dependent on an amended claim, is determined to be patentable.

New claims 41-54 are added and determined to be patentable.

47. A process for producing a microwave susceptor having at least two regions of microwave active metal material, said method including the steps of: providing a substrate having a microwave active film of metallic material thereon, and selectively removing a portion of the microwave active film from the substrate in at least each of first and second areas thereof, said step of removing a portion of the microwave active film from the first area being conducted in a manner leaving a coating of microwave active metallic material therein having a first resistivity, said step of removing a portion of the microwave active film from the second area being conducted in a manner leaving a coating of microwave active metallic material therein having a second resistivity, the second resistivity being different from the first resistivity, wherein said step of selectively removing a portion of the microwave active film from the substrate in at least each of the first and second areas includes exposing the second area to etchant droplets of a first average size and exposing a second region to etchant droplets of a second average size, the first average size being different from the second average size.

B1 5,062,840 (2449th)
DISPOSABLE DIAPERS
 John N. Holt, and Debra S. Holt, both of Box 4, Ralston, Okla. 74650
 Reexamination Request No. 90/002,896, Nov. 19, 1992.
 Reexamination Certificate for Patent No. 5,062,840, issued Nov. 5, 1991, Ser. No. 355,654, May 22, 1989.
 Int. Cl.⁶ A41B 13/02
 U.S. Cl. 604—385.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 11 & 13 is confirmed.

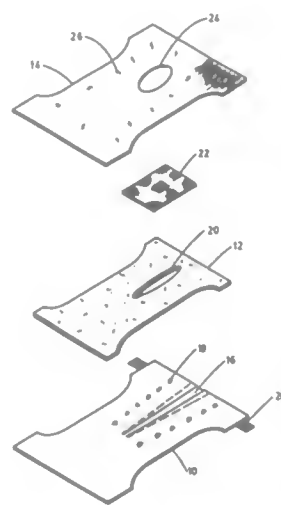
Claims 1, 9 and 12 are determined to be patentable as amended.

Claims 2-8, and 10, dependent on an amended claim, are determined to be patentable.

New claims 14-23 are added and determined to be patentable.

1. A disposable diaper comprising:
 a water permeable inner layer having an opening therein shaped to surround a wearer's anal opening;
 a water retention absorbent intermediate [layer having a void positioned at least partially under said opening of said inner layer for receiving solid waste excrement from a wearer] layer, said intermediate layer having a cavity, larger than said opening, and positioned under said opening

of said inner layer to entrap waste and preventing the waste from being spread over a substantial portion of a diaper;
a water impervious outer layer adjacent said intermediate layer;



means to hold said inner layer, said intermediate layer and said outer layer in position.

B1 5,144,195 (2450th)

CIRCUIT FOR DRIVING AT LEAST ONE GAS DISCHARGE LAMP

John G. Kooopka, Barrington, and Mihail S. Moisin, Lake Forest, both of Ill., assignors to Motorola Lighting, Inc., Buffalo Grove, Ill.

Reexamination Request No. 90/003,342, Feb. 22, 1994.
Reexamination Certificate for Patent No. 5,144,195, issued Sep. 1, 1992, Ser. No. 705,865, May 28, 1991.

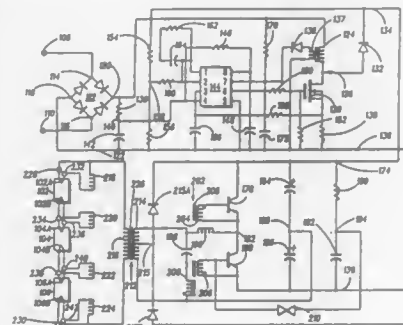
Int. Cl.⁶ H05B 37/00

U.S. Cl. 315—94

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-17 are cancelled.

[1. A circuit for driving at least one gas discharge lamp having heatable filaments, the circuit comprising:
input terminals for connection to a source of voltage supply;
output terminals for connection to the filaments of the gas discharge lamp;
oscillator means coupled to the input terminals and to the output terminals for producing a high-frequency output voltage for application to the gas discharge lamp;
oscillator activation means coupled to the input terminals and to the oscillator means for activating the oscillator means after a first predetermined delay;
voltage boost means comprising an inductive boost circuit and coupled to the input terminals and to the oscillator means for causing the oscillator means to produce a



boosted output voltage when the voltage boost means is unactivated; and
voltage boost activation means coupled to the voltage boost means for activating the voltage boost means after a second predetermined delay;
the second predetermined delay being longer than the first predetermined delay, the unboosted output voltage produced by the oscillator means after the first predetermined delay and before the second predetermined delay being sufficient to heat the filaments but insufficient to initiate striking in the lamp, and the boosted output voltage produced by the oscillator means after the second predetermined delay being sufficient to initiate striking in the lamp, whereby the filaments are pre-heated prior to striking in the period between the first and second predetermined delays.]

STATUTORY INVENTION REGISTRATIONS

PUBLISHED JANUARY 3, 1995

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1389 IRON BACKED, ROUND BORE, AUGMENTED ELECTROMAGNETIC ACCELERATOR AS AN INJECTOR

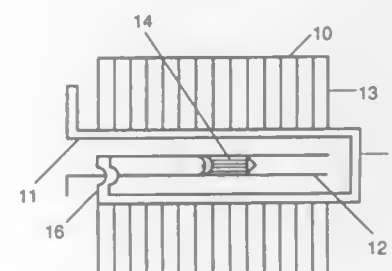
William F. Weldon, and Siddharth Pratap, both of Austin, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1993, Ser. No. 49,279

Int. Cl.⁶ F41B 6/00

U.S. Cl. 89—8

20 Claims



1. An injector system for imparting an initial velocity to a projectile as it enters the breech of an electromagnetic gun, having crossovers at the breech and muzzle ends which have minimum influences over the electromagnetics in the bore, comprising
means to provide enhanced inductance gradients;
means to accelerate cylindrical projectiles.

H1390

CLAYMORE TRAINING DEVICE

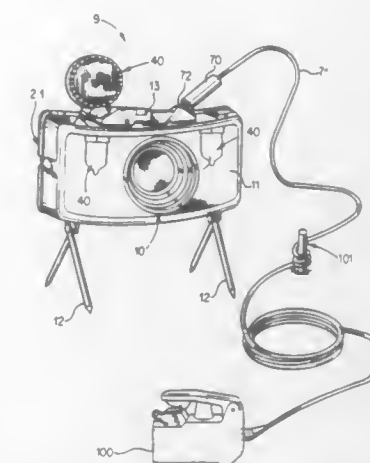
Carl J. Campagnuolo, Potomac, and Donald Gross, Joppa, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 6, 1993, Ser. No. 2,367

Int. Cl.⁶ F41A 33/00

U.S. Cl. 434—11

5 Claims



1. An inert, non-explosive, Claymore antipersonnel training device for use with a MILES compatible battle training system comprising:
a housing substantially resembling the Claymore series antipersonnel mine,

a means for emitting a directional acoustic signal replicating an actual Claymore pattern,
a means for emitting a visual signal,
a means for activating said training device comprising a handheld pulse generator and a firing cable attached to said housing and to said handheld pulse generator, wherein upon activation of said training device, said directional acoustic signal further activates a MILES compatible system attached to a target within an effective distance of said directional acoustic signal.

H1391 HYDRAULIC CONNECTION DEVICE

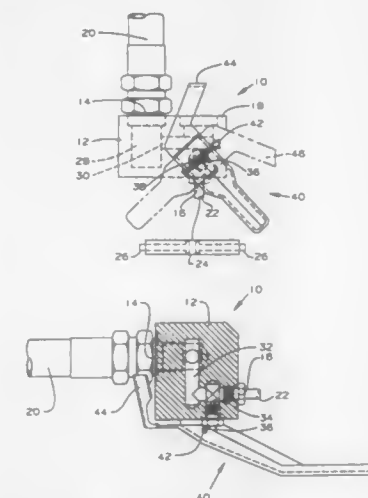
John J. Bloom, Jr., St. Charles, Mo., and Leslie H. Maas, Hampshire, Ill., assignors to Caterpillar Inc.

Filed Oct. 4, 1993, Ser. No. 130,924

Int. Cl.⁶ F16K 35/00

U.S. Cl. 251—89.5

1 Claim



1. A hydraulic system for controlling the implements of a vehicle, the hydraulic system includes a valve assembly having an inlet, a first outlet for connecting a first circuit and a second outlet adapted for connecting a second circuit, comprising:
a valve body having a shut-off valve positioned between the inlet and the first outlet, the shut-off valve having a first position to allow fluid to flow from the inlet to the first outlet and a second position to prevent fluid flow from the first circuit when the second circuit is being connected to the second outlet, and
a handle attached to the shut-off valve, the handle includes an extending portion which overlies the second outlet when the shut-off valve is in the first position.

H1392

SPECIALTY BOOM AND OUTRIGGER SYSTEM FOR USE WITH OFFSHORE SKIMMERS

Paul E. Frederick, Covington, La., assignor to Exxon Production Research Company

Filed Apr. 7, 1994, Ser. No. 241,384

Int. Cl.⁶ E02B 15/04; B01D 17/02

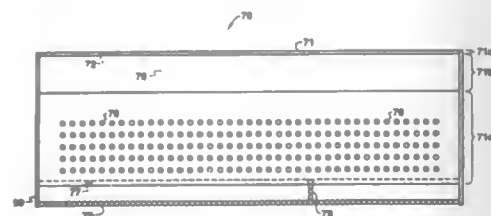
U.S. Cl. 405—63

1 Claim

1. An apparatus for use with a floating vessel for containing buoyant substances, comprising:

corralling means, comprising an elongated flexible member connected with a plurality of floating members; and, outrigger means for towing said corralling means off the side of the vessel, comprising:

an elongated horizontal towing member;



a first plurality of guide members connected between said towing member and said flexible member; and
a vertical member fixed to the vessel and connected to said towing member by means of a second plurality of guide members.

H1393

DIPHENYL ETHER AND BENZOPHENONE COMPOSITIONS

Gary R. Buske, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1991, Ser. No. 770,498
Int. Cl.⁶ C09K 5/00; H01B 3/20

U.S. Cl. 252—73 17 Claims

1. A functional fluid composition, comprising a homogeneous mixture of from about 5 to about 80 weight percent diphenyl ether and from about 5 to about 50 weight percent benzophenone and from about 5 to about 25 weight percent of at least one additional component selected from the group consisting of dibenzofuran and naphthalene.

H1394

METHOD OF PREPARING REDUCED FAT SPREADS

Patrick C. Dreese, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed May 22, 1992, Ser. No. 887,977
Int. Cl.⁶ A23D 7/00; A23L 1/05; A23G 3/00

U.S. Cl. 426—603 2 Claims

1. A composition of matter useful as a table spread comprising a macroscopically homogeneous blend of:

(i) a disperse aqueous phase having dispersed therein a fragmented granular starch hydrolysate derived from a starch having a major proportion of amylopectin and having a molecular weight of from about 4,000 to about 7,500 g/mol and comprised of a major amount of cold-water insoluble starch hydrolysate and a minor amount of cold-water soluble hydrolysate, the ratio of said major amount of cold-water insoluble starch hydrolysate to said minor amount of cold-water soluble starch hydrolysate is from about 3.0:1 to no greater than about 9:1, wherein said granular starch hydrolysate will form an aqueous dispersion having a yield stress of from about 100 to about 1,500 pascals when fragmented in a aqueous medium at 20% starch hydrolysate solids, and

(ii) a disperse oil phase, wherein the oil of said dispersed oil phase is a partially hydrogenated oil selected from the group consisting of corn oil, soybean oil, canola oil, cottonseed oil, peanut oil, and mixtures of two or more thereof, and wherein the amount of said oil is less than about 40% by weight of the composition and wherein the amount of said fragmented granular starch hydrolysate dispersed in said aqueous phase is sufficient in relation to the amount of said oil to make said composition non-flowable, said composition further comprising a salt selected from the group consisting of alkali metal chlorides, alkali metal sulfates, alkaline earth metal chlorides, alkaline earth metal sulfates, and mixtures of two or more thereof,

in an amount of at least about 0.1% by weight of said starch hydrolysate.

H1395

COMPOSITION AND METHOD OF PREPARING REDUCED FAT SPREADS

Shawna L. Prosser, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed May 22, 1992, Ser. No. 887,984
Int. Cl.⁶ A23L 1/38, 1/05

U.S. Cl. 426—633 20 Claims

1. A composition of matter useful as a peanut spread comprising a macroscopically homogeneous blend of a peanut component and an aqueous dispersion of a fragmented granular starch hydrolysate comprised of a major amount of cold-water insoluble starch hydrolysate and a minor amount of cold-water soluble hydrolysate, wherein the amount of said fragmented granular starch hydrolysate in said dispersion is sufficient in relation to the amount of water in said aqueous dispersion and any oil in said composition to make said composition non-flowable.

H1396

OXIDE SUBSTRATE WITH A STRONGLY ADHERENT GOLD FILM OF 10 TO 40 NM IN THICKNESS ON THE SUBSTRATE

John R. Vig, Colts Neck; Mary A. Hendrickson, Forked River, and Sally M. Laffey, So. Bend Brook, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 21, 1993, Ser. No. 125,050
Int. Cl.⁶ B32B 15/00

U.S. Cl. 428—434 6 Claims

1. An oxide substrate with a strongly adherent gold film of 10 to 40 nm in thickness on the substrate.

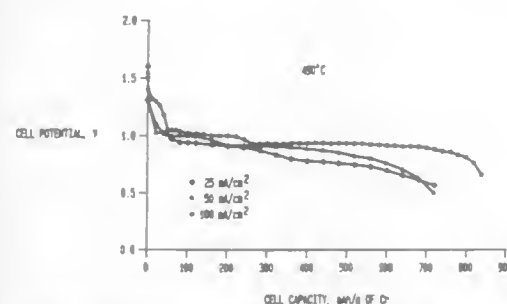
H1397

CATHODE MATERIAL FOR USE IN A HIGH TEMPERATURE RECHARGEABLE MOLTEN SALT CELL AND HIGH TEMPERATURE RECHARGEABLE MOLTEN SALT CELL INCLUDING THE CATHODE MATERIAL

Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 7, 1993, Ser. No. 1,687
Int. Cl.⁶ H01M 6/00

U.S. Cl. 429—122 11 Claims



2. A high temperature rechargeable molten salt cell including a lithium aluminum alloy of about 48 atomic percent lithium as the anode, a lithium halide eutectic mixture of about 31 mole percent of molten lithium chloride, about 47 mole percent of molten lithium bromide, and about 22 mole percent of molten lithium fluoride with a melting point of about 445° C. as the electrolyte, and a mixture of about 25 mole percent of chromium metal and about 75 mole percent of lithium sulfide as the cathode, wherein the cell is in an electrochemically reduced

state and is activated to form the Cr₂S₃, Cr₃S₄, and CrS cathode material by electrically charging the cell to a cell voltage limit of about 1.6 V at a temperature above the melting point of the electrolyte.

H1398

DNA-BASED FLUORESCENT SENSOR

James R. Campbell, 18904 Rolling Acres Way, Olney, Md. 20832

Continuation of Ser. No. 635,019, Dec. 28, 1990, abandoned.
This application Aug. 21, 1992, Ser. No. 932,999

Int. Cl.⁶ C12Q 1/68, 1/00

U.S. Cl. 435—6

4 Claims

1. A method for the fluorescent detection of target DNA, comprising the steps of:

- performing a first amplification on a sample suspected of containing said target DNA by initiating a polymerase chain reaction with a first pair of primers, which delimit therebetween a first region of DNA base sequences of said target DNA to be amplified by said amplification, and a polymerase which catalyzes said polymerase chain reaction, said amplification being sufficiently great that the amount of DNA other than target DNA in the amplified sample is negligible in comparison to the amount of target DNA in the amplified sample if target DNA were present in the unamplified sample;
- performing a second amplification on the amplified sample using a second pair of primers, said second pair of delimiting therebetween a second region of DNA base sequences within the first region of DNA base sequences bracketed by said first pair of primers and selected for amplification by said first amplification using said first pair of primers, at least one member of said second pair of primers having a fluorescent reporter molecule bound thereto and at least one member of said second pair of primers having a specific binding site for a double-stranded DNA-binding protein bound thereof, thereby producing an amount of double stranded, fluorescent reporter molecule-bound and double stranded DNA-binding protein site-bound, twice amplified DNA which, when excited at an excitation frequency of said reporter molecule, emits a detectable level of fluorescence if target DNA was present in the unamplified sample;
- contacting at least an aliquot of said twice amplified sample with a fluorescent sensor comprising a fiber waveguide having attached to its exposed surface a double stranded CNA-binding protein which binds to said double stranded DNA-binding protein site on said twice amplified DNA;
- exciting the fluorescent reporter molecule bound to any of said twice amplified DNA bound to said sensor via said double stranded CNA-binding protein with light of an excitation wavelength for said reporter molecule;
- detecting any fluorescent emission from said excited fluorescent reporter molecule.

H1399

PROCESS FOR TRANSFORMING PURE Y₂BACUO₅ INTO A SUPERCONDUCTING MATRIX OF YBA₂Cu₃O_{7-x} WITH FINE AND HOMOGENEOUSLY DISPERSED Y₂BACUO₅ INCLUSIONS

Gregory Kozlowski, Centerville, and William E. Endres, Bellbrook, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 6, 1993, Ser. No. 86,583
Int. Cl.⁶ H01L 39/12

U.S. Cl. 505—452

9 Claims

1. A method for making a ceramic superconductor, comprising the steps of:

- providing a supply of Y₂BaCuO₅;
- providing a supply of YBa₂Cu₃O_{7-x};

- placing the two supplies in contact with each other;
- next placing the two supplies into a furnace at a temperature above the peritectic temperature of YBa₂Cu₃O_{7-x} for a period of less than about fifteen minutes so that the supply of YBa₂Cu₃O_{7-x} begins to melt and so that the resulting melt begins to be absorbed by capillary action into the supply of Y₂BaCuO₅; and,
- next cooling the resulting material to a temperature lower than the peritectic temperature of YBa₂Cu₃O_{7-x} and holding that temperature for a period of time to promote growth of YBa₂Cu₃O_{7-x}.

H1400

FUNGICIDE

Albert K. Culbreath, 2411 Madison Dr., Tifton, Ga. 31794, and Henry S. McLean, 170 Old Blackshear Rd., Cordele, Ga. 31015

Filed Aug. 11, 1992, Ser. No. 928,551
Int. Cl.⁶ A01N 43/64, 37/34

U.S. Cl. 514—383

2 Claims

1. A method of controlling fungal disease in peanuts which comprises applying to the peanut plants or their locus in admixture or separately a fungicidally effective aggregate amount of (a) a triazole, 14- α -demethylation inhibitor and chlorothalonil.

H1401

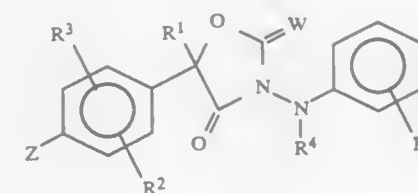
FUNGICIDAL OXAZOLIDINONES

Carlton L. Campbell, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Inc., Wilmington, Del.

Filed Nov. 15, 1993, Ser. No. 152,617

Int. Cl.⁶ A01N 55/10; A61K 31/695; C07D 263/04
U.S. Cl. 514—63 9 Claims

1. A compound of Formula I



wherein:

- W is O or S;
R¹ is H; C₁–C₄ alkyl; C₁–C₄ haloalkyl; C₃–C₆ cycloalkyl; C₂–C₄ alkenyl; or C₂–C₄ alkynyl;
R² is H; halogen; C₁–C₄ alkyl; C₁–C₄ alkoxy; trifluoromethyl; methylthio; or nitro;
R³ is H or halogen;
R⁴ is H; methyl; or acetyl;
R⁵ is H; trifluoromethyl; trifluoromethoxy; halogen; C₁–C₄ alkyl; C₁–C₄ alkoxy; or cyano;
Z is —(CH₂)_nOR⁶ or —OCH(R¹¹)(CH₂)_mR⁶;
n is 0–4;
m is 0–3;
R⁶ is phenyl substituted with C₃–C₈ trialkylsilyl; or quinolyl, isoquinolyl, quinolyl, quinazolinyl, quinoxalinyl, benzo[b]thienyl, benzo[b]furanyl, indolyl, N-methylindolyl, isindolyl, indolizyl, indazolyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, benzisothiazolyl, or benzisoxazolyl each optionally substituted with one of R⁷, R⁸, or both R⁷ and R⁸;
R⁷ and R⁸ are each independently trifluoromethyl; trifluoromethoxy; nitro; CO₂CH₃; halogen; C₁–C₄ alkyl; C₁–C₄ alkoxy; or cyano; or phenoxy substituted with one of R⁹, R¹⁰, or both R⁹ and R¹⁰;
R⁹ is halogen; C₁–C₄ alkyl; C₁–C₄ alkoxy; trifluoromethyl; methylthio; or nitro;
R¹⁰ is halogen; and
R¹¹ is H; methyl; or ethyl;
and the agriculturally suitable salts thereof; provided that

REISSUES

JANUARY 3, 1995

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,814

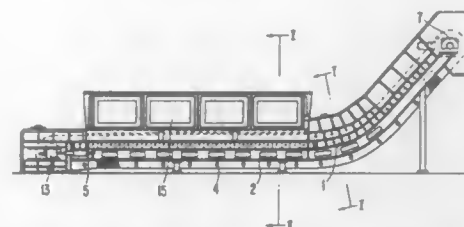
PROCESS AND APPARATUS FOR CONTINUOUS DRY REMOVAL OF BOTTOM ASH

Mario Magaldi, Viale del Bosco 22, I-84100 Salerno, Italy
Original No. 4,887,539, dated Dec. 19, 1989, Ser. No. 120,493,
Jan. 8, 1987. Application for reissue Dec. 19, 1991, Ser. No.
851,381

Claims priority, application Italy, Jan. 10, 1986, 19052 A/86
Int. Cl.⁶ F23J 1/00

U.S. Cl. 110—165 R

9 Claims



1. A system for continuously removing bottom ash from a [fire bed] fired boiler, said system comprising a [first and] flexible conveyor belt made of high temperature resistant material trained over a drive drum with a friction fit therebetween, a plurality of overlapping load bearing plates loosely joined to said conveyor belt for bearing the weight of a load deposited on said belt, whereby temperature caused expansion and contraction of said conveyor belt is absorbed by said plates sliding relative to each other in said overlap area, and a tightly sealed envelope means surrounding said conveyor belt in order to retain heat of said [fire bed] fired boiler while enabling said ash to be conveyed out of a [furnace in which said fire bed is located] combustion chamber of said fired boiler.

Re. 34,815

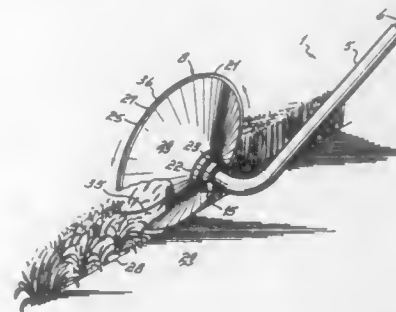
FLEXIBLE FLAIL TRIMMER WITH COMBINED GUIDE AND GUARD

Steven E. Byrne, 10787 Big Bone Church Rd., Union, Ky. 41091
Original No. 5,115,870, dated May 26, 1992, Ser. No. 636,193,
Dec. 31, 1990. Application for reissue Dec. 22, 1992, Ser. No.
995,130

Int. Cl.⁶ A01D 34/84

U.S. Cl. 172—15

34 Claims



1. Apparatus for trimming and edging lawns comprising:
a handle having a first upper end and a second lower end,
a drive means mounted on said handle proximate the upper end,
a rotatable cutting head mounted proximate the lower end of said handle,
a rotating driveshaft operably connected to and extending from said drive means to said cutting head for driving said cutting head,

said rotating cutting head having flexible flail means, said flexible flail means extending outwardly from said cutting head and generally perpendicular to an axis of rotation of said cutting head during operation, and an integral guide and guard means rotatably supported on said apparatus inboard of said cutting head between said cutting head and said first end of said handle for guiding said cutting head and for shielding a user from debris generated by said cutting head, said integral guide and guard means being fully rotatable about said axis of rotation of said cutting head as said apparatus is moved along for trimming and said integral guide and guard means further including an outboard generally planar flail stabilizing surface for bearing said flexible flail means as said flexible flail means rotates, said stabilizing surface being disposed within a path of rotation of said flexible flail means.

Re. 34,816

REFLECTIVE SURGICAL DRAPE

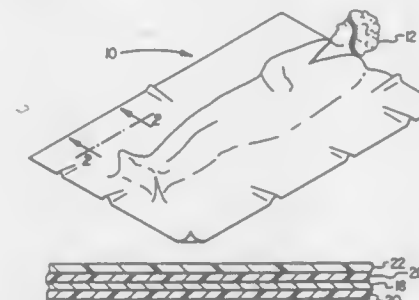
Robert J. Poettgen, Arlington, Tex., assignor to O.R. Concepts, Inc., Roanoke, Tex.

Original No. 4,765,323, dated Aug. 23, 1988, Ser. No. 890,403,
Jul. 25, 1986. Application for reissue Feb. 20, 1991, Ser. No.
658,170

Int. Cl.⁶ B32B 15/08

U.S. Cl. 128—849

39 Claims



1. A reflective surgical drape for covering a surgical patient and reducing heat loss from the patient's body during and after a surgical procedure, comprising:

- (a) [a] an electrically non-conductive core layer of aluminum;
 - (b) a first and second adjacent layer of a thermoplastic material; and
 - (c) a non-woven layer of absorbent material attached to said first adjacent layer;
- wherein said drape is non-perforated.

Re. 34,817

METHODS AND APPARATUS FOR WINDING TWO-POLE ELECTRIC MOTOR STATORS

Sabatino Luciani, Sesto Fiorentino, Italy, assignor to Axis S.p.A., Florence, Italy

Original No. 4,982,908, dated Jan. 8, 1991, Ser. No. 304,026,
Jan. 31, 1989. Application for reissue Dec. 22, 1992, Ser. No.
995,147

Claims priority, application Italy, Sep. 16, 1988, 67823 A/88
Int. Cl.⁶ H02K 15/085

U.S. Cl. 242—1.1 R

30 Claims

30. Apparatus for use in winding an electric motor stator of hollow substantially cylindrical shape, said stator having a central longitudinal axis and first and second axial ends adjacent respec-

each other, said first and second regions forming a source and a drain of said transistor,
 a thin channel region of said opposite conductivity type in said body region and interconnecting said first and second regions,
 a thin surface gate layer of said one conductivity type overlying said channel region and extending from said first region to said second region, and
 a surface contact on said surface gate [region] layer between said first and second regions and electrically isolated from said body region, said surface contact comprising polycrystalline silicon layer of said one conductivity

type and having a conductivity greater than the conductivity of said surface gate layer, said body region beneath said channel region and said surface contact comprising electrically separate gates for said transistor, said thin surface gate layer and an upper region of said channel region include impurities diffused therein from said polysilicon layer and
 an aluminum metal contact on said polycrystalline silicon layer.

PLANT PATENTS

GRANTED JANUARY 3, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,026
CHRYSANTHEMUM PLANT NAMED KIMBERLY
 Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
 Filed Dec. 20, 1993, Ser. No. 169,189
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—82.4 1 Claim
 1. A new and distinct Chrysanthemum plant named Kimberly, as described and illustrated.

9,031
MINIATURE ROSE PLANT NAMED SAVALAV
 F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.
 Filed Jan. 12, 1994, Ser. No. 180,437
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—9 1 Claim
 1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

9,027
VARIETY OF LILIUM NAMED ZSAZSA
 Petrus M. M. Hoff, Steenbergen, Netherlands, assignor to Hoff-gaarde B.V., Steenbergen, Netherlands
 Filed Jan. 4, 1994, Ser. No. 177,194
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.4 1 Claim
 1. A new and distinct variety of lily plant substantially as shown and described.

9,032
FLORIBUNDA ROSE PLANT NAMED TWORIGHT
 Jerry Twomey, Aptos, Calif., assignor to DeVor Nurseries, Inc., Watsonville, Calif.
 Filed Jan. 30, 1993, Ser. No. 86,430
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—28 1 Claim
 1. A new and distinct variety of rose plant of the floribunda rose class, substantially as shown and described.

9,028
VARIETY OF LILIUM NAMED FÜR ELISE
 Petrus M. M. Hoff, Steenbergen, Netherlands, assignor to Hoff-gaarde B.V., Steenbergen, Netherlands
 Filed Jan. 4, 1994, Ser. No. 177,195
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.4 1 Claim
 1. A new and distinct variety of lily plant substantially as shown and described.

9,033
MINIATURE ROSE PLANT NAMED MEIFRUIJE
 Alain A. Meilland, Antibes, France, assignor to The Conard-Pyie Company, West Grove, Pa.
 Filed Apr. 13, 1994, Ser. No. 227,276
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—7.1 1 Claim
 1. A new and distinct variety of miniature rose plant characterized by the following combination of characteristics:

- (a) forms attractive bicolored blossoms which are yellow edged with a suffusion of Persimmon Orange in coloration,
- (b) forms dense and glossy foliage,
- (c) exhibits a bushy growth habit, and
- (d) is particularly well-suited for growing as attractive diminutive ornamentation in the landscape;

substantially as herein shown and described.

9,029
LILIUM 'GOLD DWARF'
 Homme Mantel, 15361 S.E. Bluff Rd., Sandy, Oreg. 97055
 Filed May 4, 1994, Ser. No. 238,028
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.4 1 Claim
 1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower from form, size and substance; its versatility both as a garden plant and as a pot plant produced from pre-cooled bulbs forced under glass out of season; and in particular by its lightly spotted golden flowers with golden-orange margins, borne in a compact inflorescence on extremely short stems, a combination unique among Asiatic hybrid lilies suited to forcing and to mass commercial cultivation.

9,034
CHRYSANTHEMUM PLANT NAMED ROSE PINK DEBONAIR
 W. John Layng, 10311 Mountington Ct., Vienna, Va. 22182
 Filed Mar. 1, 1994, Ser. No. 203,318
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—80 1 Claim
 1. A new and distinct Chrysanthemum plant named Rosepink Debonair, as described and illustrated.

9,030
BERMUDAGRASS PLANT 'FHB-135'
 Albert E. Dudeck, Gainesville, Fla., assignor to Florida Foundation Seed Producers, Inc., Greenwood, Fla.
 Filed Nov. 30, 1992, Ser. No. 982,954
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—90 1 Claim
 1. A new and distinct cultivar of bermudagrass plant, substantially as herein illustrated and described, characterized particular by the fine texture of the leaf blade and which produces a low growing turf of improved density and winter color.

9,035
CARNATION NAMED KRISTINA
 Jean-Louis Desclaux, Angers, France, assignor to Laboratoire Physiologie Vegetale, Le Pradet, France
 Filed Jan. 31, 1994, Ser. No. 189,444
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—70.1 1 Claim
 1. A new and distinctive carnation cultivar substantially as herein shown as described, characterized by its light pink flowers having violet spots, which may occasionally be elongated, borne singly on long, strong stems, the flowers being characterized by petals which have a slightly serrated margins violet in color.

9,036
BA 73-366 KENTUCKY BLUEGRASS
 Virgil D. Meier, Marysville, Ohio; J. Kevin Turner, South Sa-
 lem, Oreg., and Eugene W. Mayer, Marysville, Ohio, assign-
 ors to The O. M. Scott and Sons Company, Marysville, Ohio
 Filed Sep. 23, 1993, Ser. No. 125,564
 Int. Cl.⁶ A01H 5/00

U.S. Cl. Pkt.—90.2

1 Claim

1. A variety of Kentucky bluegrass, substantially as shown

and described, characterized by a medium to high level of
 resistance to several serious diseases, including leaf spot and
 melting out disease, several rust diseases and dollar spot; a
 desirable green color throughout the growing season; good
 drought recovery capability; a medium to high quality dense
 presistent turf forming ability under a wide variety of environ-
 mental conditions; and a high level of seed yielding capacity.

PATENTS

GRANTED JAN. 3, 1995

ERRATA

For CLASS	See PATENT NO.
431-411	5,377,440
451-287	5,377,451
451-001	5,377,452
451-001	5,377,453
451-005	5,377,454
451-005	5,377,455
451-364	5,377,456
451-047	5,377,457
477-110	5,377,562
101-327	5,377,599
116-173	5,377,611
116-234	5,377,612
514-182	5,377,618
482-052	5,378,209
156-362	5,378,273
435-262	5,378,738
521-138	5,378,792
117-201	5,378,900
257-077	5,378,901
250-369	5,378,915
250-492	5,378,917
250-571	5,378,918
327-333	5,378,932

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ERRATA—CONTINUED

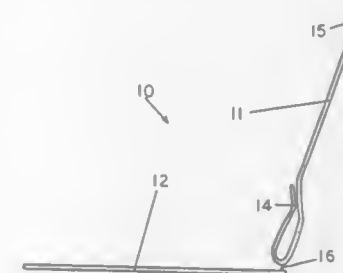
For CLASS	See PATENT NO.
327-172	5,378,933
327-203	5,378,934
327-114	5,378,935
327-077	5,378,936
327-306	5,378,937
327-094	5,378,938
326-021	5,378,940
326-097	5,378,942
326-068	5,378,943
326-062	5,378,944
326-068	5,378,945
327-014	5,378,946
327-552	5,378,947
327-113	5,378,949
327-401	5,378,950
324-158	5,378,970
324-760	5,378,971
505-211	5,379,018
505-211	5,379,020
346-076	5,379,055
346-076	5,379,056
347-071	5,379,060
360-018	5,379,151
360-048	5,379,152
360-027	5,379,153
369-013	5,379,275
369-032	5,379,276
370-014	5,379,277
370-016	5,379,278
370-024	5,379,279
370-062	5,379,280
379-387	5,379,319
385-046	5,379,354

PATENTS

GRANTED JANUARY 3, 1995

GENERAL AND MECHANICAL

5,377,359
FOOD SPILL CATCHING DEVICE
Curtis T. Jiang, San Francisco, Calif., assignor to QLH USA,
Inc., San Francisco, Calif.
Filed Dec. 10, 1993, Ser. No. 164,965
Int. Cl.⁶ A41D 13/04; A45F 5/00
U.S. Cl. 2—48



1. A food spill catching device comprising:
a. a lower planar body and an upper substantially planar body, on one side facing the lower body, the upper body having a pair of knobs at one upper end thereof, and being bent upon itself at one lower end thereof to form a clip;
b. pivoting means pivotally securing the upper body to the lower body;
c. trivet means formed from a folded position of the upper and lower bodies when the upper body pivots toward the lower body;
wherein the upper body is adapted to be used as a shield for protecting a user's clothing from being soiled by catching food spills of the user, wherein the knobs are used to space the upper body from the lower body a small distance such that their folded position serves as a trivet and wherein the clip is adapted to secure a sheet material to form a shielding structure with a size slightly larger than that of the upper body.

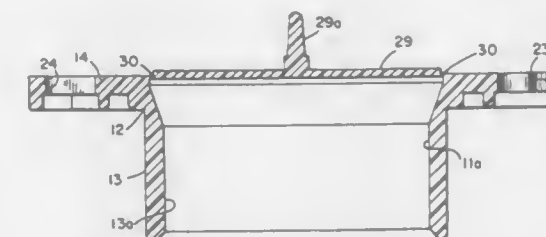
5,377,360
DECORATIVE, COMFORTABLE, ULTRA-ABSORBENT SWEATBAND
Jeffrey P. Fleitman, 1426 Pacific Ave., #1, Venice, Calif. 90291
Filed Jun. 2, 1993, Ser. No. 71,661
Int. Cl.⁶ A42C 5/02
U.S. Cl. 2—181



1. A sweatband comprising:
a) an elongated, decorative, cloth element made of a material capable of transmitting water, the cloth element rolled to simulate a rolled bandana and stitched in that configuration, the cloth element having opposed, tapered end portions, and the cloth element being sufficiently long to extend around a body part; and
b) a water-absorber retained by the cloth element, the water-absorber being sufficiently flexible to conform to the body part,
wherein the sweatband can be placed around the body part and the cloth element end portions can be secured together so that the band can absorb sweat from the body

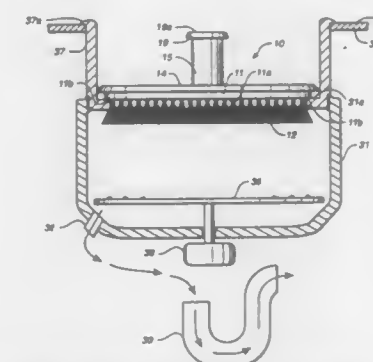
part, sweat transmitting through the cloth element into the water-absorber.

5,377,361
TOILET FLANGE
James Piskula, P.O. Box 26174, Milwaukee, Wis. 53226
Filed Jun. 3, 1994, Ser. No. 253,644
Int. Cl.⁶ E03D 11/16
U.S. Cl. 4—252.4



1. A toilet flange for mounting a toilet to a floor and for connecting said toilet to a drain pipe leading to a sewer pipe, said toilet flange comprising a cylindrical main body with an axial bore with a closed top and open bottom, said main body having upper and lower cylindrical body portions, said lower body portion being connectable to said drain pipe, said upper portion being larger in diameter than said lower body portion and defining an inlet of said body, an exterior annular attachment flange located about said inlet for attachment to a floor with said body extending through an aperture in said floor and for attachment to said toilet thereto, said axial bore being closed at a top thereof by an integral knock out element which seals the bore for air or water testing prior to the mounting of said toilet and which is larger in diameter than the lower body portion so that it cannot enter therein when removed from the top.

5,377,362
COMBINED SINK STRAINER STOPPER AND SCRUB BRUSH
Ingrid Jackson, 12455 Briones Way, Los Altos, Calif. 94022
Filed Aug. 20, 1992, Ser. No. 932,769
Int. Cl.⁶ E03C 1/262
U.S. Cl. 4—292



1. A combined sink strainer and scrub brush comprising:
a circular strainer base having a series of spaced water drain apertures extending therethrough for passage of water from a top side of the strainer base to the underside of the strainer base, said strainer base being adapted to fit into a sink drain;

brush elements extending from an underside of said strainer base, said brush elements being directly mounted to said underside of said strainer base so as to form a single, substantially disc-shaped brush;
 a handle connected to an extending upwardly from a central portion of the top side of said strainer base for manipulative removal of said strainer base from within the sink drain and for manipulative use of said brush elements for scrubbing foodstuff-containing surfaces.

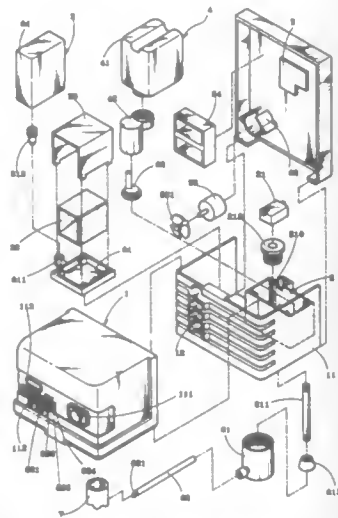
5,377,363
AUTOMATIC LAVATORY DETERGENT AND PERFUME DISPENSER

Snoopy Shieh, 6-2 Fl., No. 11, Ming Chuan W. Rd., Taipei, Taiwan, Prov. of China

Filed Mar. 9, 1994, Ser. No. 207,695
 Int. Cl.⁶ E03D 9/03, 5/10

U.S. Cl. 4—313

2 Claims



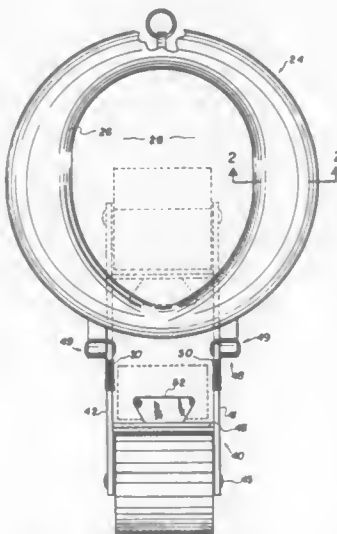
1. An automatic lavatory detergent and perfume dispenser for connection with a lavatory flush pipe comprising:
 - a housing having a view window and an exhaust port with a shutter on a front panel thereof;
 - a water container mounted inside said housing at a bottom thereof, said water container comprising a valve seat at a bottom thereof, a float floated in water in said water container, an upright rod having a top end connected to said float and a bottom end extended out of said valve seat and coupled with a valve cone, said valve cone being moved by said float to control the opening of said valve seat;
 - a water guide to guide water from the flush pipe into said water container through said valve seat;
 - a detergent dispensing device disposed inside said housing above said water container, said detergent dispensing device comprising a transparent detergent container having a bottom opening, a dispensing cap fastened to the bottom opening on said detergent container and forced to send a fixed amount of a detergent from said transparent detergent container when water in said water container reaches full water level;
 - a perfume dispensing device mounted inside said housing behind said shutter, said perfume dispensing device comprising a sponge holder having a guide hole, a perfume bottle having a bottom hole connected to the guide hole on said sponge holder, a sponge mounted on said sponge holder to suck in a liquid perfume being guided from said perfume bottle into the guide hole of said sponge holder, and a DC motor fan driven to send a current of air through said sponge toward said shutter; and
 - a control circuit assembly disposed inside said housing;

wherein said control circuit assembly comprises:
 a key pad mounted on said front panel of said housing and comprising a plurality of touch-control keys for setting controls;
 an infrared monitor having an infrared transmitter and an infrared receiver respectively mounted on said front panel of said housing to detect the approach of human bodies and to send a detected signal upon the detection of the approach of a human body;
 a central processing unit to receive the detected signal from said infrared monitor and to output a control signal upon receipt of the detected signal or at a predetermined cycle being set through said touch-control keys of said key pad;
 a driver to receive the control signal from said central processing unit and to output a driving signal upon receipt of the control signal from said central processing unit;
 an electromagnetic valve adapted to be installed in said flush pipe and controlled by said driver to let water flow from said flush pipe to said guide tube; and
 a power controller controlled by the control signal from said central processing unit to turn on said DC motor fan and an indicator lamp for illumination.

5,377,364
PORTABLE TOILET ASSEMBLY
 Jorge Cabrera, 74550 Low Matcumbe Key, Fla. 33036
 Filed Apr. 28, 1993, Ser. No. 54,621
 Int. Cl.⁶ A47K 11/04

U.S. Cl. 4—483

12 Claims



1. A portable toilet assembly comprising:
 - a) a container having a hollow interior and including a closed bottom end and a continuous, cylindrical side wall connected thereto and extending outwardly therefrom, said side wall terminating in a substantially continuous peripheral edge adapted to define a periphery of an open end oppositely disposed relative to said closed end;
 - b) a seat structure having a central opening and being removably mounted on said container in overlying relation to said open end and in communication with said hollow interior;
 - c) said seat structure including an outer surface configured to have a person sit thereon and an under surface adapted to be removably connected to said peripheral edge;
 - d) locking means mounted on said under surface and adapted for removably locking engagement with a portion of said peripheral edge;
 - e) a paper dispensing means connected to said seat structure

and selectively positionable into an operative, accessible location relative to an occupant of said seat structure,
 f) mounting means adapted for movably connecting said paper dispenser to said seat structure, and
 g) said paper dispenser being selectively positionable between an operative position and a stored position, said operative position being defined by a substantially outwardly extending linear orientation relative to said seat structure and said stored position being defined by downward, angled orientation relative to said operative position and said seat structure.

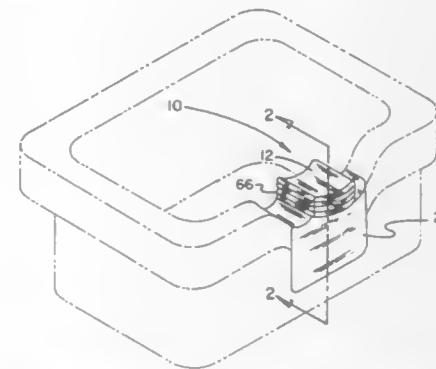
5,377,365
NECK SUPPORT FOR BEAUTY SALON HAIR WASHING SINKS

Shaharazad H. Hakim, 58 Rottkamp St., Valley Stream, N.Y. 11580

Filed May 31, 1994, Ser. No. 251,344
 Int. Cl.⁶ A45D 19/00; A47K 1/04

U.S. Cl. 4—523

4 Claims

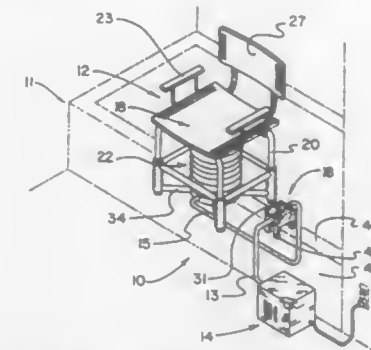


1. A new and improved neck support for beauty salon hair washing sinks comprising, in combination:
 - a pillow formed of an elastomeric foam with a water proof envelope thereover;
 - a coupling assembly having a downwardly extending exterior member and a downwardly extending interior member, the members being positionable over an upper edge of a beauty salon sink wall, the coupling assembly having a pair of suction cups on the interior member facing the exterior member, the coupling assembly also including apertures extending through the exterior member with a threaded bolt extending therethrough, the bolt having a handle on its exterior end and a suction cup on the interior end facing the interior member, the suction cups adapted to contact opposing faces of the sink wall for positioning and support thereadjacent;
 - an intermediate assembly between the pillow and the coupling assembly, the intermediate assembly including a ratchet, a lower end of which is secured to the coupling assembly and an upper end of which is coupled to the pillow with opposed circular components with engaging serrated teeth on facing sides thereof, the circular components adapted to rotate about a horizontal axis to vary the angular orientation of the pillow with respect to the coupling assembly and a spring coupling the circular components to maintain the teeth in engagement until moved by a user through application of a rotational force.

5,377,366
FLUID OPERATED BATHTUB CHAIR
 Kenneth Boyd, 917 Gretna Ln., and Gussie B. Boyd, 10738 Toulon Dr., both of Cincinnati, Ohio 45240
 Filed May 24, 1993, Ser. No. 66,592
 Int. Cl.⁶ A47K 3/12

U.S. Cl. 4—561.1

9 Claims



1. A bathtub chair, comprising:
 - a fluid operated chair assembly having a seat member,
 - a fluid pressure generating assembly for generating fluid pressure for raising and lowering said fluid operated chair assembly, and
 - a fluid pressure valve assembly, connected between said fluid operated chair assembly and said fluid pressure generating assembly, for controlling fluid pressure applied to said fluid operated chair assembly;
 - and further including a bubble massage assembly, receiving fluid pressure from said fluid pressure generating assembly, for providing bubbles of fluid in water in a bathtub.

5,377,367
SOAP DISH FOR USE WITH HAND-SHOWER WALL ROD ASSEMBLY

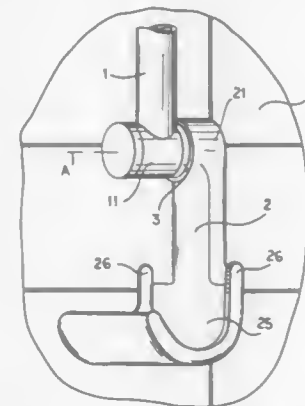
Bernd Bischoff, Hemer, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany

Filed Sep. 20, 1993, Ser. No. 124,270

Claims priority, application Germany, Nov. 9, 1992, 4237738
 Int. Cl.⁶ A47K 5/03

U.S. Cl. 4—605

10 Claims



1. In combination with a hand-shower wall rod having vertically spaced and horizontally extending upper and lower brackets secured to a wall and a vertical tube with upper and lower ends respectively seated in the brackets, the lower bracket having a cylindrical outer surface between the wall and the rod, a soap-dish fixture comprising:
 - a body having a lower end formed as a soap dish and an upper end formed as an eye engaged around the surface of

the lower bracket, the body being swivelable about a horizontal central axis of the lower bracket; means for releasably holding the body in a normal position with the lower end below the lower bracket; and an axially compressible spring ring engaged around the lower bracket between the eye and the tube and compressed between the tube and the eye to press the body against the wall, the eye being provided with formations rotationally coupling the spring ring to the body.

5,377,368

COLLAPSIBLE BABY BED

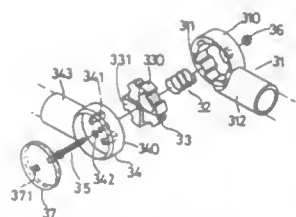
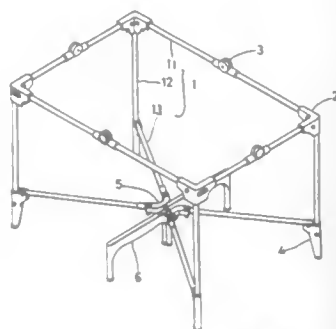
Ying-Hsiung Cheng, San Diego, Calif., assignor to Top Fortune Ltd., San Diego, Calif.

Filed Aug. 24, 1993, Ser. No. 110,927

Int. Cl.⁶ A47D 7/00

U.S. Cl. 5—991

2 Claims



1. A collapsible baby bed comprising:
 (a) a plurality of extended upper horizontal side rods;
 (b) rotatably lockable connector means for coupling pairs of said extended upper horizontal side rods each to the other at first ends thereof, said rotatably lockable connector means including a first cylindrical cap having a first cylindrical disk portion and a first cylindrical cap tubular portion extending therefrom, said cylindrical disk portion having a recess formed therein defining an open chamber, a plurality of inner grooves formed within an inner circumferential surface of a wall of said open chamber, said first cylindrical tubular portion being secured to a first end of one of said extended upper horizontal side rods, a spring member mounted within said open chamber, a fitting block located within said open chamber, said spring member being sandwiched between said fitting block and an end wall of said first cylindrical cap, said fitting block having a plurality of fitting block projections for engagement within respective ones of said inner grooves and a plurality of fitting block fan-shaped projections, said rotatable lockable connector means further including a second cylindrical cap having a second cylindrical disk portion and a second cylindrical cap tubular portion, said second cylindrical disk portion having a plurality of second cylindrical disk portion fan-shaped projections extending from a central wall of said second cylindrical disk portion for engagement with respective ones of said fitting block fan-shaped projections, said central wall having a projection opening formed therethrough, a push disk insertable within said second cylindrical disk portion and having a push disk projection formed thereon for passage through said projection opening for interface with said fitting block, said second cylindrical tubular portion being se-

- cured to said first end of one of said extended upper horizontal side rods, said push disk, said second cylindrical disk portion, said fitting block, said spring member and said first cylindrical disk portion being secured by a threaded member passing therethrough, wherein (1) said fan-shaped projections of said fitting block engage said fan-shaped projections of said second cylindrical disk portion for lockingly securing said first and second cylindrical disk portions each to the other, and, (2) said fan-shaped projections of said fitting block are disengaged from said second cylindrical disk portion when displaced by a tenon extending from said push disk when said push disk is displaced, said tenon extending through an aligned opening formed in said second cylindrical disk portion;
 (c) a plurality of corner connectors secured to pairs of said horizontal side rods at second ends thereof;
 (d) a plurality of foot rods secured to respective corner connectors, extending substantially orthogonal to a plane of said horizontal side rods, each of said foot rods having a lower end secured to a respective foot support member for interface with a base surface;
 (e) a plurality of lower horizontal support rods, each of said lower horizontal support rods coupled respectively to a respective one of said foot rods and a V-shaped connector tube on opposing ends thereof; and
 (f) a pair of bottom frame members mounted in pivotal manner between adjacently located apex sections of said V-shaped connecting tubes and pivotally joined each to the other in rotatable displacement by a pivot pin extending therethrough.

5,377,369

BOTTOM STRUCTURE OF A BED

Kunito Shirai, Togane, Japan, assignor to Paramount Bed Company Limited, Tokyo, Japan

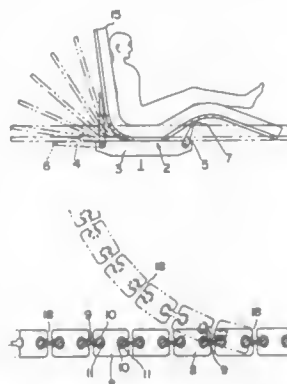
Filed Dec. 21, 1993, Ser. No. 170,715

Claims priority, application Japan, Dec. 25, 1992, 4-089070[U]

Int. Cl.⁶ A47C 23/08

U.S. Cl. 5—236.1

19 Claims



1. A bottom structure for a bed with a bottom lifting mechanism comprising parallel bottom strips, each with coupling grooves formed like circular arcs in cross section in a longitudinal direction in opposite faces of the bottom strip, said bottom strips being sequentially connected by coupling members, each coupling member having bulbous portions corresponding to said coupling grooves at both ends of the coupling members.

5,377,370

HOSPITAL BED WITH COLLAPSING WING

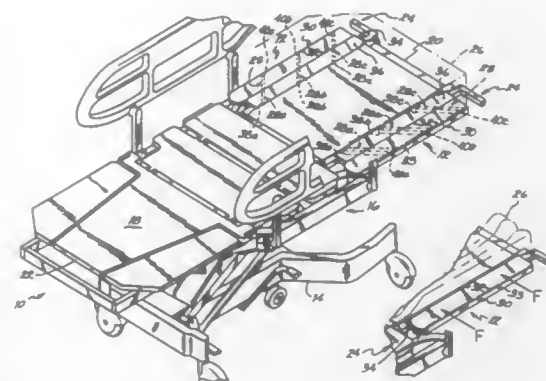
L. Dale Foster, and Ryan A. Reeder, both of Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Jun. 10, 1993, Ser. No. 74,925

Int. Cl.⁶ A47G 7/02; A61G 7/015

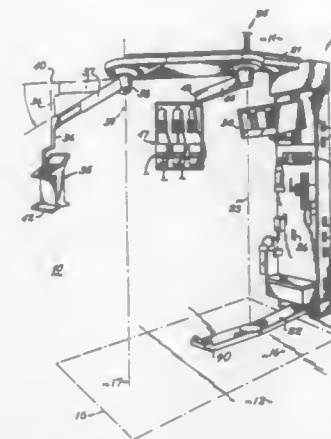
U.S. Cl. 5—620

14 Claims



1. A hospital bed comprising:
 a base;
 a bed frame mounted above said base, said frame having spaced lateral sides and a head end spaced from a foot end;
 a wing on at least one lateral side of said frame proximate said head end; and
 linkage means having a first end pivotally connected to said frame, and a second end pivotally connected to said wing, said linkage means connecting said wing to said frame permitting said wing to be selectively moved laterally in a plane generally defined by said frame, said linkage means being operable to adjust the lateral position of said wing and thereby a lateral dimension of the bed.

ceiling on the same axis as said upper and lower arms, the other end of said arm being connected to said IV rack,



said IV rack arm supporting said IV rack permitting said IV rack to swing through an arc from one side of said bed site to the other side of said bed site.

5,377,372

HOSPITAL BED CASTOR CONTROL MECHANISM

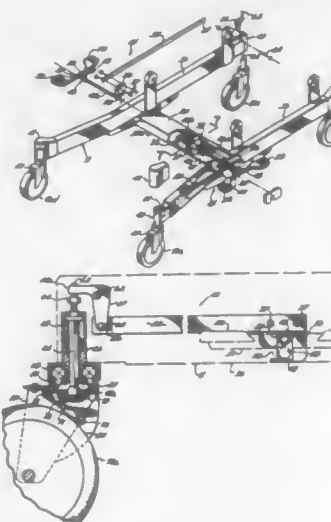
Kenneth O. Rudolf, and David W. Williams, both of Batesville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Mar. 31, 1993, Ser. No. 41,008

Int. Cl.⁶ A61G 7/06; B60B 33/00

U.S. Cl. 5—600

30 Claims



29. A hospital bed comprising:
 a base;
 a patient support mounted above said base;
 castors mounted around said base and including at least one plunger type castor having a plunger actuable to provide neutral, brake and steer modes; and
 a linkage for selectively positioning said plunger type castor in said neutral, brake and steer modes, said linkage including an arm having an end for applying a downward force directly on said plunger.

5,377,371

HOSPITAL BED WITH PIVOTING HEADBOARD

L. Dale Foster, Brookville, Ind., assignor to Hill-Rom Company, Inc., Batesville, Ind.

Continuation of Ser. No. 525,044, May 18, 1990, abandoned, which is a division of Ser. No. 309,886, Feb. 14, 1989, Pat. No. 5,072,906, which is a continuation-in-part of Ser. No. 144,188, Jan. 15, 1988, Pat. No. 4,811,435. This application Dec. 16, 1992, Ser. No. 991,445

The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.

Int. Cl.⁶ F16M 13/00

U.S. Cl. 5—503.1

6 Claims

1. Apparatus for a hospital room having a floor and ceiling comprising:
 an elongated, generally rectangular hospital bed site having two opposed ends,
 a power column having electrical outlets, gas outlets, a monitor for the display of patient data and other patient-treating accessories,
 an upper arm having one end pivotally mounted on said ceiling on an axis which is over one end of the bed site, the other end of said arm being connected to said power column,
 a lower arm having one end pivotally mounted on said floor on the same axis as said upper arm, the other end of said lower arm being connected to said power column,
 said two arms supporting said power column and permitting said power column to swing through an arc that passes from one side of said bed site past said one end of said bed site to the other side of said bed site,
 an IV rack for supporting IV solution bags and IV pumps,
 an IV rack arm having one end pivotally mounted on said

5,377,373

BOTTOM STRUCTURE OF A BED

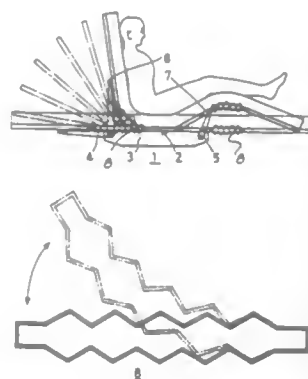
Kunito Shirai, Togane, Japan, assignor to Paramount Bed Company Limited, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,716

Claims priority, application Japan, Dec. 25, 1992, 4-89072[U]
Int. Cl.⁶ A61G 7/04

U.S. Cl. 5—613

3 Claims



1. A bottom structure for a bed having moveable flexible sections connected to moveable rigid sections, each of said flexible sections being hollow and extensible and formed of flexible plastic, each flexible section having upper and lower walls with a plurality of V-shaped corrugations formed in both the upper and lower walls, said V-shaped corrugations extending transverse to a longitudinal axis of said bottom structure, said corrugations permitting the flexible section to bend either up or down.

5,377,374

TURF AND GARDEN TOOL

William J. Green, 3821 Barbara Way, Salt Lake City, Utah 84124

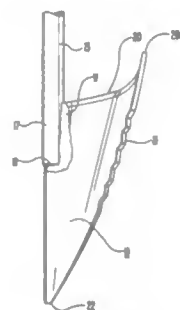
Filed Oct. 4, 1993, Ser. No. 130,793

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.⁶ A01B 1/00

U.S. Cl. 7—114

3 Claims



1. A multi-use turf and garden tool including, in combination, a rod member comprising an upper handle, an upper rod portion integral with and depending from said upper handle, a lower rod portion extending beneath said upper rod portion and having a lower extremity, a medial, laterally-extending step portion integral with said upper and lower rod portions, and an arcuately curved root trap tool formed essentially as a hemi-conical sector and having a lower turf-penetration end and an attachment side fixed to said lower rod portion at said lower extremity, said root trap tool having a side, serrated, sloping leading edge for sod cutting about a weed location and also an upper, arcuate, sharpened cutting edge means formed in part by at least one chamfered side for selectively severing off-shoots of plant-life.

5,377,375

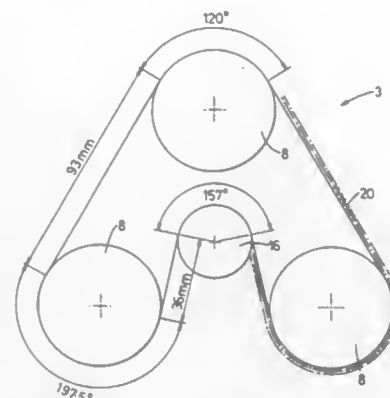
STAIR CLEANING DEVICEAndrew Holman, Poole, and Graham Fairbrass, Christchurch, both of England, assignors to BTR plc, London, England
Filed Feb. 9, 1994, Ser. No. 194,502

Claims priority, application United Kingdom, Feb. 10, 1993, 9393557

U.S. Cl. 15—49.1

Int. Cl.⁶ A47L 11/16, 11/40

15 Claims



1. A stair cleaning device comprising a plurality of cleaning heads arranged to rotate; in a single plane, each head being mounted to rotate about an axis perpendicular to the said plane, a plurality of plain-surfaced pulleys, equal in number to the number of cleaning heads, each one of said pulleys being drivably connected to a respective cleaning head, a toothed driven pulley mounted with its axis of rotation parallel to the axes of rotation of the plain-sided pulleys and a drive belt formed with teeth on one side thereof and being plain on the opposite side, the teeth of the belt engaging with the teeth of the driven pulley and the plain side of the belt frictionally engaged with plain-surfaced pulleys thereby transmitting the drive to the cleaning heads.

5,377,376

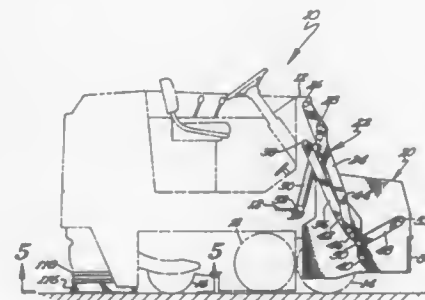
MOBILE SURFACE CLEANING MACHINE

David Wood, Rockford, and Randy Brunn, Brooklyn Park, both of Minn., assignors to Advance Machine Company, Plymouth, Minn.

Division of Ser. No. 781,832, Oct. 24, 1991, Pat. No. 5,239,720.
This application Aug. 23, 1993, Ser. No. 110,362Int. Cl.⁶ E01H 1/04

U.S. Cl. 15—83

20 Claims



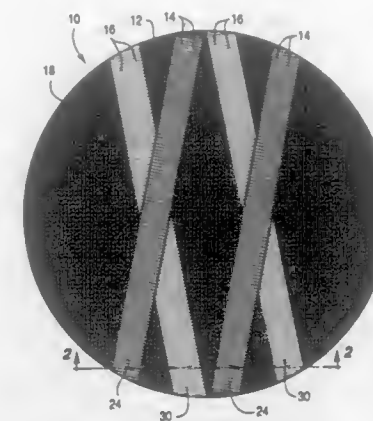
1. Machine for movement along a surface having debris comprising, in combination: a frame; a hopper for holding debris collected from the surface; and means for raising the hopper relative to the frame from a lowered position with the hopper in a horizontal debris collecting condition to a raised position with the hopper in a dumping condition and for simultaneously tilting the hopper as the hopper is raised from the lowered position to allow dumping of the debris from the hopper at multiple levels above the surface comprising, in

5,377,378

DRY CLEANING PADBarry L. Cutler, 7 Stanford Ct., East Windsor, N.J. 08520
Filed Jan. 3, 1994, Ser. No. 176,997Int. Cl.⁶ A47L 11/14

U.S. Cl. 15—230

17 Claims



1. A cleaning pad comprising:
a base sheet of a non-woven material;
first and second strips of fibrous bristles in said base sheet defining a space therebetween, the fibrous bristles of the first strip being stiffer than the fibrous bristles of the second strip; and
a bed of firmly looped strands woven to a hooked rug solidity to the base sheet to present a cleaning surface filling the space of the base sheet between the first and second strips.

5,377,377

INTERPROXIMAL BRUSH

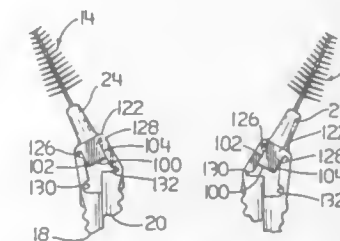
William A. Bredall, Pacifica, Calif., and Graham J. Simms, Reading, United Kingdom, assignors to Gillette Canada Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 34,281, Mar. 23, 1993, Pat. No. 5,309,596. This application Feb. 24, 1994, Ser. No. 201,919

Int. Cl.⁶ A46B 9/04

U.S. Cl. 15—167.1

17 Claims



1. An interproximal brush comprising:
an elongated body member having a longitudinal axis and comprising a pair of parallel legs slidably attached to each other for movement relative one to the other in the direction of the body member longitudinal axis;
a substantially planar platform having a lower surface thereof facing said parallel legs when said legs are attached and brush means disposed on an upper opposite surface thereof and extending outwardly therefrom;
hinge means comprising first and second pairs of hinges, said first pair of hinges formed on said planar platform having one hinge located adjacent one side of said brush means and a second hinge located adjacent an opposite side of said brush means, said second pair of hinges having one hinge connecting said planar platform to one of said parallel legs and the other connecting said platform to the other of said parallel legs whereby movement of said legs relative one to the other is effective to move said brush means angularly with respect to said body member longitudinal axis, said first pair of hinges located intermediate said brush means and said second pair of hinges; and
an inwardly extending bumper means formed on said lower surface of said planar platform between said first pair of hinges
said bumper means having a pair of opposite facing surfaces, a first surface disposed for contacting a portion of said platform between said one of said first pair of hinges and one of said second pair of hinges and a second surface for contacting a portion of said platform between the second of said first pair of hinges and the other of said second pair of hinges during movement of said brush means angularly with respect to said body member.

5,377,379

DEVICE FOR CLEARING IRON CHIPS PRODUCED DURING A MECHANICAL WORKING PROCESS

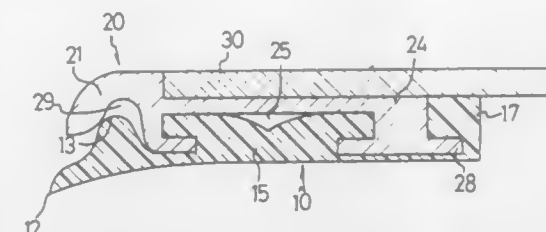
Neag S. Lo, No. 546, Sec. 1, Feng Shih Rd., Fengyuan City, Taichung Hsien, Taiwan, Prov. of China

Filed Apr. 22, 1994, Ser. No. 231,319

Int. Cl.⁶ B23Q 11/08; F16C 17/00

U.S. Cl. 15—246

3 Claims



1. A device for clearing iron chips produced during a mechanical working process, comprising:
a plurality of telescopic housings (3) each having an upper plate (30), two side plates and a lower plate;
a fastening member (20) securely attached to an underside of said upper plate (30) of said telescopic housing (3) and having a first side wall member (21) and a second side wall member (24);
a recess (25) having a substantially T-shaped cross-section being defined in an underside of said fastening member (20) between said first and second members (21) and (24) thereof;
a groove (29) having an arc-shaped cross-section being defined in an underside of said first side wall member (21);
a first flange portion (28) laterally formed on said second side wall member (24) and extending outwardly therefrom; and
a resilient member (10) securely attached to said fastening

member (20) and having a first side and a second side, and comprising:

- a locking element (15) having a substantially Y-shaped cross-section being securely received in said substantially T-shaped recess (25);
- a lug portion (13) having an arc-shaped cross-section being formed on the first side of said resilient member (10) and being partially enclosed in said arc-shaped groove (29);
- a clearing edge portion (12) extending from a distal end of said arc-shaped lug portion (13) for clearing iron chips produced during a mechanical working process; and
- a second flange portion (17) having an L-shaped cross-section being formed on said second side of said resilient member (10) and being securely mounted on said first flange portion (28).

5,377,380

SIMULATED VEHICLE HEADLIGHT WIPERS

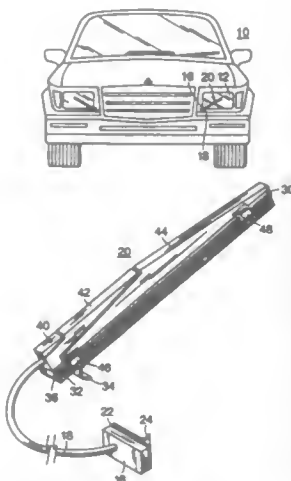
Ronald C. Reeves, 485 Hawthorn Pl., Reynoldsburg, Ohio 43068

Filed Jul. 27, 1990, Ser. No. 559,145

Int. Cl.⁶ B60S 1/34, 1/56

U.S. Cl. 15—250.002

13 Claims



1. A novelty device simulating a vehicle headlight wiper comprising an oblong member that simulates a headlight wiper and means for attaching said oblong member to a vehicle headlight so as to maintain it in a stationary position relative to said headlight.

5,377,381

CLEANING SYSTEM AND METHOD

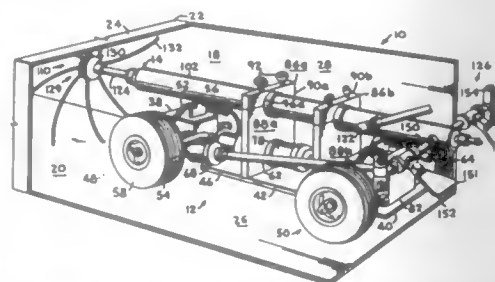
Edward G. Wilson, Rte. 2, Box 235B, Lynville, Tenn. 38472

Filed Oct. 26, 1992, Ser. No. 966,359

Int. Cl.⁶ B08B 9/04; B05C 7/08

U.S. Cl. 15—304

10 Claims



1. A cleaning system vehicle having front and back ends and powered by a pressurized fluid source, said vehicle comprising:

- (a) a chassis;
- (b) drive means mounted on the chassis for propelling the chassis in a first direction, said drive means including a fluid motor and first fluid connection means for connecting the fluid motor to the pressurized fluid source;
- (c) fluid-powered cleaning means mounted on said chassis for cleaning the inner surfaces of a duct passage, said cleaning means including second fluid connection means for connecting the cleaning means to the pressurized fluid source;
- (d) said cleaning means further comprising a brush rotatably mounted on the chassis and a cleaning system fluid motor drivingly connected to the brush;
- (e) said brush being mounted in proximity to said vehicle front end;
- (f) said first and second fluid connection means being located in proximity to said vehicle back end; and
- (g) said cleaning means further including a boom with front and back ends, said brush being mounted on the boom front end coaxially with the booms, air jet means mounted on the boom back end for sweeping the inner surfaces of a duct passage, and a boom mounting bracket connected to the chassis and to the boom.

5,377,382

FLOOR CLEANING MACHINE INCLUDING SQUEEGEE ASSEMBLY

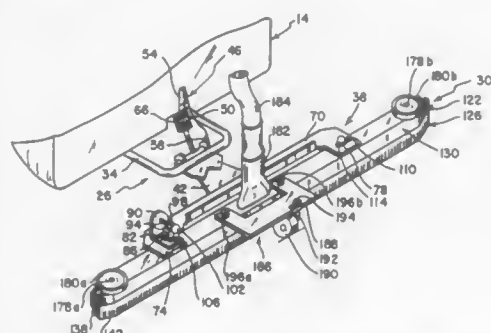
Frederick M. Bores, Highlands Ranch, and Thomas G. Plaven, Littleton, both of Colo., assignors to Windsor Industries, Inc., Englewood, Colo.

Filed May 13, 1993, Ser. No. 60,874

Int. Cl.⁶ A47L 11/30

U.S. Cl. 15—340.1

16 Claims



1. A cleaning machine for use in cleaning a surface, comprising:

- a housing unit for containing a number of cleaning machine components;
- a cleaning assembly connected to said housing unit for cleaning a path on a floor surface;
- machine moving means for use in moving said housing unit and said cleaning assembly;
- a squeegee mounting assembly connected to said housing unit;
- a squeegee assembly separate from but connected to said squeegee mounting assembly for wiping up liquid on the floor surface, said squeegee assembly including:
- (1A) squeegee blade means for collecting liquid from the floor surface, and
- (1B) a blade holding subassembly;
- said squeegee blade means including at least a first squeegee blade having upper and lower sections, said lower section including a laterally extending edge for contacting the floor surface when collecting liquid, said upper surface joined to said lower section above said laterally extending edge, wherein said blade holding subassembly fixedly holds said upper section of said first squeegee blade in place, said blade holding subassembly including a plurality of connectors positioned through portions of said blade

holding subassembly, each of said plurality of connectors being for holding said first squeegee blade, and wherein said plurality of connectors includes roller connectors for connecting rollers, located adjacent to ends of said holding subassembly, to said blade holding subassembly.

5,377,383

ATTACHMENT FOR A VACUUM CLEANER OR A VACUUM-CLEANING PIPE

Lars Christensen, Søndergade 24, DK-8783 Hornslyd, Denmark

PCT No. PCT/DK92/00030, § 371 Date Jul. 16, 1993, § 102(e)

Date Jul. 16, 1993, PCT Pub. No. WO92/12664, PCT Pub. Date Aug. 6, 1992

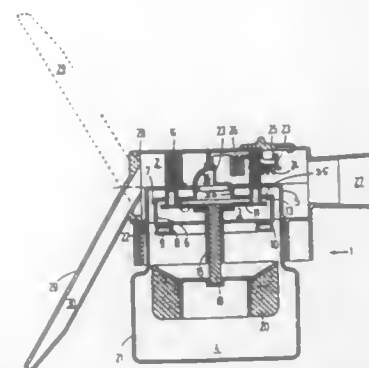
PCT Filed Jan. 28, 1991, Ser. No. 90,016

Claims priority, application Denmark, Jan. 28, 1991, 0150/91

Int. Cl.⁶ A47L 7/00

U.S. Cl. 15—353

7 Claims



1. An attachment for a vacuum cleaner or a vacuum cleaning pipe, the attachment used for collecting vacuumed liquid, and comprising a closed container having a suction connection for connection to a nozzle, and having a vacuum connection for connection to the vacuum cleaner or the vacuum cleaning pipe, a separation chamber provided in the container and connected to the suction connection for separating the vacuumed liquid from suction air, a collection chamber provided in the container for collecting the separated liquid, a float control valve located between the collection chamber and the vacuum connection, the suction connection placed in a top of the container such that it opens into the separation chamber, the separation chamber forming a channel defined by vertical and horizontal walls on which the liquid is separated from the suction air, the walls located above the collection chamber, the vertical wall surfaces having drip edges at the bottom thereof, the horizontal wall surfaces having drip cones thereon.

5,377,384

LOCKING PIVOT SHOE

Harry M. Riegelman, 2417 Wimbledon Dr., Arlington, Tex. 76017

Filed Apr. 5, 1993, Ser. No. 42,967

Int. Cl.⁶ E05F 3/00

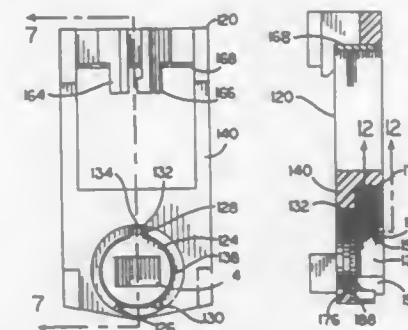
U.S. Cl. 16—193

8 Claims

5. In an improved locking pivot shoe comprising, a body having a front and a back an opening through said body from the front to the back of said body, a wall around said opening including an inward facing surface forming said opening, a rotary barrel cam having a front and a back, mounted in said opening for rotation on an axis which passes through the front and back of said body with the front of said barrel cam being toward the front of said body, a brake shoe mounted on said body for axial movement within said opening and being adapted for engaging said barrel cam for being urged by said barrel cam for said axial movement, the improvement comprising:

- means on said body for holding said brake shoe in said opening,

said wall of said opening comprising a first annular ring normal to said axis, said barrel cam comprising a second annular ring normal to the axis of said barrel cam, said first ring having a first rearward facing planar surface, and said second ring having a second forward facing



planar surface, said first and second planar surfaces being in bearing contact when said barrel cam is fully seated in said opening from the back of said body, said second ring including a third rearward facing cam surface for said urging of said brake shoe in said opening in axially rearward movement.

5,377,385

DRAW FRAME, STORAGE DEVICE AND COILER, DELIVERY REGULATION

Erich Jorrot, Seuzach; Raphael Wicki, Aadorf, and Urs Keller, Seuzach, all of Switzerland, assignors to Maschinenfabrik Relter AG, Winterthur, Switzerland

PCT No. PCT/CH91/00184, § 371 Date Jul. 19, 1992, § 102(e)

Date Jul. 19, 1992, PCT Pub. No. WO92/05301, PCT Pub. Date Apr. 2, 1992

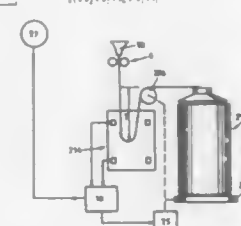
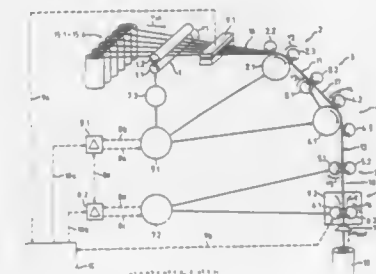
PCT Filed Aug. 28, 1991, Ser. No. 856,951

Claims priority, application Switzerland, Sep. 20, 1990, 03051/90

Int. Cl.⁶ D01H 5/32; D01G 31/00

U.S. Cl. 19—240

10 Claims

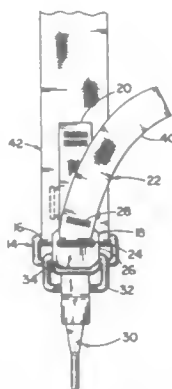


1. An apparatus for producing and storing a sliver, said apparatus comprising:

- (a) a drafting device comprising:
 - (1) a feed zone comprising:
 - (i) means for introducing at least one preliminary sliver to said drafting device; and
 - (ii) a sliver mass measuring unit;

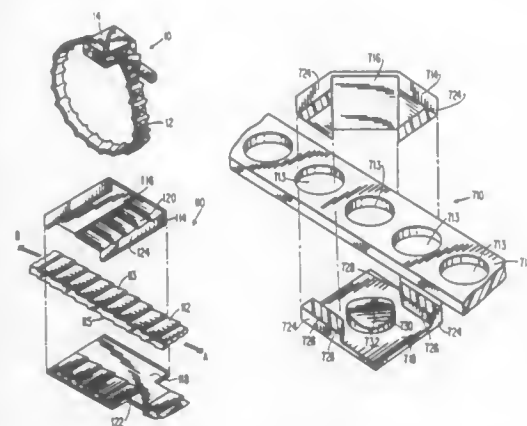
- (2) a predrafting zone and a main drafting zone;
 (3) means for delivering a drafted sliver from said drafting device at a supply speed;
 (4) means for driving said drafting device at a feed speed;
 (5) a control unit, said control unit comprising means for controlling said driving means as a function of measurements made by said mass measuring unit for reducing mass fluctuations sensed by said mass measuring unit by changing said driving of said main drafting zone, said changing of said driving of said main drafting zone also changing said supply speed; and
 (b) a storage device for storing a variable amount of said drafted sliver delivered by said drafting device;
 (c) means for sensing an amount of said drafted sliver in said storage device; and
 (d) a can press for receiving said drafted sliver from said storage device at an intake speed, wherein said means for driving said drafting device further comprises means for driving said can press;
 said control unit comprising means for controlling said drafting device driving means in response to said means for sensing, for maintaining an amount of said drafted sliver in said storage device within a predetermined range, and said means for controlling comprising means for controlling a change in at least said feed speed of said drafting device.

5,377,386
QUICK-RELEASE DISCONNECT FOR A HARNESS
 Richard R. Griffith, Utica, N.Y., assignor to Sturges Manufacturing Company, Inc., Utica, N.Y.
 Filed Oct. 18, 1993, Ser. No. 137,639
 Int. Cl.⁶ A44B 21/00; A45F 5/00
 U.S. Cl. 24—3 B 6 Claims



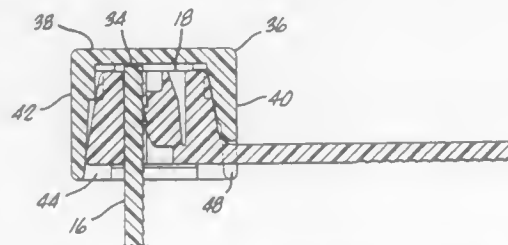
1. A quick release disconnect for a harness comprising an attached pivotable collar pulled through gravitational force from a lock position of upward rotation into a normal release position of downward rotation, a detachable snaphook having an attached yoke, the pivotable collar in its lock position of upward rotation engaging the yoke, a tang for securing the pivotable collar in its lock position to the yoke, and a flexible quick-release means for detaching the tang from the pivotable collar such that the pivotable collar returns to its normal release position and the yoke is automatically disengaged from the pivotable collar.

5,377,387
TWO-WAY ADJUSTABLE TIE
 Anna B. Freed, 185 E. 85th St., Suite 2-L, New York, N.Y. 10028
 Filed Feb. 25, 1993, Ser. No. 22,354
 Int. Cl.⁶ B65D 63/00
 U.S. Cl. 24—16 PB 28 Claims



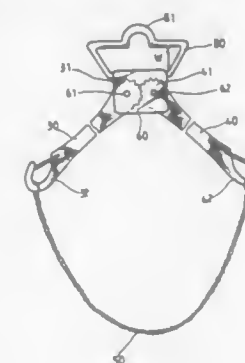
1. A two-way adjustable tie comprising:
 (a) a strap having a plurality of projections, said plurality of projections extending substantially symmetrically along said strap;
 (b) a holder having an upper member, a lower member and a pair of connecting members, said connecting members integrally connect said upper and lower members as a one piece assembly, said holder having means for defining a first connecting position and a second connecting position of said holder with respect to said strap;
 (c) an incremental tightening means for incrementally tightening said strap, wherein said holder cooperates with said strap to permit discrete tightening of said strap when said strap and said holder are in a first orientation corresponding to said first connecting position with respect to each other; and
 (d) an incremental loosening means for incrementally loosening said strap, wherein said holder cooperates with said strap to permit discrete loosening of said strap when said strap and said holder are in a second orientation corresponding to said second connecting position with respect to each other.

5,377,388
SAFETY CAP
 Bruce J. DeBever, Whittier, Calif., assignor to Decor Concepts, Inc., Arcadia, Calif.
 Filed Dec. 27, 1993, Ser. No. 173,769
 Int. Cl.⁶ B65D 63/10
 U.S. Cl. 24—16 PB 3 Claims



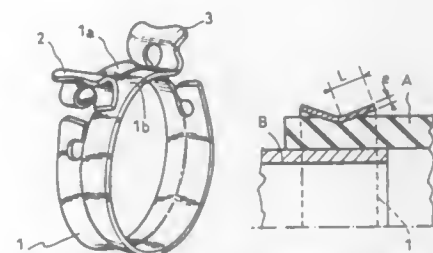
1. A cap for a tie head of substantially rectangular cross section in plan having a top, a bottom and sides, each side having a draft tapering inwardly toward the top, comprising

- a hollow body having four side walls, a top wall and an open bottom;
 flanges extending inwardly from two opposed first walls of said four side walls partially across said open bottom, said flanges having outer surfaces which are tapered inwardly for facile introduction of the tie head and inner surfaces extending parallel to said open bottom to prevent extraction of the tie head once positioned;
 a first rib extending across the inside of one of two opposed second walls of said four side walls adjacent said top wall;
 a second rib extending down the inside center of the other of said two opposed second walls of said four side walls from adjacent said top wall, said second rib being tapered to extend further into said hollow body toward said top wall.



allowing said arm to be turned toward to or apart from each other and then retained in the adjusted position.

5,377,389
CLAMPING SPRING COLLAR
 Lionel Calmettes, Romorantin Lanthenay, and Pascal Detable, Glevres, both of France, assignors to Etablissements Caillau, Issy les Moulineaux, France
 Filed Feb. 24, 1994, Ser. No. 201,937
 Claims priority, application France, Feb. 26, 1993, 93 02259
 Int. Cl.⁶ B65D 63/00; F16L 33/00
 U.S. Cl. 24—20 R 1 Claim

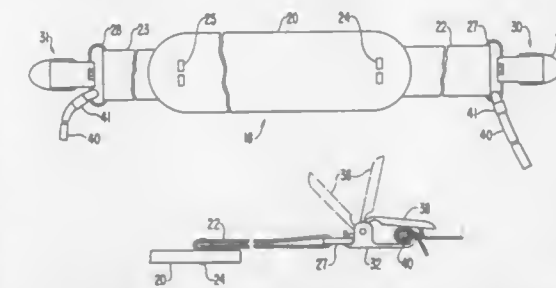


1. A clamping spring collar, constituted by a rolled-up metal strip having end portions each of which is of a width substantially equal to half the width of the strip, said end portions being disposed side by side and being provided with respective tabs that are directed radially outwardly from the collar, which tabs form abutments for engaging a pliers-like tool, the strip having a cross-section that constitutes a flattened V-shape such that the central region of the inside surface of the collar has a diameter that is smaller than that of its lateral regions, wherein the angle formed between the two branches of the V-shape lies in the range 120° to 165°, and wherein the ratio between the thickness of the strip and the length of each of its branches itself lies in the range 0.2 to 0.5.

5,377,390
ADJUSTABLE TIE CHAIN
 Yu-Lin Huang, No. 5, Alley 2, Lane 85, Min Tsu Road, Lu Chou Hsiang, Taipei Hsien, Taiwan, Prov. of China
 Filed Jan. 3, 1993, Ser. No. 71,896
 Int. Cl.⁶ A44B 6/00
 U.S. Cl. 24—49 CF 4 Claims

1. An adjustable tie chain comprising a hanger for hanging on the tie thread of a button on a cloth, a clamping plate fastened to said hanger, two arms each having one end pivotally connected to said clamping plate and an opposite end terminated to a hook, a chain having two opposite ends respectively

5,377,391
BED COVERING RETAINING DEVICE
 Wilbur A. Foster, Ste. 650, 3300 Bee Caves Rd., Austin, Tex. 78746-6663
 Filed Oct. 19, 1992, Ser. No. 962,659
 Int. Cl.⁶ A47C 21/00
 U.S. Cl. 24—72.5 14 Claims



1. An elongated device for holding a cover on a bed comprising the combination of an elongated band of stiff, substantially inelastic material having smooth surfaces and having a length less than a dimension of a mattress with which the band is to be used; first and second openable and closeable fasteners, each said fastener having a pair of jaws openable to receive cover fabric and lockable in the closed position; first and second elastic straps at opposite ends of said band, each of said elastic straps being substantially permanently attached at one end to an end of said band and at the other end to one of said first and second fasteners; and first and second lengths of cord each fixedly attached at one end to one end of said device, the other ends of said lengths of cord being unattached until the device is used, whereupon said band is inserted under the mattress, said cords are placed in folds adjacent marginal portions of the cover to be held onto the mattress on opposite sides of said mattress and said jaws of said fasteners are closed and locked over said folds and cords together with each fold enclosing one cord so that said cover is securely held thereby.

5,377,392

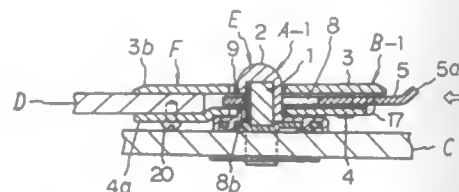
MAGNETIC FASTENING DEVICE

Tamao Morita, 47-1, Arakawa 6-Chome, Arakawa-ku, Tokyo 116, Japan

Continuation-in-part of Ser. No. 898,608, Jun. 15, 1992, Pat. No. 5,253,394, and Ser. No. 899,979, Jun. 17, 1992, Pat. No. 5,199,138. This application Apr. 6, 1993, Ser. No. 43,484
Claims priority, application Japan, Jun. 14, 1991, 3-169239; Jun. 17, 1991, 3-170396Int. Cl.⁶ A44B 11/26

U.S. Cl. 24—303

15 Claims



1. A fastener comprising:
 - a male member having a magnetic projection, said projection having a recess; and
 - a female member having a female frame comprising:
 - a first and a second plate members; and
 - a ferromagnetic slide plate slideably situated between said first and the second plate members, said slide plate capable of being manipulated from the outside of the female frame,
 wherein said first and the second plate members and said slide plate have communicating openings through which said projection of the male member is inserted, wherein said recess in said projection is maintained in engagement with one of peripheral edges of said slide formed by the opening in said slide plate by magnetism produced by said projection when said projection is inserted through said openings.

5,377,393

SEAT BELT BUCKLE

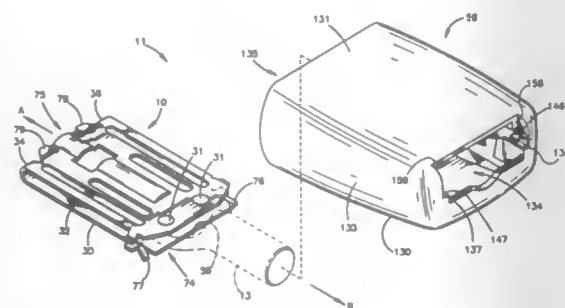
Robert P. Ellis, Romeo, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Sep. 3, 1993, Ser. No. 116,494

Int. Cl.⁶ A44B 11/00

U.S. Cl. 24—637

8 Claims



1. A seat belt buckle for receiving and locking a seat belt tongue, said buckle comprising:
 - a base including a first end portion and a second end portion located opposite said first end portion;
 - a latch mechanism supported on said base for engaging and locking the seat belt locking tongue to said base;
 - a buckle cover defining a cavity for receiving said base and said latch mechanism, said cover including a front portion and a rear portion located opposite said front portion;
 - said cover and said base having cooperating means for retaining said cover and said base against relative movement, said cooperating means including a first set of tabs at said first end portion of said base, a second set of tabs at

said second end portion of said base, first shoulder means on said cover at said rear portion for engaging said first set of tabs when said base is received in the cavity in said cover, and second shoulder means on said cover at said front portion for engaging said second set of tabs when said base is received in the cavity in said cover.

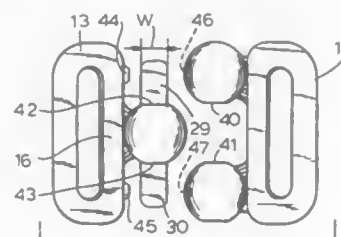
5,377,394

LINGERIE CLASP

Gerhard Fildan, Kriebhurggasse 31, A-1050 Vienna, Austria
Continuation-in-part of Ser. No. 4,039, Jan. 26, 1992, which is a continuation-in-part of Ser. No. 530,728, May 30, 1990, Pat. No. Des. 337,745. This application Dec. 22, 1993, Ser. No. 172,031Int. Cl.⁶ A44B 11/00, 21/00

U.S. Cl. 24—683

18 Claims



1. A lingerie clasp comprising:
 - a female clasp member comprising:
 - a body formed with an elongated loop adapted to receive a first strap, said loop having an inner and an outer bar, a pair of spaced-apart projections extending laterally from said inner bar and provided with generally spheroidal formations on a face side and with aligned channels on a reverse side, said channels each having an open end turned toward the other channel, said channels each opening at a slot narrower than a width of the respective channel over an entire length thereof, and
 - means bridging across ends of said channels opposite said open ends for increasing a tensile strength of the clasp; and
 - a male clasp member comprising:
 - a body formed with an elongated loop adapted to receive a second strap, said loop of said male clasp member having an inner and an outer bar,
 - a projection extending laterally from said inner bar of said male clasp member centrally thereof and provided with a spheroidal formation on a face side,
 - a pair of pins extending in opposite directions from said projections parallel to said inner bar of said male clasp member and receivable in said channels, said pins having widths accommodatable in said channels and greater than widths of said slots in a plane of said pins and the loop of said male clasp member, said pins having widths in a direction perpendicular to said plane less than the widths of said slots,
 whereby said pins of said male clasp member are insertable through said slots from the reverse side of said female clasp member with said clasp member being located at a right angle to one another and said clasp members are locked together upon relative rotation of said clasp members into coplanarity with said spheroidal formations being aligned on the face sides along an axis of said pins.

5,377,395

EXTERNALLY REMOVABLE CASKET HARDWARE

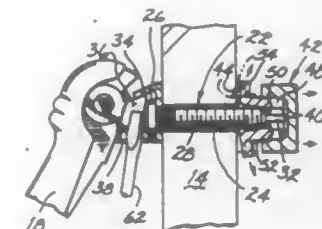
Donald R. Maier, Cincinnati, Ohio, and John E. Linville, Os-good, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed May 4, 1993, Ser. No. 57,655

Int. Cl.⁶ A61G 17/04

U.S. Cl. 27—2

22 Claims



1. A fastener assembly for removably attaching hardware to a wall of a casket comprising:
 - an elongated externally threaded bolt adapted to project through a hole in the casket wall;
 - securement means for threadably engaging said bolt inside the cabinet to removably secure the hardware to the casket wall; and
 - an ejector actuatable from outside the casket and operable upon actuation to force said securement means off said bolt such that said bolt may be withdrawn through the hole to detach the hardware from the casket without opening the casket.

5,377,396

METHOD OF MAKING A CONTINUOUS PLASTIC HINGE STRUCTURE

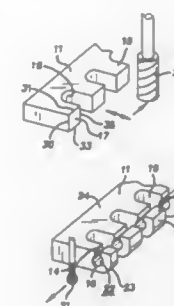
Thomas F. Moran, Jr., Chagrin Falls, Ohio, assignor to Qube Corporation, Chagrin Falls, Ohio

Filed Mar. 5, 1993, Ser. No. 26,603

Int. Cl.⁶ B21D 53/40; B21K 13/02

U.S. Cl. 29—11

8 Claims



1. A method of making a hinge joining rigid pieces each with top and bottom surfaces comprising, the steps of:
 - machining a series of parallel hinge knuckles along a first straight edge of a first piece of rigid plastic material at least one fourth inch thick and along a first straight edge of a second piece of rigid plastic material at least one fourth inch thick at the straight edges, each knuckle having a width from side-to-side and a distal end;
 - machining keyhole shaped passages perpendicular to the length of the hinge knuckles and across the width of the hinge knuckles of each of the first and second plastic pieces;
 - said keyhole shaped passages each being defined by a tubular

central portion and an outwardly extending slot of narrower width extending to one of a top or bottom surface of the respective knuckle;

each hinge knuckle having a width slightly less than the space between adjacent knuckles;

assembling the knuckles of the two pieces by interleaving the hinge knuckles of the two pieces so that the tubular central portions are aligned perpendicularly of the knuckles; and

inserting a hinge pin through the aligned tubular central portions to hinge together the first and second pieces.

5,377,397

BICYCLE DOWNTUBE PROCESSING MACHINE

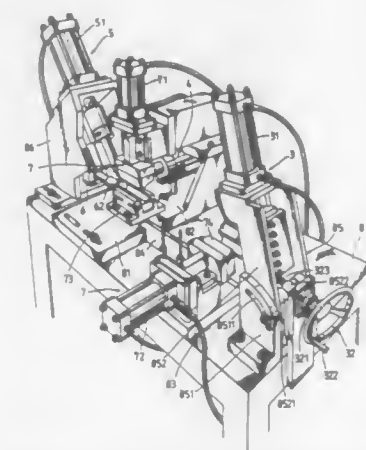
Chih-Wan Yu, and Chih-Yung Yu, both of No. 1-2, Kang-Hou Lane, Hsin Hsin Tsun, Ta Tsun Hsiang, Changhua Hsien, Taiwan, Prov. of China

Filed Feb. 25, 1994, Ser. No. 202,024

Int. Cl.⁶ B22P 13/02

U.S. Cl. 29—33 T

3 Claims



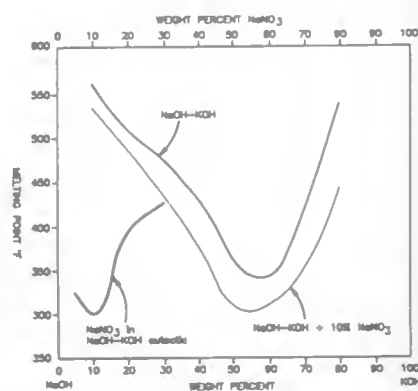
1. A bicycle downtube processing machine comprising:
 - a machine base having a left support on the left side at the top and a right support on the right side at the top;
 - a drill unit mounted on said machine base at the bottom for drilling holes on the downtube to be processed, said drill unit comprising a hydraulic cylinder and two drills mounted on the hydraulic cylinder and moved out of an opening on said machine base and controlled to drill holes on the downtube;
 - a first cutting unit mounted on said right support for cutting the right end of the downtube by punching, said first cutting unit comprising a first cutting tool and a hydraulic cylinder controlled to reciprocate said first cutting tool causing it to punch the right end of the downtube;
 - a second cutting unit for cutting a downwards bevel edge on the left end of the downtube by punching, said second cutting unit comprising a cutting tool and a hydraulic cylinder mounted on said second slide and controlled to reciprocate said second cutting tool causing it to punch the downwards bevel edge on the left end of the downtube;
 - a third cutting unit for cutting an inwardly curved top edge on the left end of the downtube by punching, said third cutting unit comprising a third cutting tool and a hydraulic cylinder mounted on said left support and controlled to move said third cutting tool causing it to punch an inwardly curved top edge on the left end of the downtube;
 - a first locating unit mounted on said left support at the bottom for moving the downtube to the processing position for processing, said first locating unit comprising a movable rod and a hydraulic cylinder to move said movable rod causing it to stop the downtube in the processing position;

a second locating unit mounted on said machine base in the middle at the top for holding down the downtube in position for processing, said second locating unit comprising a left hydraulic cylinder, a right hydraulic cylinder, a left jaw plate fastened between a first slide and a second slide on said machine base and moved by the right hydraulic cylinder; and

a control circuit for controlling the operation of the hydraulic cylinders of said first, second and third cutting units and said first and second locating units and said drill unit and the drills of said drill unit.

5,377,398
METHOD FOR DESCALING METAL STRIP UTILIZING ANHYDROUS SALT

Charles M. Bessey, Plymouth, Mich., assignor to Kolene Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 926,528, Aug. 5, 1992, Pat. No. 5,272,798. This application Apr. 8, 1993, Ser. No. 44,946
Int. Cl.⁶ B23P 9/00; C23F 4/00
U.S. Cl. 29—81.07 6 Claims



1. A method of descaling a metal having a surface layer of oxide scale thereon comprising the steps providing a metal article with scale thereon, providing a fused essentially anhydrous salt comprising by weight;

from about 40% to about 70% potassium hydroxide; from about 20% to about 55% sodium hydroxide; and from about 2% to about 30% of an alkali metal nitrate; and contacting the scaled surface of the metal with said fused salt for conditioning and partially removing the scale; and thereafter contacting the scaled surface of the metal with acid to completely remove the scale from the surface of the metal.

5,377,399
METHOD AND APPARATUS FOR DISASSEMBLING AND REASSEMBLING AN ARTICLE

Masazumi Ogawa, Kanagawa, Japan, assignor to Fujii Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 4, 1993, Ser. No. 145,642
Claims priority, application Japan, Nov. 4, 1992, 4-295443
Int. Cl.⁶ B23Q 17/00

U.S. Cl. 29—407

15 Claims

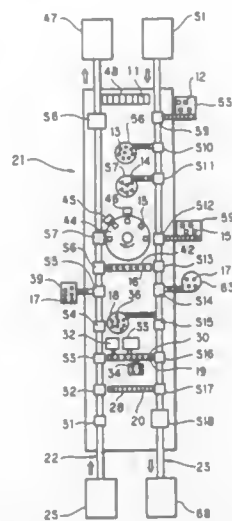
1. A method of disassembling a used article and assembling a new article which has the same construction as said used article, by reusing at least one part of said used article, said method comprising the steps of:

conveying said used article on a first line having a plurality of disassembling stations aligned thereon for sequentially disassembling said used article;

removing a first part from said used article at a first one of said disassembling stations;

transferring said first part from said first disassembling station directly to a corresponding assembling station through a transfer line, said corresponding assembling

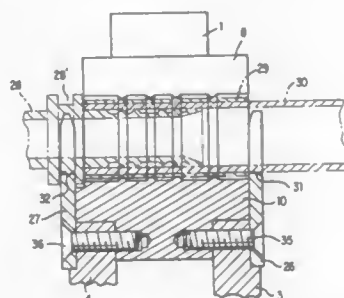
station being one of a plurality of assembling stations which are aligned on a second line for sequentially assembling said new article; and



mounting said first part, if reusable, at said corresponding assembling station to other parts of said new article which have been assembled in preceding ones of the assembling stations.

5,377,400
JOINTING CLAMP AND METHOD FOR PRESSING PIPE CONNECTIONS

Karl-Georg Homm, Marl-Polsum, Germany, assignor to Hewing GmbH, Ochtrup, Germany
Division of Ser. No. 830,815, Feb. 4, 1992, Pat. No. 5,307,664.
This application Nov. 9, 1993, Ser. No. 149,573
Claims priority, application Germany, Mar. 18, 1991, 9103264
Int. Cl.⁶ B21D 39/04 25 Claims



24. The method of joining together a pipe, a supporting sleeve and a pressing sleeve in which said pipe, said supporting sleeve and said pressing sleeve each have a longitudinal axis, said supporting sleeve having an outer cylindrical surface which has an interrupted part, the process comprising the steps of:

disposing said supporting sleeve in said pipe and disposing said pressing sleeve about said pipe to form a pre-assembled unit of the supporting sleeve within the pipe and the pipe within the pressing sleeve;

applying a jointing clamp having pressing members with ribs to said pre-assembled unit;

limiting axial moving of said supporting sleeve in both axial directions in said jointing clamp by engaging said supporting sleeve with said jointing clamp and thereby positioning said interrupted part of said supporting sleeve at a fixed predetermined position on said jointing clamp;

said step of limiting axial movement of said supporting sleeve in both axial positions to position said interrupted part in said predetermined position effecting positioning said interrupted part in axial alignment with said ribs on said pressing member such that said ribs radially overlie said interrupted part;

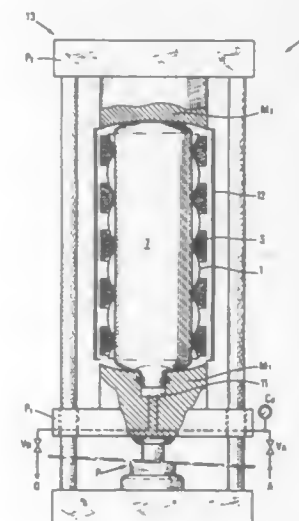
causing said jointing clamp to apply a generally radially inwardly directed pressing force to said pre-assembled unit such that said pressing sleeve, said pipe and said supporting sleeve are all radially pressed together with said ribs pressing radially inwardly toward the axially aligned underlying interrupted part of said supporting sleeve;

said pressing sleeve having a longitudinal end, and further comprising limiting axial movement of said pressing sleeve in one axial direction in said jointing clamp by engaging said terminating end of said pressing sleeve with said jointing clamp.

5,377,401
PROCESS FOR MANUFACTURING A METALLIC TANK
Michel Huvey, Bougival, France, assignor to Institut Français du Pétrole, Rueil-Malmaison, France
Filed Jul. 30, 1993, Ser. No. 99,587
Claims priority, application France, Jul. 31, 1992, 92 09643
Int. Cl.⁶ B21D 39/00

U.S. Cl. 29—523

13 Claims



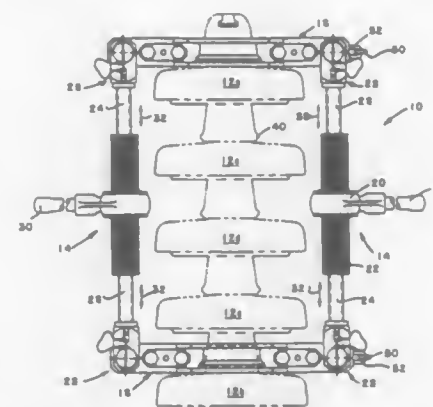
1. A process for manufacturing a metallic tank which comprises the following stages:

- providing a corrugated tube having a plurality of hollow outer parts, each part provided with a reinforcing element;
- placing inside the corrugated tube a metallic inner sheath of average plastic strain, said sheath comprising two ends separated by a cylindric zone of a length at least equal to the length of said corrugated tube, said inner sheath being provided with at least one opening in at least one of the ends; and
- forming the tank by exerting a longitudinal pressure on the ends of the inner sheath to place the sheath under compression and to expand the cylindric zone into contact with the corrugated tube thereby conforming the cylindric zone of the sheath to the shape of the corrugated tube.

5,377,402
ELECTRICAL INSULATOR CHANGE-OUT TOOL
Alan R. Semple, Jr., R.R. #1-Box 132, Monroe, N.H. 03771
Filed Oct. 27, 1993, Ser. No. 144,234
Int. Cl.⁶ H01R 43/00

U.S. Cl. 29—745

8 Claims



1. Apparatus for replacing electrical insulators in a string of insulators under strain, said apparatus comprising:

- a first strain relief assembly comprising: a ratchetable turnbuckle; and, two opposite-hand screws connected each at one end to and actuated by said ratchetable turnbuckle;
- a second strain relief assembly comprising: a ratchetable turnbuckle; and, two opposite-hand screws connected each at one end to and actuated by said ratchetable turnbuckle;
- a first strain diverter collar assembly comprising: two strain diverter halves having electrical insulator clamping means for clamping around one of said electrical insulators when the two strain diverter halves are secured together at both ends thereof; and, means for releasably securing together said strain diverter halves;
- a second strain diverter collar assembly comprising: two strain diverter halves having electrical insulator clamping means for clamping around one of said electrical insulators when the two strain diverter halves are secured together at both ends thereof; and, means for releasably securing together said strain diverter halves;
- means for releasably securing the first strain diverter collar assembly to corresponding screws of said opposite-hand screws in said first and second strain relief assemblies;
- means for releasably securing the second strain diverter collar assembly to the other corresponding screws of said opposite-hand screws in said first and second strain relief assemblies;

whereby when said ratchetable turnbuckles are actuated in one direction, strain on electrical insulators positioned between the two clamped electrical insulators is relieved and when the ratchetable turnbuckles are actuated in the opposite direction, strain is reapplied to the string of electrical insulators.

5,377,403
METHOD OF MANUFACTURING A PRESSURE SENSOR ASSEMBLY

John M. Hart, Jr., and John M. Matly, both of Kokomo, Ind., assignors to Delco Electronics Corp., Kokomo, Ind.
Division of Ser. No. 864,262, Apr. 6, 1992, Pat. No. 5,263,241.
This application Aug. 9, 1993, Ser. No. 103,146
Int. Cl.⁶ H01R 43/00

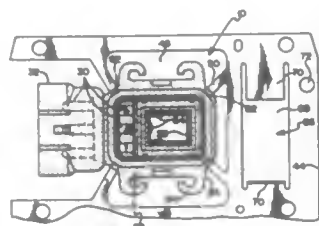
U.S. Cl. 29—827

3 Claims

1. A method of manufacturing pressure sensors each having

a molded housing with a peripheral wall and electrical circuits in the housing comprising the steps of:

- forming a carrier frame having a plurality of cells and deformable tabs extending into each cell, each cell being open at one side of the carrier frame to accommodate molding apparatus;
- molding a housing in each cell such that a portion of each deformable tab protrudes into the peripheral wall;
- after molding the housing in the cells, attaching a tie bar across the open sides of the cells to reinforce the frame;



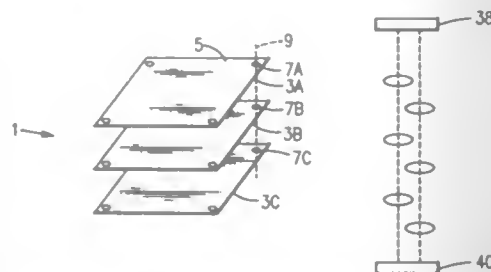
1. FORM CARRIER FRAME 10
2. POSITION LEAD FRAMES IN EACH CELL 11
3. POSITION MOLD IN EACH CELL 12
4. MOLD HOUSINGS IN EACH CELL 13
5. ATTACH TIE BAR 14 TO CARRIER FRAME 10
6. STACK & PROCESS REBARS 15
7. PUSH REBARS 15 OUT OF CARRIER FRAME 10

moving the carrier frame and housings to a plurality of assembly and processing stations for addition of other sensor parts to the housings and for circuit processing to complete pressure sensor assembly; and separating the housings from the carrier frame by pushing the housings out of the carrier frame such that the deformable tabs completely pull out of the housings leaving only dimples in the peripheral walls.

5,377,404

METHOD FOR FABRICATING A MULTI-LAYER PRINTED CIRCUIT BOARD

N. Edward Berg, 43 Smith Rd., Bedford, N.H. 03110
Continuation of Ser. No. 953,472, Sep. 29, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,166
Int. Cl.⁶ H05K 3/36; B23P 21/00
U.S. Cl. 29—830 11 Claims



1. A method of ensuring via or hole registration in a multi-layer printed circuit board comprising the steps in sequence of:
 - (a) forming and drilling at least one hole in a first board layer in at least one preselected position;
 - (b) illuminating at least a portion of a surface of said first board layer with light;
 - (c) detecting light passing through said at least one hole in said first board layer and determining the actual position of said at least one hole;
 - (d) generating in a computer a computer image representa-

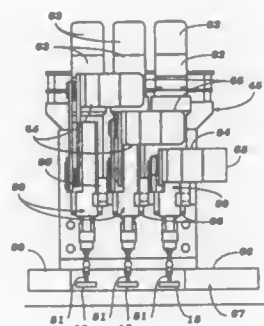
tive of said first board layer having said at least one hole in said actual position; and,

- (e) automatically adjusting said preselected position, by conformal mapping digital imaging techniques in said computer, so that said preselected position conforms to said actual position and using said adjusted preselected position to permit automatic formation and drilling of a next board layer without using a physical template.

5,377,405

METHOD FOR MOUNTING COMPONENTS AND AN APPARATUS THEREFOR

Hiroshi Sakurai; Hitooshi Onodera; Kenichi Indo, and Hiroyuki Ohta, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Jul. 1, 1993, Ser. No. 86,512
Claims priority, application Japan, Jul. 1, 1992, 4-174387; Aug. 7, 1992, 4-211838
Int. Cl.⁶ H05K 3/30; B23P 19/00
U.S. Cl. 29—833 56 Claims

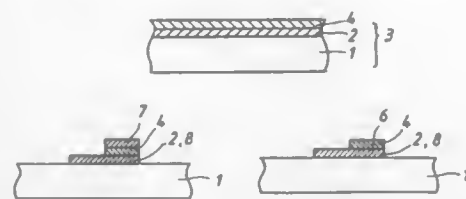


1. A method of picking up and mounting components with a apparatus comprising a carriage supported for translatory movement, a plurality of pick up devices carried by said carriage and each adapted to pick up a respective component and a sensing station for detecting information from components held by said pick up devices, said method comprising sensing of all components carried by each of said pick up devices in the sensing station a single position of said carriage.

5,377,406

PROCESS FOR PRODUCING A PRINTED CIRCUIT BOARD

Masuo Matsumoto; Naohiro Yoshida, and Masaru Kojima, all of Saltama, Japan, assignors to CMK Corporation, Japan
Filed Nov. 29, 1993, Ser. No. 158,300
Claims priority, application Japan, Nov. 27, 1992, 4-341476
Int. Cl.⁶ H05K 3/02
U.S. Cl. 29—846 17 Claims



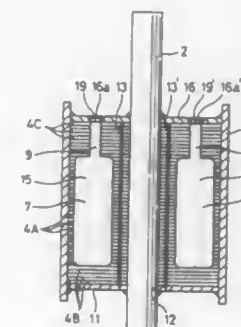
1. A process for producing a printed circuit board, comprising the steps of:
 - providing a copper-clad laminate comprising a substrate and, superimposed thereon, a copper foil having its entire surface covered with a solder foil,
 - applying an etching resist to the surface of the solder foil at areas corresponding to a predetermined conductor circuit pattern,
 - simultaneously etching the solder and copper foils to remove

the same at the areas other than those defined above, thereby forming a printed circuit, stripping off the etching resist on the printed circuit, and removing unneeded portions of the solder foil on the printed circuit.

5,377,407

SCREW ROTOR AND METHOD OF MANUFACTURING THE SAME

Tsutomu Takahashi, and Shuhei Nakahama, both of Tokyo, Japan, assignors to Ebara Corporation, Tokyo, Japan
Division of Ser. No. 961,524, Oct. 15, 1992, Pat. No. 5,290,150.
This application Nov. 1, 1993, Ser. No. 144,354
Claims priority, application Japan, Oct. 17, 1991, 3-298373
Int. Cl.⁶ B23P 15/00
U.S. Cl. 29—889 7 Claims



1. A method of manufacturing a screw rotor for use in a hydraulic machine comprising the steps of:
 - preparing a number of thin plates each having the same outer profile and at least one opening, said thin plates further having a through hole for receiving a shaft at a center portion thereof;
 - stacking said thin plates in such a manner that said through hole of said thin plate receives said shaft;
 - filling a cavity formed by said openings of said stacked thin plates with powdery pressure medium; and
 - bonding said stacked thin plates with one another by diffusion bonding under a hot isostatic pressing process.

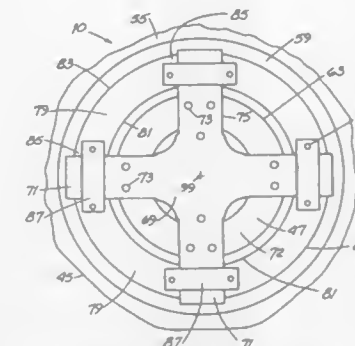
5,377,408

METHOD FOR RETAINING A PIN

Harvey J. Kallenberger, Wind Lake, and Emeric G. Tossenberger, Nashotah, both of Wis., assignors to Harnischfeger Corporation, Brookfield, Wis.
Division of Ser. No. 921,846, Jun. 29, 1992, Pat. No. 5,290,119.
This application Oct. 1, 1993, Ser. No. 130,235
Int. Cl.⁶ B23P 11/00
U.S. Cl. 29—898.07 4 Claims

1. A method of assembling machine components including a housing and a pin, the method including the steps of:
 - providing a pin retainer having a plurality of arms;
 - attaching the retainer to the pin;
 - inserting the pin in an opening in the housing; and
 - mounting a plurality of abutment members on the housing,

each abutment member being in contact with at least one arm,

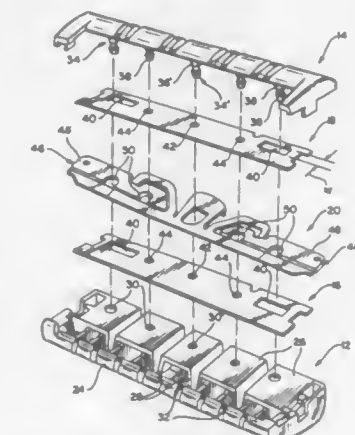


whereby there is substantially zero clearance between each abutment member and an arm and the pin is prevented from rotating with respect to the housing.

5,377,409

ONE-PUSH CLEANING MECHANISM FOR FLEXIBLE WET-SHAVING RAZOR UNIT

Evan N. Chen, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Oct. 8, 1992, Ser. No. 958,407
Int. Cl.⁶ B26B 21/22
U.S. Cl. 30—41 33 Claims



1. A twin-blade, flexible, wet-shaving razor unit in combination with a one-push cleaning mechanism for removing shaving debris, said razor unit formed with a plurality of blade platforms interconnected by a plurality of living hinges, said razor unit including a centrally-positioned blade platform and, a cap and seat blades, each of said blades having a cutting edge for shaving, and a centrally-fixed securing post extending through said cleaning mechanism, said cleaning mechanism comprising:

an ejector bar coextensive with said blades and operable between a biased position wherein said ejector bar is advanced forward of said cutting edge of said cap blade and a non-biased position wherein said ejector bar is retracted rearward of said cutting edge of said cap blade and wherein only a portion of said ejector bar traverses the living hinges adjacent said centrally-positioned blade platform;

an actuator fixed to said ejector bar for actuation by a user to advance said bar to eject said debris;

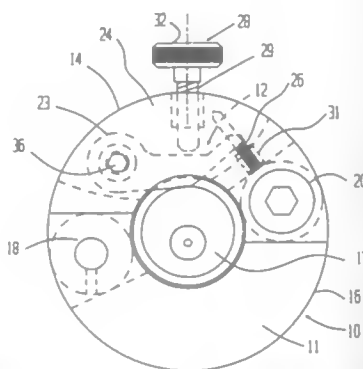
a stabilized assembly section securable to said razor unit and configured to accommodate transverse movement of said blades during flexing;

securing posts for securing said stabilized assembly section to said razor unit;
wherein said actuator is integrally formed with said ejector bar and said actuator includes a centrally-positioned slot extending in a direction substantially perpendicular to the cutting edges of said blades for receiving said centrally-fixed securing post;
openings located to accommodate said securing posts for securing said stabilized assembly section to said razor unit, said actuator and said ejector bar; and
wherein said actuator and said ejector bar are comprised of a continuous thermoplastic body and said openings are configured such that a minimal amount of thermoplastic material is located in the region of maximum flexing, adjacent to the centrally-fixed securing post.

5,377,410
CUTTER FOR STRAND-ENCIRCLING SHEATHS
Wade Welch, 1935 Lukens Ave., Willow Grove, Pa. 19090
Filed Oct. 25, 1993, Ser. No. 142,233
Int. Cl.⁶ H02G 1/12

U.S. Cl. 30—90.1

9 Claims



1. An apparatus for cutting a cable sheath comprising:
a housing defining a passage through which a cable having a sheath is placed;
a first recess in said housing disposed transversely of said passage, said recess having a transversely extending elongated opening communicating with said passage;
a first blade assembly including a blade having a cutting edge;
means for movably mounting said blade within said first recess, said mounting means allowing movement of said blade from a first position in which the blade is retracted within said recess and a second position in which the cutting edge is within said passage; and
means disposed adjacent to said opening for adjustably moving said blade through said opening and into said second position within said passage and means for returning said blade to said first position, wherein said means for adjustably moving said blade comprises a screw, a threaded opening dimensioned to receive said screw and extending through said housing into said recess, said screw being received within said opening and being rotatable in a first direction to push said blade to said second position.

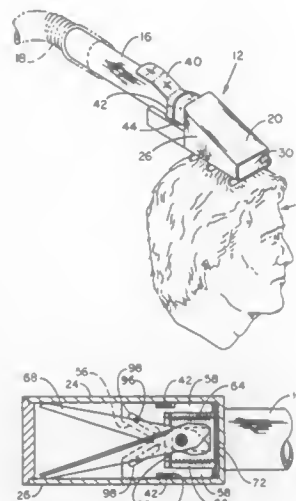
5,377,411
HAIR CUTTING APPLIANCE
Demetrios Andriotis, 19 Alden Ave., Trumbull, Conn. 06611
Filed Jul. 1, 1993, Ser. No. 84,147
Int. Cl.⁶ B26B 19/44, 19/20

U.S. Cl. 30—133

8 Claims

1. A haircutting appliance for connection to a vacuum source to carry away cut hairs comprising,
an enclosed housing having a first opening to a vacuum source and having a second opening permitting entry of hair to be cut therein,

a pair of moveable shear members operably disposed within the housing for cutting hair upon movement thereof,
a handle extending from said housing to be held by a hand of a user of the appliance for cutting hair,
finger depressible means including a member pivotally mounted on an exterior portion of said housing and having at least one leg projecting into said housing,
said pivotal member being in juxtaposition to said handle for operation by the same hand of the user holding said handle to operate the appliance and,

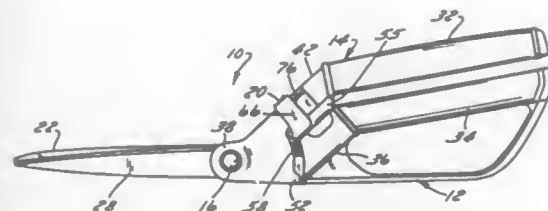


a motion transmitting mechanism interconnecting said shear members and said at least one leg of the finger depressible member for imparting motion of said finger depressible means to said shear members,
said motion transmitting mechanism including a plate engaged by said at least one leg and supported for sliding movement such that said plate is moved in one direction by movement of the at least one leg of said member of the finger depressible means to operate the shear members to cut hair entering said housing, and spring means connected to said plate to normally urge said plate in an opposite direction.

5,377,412
SOFTOUCH SCISSORS
Robert T. Schofield, Madison; Craig H. Melter, Baraboo, and Douglas J. Brkholz, De Forest, all of Wis., assignors to Fiskars Oy Ab, Helsinki, Finland
Continuation-in-part of Ser. No. 815,287, Dec. 27, 1991, Pat. No. 5,179,783. This application Nov. 17, 1992, Ser. No. 978,211
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.⁶ B26B 13/16

U.S. Cl. 30—262

12 Claims



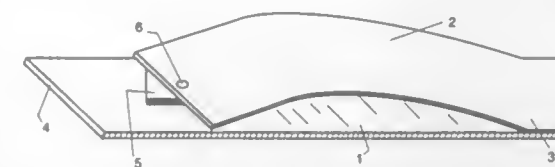
1. A soft touch scissors comprising:
a first blade assembly including a first handle and a first blade having a tang molded in the first handle,

a second blade assembly including a second handle and a second blade having a tang molded in the second handle, means pivotally connecting said blade assemblies, said first handle including a rib on the top of said first handle and said second handle including a rib on the bottom of said second handle in a position to engage said rib on said first handle to limit the opening movement of said blade assemblies, a tab on said second rib and means on said second handle for engaging said tab on closing said blade assemblies to lock said blades in a closed position.

5,377,413
RETRACTING CUTTER
Joseph H. Masse, P.O. Box 63037, New Bedford, Mass. 02736-0898
Continuation-in-part of Ser. No. 746,997, Aug. 19, 1991, Pat. No. 5,208,983. This application May 11, 1993, Ser. No. 60,347
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.⁶ B25G 1/00

U.S. Cl. 30—340

17 Claims

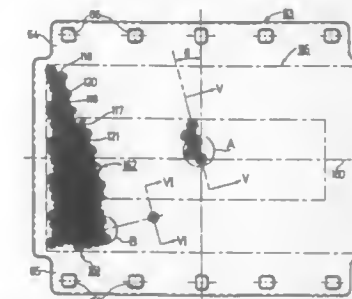


1. An adjustable self-retracting instrument comprising:
(a) a primary functional section of said instrument;
(b) a first curved leg having upper and lower ends, said section being located at the lower end of said first leg; and
(c) a second shorter less curved leg having upper and lower ends, wherein at least one leg is made from a resilient material, said second leg being attached to said first leg at the upper end and resting against said section, whereby when said legs are compressed together said section extends beyond said second leg.

5,377,414
SHAVING APPARATUS HAVING A FOIL-LIKE UPPER CUTTER AND A FOIL-LIKE LOWER CUTTER
Valentin Buzzi, Klagenfurt, and Ferdinand Sereinig, Velden, both of Austria, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 1, 1993, Ser. No. 146,512
Claims priority, application Austria, Nov. 25, 1992, 2335/92
Int. Cl.⁶ B26B 19/26

U.S. Cl. 30—346.51

6 Claims



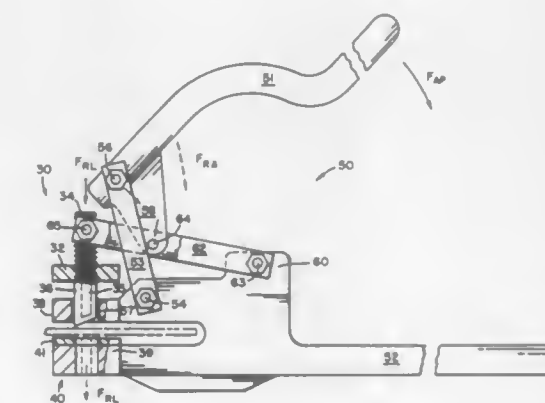
1. A shaving apparatus comprising a foil-like lower cutter having a shaving area defined by a circularly cylindrical surface and provided with hair-entry apertures which are separated from one another by webs and bounded by bounding surfaces, which lower cutter can be driven with a combined movement which is performed substantially along a circular path projected on a circularly cylindrical surface, and comprising a foil-like upper cutter having a shaving area engaging with

the shaving area of the lower cutter and provided with hair-entry apertures which are separated from one another by webs and bounded by bounding surfaces, all the bounding surfaces of all the hair-entry apertures terminating in cutting edges, characterized in that in its planar condition the lower cutter has hair-entry apertures with six bounding surfaces terminating in six cutting edges arranged as a regular hexagon, said hexagonal hair-entry apertures being arranged in a honeycomb pattern, in its planar condition the upper cutter has hair-entry apertures with four bounding surfaces terminating in four cutting edges arranged as a square, each of these square hair-entry apertures belonging to two rows of square hair-entry apertures, which rows intersect one another at right angles, and a further hair-entry aperture is situated between every two adjacent square hair-entry apertures, which further hair-entry aperture has bounding surfaces terminating in cutting edges arranged in the form of a narrow slot, two of the cutting edges extending parallel to the adjacent cutting edges of the adjacent square hair-entry apertures, and when the cutters are superposed as in the shaving apparatus but are in their flat condition the direction of two mutually parallel cutting edges of the square hair-entry apertures of the upper cutter and the direction of two mutually parallel cutting edges of the hexagonal hair-entry apertures of the lower cutter subtend an angle between 5° and 25°.

5,377,415
SHEET MATERIAL PUNCH
John Gibson, 12 Overlook Ave., Troy, N.Y. 12180
Filed Dec. 10, 1993, Ser. No. 165,332
Int. Cl.⁶ B26F 1/02

U.S. Cl. 30—363

12 Claims



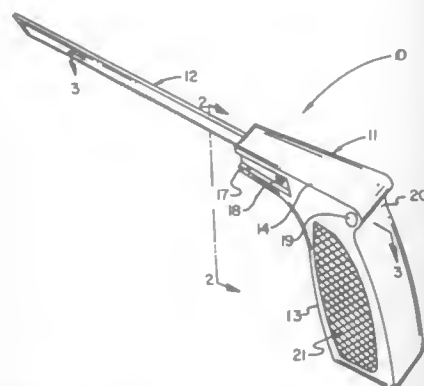
1. An improved sheet metal punch tool including an elongate base arm, an elongate and inflected force application arm pivotally connected to said base arm and a punch subassembly disposed proximate an end of at least one of said arms, said punch tool comprising:

the said base arm having a bifurcated end further comprising a lower matrix means, which includes a die base and die plate, and an upper guide plate in set-apart, fixed parallel-plane registry therewith, at least one dual-pivot fulcrum link pivotally connected to said base arm proximate said bifurcated end to form a first pivot, and pivotally connected to said force application arm proximate a first end thereof to form a second pivot, said fulcrum link defining a common, primary fulcrum for said base and said force application arms;
a secondary fulcrum disposed on said force application arm, facing said base arm, and further disposed proximate said second pivot between said second pivot and a second end of said force application arm;
a tertiary fulcrum disposed on said base arm, facing said force application arm, and further disposed between said primary fulcrum and the second end of said base arm;

an improved punch subassembly comprising a horizontally disposed mounting plate, two or more elongate cutting tools aligned and projecting orthogonally from a base of said mounting plate and a post which projects orthogonally from a top of said mounting plate, said tools oriented for movable disposition into said upper guide means and thence into said matrix means; and

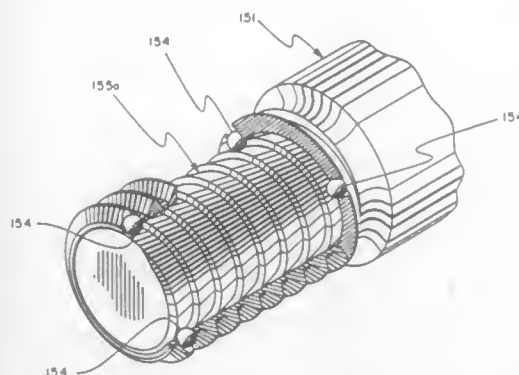
a straight lever containing at least three holes therealong and which is pivotally connected at each of said three holes to said tertiary fulcrum, said secondary fulcrum and said orthogonal post, respectively, whereby a force applied to said second end of said force application arm and towards said base arm is multiplied and transmitted to said secondary fulcrum and thence to said straight lever at a point between said orthogonal post and said tertiary fulcrum thereby effecting a force for driving said tools through said guide means towards and into said matrix means.

5,377,416
HACKSAW
Mark A. Petraccoro, 350 Queen Haven Rd., Hubert, N.C. 28539
Filed Jan. 27, 1994, Ser. No. 186,992
Int. Cl.⁶ B23D 49/12
U.S. Cl. 30—517 1 Claim



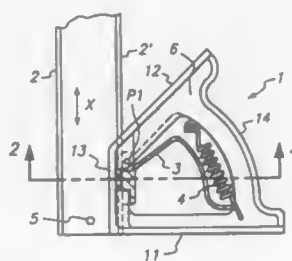
1. A hacksaw assembly, comprising:
an elongate hacksaw blade having a blade first end spaced from a blade second end;
an L-shaped handle, the L-shaped handle including a handle body and a handle head obliquely mounted to the handle body, with the handle head having a head front wall spaced from a head rear wall, and spaced head side walls, the head front wall having a slot formed therewithin which receives the hacksaw blade first end, each of said side walls including a recess coextensive and aligned to flank said slot, said recesses extending from said head front wall, said handle body having a knurled surface formed along at least a portion of said handle body to enhance gripping of the device, said handle head having a stop protection formed at said head rear wall along a juncture of said handle head with said handle body, said handle head having a mounting bore directed through said stop projection to permit mounting of the hacksaw on a support rod; and,
a fastener member positioned within the recess and directed through both side walls and the hacksaw blade to secure the blade within the slot.

5,377,417
THREAD PITCH CYLINDER GAGE
Gerald K. Sentman, 831 S. Post Rd., Indianapolis, Ind. 46239
PCT No. PCT/US90/06276, § 371 Date Apr. 30, 1993, § 102(e)
Date Apr. 30, 1993, PCT Pub. No. WO92/08099, PCT Pub. Date May 14, 1992
Continuation-in-part of Ser. No. 248,433, Sep. 23, 1988, Pat. No. 4,965,936. This PCT application Oct. 29, 1990, Ser. No. 50,222
Int. Cl.⁶ G01B 3/48
U.S. Cl. 33—199 R 26 Claims



1. A gage, comprising:
a housing having at least one radial cavity therein;
a helical cam coaxial with said housing, said helical cam rotatably mounted and axially fixed with respect to said housing and said cavity; and
a contact element radially aligned with respect to said helical cam and each said cavity;
said helical cam being dimensioned such that upon rotation of said helical cam, each said contact element moves with respect to each said cavity.

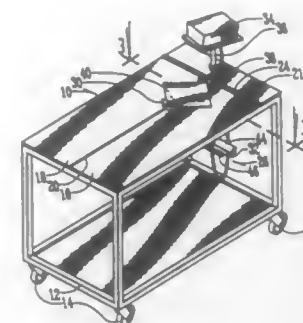
5,377,418
T-SQUARE, AND METHODS OF CONSTRUCTION AND UTILIZING SAME
Dean H. Anderson, P.O. Box 341, Garrison, N.Y. 10524
Filed Aug. 23, 1993, Ser. No. 110,316
Int. Cl.⁶ B43L 7/14
U.S. Cl. 33—478 14 Claims



1. A tool square device, comprising:
a scale having a flared peripheral edge;
a base having a slot defined through one side thereof, said slot being shaped to slidably receive said flared peripheral edge of said scale therein; and
means, connected to said base, for locking said base into position along said scale;
said locking means comprising a substantially U-shaped trigger member pivotally connected to said base, said trigger member having a pressure pad fixed at one end thereof which is selectively movable within said slot for engagement with said flared peripheral edge of said scale as said trigger member is pivoted relative to said base, and having a grippable portion at another end thereof for being selectively gripped by a user's hand to effect

pivoting movements of said trigger member relative to said base.

5,377,419
METHOD AND MEANS FOR MEASURING SQUARENESS OF TWO OPPOSING CORNERS ON PLATE STRUCTURES
Dennis R. Hesselstine, 1208 15th St., West Des Moines, Iowa 50265
Filed May 24, 1993, Ser. No. 64,898
Int. Cl.⁶ G01B 5/24
U.S. Cl. 33—535 11 Claims

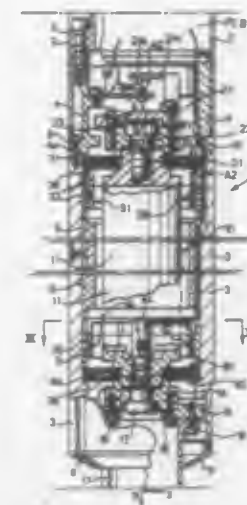


1. A device for measuring the squareness of fabricated plate structures on a measuring table having legs, a supported flat table surface with opposite sides and ends, a straight reference gauge means affixed to said table near one of said ends and extending across the top of said table surface, and an elongated straight slot through said table surface extending in a direction at right angles to said gauge means, said device comprising:
a linearly stationary yet pivotal contact bracket, mounted to said table in said slot and adjacent to said straight reference gauge means, for receiving the plate structure to be measured;
a carriage means mounted to the underside of said table for movement along said slot;
a movable contact for measuring the plate structures, pivotally connected to said carriage means and spaced apart from said linearly stationary yet pivotal bracket by movement of said carriage means so as to provide a measurement of the plate; and
a microprocessor operatively connected to said linearly stationary and movable contacts for electronically processing, storing and displaying said measurements.

5,377,420
FEELER DEVICE, PARTICULARLY FOR COPYING MACHINES
Mario Vesco, and Giancarlo Zaramella, both of Turin, Italy, assignors to Fidia S.p.A., San Mauro Torinese, Italy
Filed Dec. 22, 1993, Ser. No. 171,667
Claims priority, application Italy, Dec. 24, 1992, TO9-2A01042
Int. Cl.⁶ G01B 11/24, 5/20
U.S. Cl. 33—559 15 Claims

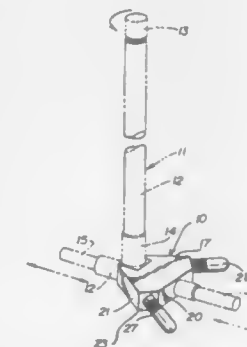
1. A feeler device particularly for copying machines comprising
a support structure,
an elongate movable member supported by said structure by resilient suspension means operable to allow the movable member to perform limited displacements with respect to this structure along three independent axes with respect to a predetermined rest position; said movable member carrying at one end a feeler element; and
sensor means operable to provide electrical signals indicative of the magnitude and sign of the displacements along said axes of the movable member with respect to the support structure; said suspension means comprising at least first and second laminar members each of which has

an aperture; a spiral slot being formed in the region lying between the outer edge and the inner edge of each laminar member, said slot extends around said aperture for an angle greater than 360°;



said laminar members being interposed between the support structure and the movable member in respective transverse positions spaced along the axes of said member; the peripheral portion and the portion surrounding the aperture of each laminar member being secured one to the support structure and the other to the movable member.

5,377,421
CENTERING TOOL FOR CYLINDER GAUGE
David Isler, 113 W. Church, Newton Falls, Ohio 44444
Filed Apr. 30, 1993, Ser. No. 54,288
Int. Cl.⁶ G01B 5/12
U.S. Cl. 33—542 6 Claims



1. In combination, a centering tool for use with telescopic cylinder wall gauges to measure inside diameter, said telescopic cylinder wall gauges comprise a T-shaped mounting body, an elongated tubular handle extending therefrom, a locking screw on the end of said handle, a pair of oppositely disposed spring loaded contact plungers extending from said mounting body, said centering tool comprises: a mounting base having spaced angularly disposed aperture mounting surfaces, centering pins in fixed relation within said respective mounting surfaces, a bore extending through said mounting base and horizontally aligned with said centering pins, means for aligning and securing said centering tool on said T-shaped mounting body of said telescopic cylinder wall gauge.

5,377,422

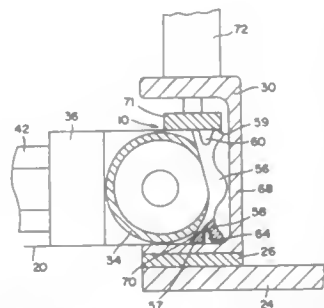
ROLLER FRAME ALIGNMENT BRACKET

Donald E. Newman, Wyncote, Pa., assignor to Stretch Devices, Inc., Philadelphia, Pa.

Filed Oct. 26, 1993, Ser. No. 143,791

Int. Cl.⁶ B41B 11/00; B41F 1/34

U.S. Cl. 33—620



1. A registration apparatus for a printing screen and an image platform, the apparatus comprising:
a screen tensioning and printing frame,
the frame having a plurality of rollers coupled together by corner members which support the rollers for rotation about their longitudinal axes, each roller having a means for retaining an edge portion of a screen fabric,
means associated with each corner member for locking each roller in a predetermined rotative position so that a desired tension may be applied to the screen fabric,
the means for locking one of the roller having a pair of fasteners, each fastener extending through the associated corner member into engagement with the roller and a pair of adapters interposed between the fasteners and the associated corner member,
a registration member associated with the image platform, and
the adapter and the registration member having coupling means for removable linking the printing frame to the registration member, the coupling means having a pair of pins received by a hole and a slot.

5,377,423

SLUDGE DEHYDRATING PRESS AND METHOD FOR TREATING SLUDGE

Tadayoshi Nagaoka, Mihara, Japan, assignor to Naganka International Corporation, Japan

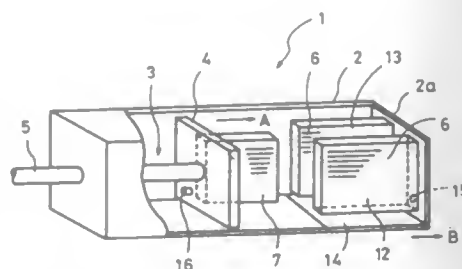
Filed Aug. 31, 1993, Ser. No. 115,193

Claims priority, application Japan, Sep. 11, 1992, 4-269250

Int. Cl.⁶ F26B 19/00

U.S. Cl. 34—70

10 Claims



1. A sludge dehydrating press comprising:
a container in which sludge to be treated is filled;
press means for pressing sludge filled in the container;
one or more screen cases disposed at positions in the container where water can be extracted from the sludge in substantially all portions of the sludge pressed by the press means, each of said screen cases having a screen surface extending parallel to the direction of pressing by said press

means and having also a space into which water extracted from the sludge flows.

5,377,424

BODY DRYING SYSTEM

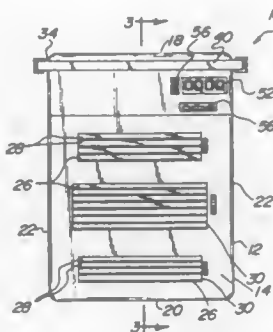
Leandro R. Albanes, 605 W. Madison, Tower III/ 2907, Chicago, Ill. 60661

Filed Oct. 18, 1993, Ser. No. 137,404

Int. Cl.⁶ F26B 19/00

U.S. Cl. 34—90

4 Claims



1. A body drying system for blow drying the entire body of an individual after bathing comprising:
a substantially rectangular housing having a forward face, a rearward face, an upper surface and a lower surface, a plurality of apertures formed within the forward face, the plurality of apertures being six circular apertures positioned in two columns and wherein each set of louvers is a plurality comprised of louver elements which extend radially outward from the center of each of the circular apertures, each set of louvers being rotatively coupled to one of the circular apertures, the rectangular housing dimensioned to be received with its forward face adjacent to a towel rack and its rearward face adjacent to a bathroom wall onto which the rack is mounted;
a set of louvers positioned within each of the apertures of the housing;
a heating element positioned within the housing adjacent the forward face;
a blower positioned within the housing intermediate the rearward face and the heating element, the blower serving to direct air towards the apertures of the housing;
a timing mechanism positioned within the forward face of the housing, the timing mechanism operatively coupled to both the heating element and the blower; and
a temperature control switch positioned within the forward face of the housing, the switch having settings corresponding to low, medium and high, the temperature control switch operatively coupled to the heating element.

5,377,425

VACUUM DRYING APPARATUS

Osamu Kawakami, Itami, and Kaichi Tsuruta, Mouka, both of Japan, assignors to Nikken Industry Co., Ltd., Itami and Senju Metal Industry Co., Ltd., Tokyo, both of Japan

PCT No. PCT/JP92/00657, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/20984, PCT Pub. Date Nov. 26, 1992

PCT Filed May 22, 1992, Ser. No. 934,655

Claims priority, application Japan, May 24, 1991, 3-046511[U]

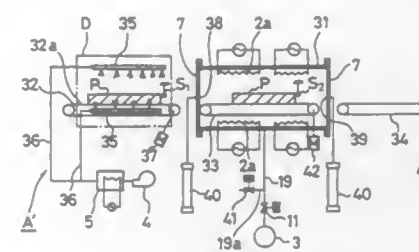
Int. Cl.⁶ F26B 13/30

U.S. Cl. 34—92

2 Claims

1. A vacuum drying apparatus characterized by a means for pre-heating a product by hot air, incorporated in a vacuum container having a heater housed therein and in that the vacuum container having a heater housed therein contains one of

plural serially arranged conveyers and that said means includes a hot air blow-out device provided to a conveyer located



upstream of said one of said plural serially arranged conveyers provided with the vacuum container.

5,377,427

HAND-DRYING APPARATUS WITH ROTATING TOWEL SUPPORT

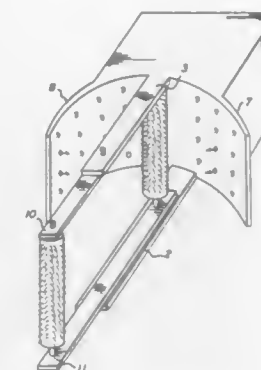
Moshe Mashata, 9761 NW. 33 Manor, Sunrise, Fla. 33351

Filed Jul. 27, 1993, Ser. No. 98,228

Int. Cl.⁶ F26B 19/00

U.S. Cl. 34—275

14 Claims



1. An automatic hand drying apparatus, comprising:
a housing defining an inner space;
an arm member attached to and extending away from said housing;
a rotating towel roller supported on said arm member;
drive means disposed in said housing for rotating said rotating towel means.

5,377,426

MICROWAVE-ASSISTED GENERATION OF VOLATILES, OF SUPERCRITICAL FLUID, AND APPARATUS THEREFOR

J. R. Jocelyn Paré, Gloucester, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of the Environment, Ontario, Canada

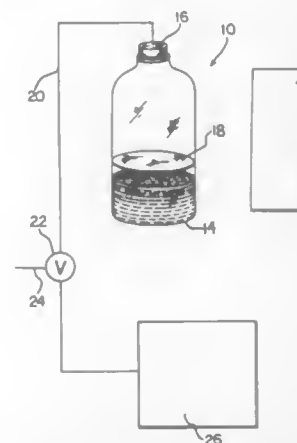
Filed Feb. 2, 1993, Ser. No. 12,475

Claims priority, application Canada, Feb. 10, 1992, 2060931

Int. Cl.⁶ F26B 3/34

U.S. Cl. 34—259

17 Claims



1. A method for expressing volatilizable components from a matrix selected from the group consisting of liquid and solid matrices containing said volatilizable components comprising:
enclosing a matrix having volatilizable components dispersed therein in a container having a selectively permeable membrane associated therewith, said membrane being adapted to pass selectively at least one volatilized component;
exposing said matrix to microwave energy to effect volatilization of at least one of said volatilizable components;
separating at least one volatilized component from said matrix by selectively passing the volatilized component through said membrane as a pressurized gaseous phase; and
recovering at least one separated component.

5,377,428

TEMPERATURE SENSING DRYER PROFILE CONTROL

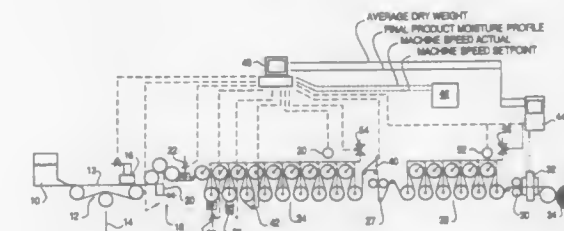
Ralph C. Clark, Ashwaubenon, assignor to James River Corporation of Virginia, Richmond, Va.

Filed Sep. 14, 1993, Ser. No. 120,449

Int. Cl.⁶ F26B 3/00

U.S. Cl. 34—446

36 Claims



1. A drying control system for a papermaking process adaptable for use with a conventional papermaking machine which forms and then dries a wet web of paper to about a 3% moisture content, wherein said control system includes:

- a cross-direction drying means controllable to modify the temperature across the web;
- temperature detection means for determining a cross-direction temperature profile of the web;
- modulation means for controlling the cross-direction drying means in response to variations in the temperature profile to reduce variations in the cross-direction temperature profile; and
- central control means for controlling said cross-direction drying means and said modulation means in response to said temperature profile received from said temperature detection means to produce a substantially uniformly dried web.

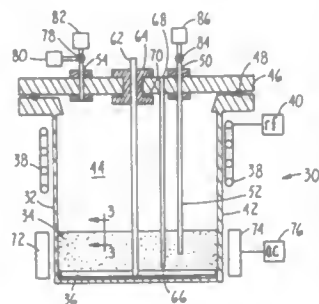
5,377,429
METHOD AND APPARATUS FOR SUBLIMING PRECURSORS

Gurtej S. Sandha; Scott G. Meikle, and Donald L. Westmoreland, all of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Apr. 19, 1993, Ser. No. 49,565
Int. Cl.⁶ F26B 13/30

U.S. Cl. 34—586

11 Claims



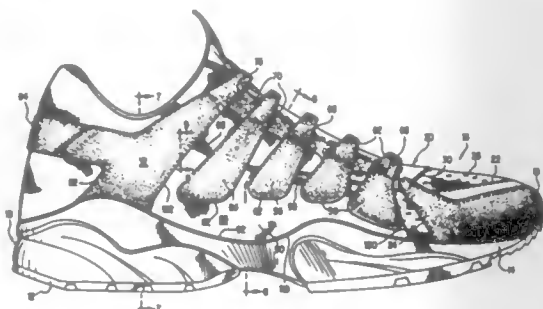
1. An apparatus for subliming a solid precursor comprising: a sealable container having a vacuum chamber connected to a vacuum source and to a supply of a carrier gas; a particulate material placed within the container and formed of individual particles of a size and shape to provide a large total sublimation area for a precursor material which coats the individual particles and with the individual particles loosely packed together to provide pockets between adjacent particles; gas flow means associated with the container for directly the carrier gas through the particulate material and for directing a precursor gas from the vacuum chamber; heating means associated with the container for heating the vacuum chamber and particulate material; and agitating means associated with the container for agitating the particulate material so that the carrier gas can move through the particulate material to provide a relatively constant sublimation area.

5,377,430
SHOE WITH ELASTIC CLOSURE SYSTEM
Tinker L. Hatfield, and William M. Dieter, both of Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Sep. 17, 1993, Ser. No. 122,335
Int. Cl.⁶ A43B 11/00

U.S. Cl. 36—51

32 Claims



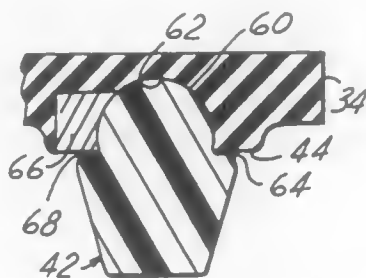
1. A shoe having a closure system for securing and fitting the shoe to a foot, comprising: an upper for surrounding the foot, the upper including an inner portion; a sole; elastic material having an upper edge and a lower edge, said lower edge being secured along the base of the upper on the medial and lateral sides and the upper edge being separate and disconnected from the upper; a plurality of straps separately attached adjacent a lower end

thereof to said elastic material, said straps made of a substantially inelastic material; closure means, disposed at the upper ends of said straps, for drawing the straps about the foot to place said elastic material disposed along said medial and lateral sides under tension independently of the tension in the inner portion of the upper; and a rearward strap in addition to said plurality of straps, said rearward strap disposed rearward of said plurality of straps and having an upper end and a lower end, said rearward strap lower end secured along the base of the upper and said elastic material attached to said rearward strap at a point in between said upper and lower ends.

5,377,431
DIRECTIONALLY YIELDABLE CLEAT ASSEMBLY
Andrew S. Walker, 815 Southfield, Birmingham, Mich. 48009, and Elwyn Gooding, 2989 W. N. Territorial, Ann Arbor, Mich. 48105

Filed Jun. 15, 1993, Ser. No. 78,628
Int. Cl.⁶ A43C 15/16, 15/00; A43B 5/00
U.S. Cl. 36—134

36 Claims



1. An athletic shoe in combination with a cleat assembly, said shoe having an upper portion and a sole, said shoe having a longitudinal axis extending along the length thereof, said cleat assembly comprising: at least one cleat member, means for mounting said cleat member to the sole so that said cleat member depends outwardly from the sole, means for permitting a greater magnitude of lateral deflection of said cleat member in response to a predetermined shear force imposed on the cleat member in a first lateral direction with respect to the longitudinal axis of the shoe than deflection of the cleat member in response to said predetermined shear force imposed on the cleat member in directions other than said first lateral direction.

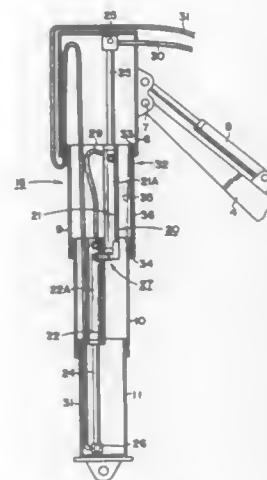
5,377,432
DEEP EXCAVATOR
Mitsuhiro Kishi, Ashikaga, Japan, assignor to Japanic Corporation, Ashikaga, Japan
Continuation-in-part of Ser. No. 30,844, Mar. 12, 1993. This application Oct. 19, 1993, Ser. No. 139,217
Claims priority, application Japan, Oct. 29, 1992, 4-313973
Int. Cl.⁶ B66C 23/00

U.S. Cl. 37—186

9 Claims

1. A deep excavator comprising: a chassis, a turntable disposed on the chassis, a boom which is pivotally supported on the turntable and is vertically swingable, a stretchable arm arrangement which is stretchable in the longitudinal direction thereof and comprises four telescopically assembled outer, base, middle and top arms, a working unit accommodated in said stretchable arm arrangement for extending and contracting said arm arrangement, and a bucket which is attached to the top arm for excavating and holding earth or sand, wherein: said working unit comprises first and second hydraulic cylinder units which are arranged in parallel with each other

with respective first and second elongate cylinder rods thereof disposed to operate in opposite directions, wherein said first hydraulic cylinder unit includes a housing coupled to the base while the cylinder rod thereof is coupled to the outer arm, wherein said second hydraulic



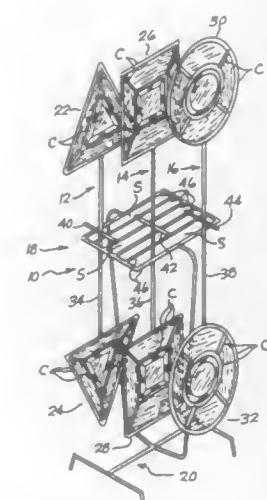
cylinder unit includes a housing coupled to the middle arm while the cylinder rod thereof is coupled to the top arm, and a synchronous means disposed between the base and middle arms for pulling out the middle arm from the base arm at the same time as the base arm is pulled out from the outer arm.

5,377,433
DYNAMIC ARTWORK DISPLAY
Laurance N. Hazlehurst, 14921F SE. 177th Pl., Renton, Wash. 98058

Filed Jul. 7, 1992, Ser. No. 909,614
Int. Cl.⁶ G09F 19/08

U.S. Cl. 40—411

16 Claims



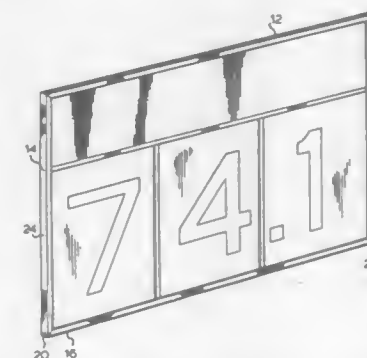
14. Dynamic artwork, comprising: a pendulum support; a plurality of pendulums positioned side-by-side on said pendulum support, each said pendulum comprising a plurality of spaced apart end members connected by an interconnecting central structure, each central structure including a hub, each of the end members comprising a translucent material, each said hub mounted on said pendulum support such that

each said pendulum has pivotal movement about a horizontal axis in response to a starting force; and each said end member of each said pendulum having sufficient mass to provide inertia power for a plurality of swings of the pendulum in response to a starting force applied to the pendulum, with each said pendulum swinging back and forth about its horizontal axis, within a vertical plane, adjacent each other said pendulum.

5,377,434
SECTIONAL FRAME DISPLAY
Arthur K. Wilson, 1050 McNicoll Avenue, Unit #12, Scarborough, Ontario, Canada M1W 2L8
Filed Oct. 29, 1993, Ser. No. 143,096
Int. Cl.⁶ G09F 7/02

U.S. Cl. 40—611

3 Claims



1. A frame for two-sided or single-sided display and exchange of a plurality of pictures and posters comprising, in combination, four outer frame components, each outer frame component having an outer sidewall with parallel side edges, inwardly facing outer walls depending from said sidewall edges substantially parallel to each other and extending an equal distance inwardly defining a continuous longitudinal recess, said frame components attached to form a rigid rectangular frame, one of said outer frame components having a longitudinal slot formed substantially from one end to the other in the outer sidewall co-extensive with said recess for insertion and removal of a plurality of planar sheets therefrom, a plurality of "I" shaped dividers having a pair of substantially parallel flanges formed integral with and joined to opposing edges of a central web to define a pair of longitudinal recesses, at least one divider having one end adapted to fit the recess of one outer frame component positioned perpendicular thereto and having a length less than that of adjacent outer frame components, a plurality of substantially rigid planar sheets slightly longer than the perpendicular divider, adapted to fit between said perpendicular divider and said adjacent outer frame components and protrude slightly above said perpendicular divider to form a protrusion, a transverse divider adapted to fit the protrusion of said planar sheets, having opposite ends adapted to fit in the recess of said adjacent outer frame components, and an elongated rigid sheet adapted to fit between said adjacent outer frame components and said transverse divider in the recess thereabout.

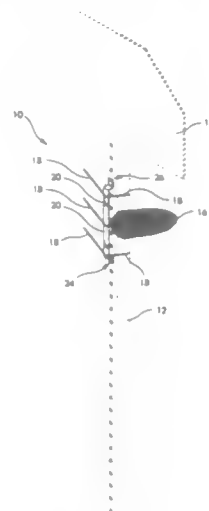
5,377,435
DISPLAY DEVICE AND METHOD FOR MATURE EARS OF SEED AND FIELD CORN
Eldon L. Dalton, 8583 S. Highway 231, Rensselaer, Ind. 47978
Filed Jul. 15, 1993, Ser. No. 92,229
Int. Cl.⁶ G09F 23/00

U.S. Cl. 40—645

3 Claims

1. A display device for mature ears of seed and field corn, comprising: a post supporting a sign;

an elongated mounting bar, having a first end portion and a second end portion, secured to said post; and a plurality of elongated spindles affixed to said mounting bar between said first and second end portions and disposed



on said mounting bar so as to extend generally upwardly whereby a mature ear of corn may be impaled upon any one of said elongated spindles and not fall therefrom under the influence of gravitational forces.

5,377,436

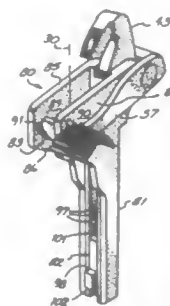
CARTRIDGE CLIP RELOADER

Robert D. Switzer, 2200 N. Ft. Thomas Ave., Ft. Thomas, Ky. 41075

Continuation-in-part of Ser. No. 935,547, Aug. 26, 1992, Pat. No. 5,249,386. This application Jul. 6, 1993, Ser. No. 88,220 Int. Cl.⁶ F41A 9/83

U.S. Cl. 42—87

8 Claims



1. A reloader for a cartridge clip, said cartridge clip having an open end, said reloader comprising:
a sleeve adapted to receive said cartridge clip in seated relation during reloading, said sleeve being open at its top end, and
an adjustable wall connected to said sleeve, said wall's connection position to said sleeve being changeable to accommodate cartridge clips of at least first and second different depths within said sleeve, said wall's connection position being changed so as to present the open end of each cartridge clip, whether of said first or said second depth, at about the same location relative to said sleeve when either of said first or second depth cartridge clips is engaged in operational relation with said reloader, and
at least one hub to which said wall is eccentrically mounted, said hub being movably mounted to said sleeve, said wall being eccentrically movable between a first position to accommodate a cartridge clip of said first depth and a

second position to accommodate a cartridge clip of said second depth by moving said hub relative to said sleeve.

5,377,437

RIFLE AND PISTOL REST

John Underwood, Rte. 9, Box 564, Mocksville, N.C. 27028
Division of Ser. No. 125,698, Sep. 24, 1993, Pat. No. 5,317,826, which is a division of Ser. No. 924,923, Aug. 5, 1992, Pat. No. 5,318,693. This application May 12, 1994, Ser. No. 241,563 Int. Cl.⁶ F41C 27/00

U.S. Cl. 42—94

6 Claims



1. A rifle and pistol rest which can be assembled in a setup position for supporting a device such as a firearm or an optical instrument and disassembled from said setup position to reduce a length of said rest for easy transport, said rest comprising two elongate members and means for pivotally connecting said two elongate members intermediate the ends thereof so that the elongate members can be pivoted to cross one another in the form of an X shape, each of said two elongate members including at least two elongate segments and means for releasably coupling said elongate segments to one another in end to end relation in said setup position of the rest.

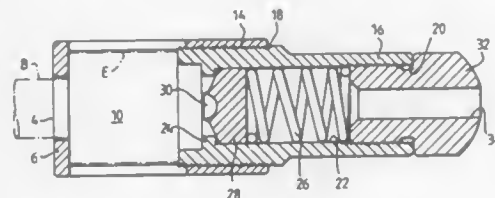
5,377,438

DEVICE FOR PREVENTING ACCIDENTAL DISCHARGING OF A BULLET FROM A FIREARM
Naftali Sheinfeld, and Michael Cohen, both of Mobile Post North Yehuda, Israel, assignors to Etzion Metal Works, Israel

Filed Oct. 13, 1993, Ser. No. 135,738
Claims priority, application Israel, Oct. 25, 1992, 103539 Int. Cl.⁶ F41A 21/32, 35/04

U.S. Cl. 42—96

2 Claims



1. A device for preventing the accidental discharge of a bullet from a firearm, comprising:
attachment means adapted to engage the muzzle end of a firearm barrel;
a substantially tubular body coaxially attachable with one of its ends to said barrel via said attachment means, the bore of said tubular body being provided close to said one of its ends with abutment means;
a stopper fixedly attachable to the other end of said body and having a central bore of a diameter exceeding the calibre of said firearm;
an impact disk slidably disposed in the bore of said tubular body, and
energy-absorbing and storing means interposed in said bore between said impact disk and said stopper, and acting on

said impact disk to maintain contact with said abutment means inside said body, wherein upon the discharge of a bullet, the latter pierces said impact disk while transferring some of its kinetic energy to said energy-absorbing and storing means, accomplishing which, said bullet disintegrates into small particles escaping through said bore in said stopper.

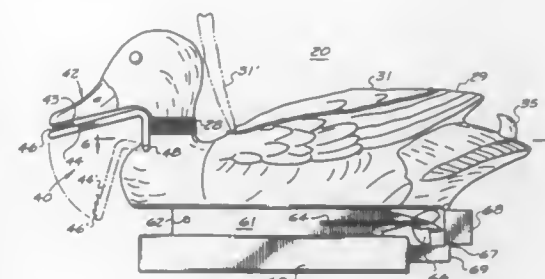
5,377,439

REMOTE CONTROLLED DECOY

Richard J. Roos, 3525 Weld County Rd. 13, and Richard J. Roos, Jr., Rte. 2, 308 Parkway Rd., both of Erie, Colo. 80516
Filed Nov. 12, 1993, Ser. No. 152,048 Int. Cl.⁶ A01M 31/06

U.S. Cl. 43—3

10 Claims



3. A remotely controlled floating decoy, comprising:
a buoyant body resembling a game bird;
a receiver disposed within said buoyant body, said receiver being responsive to commands from a transmitter and providing electrical control signals in response to said commands;
a propulsive device coupled to said buoyant body and electrically coupled to said receiver, said propulsive device being responsive to said electrical control signals;
a rudder coupled to a rear end of said buoyant body and responsive to said electrical control signals, said propulsive device and said rudder cooperating to provide directed locomotion for said buoyant body in response to commands transmitted from said transmitter;
a lower mandible disposed at a front end of said buoyant body, said lower mandible having serrations disposed on an upper surface thereof, said lower mandible hingedly attached to said buoyant body;
a first mechanical linkage having a first end coupled to said lower mandible; and
a servomechanism electrically coupled to said receiver and mechanically coupled to a second end of said first mechanical linkage, said servomechanism being responsive to said electrical control signals and causing said lower mandible to raise in response to first electrical control signals "CLAMP" from said receiver and causing said lower mandible to lower in response to second electrical control signals "DO NOT CLAMP" from said receiver.

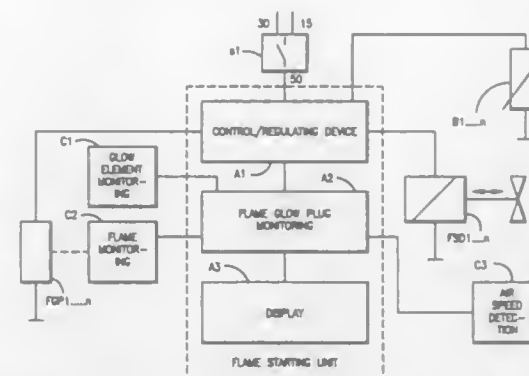
5,377,440

FLAME STARTING UNIT FOR A COMBUSTION DEVICE
Martin Eller, Ludwigsburg, and Odd Peters, Bietigheim-Bissingen, Germany, assignors to Beru Ruprecht GmbH & Co. KG, Ludwigsburg, Germany

Filed Dec. 23, 1993, Ser. No. 172,215
Claims priority, application Germany, Dec. 23, 1992, 4243959 Int. Cl.⁶ F02B 77/08; F02N 17/047; F02P 19/02 U.S. Cl. 431—11 15 Claims

1. Flame starting unit for a combustion device for preheating combustion air, comprising a flame glow plug located in an air intake duct of the combustion device, fuel and current supply devices for supplying fuel and electrical current to the flame glow plug, a control device for controlling supplying of fuel and current to the flame glow plug by the fuel and current

supply devices, and a monitoring device which is operative to monitor the functioning of the flame starting unit and to indicate occurring functional errors, said flame starting unit fur-



ther comprising a flame monitoring sensor which forms a means for monitoring the formation of a flame by the flame glow plug, said flame monitoring sensor producing a corresponding signal which is delivered to the monitoring device.

5,377,441

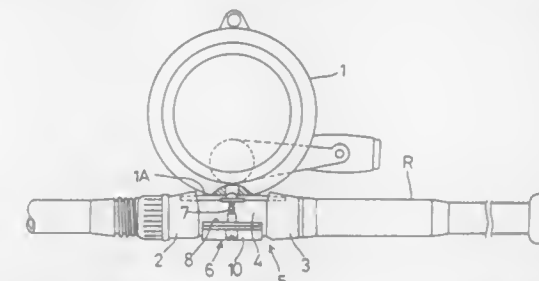
ROD CLAMP

Hideo Noda, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Aug. 10, 1992, Ser. No. 926,632
Claims priority, application Japan, Aug. 13, 1991, 3-63674[U] Int. Cl.⁶ A01K 87/06

U.S. Cl. 43—22

7 Claims



1. A rod clamp for securing a reel to a rod, comprising:
first clamp means for contacting a reel seat of the rod, said first clamp means defining a plurality of perforations;
second clamp means substantially fitting on an outer contour of said first clamp means;
an intermediate member formed of an elastic material and sandwiched between said first and second clamp means;
a plurality of supporting projections formed on said intermediate member and extending through said perforations of said first clamp means to extend toward the reel seat; and
a plurality of tightening means for tightening said first and second clamp means to a reel foot of the reel, to thereby to fix the reel seat between said first and second clamp means and the reel foot.

5,377,442

BAIT RIGGING SYSTEM

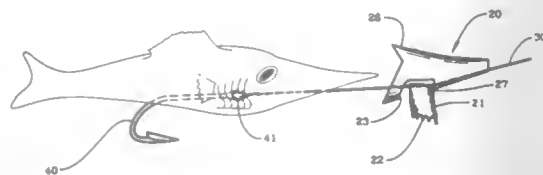
Barry Gariglio, 2251 NW. 40th Terr., Coconut Creek, Fla. 33060
Filed May 3, 1993, Ser. No. 56,715 Int. Cl.⁶ A01K 83/06

U.S. Cl. 43—44.4

11 Claims

1. A ballyhoo bait rigging system comprising:
means for housing, said means for housing having an entrance aperture and an exit aperture for encapsulating a bait fish's beak, said means for housing being adaptable to

accommodate different sized bait, said means for housing having means for receiving leader wire, said means for housing further having means for exerting a compressive force on said bait fish's beak, said means for exerting a compressive force comprising a trigger hingedly attached to a bottom edge of said housing such that said bait fish is



secured within said housing, said trigger having grooves disposed along its bottom edge such that when said trigger is engaged, it is moved upwardly into the interior of said housing, exerting compressive force on said bait fish's beak, wherein a groove of said trigger is interlocked with a latch on said housing to hold said trigger in place.

5,377,443

GLASS FISHING WEIGHTS

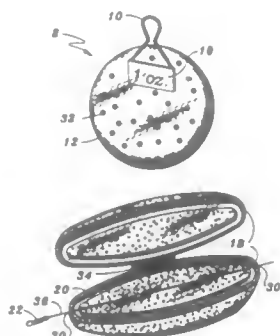
Nancie Giray, and Gary L. Giray, both of 904 Vista Del Mar Dr., Aptos, Calif. 95003

Continuation-in-part of Ser. No. 57,534, May 4, 1993, abandoned. This application Jan. 25, 1994, Ser. No. 186,235

Int. Cl.⁶ A01K 91/00

U.S. Cl. 43—44.9

6 Claims



1. An environmentally low impact fishing weight, comprising:

a body member being composed of glass; said body member being geometrically configured and including a channel adapted to receive and secure a fishing line therein; a pair of mating hook and loop fastening elements are operably aligned on said body member so that when a fishing line is positioned within said channel and said body member is compressed, said pair of mating hook and loop fastening elements combine to secure said fishing line in the channel;

means for preventing said body member from rolling on a surface; and
means for identifying said body member, whereby the fishing weight may be distinguished according to a characteristic thereof.

5,377,444

FISHING FLOAT

James W. Gibney, Sr., 5318 Cherry Ave., Cocoa, Fla. 32927
Filed Nov. 22, 1993, Ser. No. 155,189

Int. Cl.⁶ A01K 93/00

U.S. Cl. 43—44.91

10 Claims

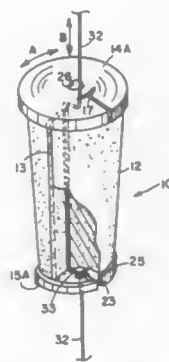
1. A fishing float comprising:

a) a buoyant body having a central opening therethrough, and a longitudinal body slot in an outer surface of said

body, said body slot extending toward said central opening;

b) a rotatable rod inserted through said central opening of said body; and

c) a pair of cap disks, one of said disks attached to each respective end of said rod, each of said disks having a radial slot including a short circumferential extension thereto at an inner end thereof, said radial slots alignable



with said longitudinal body slot for accepting a fishing line;

d) whereby said cap disk slots and said body slots are first aligned to permit a fishing line to be inserted into said body slot and said cap disk slots, and said cap disks thereafter rotated from said aligned position to a non-aligned position, thereby causing said cap disks to grip said fishing line between inner surfaces of said cap disks and outer surfaces of said body.

5,377,445

LIVE BAIT DISPENSER

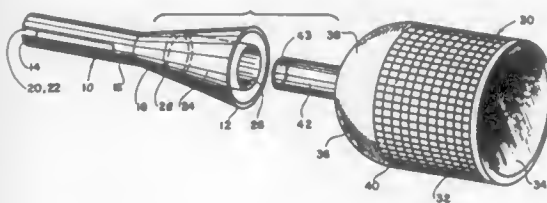
Roland Brannon, P.O. Box 586, Morgan City, La. 70380
Continuation-in-part of Ser. No. 64,864, Jun. 19, 1987, Pat. No. 4,825,577. This application Apr. 27, 1989, Ser. No. 344,137

The portion of the term of this patent subsequent to May 2, 2006, has been disclaimed.

Int. Cl.⁶ A01K 97/00; B67D 3/00

U.S. Cl. 43—55

9 Claims



1. A dispensing attachment device for use with a live bait dispenser having a dispensing conduit means, said device comprising:

a main body having a substantially hollow interior, an open securing end and open dispensing end, said dispensing end being sized and shaped to retain a single cricket in position ready for dispensing without application of a compression force on said cricket, said dispensing end being provided with at least one longitudinal slot extending a distance from said dispensing end inwardly towards said securing end, said longitudinal slot being continuously open during entire operation of the device; and

a means for selectively manually detachably securing the dispensing attachment device to a live bait dispenser, said securing means being mounted within the interior of the main body adjacent to said securing end, said securing means being internally adapted for mounting on said dispensing conduit means in at least partial overlappingly

covering co-axial relationship to said dispensing conduit means.

5,377,446

FLYING INSECT SWATTER

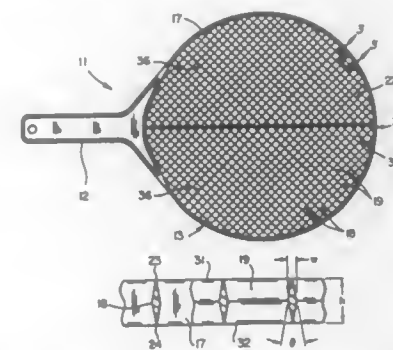
Richard DiLeo, 2124 Kittredge St. #8, Berkeley, Calif. 94704

Filed Jul. 26, 1993, Ser. No. 98,130

Int. Cl.⁶ A01M 3/02

U.S. Cl. 43—137

7 Claims



1. In a flying insect swatter: a handle, a head connected to the handle for being swung through the air to swat insects in flight, said head having a plurality of cutting elements having a width on the order of 0.025 to 0.030 inch arranged in a grid-like array in which adjacent ones of the cutting elements are spaced apart by a distance on the order of 3/16 to 1/8 inch, with each of the cutting elements having a cutting edge with an included angle of no more than about 18 degrees for cutting insects swatted in flight into pieces which pass between the elements as the head moves through the air.

5,377,447

LANDSCAPE EDGING APPARATUS AND METHOD

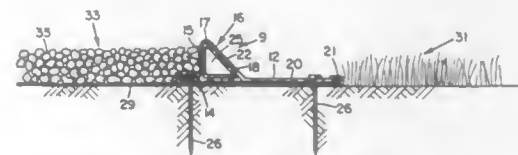
John R. Fritch, 4334 Five Points Rd., Corpus Christi, Tex. 78410

Continuation-in-part of Ser. No. 838,721, Mar. 11, 1986, and a continuation-in-part of Ser. No. 179,858, Apr. 11, 1988, and a continuation-in-part of Ser. No. 343,877, Apr. 27, 1989, Pat. No. 5,157,867, which is a continuation-in-part of Ser. No. 908,601, Sep. 18, 1986, Pat. No. 4,831,776. This application Oct. 27, 1992, Ser. No. 967,111

Int. Cl.⁶ A01G 1/08

U.S. Cl. 47—33

2 Claims



1. Landscape apparatus comprising landscape fill and restraining apparatus edging and restraining said landscape fill on a base surface, said restraining apparatus comprising:

substantially vertical strip restraining means defining a boundary adjacent said landscape fill, said substantially vertical strip restraining means including a first side surface facing toward said landscape fill for receiving substantially horizontal forces from said landscape fill and a second side surface facing away from said landscape fill; substantially horizontal extension means extending out laterally from said second side surface of said substantially vertical strip restraining means;

force converting means for converting said horizontal forces received by said substantially vertical strip restraining means into vertical forces against said substantially hori-

zontal extension means thereby restraining said landscape fill in said boundary; and

a lower lip extending from said first side surface of said substantially vertical strip restraining means substantially in the same plane as the substantially horizontal extension means.

5,377,448

DOOR POSITIONING SYSTEM

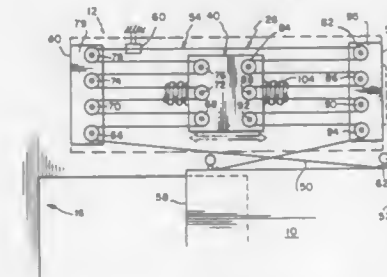
Douglas E. Boyd, Dublin, and Charles A. Burton, Columbus, both of Ohio, assignors to American Metal Door Company, Inc., Richmond, Ind.

Filed Jan. 21, 1993, Ser. No. 7,673

Int. Cl.⁶ E05F 11/54

U.S. Cl. 49—360

38 Claims



1. A door positioning system for use with a rectilinearly movable door mounted on a track system, said positioning system comprising:

a driver comprising a rectilinearly movable carriage means and means for driving said carriage means;

amplification means for drivingly connecting said driver to the door and for amplifying the speed and distance of movement of said carriage means such that said door moves a predetermined multiple of the movement of said carriage means;

a housing containing said driver and said amplification means for said predetermined multiple of the movement of said carriage means; and wherein the length of said housing is smaller than a length of said door.

5,377,449

GLASS-RUN CHANNEL

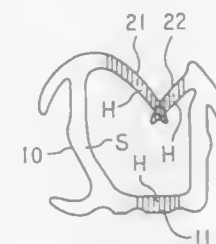
Takashi Hineribara; Yasunori Kamel, and Ryusuke Miura, all of Hiroshima, Japan, assignors to Nishikawa Rubber Co., Ltd., Hiroshima, Japan

Filed May 27, 1993, Ser. No. 68,552

Claims priority, application Japan, May 28, 1992, 4-43148[U]
Int. Cl.⁶ E06B 7/16

U.S. Cl. 49—441

12 Claims



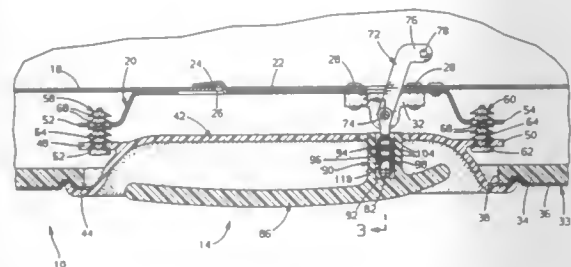
1. A glass run channel for sealing a gap between a vehicle door and a vehicle door glass comprising:

a U-shaped body having a base member, and first and second spaced-apart leg members extending substantially in the same direction from opposite ends of said base member, the body defining a cavity for receiving a peripheral edge of the vehicle door glass;

a first lip member having at one end thereof a first joint

portion pivotally coupling the first lip member to the first leg member, and an elongated first free end portion extending from the first joint portion toward the cavity for contact with one side of the vehicle door glass; a second lip member having at one end thereof a second joint portion pivotally coupling the second lip member to the second leg member, and an elongated second free end portion extending from the second joint portion toward the cavity for contact with the other side of the vehicle door glass, the second lip member mutually opposing the first lip member; and said base member, leg members and joint portions all being formed of a first material having a first JIS (A) hardness, and at least one free end portion being formed entirely of a second material having a second JIS (A) hardness which is greater than said first JIS (A) hardness to reduce a sliding resistance of said one free end portion where it contacts the vehicle door glass.

5,377,450
ADJUSTABLE DOOR HANDLE ASSEMBLY
Joseph Varajon, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 27, 1993, Ser. No. 173,103
Int. Cl.⁶ B60J 5/04; E05B 1/00
U.S. Cl. 49—502 3 Claims

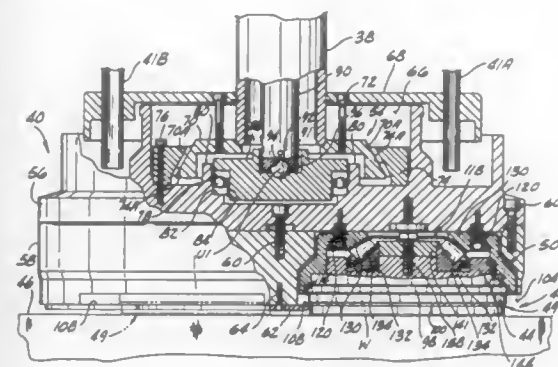


1. A door hingedly mounted on a vehicle and carrying a latch for latching the door in a closed position, said door comprising:
a door inner panel;
a lever pivotally mounted on the door inner panel and operable to release the door latch;
a trim panel carried by the door in spaced relation from the door inner panel, and having an opening therein registering with the lever;
a trim bezel installed in the opening and having a peripheral flange adapted to overlie the trim panel around the opening;
and a plurality of adjustable ratcheting fasteners acting between the trim bezel and the door inner panel to enable secure attachment of the bezel to the door inner panel and the concomitant gap free engagement of the bezel peripheral flange with the door trim panel irrespective of dimensional variation in the spacing between the door inner panel and the trim panel.

5,377,451
WAFER POLISHING APPARATUS AND METHOD
Fabrizio Leoni, Marco Morganti, and Luigi Vesco, all of Novara, Italy, assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.
Filed Feb. 23, 1993, Ser. No. 21,215
Int. Cl.⁶ B24B 7/22
U.S. Cl. 451—287 17 Claims

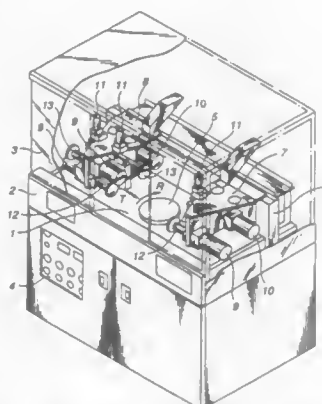
1. Wafer polishing apparatus comprising:
a turntable having a polishing surface thereon;
a frame mounting the turntable for rotation relative to the frame about an axis;
a pressure plate constructed for simultaneously holding

multiple wafers with a polish face of the wafers facing the polishing surface of the turntable;
spindle means mounting the pressure plate for rotation about an axis spaced from the axis of rotation of the turntable, the pressure plate being held from rotation about the axis of rotation of the turntable;
force applying means for applying a force to the pressure plate to press the wafers against the polishing surface of the turntable;



means operatively connecting each wafer to the pressure plate for reorienting the wafer relative to the pressure plate in response to pressure differentials over the polish face of the wafer engaging the polishing surface to substantially equalize the pressure distribution over the polish face of the wafer;
said connecting means being constructed to permit universal pivoting motion of the wafer relative to the pressure plate about a predetermined universal pivot point.

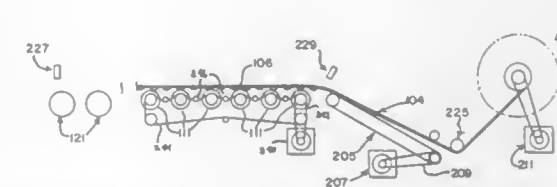
5,377,452
GRINDER FOR GRINDING STAMPER USED FOR DISC MOLDING
Yoshihiro Yamaguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 30, 1992, Ser. No. 982,865
Claims priority, application Japan, Nov. 30, 1991, 3-342328; Nov. 30, 1991, 3-342329
Int. Cl.⁶ B24B 21/06
U.S. Cl. 451—1 7 Claims



1. A grinding apparatus for grinding a stamper comprising a turntable for holding and rotating the stamper, driving means for rotating the turntable, first abrasive means movable along a first radius of said stamper, said first abrasive means slidably contactable with a mounting surface of said stamper, second abrasive means movable along a second radius of said

stamper, said second abrasive means slidably contactable with said mounting surface of said stamper, grinding position detecting means for detecting a first position of said first abrasive means on the stamper and a second position of said second abrasive means on the stamper, controlling means for controlling the rotational speed of said turntable based on the first and second positions as detected by said grinding position detecting means, and wherein said first abrasive means is movable by a feed motor and said second abrasive means is movable by a feed motor.

5,377,453
AUTOMATED METHOD AND APPARATUS FOR POLISHING HOT STRIP MILL RUN-OUT TABLE ROLLS
George C. Perneczky, 8918 Biloba, Orland Park, Ill. 60462
Filed Feb. 12, 1993, Ser. No. 16,899
Int. Cl.⁶ B24B 49/00
U.S. Cl. 451—1 16 Claims



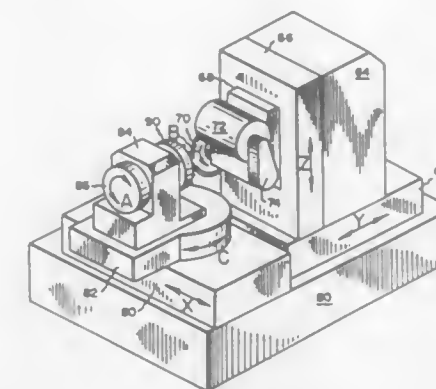
1. Apparatus for the automatic polishing of run-out table rolls rotating in a first direction, said run-out table rolls associated with a portion of a steel mill, said apparatus comprising:
a reel assembly operably connected to a first drive motor, a carrier belt having one end thereof connected to said reel assembly and at least a portion of the free end thereof having attached thereto in spaced-apart relation a plurality of polishing blocks, said polishing blocks being formed of a moldable, flexible material having an abrasive grit dispersed therein, each of said polishing blocks having a plate associated therewith, said plate being provided with at least one opening for receipt of a fastener to secure each of said polishing blocks to said carrier belt, each of said polishing blocks being further provided with a contact surface,
a plurality of rotatable rolls operably connected to a second drive motor adapted to rotate said rotatable rolls, with said plurality of rotatable rolls arranged to transport said free end of said carrier belt and said carrier belt to said run-out table rolls and to direct said contact surface of said polishing blocks and said carrier belt across said run-out table rolls,
a signal generator indicating at least the rotation in said first direction and in a second direction of said run-out table rolls with said second drive motor operable in response to a signal from said signal generator whereby said plurality of rotatable rolls are rotated in said first direction when said run-out table rolls are rotating in said first direction, a first sensor associated with said run-out table rolls, said first sensor responsive to the presence of said free end of said carrier belt and providing an operable signal to said first drive motor,
a second sensor associated with said rotatable rolls adjacent said reel assembly, said second sensor providing an operable signal to said first drive motor.

5,377,454
METHOD OF TRUING AND ANGLING CUTTER BLADES BY SHARPENING
Harry Pedersen, Penfield, and Richard L. Kitchen, East Rochester, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed May 1, 1992, Ser. No. 877,910
Int. Cl.⁶ B24B 49/00

U.S. Cl. 451—5

46 Claims



22. In a method of sharpening cutting blades of a form-relieved face mill cutter comprising:
providing a form-relieved face mill cutter having an axis of rotation and a plurality of blades, said plurality of blades being at least one of inside cutting blades and outside cutting blades, each of said blades comprising a front face having a top, a base and two edges, one of said two edges being a cutting edge with said cutting edge extending from said top of said front face to said base of said front face, said front face and said cutting edge being in a sharpening plane,
wherein the improvement comprises:
truing and angling said blades as a part of the sharpening process, said truing and angling including:
selecting said inside cutting blades or said outside cutting blades,
probing the cutting edge of each of the selected blades at a first point near said top of said front face to determine a first point location and storing said location of said first point of said each blade,
determining one blade having a lowest first point location from all said selected blades,
calculating a first point difference between said lowest first point location of said one blade and the location of the first point of each remaining selected blade and storing each said first point difference for said each remaining selected blade,
establishing a new first point location for said each remaining selected blade by subtracting said first point difference for said each remaining selected blade from the respective location of said first point for each said remaining selected blade whereby for said each remaining selected blade, the location of each said new first point is substantially the same as said lowest first point location of said one blade, probing the cutting edge of said each selected blade at a second point near said base of said front face to determine a second point location and storing said location of said second point of said each like blade,
comparing the location of said second point of said one blade with the location of the second point of each of the remaining like blades,
calculating a second point difference between said second point location of said one blade and the location of said second point for said each remaining like blade,
establishing a new second point location for said each remaining like blade by subtracting said second point differ-

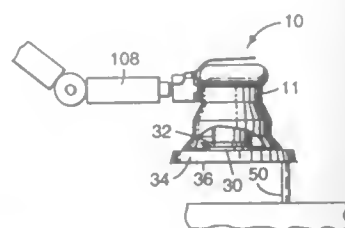
ence of said each remaining blade from the respective second point location of said each remaining like blade, calculating a new cutting edge for said each remaining like blade based upon said new first point and said new second point for said each remaining like blade, repositioning the sharpening plane of said each remaining like blade to form a new cutting edge thereon whereby said new first and second points for said each remaining like blade lie on said new cutting edge defined by the repositioned sharpening plane.

5,377,455
AUTOMATED RANDOM ORBITAL ABRADING SYSTEM AND METHOD

David J. Lanzer, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 867,982, Apr. 13, 1992, Pat. No. 5,231,803.
This application May 6, 1993, Ser. No. 57,504
Int. Cl.⁶ B24B 53/00

U.S. Cl. 451—5

11 Claims



1. An automated random orbital abrading system comprising:

- (a) an automated robotic apparatus including an arm component and a control system for directing the movement of said arm component in response to a sequence of commands, said robotic apparatus further including a source of rotary power;
- (b) an abrading head attached to said arm component, said abrading head comprising a back-up pad rotatively attached to said abrading head and operatively connected to said rotary power source, said back-up pad and said abrading head cooperatively adapted for random movement of said back-up pad through a range of motion with respect to said abrading head, said back-up pad having a major surface adapted to carry an abrasive disc thereon;
- (c) an abrasive disc having a back face releasably attached to said major surface and having an abrasive face adapted to abrade a workpiece; and
- (d) means for positioning the back-up pad at a known location within said range of motion;

whereby said robotic apparatus, responsive to said sequence of commands, contacts at least one of said abrasive disc and said back-up pad with said positioning means and moves said abrading head relative to said positioning means without displacing said back-up pad relative to said positioning means, to position said back-up pad at a known location within said range of motion.

5,377,456
EYEGLASS FRAME MEASURING CRADLE
William L. Dixon, Bixby, Okla., assignor to Coburn Optical Industries, Inc., Tulsa, Okla.
Filed Dec. 4, 1992, Ser. No. 986,463
Int. Cl.⁶ B24B 41/06

U.S. Cl. 451—364

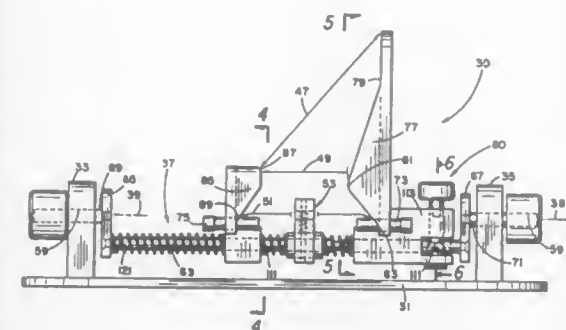
34 Claims

1. A holder for an eyeglass frame having a pair of lens rims spaced apart by a bridge comprising:

- a base plate;
- a pair of supports fixed in spaced apart relationship on said base plate;

a cradle journaled between said supports to rock beneath an axis spaced from and parallel to said base plate;

a pair of jaws transversely mounted on said cradle in relation to said axis and biased toward closing having a mouth accessible from above said axis, at least one jaw being inwardly tapered from said mouth to a narrow passage and outwardly tapered from said narrow passage to a throat having seats extending inwardly therefrom,



whereby, when a frame is inserted transversely into said mouth toward said throat with its upper rims against one of said jaws and its lower rims against the other of said jaws, said jaws open against bias to pass the frame through said narrow passage and then close under bias to secure the frame in said throat on said seats.

5,377,457
METHOD FOR GENERATING OF GEAR-SHAPED PRECISION-WORKING TOOLS, IN PARTICULAR FOR REGRINDING SHAVING GEARS, AND A GEAR-SHAPED TOOL, IN PARTICULAR A SHAVING GEAR, TO WHICH THE METHOD CAN BE APPLIED

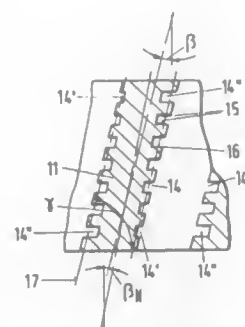
Herbert Loos, Dorfen, and Manfred Erhardt, Puchheim, both of Germany, assignors to Hurth Maschinen und Werkzeuge GmbH, Munich, Germany

Filed May 14, 1993, Ser. No. 61,864

Claims priority, application Germany, May 16, 1992, 4216329
Int. Cl.⁶ B24B 53/085

U.S. Cl. 451—47

4 Claims



1. In a method for generating of a gear-shaped precision-working tool having tooth flanks thereon and in which material is removed from the tooth flanks by means of a tool and to thereby change a tooth flank geometry, the improvement comprising the step of changing a pitch angle (β), a module in transverse section (m_z) and a base circle diameter (d_b) in such a manner that an insignificant change is made to an originally existing profile displacement fact (x).

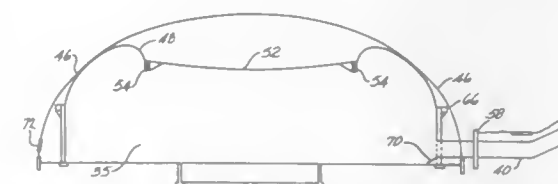
5,377,458
PRESSURE BALANCING A CLOSED ECOLOGICAL SYSTEM

William F. Dempster, Oracle, Ariz., assignor to Decisions Team, Inc., Fort Worth, Tex.
Division of Ser. No. 630,269, Dec. 19, 1990, Pat. No. 5,279,081, which is a continuation-in-part of Ser. No. 481,911, Feb. 16, 1990, abandoned. This application Mar. 18, 1993, Ser. No. 32,387

Int. Cl.⁶ E04H 9/00

U.S. Cl. 52—1

16 Claims



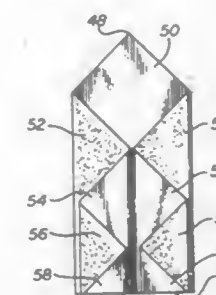
1. A closed ecological system comprising:
 - a closed structure containing a variety of organisms which collectively maintain a viable environment within the closed system;
 - a first closed chamber connected to the structure and having a pressure compensator for maintaining a selected pressure differential between the inside of the closed structure and the Earth's atmosphere;
 - a second closed chamber connected to the structure and having pressure compensator for maintaining a selected pressure differential between the inside of the closed structure and the Earth's atmosphere, each pressure compensator comprising a movable impermeable member having one face in communication with the closed structure and a second face in communication with air outside the closed structure; and
 - means for selectively varying the air pressure adjacent the second face of the movable member.

5,377,459
RIDGE COVER AND SHINGLE AND METHOD OF MAKING AND USING THE SAME
Bennie Freiborg, 3936 Madison Rd., Flintridge, Calif. 91001
Continuation of Ser. No. 682,930, Apr. 9, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 99,255

Int. Cl.⁶ E04D 1/30; B65H 45/20

U.S. Cl. 52—57

20 Claims



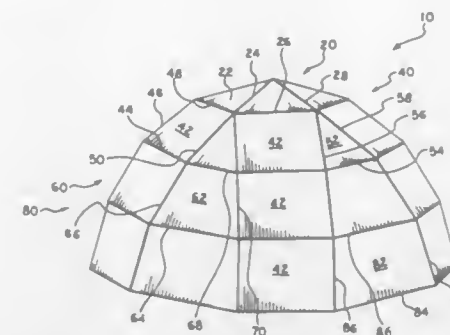
1. A roof piece comprising a sheet of asphalt composition roofing material having a first end, a first side edge, a second side edge which intersect at a point that is located opposite from said first end, said point together with said first and second side edges defines at least a portion of an equilateral triangle, said sheet of asphalt composition roofing material being substantially symmetrical about a centerline from said point to said first end, thereby defining first and second regions, one on each side of said centerline, said first region being folded along a first line approximately parallel to said centerline so that part of said first region lies under an adjacent part

of said first region to create a folded first region and thereby effectively thickening said first region, said second region being folded along a second line also approximately parallel to said centerline and substantially symmetrical to said first line so that part of said second region lies under an adjacent part of said second region to create a folded second region and thereby effectively thickening said second region.

5,377,460
DOMED BUILDING
Carl Hicks, 4 Ridgewood Avenue, Moncton, New Brunswick, E1A 3N9, Canada
Filed Jun. 8, 1993, Ser. No. 73,084
Int. Cl.⁶ E04B 1/32

U.S. Cl. 52—81.1

25 Claims



1. A building structure comprising:
 - a plurality of first panels, of second panels and of third panels, said first panels comprising rectangular panels, said second panels and said third panels having a different geometry from one another and from said rectangular panels;
 - at least one upper horizontal level of a common panel geometry other than said rectangular panels;
 - at least two further horizontal levels each comprising an alternating arrangement of two panel types of said first panels, second panels and third panels, said second panels and said third panels having at least three sides, said panels including connecting means for connection with an adjacent panel.

5,377,461
STRUCTURE FOR THE CREATION OF ROOM DIVIDING WALLS PARTICULARLY FOR OPERATING THEATRES AND THE LIKE
Bruno DeGrada, and Guido Ortolani, both of Turate, Italy, assignors to Cogefar-Impresit Costruzioni Generali S.p.A. and Omase S.r.l., both of Italy
Filed Jan. 29, 1993, Ser. No. 11,368
Claims priority, application Italy, Feb. 11, 1992, MI92A 000275

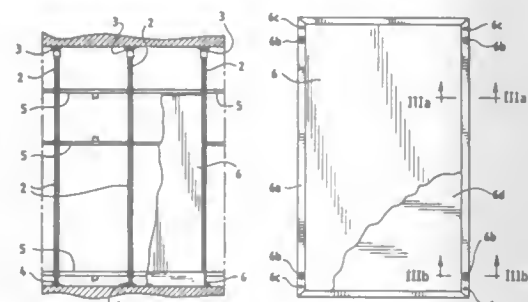
Int. Cl.⁶ E04B 2/00

U.S. Cl. 52—126.4

9 Claims

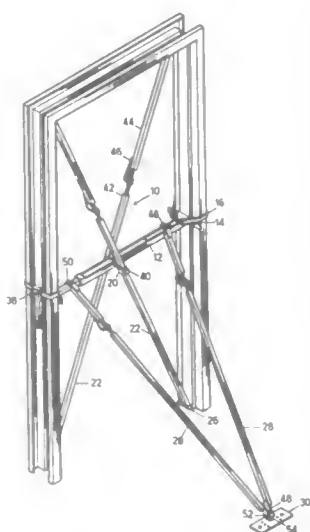
1. A structure for the creation of room dividing walls or for the lining of pre-existing walls, particularly for operating theatres and the like, said structure comprising a plurality of uprights, each upright comprising two C-shaped sections set against one another and having oppositely directed wings, means for anchoring said uprights, respectively, to the ceiling and the floor of a room being partitioned, said anchoring means including means for adjusting the height of said uprights, stiffening cross beams connecting, respectively, adjacent ones of said uprights, front lining panels arranged adjacent to one another and against said connected uprights, and means for securing adjacent ones of a pair of said panels the adjacent wings of said uprights including centering means for centering panels with respect to said uprights and affixing means affixing

said panels to said uprights, said centering means being separate from said affixing means and both said centering and said affixing means being attached to said C-shaped section, said lining panels having provided therein centering slots and affixing



ing holes for connection, respectively, to said centering means and said affixing means, said affixing means including reversible elastic restraining members capable of being deformed upon passing through said affixing holes, the affixing means securing the lining panels to the C-shaped sections.

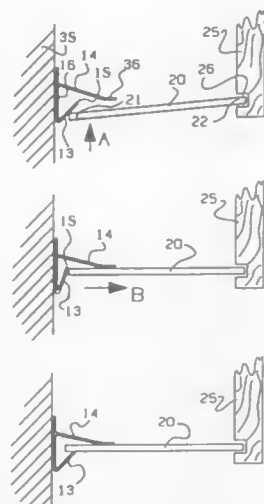
5,377,462
DOOR FRAME ASSEMBLY JIG
Michael Beals, P.O. Box 161, Tomahawk, Wis. 54487, and Brian Marine, 52556 Robin Rd., Marshfield, Wis. 54449
Filed Jul. 22, 1993, Ser. No. 95,787
Int. Cl.⁶ E04F 21/00
U.S. Cl. 52—127.2 5 Claims



1. A door assembly jig for bracing a squared metal door frame for installation into a wall, the assembly jig comprising: a pair of squaring braces, adjustable in length to match the diagonal length of the squared door frame; a support tab having a finger extending therefrom, the tab being slidably mounted to one of the squaring braces; an adjustable-length door spreading brace supported at its underside by the finger at a single support point, the support point being adjustable in position along the length of the squaring braces; securing means located at each end of the door spreading brace for securing the side jambs of the door frame to the ends of the door spreading brace, so that the squaring braces, when installed diagonally between opposing corners of the door frame, will square the door frame at the same time that the door spreading brace fixes a constant distance between the side jambs of the door frame to prevent movement of the side jambs; and

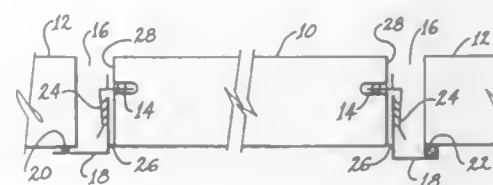
an anchor plate, the anchor plate adapted to connect to a floor; and a pair of plumbing braces being each connected at one end to the door-spreading brace and each connected at the opposite end to the anchor plate so as to plumb the door.

5,377,463
PANEL MOUNTING
Ian T. Howe, 19 Ryan Road, Pakenham, Victoria, 3810, Australia
Filed Jan. 28, 1993, Ser. No. 10,654
Claims priority, application Australia, Jan. 28, 1992, PL0600
Int. Cl.⁶ E04B 2/82
U.S. Cl. 52—200 26 Claims



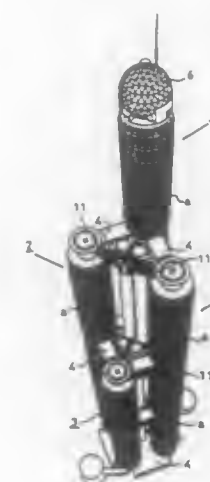
1. An elongated mounting section for operative engagement with an edge of a panel, the panel having a plane, the mounting section being securable to a structure to thereby enable mounting of the panel edge to the structure, the mounting section including a channel portion extending in a longitudinal direction and for receiving the panel edge, the channel portion having a mouth through which the panel extends in use, the channel portion including a front wall extending continuously in the longitudinal direction and for the length of the mounting section, the front wall defining one side of the mouth and an opposed wall extending in the longitudinal direction and defining an opposite side of the mouth, the front wall and opposed wall being connected together and the panel edge being receivable between the front wall and the opposed wall, one of the front wall and opposed wall being resiliently movable away from the other wall, the front wall being resiliently movable inwardly of the channel portion, the panel edge being receivable in the mouth by movement of the panel edge in a lateral direction which is transverse to both the plane of the panel and to the longitudinal direction so that the panel edge moves past the front wall while the front wall is resiliently moved inwardly of the channel portion, and while the panel edge moves generally directly towards the opposed wall and into its generally desired final position, whereafter the front wall past which the panel edge has moved resiliently returns to its operative position in which the wall which is resiliently movable away from the other wall applies a biasing force to the panel edge so as to clamp the same.

5,377,464
RETRAINER STRIP FOR WINDOW FLASHING
Richard A. Mott, Alexandria, and Richard S. Hite, Sylvania, both of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.
Filed Aug. 7, 1991, Ser. No. 741,709
Int. Cl.⁶ E06B 1/04; E04B 1/62
U.S. Cl. 52—213 20 Claims



1. A retainer strip for a window flashing used to weatherproof the installation of a window, the retainer strip comprising a window grip leg for retaining the retainer strip in a kerf in the window frame, and a flashing grip leg adapted to be mounted parallel to the side of the window frame for retaining the flashing in the space between the flashing grip leg and the side of the window frame.

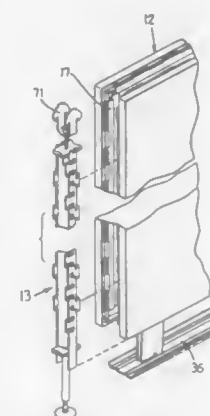
5,377,465
ULTRA-HIGH MULTI-STORY BUILDINGS AND CONSTRUCTION THEREOF
Takuji Kobori; Shigeru Ban; Toshihiko Kubota; Osamu Nohira; Norihide Koshika; Koji Kondo; Sadaaki Masuda; Yoshinori Kitamura; Hideo Tanaka; Hiroomi Sato, and A. Scott Howe, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan
PCT No. PCT/JP91/00341, § 371 Date Mar. 18, 1992, § 102(e) Date Mar. 18, 1992, PCT Pub. No. WO91/18161, PCT Pub. Date Nov. 28, 1991
PCT Filed Mar. 13, 1991, Ser. No. 820,887
Claims priority, application Japan, May 18, 1990, 2-128782; May 23, 1990, 2-132814
Int. Cl.⁶ E04H 1/00
U.S. Cl. 52—236.3 16 Claims



1. An extra super multi-story building comprising: a plurality of extra super multi-story towers of between one and two-hundred story construction each constructed by stacking a plurality of tower-like super multi-stories of about fifty story construction; a sky lobby provided every fifty stories connecting said extra super multi-story towers at elevations between said tower-like super multi-stories to enable travel between said extra super multi-story towers;

a plurality of shuttle elevators leading from the ground to the sky lobbies; and local elevators leading from the sky lobbies to floors between the sky lobbies and provided in each extra super multi-story tower.

5,377,466
SEPARABLE POST/PANEL SYSTEM
Robert W. Insalaco, and Richard G. Haworth, both of Holland, Mich., assignors to Haworth, Inc., Holland, Mich.
Filed May 29, 1992, Ser. No. 891,557
Int. Cl.⁶ E04H 1/00
U.S. Cl. 52—238.1 24 Claims

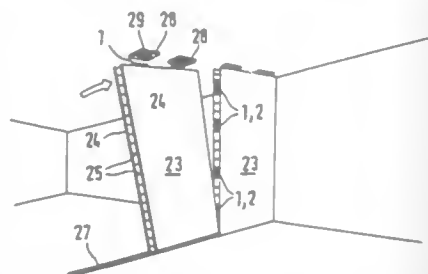


1. In an interior upright space-dividing wall system having first and second portable upright wall panel assemblies joined in end-to-end relationship, each said wall panel assembly including upright end edges defined at least in part by vertically elongate end members, and an upright support assembly joined to each end edge of each said panel assembly, said support assembly including a foot portion on a lower end thereof adapted for supportive engagement with a floor, and said support assembly including a vertically elongate support member having generally parallel and sidewardly spaced vertically elongate sidewalls each having a plurality of hanger-receiving openings therein, the hanger-receiving openings in each said sidewall being disposed in vertically spaced relationship so as to define a generally vertically elongate row, wherein the improvement comprises said support member has pluralities of first and second hooks fixed thereon and respectively defining first and second vertically-extending rows which are horizontally spaced apart, said first and second hooks being substantially identical and projecting in horizontal cantilevered relationship from said support member in opposite and outward directions relative to one another, each said end member having a plurality of hook-receiving slots formed therein and disposed in vertically spaced relationship along a vertically extending row, said first hooks of a first said support assembly projecting into said slots of the end member of said first panel assembly for directly fixedly but releasably connecting said first panel assembly to said support assembly.

5,377,467
LOCKING CLIP FOR PARTITION WALL PLATES
Charles Barnavol, 42 avenue Jeanne-d'Arc, F38100, Grenoble, France
PCT No. PCT/EP91/01090, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO92/01123, PCT Pub. Date Jan. 23, 1992
PCT Filed Jun. 12, 1991, Ser. No. 958,316
Claims priority, application Germany, Jul. 7, 1990, 4021756
Int. Cl.⁶ E04B 2/76
U.S. Cl. 52—238.1 6 Claims

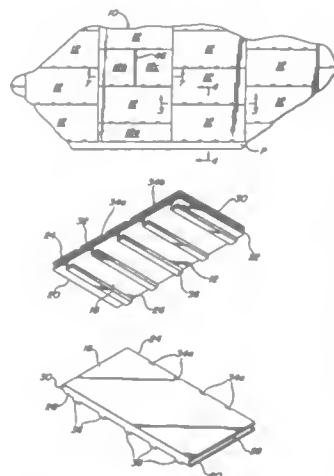
1. A locking element adapted for securing edges of adjoining partition wall plates of the kind where two plasterboard plates

are held spaced apart by cellular transverse ribs thereby to form a space between the plasterboard plates, the locking element being configured and oriented such that it is completely insertable into the space adjacent an edge of a partition wall plate, the locking element comprising a guide casing having a width corresponding to the space between the plasterboard plates, and a pressure member that, when the guide casing is seated in the space between the plasterboard plates adjacent the edge of the partition wall plate, is movably guid-



able in the casing between a first position and a fully housed position wherein the pressure member in the first position projects beyond the edge of the partition wall plate and from which first position the pressure member can be pressed against a biasing force into the casing to the fully housed position in which the pressure member is received completely within the guide casing, the guide casing including means for engaging the pressure member, at the fully housed position to maintain the pressure member from projecting beyond the edge of the partition wall plate.

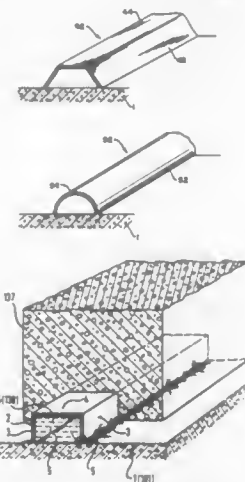
5,377,468
AERODYNAMICALLY STABLE ROOF PAVER SYSTEM AND BALLAST BLOCK THEREFOR
John Repasky, Hanover, Pa., assignor to Hanover Architectural Products, Inc., Hanover, Pa.
Filed Apr. 27, 1993, Ser. No. 53,917
Int. Cl.⁶ E04B 5/00, 7/00; E04C 1/39; E04D 3/24
U.S. Cl. 52—302.4 19 Claims



1. An aerodynamically-stable roof ballast system for protecting a membrane-type roof, said system comprising a plurality of blocks superposed on said roof in laterally interlocked relation, each of said blocks having a topside and a bottomside with leg means for spacing said bottomside from said roof to define a chamber therebetween, each block having selected edge faces with complementary means for interlocking with adjacent blocks, each block also having channel means providing fluid communication between said block topside and said chamber for enabling any aerodynamically-induced pressure differential across said interlocked blocks to be equalized while

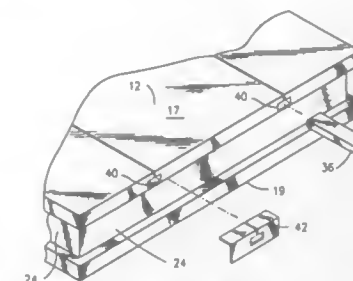
permitting fluid to drain through said interlocked blocks to said chamber above said roof, whereby the ballast system is aerodynamically stable in unusual wind conditions.

5,377,469
SEALING DEVICE FOR CONCRETE JOINTS AND PROCESS FOR THE INTRODUCING OF A SEALING MEDIUM INTO SEALING DEVICES
René P. Schmid, Grundstrasse 2, CH-8165 Oberweningen, Switzerland
Division of Ser. No. 578,830, Sep. 5, 1990, Pat. No. 5,249,401.
This application Jul. 6, 1993, Ser. No. 86,093
Claims priority, application Germany, Sep. 8, 1989, 8910744[U]
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.
Int. Cl.⁶ E04F 21/165
U.S. Cl. 52—396.02 20 Claims



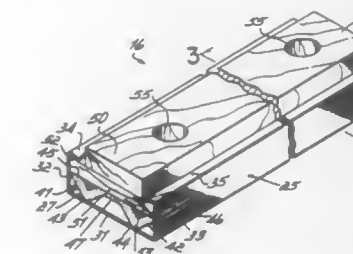
1. A sealing device for sealing a joint disposed between two concrete sections, comprising:
a profile fabricated from an impermeable material;
said profile having a substantially U-shaped cross section to provide an upper cover wall, and first and second side walls depending downwardly from opposite sides of said cover wall;
said first and second side walls having first and second free longitudinal lower edges, respectively;
said first and second free longitudinal lower edges being transversely spaced apart by a maximum distance between said first and second side walls to provide an opening extending from said first free longitudinal lower edge to said second free longitudinal lower edge;
securement means for mounting said profile in an area of the joint with said first and second free longitudinal lower edges being disposed on one of the concrete sections to provide a hood arrangement;
sealing means for emerging through said opening and beneath said first and second free longitudinal lower edges to fill faulty concrete places in the joint area;
said sealing means being a sealing medium;
passage means to provide a flow path for said sealing medium;
said passage means including a flow channel extending longitudinally within said profile in flow communication with said opening; and
said cover wall and said first and second side walls having flat and straight wall surfaces in connection with each other.

5,377,470
MODULAR INSULATING WALL PANEL SYSTEM
Carl Hebinck, 22646 Weeks Blvd., Land O'Lakes, Fla. 34639
Filed Mar. 4, 1993, Ser. No. 26,477
Int. Cl.⁶ E04B 2/20
U.S. Cl. 52—405.1 16 Claims



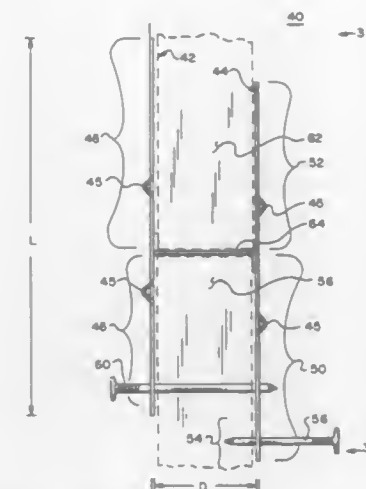
1. A modular insulating wall panel for use with walls constructed of a skeleton of structural members comprising studs, said wall panel comprising:
a monolithic structure having two opposing generally parallel surfaces and a plurality of edges, including a bottom edge, a first side edge and a second side edge, each of said side edges having a recess formed therein, a plurality of studs, having a predetermined width and a predetermined depth, said recess in each said side edge receiving one half of said depth of one of said studs when said wall panel is mounted to the structural members, said wall panel further comprising at least one furring strip inserted intermediate said opposing surfaces of said panel and said strip being substantially encased within said panel.

5,377,471
PREFABRICATED SLEEPER FOR ANCHORED AND RESILIENT HARDWOOD FLOOR SYSTEM
Michael W. Niese, Cincinnati, Ohio, assignor to Robbins, Inc., Cincinnati, Ohio
Continuation of Ser. No. 857,232, Mar. 25, 1992, abandoned.
This application Mar. 16, 1994, Ser. No. 213,947
Int. Cl.⁶ E04B 9/00
U.S. Cl. 52—482 16 Claims



1. In a floor system with an upper flooring layer supported by sleepers above a base, the sleeper comprising:
an elongated channel having two sides and a bottom;
at least one pad supported within the channel;
an elongated nailing strip supported on said at least one pad and also located in the channel, the nailing strip being slidable with respect to the channel and having an upper portion protruding beyond the top of the channel, the nailing strip further having at least one vertical access hole formed therethrough to provide vertical access to the bottom of the channel for securing the channel directly to the base.

5,377,472
TIMBER SYSTEM
Bob Terenzoni, 98 Boston Ave., Medford, Mass. 02155
Filed Feb. 6, 1992, Ser. No. 832,014
Int. Cl.⁶ E04C 3/12; E04B 1/38
U.S. Cl. 52—730.7 10 Claims



1. A system for enlarging a timber, for converting an existing timber into an expanded timber, comprising:
a timber coupler including:
a first continuous metal member having first and second portions, said first portion extending in a first direction parallel to a first major planar surface of said existing timber, said second portion extending from said first portion in a second direction opposite from said first direction;
a second continuous metal member disposed in spaced parallel relationship to said first continuous member; said second continuous member having first and second portions, said first portion extending in said first direction parallel to a second major planar surface of said existing timber, and parallel to both said first portion of said first continuous member and to said first major planar surface of said timber, said second portion of said second continuous member extending from said first portion of said second continuous member in said second direction opposite from said first direction; said first portion of said first continuous member having a length different from the length of said first portion of said second continuous member, and said second portion of said first continuous member having a length different from the length of said second portion of said second continuous member;
a cross-member, disposed perpendicular to said first and second continuous members and adjacent a surface of said existing timber perpendicular to said first and second major planar surfaces, said cross-member coupled to said first and second continuous members proximate a region wherein said first portions of each of said first and second continuous members extend from said second portions of each of said first and second continuous members, for maintaining said first and second continuous members in spaced parallel relationship a distance generally equal to a width of said existing timber, and for defining along with said second portions of both said first and second continuous members, an expander timber receiver region; and
an expander timber, disposed in said expander timber receiver region, and coupled to said second portions of both said first and second continuous members, for expanding at least one dimension of said existing timber and converting said existing timber into said expanded timber.

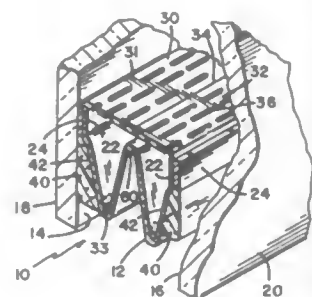
5,377,473
INSULATING GLASS UNIT WITH INSULATIVE SPACER
 Nilabh Narayan, Minneapolis, and James E. Larsen, Andover, both of Minn., assignors to Cardinal IG Company, Minnetonka, Mich.

Continuation of Ser. No. 423,704, Oct. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 367,236, Jun. 16, 1989, abandoned. This application Jun. 11, 1991, Ser. No. 714,322

Int. Cl.⁶ E06B 7/12

U.S. Cl. 52—790

9 Claims



1. An insulating glass unit comprising a pair of generally parallel, spaced-apart glass panes having confronting surfaces and peripheral edges, and a spacer-sealant assembly peripherally joining the glass panes to one another, the panes and spacer-sealant defining between them a gas-containing interpane space, the spacer-sealant including a first metal web substantially spanning the distance between the panes, the first metal web having an outer surface with a middle section between the panes and arm portions which in cross section have peripherally convergent outer surfaces; a sealant including a primary sealant sealing edges of the first web to confronting surfaces of the panes and a secondary, supportive sealant positioned solely between the outer surfaces of the arm portions and the respective confronting surfaces of the panes so that the middle section of the outer surface of the first web is free of secondary sealant; and wherein the first web and sealant provide a barrier having a permeance to air and interpane space gas of not greater than about 0.06 cubic inches/yr-inch-atm., the first web being of stainless steel having a substantially uniform thickness of not greater than about 0.006 inches to define a first thermal path between the panes having a thermal resistance of at least about 8 hr.-°F.-ft./Btu.

5,377,474
FORM-FILL-SEAL PACKAGING APPARATUS
 Lloyd Kovacs, Sheboygan; Dale M. Cherney, Howards Grove, and Keith W. Hopkins, Sheboygan, all of Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Oct. 30, 1992, Ser. No. 969,342

Int. Cl.⁶ B65B 9/06, 41/18, 57/02

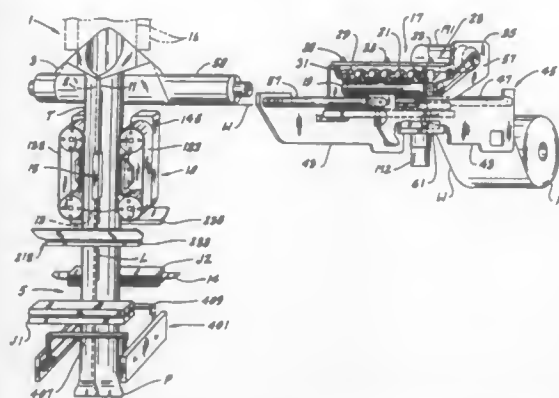
U.S. Cl. 53—64

54 Claims

1. An intermittently operating form, fill and seal machine for making packages of predetermined package length from a web of material having a sealing time, the machine being cyclicly operable and comprising:

- means for forming the web into tubing;
- means for moving the web over the web forming means during a web moving time;
- jaws for forming transverse seals across the tubing during the sealing time;
- means for moving the jaws relative to one another to open and close the jaws;
- means for independently defining each of the following: the package length, a cycle time and the sealing time; and
- a controller, receiving the package length, the cycle time and the sealing time as defined by the defining means, for determining the rate at which the web is moved over the

forming means by the web moving means as a function of the package length and the difference between the cycle



time and the sealing time, said web moving means being responsive to the determined rate.

5,377,475
DEVICE FOR STERILIZING PACKAGING CONTAINERS
 Rolf Haarer, Winterbach; Wolfgang Schmitt, Schorndorf-Weiler, and Theodor Moser, Steinberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

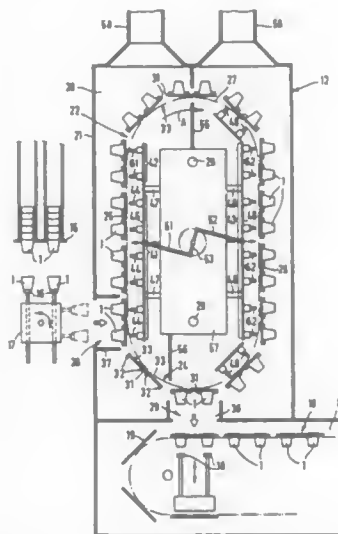
Filed Jun. 3, 1993, Ser. No. 70,839

Claims priority, application Germany, Jun. 10, 1992, 4218941

Int. Cl.⁶ B65B 3/02, 55/10

U.S. Cl. 53—167

16 Claims



1. A device for sterilizing cup-shaped packaging containers before they are filled in a filling and sealing machine, comprising a cup conveyor (10) which conveys the containers in a sterile chamber (11) on a horizontal plane by means of said cup conveyor (10) in a direction of the filling and sealing devices, having a vertically disposed sterilization chamber (20) that is connected to the sterile chamber via a lower outlet opening, an endless conveying device (22) in said sterilization chamber, said endless carrying device includes spaced carriers (31) which carries and guides the individual containers in succession from an inlet (36), guides them through a sterilization zone and transfers them through the lower outlet opening to the cup conveyor (10) of the filling and sealing machine, the endless conveying device comprises an upper and a lower deflection segment and first and second essentially vertical straight segments between the upper and lower deflection segments, the

carriers (31) of the endless conveying device (22) support each of the containers (1) and an opening of each of the containers points toward a chamber portion surrounded by the endless conveying device; in a direction of conveyance of the conveying device (22), a preheating device (41) and a sterilization device (42) downstream of the preheating device for applying a sterilization medium to the individual containers carried by the first vertical straight segment (25), with which the inlet (36) at a lower end is associated, and a drying device (43) is associated with the second vertical straight segment (26), said preheating, sterilization and drying devices (41, 42, 43) are disposed in the chamber portion surrounded by the endless conveying device (22).

5,377,476
ARRANGEMENT FOR STORING, TRANSPORTING AND LOADING SUBSTRATES

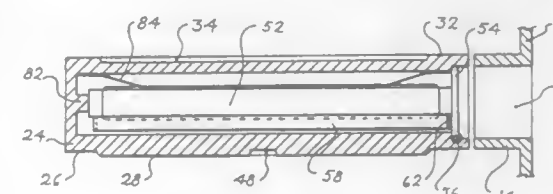
Gudrun Böhrer, Stuttgart; Josef Gentischer, Remshalden; Rolf Lehner, Esslingen; Dieter Modjesch, Nufringen, and Wolfgang Schmutz, Zimmern, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1993, Ser. No. 969,292

Int. Cl.⁵ H01L 21/00; B65B 31/00

U.S. Cl. 53—255

10 Claims



1. Arrangement for storing and transporting substrates under clean room conditions and for loading the substrates into a clean room, wherein sealable cassettes (24) each accommodating one substrate are provided and the clean room comprises an outer partition (10) having a loading slot (12), that the cassettes (24) have a sealing flap (54) in one side wall that the cassettes (24) are provided with a substrate drawer (58) which supports the substrate (52) and can be moved out through the opened sealing flap (54), that the cassettes (24) with their sealing flap (54) are alignable to the loading slot (12), and that there are mechanisms for opening the sealing flap (54) and for moving the substrate drawer (58) to a position external to the loading slot (12).

5,377,477
METHOD AND APPARATUS FOR A POWER STRAPPING MACHINE
 James A. Haberstroh, Vernon Hills, and Timothy B. Pearson, Antioch, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Dec. 9, 1993, Ser. No. 164,450

Int. Cl.⁶ B65B 13/22, 13/04

U.S. Cl. 53—399

10 Claims

1. A strap feeding and tensioning apparatus for a strapping machine, the apparatus comprising:

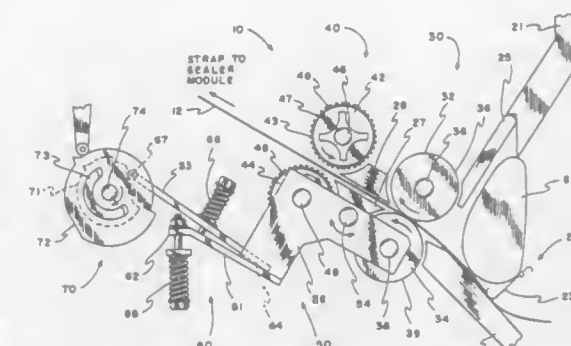
- a pivoting roller carriage pivotally disposed relative to a frame;
- a first strap feeding roller drivable by a first rotatable drive shaft, the first rotatable drive shaft rotatable by a power drive train;
- a second strap feeding roller adjacent the first strap feeding roller and rotatably disposed on the pivoting roller carriage;
- the first and second strap feeding rollers positionable to engage between them and feed a strap to a strap application assembly;
- a first strap tensioning roller drivable by a second rotatable

drive shaft, the second rotatable drive shaft rotatable by a power drive train;

a second strap tensioning roller rotatably disposed on the pivoting roller carriage;

the first and second strap tensioning rollers positionable to engage between them and tension a strap around an object; and

a feeding and tensioning cam rotatably disposed with respect to the frame, the feeding and tensioning cam engageable with a cam follower on the pivoting roller carriage, the



pivoting roller carriage being pivotable about a pivot point disposed between the second feeding and tensioning rollers, by the action of the feeding and tensioning cam against the cam follower, wherein rotation of the roller carriage by the cam in a first direction separates the tensioning rollers and draws the feeding rollers together to engage and feed the strap, and rotation of the roller carriage by the cam in a second direction separates the feeding rollers and draws the tensioning rollers together to apply tension to the strap.

5,377,478
PACKAGE FORMING APPARATUS FOR PACKAGING MACHINE

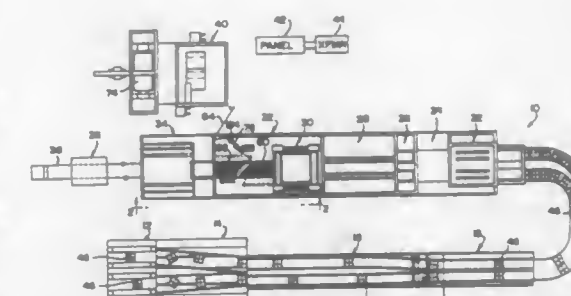
Lloyd Kovacs, Sheboygan, Wis., and Mario Tosetti, Bergamo, Italy, assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed May 27, 1993, Ser. No. 68,212

Int. Cl.⁶ B65B 9/06, 41/12

U.S. Cl. 53—550

23 Claims



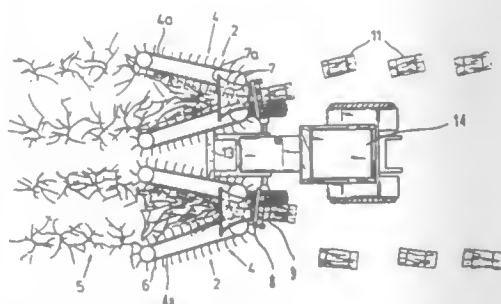
1. In an apparatus for packaging items in plastic film, a system for enveloping the items in the film comprising

- a. a source of film in an elongated sheet,
- b. forming apparatus for continuously shaping said film into a tube about said items in a path of travel of said items, said forming apparatus having an orifice including a portion extending across said path at an oblique angle,
- c. means for inserting said items into said tube, and
- d. means for conveying said tube with items therein, said conveying means comprising at least one segmented conveyor comprising a plurality of parallel conveyor seg-

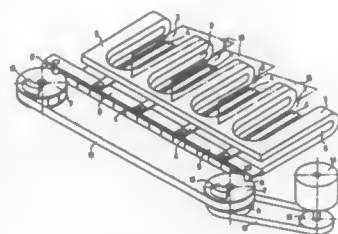
ments all driven at an equal surface velocity, said conveyor segments conforming to said orifice portion.

effect a tangential cutting off of the crop at the stop edge and for moving the movable member substantially out of the cut-

5,377,479
METHOD AND APPARATUS FOR HARVESTING AND BUNDLING PLANTS
Ragnar Wilstrand, P1 601 Hamre, and Mats Wilstrand, Åsgatan 96, both of S-776 00 Hedemora, Sweden
PCT No. PCT/SE92/00079, § 371 Date Jul. 27, 1993, § 102(e) Date Jul. 27, 1993, PCT Pub. No. WO92/14350, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 10, 1992, Ser. No. 90,209
Claims priority, application Sweden, Feb. 15, 1991, 9100462-2
Int. Cl.⁶ A01D 37/00; A01G 23/081; B65B 27/10
U.S. Cl. 56—14.3 10 Claims

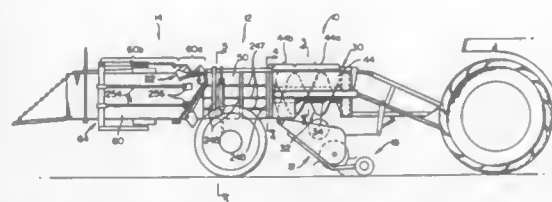


6. A method for harvesting and bundling plants in a harvesting assembly during the advancement of said harvesting assembly across the ground, comprising the steps of continuously gripping plants by a feeding apparatus, cutting off said plants, breaking said plants at a position between ends of said plants, folding said plants around said position and towards subsequent plants for forming a continuous bead of folded plants, and conveying said plants for further treatment or storage.



ting compartment after the cutting off of the crop to allow additional crop to enter the cutting compartment.

5,377,481
APPARATUS FOR BALING BULK FIBROUS MATERIAL
Duane L. Sibley, H.C.R. 67 Box 169, and Dwight A. Sibley, H.C.R. 67 Box 161, both of Nashua, Mont. 59248
Filed Mar. 17, 1993, Ser. No. 32,645
Int. Cl.⁶ A01D 39/00; A01F 15/02, 17/00
U.S. Cl. 56—341 29 Claims



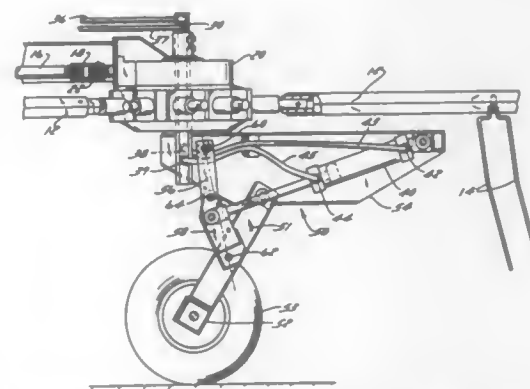
18. Apparatus for forming fibrous bulk material and like material into bales which comprises bale forming means for forming said material into an elongated continuous mass, said bale forming means having a bale-forming compartment with an infeed end and a discharge end, and material flow restricting means for resisting the movement of said mass of material; auger feeding means oriented longitudinally in line with said bale-forming compartment for conveying said material into the infeed end of said bale-forming compartment;

rotary compacting roller means rotatable about an axis transverse to said bale-forming compartment and so constructed and arranged with respect to said auger feeding means and the infeed end of said bale-forming compartment whereby material is conveyed through said compacting roller means into said bale-forming compartment and distributed arcuately against the adjacent end of said mass of material, said compacting roller means and said material flow restricting means cooperatively functioning to create said mass of material in a compacted condition with material being added longitudinally to said mass of material at the bale-forming compartment infeed end and compressed thereinto by said compacting roller means.

5,377,480
APPARATUS FOR CUTTING DOWN ELONGATED STANDING CROPS, PARTICULARLY STALK MATERIAL
Hans Locher, Kurvenstrasse 14, CH-8610 Uster, Switzerland
PCT No. PCT/CH92/00240, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO93/11658, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 11, 1992, Ser. No. 107,700
Claims priority, application Switzerland, Dec. 18, 1991, 03745/91
Int. Cl.⁶ A01D 34/73, 34/13; A01G 3/04
U.S. Cl. 56—102 25 Claims

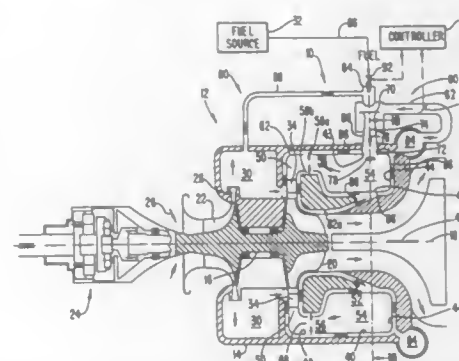
1. Apparatus for cutting down elongated standard crops comprising at least one cutting compartment to receive the crop, said cutting compartment having a static member which forms a stop edge for the crop, a movable member which compacts the crop in the cutting department and which cooperates with the static member to cut off the crop during a cutting operation, moving means operatively associated with the movable member for moving the movable member substantially parallel to the stop edge during the cutting operation to

5,377,482
HYDRAULIC LIFT ROTARY RAKE
Walter N. Knigge, Manitowoc, Wis., assignor to Miller-St. Nazianz, Inc., St. Nazianz, Wis.
Filed Sep. 3, 1993, Ser. No. 116,326
Int. Cl.⁶ A01D 78/10
U.S. Cl. 56—370 20 Claims



9. A rotary rake for raking and windrowing hay comprising: a rotary gearbox for rotating a set of rakes; a support frame and wheelbase assembly for supporting the rotary gearbox and for transporting the rotary rake; a linkage on the support frame for raising and lowering the rotary rake; a fluid-powered cylinder for operating the linkage; and a fluid port extending through the center of the rotary gearbox.

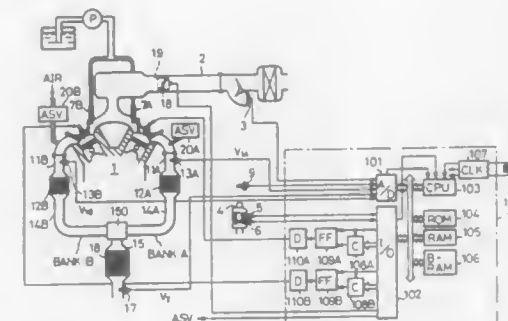
5,377,483
PROCESS FOR SINGLE STAGE PREMIXED CONSTANT FUEL/AIR RATIO COMBUSTION
R. Jan Mowill, OPRA B.V., Opaalstraat 60-P.O. Box 838, 7550 AV Hengelo, Netherlands
Division of Ser. No. 86,883, Jul. 7, 1993. This application Jan. 7, 1994, Ser. No. 178,848
Int. Cl.⁶ F02C 9/50
U.S. Cl. 60—39.06 4 Claims



1. A process for operating a gas turbine engine module to minimize NO_x and unburned fuel and fuel by-products, the engine module of the type having a cylindrical liner housing with an axis and defining a combustion chamber, the housing having at least one inlet port proximate one axial housing end, the chamber portion adjacent the one axial housing end comprising a combustion zone, and an exhaust part and aperture means proximate the other axial housing end, the chamber portion adjacent the other axial housing end comprising a dilution zone, the process comprising the steps of: supplying compressed air flow and fuel flow to the vicinity of the housing; continuously premixing all the fuel flow with a portion of the compressed air flow outside the housing and injecting

the resulting fuel/air mixture into the combustion zone through the housing inlet port in a direction to provide swirling combustion about the housing axis; admitting the remainder of the compressed air flow to the dilution zone through the aperture means; controlling fuel flow rate and the compressed air portion flow rate to provide a mixture with an essentially predetermined lean fuel/air ratio over substantially the entire operating range of the gas turbine engine module; and convectively cooling the housing portion defining the combustion zone with at least the remainder of the compressed air flow while maintaining the predetermined lean fuel/air ratio of the mixture in the combustion zone, wherein a substantial part of the compressed air flow portion is used also in said convectively cooling step.

5,377,484
DEVICE FOR DETECTING DETERIORATION OF A CATALYTIC CONVERTER FOR AN ENGINE
Yasuhiro Shimizu, Nishikamo, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Nov. 10, 1993, Ser. No. 149,805
Claims priority, application Japan, Dec. 9, 1992, 4-329406
Int. Cl.⁶ F01N 3/28
U.S. Cl. 60—276 16 Claims



1. A device for detecting a deterioration of a three-way catalytic converter for an internal combustion engine, said engine comprising, a plurality of cylinders divided into cylinder groups, individual exhaust passages connected to the respective cylinder groups, a common exhaust passage into which said individual exhaust passages are merged, upstream air-fuel ratio sensors disposed in said respective individual exhaust passages for detecting air-fuel ratios of the exhaust gases in said individual exhaust passages, a downstream air-fuel ratio sensor disposed in said common exhaust passage for detecting an air-fuel ratio of the exhaust gas in said common exhaust passage, at least one three-way catalytic converter disposed in exhaust passage between said upstream air-fuel ratio sensors and said downstream air-fuel ratio sensor, and a means for individually controlling the air-fuel ratio of each cylinder group based on outputs of said respective upstream air-fuel ratio sensors, said device comprising:

an estimating means for estimating the air-fuel ratio of a mixture of the exhaust gases from said respective individual exhaust passages flowing into said common exhaust passage based on the output signals of said upstream air-fuel ratio sensors; and

a determining means for determining whether or not said three-way catalytic converter has deteriorated based on the output signal of said downstream air-fuel ratio sensor and said estimated air-fuel ratio of the mixture of the exhaust gas flowing into said common exhaust passage.

5,377,485

ELECTRIC POWER CONVERSION SYSTEM

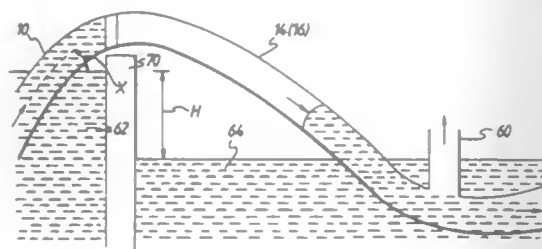
Norman W. Bellamy, Coventry, England, assignor to Hydro Energy Associates Limited, Gloucestershire, England
PCT No. PCT/GB91/00488, § 371 Date Oct. 22, 1992, § 102(e)
Date Oct. 22, 1992, PCT Pub. No. WO91/17359, PCT Pub. Date Nov. 14, 1991

PCT Filed Mar. 28, 1991, Ser. No. 938,269

Int. Cl.⁶ F16D 31/02; H02K 7/18

U.S. Cl. 60—398

29 Claims



1. An energy conversion system for use with a stream of flowing liquid which has energy, said system being adapted to convert the energy in liquid which flows from a higher level to a lower level, comprising duct means through which the liquid is caused to flow in flowing from said higher level to the lower level, means for introducing a gas into the duct means so that it is moved along the duct means by the flowing of liquid, and some of the potential energy in the gas, and including kinetic energy conversion means arranged to convert the kinetic energy of the gas into energy in a more readily usable form, characterized in that said duct means comprises a syphon duct and extends from the higher level to the lower level in a smoothly curved manner.

5,377,486

CATALYTIC CONVERTER SYSTEM

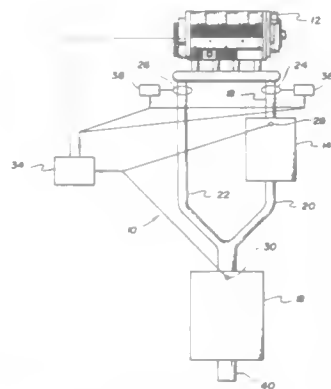
Hamid B. Servati, Farmington Hills; Steven T. Darr, Ypsilanti, and Mary B. Furness, St. Clair Shores, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 17, 1993, Ser. No. 61,466

Int. Cl.⁶ F01N 3/28

U.S. Cl. 60—288

8 Claims



1. An apparatus for controlling catalytic converter exhaust gas temperatures in an exhaust system of an internal combustion engine, the apparatus comprising:
at least one light-off catalytic converter;
at least one main catalytic converter;
an input exhaust gas conduit connecting the at least one light-off catalytic converter to an engine;
an intermediate exhaust gas conduit connecting the at least one light-off catalytic converter to the at least one main catalytic converter;

a bypass exhaust gas conduit connecting the at least one main catalytic converter to the engine;
light-off catalytic converter valve means for controlling exhaust gas flow from the engine only through the at least one light-off catalytic converter, said light-off catalytic converter valve means comprising an electrically controlled valve;
bypass valve means for controlling exhaust gas flow from the engine only through the bypass exhaust gas conduit, said bypass valve means comprising an electrically controlled valve;
means for generating signals representative of exhaust gas temperatures in the light-off catalytic converter;
means for generating signals representative of exhaust gas temperatures in the main catalytic converter;
means for generating signals representative of operating parameters of the engine;
engine control means for receiving the signals representative of exhaust gas temperatures in the light-off catalytic converter, the signals representative of exhaust gas temperatures in the main catalytic converter, and the signals representative of operating parameters of the engine and for generating in response thereto valve control signals for controlling the light-off catalytic converter valve means and the bypass valve means to direct the exhaust gas flow from the engine between the light-off catalytic converter and the bypass conduit varying proportionally therebetween from deminimus flow through the light-off catalytic converter and full flow through the bypass conduit to full flow through the light-off catalytic converter and deminimus flow through the bypass conduit, thereby controlling the exhaust gas temperatures in the light-off catalytic converter and in the main catalytic converter; and
wherein the light-off catalytic converter valve means is resiliently biased to a normally closed position and the bypass valve means is resiliently biased to a normally open position, thereby ensuring an exhaust gas flow path through the bypass exhaust gas conduit in the event of a loss of valve control signals.

5,377,487

AXLE DRIVING APPARATUS HAVING OFFSET OUTPUT SHAFT

Toshiro Azuma, and Hideaki Okada, both of Amagasaki, Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Hyogo, Japan

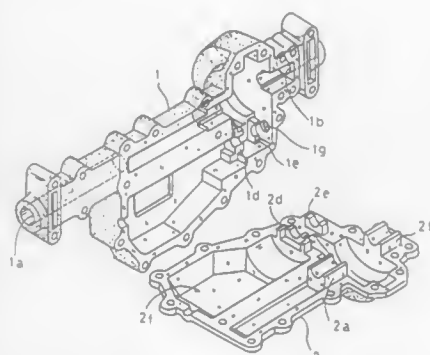
Filed Jul. 7, 1993, Ser. No. 87,076

Claims priority, application Japan, Jul. 7, 1992, 4-047347

Int. Cl.⁶ F16D 39/00

U.S. Cl. 60—487

22 Claims



1. An axle driving apparatus, comprising:
at least two casing members coupled together along a coupling surface to form a casing;
an axle disposed within said casing; and
a hydraulic non-stage transmission housed within said casing and having an output shaft supported by each of said

5,377,489

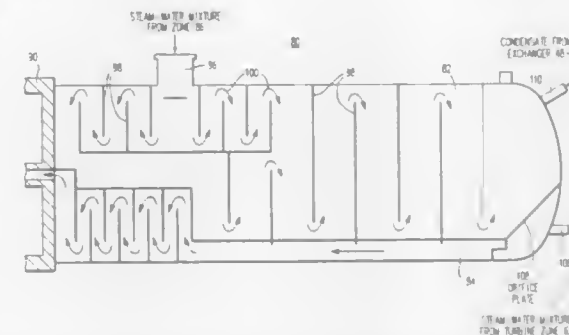
INTERNAL MOISTURE SEPARATION CYCLE FOR A LOW PRESSURE TURBINE

George J. Silvestri, Jr., Winter Park, and Paul W. Viscovich, Longwood, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 697,373, May 9, 1991, Pat. No. 5,140,818. This application Aug. 14, 1992, Ser. No. 930,112
Int. Cl.⁶ F01K 7/16; F28B 1/02

U.S. Cl. 60—678

3 Claims



1. A steam turbine heat recovery system for recapturing heat energy at a final stage moisture removal zone of a low pressure turbine, the turbine including at least one higher pressure moisture removal zone and a condenser for condensing exhaust steam from the turbine into feedwater to be returned to a boiler, the system including a condensing drain cooling heater having a condensing section and a drain cooling section, a first plurality of heat exchanger tubes extending through said condensing section and a second plurality of heat exchanger tubes extending through said drain cooling section, feedwater from said condenser being pumped through each of said first and second plurality of tubes, higher pressure moisture from said higher pressure removal zone flowing through said condensing section for transferring heat therefrom to feedwater in said first plurality of tubes while being converted to condensate, said condensate flowing into said drain cooling section, inlet means coupled between said drain cooling section and said final stage removal zone for flowing moisture from said final stage removal zone into said drain cooling section, and baffle means positioned between said condenser section and said inlet means for reducing pressure in said drain cooling section to less than a pressure of said final stage removal zone.

5,377,490

OPEN LOOP MIXED REFRIGERANT CYCLE FOR ETHYLENE RECOVERY

Lee J. Howard, Allentown, and Howard C. Rowles, Center Valley, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 4, 1994, Ser. No. 192,025

Int. Cl.⁶ F25J 3/06

U.S. Cl. 62—23

27 Claims

1. In the recovery of ethylene from a feed gas mixture containing ethylene, hydrogen, and C₁ to C₃ hydrocarbons, wherein said recovery includes the steps of compressing and cooling said feed gas to condense a portion thereof, fractionating the condensed feed liquids in one or more demethanizer columns to recover a light overhead product comprising chiefly hydrogen and methane, and fractionating the bottoms stream from said one or more demethanizer columns to recover an ethylene product and streams containing C₂ and heavier hydrocarbons, refrigeration for said recovery of ethylene is provided in a cycle which comprises:

(a) cooling an ethylene-containing mixed gas stream comprising hydrogen, methane, ethane, and ethylene in a cold feed condensing zone (101) to yield at least one feed condensate (5) and a light gas stream (3);

casing members, said shaft having a longitudinal axis which is disposed parallel to and offset from the plane of said coupling surface and drivingly connected to said axle.

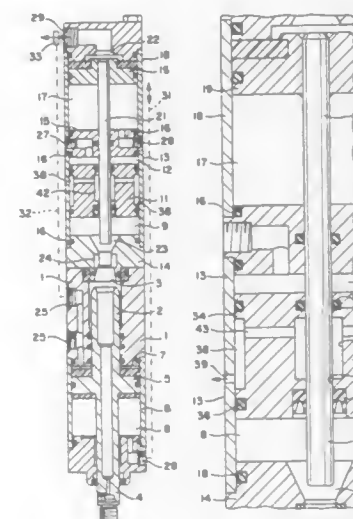
5,377,488

HYDRO-PNEUMATIC PRESSURE TRANSFORMER

Viktor Malina, Kisslegg, Germany, assignor to Tox-Pressotechnik GmbH, Weingarten, Germany
Filed Jul. 2, 1993, Ser. No. 84,975
Claims priority, application Germany, Jul. 2, 1992, 4223411
Int. Cl.⁶ F15B 7/00

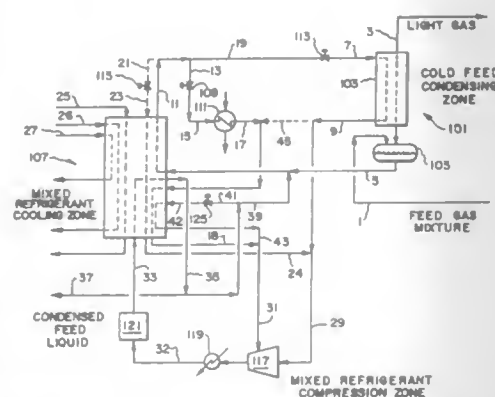
U.S. Cl. 60—560

21 Claims



1. A hydro-pneumatic pressure transformer, comprising,
a unit housing,
a work chamber (3), disposed in said unit housing, for fluctuating pressures, namely a low storage pressure and a high work pressure,
a working piston (2), delimits the work chamber (3) at a front end and is actuatable by a work pressure in the unit housing (1) for its work stroke, which piston extends to an exterior by means of a piston rod (4),
a storage chamber (9) is hydraulically connected with the work chamber (3) and is disposed in a casing (13), from which hydraulic oil under storage pressure flows into the work chamber (3) during a rapid movement of a work stroke and flows back again during a return stroke,
a plunger piston (21) is hydraulically actuatable to provide a high pressure generator, which dips into the work chamber (3) after a rapid movement of the working piston (2),
a storage piston (11) which delimits the storage chamber (9), is displaceable in the casing (13) and is penetrated by the plunger piston (21) and is radially sealed against the plunger piston (21) as well as the casing (13),
a control chamber (12) on one side of the storage piston (11) faces away from the storage chamber (9), which is charged with air at different pressures, and
a separating wall (15), delimits the control chamber (12) and is fixedly connected with the casing (13) and penetrated by the plunger piston (21), said separating wall is provided with radially outward leading connecting conduits (27, 28) for compressed air control,
a pressure-relieving outer annular groove (38) in storage piston (11) is provided in the stroke direction between the radial seals (36, 34) for the absolute separation of oil from water, and
an inner annular groove (42) is provided, between the radial seals (37), in the wall of the inner bore (41) penetrated by the plunger piston (21).

- (b) subcooling said feed condensate (5) by indirect heat exchange in a mixed refrigerant cooling zone (107) with one or more cold process streams to yield a subcooled condensate (11);
- (c) flashing a first portion (13) of said subcooled condensate (11) and using the resulting stream (15) to provide overhead condenser refrigeration for at least one of said demethanizer columns by indirect heat exchange, which warms and at least partially vaporizes said resulting stream (15) to yield a demethanizer overhead condenser refrigerant outlet stream (17); and



- (d) flashing a second portion (19) of said subcooled condensate (11) and using the resulting refrigerant stream (7) to provide at least a portion of the refrigeration required to cool said ethylene-containing mixed gas stream and condense a portion thereof by indirect heat exchange in said cold feed condensing zone (101), which warms and at least partially vaporizes said second portion (19) of said subcooled condensate (11) to yield a cold feed condensing zone refrigerant outlet stream (9).

5,377,491

COOLANT RECOVERY PROCESS

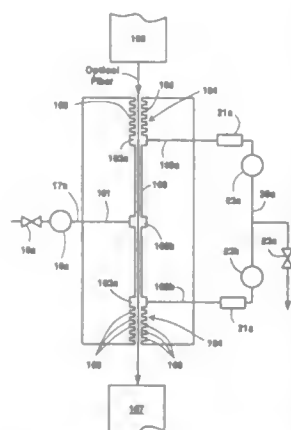
Thomas R. Schulte, Grand Island, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 11, 1992, Ser. No. 989,392

Int. Cl.⁶ F25D 13/06; C03B 25/00; F24F 3/16

U.S. Cl. 62—63

6 Claims



1. A process for recovering a coolant gas from a fiber optic cooling heat exchanger, said process comprising:
- (a) providing at least one heat exchanger having at least one passageway capable of passing therethrough at least one hot fiber, at least one inlet for passing said coolant gas into said at least one passageway and at least one outlet for

- removing said coolant gas from said at least one passageway;
- (b) introducing said at least one fiber into said at least one passageway of said at least one heat exchanger;
- (c) introducing said coolant gas into said at least one inlet of said at least one heat exchanger;
- (d) delivering at least a portion of said coolant gas from said at least one outlet of the said at least one heat exchanger to said at least one inlet of said at least one heat exchanger;
- (e) controlling a flow of coolant gas into and out of said at least one heat exchanger based on at least one condition at said at least one outlet of said heat exchanger selected from the group consisting of a flow rate of said coolant gas from said at least one outlet of said at least one heat exchanger, a concentration of impurities in said coolant gas from said at least one outlet of said at least one heat exchanger and pressure of said coolant gas from said at least one outlet of at least one heat exchanger to limit air or other gas infiltration into said at least one passageway of said at least one heat exchanger.

5,377,492

CONVEYOR SYSTEM FOR CHILLING FOOD PRODUCTS

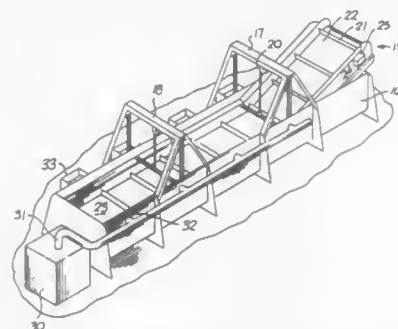
Thomas W. Robertson, and David A. Johnson, both of Metairie, La., assignors to The Laitram Corporation, Harahan, La.

Filed Jan. 3, 1994, Ser. No. 176,964

Int. Cl.⁶ F25D 13/06, 17/02

U.S. Cl. 62—63

12 Claims



1. The method of increasing the cooling speed and the thermal efficiency of a system conveying warm food products in a path through a water cooling tank on a movable conveyor belt, comprising the steps of:
- recirculating water through the tank transverse to the conveying path at a plurality of stations,
- establishing a water influx temperature at each of the stations a few degrees Fahrenheit below the food product temperature,
- and recharging the water efflux temperature at each station to influx at said water influx temperature.

5,377,493

METHOD AND APPARATUS FOR EVACUATING AND CHARGING A REFRIGERATION UNIT

Anthony E. Friedland, Apple Valley, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Mar. 28, 1994, Ser. No. 219,583

Int. Cl.⁶ F25B 45/00

U.S. Cl. 62—77

9 Claims

1. A method of evacuating and charging a refrigeration unit having a compressor; a condenser; a receiver; an evaporator; hot gas, liquid and suction lines; and suction, discharge and liquid line service valves each having a service port position, comprising the steps of:
- providing a vacuum pump having first, second and third vacuum hoses with controllable valves,
- connecting the first, second and third vacuum hoses to the

suction, discharge and liquid line service valves, respectively,

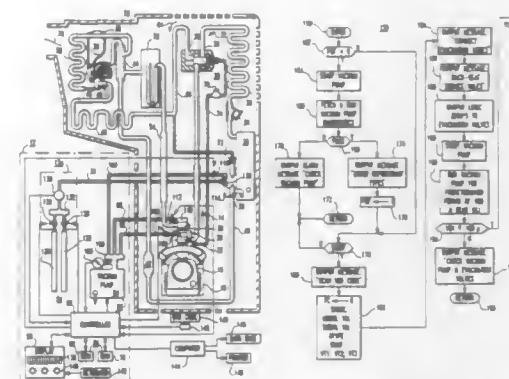
providing refrigerant supply means,

connecting the refrigerant supply means to the liquid line service valve,

actuating the suction, discharge and liquid line service valves to open their service port positions,

opening the controllable valves associated with the first, second and third vacuum hoses,

operating the vacuum pump to provide a predetermined



vacuum in the refrigeration unit via the first, second and third vacuum hoses,

closing the controllable valves associated with the first, second and third vacuum hoses,

charging the refrigeration unit via the liquid line service valve with refrigerant from the refrigerant supply means,

actuating the suction, discharge and liquid line service valves to close their service port positions,

and removing the first, second and third vacuum hoses and refrigerant supply means from the suction, discharge and liquid line service valves.

5,377,494

HEAT EXCHANGING APPARATUS AND A METHOD OF PREVENTING CORROSION

Shinya Takagi, Yamatotakada; Kazuaki Minato, Osaka, and Masafumi Satomura, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

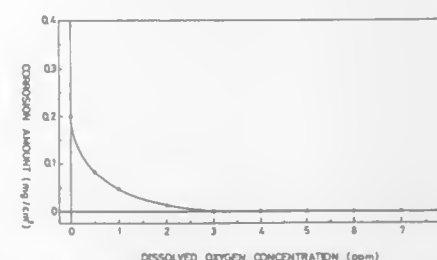
Filed Jun. 24, 1992, Ser. No. 903,268

Claims priority, application Japan, Jun. 24, 1991, 3-151426; Jun. 16, 1992, 4-156580

Int. Cl.⁶ F25B 29/00

U.S. Cl. 62—102

8 Claims



1. A process of suppressing corrosion of a heat exchanging apparatus, comprising the steps of:
- preparing ammonia solution including dissolved oxygen of a predetermined concentration,
- adding to said ammonia solution molybdate of an amount

according to the concentration of said dissolved oxygen and,

forming a composite structure including a ferrosulfuric oxide and molybdenum oxide in the portion where said ammonia solution is gasified in the internal surface of a heat exchange cycle tube including iron component through which said ammonia solution is circulated, by heating said ammonia solution including said molybdate.

5,377,495

TEMPERATURE CONTROLLED THERMAL JACKET FOR TRANSFERRING REFRIGERANT

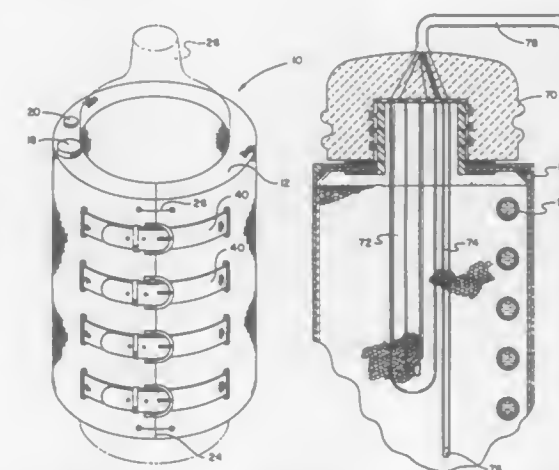
Regis G. Daigle, 8402 E. Stella Rd., Tucson, Ariz. 85730

Filed Jun. 27, 1994, Ser. No. 266,194

Int. Cl.⁶ F25B 49/00

U.S. Cl. 62—125

7 Claims



2. A thermal jacket for selectively heating and cooling a refrigerant container for capturing refrigerant therefrom and transferring refrigerant thereto comprising:
- a hollow and generally tubular jacket formed of a flexible material adapted to be coupled about a refrigerant container;
- fill means coupled to the jacket for filling the jacket with a thermally conductive liquid;
- a coil of thermally conductive tubing disposed within the jacket with the coil having an inlet and an outlet; and
- pump means coupled between the inlet and outlet of the coil for pumping thermally conductive liquid through the jacket.

5,377,496

REFRIGERATION SYSTEM WITH INSTALLED ACID CONTAMINATION INDICATOR

Nancy M. Otto, Clay; Warren R. Clough, Cicero, and Henry B. Balduzzi, Liverpool, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 5, 1993, Ser. No. 131,584

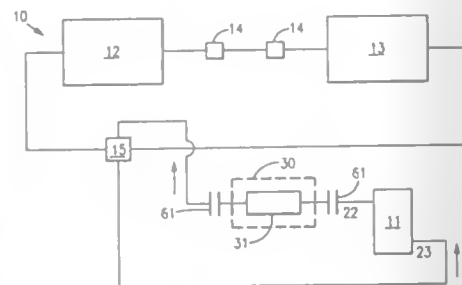
Int. Cl.⁶ G01K 13/00

U.S. Cl. 62—129

10 Claims

1. An improved vapor compression refrigeration system (10, 10') of the type in which a compressor (11), having a suction (23) and a discharge (22), circulates refrigerant through a closed loop and in which there is a portion of said closed loop

where, during operation, said refrigerant is in a gaseous state, the improvement comprising:

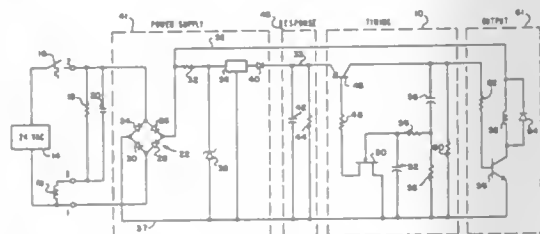


an indicator (30, 30') for detecting the presence of acid contamination in said refrigerant located in a bypass line between said suction and said discharge.

5,377,497
TIMED-OFF CONTROL APPARATUS AND METHOD
Joe R. Powell, Garland, Tex., assignor to Lennox Industries Inc., Richardson, Tex.
Filed Dec. 17, 1993, Ser. No. 170,526
Int. Cl.⁶ G05D 23/32

U.S. Cl. 62—158

20 Claims



1. Apparatus for controlling start-up of an electrically operated device after an electrical power supply outage, said apparatus comprising:

resistor means having a predetermined electrical resistance; capacitor means having a predetermined electrical capacitance and being electrically connected to said resistor means, said capacitor means being chargeable by an electrical power supply and being dischargeable at a predetermined rate in response to an electrical power supply outage;

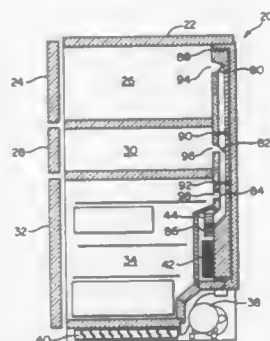
field effect transistor means electrically connected to said capacitor means and to said resistor means and being responsive to voltage across said capacitor means when said capacitor means is being discharged, said field effect transistor means being turned off in response to a first voltage indicating that said capacitor means is being discharged and being turned on in response to a second voltage indicating that said capacitor means has been discharging for a predetermined time; and

switch means electrically connected in series between the electrical power supply and the device, said switch means being opened by said field effect transistor means in response to said first voltage for isolating the electrical power supply from the device and being closed by said field effect transistor means in response to said second voltage for electrically connecting the electrical power supply to the device.

5,377,498
MULTI-TEMPERATURE EVAPORATOR REFRIGERATION SYSTEM WITH VARIABLE SPEED COMPRESSOR

Nihat O. Cur, Royalton Township, Berrien County; Steven J. Kuehl, Lincoln Township, Berrien County, and Douglas D. LeClear, St. Joseph Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Continuation-in-part of Ser. No. 930,104, Aug. 14, 1992, Pat. No. 5,231,847. This application Aug. 2, 1993, Ser. No. 101,129
Int. Cl.⁶ F25D 17/08; F25B 39/02
U.S. Cl. 62—187

32 Claims



1. A refrigeration appliance, comprising: a plurality of refrigeration compartments; a plenum in communication with each of said compartments; a single evaporator located in said plenum; a condenser; a single compressor; a refrigerant circuit comprising a series of conduits for providing a flow of refrigerant through said condenser, said evaporator and said compressor; a plurality of restriction devices in said series of conduits connecting said condenser with said evaporator, said restriction devices operating at a plurality of different pressure levels; valve means in said refrigerant circuit for directing refrigerant to a selected one of said restriction devices; a plurality of movable baffles for selectively opening and closing communication between said plenum and each of said compartments; and means for controlling said valve means and said plurality of baffles for selectively maintaining each of said compartments at any of a plurality of selectable temperature and selectable humidity levels such that each of said compartments is supplied with chilled air at the required temperature and humidity.

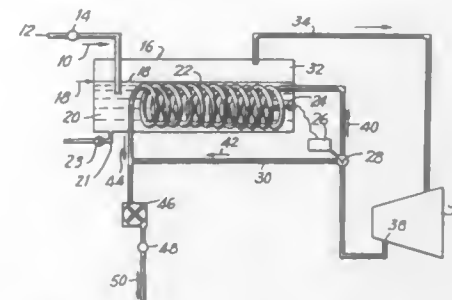
5,377,499
METHOD AND APPARATUS FOR REFRIGERANT RECLAMATION
Kevin J. Zugibe, Haverstraw, N.Y., assignor to Hudson Technologies, Inc., Hillburn, N.Y.
Filed May 10, 1994, Ser. No. 240,444
Int. Cl.⁶ F25B 43/04

U.S. Cl. 62—195

5 Claims

1. A method for reclaiming refrigerant, comprising the steps of:
 - (a) providing contaminated liquid refrigerant into a distillation chamber;
 - (b) boiling said liquid refrigerant to cause a vapor to form above said refrigerant in said chamber;
 - (c) conducting said vapor to a compressor to form hot gases;
 - (d) conducting said hot gases to either a helical coil below the liquid level within said chamber or to bypass said chamber;
 - (e) providing a temperature sensor for the liquid within the said chamber and using the sensed temperature to control

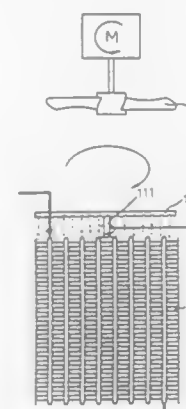
a valve for choosing flow of said hot gases either to said helical coil or to said bypass; and



(f) causing flow from said helical coil and said bypass to a condenser for providing an overall output of distilled refrigerant.

5,377,500
WATER COOLED AIR CONDITIONER
Ten S. Yang, Taipei, Taiwan, Prov. of China, assignor to Fast Maker Enterprise Co., Ltd., Chitu, Taiwan, Prov. of China
Filed Jun. 3, 1993, Ser. No. 70,806
Int. Cl.⁶ F25B 39/04
U.S. Cl. 62—238.6

7 Claims



1. A water cooled air conditioner, comprising: a compressor for pressurizing a refrigerant, said compressor having an inlet port and an outlet port; an evaporator having an outlet port fluidly coupled to said compressor inlet port; condensing means having a refrigerant input line coupled in fluid communication with said compressor outlet port and a refrigerant output line coupled in fluid communication with an inlet port of said evaporator for condensing said refrigerant from a gaseous state at a first temperature to a liquid state at a second temperature, said first temperature being higher than said second temperature, said condensing means including (1) a first conduit fluidly coupled to said refrigerant input line on one end thereof and fluidly coupled to said refrigerant output line on an opposing end for carrying said refrigerant therebetween, and (2) at least one second conduit extending through said first conduit for carrying cooling water therethrough, wherein heat from said refrigerant in said first conduit is transferred to said cooling water within said at least one second conduit; and, means for displacing said cooling water coupled in fluid communication with said second conduit, said coolant displacement means including a coolant pump having an outlet coupled in fluid communication with a first end of said second conduit, a radiator having an inlet coupled in fluid communication with a second end of said second conduit, and means for evaporative cooling of said radiator;

5,377,501
OIL SEPARATOR FOR CONDITIONING RECOVERED REFRIGERANT

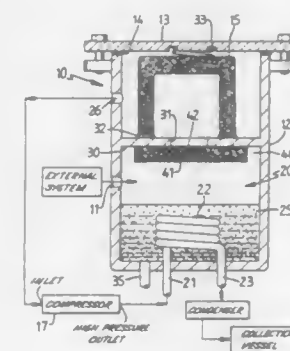
Robert L. Muston, Victoria, Australia, assignor to Environmental Products Amalgamated Pty Ltd, Victoria, Australia
PCT No. PCT/AU91/00182, § 371 Date Nov. 20, 1992, § 102(e)
Date Nov. 20, 1992, PCT Pub. No. WO91/19140, PCT Pub. Date Dec. 12, 1991

PCT Filed Apr. 30, 1991, Ser. No. 952,894
Claims priority, application Australia, May 25, 1990, PK 0312; May 25, 1990, PX 0313

U.S. Cl. 62—292

Int. Cl.⁶ F25B 45/00

20 Claims



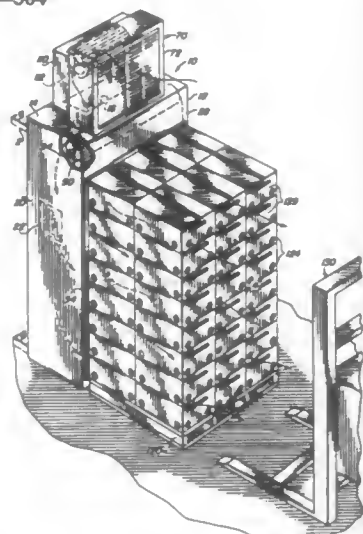
18. A conditioner for conditioning refrigerant gas comprising, in combination: a housing having an upper portion and a lower portion; an accumulator section in the lower portion of the housing for collecting a volume of refrigerant in the liquid phase together with oil; means to heat the refrigerant to thereby separate it from the oil by vaporisation; a filter element in the upper portion of the housing and located above the accumulator section so as to drain any oil separated by the filter into the accumulator section of the housing by gravity; an oil port in the accumulator section through which oil passes from the accumulator section out of the housing; means in the lower portion of the housing and upstream of the filter element for admitting refrigerant including refrigerant in the liquid phase directly into the accumulator section, with the admitting means comprising an inlet; and a vapour outlet located in the upper portion downstream of the filter element, with the filter element located intermediate the accumulator section and the vapour outlet so that refrigerant in the vapour phase passes from the accumulator section upwardly through the filter element and thence to the vapour outlet.

5,377,502
RIPENING CONTROLLING CHAMBER APPARATUS
 Harold O. Collins, 7551 E. North Ln., Scottsdale, Ariz. 85258;
 James J. Hennessy, 3622 W. Pecan Rd., Phoenix, Ariz. 85041, and Gilbert Mancillas, 4320 W. Lewis Ave., Phoenix, Ariz. 85035

Filed Dec. 29, 1993, Ser. No. 174,781
 Int. Cl.⁶ F28D 5/00

U.S. Cl. 62—304

13 Claims

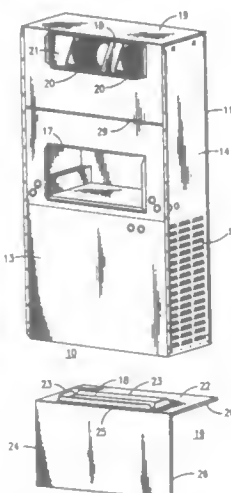


1. Apparatus for controlling the ripening of boxed produce comprising in combination:
 plenum chamber means for receiving a flow of air, including a front wall having an opening against which boxed produce; and means for providing a flow of air into the plenum chamber means and through the opening in the front wall to the boxed produce is disposed and a rolling door for sealing the opening against the boxed produce.

5,377,503
CONVERTIBLE TOP SINGLE PACKAGE HEAT PUMP UNIT
 Wayne R. Reedy, Edwardsville, Ill., and Lawrence J. Boyce, St. Louis, Mo., assignors to Nordyne, Inc., St. Louis, Mo.
 Filed Aug. 18, 1993, Ser. No. 108,508
 Int. Cl.⁶ F24F 13/02; F25B 27/00

U.S. Cl. 62—326

5 Claims



1. Single package heat pump unit that comprises a cabinet that mounts onto an exterior wall of a structure and includes a return air duct in a back wall of the cabinet that communicates through a penetration in said exterior wall with room air in a comfort space within said structure, and a supply duct positioned on one of a top wall and said back wall of the cabinet to communicate through a penetration in said structure with said

comfort space to supply treated air thereto; a room air heat exchanger within said cabinet for treating room air that flows into said cabinet through said return air duct; blower means in said cabinet for discharging the treated air out through said supply duct to said comfort space; and outdoor heat exchange means in said cabinet for exchanging heat with an outdoor environment; wherein said cabinet includes a reversible supply duct panel that has one blank wall portion and one duct wall portion containing said supply duct, and means permitting removable attachment of the supply duct panel onto the cabinet in either of two configurations including a horizontal discharge configuration in which the blank wall portion of the panel is disposed on the top of the cabinet and the duct wall portion is disposed on the back of the cabinet, and a top discharge configuration in which the duct wall portion is disposed on the top of the cabinet and the blank wall portion is disposed on the back of the cabinet.

5,377,504

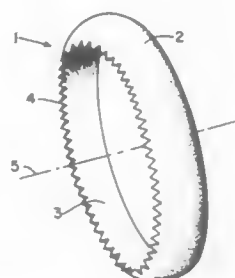
Patent Not Issued For This Number

5,377,505
FINGERNAIL RING
 Julian C. McVay, III, 6250 Streamside Dr. #63, Burlington, Ky. 41005

Filed Oct. 29, 1993, Ser. No. 143,109
 Int. Cl.⁶ A44C 9/00

U.S. Cl. 63—15

1 Claim



1. The ring of the type having a generally annular shape, said ring comprising a generally cylindrical flat inner surface and a substantially transversely convex outer surface, said inner surface and said outer surface joining together at two substantially circular edges, one of said edges being substantially smooth, and the other of said edges being notched.

5,377,506
GEM SETTING
 Johannes Tranzer, Koblenz, Germany, assignor to Erich Stenzhorn and Klaus Stenzhorn, both of Boppard, Germany
 Filed Mar. 23, 1993, Ser. No. 35,646
 Claims priority, application European Pat. Off., Mar. 26, 1992, 92105184.3

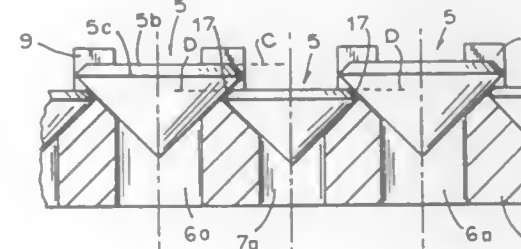
Int. Cl.⁶ A44C 17/02

U.S. Cl. 63—28

6 Claims

1. A gem setting for a jewelry piece made from noble metals for gems to be set over large areas into large-top bodies in a coherent arrangement in which a plurality of small stones having a round top-view configuration with a downwardly extending pointed end and a sharp peripheral edge are disposed in the top of the metal jewelry piece body snugly side by side, in which the pointed ends of the gems are each inserted into corresponding open-bottom funnel-shaped setting recesses milled into the solid metal of the piece body, and in which after insertion the gems are held by prongs or such like which have been formed intermediately of said funnel-shaped recesses, said

setting being formed with the gem-receiving funnel-shaped recesses in primary longitudinal rows in the top of the piece body after precise measurements to determine the positions thereof while at the same time providing lateral spacings from the marginal edge of the piece and body with close relative spacings between said recesses wherein as viewed across the body those funnel-shaped recesses that are of identical size at least are arranged side by side such that centers thereof are precisely disposed along an imaginary connecting line extending at a right angle to a longitudinal centerline of the piece body; an amount of residual metal being left as needed to

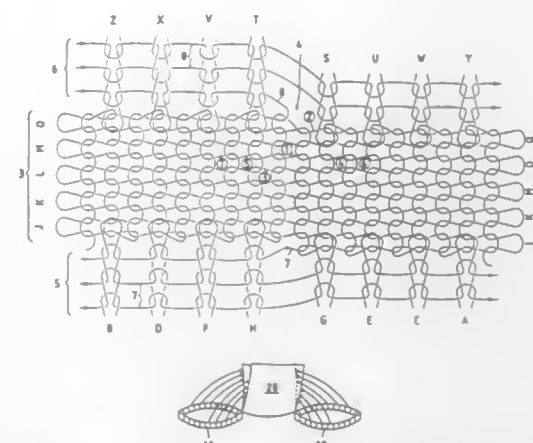


provide prongs for setting larger-size stones, while a plurality of said funnel-shaped setting recesses receive gems of smaller volume are disposed each at points of intersection between the imaginary connecting lines for surrounding larger-size gems through which they extend, in a plurality of other rows staggered in relation to said primary rows, that they slightly overlap the recesses for said larger-size stones and are of greater depth than the recesses for the larger-size stones to thereby ensure that the larger-size stones partly overlap the adjacent stones of smaller size after insertion; and said being swaged for setting the larger-size stones along their sharp peripheral edges on placement.

5,377,507
METHOD FOR MAKING JOINED FABRIC
 Masahiro Shima, Wakayama, Japan, assignor to Shima Keiko Mfg. Ltd., Wakayama, Japan
 Continuation of Ser. No. 716,906, Jun. 18, 1991, abandoned.
 This application Jun. 18, 1993, Ser. No. 77,945
 Claims priority, application Japan, Jun. 21, 1990, 2-163479
 Int. Cl.⁶ D04B 7/00

U.S. Cl. 66—69

7 Claims



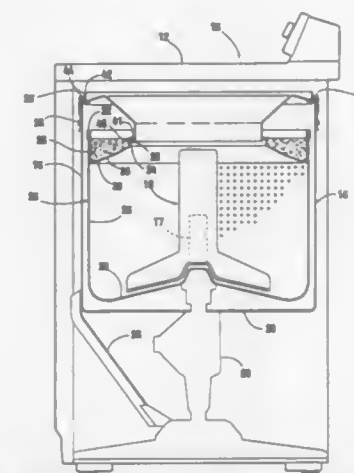
1. A method of making a joined fabric for use with a flat knitting machine having at least a front needle bed and a back needle bed, at least one of the needle beds being laterally movable, the method comprising steps of:
 supplying a first yarn to a first portion of the needles of the front needle bed to knit a first cylindrical knitted fabric;
 supplying a second yarn to a first portion of the needles of

the back needle bed to knit a second cylindrical knitted fabric; and
 knitting a third fabric for joining the first and second cylindrical knitted fabrics by
 supplying an unused portion of the first yarn to a second portion of the needles of the front needle bed, the second portion of the needles of the front needle bed being substantially between the first portion of the needles of the front needle bed and the first portion of the needles of the back needle bed,
 transferring at least one loop of the first cylindrical fabric, which are arranged on the second portion of the needles of the front needle bed, to empty needles of an opposing needle bed,
 racking the opposing needle bed such that a first end loop of the at least one loop of the first cylindrical fabric is adjacent a second end loop of the third fabric,
 transferring the at least one loop of the first cylindrical fabric to the opposing needles such that the first end loop of the first cylindrical fabric overlaps the second end loop of the third fabric, and
 passing a loop of a next course of the third fabric through the overlapped end loops.

5,377,508
APPARATUS AND METHOD FOR PROVIDING DUAL WASHING CAPACITY
 James A. Hair, and Evan R. Vande Haar, both of Newton, Iowa, assignors to Maytag Corporation, Newton, Iowa
 Filed Feb. 9, 1994, Ser. No. 194,038
 Int. Cl.⁶ D06F 35/00

U.S. Cl. 68—4

11 Claims



1. A dual capacity washing machine, comprising:
 an outer tub having an open end;
 a first inner tub mounted within the outer tub and having a first predetermined capacity for receiving items to be washed;
 a first tub cover mounted on the outer tub adjacent the periphery of the open end and including a surface extending toward the first inner tub to provide a transition into and out of the first inner tub;
 a second inner tub selectively interchangeable with the first inner tub for mounting within the outer tub, the second inner tub having a second predetermined capacity for receiving items to be washed; and
 a second tub cover selectively interchangeable with the first tub cover for mounting on the outer tub adjacent the periphery of the open end and including a surface extending into and out of the second tub whereby the combination of first inner tub and first tub cover provide a first wash

capacity and the combination of second inner tub and second tub cover provide a second wash capacity.

8. A method for changing the washing capacity of a washing machine having an outer tub with a peripheral tub rim forming a tub opening, said method comprising:

mounting a first wash basket having a first wash basket capacity within said outer tub, said first wash basket having a first basket opening spaced a first distance from said tub opening;

mounting a first tub cover to said peripheral tub rim, said first tub cover having a first transition surface extending toward said first basket opening to provide a transition into and out of said first wash basket, whereby said first wash basket and said first tub cover combine to provide a first washing capacity;

removing said first wash basket and said first tub cover from said outer tub;

mounting a second wash basket having a second wash basket capacity less than said first wash basket capacity within said outer tub, said second wash basket having a second basket opening spaced a second distance greater than said first distance from said tub opening;

mounting a second tub cover to said peripheral tub rim, said second tub cover having a second transition surface extending toward said second basket opening to provide a transition into and out of said second wash basket, whereby said second wash basket and said second tub cover combine to provide a second washing capacity.

5,377,509

PROCESS FOR THE WARP PRINTING OF A DESIGN ONTO A CLOTH AND APPARATUS FOR CARRYING OUT THIS PROCESS

Claude Corbiere, La Tour de Salvagny, France, assignor to Corbiere S.A. and Teintureries de la Turdine, France

Division of Ser. No. 704,276, May 22, 1991, Pat. No. 5,212,845.

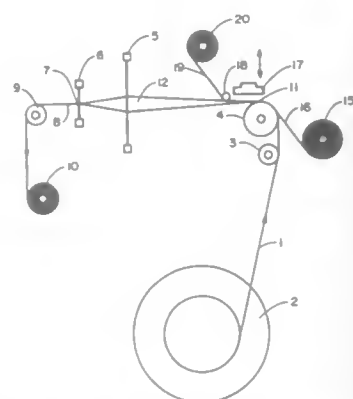
This application Jan. 14, 1993, Ser. No. 4,506

Claims priority, application France, May 29, 1990, 90 06896

Int. Cl.⁶ D06B 1/10

U.S. Cl. 68—5 D

2 Claims



1. In weaving loom, having:

a beam containing a continuously travelling lap of a parallel warp yarns, said warp yarns travelling in a plane;

a guide roller on which said lap of warp yarns is spread defining a shed formation point;

means for inserting a weft yarn at an insertion point into said shed of warp yarns, forming a fabric;

means for controlling the continuous travel of the lap of warp yarns at a travel speed;

means for controlling the insertion of the weft yarn;

means for receiving the fabric formed; an improvement comprising:

means for delivering a transfer paper, carrying a dye design capable of being transferred onto said lap of warp yarns, when said transfer paper is heated in proximity with said lap of yarns at a position between said guide roller and

said insertion point, said delivery means causing said transfer paper to travel in a speed ratio with respect to the travel speed of said lap of warp yarns;

means for receiving said transfer paper having at least some of the dye design therefrom transferred onto the lap of yarns;

two paper guide rollers defining a plane coinciding with the plane of the travelling lap of warp yarns, and located near the shed formation point;

heating means at a regulated temperature arranged between said two paper guide rollers, intended for heating and simultaneously pressing the travelling transfer paper continuously against an entire width of said travelling lap of warp yarns, said heating means comprising release means for automatically moving said heating means immediately away from the lap of warp yarns, when said loom stops.

5,377,510

KEY-RELEASABLE RESTRAINT

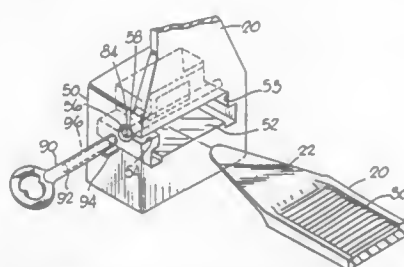
Jerry Smith, Littleton, Colo., assignor to The McKinley Group, Littleton, Colo.

Filed Nov. 17, 1992, Ser. No. 977,518

Int. Cl.⁶ A61F 5/37

U.S. Cl. 70—16

3 Claims



1. A key-releasable restraining device, comprising: a flexible strap having a lock integral with the strap and located on one end of the strap, a free end opposite the end with the lock for insertion into the lock to form an adjustable loop, and a set of strap teeth spaced along the strap; the lock including a cavity through which the strap passes, the cavity being bounded by a wall on one side to receive the strap and a ratchet-mounting wall on the opposite side, and the lock further including a one-way ratchet integrally formed with the lock having a body spaced apart from the ratchet-mounting wall, the body having a free end and a hinge end opposite the free end, and a hinge extending from the hinge end of the body to the ratchet-mounting wall, and a set of ratchet teeth normally engaging the strap teeth to allow the strap teeth to pass the ratchet in a first direction as the strap is inserted into the lock but not in a second direction opposite the first direction when the strap is urged out of the lock; and a key-operated ratchet release to disengage the ratchet teeth from the strap teeth to allow the strap teeth to pass the ratchet teeth in said second direction to allow the strap to be withdrawn from the ratchet, the ratchet release including a keyhole to receive a key, the keyhole having a hole portion to receive a barrel of a key and a slot portion to receive a tab of a key, the keyhole being positioned such that the insertion of the key into the keyhole and the subsequent rotation of the key causes the tab to apply a force against the hinge end of the ratchet body to rotate the ratchet about the hinge to disengage the ratchet teeth from the strap teeth to allow the strap to be withdrawn from the lock.

5,377,511

PADLOCK WITH LOCKING BALLS FOR A SHACKLE

Gerhard Meckbach, Hagen, Germany, assignor to Abus August Bremicker Sohne KG, Wetter, Germany

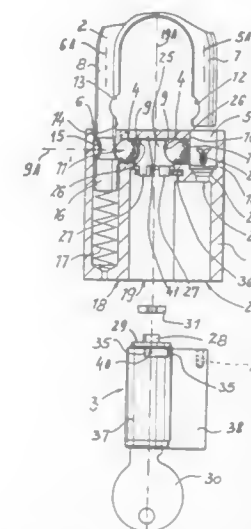
Filed Sep. 24, 1993, Ser. No. 127,172

Claims priority, application Germany, Jul. 15, 1993, 4323693

Int. Cl.⁶ E05B 67/22

U.S. Cl. 70—38 A

10 Claims



1. A padlock comprising:

a padlock body formed with a pair of upwardly open bores extending along respective substantially parallel axes;

a U-shaped shackle having a short leg and a long leg receivable coaxially in respective ones of the bores, the legs being formed with confronting relatively deep, radially open, and crosswise notches, the long leg having a free end spaced from the respective notch and being formed between the free end and the notch with a relatively shallow, radially outwardly open, and circumferential groove and being further formed with a flat extending from a floor of the relatively shallow groove to the respective notch;

a pair of balls displaceable in the body radially of the bores between a locked position projecting radially a relatively far distance into the respective bores and engaging in the respective notches and an unlocked position with only the ball of the bore of the long leg projecting radially a relatively small distance into the respective bore;

a locking element in the body rotatable about an element axis between the bore axes and having an outer surface bearing radially on the balls and formed with a pair of diametrically opposite and relatively shallow recesses and, offset angularly from one of the shallow recesses, with a relatively deep recess, the balls being seated in the shallow recesses in the unlocked position and riding on the outer surface outside the recesses in the locked position, the depth of the shallow recess of the ball of the bore of the long leg being such that in the unlocked position this ball projects into the long-leg bore and inhibits withdrawal of the long leg from the body, the axial depth of the deep recess being such that the respective ball can move substantially wholly out of the long-leg notch and thereby permit axial withdrawal of the long leg from the body, the locking element being formed between the shallow long-leg recess and the deep recess with an outer-surface portion that is set radially inward relative to the element axis from the rest of the outer surface of the element but radially outward of a floor of the deep recess;

a cylinder in the body coupled to the locking element and operable to rotate the locking element about its axis, the cylinder being movable in the body between one end position corresponding to the locked position, an opposite

end position corresponding to alignment of the deep recess with the long-leg ball, and an intermediate position corresponding to the unlocked position; and means including a removable blocking element for inhibiting rotation of the cylinder in the body into the opposite end position corresponding to alignment of the deep recess with the long-leg ball, whereby, when this blocking element is in place, the shackle cannot be removed from the body.

5,377,512

DISK DRIVE LOCK ASSEMBLY

Donald W. Kelley, Fremont, Calif., assignor to Qualtec Data Products, Inc., Fremont, Calif.

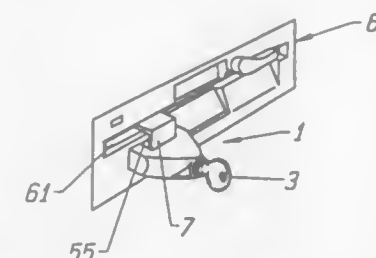
Continuation of Ser. No. 942,577, Sep. 9, 1992, abandoned. This

application Jan. 31, 1994, Ser. No. 191,459

Int. Cl.⁶ E05B 73/00

U.S. Cl. 70—58

18 Claims



1. A disk drive lock assembly comprising:

a housing including a U-shaped body member having a first and a second leg;

a slot blocking member movably mounted within the housing between said first and second legs;

means for mounting the housing with the slot blocking member movably mounted therein on a disk drive adjacent to a disk receiving slot in the disk drive; and

means located in the housing for moving the member in a linear fashion relative to said first and second leg between a retracted position and an extended position wherein a portion of the slot blocking member extends outside of the housing and outside of the disk receiving slot while the housing is mounted adjacent to the disk receiving slot so that the slot blocking member blocks the disk receiving slot when the slot blocking member is in its extended position and is removed from blocking the disk receiving slot when the slot blocking member is in its retracted position.

5,377,513

LOCKING DEVICE

Kinji Miyamoto, Mie, and Imai Akihiko, Tokyo, both of Japan, assignors to Miwa Lock Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1993, Ser. No. 875

Claims priority, application Japan, Nov. 27, 1992, 4-341495

Int. Cl.⁶ E05B 47/00

U.S. Cl. 70—276

16 Claims

1. A locking device for locking a door to an opposing door frame, said locking device comprising:

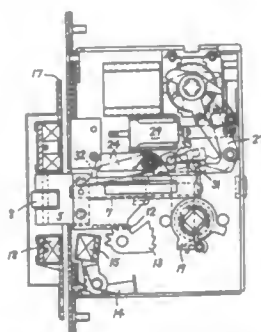
a lock box in said door, said lock box including a side plate, and a front plate facing the opposing door frame;

a dead bolt supported in the lock box so as to be displaceable in forward/rearward directions at a right angle relative to the front plate of said lock box;

a spring biasing said dead bolt in the forward direction to a position at which the dead bolt normally objects from said lock box through the front plate thereof;

said dead bolt including a dead board, and a row of rack gear

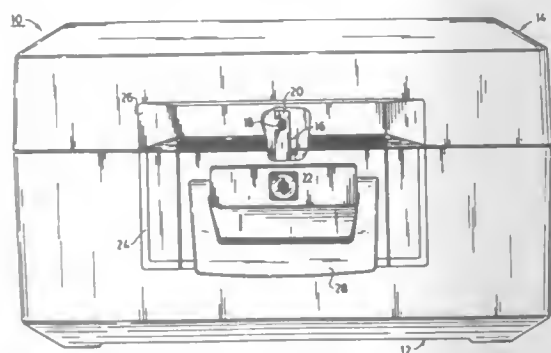
teeth extending along a lower portion of the dead board in said forward/rearward directions;
 a rotatably supported control gear located in the vicinity of said dead bolt and meshing with said rack gear teeth;
 an engagement lever integral with said control gear and extending radially from said control gear;
 a trigger member having a central part rotatably supported on the side plate of said lock box at a location in the vicinity of said front plate, one end on which a first permanent magnetic is carried, and another end engaged with said engagement lever when said dead bolt is retracted in said lock box in an unlocked state;
 a spring biasing said trigger member in such a direction that said first permanent magnet is placed near said front plate;



a second permanent magnet disposed in the door frame in alignment with said first permanent magnet when the door is closed, said second permanent magnet having a magnetic pole confronting a magnetic pole of the same polarity of said first permanent magnet when the door is closed so as to cause the latter to be displaced away from the former by the magnetic repulsive force generated thereby;
 a retractor comprising a narrow elongate plate having one end rotatably supported in said lock box and another end engaged with said dead bolt; and
 an exterior actuating member located outside of said lock box and operatively connected to said one end of the retractor.

5,377,514 ESCUTCHEON AND METHOD OF MAKING A FIRE-RESISTANT SAFE

Richard C. Robbins; Andrew L. Oliveri, both of Rochester, and Mary P. DiGiambattista, Penfield, all of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.
 Division of Ser. No. 78,515, Jun. 16, 1993, Pat. No. 5,295,447, which is a continuation of Ser. No. 811,019, Dec. 20, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 185,587
 Int. Cl.⁶ E05B 15/02; E05G 1/024
 U.S. Cl. 70—452 17 Claims



1. An escutcheon for covering a funnel in a double-walled fire-resistant safe filled with insulation material comprising:

a plate surrounded by a rim that encloses an interior space of the escutcheon;
 a baffle that is interconnected with said rim for enclosing the funnel to resist evaporation of water from the insulation material through the funnel; and
 a stake projecting from said plate for anchoring the escutcheon in the insulation material before the insulation material has completely hardened into place,

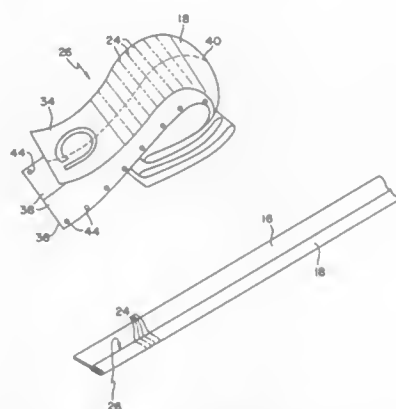
5,377,515 PROCESS FOR COLD PILGER ROLLING OF THIN-WALLED PIPES

Michael Baensch, Mönchengladbach, Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Germany
 Filed Sep. 28, 1993, Ser. No. 127,868
 Claims priority, application Germany, Sep. 30, 1992, 4233556
 Int. Cl.⁵ B21B 1/42, 37/10

U.S. Cl. 72—13 6 Claims
 1. A process for cold pilger rolling of a thin-walled pipe having a small outer diameter, comprising:
 providing shaping tools inside and outside the pipe;
 warming up the pipe and the shaping tools to an operating temperature;
 shaping the pipe by moving the shaping tools arranged outside the pipe along the pipe as the pipe is held intermittently stationary.

5,377,516 METHOD AND APPARATUS FOR BENDING SHEET STOCK

B. J. Lipari, Evergreen, Colo., assignor to Laser Products, Inc., Golden, Colo.
 Filed Mar. 19, 1992, Ser. No. 854,342
 Int. Cl.⁶ B21D 5/02; B21C 51/00
 U.S. Cl. 72—37 23 Claims



1. A method for use in bending sheet stock to form a side panel of a housing, said housing comprising said side panel and a front panel wherein said side panel is shaped to conform to said front panel, said method comprising the steps of:
 inputting dimensional information regarding said housing;
 calculating the positions and shapes of bends for bending said stock to form said side panel of said housing so that said side panel of said housing is shaped to conform to said front panel of said housing;
 determining a sequence for making said bends wherein interference is avoided;
 generating a signal indicative of the positions, shapes and sequence of said bends; and
 printing instructions regarding the positions, shapes and sequence of said bends.

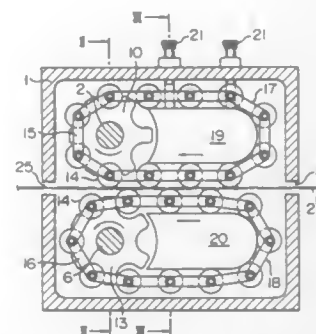
5,377,517 REFORMING APPARATUS

Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Seisakusho Co., Tokyo, Japan

Filed Nov. 9, 1993, Ser. No. 149,452
 Int. Cl.⁶ B21D 1/02

U.S. Cl. 72—164

6 Claims



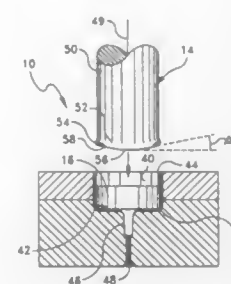
4. An apparatus for reforming work material into a flat configuration, comprising:
 two support plates each having a respective outer periphery surface portion in parallel opposed relation to each other; first and second pluralities of rolls; means for adjusting a relative position of said two support plates relative to each other;
 first and second endless belts rotatably supporting said first and second pluralities of rolls, said first and second plurality of rolls frictionally engaging with and rolling on respective ones of said two support plates; and
 first and second driving means for driving said first and second endless belts at the same speed in opposite directions by engaging said first and second plurality of rolls, respectively, only downstream of said two support plates as viewed in a direction of movement of the work material travelling between said outer periphery surface portions of the two support plates, said first rolls meshingly engaging only with said first driving means as they travel endlessly throughout an entire rotation of said first endless belt, said second rolls meshingly engaging only with said second driving means as they travel endlessly throughout an entire rotation of said second endless belt.

5,377,518 METHOD AND APPARATUS FOR FORMING EXTRUDED METAL TUBES

Joe L. Abbott, Cumberland, R.I., assignor to Enviro Pac International, Inc., Lincoln, R.I.
 Filed May 21, 1993, Ser. No. 65,943
 Int. Cl.⁶ B21C 23/18

U.S. Cl. 72—267

9 Claims



1. A method of forming a cylindrical extruded metal tube having predetermined inner and outer dimensions and configurations and including a tubular side wall having a thickness, a closed end wall which is substantially perpendicular to said

side wall and a projection extending integrally outwardly from said end wall, said method comprising:

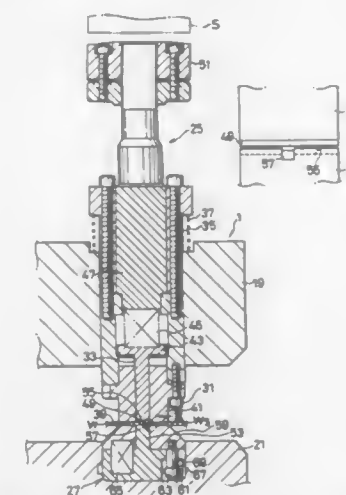
a. assembling an extrudable metal disc in a recess in a female die, said recess having a side wall having a diameter and including a main portion having a configuration which is complementary to a portion of said tube which includes said closed end wall thereof and an adjacent portion of said tubular side wall thereof, said configuration complementary to said closed end wall of said tube including a substantially flat annular portion, said recess also including an outwardly vented cavity portion having a configuration which is complementary to said projection and being correspondingly positioned thereto and located to extend from a central area of said annular portion; and
 b. applying a substantially cylindrical punch to said disc in said recess, said punch having a longitudinal axis and comprising a longitudinally extending side wall and an end face including a peripheral portion which is substantially symmetrical about said axis, said peripheral portion extending outwardly relative to said axis and backwardly in a direction along the longitudinal extent of said punch at an angle of between 10° and 20° relative to a plane which is perpendicular to said axis, said peripheral portion extending to and merging with an outer rim portion which defines a maximum diameter of said punch, said maximum diameter being less than the diameter of said side wall of said recess by an amount equal to said thickness, said outer rim portion merging with said longitudinally extending side wall of said punch having a diameter which is less than said maximum diameter, said punch being applied to said disc with a force sufficient to extrude metal from said disc between said rim portion and said side wall of said recess in a longitudinal direction relative to said punch and to force metal from said disc into said cavity.

5,377,519 PUNCH AND DIE FOR FORMING A PROTRUSION AND A PAIR OF SLITS IN SHEET MATERIAL

Tetsuji Hayashi, La Mirada, Calif., assignor to Yazaki Corporation, Japan
 Division of Ser. No. 953,086, Sep. 29, 1992, Pat. No. 5,284,043.
 This application Nov. 10, 1993, Ser. No. 149,745
 Int. Cl.⁶ B21D 28/10

U.S. Cl. 72—326

4 Claims



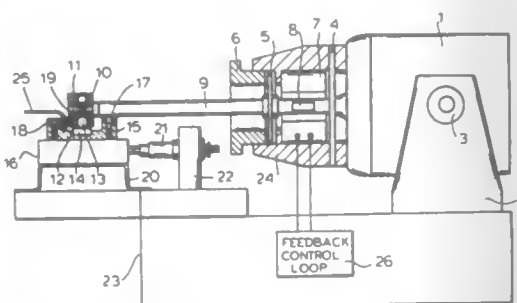
1. Punch and die device pair adapted to cooperate with each other for forming a protrusion and a pair of slits in a strip-like portion of a work sheet, the pair of slits, extending from both sides of the strip-like portion to points in the middle of the strip-like portion where the protrusion is formed, wherein the punch device and die device comprise a punch tool and die

5,377,525
FRICTION TESTING APPARATUS FOR OSCILLATING
AT LEAST ONE SPECIMEN IN CONTACT WITH
ANOTHER

John M. Hutchinson, 82 Meadvale Road, Ealing, London W5 1NR, Great Britain, and John C. Hamer, 17 Clive House, Union Grove, London, Great Britain

Filed Aug. 30, 1993, Ser. No. 114,427
 Claims priority, application United Kingdom, Sep. 5, 1992, 9218827

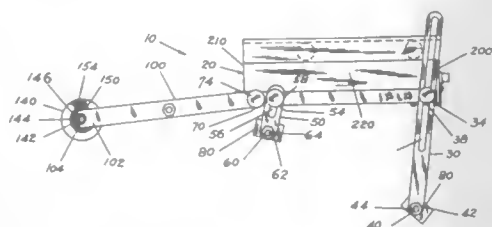
Int. Cl.⁶ G01N 3/56, 19/02
 U.S. Cl. 73—9 20 Claims



1. A test apparatus comprising:
 a first specimen holder which is adapted to hold a first specimen such that a surface of the said specimen is in contact with a second specimen, in a second specimen holder; means for applying a measurable load between the specimens;
 oscillatory driving means for oscillating at least one of the specimen holders along a direction substantially perpendicular to a line of contact between the specimens, said oscillating driving means comprising an electromagnetic vibrator and a stiffness adjusting means, the first and second specimen being electrically insulated from each other when they are not in contact; and
 means for measurement of electrical resistance between the test specimens.

5,377,526
TRACTION ANALYZER
 Bruno Diekmann, Sturtevant, Wis., and Lawrence H. Dubé, Zion, Ill., assignors to Racine Flame Spray Inc., Racine, Wis.
 Continuation-in-part of Ser. No. 939,792, Sep. 3, 1992, abandoned. This application Nov. 4, 1993, Ser. No. 148,023
 Int. Cl.⁶ G01N 19/02

U.S. Cl. 73—9 5 Claims

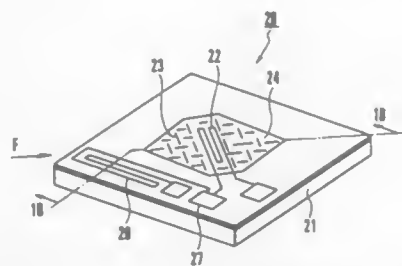


1. An apparatus for measuring the coefficient of friction between a piece of paper and a surface being finished by flame spraying, the apparatus comprising:
 a rolling weight having a circular cross-section;
 a moving means for moving the piece of paper at a constant velocity;
 a holding means for holding the piece of paper and surface finished by flame spraying in contact with one another at a point;
 a support means for supporting the weight in a position to exert a predetermined force upon the point;
 a force measuring means attached between the moving means and the piece of paper to measure the force be-

tween the piece of paper and surface finished by flame spraying as the piece of paper is drawn past the point by the moving means.

5,377,527
THERMAL CONDUCTIVITY MEASURING DEVICE
 Shoji Kamiyama, Kanagawa, Japan, assignor to Yamatake-Honeywell Co., Ltd., Tokyo, Japan
 Filed Sep. 3, 1993, Ser. No. 116,866

Claims priority, application Japan, Sep. 14, 1992, 4-269131
 Int. Cl.⁶ G01N 27/18
 U.S. Cl. 73—25.03 4 Claims

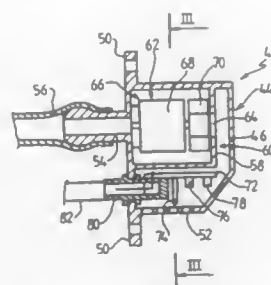


1. A thermal conductivity measuring device comprising:
 a base with a hollow portion;
 a membrane formed above said hollow portion of said base;
 a detector having a heating element held in the air by said membrane, and wherein said detector measures at least one of the thermal conductivity of a gas and a change in thermal conductivity of a gas; and
 a flow path for guiding gas to be measured to said detector; wherein an area of a cross-section perpendicular to the flow direction in said flow path, and over said detector, is set to be larger than an area of a cross section perpendicular to the flow direction in the hollow portion under said membrane of said detector.

5,377,528
MEASURING DEVICE FOR MEASURING PARAMETERS
IN AN AIR STREAM TO BE INTRODUCED INTO THE
CABIN OF A MOTOR VEHICLE

Jean Dauvergne, Fosses, France, assignor to Valeo Thermique Habitacle, Le Mesnil-Saint-Denis, France
 Filed Jul. 29, 1993, Ser. No. 99,159

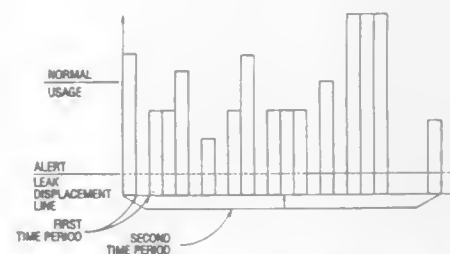
Claims priority, application France, Jul. 30, 1992, 92 09471
 Int. Cl.⁶ B60H 1/32; F25B 49/00
 U.S. Cl. 73—31.01 9 Claims



1. A measuring device for measuring parameters in an air stream to be introduced into a cabin of a motor vehicle through a single unit in order to regulate the apparatus for controlling the climate within the motor vehicle, wherein the measuring device comprises: a housing defining the single unit that is completely separate and distinct from the climate control apparatus, said housing having an air inlet for admitting a fraction, to be measured, of said air stream, an air outlet within said housing for evacuation of said fraction, and an internal

chamber communicating with said air inlet and said air outlet in said housing for the single unit; air circulating means within said housing for the single unit for setting up a differential pressure between said air inlet and air outlet so as to cause said fraction to flow through said internal chamber; and at least one measuring sensor within said internal chamber of the single unit within said housing for giving an output signal representing the instant value of a corresponding parameter of the air stream when said fraction of the air stream passes in contact with the sensor within the housing, and wherein the measuring device further includes a circuit within said housing for the single unit connected to at least one said sensor and located in said internal chamber for regulating the separate and distinct apparatus for controlling the motor vehicle climate outside of said single unit housing.

5,377,529
LEAK DETECTING DEVICE, AND METHOD OF
CONSTRUCTING AND UTILIZING SAME
 Mark A. Boyd, 2552 Middlebelt Rd., Flat Rock, Mich. 48134
 Filed Nov. 15, 1993, Ser. No. 152,683
 Int. Cl.⁶ G01M 3/00, 3/28
 U.S. Cl. 73—40 20 Claims



9. A fluid leakage detection system, comprising:
 means for sensing flow of fluid and generating a pulse corresponding to an identification of a predetermined amount of fluid flow;
 means, connected to said sensing means, for calculating a first time period between two consecutively generated pulses from said sensing means and comparing said first time period to a predetermined time duration;
 means, connected to said calculating means, for determining whether, over a second time period, each of a consecutive series of said first time periods is less than said predetermined time duration; and
 means, connected to said determining means, for indicating a detection of said consecutive series of said first time periods each being less than said predetermined time duration.

5,377,530
APPARATUS FOR HYDROSTATIC PRESSURE TESTING
OF TUBULAR PRODUCTS
 Bruce F. Allen, Granby; Alfred D. DePeau, Somers, both of Conn., and David L. Crick, Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Conn.
 Filed Jul. 29, 1993, Ser. No. 98,888
 Int. Cl.⁶ G01M 3/28

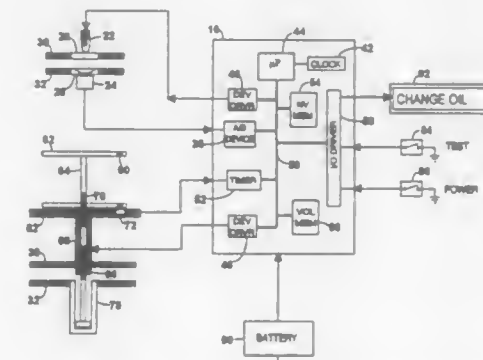
U.S. Cl. 73—49.5 16 Claims



1. An apparatus for hydrostatic pressure testing tubular products, comprising:
 a first seal/gripper assembly having a first seal bladder and a first gripper member connected to each other;

a second seal/gripper assembly having a second seal bladder and a second gripper member connected to each other; a connecting member attached between said first seal/gripper assembly and said second seal/gripper assembly; means for expanding each of said first and second seal bladders into sealing engagement with an inner surface of a tubular product; means for expanding each of said first and second gripper members into gripping engagement with an inner surface of the tubular product; and means for inducing pressure within a segment of the tubular product between said first and second seal/gripper assemblies; wherein said means for expanding each of said gripper members includes a gripper bladder positioned within each of said gripper members and a fluid pressure supply line in fluid communication with each of said gripper bladders.

5,377,531
PORTABLE OIL CHANGE ANALYZER
 Nelson R. Gomm, 14 Gloconda Ave., Acton, Mass. 01720
 Filed Sep. 30, 1993, Ser. No. 129,865
 Int. Cl.⁶ G08B 21/00
 U.S. Cl. 73—53.05 9 Claims

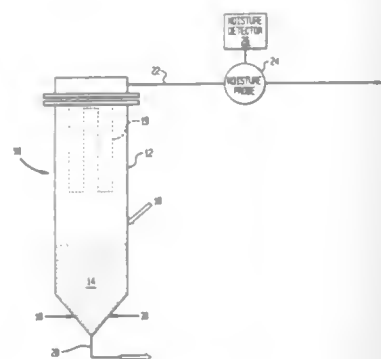


1. An apparatus for determining the lubricating characteristics of combustion engine lubrication oil, said apparatus comprising a viscosity measuring element and a contamination measuring element, said viscosity measuring element comprising a plunger assembly and an oil sample receptacle, said plunger assembly comprising a plunger means, a solenoid means and a switch means for measuring a displacement time of said plunger through oil in said oil sample receptacle, said contamination measuring element comprising a light source and a light sensor operable to optically measure the variance in transmittance of light through an oil sample dish between said light source and said light sensor;
 a calculating element, electronically connected to said viscosity measuring element and said contamination measuring element, comprising a processor means, a memory storage means, and a program means for conversion of said displacement time to a viscosity and the output from said light sensor to a normalized contamination level, and for correlating said viscosity and said contamination level to a state of oil degradation.

5,377,532
METHOD AND SYSTEM FOR IN-LINE DETECTION OF
MOISTURE IN URANIUM-CONTAINING POWDERS
 Inaky J. Urza, Richland, Wash., assignor to Siemens Power Corporation, Richland, Wash.
 Filed Sep. 29, 1993, Ser. No. 128,402
 Int. Cl.⁶ G01N 33/22, 27/00

1. A moisture detection system for in-process nuclear fuel powder components comprising:

containing means having a nuclear fuel powder therein; purge gas supply means for providing a purge gas within said containing means, said purge gas contacting the powder; transport means connected to said containing means for transporting at least part of said purge gas therethrough, after said purge gas contacts the powder; and, moisture detection means for measuring the moisture in said transported purge gas, said measurement of moisture correlating to a measure of overall moisture in said powder wherein the purge gas is a fluidizing gas fluidizing the powder within said containing means.



5. A process for detecting moisture of an in-process nuclear fuel powder component comprising the steps of: providing a nuclear fuel powder; supplying a purge gas; contacting the nuclear fuel powder with the purge gas so that the purge gas absorbs moisture therefrom; transporting at least part of said purge gas to moisture detection means; and, measuring the moisture of said transported purge gas, said measure of moisture correlating to a measure of overall moisture content of said powder, wherein the purge gas is supplied such that the purge gas fluidizes the powder to create a fluidized bed.

5,377,533

METHOD OF TAKING EROSION/CORROSION MEASUREMENTS

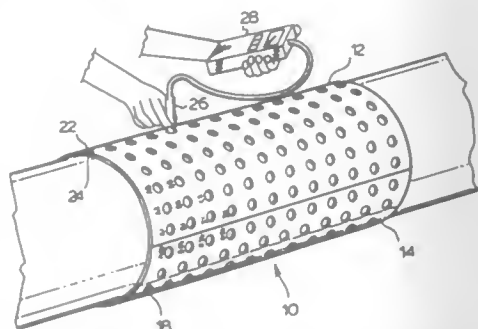
Larry Shaw, RR#1, Lepreau, New Brunswick, Canada E0G 2H0, and William Perrin, RR#1, Lepreau, New Brunswick, Canada E3B 1C4

Filed Nov. 6, 1992, Ser. No. 972,406

Claims priority, application Canada, Jul. 20, 1992, 2074239
Int. Cl.⁵ G01N 17/00

U.S. Cl. 73—86

6 Claims



1. A method of taking erosion and corrosion measurements of a piping system for logging a history of the piping system over time, comprising the steps of:

(a) wrapping a template about a pipe component, said template adapted to circumferentially extend about said pipe component, said template having a plurality of spaced

holes arranged in a grid pattern which extend through said template for receiving a probe for measuring wall thickness of said pipe component, said template having indicia for identifying each of said spaced holes;

(b) aligning said template with a reference marking fixed on said pipe component;

(c) taking a wall thickness measurement at each of said spaced holes;

(d) recording at least said wall thickness measurement at each of said spaced holes and said indicia of said spaced hole location.

5,377,534

GROUND TEST INSTALLATION FOR THE JET ENGINES OF AN AIRLINER

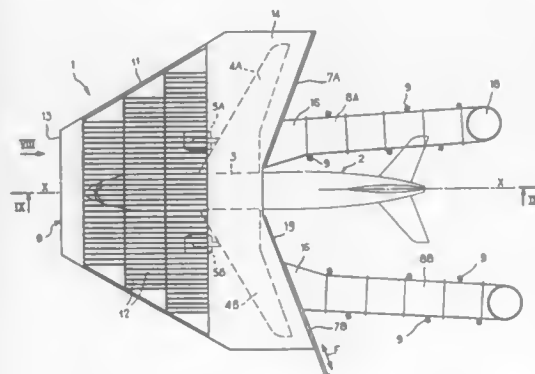
Jean-Paul Boet, Villeneuve d'Ascq, France, assignor to Societe Anonyme dite: S.A. Andre Boet, Villeneuve d'Ascq, France

Filed Oct. 28, 1992, Ser. No. 967,705

Claims priority, application France, Nov. 6, 1991, 91 13696
Int. Cl.⁶ B64F 1/26

U.S. Cl. 73—116

11 Claims



1. A noise-suppressing ground test installation for an aircraft equipped with at least two jet engines linked to the wings of the aircraft,

said installation comprising, for each jet engine, a silencer (8A, B) having a body of generally cylindrical elongate shape, said silencers being adapted to each be arranged behind the nozzle of one of said jet engines, and a casing (6) which is acoustically insulating and permeable to air, adapted to envelop the front part of the fuselage (3) and the wings (4A, 4B) of the aircraft (2), said casing having a rear wall (7A, 7B) which is connected to the front end of each of said silencers (8A, 8B).

5,377,535

METHOD FOR IDENTIFYING AND CORRECTING ERRORS IN TIME MEASUREMENTS ON ROTATING SHAFTS

Anton Angermaier, Landshut; Thomas Vogt, Regensburg, and Manfred Wier, Wenzelbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 16, 1993, Ser. No. 107,216

Claims priority, application European Pat. Off., Aug. 14, 1992, 92113916.8

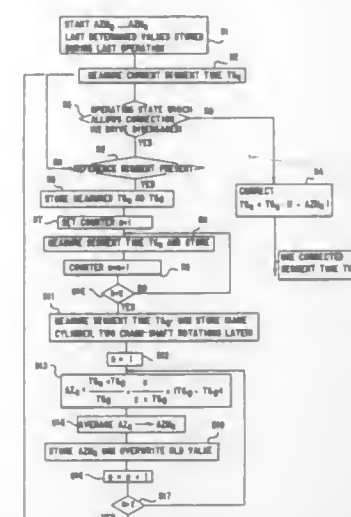
Int. Cl.⁶ G01M 15/00

U.S. Cl. 73—116

18 Claims

1. In a method for determining a segment time required for a segment of a rotating crankshaft of an internal combustion engine with z cylinders to rotate about a defined angular distance, in which the crankshaft or a tachometer disk connected thereto are provided with marks which are scanned by an associated sensor, a method for identifying and correcting errors in determining the segment time, which comprises:

measuring and storing a reference segment time (TG_0) of a reference segment associated with a reference cylinder; subsequently measuring segment times (TG_n) of crankshaft segments associated with respective ones of the cylinders;



measuring and storing a new segment time (TG_0') of the reference segment associated with the reference cylinder two full crankshaft rotations later; and calculating correction values (AZ_n) for each of the cylinders (n) in accordance with an equation

$$AZ_n = \frac{TG_n - TG_0}{TG_0} + \frac{n * (TG_0 - TG_0')}{z * TG_0}$$

where z represents a total number of cylinders; subsequently averaging respective correction values (AZ_n) and storing the averaged correction values (AZM_n); and correcting the measured segment times (TG_n) with the averaged correction value (AZM_n) for forming corrected segment times (TK_n) according to an equation

$$TK_n = TG_n * (1 - AZM_n).$$

5,377,536

METHOD FOR IDENTIFYING MISFIRE IN INTERNAL COMBUSTION ENGINES

Anton Angermaier, Landshut; Thomas Vogt, Regensburg, and Manfred Wier, Wenzelbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 16, 1993, Ser. No. 107,217

Claims priority, application Hague Agreement, Aug. 14, 1992, 92113917

Int. Cl.⁶ G01M 15/00

U.S. Cl. 73—116

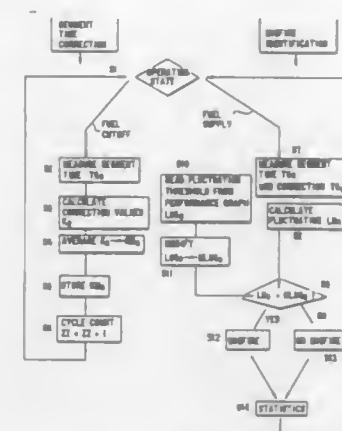
10 Claims

1. A method for identifying misfiring in an internal combustion engine having a plurality of cylinders, a crankshaft and markings indicating an angle of rotation of the crankshaft, which comprises:

measuring segment times required by the crankshaft to rotate about a predetermined angular span during a working cycle of respective ones of the cylinders; determining whether or not the engine is in a thrust cutoff operating state during which a fuel supply is cut off and if the engine is in the thrust cutoff operating state, comparing the segment times obtained in the measuring step with a reference segment time of a reference segment, determining differences between the individual segment times and calculating a correction value for the respective segments associated with respective ones of the cylinders; if the engine is not in the thrust cutoff operating state, deter-

mining a fluctuation from the measured and corrected segment times, and comparing the fluctuation with a fluctuation threshold value;

identifying misfire of a cylinder if the fluctuation is less than the threshold value for a case in which the calculated fluctuation values are negative when misfiring occurs or identifying misfire of a cylinder if the fluctuation is greater than the threshold value for a case in which the calculated fluctuation values are positive when misfiring occurs, and if the calculated fluctuation values are negative when misfir-



ing occurs, taking the threshold value at a relatively small value during initial engine operation prior to calculating the correction values and increasing the threshold value to a relatively greater value with successive calculations of correction values; and if the calculated fluctuation values are positive when misfiring occurs, taking the threshold value at a relatively greater value during initial engine operation prior to calculating the correction values and decreasing the threshold value to a relatively smaller value with successive calculations of the correction values.

5,377,537

SYSTEM AND METHOD TO COMPENSATE FOR TORSIONAL DISTURBANCES IN MEASURED CRANKSHAFT VELOCITIES FOR ENGINE MISFIRE DETECTION

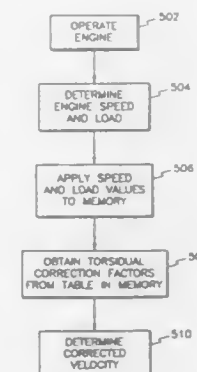
John V. James, Walled Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 1, 1993, Ser. No. 114,231

Int. Cl.⁶ G01M 15/00

U.S. Cl. 73—117.3

18 Claims



1. A method for generating a set of correction factors corresponding to individual rotation intervals between respective predetermined points disposed on an encoder wheel driven by

an internal combustion engine to compensate for torsional effects in crankshaft speed, comprising the steps of:

- (a) detecting passage of said predetermined points past a fixed location to provide a position signal at each point;
- (b) causing said engine to rotate at a fixed steady state operating point with combustion;
- (c) measuring a time which elapses between each consecutive pair of said position signals occurring within N complete engine cycles, wherein N is a predetermined integer greater than zero;
- (d) calculating a velocity over said time between each pair of said position signals;
- (e) selecting a rotation interval between two of said predetermined points;
- (f) determining a total elapsed time for at least a 720° rotation of said encoder wheel including said selected rotation interval;
- (g) calculating an average velocity over said total elapsed time; and
- (h) determining a ratio of said velocity and said average velocity to obtain a correction factor.

5,377,538

METHOD AND APPARATUS FOR MEASURING THE VOLUME AND THE VELOCITY OF AIR FLOWING THROUGH INDIVIDUAL PARTS OF A TWO CYCLE ENGINE CYLINDER

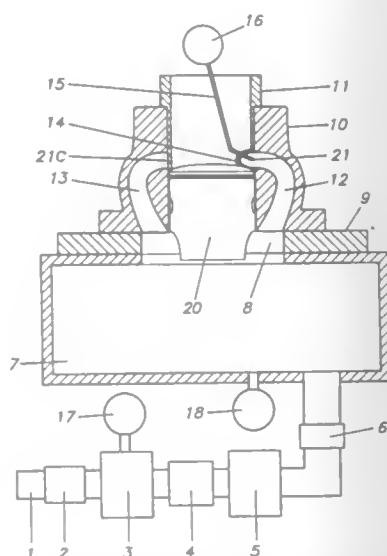
Richard L. Cardinal, 115 Beach, Hereford, Tex. 79056

Filed Jan. 30, 1992, Ser. No. 828,761

Int. Cl.⁶ G01P 5/16

U.S. Cl. 73—118.2

4 Claims



1. A method of measuring air flow through a port or group of ports of a two cycle cylinder for the purpose of comparing to a similar port or group of ports of the same or similar cylinder comprising: drawing air through a variable intake valve linked to a calibrated indicator scale, set at a predetermined position, into a low pressure chamber connected to a pressure differential gage, through a vacuum motor into a high pressure chamber, through a variable valve, into a test pressure chamber at a predetermined pressure into the transfer ports of a test cylinder with piston and rings fitted and positioned at bottom dead center, through the port or group of ports exposed by a cut away in a port isolation tube fitted inside the cylinder bore, past a pitot tube connected to a pressure differential gage positioned at the port exit; and comparing low pressure signal generated and pitot tube signal generated as a means of evaluating port configurations, modifications and finishes of similar ports or group of ports of the same or similar cylinders.

5,377,539

VALVE STEM EXTENDER WITH INTEGRAL AIR PRESSURE GAUGE

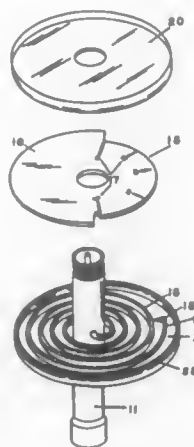
Robert LaSalle, 3337 Canada Goose Crossing, Racine, Wis. 53403

Filed Apr. 26, 1993, Ser. No. 51,890

Int. Cl.⁶ B60C 23/04

U.S. Cl. 73—146.8

2 Claims



1. A continuous display, pressure gauge for use with air inflated automotive tires comprising

- a) an elongated, air inflated tire valve stem extender portion embodying a spring loaded air valve controlling air flow in a passage extending longitudinally through said extender portion, said extender portion being configured for being operably received on a valve stem of a tire at a base end extremity, and for receiving thereon a pressurized air hose fitting at the opposite free-end extremity,
- b) an opening disposed through the wall of said valve stem extender portion,
- c) a Bourdon tube operably disposed, sealably connected to the outer surface of said valve stem extender portion for communicating said opening through said wall to the inner end extremity core opening of said Bourdon tube to provide for flow of air between said passage in said valve stem extender portion and said core of said Bourdon tube, wherein said Bourdon tube is configured as a substantially flat spiral coil disposed annularly around said valve stem extender portion substantially axially concentric therewith,
- d) a dial pointer distal end configuration of said Bourdon tube,
- e) a sealed annular enclosure having disposed therein said Bourdon tube and said dial pointer distal end configuration wherein said enclosure is provided with a transparent viewing face,
- f) an indicia disk disposed within said enclosure in fixed relation thereto including a dial scale with which said dial pointer end configuration operably registers to indicate air inflation pressure within said valve stem extender portion and of a tire with which it is used.

5,377,540

OIL AND GAS WELL LOGGING SYSTEM

Lloyd J. Songe, Jr., 3736 E. Park Ave., P.O. Box 176, Bourg, La. 70343, and Jimmy Pertuit, P.O. Box 249, Raceland, Pa. 70394

Continuation of Ser. No. 576,268, Aug. 31, 1990, abandoned.

This application Jun. 25, 1993, Ser. No. 82,807

Int. Cl.⁶ E21B 47/09

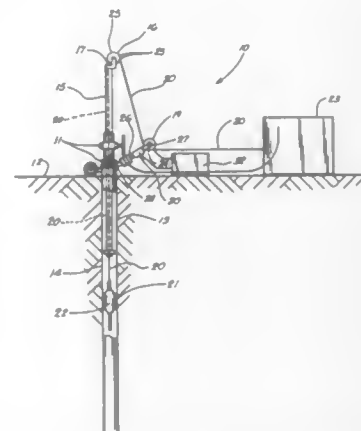
U.S. Cl. 73—151

13 Claims

1. A method of logging a well having connected joints of

casing or tubing wherein the well joint and collar locations are defined by an as-built oil well profile, comprising the steps of:

- a) lowering a sensing tool into the well on a slick elongated lifting line and at the wellhead area;
- b) using a counter wheel to monitor the length of line that is payed out into the well in order to define the elevational position of the sensing tool in the well;
- c) using a weight indicator to monitor the load being carried by the line and at a position at the wellhead;
- d) sensing a change in load when the sensing tool engages an obstruction in the well;



e) printing a continuous chart of well depth that gives a written indication of well depth value for the sensing tool; and

- f) printing a visible indicator at multiple intervals on the chart of various multiple well irregularities when the weight indicator senses a weight change variance above a pre-selected permissible weight change value and
- g) comparing the multiple indicating marks of the continuous chart of well depth with multiple irregularities on the existing as-built oil well profile information.

5,377,541

GOLF CLUB GRIP TRAINING ASSEMBLY

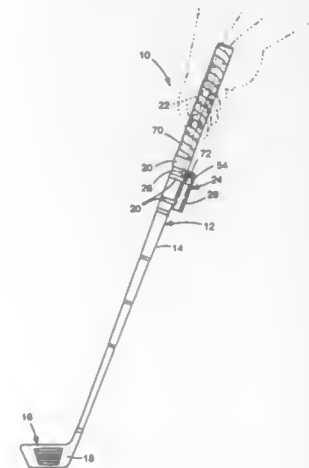
Richard L. Patten, 2932 37th Ave., South, Minneapolis, Minn. 55406

Filed Nov. 18, 1992, Ser. No. 978,266

Int. Cl.⁶ G01L 5/02

U.S. Cl. 73—379.02

11 Claims



1. A grip training assembly comprising:

a golf club having a shaft with a handle portion, said handle portion being surrounded by a cushioned grip;

a sensor for detecting grip pressure, said sensor lying over said grip in close fitting relation thereto;

a circuit including an indicator operatively connected to said sensor for indicating when the grip pressure detected by said sensor is greater than a certain value; and

a relatively thin covering surrounding said sensor and at least a portion of said grip, said covering including means for releasably connecting said covering to said handle portion such that the orientation of said sensor relative to the handle portion is variable,

wherein said indicator includes a housing having means for detachably connecting to said shaft of said golf club, wherein said handle portion is hollow, wherein said indicator is received in said housing, and wherein said housing is releasably received in said hollow handle portion of said golf club.

5,377,542

WHEEL BALANCER APPARATUS AND METHOD

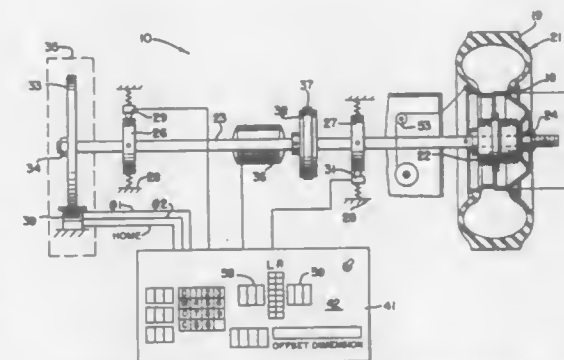
Allen D. McConnell, Maumelle; Hanford D. Monroe, Conway, and Jean O. W. deBellefeuille, Jr., Maumelle, all of Ark., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 4, 1992, Ser. No. 941,577

Int. Cl.⁶ G01M 1/16

U.S. Cl. 73—462

14 Claims



1. A wheel balancer for balancing a wheel assembly, comprising:

- a shaft;
- means for mounting the wheel assembly on the shaft;
- means for rotating the shaft to a desired frequency;
- a first means for measuring forces applied to the shaft at a first location on the shaft and generating a signal in response to the force applied to the shaft at the first location;
- a first phase shifter electrically connected to the first means for measuring, which shifts the phase of the signal from the first means for measuring;
- a first subtraction circuit electrically connected to the first means for measuring and the phase shifter, which receives the signal from the first means for measuring and the signal from the phase shifter and subtracts one signal from another: and
- means for analyzing the output from the first subtraction circuit and determining the unbalance of the wheel assembly, wherein the means for analyzing is electrically connected to the first subtraction circuit.

5,377,543

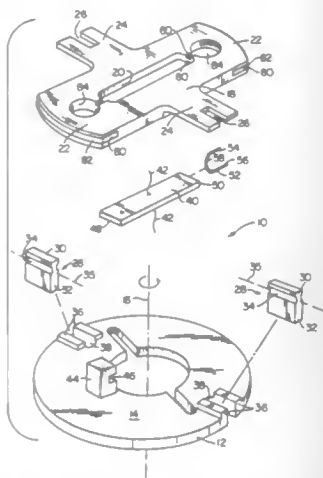
LOW PROFILE ANGULAR RATE SENSOR ASSEMBLY
Charles R. Fuchs, Wayne; Peter Lindsay, Hardyston Township, Sussex County, and Henry S. Nicholas, Paramus, all of N.J., assignors to GEC-Marconi Electronic Systems Corp., Wayne, N.J.

Filed Nov. 10, 1992, Ser. No. 974,094

Int. Cl.⁶ G01P 9/02

U.S. Cl. 73—504

21 Claims



1. An angular rate sensor assembly comprising:
 - a base member having a support surface and adapted for rotation about a spin axis transverse to said support surface;
 - a generally planar gyroscopic element defining a plane and having a central opening;
 - means for resiliently coupling said gyroscopic element to said base member support surface for rotation therewith and for pivotal movement relative to said base member about a single pivot axis orthogonal to said spin axis, said coupling means being effective for holding said gyroscopic element so that the plane of said gyroscopic element is substantially orthogonal to said spin axis;
 - a planar piezoelectric beam defining a plane;
 - first coupling means for coupling said piezoelectric beam to said base member support surface; and
 - second coupling means for coupling said piezoelectric beam to said gyroscopic element;
- said first and second coupling means being together effective for holding said piezoelectric beam within said central opening of said gyroscopic element and substantially parallel to said gyroscopic element so that pivotal movement of said gyroscopic element relative to said base member about said pivot axis due to an angular velocity of said assembly about an axis orthogonal to said spin axis results in said piezoelectric beam bending about a bend axis parallel to said pivot axis.

5,377,544

ROTATIONAL VIBRATION GYROSCOPE

William C. Dunn, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1991, Ser. No. 810,043

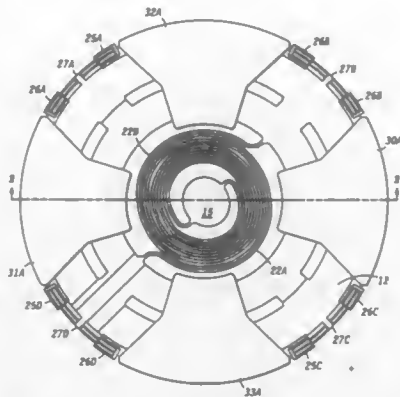
Int. Cl.⁶ G01P 9/04

U.S. Cl. 73—505

7 Claims

1. A rotational vibration gyroscope comprising:
 - a base with a generally planar upper surface;
 - a mounting post fixedly attached to the base and defining a first axis;
 - a mass including a generally disk shaped layer of semiconductor material lying in a plane parallel to and spaced from the planar upper surface of the substrate and positioned in a plane perpendicular to the post;
 - springs affixed at one end to the post and at another end to

the mass, and mounting the mass for oscillatory rotary movement about the post; oscillatory motion driving apparatus mounted adjacent to the mass for causing the mass to move in an oscillatory rotary motion about the first axis; and sensing apparatus, positioned adjacent to the mass and defining second and third axes mutually perpendicular to each other and to the first axis, for sensing movement of the



disk about the third axis in response to movement of the gyroscope about the second axis, the sensing apparatus including first plates positioned in parallel to and adjacent the mass for sensing movement about the third axis in response to movement of the gyroscope about the second axis and second plates positioned in parallel to and adjacent the mass for sensing movement about the second axis in response to movement of the gyroscope about the third axis.

5,377,545

SERVO ACCELEROMETER WITH TUNNEL CURRENT SENSOR AND COMPLEMENTARY ELECTROSTATIC DRIVE

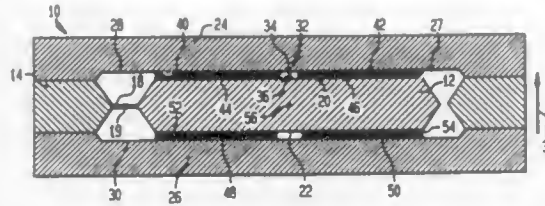
Brian L. Norling, Mill Creek, and James R. Woodruff, Redmond, both of Wash., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 8, 1992, Ser. No. 986,958

Int. Cl.⁶ G01P 15/08

U.S. Cl. 73—517 B

45 Claims



1. An accelerometer comprising: position sensing means including a tunnel current sensor for sensing a displaced position of a proof mass from a servo null position and for generating a position sensing signal indicative of said displaced position; means responsive to said position sensing signal for providing an output signal indicative of sensed acceleration; electrostatic drive means for generating first and second electrostatic forces on said proof mass for returning said proof mass from said displaced position to said servo null position, said first electrostatic force being opposite in direction to said second electrostatic force; a frame having first and second surfaces; elastic connecting means for elastically connecting said proof mass to said frame;

a first cover plate sealingly engaging said first surface; a second cover plate sealingly engaging said second surface opposite said first surface; said first and second cover plates and said frame defining a chamber in which said proof mass is disposed; and a damping fluid disposed in said chamber.

5,377,546

MULTI-DEGREE LINEAR LINER IMPEDANCE TESTING DEVICE

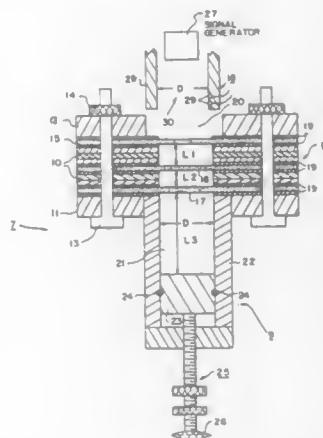
Noe Arcas, Plainview; Shepard G. Kay, North Bellmore, and Charles A. Parente, Oyster Bay, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 29, 1992, Ser. No. 827,606

Int. Cl.⁶ G01N 29/00

U.S. Cl. 73—589

22 Claims



1. Apparatus for evaluation of the acoustic impedance of structural members, comprising:
 - spacer means for separating at least two of said structural members by a predetermined distance;
 - alignment means for aligning an impedance tube with respect to said structural members;
 - means for acoustically sealing said apparatus device such that acoustic signals generated within said impedance tube are directed onto said structural members.

5,377,547

PIEZOELECTRIC PRESSURE SENSOR HAVING TUBULAR CHARGE DETECTING UNIT AND METHOD OF ASSEMBLING SAME

Hiroki Kusakabe, Osaka; Tohru Okauchi, Katano, and Masuo Takigawa, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 10, 1993, Ser. No. 118,678

Claims priority, application Japan, Sep. 11, 1992, 4-242917

Int. Cl.⁶ C01L 9/08

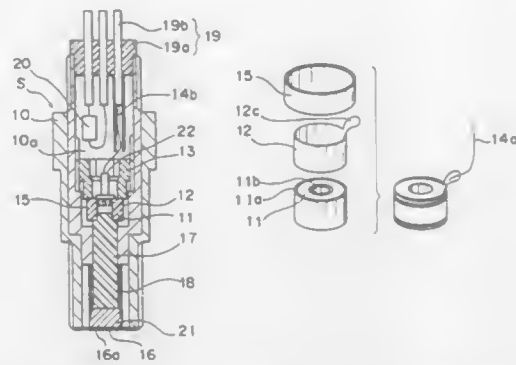
U.S. Cl. 73—723

8 Claims

1. A piezoelectric pressure sensor comprising:
 - a generally elongated sensor housing having first and second ends opposite to each other;
 - a pressure receiving plate having first and second surfaces opposite to each other and disposed at the first end of said sensor housing, the first surface of said pressure receiving plate serving as a pressure receiving surface for receiving a pressure applied from outside of said sensor housing;
 - a pressure transmission member having first and second ends opposite to each other, said pressure transmission member being accommodated in said sensor housing with the first end of said pressure transmission member being held in contact with the second surface of said pressure receiving plate;
 - a tubular piezoelectric element having first and second ends opposite to each other, said piezoelectric element being

accommodated in said sensor housing with the first end of said piezoelectric element being held in contact with the second end of said pressure transmission member, said piezoelectric element having external and internal surfaces;

external and internal electrodes formed on the external and internal surfaces of said piezoelectric element, respectively; an external charge detection member held in contact with said external electrode for collecting charge generated by said piezoelectric element;



- a heat-shrunk tube encircling said external charge detection member, said tube being thermally shrunk to compress said external charge detection member radially inwardly against said external electrode;
- a fixing screw threaded into said sensor housing for holding in a prestressed fashion said piezoelectric element and said pressure transmission member against said pressure receiving plate; and
- an internal charge detection member held in contact with said internal electrode for extracting charge therefrom.

5,377,548

METHOD OF INSTRUMENTING AN ALREADY ERECTED CONCRETE STRUCTURE AND THE SO-INSTRUMENTED STRUCTURE

Gérard Ballivy, Sherbrooke, Canada, assignor to Université de Sherbrooke, Sherbrooke, Canada

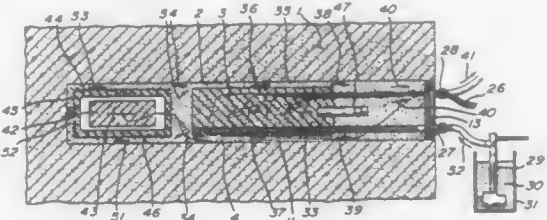
Filed Oct. 23, 1992, Ser. No. 965,844

Claims priority, application Canada, Apr. 23, 1990, 2015184

Int. Cl.⁶ G01N 3/00

U.S. Cl. 73—768

17 Claims



1. A method of instrumenting an already erected structure made of material including concrete and/or rock in order to determine the state of deformation of the said structure, comprising the steps of:

fabricating an inclusion with concrete having substantially the same mechanical properties as the material of the said structure, said fabricating step comprising embedding in the concrete of the inclusion sensor means capable of detecting deformations of the said structure; boring the structure to make a hole therein; inserting and orienting the inclusion in said hole; and injecting a grout between the said inclusion and the said hole

to tightly fill with said grout any empty space existing between the said inclusion and hole; whereby any deformation of the structure also deforms the inclusion and is therefore detected by the sensor means.

5,377,549

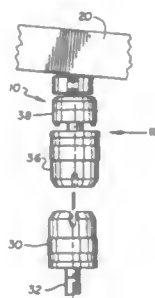
ALIGNMENT DEVICE AND METHOD OF ALIGNING
F. David Werner, Bloomington, Minn., assignor to Interlaken Technologies, Inc., Eden Prairie, Minn.

Filed Dec. 17, 1992, Ser. No. 991,750

Int. Cl.⁶ G01N 3/02

U.S. Cl. 73—860

14 Claims



1. An alignment device for use in a materials test frame, the test frame including means for applying an axial force to a load train, the load train including a test specimen having an axial dimension and sensing apparatus to measure various parameters of the test specimen responsive to the force, first and second gripping means for holding the test specimen in the load train during testing, each such gripping apparatus presenting a respective first and second gripping axis, said load train being in a preload condition wherein the preload applied exceeds the axial force to be applied to the test specimen, said alignment device comprising:

first alignment means for angularly aligning the first and second gripping axes operably slideably coupling said first gripping means to said test frame, having a curved surface, the origin of the radius of said curved surface being located proximate the center of the axial dimension of the test specimen, such that sliding motion of the first alignment means about such curved surface with respect to said test frame produces an angular shift between said first and second gripping axes;

second alignment means for laterally aligning the first and second gripping axes operably coupling said second gripping means to said test frame, having a flat surface, such that sliding motion along said flat surface of the second alignment means with respect to said test frame produces a lateral shift between said first and second gripping axes; and

isolation means operably coupling and interposed between said first and second alignment means for isolating said first alignment means from said second alignment means such that the angular rotation about the center of the axial dimension of the test specimen and lateral relative shifting of said first and second axes is accomplished substantially independently of each other.

5,377,550

MECHANICAL TORQUE INDICATOR

Parke H. Thompson, III, St. Louis, Mo., assignor to Hubbell Incorporated, Orange, Conn.

Filed Jan. 7, 1993, Ser. No. 1,172

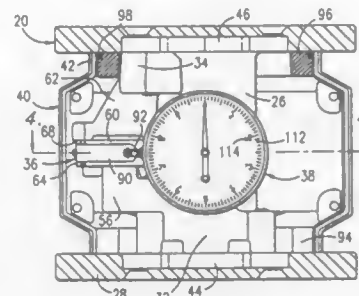
Int. Cl.⁶ G01L 3/02

U.S. Cl. 73—862.322

14 Claims

1. A mechanical torque indicator apparatus for use on a rotatable drive wrench, the apparatus comprising: an elongated torsion member defining a longitudinal axis and having first and second axial ends, the ends of the member being displaced rotationally relative to one another upon

application of a torque about the axis, wherein the distance of rotational displacement of the ends relative to one another corresponds to the applied torque; a mounting means for supporting the torsion member on the drive wrench so that torsion loading of the wrench is transmitted through the torsion member; a first radial arm connected to one end of the member and a second radial arm connected to the opposing end of the member, the first and second radial arms moving relative to one another about the axis of the member when torsional strain is experienced by the member;



a mechanical displacement conversion means supported on the torsion member for continuously converting the relative rotational displacement of the radial arms into linear displacement carried out within a plane extending transverse to the axis; and an indicator mounted on the torsion member for continuously providing an indication of the magnitude of the applied torque in response to the linear displacement of the mechanical displacement conversion means.

5,377,551

PROBE FOR PENETRATING AND DISPLACING PARTICULARLY INTO A MASS OF PULVERULENT MATERIAL

Benolt Vacquer, Rouen, France, assignor to Desinsectisation Moderne, Rouen, France

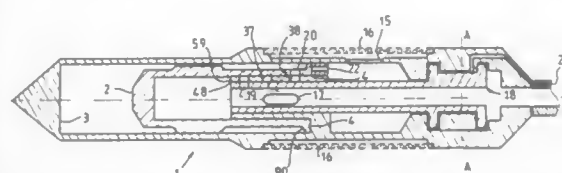
Filed Jul. 15, 1991, Ser. No. 720,838

Claims priority, application France, Mar. 2, 1990, 90 02684; Mar. 2, 1990, 90 02685

Int. Cl.⁶ B25D 9/06; E21B 7/26; E21C 3/24; G01N 33/02

U.S. Cl. 73—864.45

7 Claims



1. A probe assembly adapted to penetrate a pulverulent mass of food grains, such probe assembly comprising a hull defining a cylindrical hollow therein, a striking zone integral with the hull and located in the hollow at one end thereof, a striking piston disposed within the hollow and slidable between a first position remote from said striking zone and a second position impacting against said striking zone, and a pneumatic motor actuatable by compressed air for projecting said striking piston against said striking zone, said striking piston being adapted to transmit to the hull substantially all the kinetic energy of the striking piston, thereby moving the probe assembly by itself within the mass of food grains, exhaust means located on the sides of the hull for exhausting the air from the pneumatic motor after each impact of the striking piston on a striking zone, wherein said exhaust means includes an external filter to prevent any entry of food grains into the interior of the hull.

5,377,552

LINEAR BEARING ASSEMBLY WITH LOAD COMPENSATING BALL BEARING ARRAY

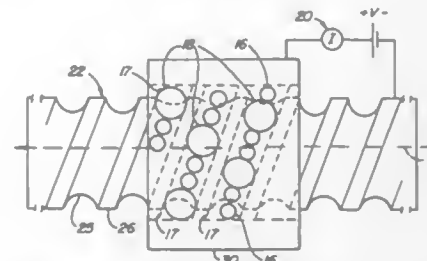
Victor B. Kley, 1119 Park Hill Rd., Berkeley, Calif. 94708

Filed Apr. 5, 1991, Ser. No. 681,144

Int. Cl.⁶ G01L 5/12

U.S. Cl. 73—862.49

34 Claims



19. A linear bearing assembly, including: a screw having a land portion defining a generally cylindrical surface, and a recessed helical race around the land portion; a nut dimensioned for mating engagement with the screw, and having a surface defining a helical groove shaped for confining ball bearings in the race; and a load compensating ball bearing array positioned between the race and the groove, and including first and second pluralities of balls which bear a load between the screw and the nut, and which roll in the race as the screw advances relative to the nut; the first plurality of balls being characterized by a first diameter and a first degree of compressibility; the second plurality of balls being characterized by a second diameter smaller than said first diameter, and a second degree of compressibility; the relative diameters and degrees of compressibility being chosen so that under loads less than a transition load at least some of the first plurality of balls and none of the second plurality of balls bear the load and under loads greater than the transition load at least some of the first plurality of balls and at least some of the second plurality of balls bear the load.

5,377,553

TRANSDUCER SUPPORT DEVICE

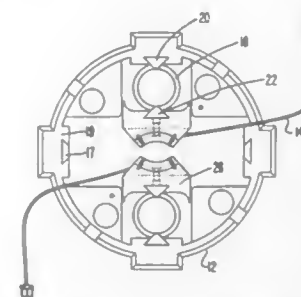
William H. Knepper, Jr., Katy, Tex., assignor to Tuboscope Vetco International, Inc., Houston, Tex.

Filed May 12, 1993, Ser. No. 59,590

Int. Cl.⁶ G01N 27/72

U.S. Cl. 73—866.5

8 Claims



1. A transducer support device comprising, a frame having an inner surface surrounding an open inner portion of the frame, a plurality of transducers within said open inner portion of said frame with each transducer of said plurality of transducers mounted on and connected to the frame by an associated flexible means for permitting each transducer to move toward and away from a portion of the inner surface of said frame, each said flexible means having a connection to said portion of

the inner surface and constituting a ring constructed of flexible material and adapted for compression toward said connection to said portion of the inner surface upon application of force to each said transducer toward said connection.

5,377,554

RELEASE DEVICE FOR A MECHANICAL ENERGY STORAGE MEANS

Hermann Reulein, Pinneberg-Thesdorf; Alfred Linsdorf, Norderstedt; Bernd Lacher, Agathorst; Peter Eckmann, Hamburg, and Hans-Otto Kock, Kaltenkirch, all of Germany, assignors to Autoflug GmbH & Co. Fahrzeugtechnik, Rellingen, Germany

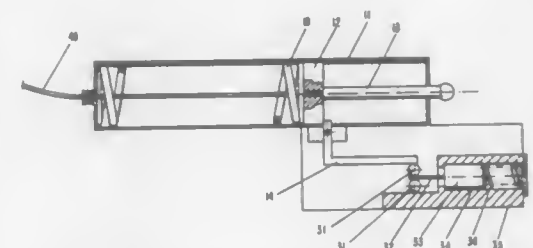
PCT No. PCT/DE90/00708, § 371 Date Mar. 12, 1992, § 102(e) Date Mar. 12, 1992, PCT Pub. No. WO91/04175, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 13, 1990, Ser. No. 850,489

Claims priority, application Germany, Sep. 16, 1989, 39 30 980 Int. Cl.⁶ G05G 17/00

U.S. Cl. 74—2

5 Claims



1. A device for releasing a mechanical energy storage means from an initial locked position in a release situation, said device comprising:

a housing; a bearing provided at said housing; a locking means for securing said energy storage means in said initial locked position, said locking means connected to said housing; a supporting means deflectable in said release situation and connected to said bearing, said locking means resting on said supporting means in a prestressed manner in said initial locked position, and said supporting means being deflected in said release situation by forces created by its own inertia, wherein said supporting means is comprised of two rollers arranged atop one another, a displaceable roller bearing, positioned between said two rollers, and a sensor body connected to said roller bearing.

5,377,555

STEERING COLUMN CLAMPING MECHANISM

Michael T. Hancock, Coventry, England, assignor to The Torrington Company, Torrington, Conn.

Filed Nov. 23, 1993, Ser. No. 156,480

Claims priority, application United Kingdom, Dec. 2, 1992, 9225232

Int. Cl.⁶ B62D 1/18

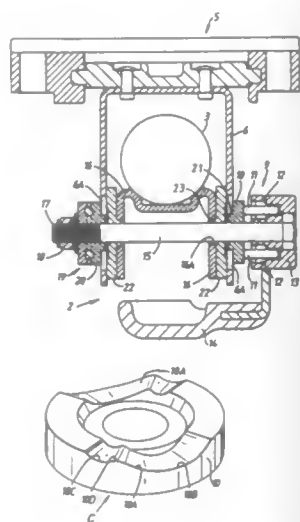
U.S. Cl. 74—493

6 Claims

1. A steering column clamping mechanism for use with an adjustable steering column, the mechanism having an unclamped condition allowing at least one of axial movement of the steering column or tilting movement of the steering column and having a clamped condition preventing movement of the steering column, the clamping mechanism comprising:

an actuating member having at least two rolling members thereon; and a cam member in rolling engagement with the rolling members, the cam member having at least two cam tracks with at least three zones, a first zone, a second zone and a third zone, the third zone being between the first zone and the second zone, the first zone being lower than the second

zone and the third zone being higher than the second zone, the rolling members being in engagement with the cam tracks, the actuating member moving the rolling

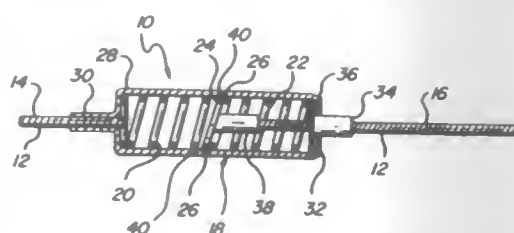


members from engagement with the first zone wherein the steering column is unclamped through engagement with the third zone and into engagement with the second zone wherein the steering column is clamped.

5,377,556
CORE ELEMENT TENSION MECHANISM HAVING LENGTH ADJUST
John L. Byrnes, Waterbury, Conn., assignor to Teleflex Incorporated, Limerick, Pa.
Filed Sep. 27, 1993, Ser. No. 127,432
Int. Cl. F16C 1/10

U.S. Cl. 74—502.6

20 Claims

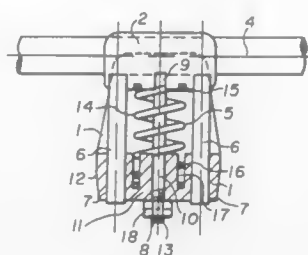


1. A motion transmitting remote control cable assembly (10) for transmitting motion in a curved path comprising:
a motion transmitting core element (12) having first and second ends;
a tension adjustment mechanism (18) disposed between said first and second ends of said core element (12) comprising:
a helical spring (20) responsive to axial forces having a first end and a second end, an inner diameter and an outer diameter and a plurality of spaced apart helical coils (22), said spring being secured to said core element (12) coaxial with said core element;
a flange (24) disposed on said core element (12) inside said spring (20), said flange extending radially away from said core element;
beyond said inner diameter of said spring (20) and between adjacent coils (22) for moving along said spring (20) upon relative rotation between said spring and said flange.

5,377,557
CUSHIONED MOUNT FOR BICYCLE HANDLEBARS
Gianfranco Nastrucci, 21 Contrada Meneghetti, 36061 Bassano Del Grappa, Italy
Filed Apr. 15, 1993, Ser. No. 48,228
Int. Cl. B62K 21/14

U.S. Cl. 74—551.2

15 Claims

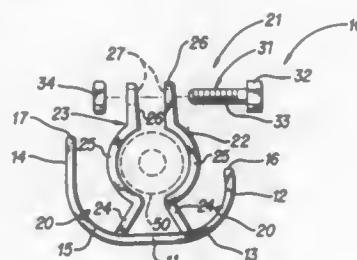


1. A handlebar mount suitable for use with a bicycle having a fork post and handlebars, said handlebar mount comprising a first part being adapted to connect to the fork post, a second part defining a bore for receiving the handlebars, a spring having an upper end secured to said second part and a lower end contacting said first part, said first part including a base portion defining a first socket and a second socket, a first rod and a second rod, said first and second rods each having an upper end secured to said second part and a lower end, and said lower end of said first rod being movably received in said first socket and said lower end of said second rod being movably received in said second socket.

5,377,558
PROTECTIVE DEVICE FOR COVERING BRACKETS ON MOTORCYCLE HANDLEBARS
Dimitri Harris, P.O. Box 1227, Jonesboro, Ark.
Filed Apr. 30, 1993, Ser. No. 54,244
Int. Cl. B62K 21/12

U.S. Cl. 74—551.8

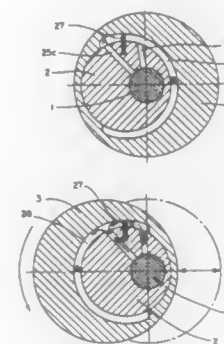
20 Claims



1. A protective device for covering motorcycle handlebar brackets, comprising:
a generally U-shaped plastic body having first and second legs and a cross-member extending between said legs, a curved transition being provided between said cross-member and each of said legs; and
at least one plastic clip member integral with said body and having a pair of cantilevered clip legs extending outwardly from a base integral with said cross-member between said first and second legs, to free ends; said clip member legs defining therebetween, at a central area between said base and free ends thereof, a central opening having an interior configuration and size substantially the same as the exterior configuration of a motorcycle handlebar; and said clip member legs having sufficient flexibility to move outwardly when said free ends thereof are brought, into contact with a motorcycle handlebar so that said device may be moved to a position with a motorcycle handlebar received within said central opening; and wherein said first leg is not as long as said second leg.

5,377,559
RADIAL PISTON FLUID MACHINE AND/OR ADJUSTABLE ROTOR
William C. Riley, Shelbyville; Marc S. Albertin, Atlanta, and James B. May, Sandwich, all of Ill., assignors to WhiteMoss, Inc., W. Lafayette, Ind.
PCT No. PCT/US91/04575, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993
Continuation-in-part of Ser. No. 546,373, Jun. 29, 1990, abandoned. This PCT application Jun. 26, 1991, Ser. No. 955,902
Int. Cl. G05G 1/08; F04B 1/04
U.S. Cl. 74—571 M

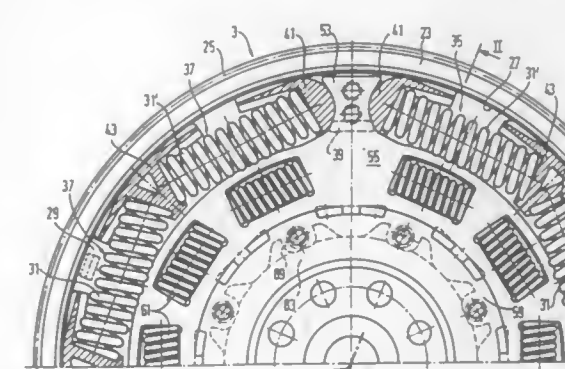
13 Claims



1. An adjustable rotor mechanism with two eccentric sub-mechanisms comprising
a. a shaft rotatable on an axis,
b. a primary eccentric surrounding said shaft and fixed to or integral with said shaft,
c. a secondary eccentric surrounding and movable with respect to said primary eccentric,
d. at least one cavity between said primary eccentric and said secondary eccentric and defined by outer surfaces of said primary eccentric spaced radially from said axis and inner surfaces of said secondary eccentric spaced radially from said axis, and
e. adjustment means effective within said cavity to adjust the relative positions of said primary eccentric and said secondary eccentric.

5,377,560
DOUBLE-MASS FLYWHEEL
Bernhard Schierling, Kürnberg, and Jörg Sudau, Niederwerrn, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Aug. 2, 1993, Ser. No. 101,463
Claims priority, application Germany, Aug. 3, 1992, 4225605
Int. Cl. F16D 3/66
U.S. Cl. 74—574

15 Claims



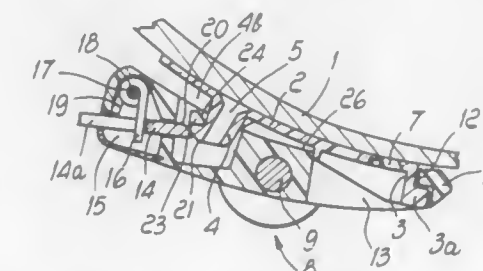
1. Double-mass flywheel to be positioned in the drive train

of a motor vehicle powered by an internal-combustion engine, comprising:

a first flywheel (3) to be secured on a crankshaft of the internal-combustion engine, coaxially with its axis of rotation (9),
a second flywheel, pivoted coaxially relative to the first flywheel (3), in the form of a carrier of a friction clutch (11) in the drive train,
a torsional vibration damper (13) coupling the two flywheels (3, 7) to each other with torsional flexibility, said torsional vibration damper (13) comprising at least one set (35, 37) of at least two helical-spring elements (31) which are arranged in series at a common average diameter in a channel (29) of the first flywheel (3) that encircles the axis of rotation (9),
several control elements (39, 53) for each circumferentially outer endface (93) of the two circumferentially outermost helical-spring elements (31) of each set (35, 37), first control elements (39) of which connect the outermost endfaces (93) to the first flywheel (3), while second control elements (53) of which connect the outermost endfaces (93) to the second flywheel (7),
a sliding shoe (43) between each pair of adjacent ends (103) of circumferentially adjacent helical-spring elements (31) of the set (35, 37), for guiding the adjacent ends (103) in the channel (29), and
an endshoe (41) between the outer endface (93) of each of the two outermost helical-spring elements (31) of each set (35, 37) and the first (39) and second (53) control elements, the endshoes (41) for the support of the outer endfaces (93) of the outermost helical-spring elements (31) having essentially annular, flat contact surfaces (91) running at least approximately perpendicular to the spring axis (111) of the outermost helical-spring element (31) and further the endshoes (41), on the sides circumferentially distant from their flat contact surfaces (91), having guide surfaces (95) having the shape of a circular segment in cross-section, and the first (39) and second (53) control elements having counter-guide surfaces (97) having the shape of a circular segment in cross-section, permitting a limited swivelling movement of the endshoes (41) around a swivelling axis (99) that is at least approximately parallel to the axis of rotation (9) of the flywheels (3, 7).

5,377,561
DEVICE FOR FIXING A SHOE TO A BICYCLE PEDAL
Diego Danielli, and Angelo Mason, both of Caerano San Marco, Italy, assignors to Diadora S.p.A., Caerano San Marco, Italy
Filed Aug. 31, 1992, Ser. No. 937,019
Claims priority, application Italy, Sep. 10, 1991, 91A000153; Nov. 12, 1991, 91U000105
Int. Cl. G05G 1/14; A43B 5/00
U.S. Cl. 74—594.6

15 Claims



1. In combination, a bicycle pedal (8) having a rotation axis, a shoe having a sole (1), and a device for fixing said sole (1) of said shoe to said bicycle pedal (8), said device comprising a plate (2) fixed to said sole (1), a front fixed coupling element (11) connected to said pedal (8), a guiding seat (15) defined in said pedal (8) and having a rear wall, a rear movable coupling element (14) slideably accommodated in said guiding seat (15),

a cylindrical helical spring (17) having one radial end (16) acting on said movable coupling element (14) and another radial end (19) acting on said rear wall of said guiding seat (15) for biasing said rear movable coupling element (14) in a direction extending in a straight line at right angles to the rotation axis of said pedal, a front wing (3) connected to said plate (2) and engaging said front fixed coupling element (11), a rear wing (4) connected to said plate (2) and engaging said rear movable coupling element (14).

5,377,562

DRIVEN WHEEL TORQUE CONTROL SYSTEM

Hiroshi Kitagawa, and Norio Suzuki, both of Saitama, Japan, assigns to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

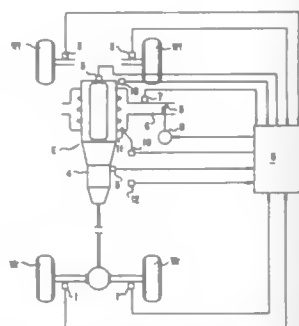
Filed Sep. 11, 1991, Ser. No. 756,841

Claims priority, application Japan, Sep. 12, 1990, 2-242143

Int. Cl.⁶ F16H 59/18

U.S. Cl. 477—110

5 Claims



1. A driven wheel torque control system including a torque converter provided between an internal combustion engine of a vehicle and a driven wheel when slipping of the driven wheel becomes excessive, said system comprising:

- an internal combustion engine output torque calculating means for calculating an output torque from said internal combustion engine;
- a driven wheel applied torque calculating means for converting the internal combustion engine output torque calculated by said internal combustion engine output torque calculating means into a driven wheel applied torque by use of a torque ratio of said torque converter;
- a surplus torque calculating means for calculating a surplus torque consumed for slipping of said driven wheel;
- a transmittable-torque calculating means for calculating torque transmittable between the driven wheel and a road surface on the basis of output signals from said driven wheel applied torque calculating means and said surplus torque calculating means;
- a control quantity determining means for calculating a control quantity by use of said transmittable torque; and
- a driven wheel torque reducing means, responsive to said control quantity, for reducing an output torque of the driven wheel.

5,377,563

KNIFE SHARPENER

Raymond Weeks, 353 Washington St., Mt. Holly, N.J. 08060

Filed Jul. 2, 1993, Ser. No. 85,072

Int. Cl.⁶ B21H 1/02

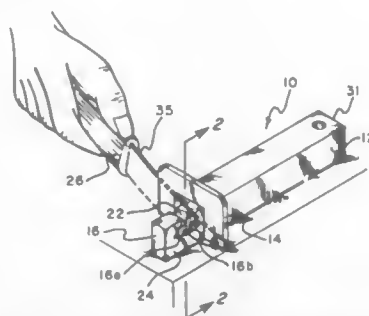
U.S. Cl. 76—86

8 Claims

1. A knife sharpener comprising:
- a body member;
 - means for angling said body member from the horizontal plane;
 - first and second sharpening blades attached to said body member;
 - said first and second blades positioned to form a sharpening groove therebetween, a portion of said first blade being

located in the same plane as a portion of said second blade, said plane extending substantially perpendicular to said groove;

each of said blades having a plurality of intersecting sides forming a plurality of intersections, said intersections of each blade being substantially curvilinear in shape, said blades being positioned such that one intersection from said first blade substantially abuts an intersection from said second blade;



said sides and the curvilinear shape of said abutting intersections combining to form said groove for sharpening the edge of a knife, said groove being shaped and adapted to sharpen said edge into a beveled configuration in which both sides thereof are partially formed into the curvilinear shape of said intersection, and

a guard means including a detachable leg member attached to said body member for separating said knife sharpening blades and said knife from the remaining portion of said body member.

5,377,564

TOOL FOR STRIPPING SHEATH FROM FIBER OPTIC CONDUCTOR

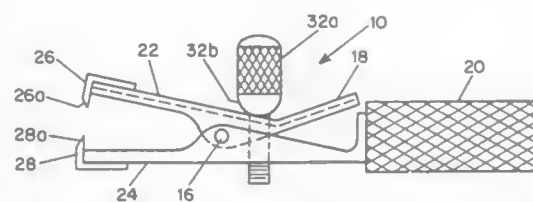
Ron Erlich, Bridgeport, Conn., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Oct. 12, 1993, Ser. No. 135,012

Int. Cl.⁶ H02G 1/12

U.S. Cl. 81—9.44

6 Claims



1. A stripping tool for removing the sheath from a fiber optic conductor comprising:

- two members pivoted together between their ends by a pivot pin so as to provide a pair of stiff lever handles on one side of the pivot and a pair of stiff jaws on the other side of the pivot, each of said jaws being provided with a blade, said blades having opposed parallel edges at least one of which is sharpened;
- spring means disposed between said two members for normally urging said jaws and the opposed edges of said blades toward one another; and
- adjusting screw means coupled to said lever handles which when turned in one direction forces said lever handles toward one another, against the bias of said spring means, for causing separation of the opposed edges of said blades to permit insertion of a fiber optic conductor therebetween, and which when turned in the opposite direction

allows said spring means to urge said lever handles apart and to urge said opposed blades into engagement with the sheath of said fiber optic conductor with a force determined only by said spring means.

5,377,565

AUTOMATIC OIL FILTER CHANGER

Charles E. Mangum, P.O. Box 1028, Elm City, N.C. 27822

Filed Mar. 2, 1994, Ser. No. 204,961

Int. Cl.⁶ B25B 13/50

U.S. Cl. 81—57.33

3 Claims



2. An automatic oil filter changer for changing the oil filter on a vehicle comprising, in combination:

- an elongated handle;
- a tube for delivering pressure having a first end and a second end, the second end adapted to be coupled to a pressure delivery mechanism;
- clamping means coupled to the handle and tube, the clamping means having a closed orientation for crimping the tube for preventing pressure from being delivered through the first end and an opened orientation for allowing pressure to be delivered through the first end; and
- head means coupled to the handle and first end of the tube, the head means adapted to receive an oil filter therein, the head means further adapted to receive pressure from the first end of the tube such that when the clamping means is placed in an opened orientation, the head means grips and rotates an oil filter positioned therein, and when the clamping means is placed in a closed orientation, the head means releases its grip of the oil filter.

5,377,566

ADJUSTABLE RATCHET WRENCH APPARATUS

Wallace L. Mandigo, 126 SE. 3rd St., College Place, Wash. 99324

Filed Feb. 18, 1994, Ser. No. 199,010

Int. Cl.⁶ B25B 13/46

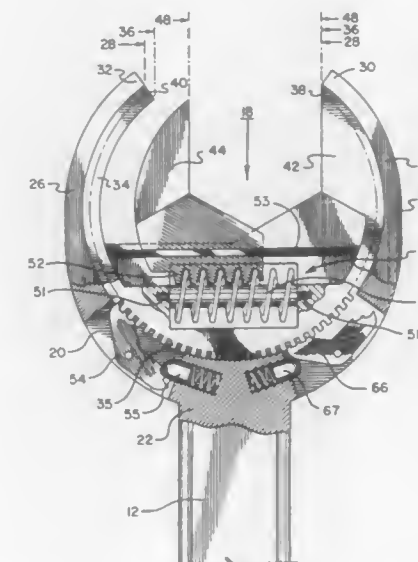
U.S. Cl. 81—58.2

5 Claims

1. A new and improved adjustable ratchet wrench apparatus, comprising:
- a handle assembly, and
 - a wrench head assembly connected to said handle assembly, wherein said wrench head assembly includes a ratchet assembly and a jaw assembly supported by said ratchet assembly,
- wherein said ratchet assembly includes a ratchet assembly housing connected to said handle assembly, wherein said ratchet assembly housing is substantially C-shaped and includes a base portion connected to said handle assembly, a first free-ended portion extending from said base portion, and a second free-ended portion extending from said base portion, wherein a first gap is provided between a

first free end of said first free-ended portion and a second free end of said second free-ended portion, and wherein said ratchet assembly includes a first ratchet element supported by said ratchet assembly housing, said first ratchet element permitting unidirectional rotation of said jaw assembly, and

wherein said jaw assembly includes a substantially C-shaped jaw assembly housing which is nested within and is supported by said ratchet assembly housing for relative rotation between said ratchet assembly housing and said jaw assembly housing, wherein said jaw assembly housing is capable of rotating 360 degrees repetitively within said ratchet assembly housing, wherein said jaw assembly housing includes peripheral gear teeth that are engaged by said first ratchet element, wherein a second gap is provided between a first free end and a second free end of said jaw assembly housing, wherein said jaw assembly includes a first jaw member and a second jaw member connected to said jaw assembly housing, and said jaw assembly includes a jaw-adjustment assembly, connected to said jaw assembly housing, for adjusting a third gap between said first jaw member and said second jaw member,

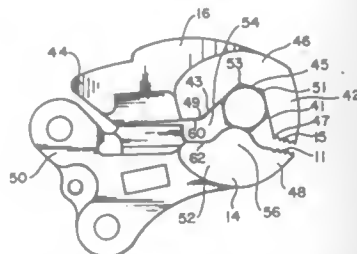


wherein said jaw-adjustment assembly includes a unidirectionally threaded screw, wherein said first jaw member is fixed with respect to said jaw assembly housing, and wherein said second jaw member includes a threaded portion which engages said unidirectionally threaded screw such that said second jaw member is movable by said unidirectionally threaded screw with respect to said first jaw member,

further including,

- a jaw-locking assembly connected to said first jaw member, wherein said jaw-locking assembly includes:
- a pivoted face plate juxtaposed to a front face of said first jaw member, and
- an eccentric locking cam supported by said first jaw member and located adjacent to said face plate, said eccentric locking cam including an unlocking mode in which said eccentric locking cam is positioned such that a rear surface of said face plate is permitted to be flush against front face of said first jaw member, said eccentric locking cam also including a continuum of locking modes in which said eccentric locking cam is positioned such that said eccentric locking cam pushes said face plate away from said front face of said first jaw member and toward said second jaw member.

5,377,567
BICYCLE TOOL
 Joseph A. Sorensen, Lincoln, Nebr., assignor to Petersen Manufacturing Co., Inc., DeWitt, Nebr.
 Continuation of Ser. No. 5,943, Feb. 4, 1993, abandoned. This application Nov. 23, 1993, Ser. No. 156,962
 Int. Cl.⁶ B25B 13/08
 U.S. Cl. 81—426 14 Claims

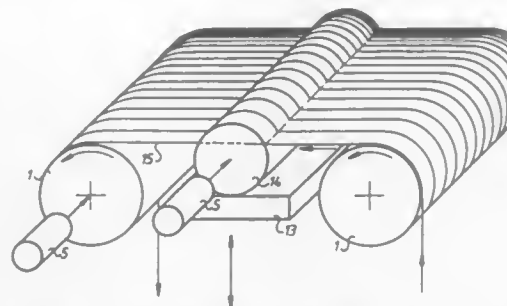


1. A locking plier hand tool comprising:
 a first jaw element having a forward end and a rear end;
 a second jaw element having a forward end and a rear end;
 a pair of handles operatively connected to said first jaw element and said second jaw element for movement of said first jaw element toward and away from said second jaw element from a substantially open position to a substantially closed position and vice versa;
 said first jaw element having a central portion positioned between said forward and rear ends thereof, said central portion having a main recess formed by (1) a first contacting portion; (2) a second contacting portion at an angle with respect to said first contacting portion; and (3) a third contacting portion interconnecting said first contacting portion and said second contacting portion, wherein each of said first contacting portion and said second contacting portion having one end connected to said third contacting portion and a free end;
 said second jaw element having a central area situated between said forward end and said rear end thereof, wherein an arc shaped protuberant extends outwardly from said central area toward said main recess;
 said first jaw element comprising a substantially flat member having a rear part, said substantially flat member extending between said free end of said second contacting portion of said main recess and said rear part;
 said second jaw element comprising a substantially flat surface extending rearwardly from said protuberant and a wall situated remotely from said protuberant, said wall extending from said substantially flat surface and having a free end substantially in engagement with said rear part of said substantially flat member when said hand tool is in said closed position;
 said protuberant, said wall and said substantially flat surface forming an auxiliary recess offset to said main recess, so that a gap is formed between said substantially flat member and said substantially flat surface adapted to receive a workpiece when said first and second jaw elements are in said substantially closed position.

5,377,568
DEVICE FOR CONTROLLING THE CUTTING GEOMETRY OF FINE SLICES OBTAINED BY THREAD SAWING
 Charles Hauser, 1261 Genolier, Chemin Nuyettes, Switzerland
 Filed Jan. 14, 1993, Ser. No. 5,971
 Claims priority, application Switzerland, Jan. 22, 1992, 00170/92-2
 Int. Cl.⁶ B26D 1/46 6 Claims

U.S. Cl. 83—74
 1. A thread sawing device comprising a frame carrying thread guide cylinders and having a thread trained about said thread guide cylinders, a support for a part to be sawed, means for moving said thread and said support toward and away from

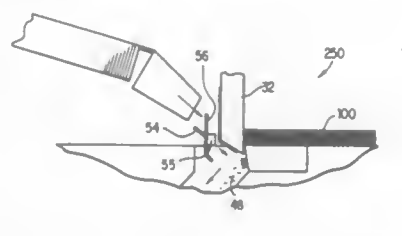
each other in one direction to saw the part supported by the support, means for detecting the relative position of the cylinders and the part to be sawed, and means responsive to the detection of said relative position to change the temperature of a portion of the device to cause thermal expansion or contrac-



tion of said part so as to maintain said relative position constant in a direction transverse to said one direction in which the thread and the support move toward and away from each other, said portion of the device whose temperature is changed being a said cylinder.

5,377,569
SIGNATURE BOOKLET MAKER WITH A MODIFIED FOLD BLADE AND A TRIM WASTE ELIMINATION DEVICE
 Paul N. Richards, Fairport; Harry A. Hilbert, Ontario, and Gary D. Juda, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
 Filed May 7, 1993, Ser. No. 57,802
 Int. Cl.⁶ B26D 7/18 15 Claims

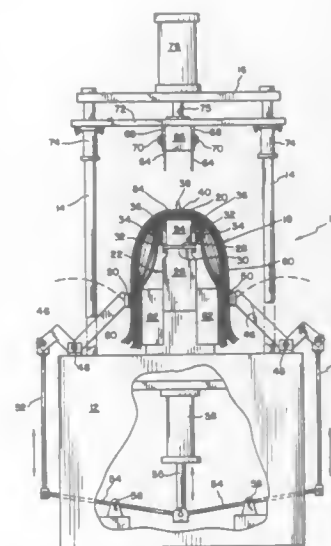
U.S. Cl. 83—98



1. A trimming unit for trimming edges of folded pages, the trimming unit comprising:
 an upper knife member movable in a plane between a resting position and a trimming position;
 a lower knife member disposed adjacent said plane such that said upper knife member and said lower knife member are adjacent each other when said upper knife member is in said trimming position enabling a concerted cutting action between said upper and lower knife members to cut said edges of said folded pages;
 a waste chute for receiving trimmings cut by said upper and lower knife members;
 an air blower disposed on one side of said upper knife member, said air blower blowing air towards said upper knife member directing all of said trimmings toward said waste chute; and
 a knife guard disposed between said upper knife member and said air blower.

5,377,570
APPARATUS FOR PERFORATING PLASTIC FILM SADDLE BAGS
 Kenneth J. Giljam, Nashville, Tenn., assignor to Packaging Innovations, Inc., Nashville, Tenn.
 Filed Oct. 15, 1992, Ser. No. 961,478
 Int. Cl.⁶ B31B 31/14 16 Claims

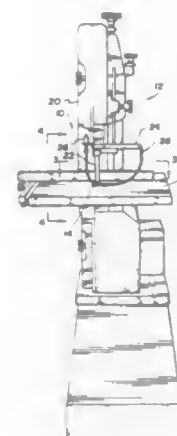
U.S. Cl. 83—175



1. An apparatus for perforating a plastic film header section connecting together a plurality of plastic film bags and forming a pack of bags, said apparatus comprising:
 means for carrying the pack of bags at the plastic film header with the plastic film bags draped thereover;
 means for contacting a portion of the pack of bags draped over said carrying means and making said plastic film header section taut on said carrying means; and
 perforation means for partially cutting the plastic film header section and perforating the same, whereby the plastic film bags can thereafter be detached from the header at said perforation by pulling the bags away from the header.

5,377,571
SAFETY GUARD SYSTEM FOR BAND SAWS AND SIMILAR EQUIPMENT
 Harold Josephs, 25311 Ronald Ct., Oak Park, Mich. 48237
 Filed Oct. 19, 1993, Ser. No. 138,799
 Int. Cl.⁶ B27G 19/06 15 Claims

U.S. Cl. 83—399



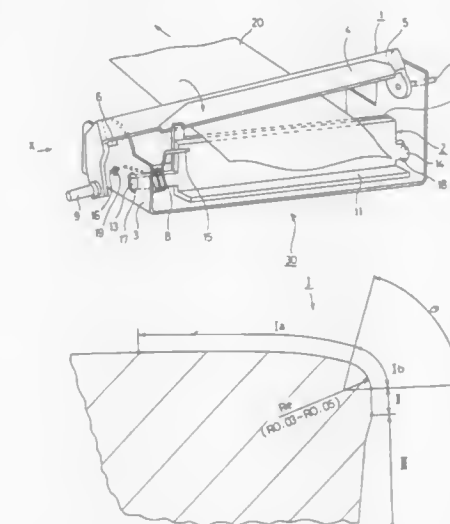
1. A guard for a power saw used to cut a workpiece, the

power saw having a blade which is driven by a motor having a power circuit, the blade being enclosed by a housing covering all but a cutting area portion of the blade, a workpiece support platform disposed at one end of the cutting area portion, the guard comprising:

a flexible member having a first end, a middle portion, and a second end, each of said ends being secured to the housing, said flexible member having an at-rest position in which the middle portion of the flexible member extends across the cutting area portion forming a partial-loop, and contacts the workpiece support platform wherein the middle portion of the flexible member normally covers the cutting area portion and a sawing position in which the workpiece is placed on the workpiece support platform with the flexible member being deformed from the at-rest position of the flexible member, and extending from the housing across a first segment of the cutting area portion between the workpiece placed on the workpiece support platform and the housing wherein the workpiece and the flexible member cooperate to cover the cutting area portion as the workpiece is cut; and
 a switch in the power circuit, said switch being closed by the flexible member containing the workpiece support platform and by the flexible member contacting the workpiece on the workpiece support platform.

5,377,572
CUTTING DEVICE
 Katsuyoshi Sonobe, Nagoya, and Morikazu Iwase, Toyohashi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
 Filed Apr. 12, 1993, Ser. No. 44,712
 Claims priority, application Japan, Apr. 16, 1992, 4-024394[U]
 Int. Cl.⁶ B26D 1/38 10 Claims

U.S. Cl. 83—583



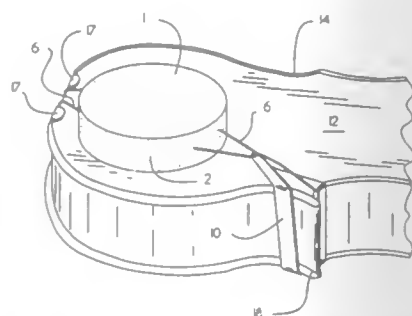
1. A cutting device comprising:
 a first blade unit;
 a substantially flat bar forming a first blade having a cutting edge that is a plastically deformed portion along its length, said first blade mounted to said first blade unit;
 a second blade unit;
 a substantially flat bar forming a second blade having a cutting edge that is a plastically deformed portion along its length, said second blade mounted to said second blade unit;
 supporting means for supporting said first blade unit pivotably around a predetermined axis, so that the plastically

deformed portion of the cutting edge of the first blade contacts the plastically deformed portion of the cutting edge of the second blade at all cutting positions; and a driving mechanism for rotating said first blade unit around the predetermined axis, wherein a cross-section of each plastically deformed portion at each point along the entire length has a radius of curvature that is between about 0.03 and 0.05 millimeters.

5,377,573
SHOULDER PAD FOR VIOLIN AND VIOLA
Stephanie Tretick, 3979 Boulevard Dr., Pittsburgh, Pa. 15217
Filed Mar. 2, 1994, Ser. No. 204,869
Int. Cl.⁶ G10D 1/02

U.S. Cl. 84—280

16 Claims



1. A shoulder support for a violin and other stringed instruments having a back, an end button and a lower bout corner on a bass-bar side of the instrument comprising:

- a foam pad having a pair of longitudinal channels there-through, the pad made from a resilient foam material which when placed on a violin will have a coefficient of friction so that the pad will remain in place during normal use;
- an elastic band; and
- a filament loop passing through the elastic band and the pair of longitudinal channels in the foam pad;

wherein the elastic band and filament loop are made from materials and sized so that when the foam pad is placed on the back of the instrument the filament loop may be fitted over an end button on the instrument and the elastic band may be fitted over the lower bout corner on the bass-bar side of the instrument, and when so placed the filament loop will press the pad against the back of the instrument and the portions of the filament within the longitudinal channels of the foam pad will be forced toward one another thereby compressing a portion of the foam pad between the longitudinal channels.

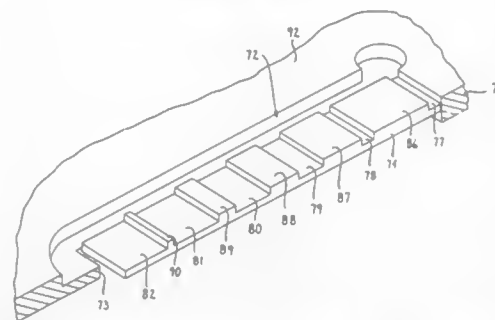
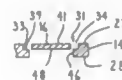
5,377,574
METALLIC VOICING ELEMENT FOR MOUTH ORGANS
Michael C. Lempke, 1117 W. Kilgore Rd., Portage, Mich. 49008
Continuation-in-part of Ser. No. 901,129, Jun. 19, 1992, abandoned. This application Mar. 3, 1993, Ser. No. 25,929
Int. Cl.⁶ G10D 7/12

U.S. Cl. 84—377

18 Claims

1. A method of fabricating a voicing element having a sound-producing reed, comprising the steps of chemically etching an approximately U-shaped recess into a platelike element from a surface on one side thereof and simultaneously chemically etching a further recess of approximately rectangular shape into said voicing element from a further surface disposed on an opposite side thereof from said surface having said U-shaped recess, said recesses having substantially equal depths and being in communication with each other at inner ends thereof so as to leave an elongate portion of said element which is integrally coupled at only one end to a remaining portion of said element and which serves as the reed, said

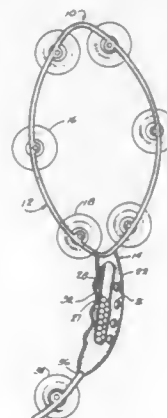
elongate portion having a thickness at said one end thereof which is substantially less than a thickness of said platelike



element at a location adjacent said one end of said elongate portion.

5,377,575
PERCUSSION INSTRUMENT
John T. Huth, III, 6226 Curie St., New Orleans, La. 70122
Filed Feb. 18, 1994, Ser. No. 198,611
Int. Cl.⁶ G10D 13/08, 13/02; A63H 5/00
U.S. Cl. 84—402

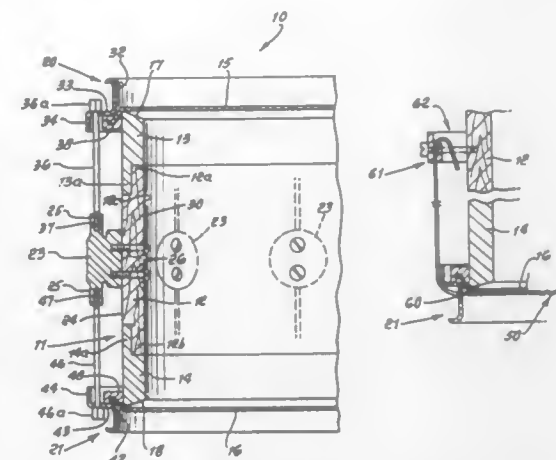
20 Claims



1. A hand-held instrument comprising:
 - (a) a tambourine portion containing a plurality of first cymbal sets spaced thereabout intermediate first and second open sides;
 - (b) a hollow handle having a proximate end portion and a distal end region opposite said proximate end portion and secured at said proximate end portion to said tambourine portion and projecting away from said tambourine portion, said handle having a plurality of openings therein;
 - (c) a hollow chamber located within said hollow handle and containing a plurality of individual pellets therein;
 - (d) a second cymbal set mounted to the distal end region of said handle; and
 - (e) whereby said instrument can be moved to produce one or more of a variety of different sounds, the sounds comprising a sound of said first cymbal sets spaced about said tambourine portion, a maraca-type sound generated from said plurality of pellets contained in said hollow chamber, the maraca-type sound being adjustable by selectively covering or uncovering said openings in said handle, and a sound of said second cymbal set mounted to the distal end region of said handle.

5,377,576
DRUM CONSTRUCTION HAVING WOOD AND METAL WALL SECTIONS
John J. Good, and Donald G. Lombardi, both of Thousand Oaks, Calif., assignors to Drum Workshop, Inc., Oxnard, Calif.
Filed Aug. 20, 1993, Ser. No. 110,186
Int. Cl.⁶ G10D 13/02
U.S. Cl. 84—411 R

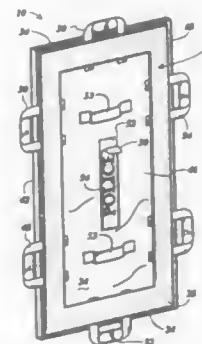
25 Claims



1. A combination drum structure comprising:
 - a drum shell having cylindrical sections located in axially end-to-end positions, and in direct axial alignment,
 - at least a first section of said sections consisting of wood and at least second and third sections of said sections consisting of metal,
 - drumhead structure on the drum shell,
 - retaining means for retaining said drumhead structure on the drum shell, said means including flange structure at an axial end of the drum shell, retainer structure on one of said sections, and adjustable tensioning structure interconnecting said flange structure and retainer structure,
 - and said flange structure being independent of and separate from said sections, and said first section interposed between said second and third sections.

5,377,577
BALLISTIC SHIELD
Bouakeo Bounkong, Chantilly; Joseph F. Fernandez, Vienna, and Oliver L. North, Bluemont, all of Va., assignors to Guardian Technologies International, Sterling, Va.
Filed Nov. 16, 1992, Ser. No. 977,015
Int. Cl.⁶ F41H 5/08, 7/00
U.S. Cl. 89—36.05

15 Claims



1. A ballistic-resistant blanket comprising:
 - a rectangular ballistic envelope of a heavy duty fabric having first and second outer planar surfaces circumscribed by first and second longitudinal sides and first and second

lateral sides defining a first peripheral border on said first outer planar surface and a second peripheral border on said second outer planar surface and said envelope defining a pocket;

a ballistic-resistant insert snugly received within said pocket of said envelope;

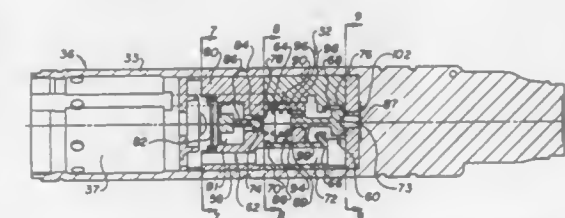
a first element of a hook-and-loop fastening system about said first peripheral border of said first outer planar surface; and

a second element of a hook-and-loop fastening system about the peripheral border of said second outer planar surface, at least one handle secured to each of said first and second longitudinal sides and at least one handle to each of said first and second lateral sides; and

at least one further handle secured to said first outer planar surface approximately mid-way between said longitudinal sides and adjacent to, but spaced from, one of said lateral sides.

5,377,578
TORQUE CONTROL SYSTEM
John A. Borries, Chardon, Ohio, assignor to The Rotor Tool Company, Cleveland, Ohio
Division of Ser. No. 406,151, Sep. 11, 1989, Pat. No. 5,117,919.
This application May 8, 1992, Ser. No. 880,501
Int. Cl.⁶ F15B 13/02
U.S. Cl. 91—47

7 Claims



1. A solenoid valve assembly for an air tool comprising:
 - a valve body having a bore therein and an annular shoulder partially extending into the bore intermediate its ends to define a first bore section and a second bore section normally in fluid communication with one another;
 - a valve member in the first bore section and a piston of greater diameter than the valve member in the second bore section, the valve member and piston being interconnected by a stem for simultaneous movement guided by the piston slidingly engaging the bore;
 - an air supply passage through the valve body to the second bore section between the piston and valve member selectively to introduce air at line pressure into the bore when the air tool is activated;
 - a first air exhaust passage from an end of the first bore section and a second air exhaust passage from an end of the second bore section;
 - an air feed passage extending from the first bore section to an air motor for the air tool;
 - a solenoid operative to close the second air exhaust passage when energized and to open the second air exhaust passage when deenergized;
 - and an air bleed passage through the piston to introduce line pressure air to both sides of the piston;
- the solenoid valve assembly being operative when the solenoid is energized and the tool activated to have line pressure air equalized on both sides of the piston thereby to urge the valve member with line pressure air toward the end of the first bore section to close the first air exhaust passage and to allow line pressure air to pass through the air supply passage, bore and air feed passage to the air motor; and
- the solenoid valve assembly being operative when the solenoid is deenergized to open the second air exhaust passage

with assistance from line pressure air between the piston and end of the second bore section thereby to urge the piston with line pressure air toward the end of the second bore section to seat the valve member on the shoulder to close the air feed passage to stop the air motor while opening the first air exhaust passage to vent any line pressure air trapped in the first bore section and air feed passage, wherein said solenoid valve assembly is maintained in position wherein the second air exhaust passage is open and the piston is urged toward the end of the second bore section seating the valve member on the shoulder closing the air feed passage stopping the air motor assisted by line pressure air biasing said piston.

5,377,579

FLUID-OPERATED SPRING BRAKE ACTUATOR WITH FUNNEL-SHAPED PRESSURE PLATE

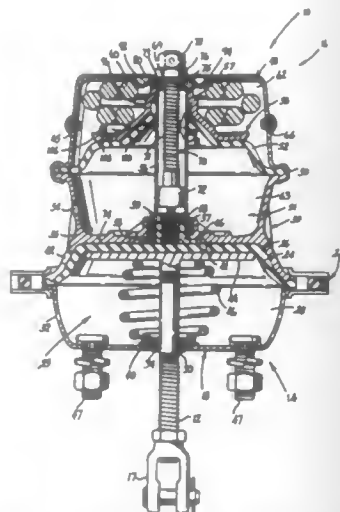
William C. Pierce, Muskegon, Mich., assignor to NAI Anchorlok, Inc., Muskegon, Mich.

Filed Jun. 15, 1993, Ser. No. 78,734

Int. Cl.⁶ F01B 7/00, 19/00

U.S. Cl. 92—63

20 Claims



1. In a fluid-operated diaphragm spring brake actuator, having a housing, an elastomeric diaphragm suspended in the housing to divide the interior thereof into first and second chambers, a pressure plate adjacent to the diaphragm in the first chamber, a spring in the first chamber between the pressure plate and the housing, and an actuator rod in the second chamber for actuating a brake mechanism in response to movement of the diaphragm and pressure plate, the improvement wherein:

the pressure plate is funnel-shaped, having a tubular portion adjacent to the actuator rod at an end of the actuator rod in the first chamber and a flared portion extending obliquely from the tubular portion, whereby the volume of fluid in the second chamber can be reduced to provide a faster response to the spring brake actuator.

5,377,580

PISTON WITH AN ENCOMPASSING SEAL

Dieter Merklein, Ludwigshurg; Harald Ott, Ditzingen; Barbara Schwind-Grellmann, Winnenden; Heinz Siegel, Stuttgart, all of Germany, and Alexander Bareiss, North Charleston, S.C., assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 24, 1993, Ser. No. 127,036

Claims priority, application Germany, Oct. 8, 1992, 4233896

Int. Cl.⁶ F16J 9/00

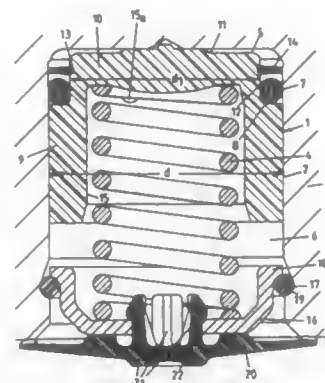
U.S. Cl. 92—248

9 Claims

1. A piston with an encompassing seal, said piston is adapted for slidably seating in a cylindrical receiving bore of a struc-

tural part and is adapted to be acted upon by pressure on at least one end,

the piston (1) has a shoulder (8) for receiving the encompassing seal (7), said shoulder extends between a cylindrical outer face (9) and an end segment (10) which forms a



jacket face (12) extending from an end (11) of said end segment to said shoulder (8), and a groove (13) is formed into the jacket face (12) between said shoulder (8) and said end (11) for receiving a ring (14) that secures the encompassing seal (7) in an axial direction.

5,377,581

ELECTRICAL COFFEE POT POSITIONABLE IN A VEHICLE AND OPERABLE FROM A CIGARETTE LIGHTER RECEPTACLE

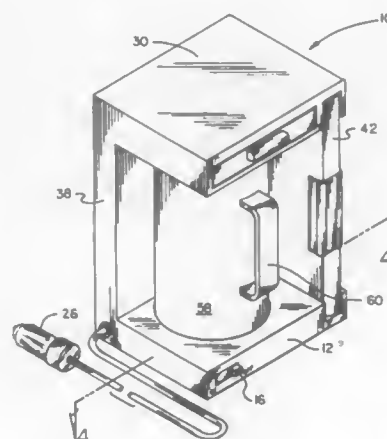
Jerry D. Campbell, 2281 S. Stagecoach La., Fallbrook, Calif. 92028

Filed Mar. 21, 1994, Ser. No. 215,102

Int. Cl.⁶ A47J 31/00

U.S. Cl. 99—295

3 Claims



1. A new and improved electrical coffee pot positionable in a vehicle and operable from a cigarette lighter receptacle comprising, in combination:

a base plate constituting a lower component positionable in a vehicle in a horizontal disposition with an electrical switch movable between an on and off orientation and an electrical resistance wire operable in response to the orientation of the switch, the base also including a tube for the passage of water for use in brewing coffee with the electrical resistance wire spirally wound therearound to heat water passing therethrough, the electrical resistance wire coupled to an electrical cord having at one end a device positionable in the cigarette lighter receptacle of the vehicle to power the resistance wire when the switch is in the on orientation;

an upper component horizontally disposed and adapted to receive heated water from the tube in the base plate with a drawer adapted to receive the coffee to be brewed from the passage of water therethrough;

a vertically disposed back component coupling the lower component and the upper component;

a water tank positioned secured to one side of the device and coupled to the lower plate, upper plate and back component;

the water conveying tube having a lower end within the lower extent of the tank extending through the lower component and unit through the electrical resistance wire, then upwardly through the back component and terminating at a location in the upper component over the coffee to be brewed; and

a cup having a handle, a lower closed end positioned on the lower component and an upper open end position located beneath the drawer whereby when water is in the tank and switch turned to the on orientation, there will be a flow of water while being heated and moved to an elevated location for being gravity fed through the coffee in the drawer and then into the cup.

5,377,582

COOKING OVEN AND METHOD

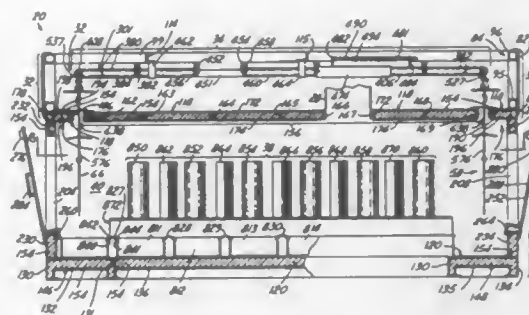
John Nersessian, 1930 Ferry Park, Detroit, Mich. 48208

Filed Mar. 24, 1993, Ser. No. 36,342

Int. Cl.⁶ A47J 37/04

U.S. Cl. 99—420

28 Claims



1. A cooking oven for cooking food products comprising in combination:

- (a) oven cabinet means defining a single interiorly open cooking oven chamber therein;
- (b) heating element array means arranged solely in a single row centrally of said oven chamber and comprising a plurality of heat radiators having their longitudinal axes oriented in the plane of said row and operable to each radiate heat energy therefrom generally radially of their longitudinal axes in a horizontal plane at least from opposite lateral surfaces thereof to thereby radiate heat energy from both of the opposites sides of the row of said radiators generally throughout the interior of said oven chamber;
- (c) overhead conveyor means constructed and arranged relative to said cabinet means for transporting food to be cooked in said oven chamber while hanging suspended from said conveyor means and traveling in a horizontal travel path in said horizontal radiant heat energy plane extending along each side and around the opposite ends of said row of heat radiators so as to thereby encircle said entire row of said heating element array means; and
- (d) food skewers individually removably attached and hanging vertically from said conveyor means at spaced intervals along the travel path, said skewers being constantly directly exposed to the radiant heat energy radiated in said horizontal plane from said heating element array means during travel thereof in said path in a complete cycle

around both sides and the ends of said single row of heat radiators.

5,377,583

YOLK CUP FOR EGG BREAKING APPARATUS

Shigeo Tomosue, Tsuyama, Japan, assignor to Kyowa Machinery Co. Ltd., Okayama, Japan

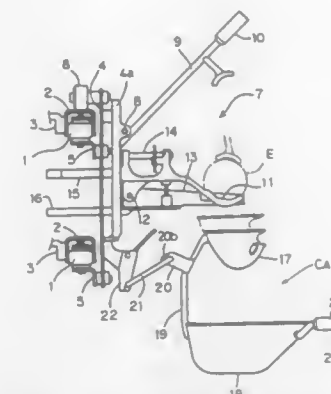
Filed Apr. 15, 1994, Ser. No. 228,368

Claims priority, application Japan, Apr. 23, 1993, 5-120773; Apr. 26, 1993, 5-123380

Int. Cl.⁶ A23J 1/09

U.S. Cl. 99—500

8 Claims



1. A yolk cup for an egg breaking apparatus, the yolk cup being pivotable between a substantially horizontal position and an inclined position, the yolk cup in the horizontal position receiving an egg content including a yolk and an albumen, the yolk cup being provided with discharge means for selectively discharging the albumen while retaining the yolk when the yolk cup is held in the horizontal position, wherein the discharge means comprises a yolk discharge opening elongated horizontally for discharging the yolk when the yolk cup is pivoted to the inclined position.

5,377,584

DEJUICING PRESS FOR DIFFERENT PRODUCTS

Jean-Michel Egretier, Domaine des Camplazens (B.P. 301), Narbonne Cedex, France 11103

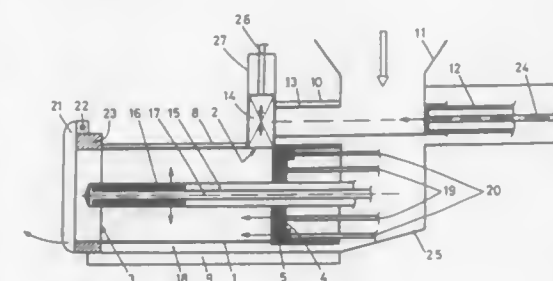
Filed Jan. 13, 1993, Ser. No. 4,126

Claims priority, application France, Jan. 13, 1992, 92 00421; Nov. 6, 1992, 92 13793

Int. Cl.⁶ B30B 9/06

U.S. Cl. 100—110

7 Claims



1. A dejuicing press comprising:

a first dripping means of a cylindrical grate type defining a main pressing chamber of a finite length and cross-section, a loading opening and an unloading opening in the main pressing chamber, a retaining means associated with said unloading opening and adjustable in position with respect to the unloading opening for retaining material within the

1. Drive for a printing press having a plurality of printing units having plate cylinders, elements for transporting stock, and elements which do not transport stock, comprising gear-transmission means for interconnecting the printing units, a plurality of motors, respectively, coupled at various locations to said gear-transmission means, a device for controlling and regulating delivered power connected to said motors, and means for feeding signals regarding rotational speed in said gear-transmission means to the control and regulating device, said gear-transmission means including a gear-transmission unit for driving all of the stock-transporting cylinders and the plate cylinders; at least one of said motors being connected to said gear-transmission unit; at least one sensor for detecting motion variables in said gear-transmission unit; at least one drive for driving the elements of the printing press which do not transport stock; at least another sensor for detecting motion variables in said drive for driving the elements which do not transport stock; all of said sensors being connected to said control and regulating device.

5,377,590
METHOD AND APPARATUS FOR THE ACCURATE
REGISTERING AND MOUNTING OF PRINTING
PLATES ON FORME CYLINDERS

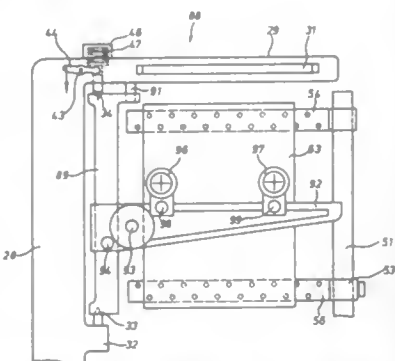
Hans-Bernhard Bolza-Schünemann, and Erich G. Wieland, both of Würzburg, Germany, assignors to Koenig & Bauer Aktiengesellschaft, Würzburg, Germany

Filed Mar. 12, 1993, Ser. No. 30,882

Claims priority, application Germany, Mar. 12, 1992, 4208179
 Int. Cl.⁶ B41F 27/00

U.S. Cl. 101—389.1

12 Claims



1. An apparatus for registering and mounting a flexible printing plate on a forme cylinder of a printing press assembly, said registering and mounting apparatus comprising:
 means for supporting a forme cylinder on a machine frame;
 a printing plate support assembly slidably supported on said machine frame, said printing plate support assembly including spaced upper and lower suction arms;
 means to releasably secure a printing plate to said printing plate support assembly;
 means to support said support assembly on said machine frame for adjustable movement in at least three degrees of freedom;
 a locating shield adapted to receive a transparent proof of a printing plate in accurate register;
 means to position said printing plate support assembly in register alignment with said locating shield and to register a printing plate with said transparent proof; and
 means to position said printing plate support assembly adjacent a forme cylinder and to release a printing plate from said printing plate support assembly to a forme cylinder.

5,377,591
WASHING APPARATUS FOR PRINTING PRESS
CYLINDERS HAVING A SPRING-BAND FREEWHEEL
TENSIONING DEVICE

Andreas Lippold, Nidderan, and Marco Bergmann, Offenbach am Main, both of Germany, assignors to Man Roland Druckmaschinen AG, Germany

Filed Feb. 22, 1994, Ser. No. 199,908

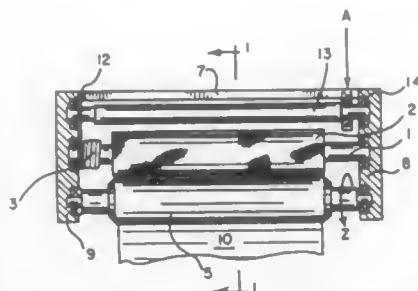
Claims priority, application Germany, Feb. 19, 1993, 4305153
 Int. Cl.⁶ B41F 35/00

U.S. Cl. 101—423

5 Claims

1. In a washing apparatus employing a washing fluid and a washing cloth for washing a cylinder in a printing press wherein the washing apparatus includes a fresh-cloth supply roller, a dirty-cloth take-up roller and an intermediate washing roller with each of the rollers having a shaft journaled at its opposite ends in supporting frame parts, the washing cloth being drawn off the fresh-cloth supply roller and around the washing roller by tension resulting from winding the cloth onto the dirty-cloth take-up roller, and throw-on means for selectively causing the washing cylinder to press the washing cloth onto the surface of the cylinder, the improvement comprising a spring-band freewheel including a helical spring having a coil portion and first and second ends, said coil portion being disposed in close-fitting concentric relation on one

end of said fresh-cloth supply roller shaft with said first spring end free and said second spring end projecting from said shaft substantially tangent to the direction of unwinding rotation thereof and fixed to one of said supporting frame parts



whereby said coil portion of said spring-band freewheel loosens from said shaft during rotation of said shaft in the fresh-cloth supply direction and seizes onto said shaft incident to rotation of said shaft in the opposite direction.

5,377,592
IMPULSE SIGNAL DELAY UNIT

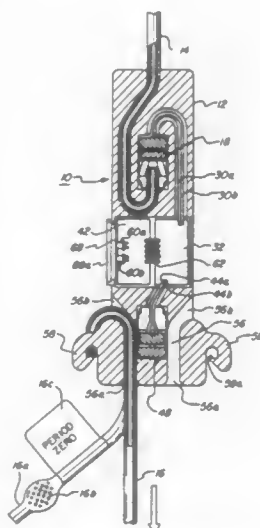
Kenneth A. Rode, Burlington; Robert G. Pallanck, Windsor; Dorman, Mark D., East Grandby, and Richard J. Michna, Winsted, all of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Continuation-in-part of Ser. No. 730,275, Jul. 9, 1991, Pat. No. 5,173,569. This application Sep. 22, 1992, Ser. No. 949,466

Int. Cl.⁶ F42C 11/02

U.S. Cl. 102—210

29 Claims



1. A delay unit comprising a housing having (i) input line retainer means for retaining an input transmission line capable of transmitting a non-electric input impulse signal; (ii) coupling means for coupling the input transmission line to signal conversion means for converting a non-electric input impulse signal from the input transmission line to electrical energy and releasing the electrical energy as a first electric signal and a subsequent second electric signal; (iii) first conductor means connecting the signal conversion means to a delay circuit for transmitting thereto the first electric signal to activate the delay circuit to start counting a selected time interval; (iv) second conductor means connecting the signal conversion means via the delay circuit to an electrically detonatable output charge for transmitting, upon lapse of the selected time interval, the second electric signal to detonate the output

charge; and (v) one or more output line retainer means for retaining one or more output transmission lines in proximity to the output charge whereby detonation of the output charge ignites the one or more output transmission lines.

5,377,593
INTERPENETRATING NETWORK COMBINATION OF
ULTRAVIOLET AND THERMALLY CURED ROCKET
MOTOR LINER COMPOSITION AND METHOD

Richard E. Boothe, Madison, and Dale E. Hutchens, Huntsville, both of Ala., assignors to Thiokol Corporation, Ogden, Utah

Filed Feb. 20, 1992, Ser. No. 838,091

Int. Cl.⁶ C06B 45/00; C06D 5/06

U.S. Cl. 102—289

8 Claims

1. An interpenetrating network combination of ultraviolet and thermally curable rocket motor liner formulation comprising at least one ultraviolet curable polymer, at least one thermally curable polymer and at least one curing agent.

5,377,594
FLEXIBLE LINEAR EXPLOSIVE CUTTING OR
FRACTURING CHARGE

Sidney C. Alford, 41a Pickwick, Corsham, Wiltshire, England SN13 OHX

PCT No. PCT/GB90/01277, § 371 Date Apr. 14, 1992, § 102(e) Date Apr. 14, 1992, PCT Pub. No. WO91/02939, PCT Pub. Date Mar. 7, 1991

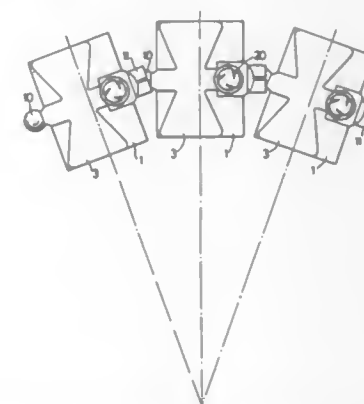
PCT Filed Aug. 14, 1990, Ser. No. 834,535

Claims priority, application United Kingdom, Aug. 15, 1989, 8918552

Int. Cl.⁶ F42B 1/032

U.S. Cl. 102—308

16 Claims



1. An element for use in forming a linear explosive cutting or fracturing charge, the element comprising a body portion for receiving an explosive material and connecting means comprising first and second connector parts at opposite sides of the body portion whereby two or more said elements can be connected together for articulation relative to one another characterized in that the body portion defines a first initiation channel which extends between the first and second connector parts with said first initiation channel having a hollow interior for receiving an explosive material and is adapted to initiate, in use, detonation of additional explosive material in said body portion, the first and second connector parts of the element being constructed and arranged such that when a plurality of the elements are connected together, the first initiation channels of the connected elements are connected end to end.

5,377,595
SPRING-SUPPORTED ELECTRIC CONTACT DEVICE
FOR TOY VEHICLE AND TRACK ASSEMBLIES

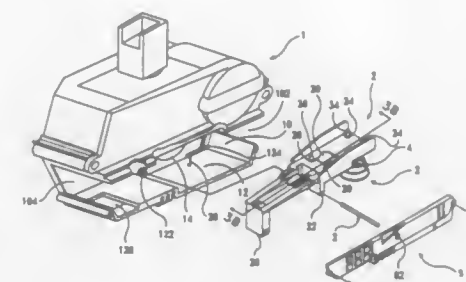
Ting Lin, 1006 Chelsea Pl., Matthews, N.C. 28105

Filed Jul. 21, 1993, Ser. No. 95,175

Int. Cl.⁶ B61B 13/00; B60L 5/00

U.S. Cl. 104—118

5 Claims



1. A spring-supported electric contact device for toy vehicle and track assemblies comprising:
 a vehicle body having a track mounting space extending from a front end to a rear end of said vehicle body, said space adapted to allow a flexible track to pass through said vehicle body, said vehicle body further having a side wall at a lower portion thereof and defining a first boundary of a chamber below said track mounting space, said wall including a pivot hole;
 a seesaw frame having a pivot hole in an intermediate portion thereof and having one end supported on a conical spring;
 an electric contact assembly fastened to said seesaw frame and disposed for constant contact with metallic electrical conductor strips fastened to the flexible track;
 a side cover having a pivot hole in an intermediate portion thereof, said side cover defining a portion of said vehicle body and defining a second boundary of said chamber; and
 a pivot pin extending through said pivot hole in said seesaw frame and supported at its respective ends by the respective pivot holes in said side wall and said side cover.

5,377,596
MAGNETIC LEVITATING TRANSPORTATION
APPARATUS WITH RAIL GAP SENSOR AND
NON-PARALLEL MAGNET UNIT ARRANGEMENT
 Yoshinobu Ono, Yoshio Watanabe, and Shinjiro Tanida, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 6, 1993, Ser. No. 86,033

Claims priority, application Japan, Jul. 6, 1992, 4-178636; Jan. 15, 1993, 5-143660

Int. Cl.⁶ B60L 13/06

U.S. Cl. 104—284

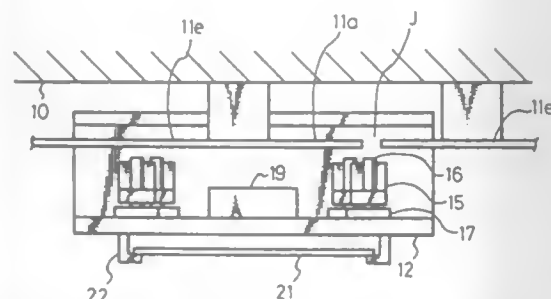
21 Claims

1. A magnetic levitating transportation apparatus for a vehicle, comprising:
 a rail support system comprising first and second parallel rails, each rail comprising a plurality of successive rail elements arranged in an end-to-end abutting relationship and defining a respective rail-to-rail gap therebetween;
 four support assemblies connected to the vehicle and provid-

ing levitation support of the vehicle from the rail support system, first and second said support assemblies corresponding to and travelling along the first rail and third and fourth said support assemblies corresponding to and travelling along the second rail, each support assembly comprising:

an electro-magnetic unit, coupled through a magnetic path to the corresponding rail, magnetically levitating and thereby supporting the vehicle, relative to the corresponding rail, by a magnetic support force in accordance with an energizing current supplied thereto, the level of the energizing current and the corresponding level of the magnetic support force being selectively adjustable and being selected so as to maintain a vehicle-to-rail gap of a desired size between the electro-magnetic unit and the corresponding rail, each rail-to-rail gap causing a discontinuity in the magnetic path and a corresponding reduction in the level of the magnetic support force and the desired size of the vehicle-to-rail gap for the selected level of energizing current,

first detecting means for detecting variations in the size of the vehicle-to-rail gap, as produced by the associated electro-magnetic unit, and generating a corresponding first detection output, and



second detecting means for detecting the presence and the absence of a rail-to-rail gap in the corresponding rail of the rail support system as the associated support assembly travels along the corresponding rail and for producing a corresponding second detection output; and means for supplying energizing current to the respective electro-magnetic units of the four support assemblies; and control means for adjusting, when a respective second detecting means detects the absence of a rail-to-rail gap, the level of the energizing current supplied to the associated electro-magnetic unit in accordance with the first detection output of the associated first detection means and thereby to maintain the desired size of the corresponding vehicle-to-rail gap and for adjusting, when a respective second detecting means detects the presence of a rail-to-rail gap, the level of the energizing current supplied to the associated electro-magnetic unit for the duration of the detection of the rail-to-rail gap by the associated second detecting means and thereby to compensate for the corresponding reduction in the level of the magnetic support force caused by the rail-to-rail gap;

wherein the four support assemblies are connected to the vehicle so that the electro-magnetic units of the four support assemblies are arranged so as to define a quadrilateral having two pairs of opposite sides, the respective opposite sides of each pair being non-parallel.

5,377,597 **RAIL VEHICLE HAVING ARTICULATED CONNECTION BETWEEN VEHICLE BODIES FOR PROHIBITING TELESOPING IN CASE OF ACCIDENTS**

Wolfgang-Dieter Richter, Winkelhald; Wolfgang David, Donauwörth; Engelbert Weeger, Nürnberg, and Bernhard Hartmann, Mering, all of Germany, assignors to Man GHH Schienenverkehrstechnik GmbH, Nürnberg, Germany

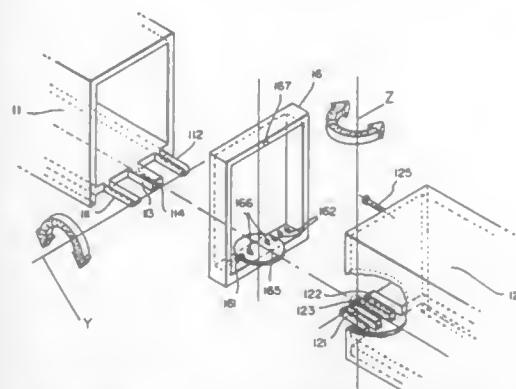
Filed Apr. 26, 1993, Ser. No. 52,722

Claims priority, application Germany, Apr. 28, 1992, 4213948

Int. Cl.⁶ B61D 17/00

U.S. Cl. 105—4.1

5 Claims



1. A rail vehicle which comprises first and second car bodies aligned such that an end of the first car body is adjacent an end of the second car body, said adjacent car body ends being supported on a common truck,

link structure including a portal disposed between said adjacent car body ends for linking said car bodies together, the portal having upper and lower lateral braces, the link structure further having means for connecting the first car body to the portal for first car body rotation relative to the portal about an axis passing laterally of the portal, means for connecting the second car body to the portal for second car body rotation relative to the portal about a vertically directed axis passing centrally through the portal, and

a device for preventing telescoping of said adjacent car body ends on happening of an accident, said device comprising a stop bar carried on the end of the first car body, and another stop bar carried at the end of the second car body, said stop bars being carried at a lower part of said car bodies with each stop bar extending centrally longitudinally from its associated car body to a tip end termination thereof proximal the axis passing laterally of the portal, one stop bar having a cup-shaped recess at its tip end in which the tip end of the other stop bar fits and abuts therewith so in event of an accident, said stop bars center against each in car body adjacent ends telescoping preventing relation.

5,377,598 **DESKTOP MOUNTED SHELF WITH PIVOTING ARMS**

Balthasar Kirchner, Eferding, and Siegfried Schleicher, Buchkirchen, both of Austria, assignors to Firma Ernst Stadelmann Gesellschaft mbH, Eferding, Austria

Filed Jul. 7, 1992, Ser. No. 909,941

Claims priority, application European Pat. Off., Jul. 17, 1991, 91890153.9

Int. Cl.⁶ F16M 11/00; A47F 7/00

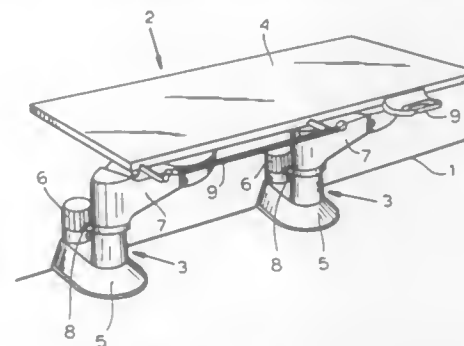
U.S. Cl. 108—97

12 Claims

1. A shelf structure for providing a support surface above a desktop, said shelf structure comprising:

a pair of brackets spaced apart along a desktop and each provided with:

a base fixedly positionable relative to said desktop and defining a first vertical axis perpendicular to said desktop, and an arm swingable about said first axis on said base and having an end spaced from said base and from said first axis, said end defining a second vertical axis perpendicular to said desktop, said arms overhanging said desktop; and



a single shelf spaced above said desktop and overlying said desktop to form the support surface, said single shelf being mounted on said ends of both said arms to pivot about said second axes, said arms being parallel, said first axes being spaced apart at a respective fixed distance and said second axes being spaced apart at a respective fixed distance, so that said shelf is displaceable parallel to itself above said desktop.

5,377,599 **ADJUSTABLE MOUNT DEVICE FOR PRE-INKED HAND STAMP**

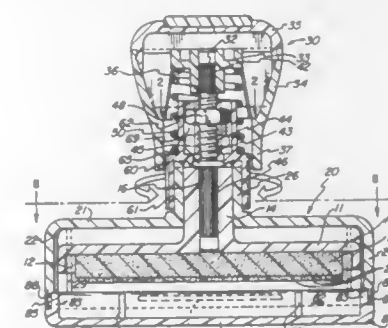
Alexander C. Wall, 705 Bayshore Rd., Nokomis, Fla. 33555, and Steven J. Sculler, 14 Dartmoor Dr., Manalapan, N.J. 07726

Filed Sep. 20, 1993, Ser. No. 123,784

Int. Cl.⁶ B41K 1/38

U.S. Cl. 101—327

20 Claims



1. In a mount for a stamp impression member adapted to imprint surfaces to be marked, including:

- a platen to support and carry the impression member;
- a case to house the platen with such impression member mounted thereon;
- a handle disposed upward of said case;
- a stem substantially rigidly interconnecting said handle and said platen, forming a reciprocable assembly therewith, and extending through a top portion of said case;
- a spring normally holding said assembly in an upward position in which the platen and a said impression member when on the platen are disposed inside said case, said assembly being displaceable downward against said spring by pressure on said handle to mark a surface underlying said case;
- a stop member constituted by a part of said assembly inside said handle and a coacting stop member constituted by a structure normally held seated relative to an upper portion of said case, said stop members being spaced apart in said upward position of said assembly and upon downward

displacement of said assembly abutting each other to stop such displacement, one of said stop members being adjustable in location lengthwise of said stem to change the permitted distance of such displacement;

an adjuster turnable about said stem and having an upper portion that peripherally surrounds said one stop member and upon turning of said adjuster correspondingly turns said one stop member about said stem; and means responsive to such turning for substantially proportionately displacing said one stop member lengthwise of said stem.

5,377,600 **PALLET AND PALLET RUNNER OF CORRUGATED CARDBOARD**

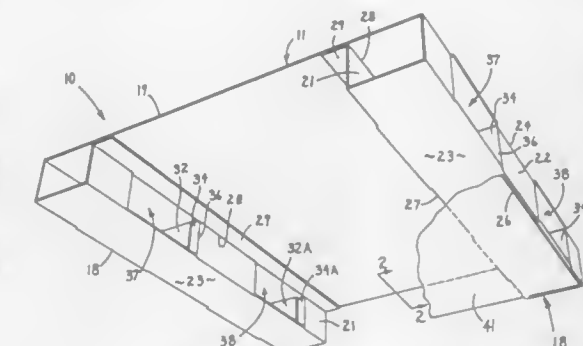
Scott Speese, Kalamazoo, and Gregory Arvanigian, Portage, both of Mich., assignors to Arveco Container Corporation, Kalamazoo, Mich.

Continuation of Ser. No. 949,726, Sep. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 823,296, Jan. 21, 1992, abandoned, and a continuation-in-part of Ser. No. 890,550, May 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 823,296, May 28, 1992. This application Mar. 4, 1994, Ser. No. 206,896

Int. Cl.⁶ B65D 19/00

U.S. Cl. 108—51.3

29 Claims



1. A pallet assembly constructed substantially entirely of corrugated paperboard, comprising a pair of parallel, spaced-apart, elongated end stringers each being defined by a monolithic one-piece blank of corrugated paperboard cut, scored, folded, and erected to define a substantially hollow, rectangular cross-section comprised of two, spaced-apart, parallel, opposed vertical sidewalls with a top wall extending substantially horizontally between upper edges of said sidewalls and a bottom wall extending substantially horizontally between lower edges of said sidewalls and extending substantially parallel with said top wall, and a substantially flat top deck extending substantially horizontally between said end stringers and fixedly joined to the top walls thereof, said top deck comprising a monolithic one-piece blank of corrugated paperboard, said stringers projecting downwardly from said top deck, said two sidewalls of each stringer each having two pairs of rectangular flaps bounded by two upright fold lines along mutually remote upright edges thereof and cut lines along adjacent upright edges thereof and along upper and lower edges thereof, said flaps being foldably positioned in an inwardly folded position so as to extend substantially transversely of their respective sidewalls inside said stringer so as to be disposed in overlapping and abutting relationship and to extend between and provide vertical load support between said top and bottom walls, said pairs of overlapping flaps defining two aligned openings through each said stringer, each opening in one stringer being aligned with a corresponding opening in the other stringer, and the pairs of aligned openings in said stringers being spaced-apart a distance corresponding to the spacing between the support bars of a forklift truck so that the pallet assembly can be lifted by a forklift truck.

5,377,601

TABLE WITH REMOVABLE LEGS

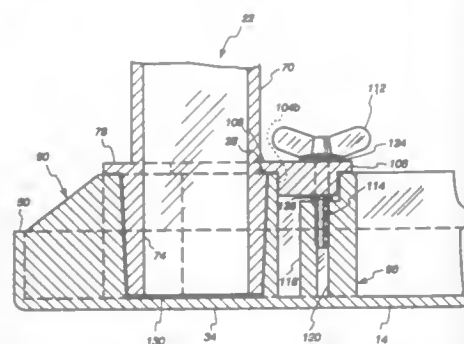
Richard E. Cashen, Mazon, Ill., assignor to Suncoast Corporation, Batavia, Ill.

Filed Apr. 1, 1993, Ser. No. 41,786

Int. Cl.⁶ A47B 3/06

U.S. Cl. 108—157

21 Claims



1. An article of furniture having removable legs for resting on a support surface, with provision for mounting the legs in a working position and further provision for stowing the legs when not in use, the article of furniture comprising:

- a generally planar body;
- a plurality of elongated, double-ended legs having first ends for resting on the support surface and second ends for engaging the body to maintain the body at a preselected position away from the support surface;
- leg mounting members carried on the body for engaging the second ends of the legs so as to orient the legs in a working position, at an angle to the body;
- the leg second ends and leg mounting members comprising telescopically interengaging plug and socket members;
- said legs further having an outwardly protruding lip adjacent the second end, for engagement with a clamping member;
- said body further having a first fastener engaging means adjacent the leg mounting members for engaging a fastener;
- a clamping member engageable with the lip;
- a fastener for engaging the clamping member and the first fastener engaging means so as to press the clamping member against the lip of the leg to assist in maintaining engagement of the leg second ends and leg mounting members;
- a bracket carried by the body extending at an angle to the body and defining a recess adjacent the body to at least partly receive a portion of a leg;
- said body further having a second fastener engaging means adjacent the bracket for engaging the fastener; and
- the fastener adapted to also engage the clamping member and the second fastener engaging means to press a portion of the leg toward the body to secure the leg in the bracket so as to store the leg along the body when not in use.

5,377,602

INSTALLATION OF SAFES

Joseph P. Keogh, 33 Lenton Parade, Waterloo, NSW 2017, Australia

PCT No. PCT/AU91/00114, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO91/14841, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 26, 1991, Ser. No. 930,540

Claims priority, application Australia, Mar. 26, 1990, PJ9311; Dec. 24, 1990, PK4044

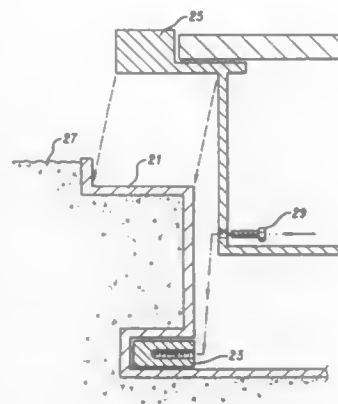
Int. Cl.⁶ E05G 1/00, 21/00; E04B 1/38

U.S. Cl. 109—51

8 Claims

1. A safe installation including a safe and formwork with said formwork cast within a concrete structure, said formwork providing a void therein within which said safe is installed, said formwork having a surrounding side wall and a base

wall defining said void and including an open end, said side wall including at least one portion thereof protruding outwardly from said side wall proximate to said base wall to provide a cavity protruding outwardly from said side wall,



anchorage means disposed within said outwardly protruding cavity, securing means protruding through said safe engaged with said anchorage means and retaining said safe within said formwork in said concrete structure.

5,377,603

BURNING OF BLENDED WASTE-DERIVED SUPPLEMENTAL FUEL FOR IMPROVED MANUFACTURE OF CEMENT

Theodor J. Reese, Ft. Myers, Fla.; Eric R. Hansen, Shawnee, Kans., and Michel R. Benoit, Greene, R.I., assignors to Cadence Environmental Energy, Inc., Michigan City, Ind. and Ash Grove Cement Company, Overland Park, Kans.

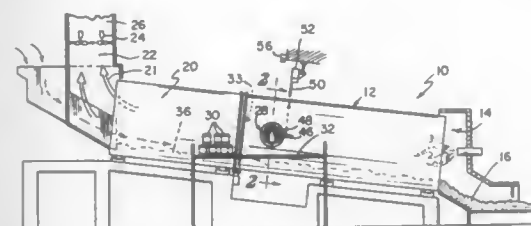
Continuation of Ser. No. 978,154, Nov. 17, 1992, Pat. No. 5,224,433, and a continuation of Ser. No. 826,026, Jan. 27, 1992, abandoned, and a continuation of Ser. No. 731,625, Jul. 17, 1991, Pat. No. 5,083,516, and a continuation of Ser. No. 613,238, Jan. 9, 1990, Pat. No. 5,058,513, and a continuation of Ser. No. 412,287, Sep. 25, 1989, Pat. No. 4,974,529, Division of Ser. No. 347,075, May 16, 1989, abandoned, Division of Ser. No. 275,402, Nov. 23, 1988, Pat. No. 4,850,290. This application Jun. 28, 1993, Ser. No. 84,547

The portion of the term of this patent subsequent to Jul. 25, 2006, has been disclaimed.

Int. Cl.⁶ F23G 5/00

U.S. Cl. 110—346

19 Claims



1. A method for achieving environmentally sound disposal of solid waste having volatile and non-volatile components in an operating rotary kiln comprising a heated, rotating cylinder containing in-process mineral material, said method comprising the steps of blending the waste to form a waste blend, processing the waste blend to retard the rate of release of volatile components and charging the processed waste blend into the kiln to contact the mineral material at a point along the length of the kiln cylinder wherein the kiln gas temperature is

sufficient to decompose volatile components Of the waste blend.

5,377,604

METHOD FOR THE OBTAINING OF MOLDED STABILIZED MATERIALS FROM WASTES

Philippe Pichat, 18, Rue des Tournelles, 75004 Paris, France

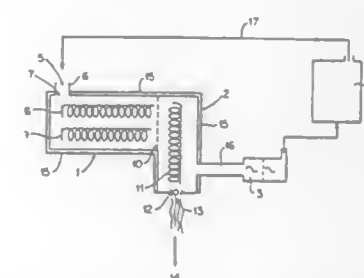
Filed Jul. 26, 1993, Ser. No. 96,910

Claims priority, application France, Jul. 24, 1992, 92 09196

Int. Cl.⁶ F23G 7/04

U.S. Cl. 110—346

9 Claims



1. A method for the obtaining of molded materials, stabilized at the physical/chemical level, from wastes of various types and origins, said method comprising the steps: mixing the waste with at least one solidification agent of the hydraulic binder type, and in carrying out extrusion molding of the solid material obtained, wherein the waste, conditioned in the form of a mixture with a liquid limit ranging from 25% to 45%, is mixed under high vacuum at a controlled temperature that is substantially constant for a given type of waste, the operation being done continuously.

5,377,605

DUAL CLAMPING SYSTEM

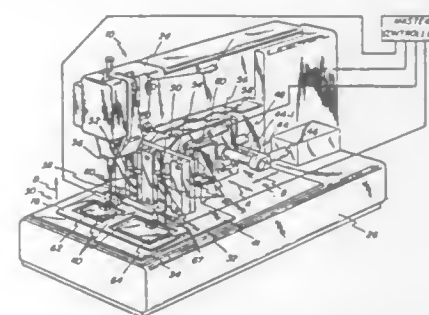
Rick J. Frye, Miamisburg, Ohio, assignor to MIM Industries, Inc., Miamisburg, Ohio

Filed Jul. 14, 1992, Ser. No. 913,135

Int. Cl.⁶ D05B 21/00

U.S. Cl. 112—114

23 Claims



1. A clamping system for clamping a plurality of workpieces against a sewing surface in a sewing machine, said clamping system comprising:

- a clamp for securing said plurality of workpieces independently of each other against said sewing surface; and
- a driver coupled to said clamp for coupling said clamp to the sewing machine and also for driving said clamp into engagement with said plurality of workpieces to secure said plurality of workpieces against said sewing surface when said driver is energized; and
- each of said plurality of workpieces comprising an inner clamp portion, said clamp comprising a plurality of inner clamps for clamping said inner clamp portion of each of said plurality of workpieces against said sewing surface.

5,377,606

THREAD TENSIONING DEVICE FOR SEWING MACHINE

Shuji Fujita, Chofu, Japan, assignor to Juki Corporation, Chofu, Japan

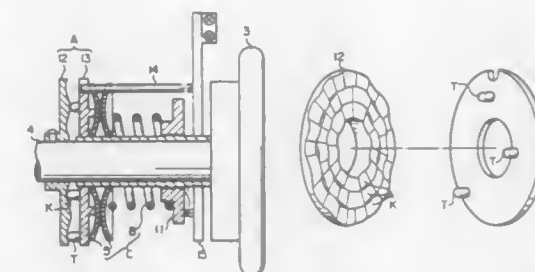
Filed Apr. 27, 1993, Ser. No. 53,882

Claims priority, application Japan, Apr. 27, 1992, 4-027623[U]

Int. Cl.⁶ D05B 47/00

U.S. Cl. 112—254

3 Claims



1. A thread tension device for a sewing machine, the thread tension device including a rotatably operable shaft, a pair of thread tensioning discs so disposed opposite to each other as to move axially with respect to said shaft, an elastic member mounted on said shaft so as to apply a pressure contact force to said thread tensioning discs, said thread tension device comprising:

- a rotary member fixed to said shaft;
- a follower movable in an axial direction only with respect to said shaft between said thread tensioning discs and said rotary member;
- a cam surface formed on one of the opposed surfaces of either one of said rotary member or said follower; and
- a projection element formed on the other one of the opposed surfaces of either one of said rotary member or said follower so as to engage with said cam surface, said elastic member being provided to vary a contact force of said thread tensioning discs with an axial movement of said follower.

5,377,607

CONVERSION ARRANGEMENT FOR SAIL BOARD WITH SEAT

Gerald S. Ross, 24 Cranberry Cir., Mashpee, Mass. 02649

Filed Mar. 8, 1994, Ser. No. 207,967

Int. Cl.⁶ B63H 25/06

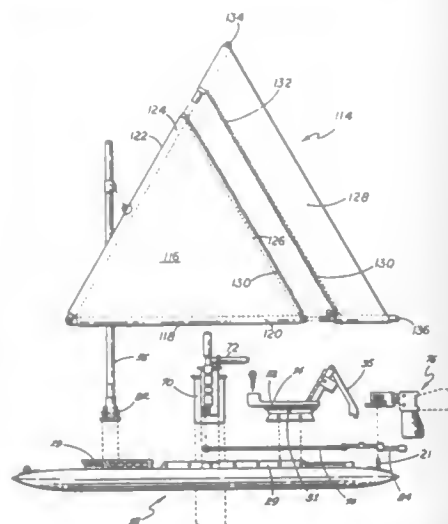
U.S. Cl. 114—39.2

10 Claims

1. A multi-functional accessory arrangement for converting a sail board into a paddling craft, rowing craft or conventional sailing craft comprising:

- a) hull means comprising a sail board having a deck a forward bow end, an aft stern end, a longitudinal axis extending between said bow end and stern end, and a center-board well;
- b) a detachable, multi-functional seat with moveable back including an associated back support, adapted to be adjustable between a forward facing sailing position, an aft facing rowing position and a forward facing paddling position;
- c) a chassis extending along said longitudinal axis attached to the deck for engaging said multi-functional seat permitting selective positioning of said seat on said longitudinal axis of the sail board;
- d) watercraft conversion assembly means for propelling the sail board comprising a sailing subassembly, a rowing subassembly and a paddling subassembly;
- e) steering means for manually steering the sail board when in motion;
- f) pedestal means for controlling the movement of the sail board including a centerboard, a tiller means for control-

- ling the rudder and rigging means for controlling the sail comprising halyard means and sheet means;
- g) rowing fixture means including locks attached to the chassis;
- h) step means positioned forward of the centerboard well for stepping a mast; and
- i) rudder post means positioned aft of the chassis for mounting a steering means wherein stability is provided by utilizing the larger size conventional sail board assembly



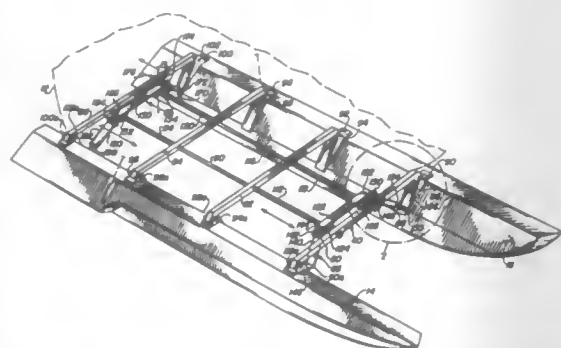
hulls as a hull to which can be attached to the multi-functional seat arranged in combination with one of said water craft conversion means for converting the sail board selectively into either a conventional sailing craft that is designed to be operated from a forward-facing seated position, a row boat that is arranged to be operated from an aft-facing seated position with oars or a paddling craft wherein the user is oriented in a forward-facing seated position.

5,377,608

ASYMMETRIC PONTOONS FOR A WATER CRAFT
William H. Harper, Jr., 1454 Amon Dr., Richland, Wash. 99352
Division of Ser. No. 952,566, Sep. 25, 1992, Pat. No. 5,265,550.
This application Nov. 5, 1993, Ser. No. 148,666
Int. Cl.⁶ B63B 1/00

U.S. Cl. 114-61

22 Claims



1. An asymmetric pontoon pivotally supported upon a craft, said pontoon comprising in combination:
- a) means for attaching said pontoon to the craft;
- b) a first planar longitudinally extending surface having a forward curved edge for defining the bow of said pontoon and on edge;
- c) a second planar longitudinally extending surface having a lateral edge attached to said curved edge, said second

- surface including a simple curvature section for defining the bow;
- d) a third planar longitudinally extending surface having a reinforced surface, said third surface including a simple curvature section for defining the bow and an edge;
- e) plate means laterally interconnecting said third surface with said second surface;
- f) a fourth planar longitudinally extending surface having a lateral edge attached to said edge of said third surface, said fourth surface including a simple curvature section for defining the bow and an edge;
- g) a fifth planar longitudinally extending surface having a curved edge attached to said edge of said fourth surface and a further edge; and
- h) means for interconnecting said further edge of said fifth surface with said edge of said first surface.

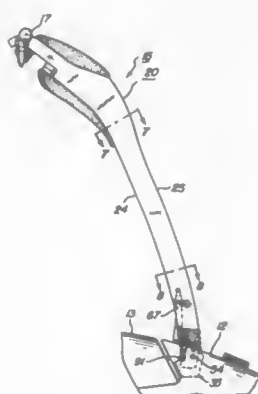
5,377,609

HANDLE POLE WITH INTEGRAL GAS SPRING FOR JET SKIS

Edward W. Miller, 20022 Daniel La., Orange, Calif. 92669
Filed May 24, 1993, Ser. No. 64,986
Int. Cl.⁶ B63H 25/00

U.S. Cl. 114-144 R

15 Claims



1. A handle pole assembly for jet skis comprising:
- a. an elongated handle pole having the shape of a rectangular transverse cross-section beam including a generally transversely disposed upper side wall, a lower side wall generally parallel to said upper side wall, and left and right side walls depending downwardly from said upper side wall, said beam having an aft end adapted to support controls for said jet ski, said beam having a short front portion of reduced width, said front portion having generally vertically disposed left and right side walls displaced laterally inwards from the adjacent side walls of said beam rearward of said front section, said lower wall of said beam having formed therein longitudinally elongated hollow tubular section extending rearward from said front section and adapted to receive control cables and a longitudinally disposed groove extending rearward from said front section of said beam, said groove being located between said hollow tubular section and one of said side walls of said beam,
- b. a mounting frame having a base adapted to be fastened to the body of a jet ski, and a pair of laterally spaced apart longitudinally disposed side walls protruding upwards from said base, the spacing between the inner facing side of said side walls begin of the proper size to sandwich said front section of said beam, each of said pair of side walls having a laterally disposed bore through the thickness dimension thereof, said bores being laterally aligned and adapted to support a laterally disposed pivot means adapted to permit pivotal motion in a vertical plane of said front section of said beam, and

- c. a linear gas spring having a first longitudinal end portion thereof attached to a second laterally disposed pivot member located within said groove in said lower wall surface of said beam near the rear transverse wall of said groove, and a second longitudinal end thereof attached to a third, laterally disposed pivot member attached to said mounting frame, said gas spring being adapted to exert an extensional force between said second and third pivot members tending to cause said beam and said gas spring to pivot upwards, thereby counterbalancing at least part of the weight of said aft end of said handle pole.

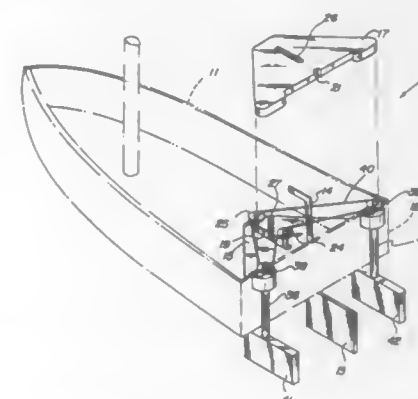
5,377,610

SAILBOAT BRAKE APPARATUS

Clarence F. Goebel, R.R. 1, Ruthville, Minot, N. Dak. 58701
Filed Mar. 16, 1992, Ser. No. 852,300
Int. Cl.⁶ B63H 25/34

U.S. Cl. 114-145 R

1 Claim



1. A sailboat brake apparatus, comprising, a sailboat hull, the sailboat hull including a stern plate, and a rudder control rod extending below the sailboat hull adjacent the stern plate, and the rudder control rod including a rudder blade mounted to a lower end of the rudder control rod, and
- a housing member mounted within the sailboat hull adjacent the stern plate, with the housing including an upper housing plate spaced from a lower housing plate, and
- a cover lid arranged for securement to an upper distal end of the housing above the upper housing plate, with the lid including a lid slot, the upper plate including an upper plate slot coextensive with and parallel the lid slot, and
- a brake control rod orthogonally oriented relative to the upper housing plate and lower housing plate extending through the upper plate slot and the lid slot, and
- a first brake plate spaced from a second brake plate, with the first brake plate and the second brake plate positioned below the sailboat hull and adjacent the stern plate and positioned on opposed sides of the rudder blade, and
- drive means in operative communication between the brake control rod and the first brake plate and the second brake plate for effecting pivotment of the first brake plate and the second brake plate from a first position orthogonally oriented relative to the stern plate to a second position arranged parallel relative to one another and the stern plate, and
- the drive means includes a first gear shaft and a second gear shaft directed through the lid slot and the upper plate slot, with the brake control rod connected to the second gear shaft, and the first gear shaft including a first gear at an upper distal end of the first gear shaft, and a second gear fixedly mounted to an upper distal end of the second gear shaft, with the first gear and the second gear arranged substantially coplanar relative to one another, and a third gear shaft mounted adjacent the stern plate, with the third gear shaft including the first brake plate mounted to a

- lower distal end of the third gear shaft, and a fourth gear shaft, with the second brake plate mounted to a lower distal end of the fourth gear shaft, and a third gear mounted to an upper distal end of the third gear shaft, and a fourth gear mounted to an upper distal end of the fourth gear shaft, and
- a first slide bar arranged in a parallel coextensive relationship relative to a second slide bar, wherein the first slide bar and the second slide bar are mounted within a housing member orthogonally oriented relative to the stern plate, and a first slide plate slidably mounted between the first and second slide bars, and a second slide plate slidably mounted between the first and second slide bars, the first slide bar orthogonally and rotatably mounting the first gear shaft therethrough, and a second slide plate slidably mounted relative to the first and second slide bars orthogonally mounting the second gear shaft therethrough, and a stationary plate fixedly mounted between the first and second slide bars oriented between the first and second slide plates, the stationary plate including a tension lever pivotally mounted relative to and above the stationary plate, the tension lever including a first slide link and a second slide link, the first slide link mounted to the tension lever and the first slide plate, the second slide link pivotally mounted to the tension lever and the second slide plate, whereupon pivotment of the tension lever effects tensioning of the drive means.

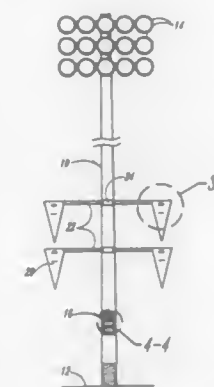
5,377,611

MEANS AND METHOD FOR CHARITABLE DONATION PROMOTION

Joe P. Crookham, and Jeffrey A. Rogers, both of Oskaloosa, Iowa, assignors to Musco Corporation, Oskaloosa, Iowa
Filed Dec. 18, 1992, Ser. No. 992,840
Int. Cl.⁶ G09F 17/00

U.S. Cl. 116-173

14 Claims



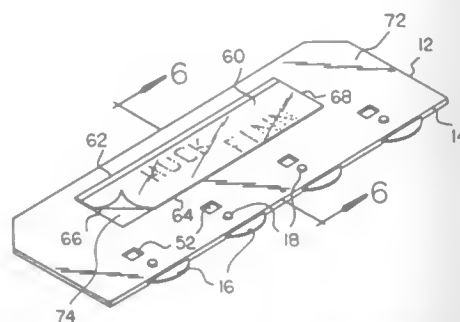
1. An apparatus for visual display of information relating to donations to one of a promotional and advertising goal comprising:
- a pole fixed in the ground at a lower end and having an upper end extending generally vertically;
- a bank of light fixtures fixed to the upper end of the pole which can issue controlled, concentrated beams of light to a target area away from the pole; and
- one or more flag devices fixed to the pole, each flag device bearing indicia related to a factor relevant to said one of the promotional and advertising goal, each flag device comprising an elongated bar having opposite ends and mounted generally horizontally to the pole by a mounting bracket, one or more flag members bearing the indicia and having proximal and distal ends, each flag member being attached to one of the bars at said proximal end, and said distal end hanging freely from said one of the bars, so that the flag member can swing and move relative to its fixed attachment at said proximal end; and

so that the apparatus concurrently allows visual display of information relating to donations to one of the promotional and advertising goal and high intensity lighting to a target area for wide area lighting such as sports field lighting.

5,377,612
DEVICES FOR MARKING A PAGE OF A BOOK AND FOR INDICATING THE NUMBER OF SUCH PAGE
John P. Catalano, and John M. Catalano, both of 312 Knoliwood Dr. R.D. #1, Linwood, N.J. 08221
Filed Dec. 10, 1993, Ser. No. 164,969
Int. Cl.⁶ B42D 9/00

U.S. Cl. 116—234

4 Claims



1. A new and improved device for marking a page of a book and for indicating a page number comprising, in combination: a first sheet of thin rigid opaque plastic material formed in a generally rectangular configuration with long parallel first and second side edges and short parallel upper and lower edges and with angled edges along the first side edge extending to the adjacent upper and lower edges thereby forming cutouts; a second sheet of thin rigid opaque plastic material formed in a generally rectangular configuration with long parallel first and second side edges and short parallel upper and lower edges and with angled edges along the first side edge extending to the adjacent upper and lower edges thereby forming cutouts, each of the sheets being formed with four equally spaced rectangular windows formed between the longitudinal center line of each sheet and the second side edge thereof;

four rigid opaque plastic circular disks disposed between the sheets, each of the disks being formed with numbers 0 through 9 adjacent to its periphery for being positioned adjacent to one of the windows;

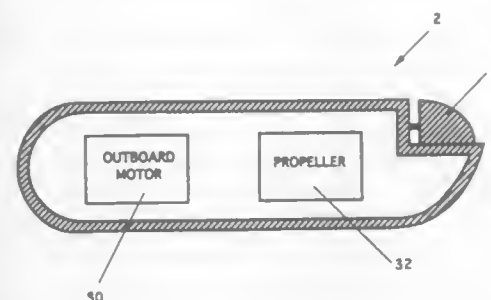
a rivet extending through the center of each circular disk and through the first and second sheets to allow for rotation of each circular disk independent of the other circular disks to bring a number into view through said O.C. of said window for indicating the page number of a book being marked, a minor portion of each circular disk extending beyond the second side edges of the sheets to allow a user to rotate each circular disk to thereby change an exposed number; and

a marking strip of flexible transparent plastic material having long parallel longitudinal edges and short parallel end edges with means to couple the marking strip along one longitudinal edge to the first sheet near the windows and with a layer of marking material on a fixed strip therebeneath whereby the name of the book being read may be written by depressing the marking strip into contact with the layer of marking material on the fixed strip and whereby lifting the marking strip will separate the marking strip from the layer of marking material on the fixed strip to erase the name of the book.

5,377,613
SUBMERSIBLE BOAT
David B. Wyman, Panama City, and Joann Davis, Parker, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 29, 1993, Ser. No. 83,232
Int. Cl.⁶ B63G 8/18, 8/08

U.S. Cl. 114—332

4 Claims

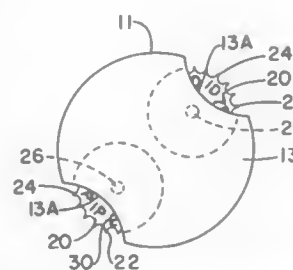


1. A vessel which can operate both as a planing boat and as a submarine comprising: a blunt end of said vessel, an outboard motor located near said blunt end of said vessel, a pointed end of said vessel, a propeller located near said pointed end of said vessel, wherein said outboard motor propels said vessel with said pointed end forward as said vessel moves at planing speeds, wherein said propeller propels said vessel with said blunt end forward when said vessel operates as a submarine, a rudder located near said pointed end of said vessel, wherein said rudder steers said vessel when said propeller propels said vessel, a plurality of bow planes, a plurality of stern planes, wherein the pressure of the water flowing over and under said bow planes and said stern planes steers said vessel as said vessel submerges and ascends, a plurality of open ballast tanks, and a plurality of closed ballast tanks, wherein movement of water into and out of said open ballast tanks and said closed ballast tanks changes the weight of said vessel.

5,377,614
REMINDER DEVICE FOR PILL CONTAINERS
Bradley M. Glazer, 24835 Penshurst Dr., Beachwood, Ohio 44122
Filed Nov. 9, 1992, Ser. No. 973,184
Int. Cl.⁶ G09F 11/04

U.S. Cl. 116—308

11 Claims



1. A reminder device for pill dispensing containers, comprising: a body having a base and top portion; said base having first and second surfaces, said first surface having at least one aperture therethrough to receive at least one spindle to

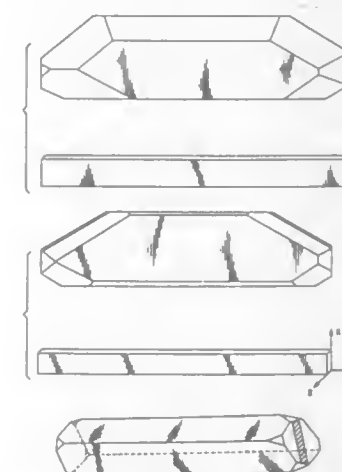
project outwardly and essentially orthogonally from said first surface of the base into the top portion of said body; and said second surface having a means for securing the second surface to a surface of an object; at least one dial rotatably mounted on said at least one spindle, each said at least one dial having a perimeter; said top portion of said body and each said at least one dial having indicia indicating time thereon, said indicia being discernible to a user; and, means for engaging the perimeter of said at least one dial mounted on said base to retain said at least one dial in a set position relative to said base.

5,377,615
PROCESS FOR INCREASING THE DIMENSIONS OF CRYSTALS WHICH CAN BE PRODUCED BY HYDROTHERMAL GROWTH, USING A SEED OBTAINED BY CRYSTALLINE PLATE ASSEMBLY
Jacques Detaint, Villemonble; Jacquie Schwartzel, Palaiseau; Yves Toudic, Lannion; Etienne Philippot, Saint Mathieu De Trevier; Bernard Cappelle, Villejuif; Albert Zarka, Paris; Aline Goiffon, Saint Clement La Riviere, and Roger Arnaud, Crangevri, all of France, assignors to France Telecom and Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed May 22, 1992, Ser. No. 887,088
Claims priority, application France, May 24, 1991, 91 06271
Int. Cl.⁶ C30B 29/14

U.S. Cl. 117—1

17 Claims

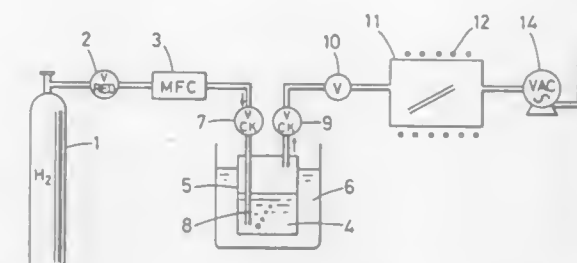


1. A process for increasing the dimensions of quartz crystals and of quartz-isomorphic materials, which can be produced by hydrothermal growth from seed, in which a seed obtained by assembly of several crystalline plates is used; wherein two plates identical in at least one dimension of length and width and cut in at least one crystal and having at least three faces of crystalline orientations, the deviations from which remain, between the plates, smaller than 10° of arc, and wherein said plates are brought together on a support by guidance elements, which ensures the alignment on said three faces with crystalline orientation deviations smaller than 10° of arc, one face per plate growing crystals from one of said faces thereby the production of a single crystal exhibiting at least one dimension greater than that corresponding to the original crystalline plates.

5,377,616
METHOD FOR VAPORIZING AND SUPPLYING ORGANOMETAL COMPOUNDS
Hiroshi Mihira; Tetsuo Shimizu, both of Kyoto; Kazuhiro Hirahara; Toshinobu Ishihara, both of Nigata, and Seiki Takaya, Kanagawa, all of Japan, assignors to Tec, Inc., Kyoto and Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan
Continuation of Ser. No. 905,620, Jun. 29, 1992, abandoned, which is a division of Ser. No. 500,772, Mar. 28, 1990, abandoned. This application Nov. 9, 1993, Ser. No. 150,532
Claims priority, application Japan, Mar. 29, 1989, 1-77020
Int. Cl.⁶ C30B 25/14

U.S. Cl. 117—104

9 Claims

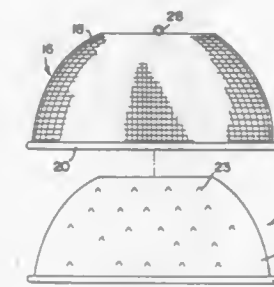


1. In a method for vaporizing an organometal compound and supplying the vapor produced to a heated substrate surface under reduced pressure in a crystal growth chamber, the improvement which comprises heating the organometal compound in a solid state to a temperature from 50°-80° C. in the absence of a carrier gas to produce a pure vapor of the compound at a vapor pressure greater than the reduced pressure and supplying the vapor at a constant flow rate to the substrate surface.

5,377,617
FEEDER WITH FOOD PROTECTION GRID
Mary B. Harwich, P.O. Box 533, Glencoe, Ill. 60022
Filed Feb. 19, 1993, Ser. No. 19,612
Int. Cl.⁶ A01K 39/01, 53/00

U.S. Cl. 119—6.5

7 Claims



1. A feeder for butterflies and moths, comprising: a core member for supporting food thereon; a protective grid member covering said core member and providing a feeding surface for butterflies and the moths to land thereon; said core member and said protective grid member are both of a domed configuration, said core member and said grid member each having at least one horizontal surface thereon and spaced apart at a distance of between about 19 mm and about 38 mm; a plurality of openings extending through said grid member, said openings being less than about 3.0 millimeters in width to permit the ingress and egress of the proboscis of a butterfly or moth; and hanging means associated with said core member and said protective grid member to vertically hang the feeder from

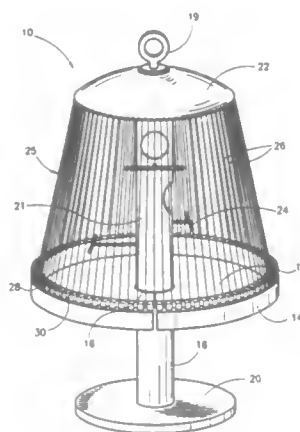
an overhead support, said hanging means including a tray for supporting said core member and said grid member thereon, said tray being adapted for attachment to said overhead support for vertically hanging the feeder therefrom.

5,377,618
METHOD FOR PREFERENTIAL PRODUCTION OF RATITES OF A DESIRED SEX
David Crews, and Thane Wibbels, both of Austin, Tex., assignors to Reproductive Sciences, Inc., Austin, Tex.
Filed Jul. 31, 1992, Ser. No. 922,831
Int. Cl.⁶ A01K 67/04; A61K 31/56

U.S. Cl. 514—182 20 Claims
1. A method for preferential production of ratites of a desired sex by treating developing embryos in ova, comprising the steps of:
injecting an effective amount of sex differentiating material into a ratite egg so as to effect development of gonads of the desired sex; and
incubating the egg until hatch and thereby obtain a viable ratite of the desired sex.

5,377,619
PET CAGE BARRIER
George Katz, P.O. Box 3106, Herzliya, Israel
Filed Dec. 13, 1993, Ser. No. 165,458
Int. Cl.⁶ A01K 31/00

U.S. Cl. 119—17 10 Claims

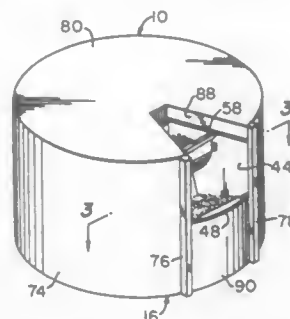


1. A pet cage barrier comprising:
a plurality of cage sections comprising a top and a base section maintained spaced apart from one another by a rigid frame portion so as to define a volume therebetween; and
a plurality of thin, flexible wires tensioned between said cage sections, said wires blocking exit of a pet from said volume while allowing maximum visibility therewithin;
wherein said rigid frame portion comprises a support arm extending external to said volume between said cage sections.

5,377,620
CAROUSEL ANIMAL FEEDER
Daniel J. Phillippi, 1440 W. 34th North, Wichita, Kans. 67204
Filed Sep. 13, 1993, Ser. No. 119,625
Int. Cl.⁶ A01K 5/00

U.S. Cl. 119—51.12 8 Claims
1. An animal feeder comprising:
a base comprising a support adapted to be positioned on a supporting surface, and an upright shaft mounted on the support;
a carousel rotatably mounted on the shaft for rotary movement about the latter, there being a plurality of compart-

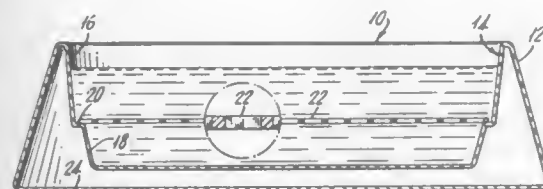
ments carried by the carousel and disposed generally in a circular arrangement concentric to the shaft;
a cover extending over the compartments, said cover having an opening therethrough at a position to provide an animal access to a compartment at said position when the latter is moved to the position by rotation of the carousel about the shaft;
means operably coupled with the carousel for rotating the



latter at predetermined, timed intervals with one of said compartments being positioned beneath the opening during each interval, whereby to provide an animal access through the cover to eat feed from said compartment during said interval; and
said compartments each consisting of a volume substantially adequate for feeding a horse for half a day, and a height of a naturally grazing horse's mouth, and an upper feed trough.

5,377,621
HYGIENIC ANIMAL FEEDER
Samuel A. Camm, 506 Country Club Rd., New Canaan, Conn. 06840
Filed Jan. 5, 1994, Ser. No. 177,778
Int. Cl.⁶ A01K 7/00, 5/01

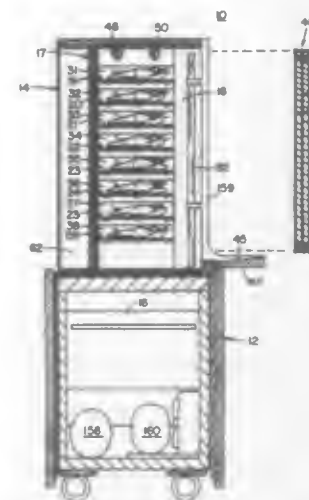
U.S. Cl. 119—61 6 Claims



1. A pet dish, comprising an exterior wall, a generally smooth conical interior wall terminating in a bottom surface, said interior wall having a stepped shoulder proximate said bottom surface, said interior wall being free of discontinuities above and below said shoulder, and a filtering screen having screen elements removably resting upon said shoulder, said screen and bottom surface being separated such that foreign matter is caused to be admitted to the bottom surface of the dish and yet such foreign matter being inaccessible to the pet using said dish, said screen being removable to permit and facilitate access to said bottom surface from the top of said dish, said exterior wall including an integral exterior bottom wall defining with said bottom surface an interior hollow for holding weighting materials, said exterior wall also defining an opening through which said weighting materials are inserted.

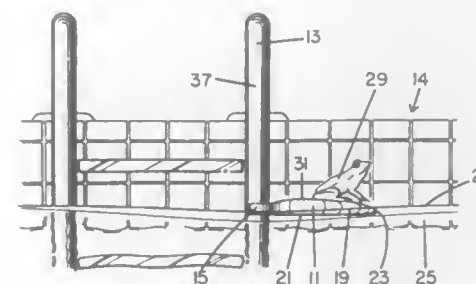
5,377,622
LIVE AQUATIC FOOD PRODUCTS PRESERVATION, PRESENTATION AND CUSTOMER SELF-SERVE STORAGE SYSTEM
Thomas L. Lauttenbach, Raymond, N.H., and Philip Dunkelbarger, Beverly, Mass., assignors to Marine Biotech, Inc., Beverly, Mass.

Filed Apr. 16, 1993, Ser. No. 48,815
Int. Cl.⁶ A01K 63/00
U.S. Cl. 119—200 18 Claims



1. A live aquatic food product preservation, presentation and customer self-serve storage system, comprising:
a display case;
means for providing customer access to said display case;
see-through containers for holding individual aquatic food portions, said containers including a plurality of small openings for allowing air and water to pass therethrough to keep the aquatic food animals alive;
means in said display case for holding said containers;
a water charge;
a pump for delivering the water to said display case;
a water conduit interconnected to said pump and having openings for delivering pumped water to said containers;
means for collecting water in said display case and delivering it to said pump; and
means for maintaining the water at a desired temperature to extend the animals' life.

5,377,623
METHOD AND APPARATUS FOR RESCUING FROGS FROM A SWIMMING POOL
Jeffrey A. Parr, 16 Andromeda Dr., Milton, Fla. 32570
Continuation-in-part of Ser. No. 28,539, Mar. 8, 1993. This application Feb. 22, 1994, Ser. No. 199,101
Int. Cl.⁶ A01K 61/00; E04H 4/08
U.S. Cl. 119—221 10 Claims

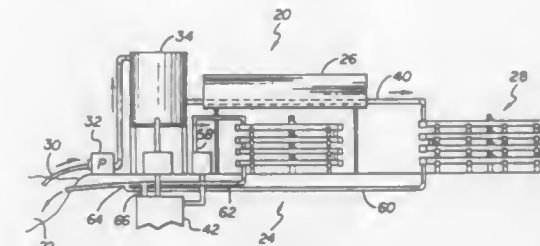


1. A frog saving apparatus, comprising:

a rounded, substantially convey continuous to surface for supporting a frog thereon;
a clamp integrally coupled to an edge of said rounded surface, said clamp being C-shaped having opposing arms extending away from said rounded surface, said arms being adapted to frictionally grip a mounting member.

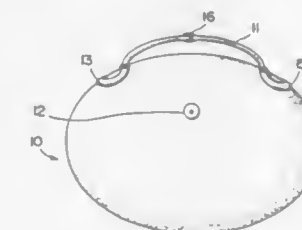
5,377,624
ABALONE FARMING SYSTEM
Richard K. Craig, and Benjamin E. Beede, both of Goleta, Calif., assignors to The Cultured Abalone Incorporated, Goleta, Calif.

Filed May 7, 1993, Ser. No. 58,923
Int. Cl.⁶ A01K 61/00
U.S. Cl. 119—234 35 Claims



1. An abalone farming system, comprising:
a plurality of elongated, vertically stacked tanks, each having a first end and a drain at a second end thereof;
a water supply at the first end of a top tank;
a water discharge outlet at the second end of a bottom tank;
means extending the length of each tank for aerating water within the tank; and
means for directing water flow through the plurality of elongated, vertically stacked tanks, from the water supply to the water discharge outlet, in a manner causing the water to flow the length of each elongated tank and cascade from an upper tank to a next lower tank successively from the first end to the second end.

5,377,625
PROLATE RECREATIONAL AND AMUSEMENT DEVICE
Sandra F. Budman, and Jack F. Budman, both of 21 Valerian Ct., Rockville, Md. 20852
Continuation-in-part of Ser. No. 45,168, Apr. 13, 1993, Pat. No. 5,351,652. This application Dec. 22, 1993, Ser. No. 168,499
Int. Cl.⁶ A01K 29/00
U.S. Cl. 119—709 13 Claims



1. A recreational device for horses comprising:
a resilient body capable of bouncing when dropped from a height of at least one foot;
a grip projecting from said device and having a configuration suitable for engagement between a horse's upper and lower teeth;
wherein said body has the shape of a generally prolate spheroid, and wherein said grip is located to preclude continued rolling of said device about the major axis of said prolate spheroid;

wherein said grip is a simulated bridle bit; and wherein said bit is a snaffle bit comprising first and second spaced rings defined as respective raised portions on said body and corresponding to respective ends of said grip.

5,377,626

LUNGE LINE CONTROLLER

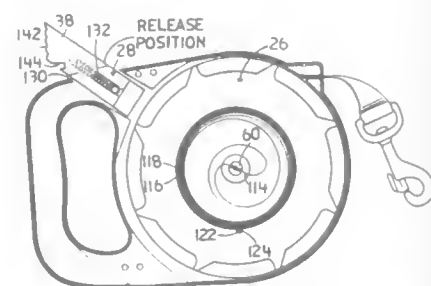
Celia Kilsby, 170 Mission Vineyard Rd., San Juan Bautista, Calif. 95045, and Frank C. King, 15210 Yvonne Dr., Morgan Hill, Calif. 95037

Filed May 10, 1993, Ser. No. 58,383

Int. Cl.⁶ A01K 27/00

U.S. Cl. 119—796

8 Claims



1. A retractable lunge line controller, comprising: a housing containing a rotatable reel, a tape wound around said reel and having a free end extending out of said housing, a clip being secured to said free end of said tape, retracting means for urging said reel in one direction of rotation so as to wind said tape around said reel within said housing, latch means coupled to said reel, said reel containing a plurality of teeth for engagement with said latch means, said latch means comprising an actuation and locking button, resilient means arranged to bias said button to an outward position with respect to said housing, said button including a pawl on an inner end thereof for engagement with said teeth whereby when said button is pressed inwardly against the bias of said resilient means said pawl engages with said teeth preventing rotation of said reel, and when said resilient means biases said button to said outward position, said pawl will not engage said teeth so that said reel can rotate in either direction, said button includes a notch whereby providing a means for locking said button in said inward position, said housing includes an opening for said button, said opening includes a back sidewall whereby when said button is pressed inward toward said housing, said notch on said button engages with said back sidewall locking said button in said inward position.

5,377,627

FLUIDIZED BED COMBUSTOR, EQUIPPED WITH MEANS FOR IMPROVING THE DISTRIBUTION OF FUEL AND GASES

Mats Andersson, Finspong, Sweden, assignor to ABB Carbon AB, Finspong, Sweden

PCT No. PCT/SE92/00016, § 371 Date Jul. 15, 1993, § 102(e) Date Jul. 15, 1993, PCT Pub. No. WO92/13237, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 14, 1992, Ser. No. 90,170

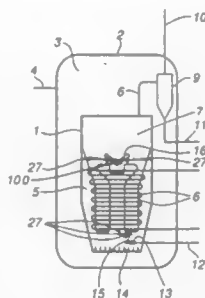
Claims priority, application Sweden, Jan. 15, 1991, 9100122 Int. Cl.⁶ F22B 1/00

U.S. Cl. 122—4 D

22 Claims

1. A power plant comprising a combustor containing a fluidized bed together with combustible gaseous and particulate material, tubes located in the combustor for steam generation, a plurality of nozzles for supplying fluidization air which fluid-

izes the material in the bed and fuel feed nozzles for feeding fuel to said bed; and at least one distributor arranged above each fuel feed nozzle for spreading throughout the bed bubbles which are formed during combustion and rise upwardly; said distributor including one distributor part with obliquely upwardly-inclined surfaces, as viewed from the horizontal plane, forming elongated, wing-like members or at least a fraction of a cone, said upwardly-inclined surfaces being



arranged such that said bubbles are directed outwards along the obliquely upwardly-inclined surface and are released distributed in the bed while rising upwards; said distributor part being provided with through-holes for fuel distribution; said distributor including a mid-portion to which said upwardly-inclined surfaces are connected; and wherein said mid-portion is arranged in said upwardly-rising flow of bubbles above a respective fuel feed nozzle and distributes the bubbles to the distributor part.

5,377,628

EXHAUST COOLING SYSTEM

Joseph S. Adams, R.R. #4 Lepage 19, Ganges B.C., Canada V0S1E0

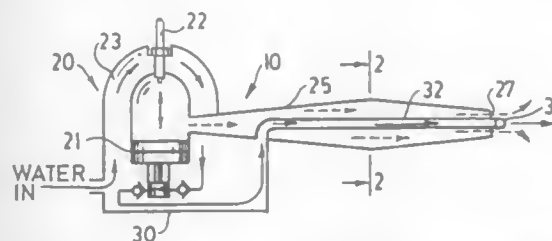
Filed Dec. 9, 1993, Ser. No. 164,376

Claims priority, application European Pat. Off., Dec. 15, 1992, 92121342.7

Int. Cl.⁶ F01P 1/06

U.S. Cl. 123—41.31

6 Claims



1. An exhaust cooling system for an internal combustion engine arranged for powering a fluid pump so that the engine and pump combination can be carried and manipulated by an operator, said exhaust cooling system comprising:

- a liquid flow line extending in a fixed direction from said pump to an outlet forming a high velocity liquid jet directed by said operator by manipulating the engine and pump combination to aim the liquid flow line;
- an exhaust passageway extending in a fixed direction from said engine and extending around said liquid flow line leading from said pump so that heat is transferred from exhaust gases in said passageway to said liquid in said flow line upstream of said high velocity liquid jet as the liquid line and the exhaust passageway are aimed by operator manipulation of the engine and pump combination; and
- c. said engine, pump, liquid flow line, and exhaust passage-

way being integrally connected together for manipulation as a unit.

5,377,629

ADAPTIVE MANIFOLD TUNING

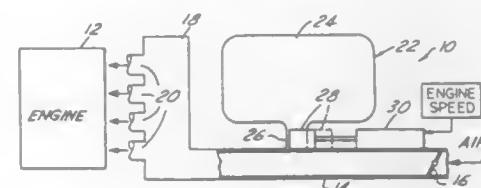
Stephen E. Brackett, Blenheim, and Dennis E. Houle, Chatham, both of Canada, assignors to Siemens Electric Limited, Chatham, Canada

Filed Oct. 20, 1993, Ser. No. 139,370

Int. Cl.⁶ F02B 75/18

U.S. Cl. 123—184.56

9 Claims



1. An internal combustion engine induction system comprising an induction air intake passage containing throttle valve means for selectively throttling induction air flow, plenum chamber means for receiving the induction air flow that has passed through said induction air intake passage, runners leading from said plenum chamber means for delivering induction air to individual combustion chambers of an engine, and a Helmholtz resonator chamber that is placed in communication with said induction air intake passage by means of a neck of the Helmholtz resonator, characterized by means for selectively setting the effective transverse cross sectional area of communication that said neck provides between said resonator chamber and said induction air intake passage, said means for selectively setting the effective transverse cross sectional area of communication that said neck provides between said resonator chamber and said induction air intake passage comprising obturator means that is operated by an actuator means in accordance with an engine operating parameter, said obturator means comprising a slide that is selectively positionable in the plane of said transverse cross sectional area by said actuator means, and characterized further in that said slide is guided, at least in part, on the exterior of a wall portion of at least one of said induction air intake passage and said plenum chamber.

5,377,630

MULTICYLINDER TWO-STROKE ENGINE INTAKE MANIFOLD

Christopher K. Schlunke, South City Beach; Kenneth P. Seeber, Wanneroo; Rodney A. R. Houston, Kingsley, and Christopher N. F. Sayer, Ferndale, all of Australia, assignors to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia PCT No. PCT/AU92/00119, § 371 Date Aug. 30, 1993, § 102(e) Date Aug. 30, 1993, PCT Pub. No. WO92/16726, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 20, 1992, Ser. No. 107,831

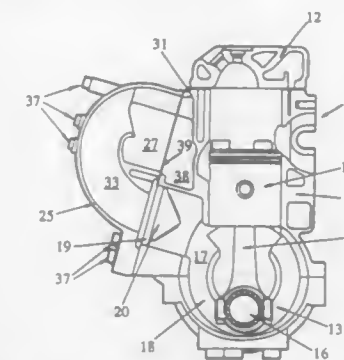
Claims priority, application Australia, Mar. 22, 1991, PK 5250

Int. Cl.⁶ F02B 75/18

U.S. Cl. 123—184.22

7 Claims

1. A multi-cylinder two stroke cycle internal combustion engine comprising a cylinder block having at least two cylinders therein, an individual crankcase cavity for each cylinder to receive the incoming air charge for the respective cylinder, each said crankcase cavity having a respective valve controlled inlet port in a common wall of the cylinder block, an air induction manifold detachably mounted to said common wall of the cylinder block to form therewith a single air induction



cylinder block, and at least one inlet opening in said manifold for the entry of air to said induction cavity.

5,377,631

SKIP-CYCLE STRATEGIES FOR FOUR CYCLE ENGINE

Michael M. Sebechter, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 20, 1993, Ser. No. 124,172

Int. Cl.⁶ F02B 77/00

U.S. Cl. 123—198 F

7 Claims

FIRING ORDER	% OF FULL INDICATED LOAD
A 1-3-4-2	100 %
B 1-3-S-2-4-S	66 2/3 %
C 1-3-S-S-4-2-S-S	50 %
D 1-S-S-3-S-S-4-S-S-2-S-S	33 1/3 %

S DENOTES A SKIP-CYCLE

1. In an automotive type four cycle multicylinder engine having intake and exhaust valves for each and every cylinder, the improvement comprising valve control means including means for operating the engine in a variety of skip cycle strategies by deactivating, in inverse proportion to the change in the load level, one or more of the cylinders during engine operation, the means further including means for converting the stroke of the piston of a deactivated cylinder from its set stroke in the four cycles of engine operation to an earlier stroke in the cycle to assure the sequential firing of each of the cylinders all within a predetermined limited number of revolutions of the engine crankshaft defined by one complete skip cycle sequence for the particular load level.

5,377,632

CUTTING OR SAWING MACHINE

Tore Aronsson, Mölndal, and Ove Donnerdal, Partille, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jan. 19, 1994, Ser. No. 183,395

Claims priority, application Sweden, Jan. 21, 1993, 9300179

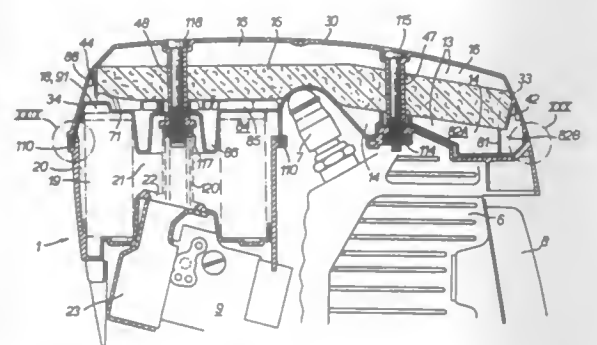
Int. Cl.⁶ F02B 77/00

U.S. Cl. 123—198 E

10 Claims

1. A cutting or sawing machine powered by an internal combustion engine and comprising a cutting unit and a power unit, said power unit comprising: a motor room; an air-cooled motor cylinder positioned within said motor room;

a cylinder cover disposed at least partly about said air-cooled motor cylinder;
a fan housing; and
a rotatably driven impeller including impeller wings disposed within said fan housing which operate to propel a cooling air flow towards the periphery of said fan housing and between said motor cylinder and said cylinder cover;



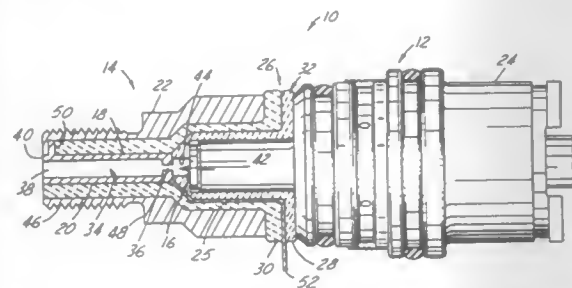
wherein a first filter chamber with a first filter for intake air for the internal combustion engine is positioned over the cylinder cover on an opposite side of the cylinder cover from the impeller, and a nozzle tube for the intake air is provided which extends from an intake port close to the periphery of the impeller through the motor room and terminates in said first filter chamber.

5,377,633
RAILPLUG DIRECT INJECTOR/IGNITOR ASSEMBLY
Russell J. Wakeman, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Jul. 12, 1993, Ser. No. 90,418
Int. Cl.⁶ F02M 57/06

U.S. Cl. 123—297

5 Claims



1. A high pressure fuel injector assembly for injecting a high energy plasma jet into a combustion chamber, comprising:
a high pressure fuel injector having a nozzle from which fuel is injected;
a railplug assembly disposed on said nozzle for acting on the fuel as the fuel is injected from said nozzle, said railplug assembly comprising means defining a bore through which fuel injected from said nozzle is constrained to pass upon leaving said nozzle, said means defining a bore including insulative means supporting respective elongate electrodes on opposite diametrical portions of said bore in mutually electrically insulated relationship, each of said electrodes extending lengthwise of said bore and being constructed and arranged to be in closer proximity to each other at a lengthwise location that is proximate, but spaced from, said nozzle such that said electrodes have longer lengths and are farther apart from each other beyond said location in a direction toward an exit of said bore such that when suitable electrical potential is applied across said electrodes, initial arcing occurs between said

electrodes at said location to intersect the fuel being injected from said nozzle at said location.

5,377,634
COMPRESSOR SYSTEM FOR RECIPROCATING MACHINE

Hun Taue, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

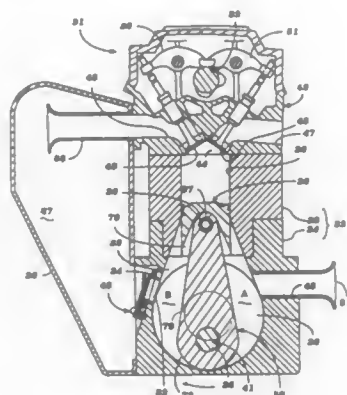
Filed Aug. 31, 1993, Ser. No. 114,464

Claims priority, application Japan, Sep. 8, 1992, 4-264157; Jan. 18, 1993, 5-21688

Int. Cl.⁶ F02B 75/02

U.S. Cl. 123—317

48 Claims



1. A reciprocating machine comprised of a cylinder having a cylinder bore with a crankcase chamber formed at one end thereof, a piston reciprocating in said cylinder bore, a crankshaft rotatably journaled in said crankcase chamber, a connecting rod coupled to said piston and said crankshaft for transmitting motion therebetween, means for providing a seal between one end of said connecting rod and said piston and between the sides of said connecting rod and the side surfaces of said crankcase chamber, said connecting rod having a portion thereof in sealing engagement with said crankcase during at least a portion of a single rotation of said crankshaft for dividing said crankcase chamber into a pair of variable volume chambers formed solely by said piston, said cylinder bore, said connecting rod, said crankshaft and said crankcase chamber for acting as a positive displacement pump having two pumping cycles per each revolution of the crankshaft, intake means for admitting an air charge to said crankcase chamber, and exhaust means for discharging a compressed air charge from said crankcase chamber.

5,377,635
ROTARY THROTTLE VALVE AND UTILIZATION OF SAID THROTTLE VALVE FOR THE TRANSFER OF A FLUID TO A COMBUSTION CHAMBER OF AN INTERNAL-COMBUSTION ENGINE

Stephen Glover, Rueil Malmaison, France, assignor to Institut Francais du Pétrole, Rueil Malmaison, France

PCT No. PCT/FR92/00757, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO93/03260, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 31, 1992, Ser. No. 39,116

Claims priority, application France, Aug. 2, 1991, 91 09917

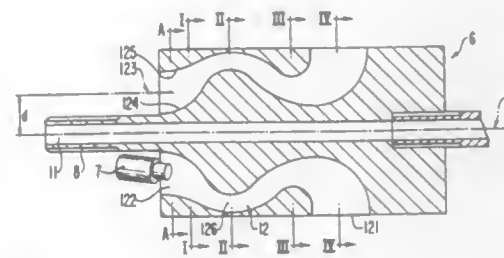
Int. Cl.⁶ F01L 7/02

U.S. Cl. 123—336

11 Claims

1. A rotary throttle valve for transferring a fluid between a fluid source and a combustion chamber of an internal-combustion engine, the rotary throttle valve comprising at least one substantially cylindrical surface and a side wall, at least one flow channel for transferring said fluid from an inlet to an outlet, wherein the inlet is arranged at a lateral surface of the rotary throttle valve and is positioned at a distance, which is

not zero, from a rotational axis of the rotary throttle valve, the outlet is arranged at the cylindrical surface of said rotary throttle valve and is radially offset with respect to said inlet, and wherein at least one fluid injector is arranged in a vicinity of said inlet and a portion of the at least one fluid injector



extends inside said rotary throttle valve, said fluid injector being positioned in such a manner that an axis of a jet of fluid generated by the fluid injector has an orientation substantially corresponding to a plane in which a wall of the at least one flow channel is nearest to the rotational axis of the rotary throttle valve.

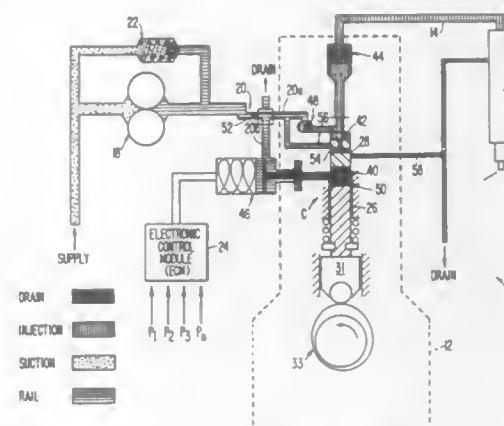
5,377,636
SOLENOID OPERATED PUMP-LINE-NOZZLE FUEL INJECTION SYSTEM AND INLINE PUMP THEREFOR
David M. Rix; Harry L. Wilson; Rodney C. Wilson, and George L. Muntean, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 6, 1993, Ser. No. 102,830

Int. Cl.⁶ F02M 37/04, 7/00

U.S. Cl. 123—446

16 Claims



1. A pump-line-nozzle fuel injection system comprising an inline high pressure pump having a plurality of high pressure pumping cylinders, each of which comprises a plunger assembly reciprocatingly mounted within a cylinder bore, and a low pressure fuel supply pump connected to each cylinder of said inline high pressure pump; wherein each plunger assembly comprises a cam-driven timing plunger and a floating metering plunger, a variable volume timing chamber being defined in said cylinder bore between an end of the timing plunger and a first end of the metering plunger, and a variable volume metering chamber being defined in said cylinder bore between a second end of the metering plunger and delivery valve at an outlet end of the respective cylinder; wherein said supply pump is connected to said metering chamber via a fuel supply branch of a fuel supply flow path from the supply pump containing a check valve in a manner enabling a flow of fuel to enter said metering chamber during an initial phase of a retraction stroke of the plunger assembly; wherein said timing chamber is connected to a supply of timing fluid via flow path containing a solenoid valve, said solenoid valve blocking timing fluid from flowing to said timing chamber during said initial phase of the retraction stroke of the plunger assembly;

and wherein electronic control means is provided for opening said solenoid valve when a required amount of fuel has entered said metering chamber and for enabling timing fluid to flow into and out of said timing chamber through said timing fluid flow path, and for re-closing said solenoid valve during a compression stroke of the plunger assembly, so as to block said flow of timing fluid into and out of the timing chamber, for commencing compression of fuel in said metering chamber; and wherein said delivery valve is responsive to the pressure of fuel in said metering chamber for enabling delivery of fuel from the metering chamber to a respective fuel injector via a respective high pressure delivery line when the pressure of fuel in said metering chamber exceeds a predetermined value.

5,377,637
METHOD AND APPARATUS FOR METERING OIL FOR A TWO STROKE CYCLE INTERNAL COMBUSTION ENGINE

Sam R. Leighton, Nedlands; Claudio Pracilio, Balcatta, and Raymond J. Hill, Palm Springs, all of Australia, assignors to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia

PCT No. PCT/AU92/00301, § 371 Date Oct. 25, 1993, § 102(e) Date Oct. 25, 1993, PCT Pub. No. WO93/00502, PCT Pub. Date Jan. 7, 1993

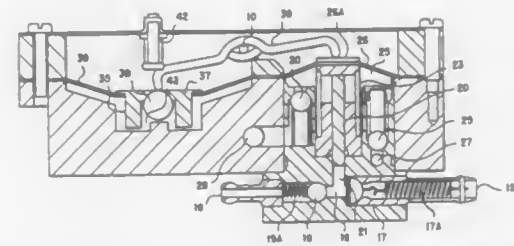
PCT Filed Jun. 19, 1992, Ser. No. 133,166

Claims priority, application Australia, Jun. 21, 1991, PK6788

Int. Cl.⁶ F01M 1/00

U.S. Cl. 123—73 AD

18 Claims



1. A method of control of the supply of lubricating oil to a two stroke cycle internal combustion engine comprising delivering fuel to the engine from a fuel reservoir, cyclically filling said reservoir with a quantity of fuel at least equal to the engine fuel requirement for a plurality of engine cycles at maximum engine fuel consumption rate, delivering oil to the engine by positive displacement pump means having a delivery rate per pump means cycle greater than the maximum oil requirement of the engine per engine cycle, activating said oil pump means in response to and simultaneous with the consumption of fuel from said reservoir, and controlling the delivery of oil during each pump means cycle to maintain a substantially uniform predetermined ratio between the quantity of fuel and quantity of oil delivered to the engine per engine cycle, said method allowing oil and fuel to be delivered separately to the engine.

5,377,638
HYDRAULIC ADJUSTING DEVICE
Martin Mueller, Moegligen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 1, 1993, Ser. No. 130,488

Claims priority, application Germany, Nov. 28, 1992, 4240075

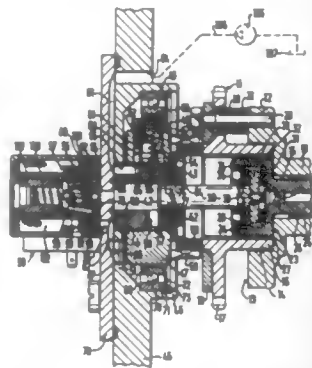
Int. Cl.⁶ F01L 1/34; F16D 3/10

U.S. Cl. 123—90.17

24 Claims

1. A hydraulic adjusting device for rotating a camshaft (10) of an internal combustion engine relative to a drive wheel (11) of the engine with an actuator (39), which is acted upon by a pressure of a pump (43, 47, 48, 49), which pressure is variable via a control valve (90), and is connected to a longitudinally displaceable coupling member (23) that via a respective pair of gear tooth systems (26, 27) cooperates with the drive wheel

(11) and with the camshaft (10), wherein at least one pair of gear tooth systems (26, 27) is embodied as a helical gear, an actuator (39) is embodied as a single-acting cylinder, whose



pressure chamber (42, 59) always communicates with the pump, and total pitch of the pairs of gear tooth systems is less than 200 mm per revolution.

5,377,639

VARIABLE VALVE TIMING SYSTEM

Hiroyuki Nakadouzono, Anjo, and Kongo Aoki, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

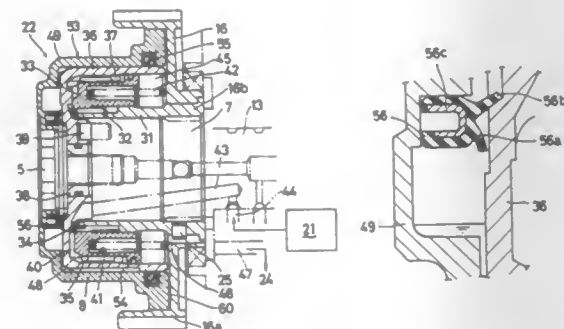
Filed Jan. 28, 1994, Ser. No. 187,721

Claims priority, application Japan, Jan. 29, 1993, 5-13713

Int. Cl.⁶ F01L 1/34

U.S. Cl. 123—90.17

9 Claims



1. A variable valve timing system in an engine having a rotating camshaft comprising:
an input pulley driven by the engine;
a piston engaged with the input pulley so as to be displaceable in axial and angular directions relative thereto;
a cup-shaped casing mounted on the piston so as to be relatively rotatable with respect to each other and rotatably fixed to the camshaft;
a cup-shaped cover accommodating therein the cup-shaped casing with a clearance therebetween and connected to the input pulley;
a damper containing an amount of viscous fluid disposed in the clearance;
a first sealing member disposed at one end of the clearance; and
a second sealing member disposed at the other end of the clearance and having a characteristic in that a fluid-tight function between the cup-shaped cover and the cup-shaped casing becomes less as a centrifugal force due to rotation of said input pulley increases.

5,377,640

PLUG CAP DEVICE

Yoshinao Kobayashi, Mie, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

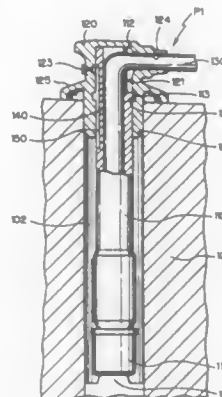
Filed Jun. 21, 1993, Ser. No. 78,645

Claims priority, application Japan, Jul. 23, 1992, 4-057849[U]; Aug. 19, 1992, 4-063974[U]

Int. Cl.⁶ F02P 23/00

U.S. Cl. 123—143 C

9 Claims



1. A plug cap device comprising:
a cylindrical plug cap body adapted to be detachably inserted into a plug bore extending vertically in an engine body;
a water-proof elastic cover adapted to be detachably and sealingly fitted in an upper end of said plug bore at a lower end thereof, said cover having an aperture for receiving an upper portion of said plug cap body and a vent hole in a wall defining said aperture;
an air flow passage being formed between said plug cap body and said water-proof elastic cover so that air in said plug bore is discharged through said vent hole to an external area; and
a groove being formed on the outer periphery of said plug cap body so that said groove constitutes at least a part of said air flow passage.

5,377,641

TIMER-CONTROLLED START/STOP DEVICE FOR AN AUTOMOBILE

Gerardo S. Salazar, 452 Circle Dr., Rantoul, Ill. 61866

Filed May 19, 1993, Ser. No. 64,394

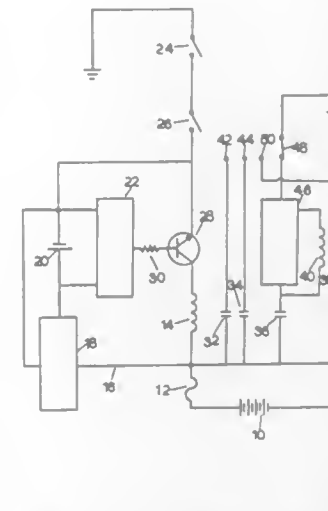
Int. Cl.⁶ F02N 11/08

U.S. Cl. 123—179.4

2 Claims

1. A start/stop device in combination with a vehicle having an internal combustion engine, an ignition system, starter motor, a power source, an oil pressure switch comprising:
(a) a first switch means having one terminal connected to the negative side of said power source adapted to open when a hood of the said vehicle is opened,
(b) a second switch means connected in series to said first switch means adapted to open when a shifting lever of said vehicle is placed out of park,
(c) a first timer means having an output that can be set to turn on or off at preselected times,
(d) a transistor connected to the output of said first timer means,
(e) a second timer means that can be set to turn on only a predetermined amount of time when activated, said second timer means is connected in series to said oil pressure switch to deactivate said second timer means when oil pressure builds up when the engine is running to stop the cranking of said engine,
(f) a first relay having a first, a second and a third set of contacts and a coil, the coil of said first relay is connected

to said transistor, the activation of said first relay applies power to an accessory terminal, an on terminal and said second timer means through the first, the second and the third contacts respectively,
(g) a second relay actuated by said second timer means, said second relay having a set of normally open contacts, the



closing of said set of normally open contacts applies power to a start terminal,
(h) Voltage regulating means for supplying the power requirements of said first timer means and,
(i) Back-up power means for supplying power to said first timer means when said power source fails.

5,377,642
COMPRESSION RELEASE FOR AN INTERNAL COMBUSTION ENGINE

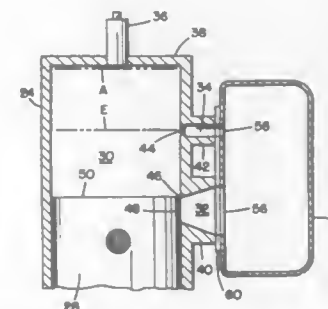
John A. Morrow, and Jack E. Campbell, both of Fort Mill, S.C., assignors to Textron Inc., Providence, R.I.

Filed Jul. 19, 1993, Ser. No. 93,779

Int. Cl.⁶ F02B 75/06

U.S. Cl. 123—182.1

26 Claims



1. A compression release system for an internal combustion engine comprising:
a cylinder of the engine having a first boss with a main exhaust port and a second boss with a separate compression release port; and
a muffler connected to the cylinder on the bosses, the muffler having a first inlet aperture connected to the main exhaust port and a separate second inlet aperture connected to the compression release port.

5,377,643

CYLINDER HEAD SEALING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

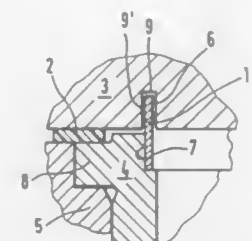
Walter Schibalsky, Nürnberg, Germany, assignor to Man Nutzfahrzeuge AG, München, Germany

Filed Apr. 16, 1993, Ser. No. 48,834

Claims priority, application Germany, Apr. 24, 1992, 4213502 Int. Cl.⁶ F16J 15/08

U.S. Cl. 123—193.3

7 Claims



1. A cylinder head sealing device positioned between a cylinder head and a cylinder liner of an internal combustion engine, said cylinder head sealing device comprising:
a cylindrical gasket ring having a first and a second end and being coaxially positioned relative to the axis of the cylinder, said gasket ring having a width and a height, with said width being small compared to said height, said gasket ring positioned with said first end in an annular groove of said cylinder head and with said second end connected to said cylinder liner; and
an auxiliary areal seal positioned radially outwardly of said gasket ring between said cylinder head and a flange of said cylinder liner and surrounding said gasket ring, said auxiliary areal seal being prestressed by screws fastening said cylinder head to a cylinder block.

5,377,644

METERING VOLATILE FUEL COMPONENTS TO A COMBUSTION ENGINE

Harald Krohm, Bochum, Germany, assignor to AFT Atlas Fahrzeugtechnik GmbH, Werdohl, Germany

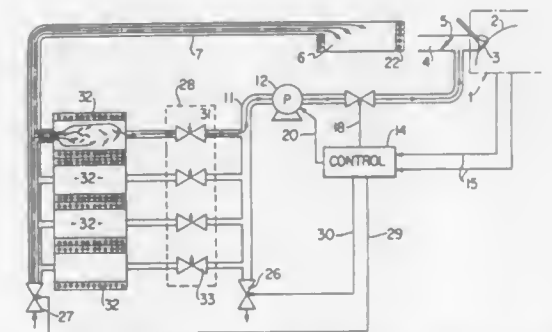
Filed May 21, 1993, Ser. No. 65,472

Claims priority, application Germany, May 23, 1992, 4217152; May 17, 1993, 4316392

Int. Cl.⁶ F02M 25/08, 19/08

U.S. Cl. 123—520

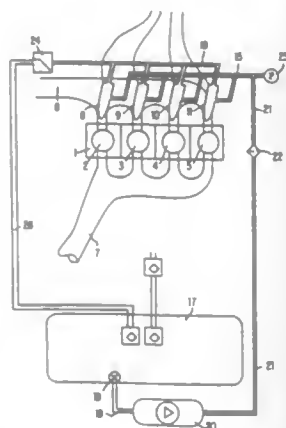
16 Claims



1. Apparatus for selectively collecting and separately metering individual different volatile fuel components and fractions to an internal combustion engine having a fuel supply, comprising:
regenerable storage means for selectively collecting different volatile fuel components from the fuel supply;
connecting means including a metering valve connecting said storage means with a fuel inlet of the engine, and control means for controlling said metering valve in response to respectively different predetermined engine

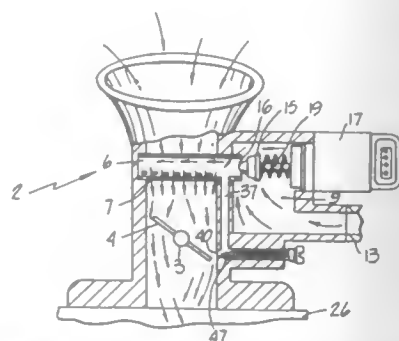
operating conditions to selectively release at least a specific one of said volatile components from said storage means to said fuel inlet during one of said predetermined engine operating condition.

5,377,645
METHOD OF FUEL INJECTION
 Christopher P. Moore, Evandale, Australia, assignor to Blocom Pty. Ltd., The Levels, Australia
 PCT No. PCT/AU91/00532, § 371 Date Jul. 9, 1993, § 102(e) Date Jul. 9, 1993, PCT Pub. No. WO92/08886, PCT Pub. Date May 29, 1992
 PCT Filed Nov. 20, 1991, Ser. No. 50,464
 Claims priority, application Australia, Nov. 20, 1990, PK3410
 Int. Cl.⁶ F02M 21/02, 37/04, 51/00
 U.S. Cl. 123—525



1. A method of operating a low boiling point liquid fuel injection system for an internal combustion engine wherein the fuel is stored in a tank and has a vapour pressure in the tank dependent upon ambient temperature, the method comprising pumping the fuel to an operating pressure a fixed differential above the vapour pressure and monitoring the absolute pressure of the fuel and varying fuel injection timing for the fuel dependent upon the absolute pressure determined.

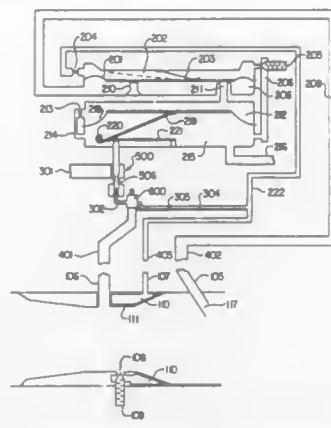
5,377,646
LIQUID PETROLEUM GAS FUEL DELIVERY SYSTEMS
 Ronald E. Chasteen, Washington, Mo., assignor to Pacer Industries, Inc., Washington, Mo.
 Filed Sep. 10, 1993, Ser. No. 119,956
 Int. Cl.⁶ F02M 21/04
 U.S. Cl. 123—527



1. A gaseous fuel management system for an internal combustion engine having a throttle control and an exhaust system comprising;
 an air intake tube for conducting combustion air into the engine,
 an angularly movable butterfly valve disposed in the air

intake tube and responsive in its angular movements to the throttle control, and
 a fuel delivery bar having an interior longitudinal fuel conducting bore diametrically disposed in the air intake tube upstream from the butterfly valve and having an upstream facing side and a downstream facing side and having a plurality of fuel delivery orifices in its downstream facing side which communicate with the said interior bore.

5,377,647
FUEL BLENDING SYSTEM FOR HIGHLY COMPRESSED GASES
 James M. Jones, 413 W. Jefferson, Waxahachie, Tex. 75165
 Filed Oct. 25, 1993, Ser. No. 142,814
 Int. Cl.⁶ F02M 21/04
 U.S. Cl. 123—527



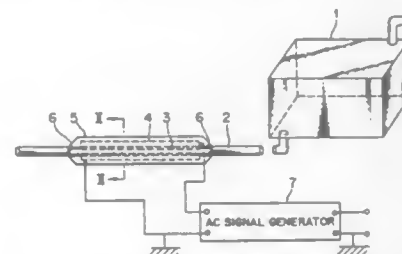
1. An air-fuel blending system for regulating a fuel mass flow of a highly compressed fuel, said highly compressed fuel being of a type which exists as a gas at ambient conditions, and blending said fuel mass flow with an air mass flow, said blend used by an internal combustion engine and being received by an intake manifold of said internal combustion chamber, comprising:

means for mixing said fuel mass flow with said air mass flow;
 means for controlling said fuel mass flow to said means for mixing;
 means for separating said fuel mass flow for use as a control fuel flow;
 means for comparing said control fuel flow with said mass air flow; and
 wherein said means for controlling said fuel mass flow increases said fuel mass flow when said means for comparing senses a decrease in said control fuel flow compared to said air mass flow, and decreases said fuel mass flow when said means for comparing senses an increase in said control fuel flow compared to said air mass flow, said fuel mass flow being introduced in liquid form into an air/fuel blending region.

5,377,648
DEVICE FOR PURIFYING FUEL
 Yoshihiro Iwata, 809-2, Higashirusubuzel-cho, Sagaru Niijo Senbadori, Kamigyo-ku, Kyoto-shi, 602, Japan
 Filed Oct. 12, 1993, Ser. No. 134,069
 Int. Cl.⁶ F02M 27/00
 U.S. Cl. 123—538

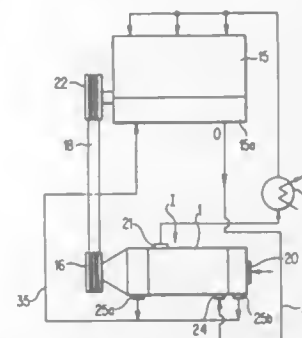
1. A device for purifying fuel comprising:
 a fuel communication synthetic resin pipe interposed in a fuel supply pipe between a fuel tank and an engine;
 a pair of arc-shaped conductive plates facing each other arranged on the outer periphery of said fuel communication synthetic resin pipe;

a protective cover for covering the outer peripheries of said arc-shaped conductive plates; and
 an AC signal generator means coupled to a battery for ap-



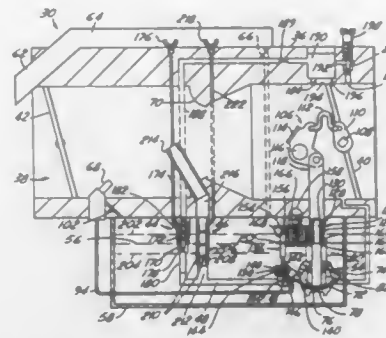
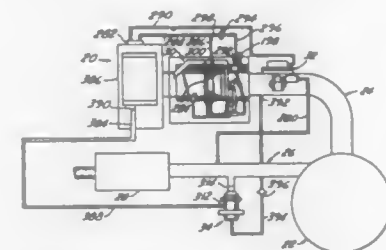
plying a signal having a frequency ranging from 30 Hz to 130 Hz, a voltage ranging from 1 V to 3 V and a current ranging from 800 μ A to 1.8 mA between said arc-shaped conductive plates.

5,377,649
LUBRICATING DEVICE FOR ENGINE-DRIVEN SUPERCHARGER
 Hidetsugu Matsubara, Tokyo; Yasuo Tanaka, Chiba; Yoshiyuki Miyagi, Tokyo; Tsuyoshi Goto, Hiroshima; Kotchi Hatamura, Hiroshima, and Seishiro Takayama, Hiroshima, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo and Mazda Motor Corporation, Hiroshima, both of Japan
 PCT No. PCT/JP92/01331, § 371 Date Jun. 14, 1993, § 102(e) Date Jun. 14, 1993, PCT Pub. No. WO93/08386, PCT Pub. Date Apr. 29, 1993
 PCT Filed Oct. 13, 1992, Ser. No. 70,459
 Claims priority, application Japan, Oct. 14, 1991, 3-291896
 Int. Cl.⁶ F02B 39/14; F04C 29/02
 U.S. Cl. 123—559.1



1. A lubricating device for an external engine-driven supercharger comprising oil feed line for feeding lubricating oil used in the engine to said supercharger and an oil discharge line for returning the lubricating oil used in said supercharger to said engine, whereby lubricating oil is used in common in said engine and supercharger, said engine-driven supercharger being of the type in which shafts of male and female rotors arranged in parallel with each other in a rotor casing are rotatably supported at a front and a rear of said rotor casing, an air suction port at the rear of said casing and a compressed air delivery port at the front of said casing, an oil feed port at the rear of said rotor casing, said delivery port being opened radially of the rotor casing and a lubricating oil passage downstream of the oil feed port and located in a wall the rotor casing diametrically opposite to said delivery port.

5,377,650
LOW EMISSION ENGINES
 Donald W. Warner, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.
 Filed Oct. 26, 1993, Ser. No. 142,767
 Int. Cl.⁶ F02M 25/06
 U.S. Cl. 123—568



1. For an internal combustion small engine having at least one and not more than four cylinders, an intake manifold and an exhaust manifold, a fuel and exhaust system comprising, a carburetor having a body, a fuel and air mixing passage through said body constructed to deliver a fuel and air mixture to the intake manifold, a throttle valve carried by the body and received in said mixing passage and movable to open and closed positions therein, a main system having an air inlet and discharging emulsified fuel and air into the mixing passage upstream of said throttle valve, an idle system having an air inlet and discharging emulsified fuel and air into said mixing passage adjacent said throttle valve, a fuel well connected with both said idle system and said main system for supplying liquid fuel thereto, and a metering valve constructed and mechanically operably connected with said throttle valve to vary the rate of flow of liquid fuel to said fuel well and both said main and idle systems in response to opening of said throttle valve so that liquid fuel flows to said fuel well at a higher rate when said throttle valve is substantially fully open than when said throttle valve is substantially closed, an exhaust gas recirculation device having a housing, a flow passage in said housing for communicating with said exhaust manifold and said intake manifold downstream from said throttle valve of said carburetor for supplying exhaust gas to said intake manifold, a control valve disposed in said flow passage in said housing and movable to open and closed positions to control the flow of exhaust gas through said flow passage in said housing, a vacuum responsive actuator mechanically operably connected with said flow valve for opening and closing said flow valve, and said actuator being plumbed with at least one port opening into said fuel and air mixing passage of said carburetor upstream of said throttle valve and constructed to open said flow valve for recirculation of exhaust gas when said throttle valve is open substantially and the engine is operating under load in direct response to vacuum conditions at said at least one port, and said fuel and exhaust system does not have any exhaust gas electronic sensors and electronic controls responsive to varying engine operating conditions.

25 Claims

5,377,651

CLOSED-LOOP CONTROL OF A DIESEL ENGINE

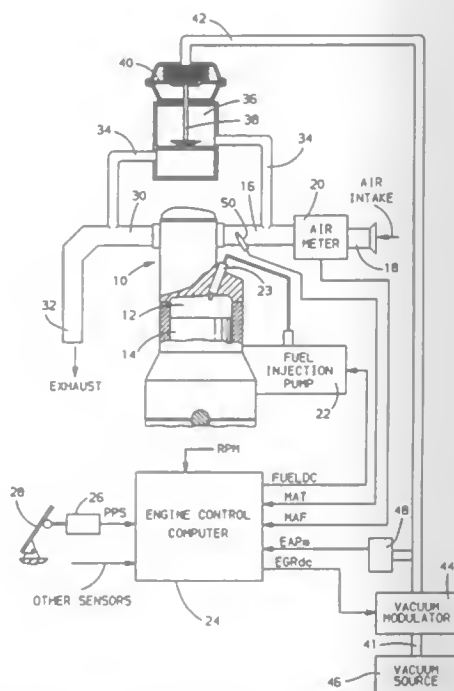
David P. Szomak, Troy, and Richard A. Peden, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1993, Ser. No. 172,977

Int. Cl.⁶ F02M 25/07

U.S. Cl. 123—569

7 Claims U.S. Cl. 123—634



1. A method for controlling recirculated engine exhaust gas in a diesel engine having a plurality of cylinders and an EGR valve responsive to an EGR command for metering the recirculated exhaust gas to an engine air intake so as to dilute air admitted to the cylinders to substantially maintain a beneficial air/fuel ratio in the cylinders, comprising the steps of:

- generating a fuel command for an engine cylinder in accord with an operator fuel request;
- determining a desired air inlet rate to the engine cylinder responsive to the fuel command as the air inlet rate estimated to provide the beneficial air/fuel ratio for the generated fuel command;
- estimating actual air inlet rate to the cylinder;
- generating air inlet rate error as the difference between the desired air inlet rate and the estimated actual air inlet rate;
- determining an open-loop desired EGR quantity in response to the fuel command as an estimate of the quantity of recirculated engine exhaust gas needed to dilute air admitted to the engine cylinder to provide the beneficial air/fuel ratio;
- sensing a predetermined set of engine parameters indicative of an engine operating level;
- selecting an EGR gain value from a stored schedule of gain values as the one of the stored schedule of gains values corresponding to the sensed predetermined set of engine parameters;
- determining an EGR gain adjustment value as a predetermined function of the air inlet rate error and of the open-loop desired EGR quantity;
- varying the selected EGR gain value by the determined EGR gain adjustment value; and
- generating an EGR command as a predetermined function of the open-loop desired EGR quantity, the varied selected EGR gain value, and the air inlet rate error.

5,377,652

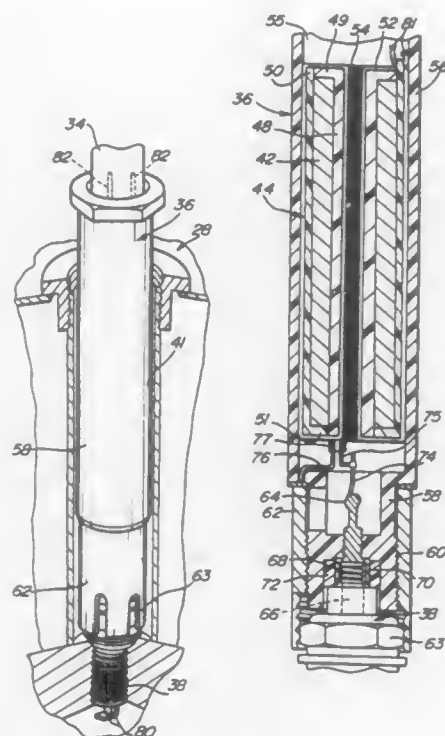
IGNITION TRANSFORMER

Gardiner A. Noble, Farmington; Leonard Kafka, Ann Arbor, and Mark Cluffetelli, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 8, 1993, Ser. No. 149,065

Int. Cl.⁶ F02P 11/00

31 Claims



1. An ignition transformer for firing a spark plug of a spark ignition internal combustion engine, said ignition transformer comprising:

- a substantially cylindrical core constructed of a material having magnetic properties, said core being hollow, having a pair of ends and including portions defining an air gap therein;
- a primary winding of wire having ends, said primary winding located about said core in a series of turns which extend longitudinally generally along an inner surface of said core, about one of said ends of said core, longitudinally generally along an exterior surface of said core and about the other of said ends of said core;
- a secondary winding of wire having ends, said secondary winding located about said core in a series of turns which extend longitudinally generally along an inner surface of said core, about one of said ends of said core, longitudinally generally along an exterior surface of said core and about the other of said ends of said core, said series of turns of said secondary winding being greater in number than said series of turns of said primary winding;
- a housing substantially enclosing said core and said primary and said secondary windings;
- mounting means connected to said housing for mounting said ignition transformer to a spark plug;
- a first pair of terminals electrically connected to said ends of said primary winding and adapted to be coupled to an electrical power supply; and
- a second pair of terminals electrically connected to said ends of said secondary winding and adapted to be coupled to the terminals of a spark plug.

5,377,653

INTERNAL-COMBUSTION-ENGINE IGNITION DEVICE

Kazuya Hamada, and Shigemi Murata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

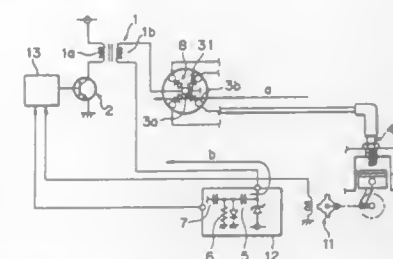
Filed Jun. 3, 1993, Ser. No. 70,798

Claims priority, application Japan, Jun. 5, 1992, 4-145695; Jun. 5, 1992, 4-145696

Int. Cl.⁶ F02P 7/06

U.S. Cl. 123—655

3 Claims



1. An internal-combustion-engine ignition device comprising: a distributor cap including a central electrode connected to an ignition coil, a plurality of peripheral electrodes respectively connected to ignition plugs of associated cylinders and adapted to be selectively connected to said central electrode, and diodes each connected at one end to said peripheral electrodes and at the other end to said central electrode, said distributor cap allowing passage therethrough of an ion current generated upon combustion of air-fuel mixture inside the cylinders, caused by actuating said ignition plugs, said diodes being lodged within openings formed in said distributor cap and being embedded in resin with which said openings are filled.

5,377,654

SYSTEM USING TIME RESOLVED AIR/FUEL SENSOR TO EQUALIZE CYLINDER TO CYLINDER AIR/FUEL RATIOS WITH VARIABLE VALVE CONTROL

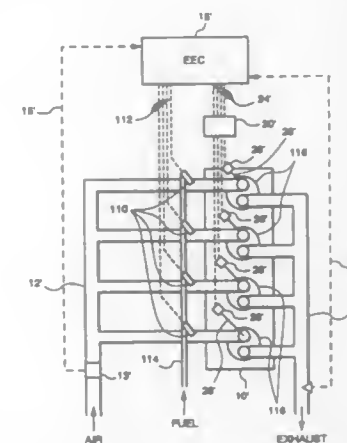
Julian A. LoRusso, Grosse Ile; Jeffrey A. Cook, Dearborn; Peter S. Szpak, and Jessy W. Grizzle, both of Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1992, Ser. No. 974,748

Int. Cl.⁶ F02D 41/14

U.S. Cl. 123—673

15 Claims



1. A method of minimizing cylinder air/fuel ratio variation in a multi-cylinder engine having variable lift intake valves, comprising the steps of:

- sensing the oxygen ratio of a combined exhaust gas stream from a plurality of cylinders using a high speed sensor which generates a composite air/fuel ratio signal;

monitoring the engine rotational position and cycle, to generate an engine event signal;

analyzing said composite air/fuel ratio and engine event signals, and generating individual cylinder air/fuel ratio signals;

controlling the air flow of each cylinder using the variable lift intake valves in response to said individual cylinder air/fuel ratio signals to adjust the air/fuel ratio;

supplying fuel to each cylinder of the engine using a plurality of fuel injectors each coupled to a different cylinder using baseline fuel charges for a given operating condition;

evaluating the cylinder to cylinder air/fuel ratio variations when the engine is operating at maximum valve lift, and generating correction signals for each cylinder;

adjusting said fuel charges in each of the cylinders from said baseline level in response to said correction signals;

storing the fuel charge correction signal for each cylinder; and

modifying the fuel charges from baseline using the correction signal when operating in a variable lift mode.

5,377,655

PROJECTILE-PROPELLING TOY AND KIT THEREFOR

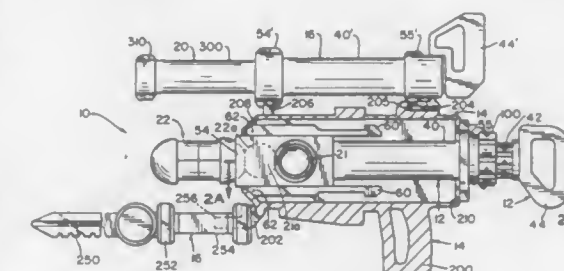
Avi Arad, Westport, Conn., assignor to Toy Biz, Inc., New York, N.Y.

Filed Dec. 31, 1992, Ser. No. 997,718

Int. Cl.⁶ F41B 7/00, 11/00

U.S. Cl. 124—65

33 Claims



1. A projectile-propelling toy comprising:

(A) a first port and a first propulsion means for propelling a projectile via said first port; and

(B) a second port and a second propulsion means for propelling a projectile via said second port;

said first and second propulsion means being separately and independently driven, said first and second propulsion means being pneumatic, one of said propulsion means being manually-driven and another of said propulsion means being spring-driven.

5,377,656

TOY GUN

David P. Lewinski, Cincinnati, and Ronald C. Boyle, Amelia, both of Ohio, assignors to Tonka Corporation, Pawtucket, R.I.

Filed May 10, 1993, Ser. No. 59,261

Int. Cl.⁶ F41B 11/14, 9/00

U.S. Cl. 124—65

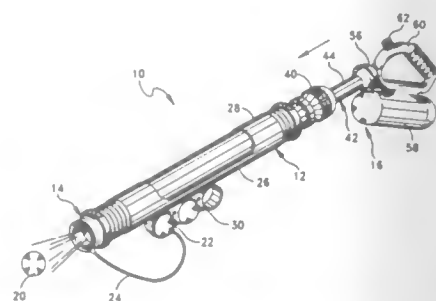
8 Claims

1. A toy game comprising

(a) a projectile;

(b) a piston and cylinder assembly for producing and supplying blasts of compressed air to a launching station for launching said projectile therefrom in a forward direction, said piston and cylinder assembly including a cylinder, a piston in said cylinder and one-way air inlet valve means for allowing air to be drawn into said cylinder as said piston is retracted therein but preventing the escape of air from said cylinder through said air inlet valve means when said piston is advanced in said cylinder;

(c) projectile holding means for receiving and releasably holding said projectile at said launching station, said projectile holding means being responsive to the application of a blast of compressed air thereto from said piston and cylinder assembly for releasing said projectile so that said projectile is launched from said launching station; and



(d) means separate from said air inlet valve means for supplying a quantity of water to said launching station so that said water is expelled forwardly from said launching station with said projectile by said blast of compressed air.

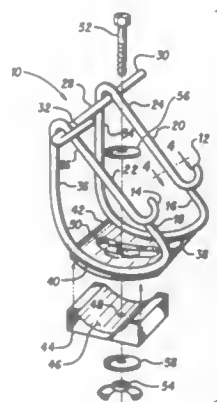
5,377,657

ARCHERY BOW HOLDER

Gary D. Foster, 5806 Monassas Run, Milford, Ohio 45150, and Curtis C. Foster, 2623 Nola Dr., Bethel, Ohio 45106
Continuation of Ser. No. 090,635, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 802,032, Dec. 3, 1991, abandoned. This application Feb. 23, 1994, Ser. No. 200,302
Int. Cl.⁶ F41B 5/00

U.S. Cl. 124—86

8 Claims



1. An archery bow holder attachable to a flat surface of a floor of a tree stand for supporting a hunter when positioned in a tree and providing substantially vertical support for an archery compound bow, said bow holder comprising:
a base having an arcuately concave upper surface and a passage for a single fastener extending therethrough;
an upper assembly composed of a material incapable of being bent manually, said upper assembly comprising:
two spaced apart retaining hooks,
two spaced apart side members respectively integral with said retaining hooks and extending upward and forward from said retaining hooks,
said two retaining hooks and two side members are spaced apart a distance sufficient to support the compound bow having at least one bifurcated bow end with a pulley installed therein,
a cross member extending transversely between and connected to said side members and having upturned end portions extending rearwardly which form guides to

ceive and retain the compound bow securely in the bow holder,
two spaced apart forward members respectively integral with said side members and extending downward and rearward from said side members to form two spaced apart arcuately convex lower members; and
an arcuately convex lower plate cooperable with said arcuately concave upper surface of said base and connected to said spaced apart arcuately convex lower members, said lower plate containing an elongated slot,
said upper assembly being adjustably secured to said base by said single fastener with said lower plate cooperating with said arcuately concave upper surface of said base, and said bow holder being further adjustably secured to said flat surface by said single fastener.

5,377,658

REINFORCEMENT FOR BOW LIMB

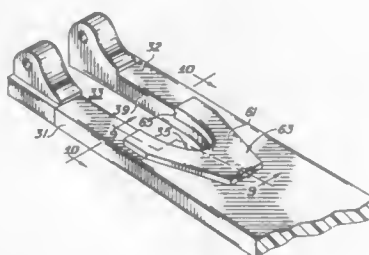
Paul E. Shepley, Jr., Tucson, Ariz., assignor to Precision Shooting Equipment, Inc., Tucson, Ariz.

Filed Mar. 29, 1993, Ser. No. 43,472

Int. Cl.⁶ F41B 5/00

U.S. Cl. 124—88

9 Claims



1. A compound archery bow comprising:
a central handle;
a pair of limbs, each limb having one end attached to said handle and a free end, a cleft in said free end forming a fork; and
a pair of limb reinforcements attached to respective limbs at said forks, wherein
said reinforcements each include a planar portion and a flange,
said flange is perpendicular to said planar portion, extends into said cleft, and conforms to said cleft; and
said reinforcements are attached to said limbs by said planar portion and said flange.

5,377,659
WIRE SAW

Klaus Tank, 9 Warbleton Avenue, Essexwold, Transvaal, and Peter N. Tomlinson, 315 Enford Road, Mondeor, Transvaal, both of South Africa

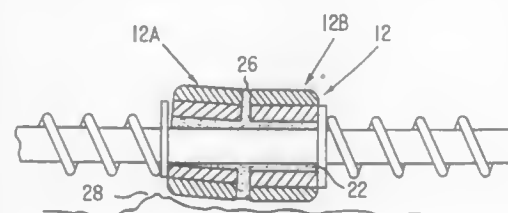
Filed Sep. 21, 1993, Ser. No. 124,003

Claims priority, application South Africa, Sep. 21, 1992, 92/7204

Int. Cl.⁶ B28D 1/08

U.S. Cl. 125—21

8 Claims



1. A wire saw comprising a rope, a plurality of abrasive

beads located on the rope and elastic spacers located about the rope between the beads to space the beads longitudinally apart from one another on the rope, the wire saw including a plurality of discrete, elastic sleeves which are provided one for each bead and which are separate from the spacers, the sleeves being sandwiched between the respective beads and the rope, wherein each bead includes at least two bead portions separated by an elastic gasket provided by a flange extending transversely from the sleeve.

5,377,660

PROTECTIVE COVER

Claudine Bombardier, 201 Bas Riviere Nord, St. Cesaire, Quebec

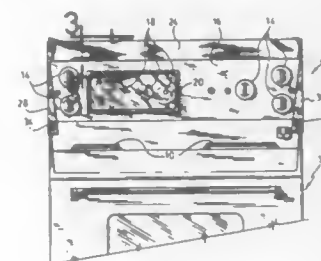
Filed Apr. 28, 1993, Ser. No. 53,223

Claims priority, application Canada, Apr. 30, 1992, 2,067,702

Int. Cl.⁶ F24C 3/12

U.S. Cl. 126—42

9 Claims



1. A cover member suitable for use with the head of a stove, the cover member comprising a rear panel, a front panel, a top panel intermediate said front and rear panels, and a pair of side panels, said front panel being moveable upwardly into and out of covering relationship with a front surface of the stove head, said cover member being formed of a flexible fire retardant material.

5,377,661

WOOD BURNING STOVE FOR HEATING WATER

Donald L. Farver, 242 Highmeadow Rd., Reisterstown, Md. 21136

Filed Dec. 13, 1993, Ser. No. 165,674

Int. Cl.⁶ F24D 7/00

U.S. Cl. 126—101

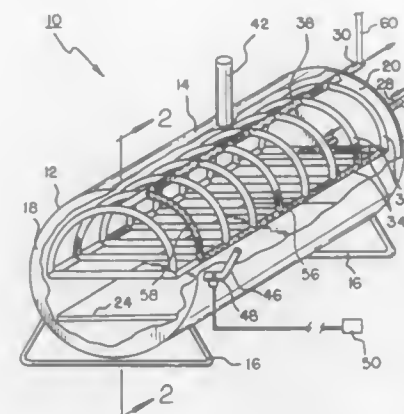
3 Claims

1. A stove for the generation of heat from the burning of wood for heating radiator water and for heating the room in which it is located comprising, in combination:

a drum having cylindrical side walls about a horizontal axis, support legs and circular end walls with a door in one end wall for the introduction of scrap wood to be burned and for the removal of ashes therefrom, the drum having a tray for supporting the scrap wood to be burned and the ashes resulting therefrom;

an array of tubes including a water input tube and a water output tube couplable with respect to radiators exterior of the drum, the tubes extending through the end wall opposite from the door to interior of the drum, the tubes interior of the drum including a rectangular array in a horizontal configuration adjacent to the widest part of the drum and coupled to the water input tube, the tubes interior of the drum also including an array of semicircular tubes extending upwardly from the rectangular array about the axis of the drum, the tubes interior of the drum

also including a linear output tube parallel with the axis of the drum coupled to the topmost part of the semicircular tubes for discharging the heated water;
a chimney coupled to the drum for conveying away smoke from interior of the drum;



an air input tube with a damper and a thermostat for controlling the damper for determining the extent of opening of the damper to determine the heat output of the stove and heated water.

5,377,662

FURNACE DOOR ATTACHMENT

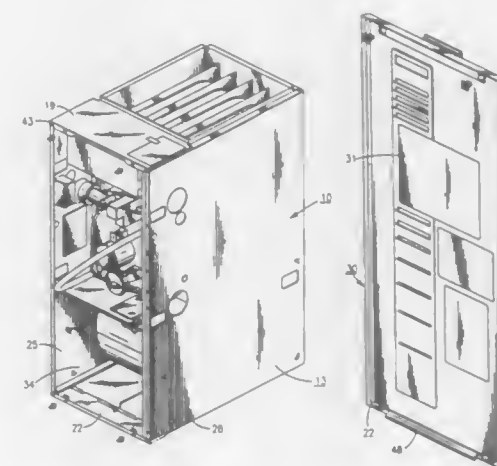
Rex R. Mills, Indianapolis; Timothy J. Waterman, Carmel; Randel K. Patterson, Plainville, and Allen L. Sherven, Brownsburg, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 24, 1993, Ser. No. 127,002

Int. Cl.⁶ F24H 3/02

U.S. Cl. 126—110 R

9 Claims



1. In a furnace of the type for supplying circulating heated air to a comfort space, the furnace being contained within a cabinet, having a door allowing access to the interior thereof, said door having a top end, and a bottom end, and being set in a door frame, wherein the furnace is capable of operating in at least any vertical orientation, an improvement comprising:
hinging means on said door for removably retaining the bottom end of said door against a bottom portion of said door frame when the furnace is in any vertical orientation;
engaging means located adjacent the top end of the door when the furnace is in any vertical orientation, said engaging means being constructed to engage a mated retaining means; and

retaining means located in both a top portion and a bottom portion of the door frame.

5,377,663

GRATE COMBUSTION SYSTEM

Arthur W. Cole, Rowley, Mass.; Franklin A. Hamlyn, Hampton, N.H.; James D. Dougherty, Stamford, Conn., and John M. O'Sullivan, Stony Point, N.Y., assignors to Wheelabrator Environmental Systems, Inc., Hampton, N.H.
Filed Jun. 7, 1993, Ser. No. 71,994
Int. Cl.⁶ F23H 13/00

U.S. Cl. 126—152 B

11 Claims



1. A grate tension bar comprising: a first section with means for connecting to a side wall end grate block on a first end thereof, a second section with means for connecting to a tensioning means on a first end thereof, and a spring section with a first end connected to the second end of the first section and a second end connected to the second end of the second section.

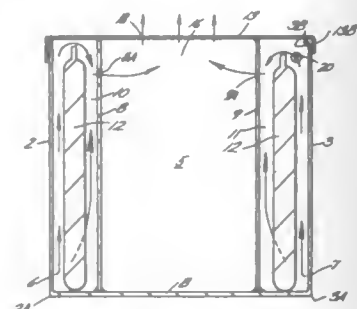
5,377,664

PORTABLE SPACE HEATER

James L. Dodge, 375 "A" Owosso Dr., Eugene, Oreg. 97404
Filed May 17, 1994, Ser. No. 243,818
Int. Cl.⁶ A61F 7/00

U.S. Cl. 126—204

3 Claims



1. A portable space heater comprising, a box structure having a closure, partitions in said structure defining in conjunction with said structure compartments each for reception of a heat source, a first series of apertures in said box structure and a second series of apertures in said partitions, said second series of apertures in a horizontal plane offset above a horizontal plane containing said first series of apertures, heated air in said compartments inducing a convective airflow through said first and second series of apertures, and said closure having a third series of apertures through which heated air flows in a convective manner into the space being heated.

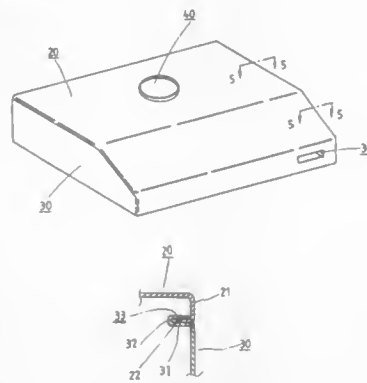
5,377,665

EXTERNAL BODY OF KITCHEN FUME EXTRACTOR

San-Sing Jang, 650, Yuan-Huan E. Rd., Fong-Yuan, Taichung Hsien, Taiwan, Prov. of China
Filed Jan. 21, 1993, Ser. No. 7,283
Int. Cl.⁶ F24C 15/20

U.S. Cl. 126—299 R

10 Claims



1. A external body of kitchen fume extractor comprising: a top sheet member having left and right edges extending downwardly to form a plate portion and then extending inwardly to form a first fixing portion; two side sheet members individually having a second fixing portion extending inwardly from an upper edge of each of said side sheet members; said first fixing portion and said second fixing portion having a free end, protection and joining means engaged over each said free end for engaging said first fixing portion to said second fixing portion and covering edges on each said free end, a rear sheet member attached to said top sheet member and said side sheet members; wherein said protection and joining means comprises an outer edge extending upwardly from said free end of said second fixing portion so as to form a resisting portion which engages said free end of said first fixing portion, and wherein an upper edge of said resisting portion extends outwardly to form a strip portion, forming a channel with said second fixing portion to receive said first fixing portion, wherein the ending edge of said strip portion is near the internal surface of said side sheet members and wherein said plate portion and one side sheet member of said side sheets are in a same plane.

5,377,666

METHOD AND APPARATUS FOR USE IN INSTALLING A FIRE IN A FIREPLACE IN CONNECTION WITH A FLUE LINER

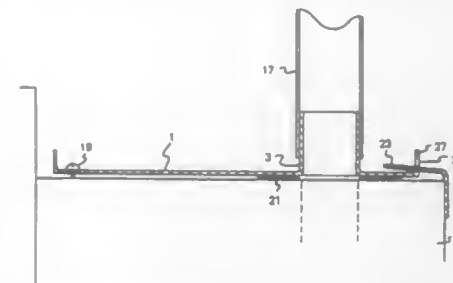
Donald Whitehouse, Birmingham, England, assignor to Valor Limited, Erdington, England
Continuation of Ser. No. 918,418, Jul. 22, 1992, Pat. No. 5,263,470. This application Aug. 16, 1993, Ser. No. 107,289
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.⁶ F24C 15/30

U.S. Cl. 126—500

2 Claims

1. Apparatus for use in installing a firebox in a fireplace opening, said fireplace having a flue liner and said firebox having a front part, a rear part including firebox engagement means for helping to secure the apparatus to the firebox and an upper surface with a flue passage disposed therein, comprising: an adaptor member for helping to facilitate installation of the firebox in the fireplace, said adaptor member having a flue spigot adapted to be connected with the flue liner; said adaptor member having adaptor engagement means

disposed on one side of said flue spigot for interengagement with the firebox engagement means of the rear part of the firebox to help secure the apparatus to the firebox; said adaptor member having adaptor securing means for helping to fasten said adaptor member to the upper surface of the firebox disposed on another side of said flue spigot opposite of said adaptor engagement means for facilitating securing the adaptor member to the upper surface of the firebox; and said adaptor member having its adaptor engagement means for interengaging with the firebox engagement means to



enable said adaptor member to be moved over the upper surface of the firebox in a slightly upwardly tilted position into engagement with the firebox engagement means and to be then pivoted downwardly until the adaptor member lies flush against the upper surface of the firebox to enable said adaptor member to be secured to the firebox; whereby the firebox engagement means and the adaptor engagement means cooperate together to help hold the adaptor member flat against the upper surface of the firebox with the flue spigot aligned with the flue passage in the firebox.

5,377,667

SPECULUM FOR DILATING A BODY CAVITY

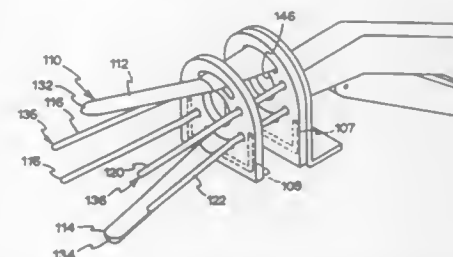
Michael T. Patton, 6315 Central City Blvd. #513, Galveston, Tex. 77551, and Howard K. Wallace, Gainesville, Fla., assignors to Michael T. Patton, Galveston, Tex.

Filed Dec. 3, 1992, Ser. No. 985,047

Int. Cl.⁶ A61B 7/02

U.S. Cl. 128—3

31 Claims



1. A speculum for dilating a body cavity, said speculum comprising: a) a base; b) a plurality of arms pivotally attached to said base; c) an actuator plate disposed adjacent to and movable relative to said base and to said arms; d) means disposed on said actuator plate for engaging each one of said plurality of arms and for moving the arms relative to each other from a closed position to an open position when said actuator plate is moved relative to said base; e) said closed position being defined by said plurality of arms being disposed adjacent to each other; and f) said open position being defined by said plurality of arms being disposed spaced apart from each other, wherein:

- g) each one of said plurality of arms includes a free end distant from said base; and h) an insertion rod is removably disposed inwardly of said plurality of arms.

5,377,668

APPARATUS AND METHOD FOR ENDOSCOPIC DIAGNOSTICS AND THERAPY

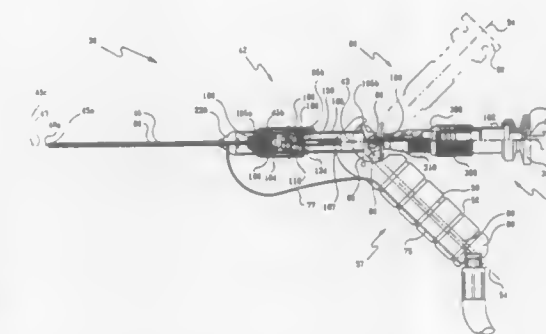
Ronald J. Ehmsen, Villa Park; Michael H. Ekinaka, Irvine, both of Calif.; Jeffery O. Brown, North Logan, Utah, and Mario Cordero, Tustin, Calif., assignors to Optimized Technologies, Inc., Orange, Calif.

Filed Apr. 12, 1993, Ser. No. 46,409

Int. Cl.⁶ A61B 1/00

U.S. Cl. 128—4

22 Claims



1. A fiberoptic instrument, comprising: a handle, having a longitudinal handle axis; a body, having a longitudinal body axis, a proximal end and a distal end, said body being connected to said handle such that said handle axis is transverse said body axis; a fiber optic bundle, having a proximal end and a distal end, said bundle being housed within said body approximately parallel said body axis with the distal end of said bundle extending past the distal end of said body; an eyepiece, having a longitudinal eyepiece axis, said eyepiece being structurally associated with said body and said proximal end of said bundle; and articulating coupling structure, connecting said eyepiece to said body, constructed and arranged to permit travel of said eyepiece with respect to said body, whereby to adjust the relative orientations of said body axis and said eyepiece axis.

5,377,669

SAPPHIRE PROTECTIVE COVERING FOR MEDICAL ENDOSCOPE

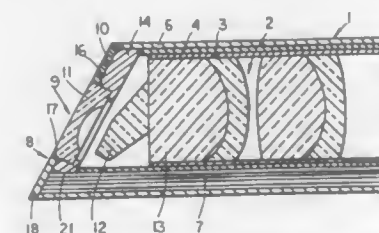
Dieter Schulz, Muehlheim, Germany, assignor to Henke-Sass, Wolf GmbH, Tuttlingen, Germany

Filed Apr. 2, 1993, Ser. No. 45,356

Claims priority, application Germany, Apr. 6, 1992, 4211547
Int. Cl.⁶ A61B 1/06

U.S. Cl. 128—6

9 Claims



1. A protective covering for a distal end of an endoscope, the distal end being outfitted with an optical system and glass

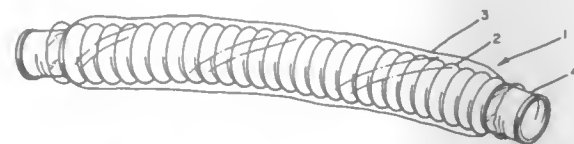
fibers serving to illuminate a viewing field, the endoscope including an optical tube for holding optical lens mountings, an inner tube for receiving the optical tube, and an outer tube for enclosing the optical tube, inner tube, and the glass fibers, the protective covering comprising:

a first part and a second part, the first and second parts being constructed from sapphire, the first part for performing an optical function and being held in a holder which covers a distal end of the inner tube, the holder having an opening defining an optical path of observation, and the second part covering the remaining end surface of the distal end of the endoscope, and the two parts being separated at a common contacting surface by opaque means for preventing the reflection of light from the glass fibers into the optical system, the protective covering entirely covering the distal end of the endoscope, the glass fibers being guided directly up to the protective covering.

5,377,670

INSULATED BREATHING TUBE

Charles A. Smith, 811 Starlite Dr., Louisville, Ky. 40207
Continuation-in-part of Ser. No. 593,555, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 275,940, Nov. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 19,248, Feb. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 910,625, Sep. 23, 1986, abandoned. This application Jun. 19, 1992, Ser. No. 900,995
Int. Cl.⁶ A61M 16/00, 5/32; A62B 7/00; F24J 3/00
U.S. Cl. 128—204.17 1 Claim



1. An insulated breathing tube arrangement having an air impervious corrugated tube for carrying respiratory gases and an outer casing of first internal diameter for insulating the corrugated tube, said corrugated tube being located within said casing and having an outer diameter less than said internal diameter of said casing, said casing being of an overall length greater than the length of said corrugated tube and being sealed at its ends to the ends of the corrugated tube such that the casing is in a slightly longitudinally compressed state relative to said corrugated tube thereby defining an insulating dead air space between said corrugated tube and said casing, the volume of the dead air space between said corrugated tube and said casing per unit length being equal to the volume of the corrugated tube per unit length, said casing further being of smooth sidewall construction and being of a thickness which is less than the thickness of said corrugated tube arrangement.

5,377,671

CARDIAC SYNCHRONOUS VENTILATION

James W. Biondi, North Haven, Conn.; Douglas M. Johnston, Winchester, and Stephen J. Herman, Andover, both of Mass., assignors to Cardiopulmonary Corporation, Andover, Mass.
Continuation-in-part of Ser. No. 692,153, Apr. 26, 1991, abandoned. This application Sep. 16, 1991, Ser. No. 760,409
Int. Cl.⁶ A61H 31/00 13 Claims

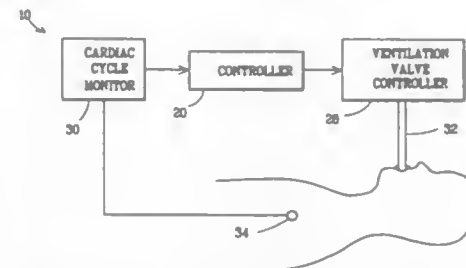
U.S. Cl. 128—204.23

8. An apparatus for providing circulatory and respiratory assistance in a patient having a cardiac cycle including a ventricular systolic portion and a ventricular diastolic portion, said apparatus comprising:

a monitoring device for detecting the patient's cardiac cycle; a processing device having an input in electrical communication with said monitoring device and an output, said processing device determining the onset and duration of at least one portion of said cardiac cycle and providing at

least one control signal on said output in response thereto; and

a ventilation controller having an input in electrical communication with said output of said processing device, said ventilation controller increasing the intrathoracic pressure of said patient by introducing a volume of a respiratory gas from a source of said gas into the lungs of said patient during said ventricular systolic portion of said patient's cardiac cycle and for reducing the intrathoracic pressure



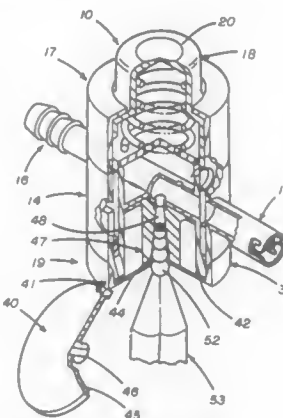
of said patient by extracting a portion of said volume of said respiratory gas from said lungs of said patient during said diastolic portion of said patient's cardiac cycle, said ventilation controller further comprising an inhalation detection device, said ventilation controller beginning the introduction of said respiratory gas upon the start of an inhalation, as detected by said inhalation detection device, by said patient, and prior to the ventricular systolic portion of the cardiac cycle of said patient in response to said at least one control signal of said processing device.

5,377,672

SUCTION CONTROL VALVE

Kok-Hiong Kee, St. Louis, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.
Division of Ser. No. 943,082, Sep. 10, 1992, Pat. No. 5,335,655.
This application Dec. 15, 1993, Ser. No. 168,738
Int. Cl.⁶ A61M 16/20 4 Claims

U.S. Cl. 128—207.16



1. A suction control valve comprising:

a valve body having a suction source connector, a primary suction device connector, an ancillary suction device access port, and a fluid flow passage for allowing fluid flow between said suction source connector and said primary suction device connector and said ancillary suction device access port, and

an actuator positioned at least partially within said valve body for opening and closing said primary suction device connector from fluid flow therethrough and having at a first position in which said primary suction device connector is closed against fluid communication with said suction

source connector, a second position in which said primary suction device connector is open to fluid communication with said suction source connector; and a plurality of third positions wherein said primary suction device connector is in varying degrees of fluid communication with said suction source connector; wherein said ancillary suction device access port includes a cap having a cover member hingeably movable between a closed position and an open position.

5,377,673

INTRAUTERINE MONITORING DEVICE

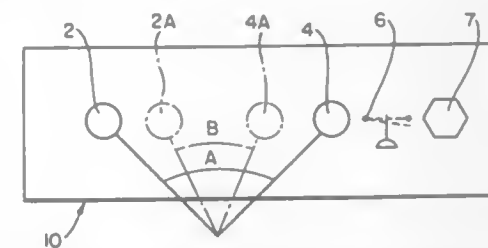
Peter Van Dell, 78 Morning Glory Dr., Easton, 06612, and Dennis Buonafede, 55 Mulberry Ln., Huntington, both of Conn. 06484

Filed Mar. 22, 1993, Ser. No. 35,045

Int. Cl.⁶ A61N 5/00

U.S. Cl. 128—633

5 Claims



1. An intrauterine fetal monitoring device to supply medical information including stages of maternal labor and degrees of fetal distress during delivery, the device comprising: a laminate sensor pad, said sensor pad having spatially located therein a controlled wavelength light source (CWLS) for transilluminating a fetus' cutaneous area, a sensor responsive to said CWLS and producing a first signal responding to said transillumination, a transducer for generating a second signal in response to intrauterine pressure during maternal contractions, and a switch means responsive to said second signal for interrupting the first signal during maternal contractions, and a microprocessor, said transducer and said sensor being connected to said microprocessor which delivers the medical information.

5,377,674

METHOD FOR NON-INVASIVE AND IN-VITRO HEMOGLOBIN CONCENTRATION MEASUREMENT

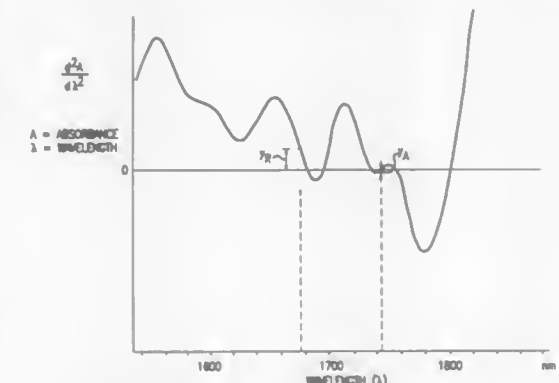
J. Todd Kuestner, 26 Wild Duck Rd., Wyckoff, N.J. 07481
Continuation-in-part of Ser. No. 4,404, Jan. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 965,817, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 880,379, May 8, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,635
Int. Cl.⁶ A61B 5/00 11 Claims

U.S. Cl. 128—633

1. A non-invasive method for determining hemoglobin concentration comprising:

generating an absorbance data measurement by measuring the absorbance of light at a plurality of wavelengths, including multiple analyte and multiple reference wavelengths, in the near-infrared and long wavelength visible regions, in capillary bed tissue during the peak of a blood pulsation through the tissue; and measuring the absorbance of the light at the plurality of wavelengths in capillary bed tissue during the trough of a blood pulsation through the tissue;

and comparing the absorbance data measurement to a reference curve which is generated by a correlation



study to determine the hemoglobin concentration of the tissue.

5,377,675

METHOD AND APPARATUS FOR IMPROVED FETUS CONTACT WITH FETAL PROBE

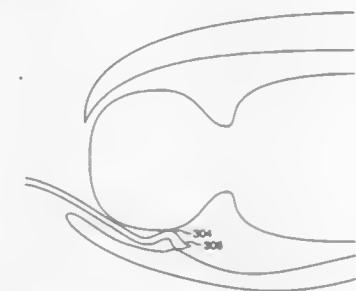
Stephen J. Ruskewicz, Kensington, and James R. Casciani, Cupertino, both of Calif., assignors to Neilcor, Inc., Pleasanton, Calif.

Filed Jun. 24, 1992, Ser. No. 904,418

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—634

22 Claims



1. An intrauterine probe for measuring a physical condition of a fetus comprising:

a sensor body comprising an active face, wherein the sensor body has a channel disposed therein; inserting means for inserting the sensor body into a uterus between a fetus and a uterine wall; a normally deformed resilient biasing means integral with the sensor body and which is disposed entirely on the portion of the probe within the uterus for applying force between the fetus and the uterine wall; and straightening means for straightening the resilient biasing means, the straightening means including a stylet removably disposed in the channel.

5,377,676
METHOD FOR DETERMINING THE
BIODISTRIBUTION OF SUBSTANCES USING
FLUORESCENCE SPECTROSCOPY

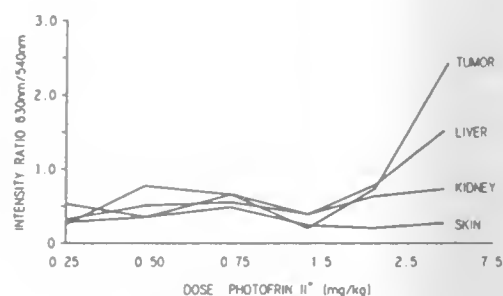
Sandor G. Vari, Encino, and Warren S. Grundfest, Los Angeles, both of Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Continuation-in-part of Ser. No. 679,766, Apr. 3, 1991, Pat. No. 5,318,023, and Ser. No. 891,586, Jun. 1, 1992. This application Mar. 30, 1993, Ser. No. 39,991

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—634

10 Claims



1. A method for determining the biodistribution of a substance in a body comprising:

- administering an effective amount of a substance capable of light-induced fluorescence to tissue to be examined and to tissue whose condition is known;
- exciting said tissue to be examined and said tissue whose condition is known with a beam of light from a light source to cause said substance to emit fluorescence;
- measuring said fluorescence emitted from said tissue to be examined and said tissue whose condition is known each at a first wavelength and a second wavelength;
- calculating a first fluorescence intensity ratio for said examined tissue and a second intensity ratio for said tissue whose condition is known, wherein said intensity ratios are said fluorescence at said first wavelength divided by said fluorescence at said second wavelength; and
- comparing said first intensity ratio with said second intensity ratio and thereby determining the biodistribution of said substance.

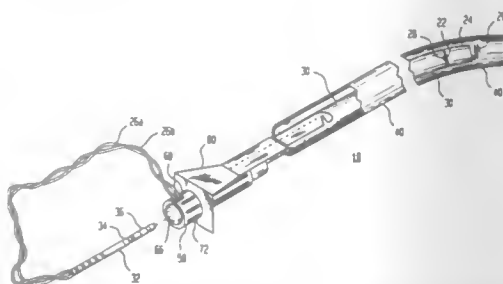
5,377,677
PACKAGING SYSTEM FOR A FETAL ELECTRODE
 Edward Dowd, Mallorytown; Joseph O'Neill, Gananoque, both of Canada; David M. DiSabito, Clarence, N.Y.; James R. Hubbard, Lumberton, and Cleatis A. Eichelberger, Delran, both of N.J., assignors to Graphic Controls Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 97,983, Jun. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 959,990, Oct. 13, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 126,222

Int. Cl.⁶ A61B 5/0448

U.S. Cl. 128—642

28 Claims



1. A packaging system attached to an electrode assembly

which includes an electrode, a drive tube having a handle and an opposite end engaging the electrode and imparting translational and rotational motion to the electrode, and a guide tube having a forward end and in which the drive tube slides allowing the electrode to project from the forward end of the guide tube when the electrode assembly is in use, said packaging system comprising a clip having:

- a tail wedging between said guide tube and said drive tube to fix the position of said drive tube in said guide tube;
- a head mounted to said handle; and
- a body integrally connecting said head and said tail of said clip, the length of said tail, said body, and said head preselected to fix said drive tube in said guide tube with said electrode protected inside said guide tube when said electrode is not in use.

5,377,678
TRACKING SYSTEM TO FOLLOW THE POSITION AND
ORIENTATION OF A DEVICE WITH
RADIOFREQUENCY FIELDS

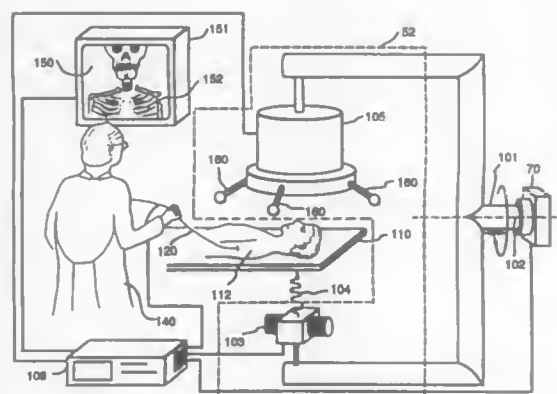
Charles L. Dumoulin, Ballston Lake; Robert D. Darrow, Scotia; John F. Schenck, and Peter B. Roemer, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 753,563, Sep. 3, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,419

Int. Cl.⁶ A61B 5/00, 6/00

U.S. Cl. 128—653.1

18 Claims



1. A tracking and imaging system for following a position and orientation of at least one invasive device within a subject, comprising:

- an invasive device;
- an electromagnetic (EM) creation means attached to the invasive device, for creating an electromagnetic field of known geometry, and known electromagnetic flux defined by a plurality of known electromagnetic field vectors within the subject, EM field creation means comprising:
 - a master oscillator for setting a standard timing signal;
 - a control computer coupled to the master oscillator and responsive to the standard timing signal; and
 - a plurality of N transmit branches, wherein $N \geq 1$, each of the transmit branches comprises:
 - a transmit frequency offset means for creating an RF transmit signal of a frequency determined by the control computer based upon the standard timing signal,
 - a gating means coupled to the transmit frequency offset means and responsive to the control computer adapted for selectively passing or not passing the RF transmit signal,
 - an amplifier responsive to the control computer for receiving the RF transmit signal from the gating means and amplifying the RF transmit signal with a gain determined by the control computer, and
 - a transmit coil coupled to the amplifier for creating the

- electromagnetic field of known geometry from the RF transmit signal;
- a radiofrequency (RF) receiver for detecting the electromagnetic field vector at a plurality of M greater than 5 selected locations;
- imaging means for acquiring a medical diagnostic image; and
- a tracking means for computing a position and an orientation relative to the acquired medical diagnostic image of the EM field creation means being substantially said position and said orientation of the invasive device, the tracking means being responsive to the electromagnetic field vectors detected by the RF receiver at the M selected locations.

5,377,679
MAGNETIC RESONANCE IMAGING SYSTEM
 Yoshio Machida; Masahiko Hatanaka, both of Nishinasunomachi, and Shinichi Kitane, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 427,704, Oct. 27, 1989, abandoned.

This application Nov. 22, 1991, Ser. No. 796,924

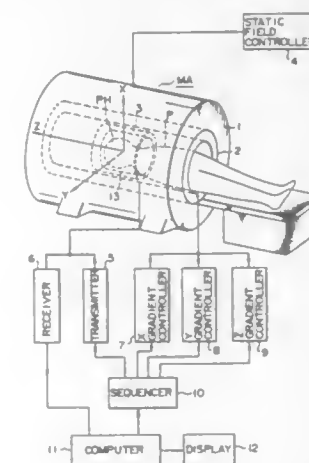
Claims priority, application Japan, Oct. 27, 1988, 63-271243;

Feb. 14, 1989, 1-34413; Aug. 31, 1989, 1-225025

Int. Cl.⁶ A61B 5/055

U.S. Cl. 128—653.2

24 Claims



1. A magnetic resonance imaging system comprising: static field generating means for generating a static field to be applied to a head of a human forming an object to be examined;

- gradient field generating means for generating a gradient field to be applied to the head of the human object;
- radio-frequency field transmitting means for transmitting a radio-frequency field to be applied to the head of the human object;
- receiving means for receiving a radio-frequency magnetic resonance signal from the head of the human object;
- sequence control means for driving said gradient field generating means, said radio-frequency field transmitting means and said receiving means in accordance with a predetermined sequence while the static field is applied from said static field generating means to the head of the human object, thereby applying the gradient field and the radio-frequency field to the head of the human object at a predetermined timing, and causing a predetermined magnetic resonance phenomenon in the head of the human object;
- signal processing means for performing predetermined processing of magnetic resonance signal data generated as a result of an operation of said sequence control means and received through said receiving means so as to obtain a magnetic resonance image; and
- display means for displaying the image obtained by said signal processing means,

wherein said receiving means comprises head coil means for

receiving the magnetic resonance signal, said sequence control means comprising multi-slice control means for executing a multi-slice method using a sequence with a relatively long echo time so that a magnetic resonance signal of a proton of fat is suppressed and a magnetic resonance signal of a proton of cerebrospinal fluid is emphasized, and said signal processing means comprises weighting summation processing means including means for setting a weighting coefficient to be smaller for a slice at a deeper position as compared to a more shallow position in order to produce weighted multi-slice images and means for summing said weighted multi-slice images so as to produce an image of a brain surface of the head.

5,377,680
MRI CARDIAC IMAGE PRODUCED BY TEMPORAL
DATA SHARING

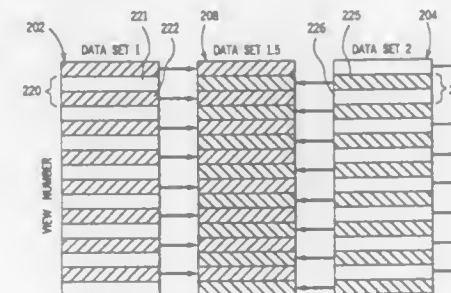
Tsur Bernstein, Glendale, and Thomas K. Foo, Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 4, 1993, Ser. No. 102,166

Int. Cl.⁶ A61B 5/055

U.S. Cl. 128—653.2

8 Claims



1. A method for increasing the number of temporal cardiac phase images of a patient's heart from NMR data acquired synchronously during a succession of cardiac cycles, the steps comprising:

- producing a cardiac signal which indicates phase of the patient's heart during each cardiac cycle;
- acquiring first NMR data at a first cardiac phase during each of said succession of cardiac cycles and storing said first NMR data to form a first data set;
- acquiring second NMR data at a second cardiac phase during each of said succession of cardiac cycles and storing said second NMR data to form a second data set;
- reconstructing a first image from said first data set depicting the patient's heart at said first cardiac phase;
- reconstructing a second image from said second data set depicting the patient's heart at said second cardiac phase;
- selecting NMR data from said first and second data sets to form an intermediate data set; and
- reconstructing an intermediate image from said intermediate data set which depicts the patient's heart at a selected cardiac phase between said first and second cardiac phases.

5,377,681
METHOD OF DIAGNOSING IMPAIRED BLOOD FLOW
 Walter E. Drane, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Continuation of Ser. No. 899,227, Jun. 16, 1992, abandoned, which is a continuation of Ser. No. 434,336, Nov. 13, 1989, abandoned. This application May 13, 1994, Ser. No. 242,708

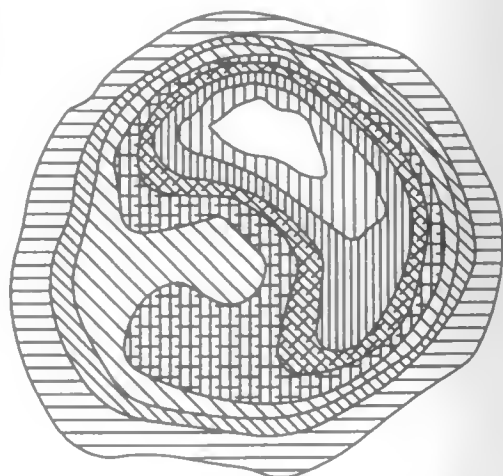
Int. Cl.⁶ A61B 5/05, 6/00

U.S. Cl. 128—653.4

54 Claims

1. A method of diagnosing impaired blood flow in an organ of a patient which comprises:

- a. administering a diagnostically effective amount of non-inert contrast agent to the patient;
- b. generating a first series of generally parallel two-dimensional images, spatially separated along one axis of major blood supply to said organ, of the contrast agent in the organ at a first time after administration sufficient for the contrast agent to be extracted to the organ, said first series of said two-dimensional spatially separated images forming a three-dimensional representation of the contrast agent uptake of said organ as of said first time;
- c. adding together, on a pixel by pixel basis, substantially all images from said first series, thereby generating a two-dimensional first composite image from the first series of two-dimensional spatially separated images, such that said first composite image represents an image of total contrast agent uptake as of said first time for the organ of interest, oriented along said one axis;
- d. generating a second series of generally parallel two-dimensional images, spatially separated along said one axis, of the contrast agent in the organ at a second time after said first series of images sufficient to allow for a detect-



- e. adding together, on a pixel by pixel basis, substantially all images from said second series, thereby generating a two-dimensional second composite image from said second series of two-dimensional spatially separated images, such that said second composite image represents an image of the total contrast agent retention for the organ of interest, as of said second time and oriented along said axis;
- f. generating a two-dimensional third composite image by subtracting said two-dimensional second composite image from said two-dimensional first composite image to determine the degree of decrease of contrast agent from the organ, said third composite image representing an image of total contrast agent washout between said first time and said second time, indicating the status of the arterial blood supply along said axis; and
- g. displaying the two-dimensional third composite image.

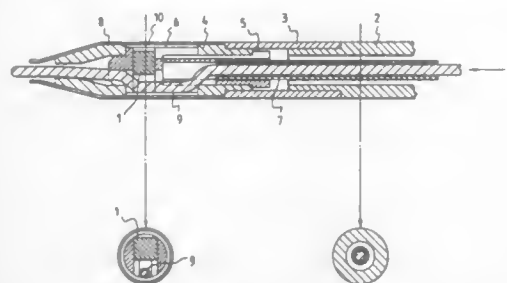
5,377,682
ULTRASONIC PROBE FOR TRANSMISSION AND RECEPTION OF ULTRASONIC WAVE AND ULTRASONIC DIAGNOSTIC APPARATUS INCLUDING ULTRASONIC PROBE
 Shinichiro Ueno, Sagami-hara; Masahiko Hashimoto, Tokyo; Akihisa Adachi, Kawasaki; Haruo Ohmori, Yokohama, and Toshiharu Sato, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Sep. 4, 1992, Ser. No. 941,580

Claims priority, application Japan, Sep. 5, 1991, 3-225907; Sep. 18, 1991, 3-237709; Oct. 15, 1991, 3-265886; Oct. 24, 1991, 3-277430; Dec. 27, 1991, 3-346034; Dec. 27, 1991, 3-346035; Feb. 17, 1992, 4-028767; Mar. 13, 1992, 4-055150; Mar. 19, 1992, 4-062990

Int. Cl.⁶ A61B 8/12

U.S. Cl. 128—660.1

18 Claims



1. An ultrasonic diagnostic apparatus comprising: a catheter having a flexible hollow structure and having a plurality of microlumens; a shaft having a hollow structure and fixed to a tip portion of said catheter; a bearing having a hollow structure and made of a material having a small frictional coefficient; a rotating shaft inserted into the hollow portions of said shaft and said bearing; a rotator which is fixed to a tip portion of said rotating shaft and in which a peripheral direction ultrasonic transducer and an ultrasonic wave reflecting mirror are disposed in opposed relation to each other, said rotator having a tubular structure and having an opening for emitting, in a direction substantially perpendicular to a longitudinal axis of the apparatus, an ultrasonic wave generated by said peripheral direction ultrasonic transducer and reflected by said reflecting mirror; an eccentric shaft fixed to a tip portion side of said rotator; a transducer holder rotatably supported by a pivot shaft and having at its rear end portion a groove engaged with said eccentric shaft so as to be sectorally movable about said pivot shaft; a forward direction ultrasonic transducer provided within said transducer holder for emitting an ultrasonic wave in a forward longitudinal direction of the apparatus; a cap fixed to said bearing, said pivot shaft being fixed to said cap; a torque transmission shaft fixed to a rear end portion of said rotating shaft and having a flexible multi-layered structure for transferring a rotating force; a first signal line passing through said lumen of said catheter and electrically connected to said forward direction ultrasonic transducer; a second signal line passing through the inside of said torque transmission shaft and electrically connected to said peripheral direction ultrasonic transducer; and a probe side connector fixed to a rear end portion of said torque transmission shaft; a main body side connector engageable with said probe side connector; a signal contact portion electrically connected to said second signal line disposed within said torque transmission shaft;

- a second rotating shaft connected to said main body side connector;
- a motor for rotating said second rotating shaft;
- a position detector for detecting a rotating state of said motor; and
- an image forming section for forming ultrasonic images, corresponding to ultrasonic wave generated from said ultrasonic transducers and returned to said ultrasonic transducers, on the basis of an output signal of said position detector.

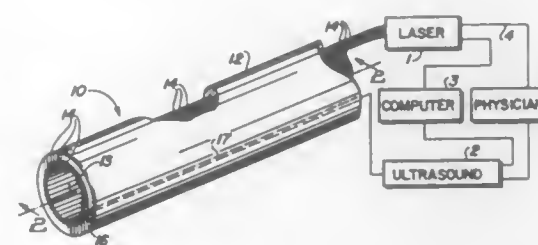
5,377,683
ULTRASOUND-LASER SURGERY APPARATUS AND METHOD

Israel Barken, 6823 Deer Hollow Pl., San Diego, Calif. 92120
 Continuation of Ser. No. 387,949, Jul. 31, 1989, abandoned. This application Jul. 30, 1991, Ser. No. 741,198

Int. Cl.⁶ A61B 8/12, 17/36

U.S. Cl. 128—660.03

18 Claims

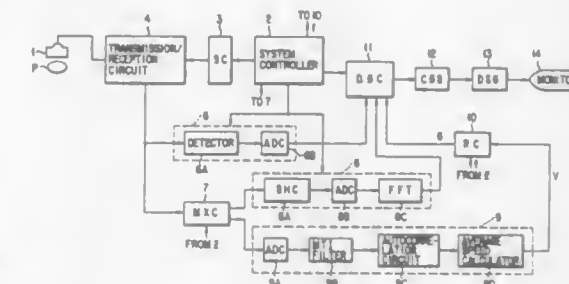


1. A catheter system for destroying unwanted internal tissue, comprising: catheter tubing having a central axis, proximal and distal ends and a lumen; a plurality of optical fibers disposed about a circumference of said catheter tubing, each of said plurality of optical fibers having proximal and distal ends thereof and extending along the length of said catheter tubing, each of said plurality of optical fibers further comprising means for directing laser irradiation, transmitted from the distal end of each of said plurality of optical fibers, away from said central axis of the catheter tubing; at least one ultrasound imaging means associated with said catheter tubing for applying ultrasonic signals to internal tissue and receiving and processing said applied ultrasonic signals to display an ultrasonic image of said internal tissue; laser irradiation means for generating and supplying laser irradiation to each of said plurality of optical fibers; interactive computer means for accepting input corresponding to an area and position of unwanted tissue from the ultrasonic image displayed by said at least one ultrasound imaging means, evaluating a positional relationship between the area of unwanted tissue and said plurality of optical fibers and identifying which of said plurality of optical fibers have an optical path corresponding to the position of the unwanted tissue; means for selecting only said identified plurality of optical fibers which have an optical path corresponding to the position of the unwanted tissue and which are to be fired; and control means operably coupled to said laser irradiation means for activating and controlling firing of said laser irradiation means to said selected plurality of optical fibers.

5,377,684
ULTRASONIC DOPPLER DIAGNOSIS APPARATUS
 Kiyoshi Hara, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Sep. 30, 1992, Ser. No. 953,867
 Claims priority, application Japan, Oct. 4, 1991, 3-257777
 Int. Cl.⁶ A61B 8/06

U.S. Cl. 128—661.09

7 Claims



1. An ultrasonic Doppler diagnosis apparatus comprising: scan means for scanning a two-dimensional region of a subject with an ultrasonic beam; detection means for detecting a Doppler deviation frequency of respective positions included in the two-dimensional region based on a signal output from said scan means; calculation means for calculating a rate of variation between two Doppler deviation frequencies of the same position, which are detected by said detection means at different times; convert means for converting a color signal to said rate of variation in accordance with a level of said rate of variation; and display means for displaying a two-dimensional distribution of said color signal.

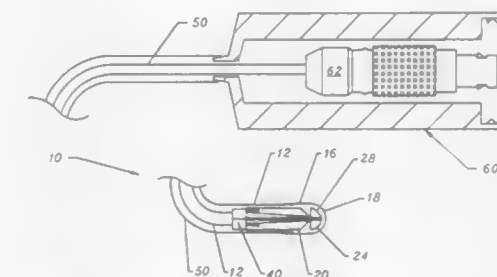
5,377,685
ULTRASOUND CATHETER WITH MECHANICALLY STEERABLE BEAM
 Arif Kazi, Bensheim, Germany; Jeanne Rougeot; Lynn L. Li, both of Montreal, Canada, and Louis D. Dufour, Longueuil, Canada, assignors to Baylis Medical Company, Inc., Quebec, Canada

Filed Dec. 17, 1993, Ser. No. 169,306

Int. Cl.⁵ A61B 8/12

U.S. Cl. 128—662.06

16 Claims



1. An ultrasound catheter comprising: an outer tube having a lumen, a sonolucent closed distal end and a proximal end; a flexible rotatable drive shaft provided in said lumen, said shaft including an electric signal transmission cable; a tip member connected to said shaft and provided at said distal end, said tip member having a lengthwise axis of rotation when rotated by said shaft, said tip member having a substantially rigid base and a head pivotally con-

nected to a distal end of said base to pivot about a transverse axis perpendicular to said longitudinal axis; an ultrasound transducer mounted in said head and connected to said cable for generating an ultrasound beam; and beam directing means for directing said beam radially outward with respect to said lengthwise axis at a variable angle thereto and for controllably adjusting said angle, said beam directing means comprising a thermally deformable conductive member connected between said base and said head for controllably pivoting said head with respect to said base as said member expands and contracts.

5,377,686

APPARATUS FOR DETECTING LEAKAGE FROM VASCULAR TISSUE

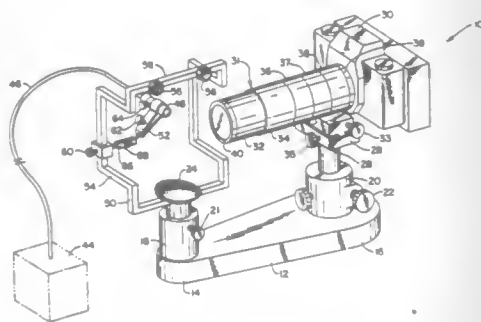
James F. O'Rourke, Farmington, and Robert H. Fagan, Middletown, both of Conn., assignors to The University of Connecticut, Farmington, Conn.

Filed Oct. 11, 1991, Ser. No. 775,284

Int. Cl.⁶ A61B 6/00, 5/00

U.S. Cl. 128—665

18 Claims



1. An apparatus for detecting leakage from vascular tissue located in an anterior region of an eye into aqueous humor, comprising:

- positioning means for maintaining the eye in a generally stationary position,
- fluorescence exciter light generation means for generating fluorescence exciter light at a fluorescence exciter light wavelength,
- light conduit means connected to the fluorescence exciter light generation means for directing the fluorescence exciter light onto the aqueous humor,
- direct light recording means for directly recording fluorescence of the aqueous humor, the direct light recording means being positioned for recording light emitted from a side of the aqueous humor, and
- barrier filter means disposed between the eye and the direct light recording means for maximizing passage to the recording means of light having a first wavelength which is the wavelength of light emitted from the aqueous humor, and minimizing passage to the recording means of light having a second wavelength, the second wavelength including the fluorescence exciter light wavelength.

METHOD AND APPARATUS FOR PERFORMING MAPPING-TYPE ANALYSIS INCLUDING USE OF LIMITED ELECTRODE SETS

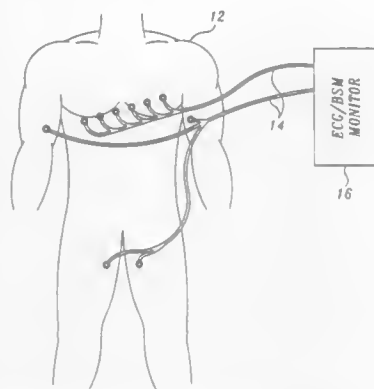
Arnold K. Evans, and Mahesh H. Merchant, both of Kent, Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Continuation of Ser. No. 944,398, Oct. 13, 1992, Pat. No. 5,318,037, which is a continuation of Ser. No. 697,332, May 9, 1991, Pat. No. 5,161,539. This application Feb. 14, 1994, Ser. No. 196,019

Int. Cl.⁶ A61B 5/452

U.S. Cl. 128—700

24 Claims



1. A system for determining the probability of a patient having a coronary disease, comprising:
 - a first set of electrodes for receiving a first set of cardiac signals from a patient;
 - computing means coupled to the first set of electrodes for transforming the first set of cardiac signals into a second set of cardiac signals such that the first set of cardiac signals appear as if they had been received from a reference set of electrodes;
 - means for storing a probability function that relates three or more statistically determined coefficients taken from a set of coefficients to the probability that a patient has a coronary disease;
 - means for multiplying the second set of cardiac signals by a predetermined set of basis functions to produce the three or more statistically determined coefficients; and
 - means for calculating the probability function with the values of the three or more statistically determined coefficients to calculate the probability of the patient having the coronary disease.

5,377,688

APPARATUS AND METHOD TO OBJECTIVELY MEASURE SENSORY DISCRIMINATION THRESHOLDS IN THE UPPER AERO DIGESTIVE TRACT

Jonathan E. Aviv, New York, and John H. Martin, Valley Cottage, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Apr. 16, 1993, Ser. No. 48,776

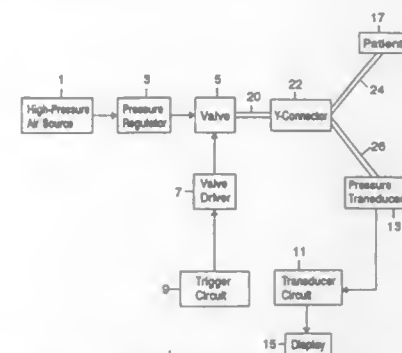
Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—747

25 Claims

1. An apparatus for testing sensation in a patient at a test site in the upper aero digestive tract, comprising:
 - control means for setting a time duration value and a pressure value of a time and pressure controlled puff of
 - means for generating the time and pressure controlled puff

of air in response to said set time duration value and said pressure value; and



means, connected to said means for generating, for delivering the controlled puff of air to the test site.

5,377,689

SAMPLING SYRINGE

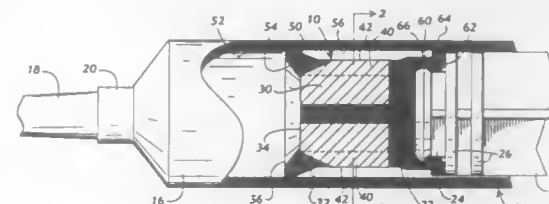
Steven F. Mercereau, 4911 W. Lake Dr., Conyers, Ga. 30208

Filed Dec. 27, 1993, Ser. No. 172,736

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—763

12 Claims



1. A sampling syringe for collecting a fluid sample from a patient, comprising:
 - an elongated tube open at one end and in communication with a sampling needle attached at the other end;
 - a plunger rod with a plunger cap attached at a first end slidably inserted into the open end of the tube;
 - the plunger cap comprising a body that encloses an air permeable filter, a front portion of the body in slidable contact with the inner wall of the tube for forming a fluid-tight first seal, and means for forming a fluid-tight second seal spaced from the first seal, the second seal effected by deforming the body from a first position to a second position,
 - whereby the plunger rod, being pulled axially through the tube away from the needle, forms a vacuum that pulls a fluid from the patient.

5,377,690

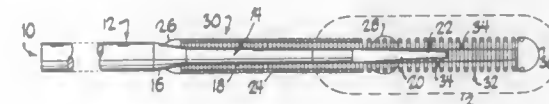
GUIDEWIRE WITH ROUND FORMING WIRE
William A. Berthiaume, Hudson, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Feb. 9, 1993, Ser. No. 15,642

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—772

7 Claims



1. A guidewire, comprising:

a helical coil having a proximal end, a distal end, and a lumen;
a core wire having a distal region extending into a lumen of said helical coil and having a proximal end of said helical coil fixedly attached to said core wire;
a plurality of cylindrical round forming wires fixedly attached to said distal region of said core wire and extending through said lumen of said helical coil; and
a protrusion provided at said distal end of said helical coil with said plurality of round cylindrical forming wires and said helical coil fixedly attached thereto;
whereby said plurality of round cylindrical forming wires provides both increased tensile strength and decreased stiffness to the guidewire.

5,377,691

PLURAL-CHARACTERISTIC-MEASURING RADIAL ERECTOMETER

Michel A. Bolleau, 2275 NE. Doctors Dr., Bend, Oreg. 97701, and Matthew W. Hoskins, 10933 SW. 41st Ave., Portland, Oreg. 97219

Filed May 14, 1993, Ser. No. 61,443

Int. Cl.⁶ A61B 5/03

U.S. Cl. 128—774

5 Claims



1. An integrated plural-characteristic-measuring radial erectometer to be worn by a male user, comprising:
 - elongate band-like structure positionable around the user's flaccid penis and constructed to form a closed loop having a desired circumference corresponding to such flaccid penis;
 - first measurement structure forming part of the band-like structure and being constructed to measure penile rigidity, and being manually movable to a first configuration providing an indication that the penis is in a flaccid condition, and being radially changeable to a second configuration as a result of radial-penile forces that will occur when the penis becomes erect, with correlation between the first and second configuration providing an indication that the penis changed from such flaccid condition to an erect condition, and providing a measurement of a first characteristic of that erect condition;
 - second measurement structure also forming part of the band-like structure and being constructed to measure penile tumescence, and being manually movable to a first configuration providing an indication that the penis is in such flaccid condition, and being radially changeable to a second configuration as a result of the erection-caused radial-penile forces, with correlation between the first and second configuration providing an indication that the penis

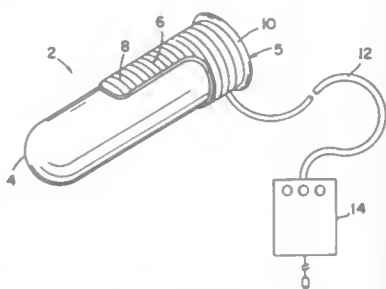
changed from such flaccid condition to an erect condition, and providing a measurement of a second characteristic of that condition; and wherein the first measurement structure includes marker substructure also forming part of the band-like structure, with the marker substructure constructed to identify on the erectometer the first configuration of the second measurement structure, thereby accommodating automatic correlation between the first and second configuration of the second measurement structure.

5,377,692 VIBRATING CONDOM

William Pfeil, Molokai Ag. Park, Box 317, Kaunakakai, HI. 96748, assignor to William F. Pfeil, Kaunakakai, HI.
Filed Dec. 1, 1993, Ser. No. 159,593
Int. Cl.⁶ A61F 6/04

U.S. Cl. 128—844

23 Claims

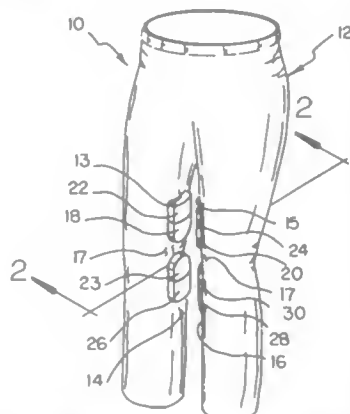


1. A vibrating condom comprising:
 - a flexible, thin impermeable sheet material, having an open end, a closed end, and an extended length from the open end to the closed end;
 - vibrating means affixed to a posterior portion of the sheet material which causes said posterior portion to vibrate sensitive parts of the female genitalia; and
 - actuating means attached to said vibrating means for causing the vibrating means to vibrate.

5,377,693
THIGH AND LEG ALIGNMENT APPARATUS
Edward C. Loper, and Christine B. Berger, both of 7125 Castor Ave., Philadelphia, Pa. 19149
Filed Jan. 4, 1994, Ser. No. 177,770
Int. Cl.⁶ A61F 5/00

U.S. Cl. 128—845

2 Claims



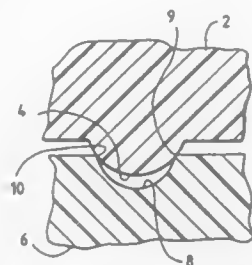
1. A new and improved thigh and leg alignment apparatus, comprising:
 - a pants assembly which includes a first inner thigh portion adapted to be located above a wearer's knee when said pants assembly is worn, said pants assembly including a

first leg portion adapted to be located below a wearer's knee when said pants assembly is worn, said pants assembly including a second inner thigh portion adapted to be located above a wearer's knee when said pants assembly is worn, said pants assembly including a second leg portion adapted to be located below a wearer's knee when said pants assembly is worn, said first inner thigh portion being opposed to said second inner thigh portion, and said first leg portion being opposed to said second leg portion, a first inner thigh pocket connected to said first inner thigh portion of said pants assembly, a first inner thigh cushion placed in said first inner thigh pocket, a second inner thigh pocket connected to said second inner thigh portion of said pants assembly, a second inner thigh cushion placed in said second inner thigh pocket, a first inner leg pocket connected to said first leg portion of said pants assembly, a first inner leg cushion placed in said first inner leg pocket, a second inner leg pocket connected to said second leg portion of said pants assembly, a second inner leg cushion placed in said second inner leg pocket, wherein said first inner thigh cushion, said second inner thigh cushion, said first inner leg cushion, and said second inner leg cushion include a rounded end, wherein said first inner thigh cushion and said second inner thigh cushion are oriented so that said respective rounded ends face downward toward the knee region, and wherein said first inner leg cushion and said second inner leg cushion are oriented so that said respective rounded ends face upward toward the knee region.

5,377,694
FITMENT SYSTEM FOR ATTACHING FLUID COLLECTION DEVICES TO SURGICAL DRAPE
Jeffrey E. Bark, Green Bay, Wis., assignor to Little Rapids Corporation, Green Bay, Wis.
Filed Dec. 28, 1993, Ser. No. 174,229
Int. Cl.⁶ A61B 19/00, 19/08; A61F 5/44

U.S. Cl. 128—849

9 Claims



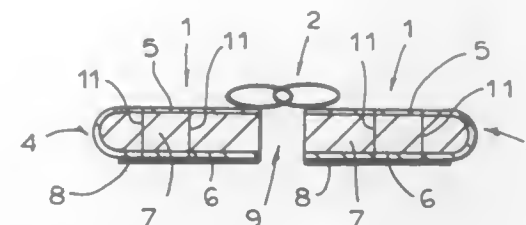
1. A fluid-tight fitment system for releasably attaching a first fluid-containing device to a second fluid-containing device, comprising:
 - a. a drape fitment having a drape attachment flange suitable for permanent attachment to a first fluid-containing device;
 - b. a raised male cylindrical element formed onto said drape attachment flange and having a large bore central aperture and an exterior cylindrical surface;
 - c. a sealing ring encircling said exterior cylindrical surface of said raised male cylindrical element and having a semicircular cross-section and a radius of said cross-section;
 - d. a pouch fitment having a pouch attachment flange suitable for permanent attachment to a second fluid-containing device;
 - e. a raised female cylindrical element formed onto said

pouch attachment flange and having a large bore central aperture and an interior cylindrical surface;
f. a groove encircling said interior cylindrical surface of said raised female cylindrical element and having a semicircular cross-section with a radius smaller than the radius of said cross-section of said sealing ring.

5,377,695
WOUND-CLOSING STRIP
Karl W. An Haack, Am Hedreisch 25, D-44225 Dortmund, Germany
Filed Mar. 25, 1994, Ser. No. 218,327
Claims priority, application Germany, Jan. 13, 1994, 4400732
Int. Cl.⁶ A61F 13/00; A61B 17/08

U.S. Cl. 128—888

10 Claims



1. A closure for an elongated skin wound having a pair of edges, the closure comprising:
 - a pair of parallel tapes each formed by
 - a U-shaped one-piece textile outer strip having a longitudinally extending outside flap and, parallel thereto, an inside flap joined at a longitudinal fold, inner edges, and a filler strip extending longitudinally between and spacing the flaps apart,
 - respective longitudinal rows of interleaveable teeth on the outside flaps at the inner edges of the tapes;
 - respective securing means engaged through the flaps and filler strip of each tape for holding them together;
 - a skin-compatible adhesive adhered to inside faces of the inside flaps, whereby the inside flaps can be adhered to skin to each side of the wound;
 - a slider displaceable longitudinally along the rows of teeth to interleave and couple them together, whereby, when the tapes are adhered to skin to each side of the wound, coupling the rows of teeth with the slider pulls the edges of the wound together.

5,377,696
CIGARETTE RECONDITIONING DEVICE
Jonathan D. Goldman, 252 Rutgers St., Rochester, N.Y. 14607
Filed Nov. 30, 1993, Ser. No. 159,730
Int. Cl.⁶ A24F 13/20

U.S. Cl. 131—248

7 Claims



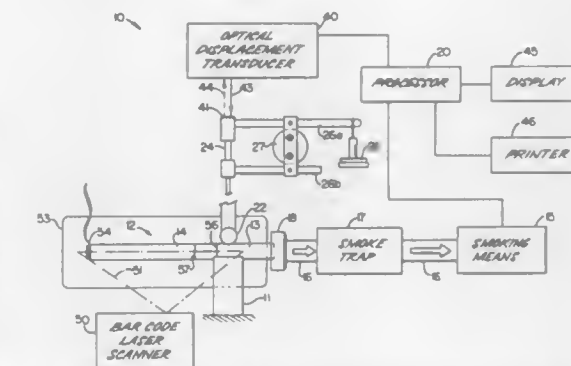
1. A device for reconditioning a partially smoked cigarette by cutting off and snuffing the burning end of a cigarette to leave a butt for re-smoking, said device comprising:
 - (a) a housing having walls enclosing a chamber, and open-

ings in said chamber for insertion of said burning end of a cigarette into said chamber,
(b) a plunger reciprocally movable in a movement direction in said housing across said chamber, said plunger having a blade and a snuffer protruding from the plunger in a direction perpendicular to said movement direction, the snuffer having a snuffing surface perpendicular to said blade which engages said burning end of said cigarette and cuts and snuffs said cigarette end while moving across said chamber, thereby leaving said butt in a condition suitable for smoking.

5,377,697
CIGARETTE FILTER TEST APPARATUS AND ASSOCIATED METHOD FOR MEASURING FILTER HOT COLLAPSE AND TOBACCO CONSUMPTION
Lance J. Deutsch, Charlotte; Pamela D. Park, Lake Wylie, both of S.C., and George Trail, McMinnville, Tenn., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Filed Aug. 27, 1993, Ser. No. 113,539
Int. Cl.⁶ A24C 5/00

U.S. Cl. 131—330

22 Claims



8. A test apparatus for a cigarette during simulated smoking of the cigarette, the test apparatus comprising:
 - a cigarette holder;
 - smoking means for drawing air through a burning cigarette positioned in said cigarette holder to thereby simulate smoking of the cigarette; and
 - tobacco consumption sensing means positioned adjacent said cigarette holder for sensing relative movement of a charline along a tobacco rod of the burning cigarette during simulated smoking and for generating a tobacco consumption signal based upon the sensed relative movement of the charline, said tobacco consumption sensing means comprising laser transmitter means for generating a laser beam, scanning means for scanning the laser beam along a length of the cigarette, and receiver means for detecting a reflected portion of the scanned laser beam from the cigarette.

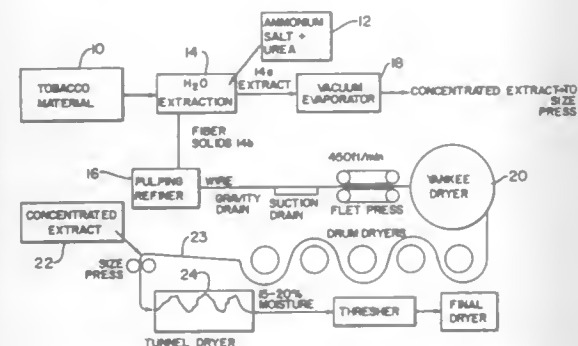
5,377,698
RECONSTITUTED TOBACCO PRODUCT
Elmer F. Litzinger, Barid B. Chakraborty, and William R. Conway, all of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Apr. 30, 1993, Ser. No. 55,736
Int. Cl.⁶ A24B 3/14, 15/24

U.S. Cl. 131—370

12 Claims

1. A method for making a reconstituted tobacco product comprising the steps of:
 - a) extracting natural tobacco with an aqueous solvent in the presence of: 1) urea or; 2) a urea derivative or; 3) a mixture of at least one ammonium salt and urea or; 4) a mixture of at least one ammonium salt and a urea derivative to produce an aqueous solvent extract and a fibrous residue;

- b) separating the aqueous solvent extract from the fibrous residue;



- c) forming the fibrous residue into a sheet-like material using a papermaking process; and applying the aqueous solvent extract to the sheet-like material.

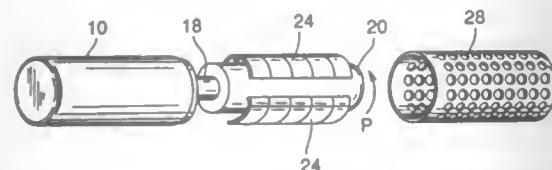
5,377,699 HAIR ABRADER

Shirley Varnum, 27775 Williams Canyon Rd., Gaston, Oreg. 97119

Filed Apr. 2, 1993, Ser. No. 41,472
Int. Cl.⁶ A45D 29/18

U.S. Cl. 132-76.4

4 Claims



1. A device for reducing the visibility of body and facial hair from the skin comprising:
a housing,
said housing having an exterior skin engaging portion with perforations leading from the exterior to an interior of the housing and said perforations being of a size capable of receiving hair therethrough and holding the hair in projecting relation into said housing,
an electric motor in said housing,
a head member in said housing driven movably by said motor,
and abrasive means on said head member,
said head member being positioned in said housing such that said abrasive means in driving movements of said head member pass said perforations in closely spaced relation, said abrasive means, upon repeated engagement of hair projecting through and held by said perforations, taper and gradually wear down the hair to a taper to reduce the diameter and thus the visibility thereof.

5,377,700 EYELASH CURLER

Elise H. Harris, 529 W. 42nd St., No. 4V, New York, N.Y. 10036
Filed Jul. 30, 1993, Ser. No. 100,544

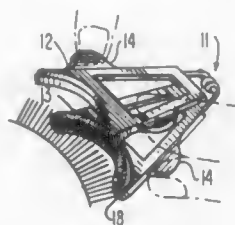
Int. Cl.⁶ A45D 2/48

U.S. Cl. 132-217

8 Claims

1. An eyelash curler comprising:
an upper jaw and a lower jaw, each of said jaws having a concave side in the form of an arc that is parallel to a curve of a front of an eye, said upper jaw having a rounded blade projecting from said concave side, said lower jaw having a member extending from the concave side for receiving a flexible insert with said member facing the projection extending from said upper jaw, said jaws

having an open structure including an aperture large enough for the eye to view the placement of the eyelash curler on the eyelash to be curled, a pair of finger tabs for each jaw adjacent to each concave side and in a comple-



mentary relationship to one another for uniformly applying pressure to the eyelash using two hands while viewing the eyelash through said aperture and spring means for maintaining said upper and lower jaws joined at a distal end of the eyelash curler in a normally open position.

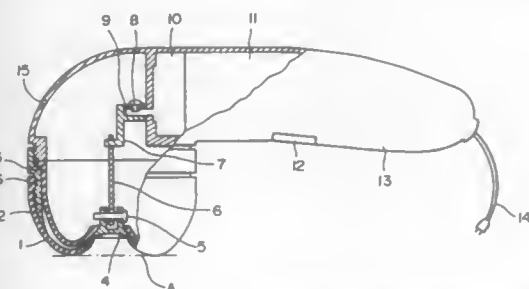
5,377,701 SUCKING MESSAGE DEVICE FOR BEAUTY TREATMENT

Canyun Fang, No. 2, Meishan Road, Hefei, Anhui Province, China

Filed Mar. 23, 1993, Ser. No. 36,205
Claims priority, application China, Mar. 23, 1992, 92101865.7; Feb. 25, 1993, 93101980.X
Int. Cl.⁶ A45D 70/08

U.S. Cl. 132-271

15 Claims



1. A sucking massage device for beauty skin treatment comprising:
a housing having a central axis and an open end;
inner and outer symmetrical and superimposed sucking lips disposed along the central axis, each of said sucking lips having a substantially annular shape and an outer annular edge coupled to said housing about said open end and an inner annular edge disposed inwardly from said outer edge and being substantially concentric with said outer edge and the central axis, wherein a cross-section of each of said lips have a substantially hook shape;
driving means coupled to said inner annular edge of said inner lip for axially reciprocating said inner lip to produce a suction.

5,377,702

BEAUTY UNIT

Yoshihiro Sakurai, Tokyo, Japan, assignor to Kabushiki Kaisha Japan Fitness and Kabushiki Kaisha Lucent, both of Tokyo, Japan

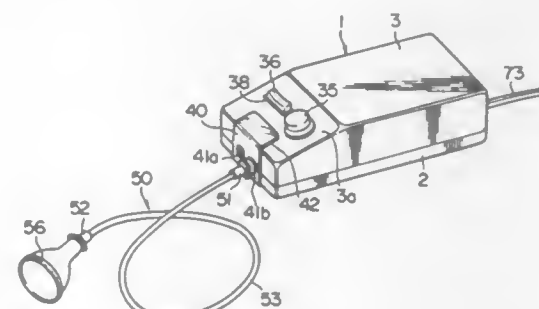
Filed Oct. 5, 1993, Ser. No. 131,806

Claims priority, application Japan, Apr. 15, 1993, 5-111199

Int. Cl.⁶ A45D 20/08

U.S. Cl. 132-271

17 Claims



1. A beauty unit comprising:
an electromagnet excited by a commercial power supply,
an air pump having diaphragms, an absorbing opening portion for guiding negative pressure and a discharge opening portion for guiding a pressing opening portion, wherein a negative pressure state and a pressing state are alternately formed in an internal chamber by vibration of said diaphragms,
operating members associated with the exciting action of the electromagnet to apply amplitude motion to the diaphragms of the air pump,
a control circuit for controlling the exciting action of the electromagnet,
a main body having inserting opening portions connected to the absorbing opening portion and the discharge opening portion, respectively, and
a manipulating member comprising a flexible introducing tube having a rear end connector capable of being inserted into the inserting opening portion provided at one end and a skin contact appliance provided at an opposite other end thereof.

5,377,703

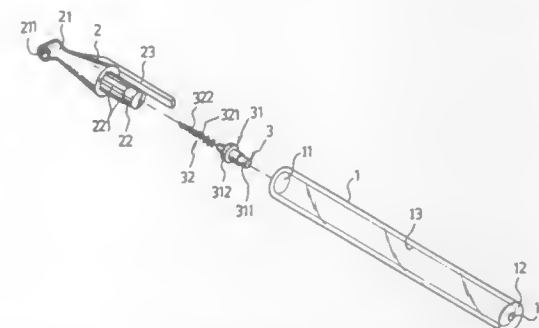
DENTAL CLEANSING DEVICE

Tien-Fu Chou, No.37-5, Kuo-Pi Lane, Feng-Shan City, Kaohsiung Hsien, and Mark Hsia, 10F, No.207-3, Wu-Miao Rd., Ling-Ya Dist., Kaohsiung City, both of Taiwan, Prov. of China
Filed Sep. 20, 1993, Ser. No. 124,306

Int. Cl.⁶ A46B 11/00

U.S. Cl. 132-311

2 Claims



1. A dental cleansing device comprising:
a hollow elongated hand grid member having an internal space with a closed end and an open end and a vent hole

which communicates said internal space to an exterior of said hand grip member;
an elongated cover member having an insert end fastened detachably to said open end of said elongated hand grip member and a holding end opposite to said insert end;
said holding end having a brush means including a brush seat attached detachably thereto, an elongated brush body extending substantially perpendicular to said cover member and formed integrally with said brush seat, and a plurality of hairy threads wound around said brush body, said brush means being insertable into said internal space via said open end of said hand grip member when said cover member is detached from said hand grip member and said brush means is detached from said cover member; wherein said insert end of said cover member has a plurality of axially extending engaging ribs formed on an external surface thereof.

5,377,704

AUTOMATED AGITATED IMMERSION WASHER

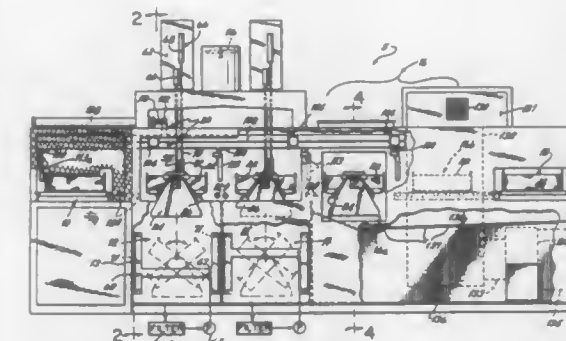
Richard F. Huddle, Nathaniels Hollow, Cincinnati, Ohio 45249

Filed Jun. 8, 1993, Ser. No. 73,100

Int. Cl.⁶ B08B 3/04

U.S. Cl. 134-76

25 Claims



1. An improved immersion washer with successive stations for washing dirty parts with a water-based environmentally-safe cleaning solution and rinsing and drying the parts comprising:
a wash station for washing a porous container of dirty parts including a wash tank to hold the cleaning solution and a wash dipping mechanism to receive said container and dip it into said tank to wash the parts in the solution, the wash dipping mechanism operable to move the container generally up and down in said tank to agitate the container of parts in the solution during a wash cycle;
a wash rotating mechanism to rotate said container on the wash dipping mechanism while it is being agitated during the wash cycle;
a pump system to turbulate the cleaning solution in said tank around the agitating and rotating container of parts;
a rinsing station spaced to one side of said wash station to rinse any residual cleaning solution from the parts rinsing station comprising a rinse tank to hold a rinsing solution and a rinse dipping mechanism to receive said container and dip it into said rinse tank to rinse the parts in the rinsing solution, the rinse dipping mechanism operable to move the container generally up and down in said tank to agitate the container of parts in the rinsing solution during a rinse cycle;
a rinse rotating mechanism to rotate said container while it is being agitated during the rinse cycle;
and a rinsing pump system to turbulate the rinsing solution in said rinse tank around the agitating and rotating container of parts, whereby the washed parts are more vigorously cleaned.

and effectively rinsed to remove the washing solution from the parts after they pass through the wash station, a drying station spaced to one side of said rinsing station to receive said container after it has left the rinsing station and dry the washed and rinsed parts in said container; and a container transport disposed between said wash station, rinsing station and drying station, said transport drivingly engaging said container to facilitate movement of said container along a path from said wash station to said rinsing station, to said drying station.

5,377,705

PRECISION CLEANING SYSTEM

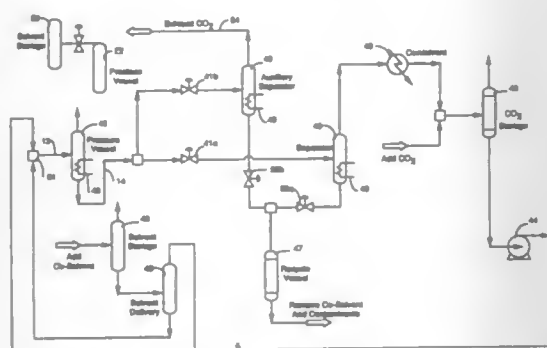
Charles W. Smith, Jr.; Larry R. Rosio, both of Fairview; Stephen H. Shore, and James A. Karle, both of Erie, all of Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Sep. 16, 1993, Ser. No. 122,766

Int. Cl.⁶ B08B 3/10

U.S. Cl. 134—95.3

7 Claims



1. A system for cleaning a workpiece with a supercritical cleaning fluid, comprising:

- a pressurizable cleaning vessel for receiving the workpiece, said cleaning vessel having an inlet and an outlet;
- a letdown valve in communication with said outlet;
- a heater for controlling the temperature of said cleaning fluid in said cleaning vessel;
- a separator in communication with said letdown valve having a first outlet and a second outlet at a lower end of the separator;
- a condenser in communication with said separator first outlet for condensing gaseous cleaning fluid to a liquid state;
- a storage vessel for maintaining the liquid cleaning fluid;
- a pump for conveying cleaning fluid from the storage vessel to the cleaning vessel;
- a co-solvent supply vessel and a co-solvent delivery vessel; and

means for placing the co-solvent delivery vessel in communication with the co-solvent supply vessel and means for placing said co-solvent delivery vessel in communication with said pump and said cleaning vessel, such that the cleaning fluid can be passed through the co-solvent delivery vessel to carry co-solvent into the cleaning vessel; whereby liquid cleaning fluid and co-solvent can be pumped from into the cleaning vessel and caused by temperature and pressure to achieve a supercritical state, said cleaning fluid can be removed from the cleaning vessel when said letdown valve is opened, and said removed portion passed to the separator.

5,377,706

GARBAGE COLLECTING DEVICE

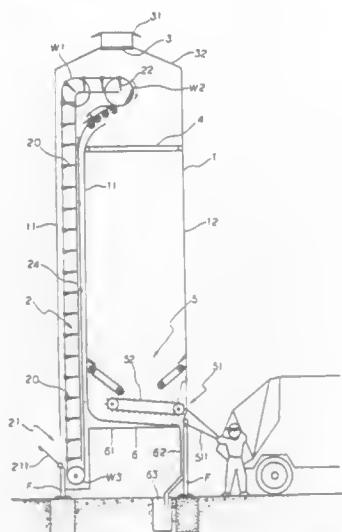
Jih-Tung Huang, No. 157, Lane 70, Sec. 3, Kang-Ning Road, Taipei, Taiwan, Prov. of China

Filed May 21, 1993, Ser. No. 65,264

Int. Cl.⁶ B08B 3/02

U.S. Cl. 134—104.1

5 Claims



1. A garbage collecting device for collecting garbage, comprising:

- a vertically extended shell body, having opposite walls and a top and a bottom, said top including an exhaust exit, one of said walls having a garbage exit and a garbage exit door covering said garbage exit, the other one of said walls having a garbage inlet and a garbage inlet door covering said garbage inlet door, said bottom having fixing legs;
- a circular elevator, having two chains and a plurality of garbage carriers, each chain forming an equivalent reversed "L" shaped circular trajectory, each garbage carrier having two hinges attached to said two chains and a plate rotatably connected to said two hinges at its two ends whereby said plate is capable of being lifted in a horizontal gesture and lowered in a vertical gesture, each garbage carrier being equally spaced apart;
- an elevator driving means, for driving said chains and said garbage carriers to circulate alone said reversed "L" shaped circular trajectory;
- a reversed "L" shaped partition plate, provided between said chains within said elevator, for guiding said garbage carriers uprightly and dumping garbage inside said shell body;
- an "L" shaped partition plate, provided beside said chains, for guiding said chains and said garbage carriers downward, and associating with said walls of said shell body in order to form a garbage storing space inside said shell body, the bottom of said "L" shaped partition plate being inclined to form a drainage; and
- a conveyer, provided at the bottom of said garbage storing space, for conveying the garbage inside said garbage storing space toward said garbage outlet.

5,377,707

DISHWASHER PUMP AND FILTRATION SYSTEM

Raymond A. Young, Jr., Kinston, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 1, 1993, Ser. No. 146,596

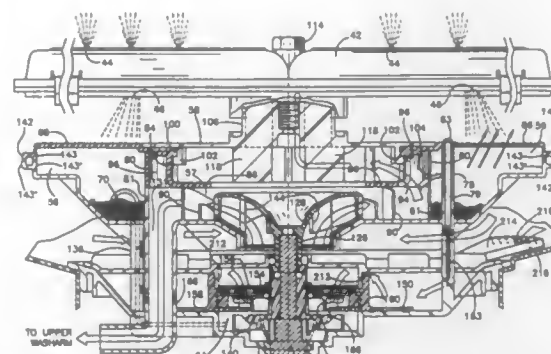
Int. Cl.⁶ A47L 15/23, 15/42

U.S. Cl. 134—104.1

8 Claims

1. A dishwasher comprising a tub having a sump at the bottom thereof, a pump assembly mounted in said tub at said sump, and a wash arm rotatably mounted on said pump assembly

bly for spraying wash liquid into the interior of said tub, said pump assembly having a drain outlet and a motor operable alternatively in wash and drain modes, said pump assembly including a recirculation impeller and a drain impeller each operatively connected to a drive shaft of said motor and rotatable in both of said modes, said pump assembly further includ-



ing a filtration chamber having an outlet to said sump, wherein when in said recirculation mode said recirculation impeller conducts wash liquid from said sump to said wash arm and said filtration chamber and said drain impeller conducts wash liquid from said sump to said filtration chamber and, when in said drain mode said drain impeller conducts wash liquid from said sump and from said filtration chamber to said drain outlet.

5,377,708

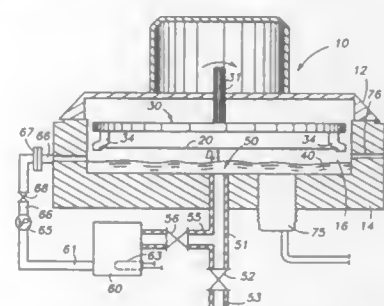
MULTI-STATION SEMICONDUCTOR PROCESSOR WITH VOLATILIZATION

Eric J. Bergman; Timothy J. Reardon, both of Kalispell; Raymond F. Thompson, Lakeside, and Aleksander Owczarz, Kalispell, all of Mont., assignors to Semitool, Inc., Kalispell, Mont. Continuation of Ser. No. 665,942, Mar. 6, 1991, Pat. No. 5,235,995, which is a continuation-in-part of Ser. No. 526,057, May 21, 1990, Pat. No. 5,238,500, and Ser. No. 328,888, Mar. 27, 1989, Pat. No. 5,168,886, and Ser. No. 526,243, May 18, 1990, Pat. No. 5,168,887, and Ser. No. 464,101, Jan. 12, 1990, Pat. No. 5,085,560, and Ser. No. 526,052, May 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 524,239, May 15, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 53,524

Int. Cl.⁶ B08B 3/10

U.S. Cl. 134—105

83 Claims



50. An apparatus for processing wafers, such as semiconductor wafers, magnetic disks, and optical disks, comprising:

- a framework;
- at least one processing bowl mounted to the framework;
- at least one chemical supply for supplying at least one processing chemical to said at least one processing bowl;
- at least one processing head mounted for controlled movement between at least one processing position wherein the processing head is in an operative relationship with the processing bowl to define a substantially enclosed processing chamber, and at least one loading position wherein the

processing head is removed from the processing bowl for loading or unloading wafers from the at least one processing head;

- at least one wafer support mounted upon said at least one processing head; said at least one wafer support serving to detachably support wafers thereon; said at least one wafer support being mounted upon the processing head to allow controlled motion of the wafer support and any wafer held therein, at least when the processing head is in said at least one processing position;
- a second processing chamber;
- a wafer transfer for moving wafers to and from said at least one processing bowl, and to and from said second processing chamber.

5,377,709

ULTRASONIC VIBRATOR DEVICE FOR ULTRASONICALLY CLEANING WORKPIECE

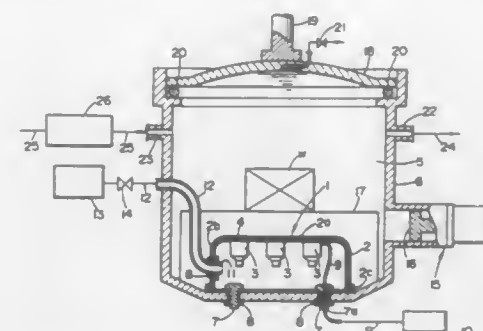
Yoshihide Shibano, 1629-1-12, Oyama-cho, Machida-shi, Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,815

Claims priority, application Japan, Oct. 22, 1992, 4-073801[U] Int. Cl.⁶ B08B 3/12

U.S. Cl. 134—184

13 Claims



1. An ultrasonic vibrator device for ultrasonically cleaning a workpiece, comprising:

- a cleaning tank for sealingly storing a deaerated cleaning solution with a workpiece immersed therein;
- a sealed container disposed in said cleaning tank;
- an ultrasonic vibrator disposed in said sealed container for radiating ultrasonic energy into the cleaning solution in said cleaning tank; and
- pressurizing means for introducing a fluid under pressure into said sealed container to pressurize the interior space of said sealed container to a pressure substantially equal to the pressure in said cleaning tank.

5,377,710

TEMPORARY CRUTCH TIP CLEAT ASSEMBLY

Jay M. Laser, 3100 Windsor Dr., Landisville, Pa. 17538-1341

Filed Jun. 10, 1994, Ser. No. 258,548

Int. Cl.⁶ A45B 3/00

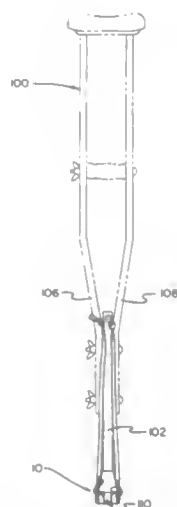
U.S. Cl. 135—66

7 Claims

1. A temporary crutch tip cleat assembly for preventing lateral slippage of a ground engaging tip of a crutch during use on icy and/or snowy supporting surfaces, the temporary crutch cleat assembly comprising:

- a stud plate attachable to a ground engagement surface of a crutch tip for piercing engagement with ice and/or snow covered ground surfaces, the stud plate comprising a generally horizontal discoid plate formed of rigid material and having a plurality of sharp teeth projecting downwardly perpendicular to the major plane thereof, the plate also having a diameter corresponding to the outside diameter of the crutch tip, the plate further having straight wall sections extending around the circumference of said plate

defining a cup-shaped receptacle wherein the crutch tip may be inserted for keeping the plate in alignment with the crutch tip, the wall having a pair of lateral holes formed through opposing sides thereof intermediate a wall rim and the discoid plate; and attachment means whereby the stud plate may be removably attached to the crutch, the attachment means comprising a pair of essentially identical resilient flexible bands, each



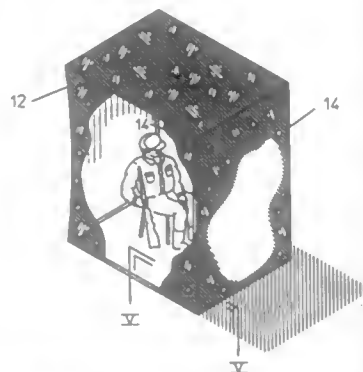
band having a loop formed on a first end thereof, each loop extending through one of the lateral holes of the stud plate wall whereby securing the bands to the plate, each band also having an enlarged knot formed on a second end thereof whereby the second end may be secured to the crutch by jamming the knot within the V-shaped juncture of a convergent pair of crutch arm support members, the stud plate being secured to the crutch by the longitudinal bias of the taut bands.

5,377,711

CAMOUFLAGE BLIND FOR HUNTERS
Mark Mueller, 3606 Central Ave., Catawissa, Mo. 63015
Filed Jul. 2, 1991, Ser. No. 724,856
Int. Cl.⁶ E04H 15/00

U.S. Cl. 135—87

15 Claims



1. A blind apparatus to camouflage persons present in natural habitat of wild game, said apparatus comprising:
a skeletal frame including top and bottom rectangular frame parts vertically spaced by posts for defining a camouflage area for a person,
a light impervious casing defining a top, a back and opposed sides supported by said skeletal frame for preventing emission of light by said casing from the camouflage area; and
netting attachable for support by said frame to form an

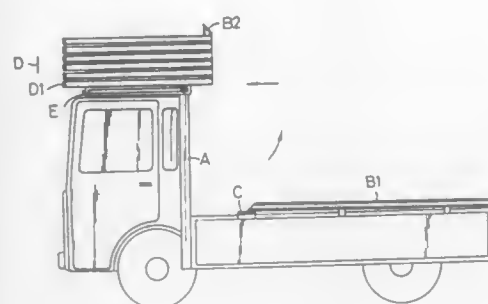
enclosure spanning an entire frontal opening formed by said skeletal frame while allowing line of sight through said opening in the netting for visual access to the natural habitat, said netting having a coloration for avoiding reflection of ambient light from interior of said blind.

5,377,712

REVOLVING AND SLIDING CANOPY
Chen Lung-Sheng, No. 222, Sec. 1, Po-An Street, Su-Lin Tsen, Taipei Hsien, Taiwan, Prov. of China
Filed Aug. 24, 1993, Ser. No. 111,340
Int. Cl.⁶ E04H 15/06

U.S. Cl. 135—88.13

1 Claim



1. A revolving and sliding canopy having a plurality of canopy portions, said canopy comprising
a one-way controller having a rotating shaft with an end portion;
a pivotable platform having a head portion, and a body portion said platform being connected to the first one of said canopy portions at one side of said first portion, and having a rectangular chute-gap within the body portion of said platform and an adjusting screw built on said head portion in order to contact with said rotating shaft;
a rectangular ingot fixed to said end portion of said rotating shaft such that said shaft is rotated by said platform when said platform is moved;
a slide piece;
a wheel mounted between said slide piece and said end portion of said rotating shaft so as to engage one side of said platform;
a main slide track and a vice slide track which have an intersection therebetween; and
a slide supporting buttress located underneath said intersection of said main slide track and said vice slide track, said slide piece being guided to slide between said main slide track and said vice slide track.

5,377,713

VALVE

Kilian Friederich, Plochingen; Winfried Michell, Reichenbach, and Diedrich von Behr, Hochdorf, all of Germany, assignors to Cerasiv GmbH Innovatives Keramik-Engineering, Plochingen, Germany

Filed Sep. 17, 1993, Ser. No. 119,099

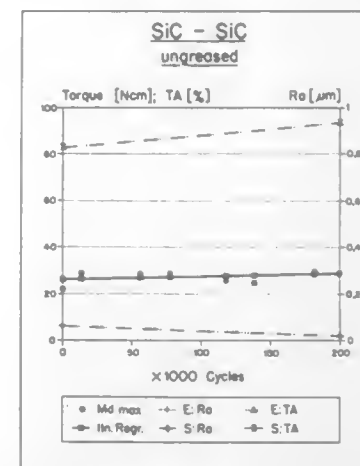
Claims priority, application Germany, Mar. 18, 1991, 4108732
Int. Cl.⁶ E03B 1/00

U.S. Cl. 137—1

14 Claims

1. A valve with at least two ceramic sealing disks in contact with one another wherein each sealing disk is of a silicon carbide ceramic having a density of at least 3.05 g/cm³ and produced by at least one of a pressureless sintering, hot press-

ing, or by pressureless sintering followed by a hot isostatic pressing operation, and has a functional surface with a profile



bearing percentage of at least 75% and a mean roughness Ra in the range of from 0.01 to 0.1 μm.

5,377,714

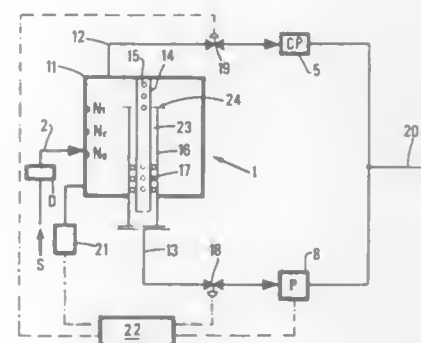
DEVICE AND METHOD FOR TRANSFERRING A MULTIPHASE TYPE EFFLUENT IN A SINGLE PIPE
Jean-François Glannesini, Saint Cloud, and Emile Levallois, Courbevoie, both of France, assignors to Institut Français du Pétrole, Rueil Malmaison, France

Filed Dec. 28, 1993, Ser. No. 174,279

Claims priority, application France, Dec. 29, 1992, 92 15984
Int. Cl.⁶ F04D 25/16, 31/00

U.S. Cl. 137—2

17 Claims



1. A method for transferring a fluid from a source of fluid or of effluents to a point of destination in a single pipe, this fluid containing at least a liquid phase and at least a gaseous phase, the composition of the fluid at any time being expressed by the value of the volumetric ratio GLR of the gas phase to the liquid phase, by using pumping means (P, 8) adapted for communicating to the fluid a sufficient pressure for providing its transfer to a point of destination as long as the GLR value is less than a predetermined threshold value, and compression means (CP, 5), comprising:

determining the GLR value of the fluid,
diverting a fraction at least of the gas phase towards said compression means (CP, 5) so as to communicate to said fraction a sufficient pressure necessary to its transfer, as long as the value of the volumetric ratio GLR is greater than said threshold value (V₃), and
recombining the near total of the suitably compressed gas phase with the fluid coming from the pumping means (P, 8) and conveying the whole consisting of the gaseous phase and of the fluid through a single pipe towards said

point of destination, the whole of the recombined fluid containing at least a gaseous part.

5,377,715

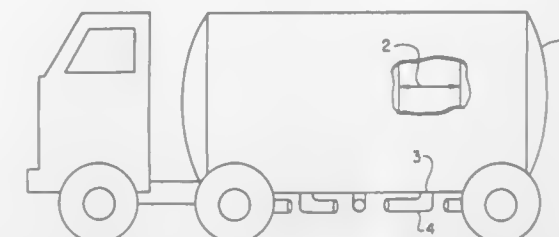
METHOD FOR ELIMINATING HAZARDOUS MATERIALS FROM CARGO TANK WET LINES
Roy W. Andenmatten, 10 Eva La., Farmingville, N.Y. 11738, and Ronald P. Andenmatten, 27 Otsego Ave., Dix Hills, N.Y. 11746

Filed Nov. 9, 1992, Ser. No. 973,487

Int. Cl.⁶ B05B 3/14

U.S. Cl. 137—15

6 Claims



1. A method for removing residual liquid in each cargo tank external loading line of a cargo tank vehicle after a cargo tank compartment associated with the cargo tank external loading line has been loaded comprising the steps of:

- closing off each cargo tank external loading line to provide a generally sealed chamber within the cargo tank external loading line;
- pressurizing the cargo tank external loading line to force the residual liquid out of the cargo tank external loading line; and
- leading the residual liquid from the cargo tank external loading line into the cargo tank compartment associated with the cargo tank external loading line through a separate purging conduit having an inlet end in flow communication with the generally sealed chamber within the cargo tank external loading line and an outlet end in flow communication with the cargo tank compartment, such that the cargo tank external loading line is substantially liquid free to allow safer transport and ensure minimal risk of spillage in the event of an under-ride accident.

5,377,716

PRESSURE SURGE RESISTANT RUPTURE DISK ASSEMBLY

Stephen P. Farwell, Owasso, and Zhenggang Wang, Tulsa, both of Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Aug. 16, 1993, Ser. No. 106,447

Int. Cl.⁶ F16K 17/40, 47/14

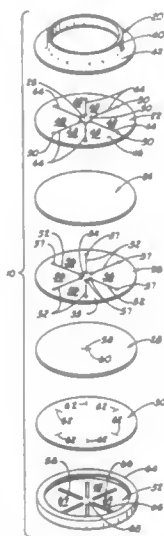
U.S. Cl. 137—68.1

12 Claims

1. A pressure surge resistant rupture disk assembly adapted to be sealingly clamped across a pressurized fluid containing passageway comprising:

- a first rupture member having a predetermined rupture pressure;
- a second rupture member having a predetermined rupture pressure and having at least one opening therein for allowing a restricted pressurized fluid flow therethrough, said second rupture member facing said pressurized fluid; and
- at least one flow restricting member positioned on the side of said second rupture member facing said pressurized fluid having at least one opening therein for further and sub-

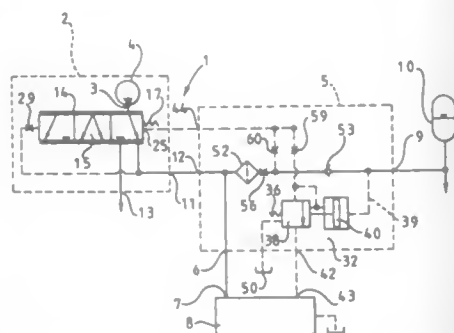
stantially restricting pressurized fluid flow therethrough and through said second rupture member, such that a means to control the flow control means so as to provide fluid flow to the second device.



momentary pressure surge does not rupture either said first rupture member or said second rupture member.

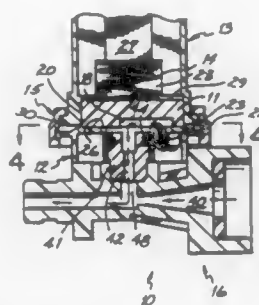
5,377,717
HYDRAULIC FLOW CONTROL VALVE ASSEMBLIES
Graham J. Toogood, Cheltenham, and Michael S. Barnes, Springbank, both of England, assignors to Ultra Hydraulics Limited, Staverton, England
Filed Mar. 15, 1994, Ser. No. 212,995
Claims priority, application United Kingdom, Mar. 24, 1993, 9306131

Int. Cl.⁶ G05D 11/03
U.S. Cl. 137—101 10 Claims



1. A hydraulic flow control valve assembly comprising an inlet port for input fluid flow from a pump, a first outlet port for output fluid flow to a first fluid pressure actuated device, a second outlet port for output fluid flow to a second fluid pressure actuated device, an excess flow port for output fluid flow to at least one further fluid device, flow control means for controlling the fluid flow from the inlet port to the outlet ports and the excess flow port, a load sensing port for communicating a load-dependent pressure signal from the first device to the flow control means to control the flow control means so as to provide priority fluid flow to the first device, switching means for cutting off said load-dependent pressure signal from the flow control means when the pressure within the second device falls below a predetermined value so as to provide for fluid flow from the flow control means to the second device, and pressure difference sensing means for communicating the pressure difference across a restrictor, due to flow of fluid through the restrictor when fluid flow from the flow control means to the second device takes place, to the flow control

5,377,718
SELECTING AND DISPENSING VALVE
William F. Sand, Cincinnati, Ohio, assignor to Hydro Systems Company, Cincinnati, Ohio
Filed Jul. 9, 1993, Ser. No. 89,249
Int. Cl.⁶ F16K 11/02
U.S. Cl. 137—625.11 18 Claims



1. A selector valve comprising:
a port plate having a flat face;
at least one outlet port and at least two inlet ports in said face, said inlet ports being disposed about said outlet port;
a sealing disc having a flat sealing face for disposition in engagement with said port plate face;
said flat sealing face of said sealing disc engaging and sealing against said port plate face;
said sealing disc being rotatable about an axis;
a knob for rotating said disc about said axis, said disc being operably engaged by said knob for rotation and said disc being movable, with respect to said knob, in a direction parallel to said axis,
said sealing disc having a channel in said sealing face, said channel extending radially outward in said face with respect to said axis; and
said disc being rotatable with respect to said port plate for interconnecting a selected inlet port with said outlet port through said channel while other inlet ports are blocked by said flat sealing face of said sealing disc.

5,377,719
PNEUMATIC VALVE, PARTICULARLY FOR CONTROL OF COMPRESSED-AIR-OPERATED MEMBRANE PUMPS

Lars Gyllinder, deceased, late of Stockholm; by Anne Marie Gyllinder, legal representative, heir; by Britt Gyllinder, legal representative, heir, and by Lena H. Blomquist, legal representative, heir, all of Sweden, assignors to Dominator Maskin AB, Sweden

PCT No. PCT/SE89/00212, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO89/10485, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 18, 1989, Ser. No. 598,725
Claims priority, application Sweden, Apr. 18, 1988, 8801423
Int. Cl.⁶ F15B 13/01; F04B 9/12

U.S. Cl. 137—625.63 6 Claims

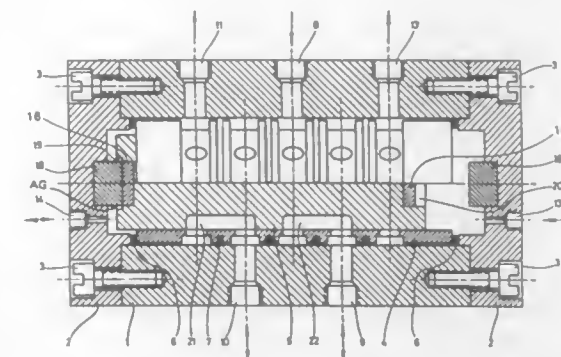
1. A pneumatic valve comprising a valve body (1) having a longitudinal valve bore extending therethrough, said valve bore being closed at both opposed ends via valve body ends (2), and each of said valve body ends (2) having an associated control air gate (13, 14) communicating with one end of said valve bore;

a plurality of gates (8-12) communicating with a side wall portion of said valve body (1) for channeling a fluid through said pneumatic valve;
a plunger (5) being slidably located within said valve bore, said plunger (5) having two annular recesses (21, 22)

formed in an exterior surface thereof and said two annular recesses (21, 22) being positioned, upon movement of said plunger (5) within said valve bore relative to said plurality of gates (8-12), for selectively guiding the fluid to desired ones of said plurality of gates (8-12); and

magnetic means for magnetically retaining said plunger in a desired one of first and second end positions of said valve bore;

wherein said magnetic means for magnetically retaining said plunger in an end position of said valve bore comprises two first mating magnetic members, one of said two first mating magnetic members is supported on each opposed end of said plunger, and two second mating magnetic members, one of said two second mating magnetic members is supported on each said valve body end, and one pair of said first and second mating magnetic members contact one another when said plunger is in the first of the two end positions of said valve; each pair of said first and second mating magnetic members, when in contact with one another, generates a magnetic retaining force therebetween of between about 5-200 mbar, and the retaining force is only great enough to insure that said plunger (5) is retained in a desired end position, until a sufficient minimum control pressure, which will guarantee that said plunger will travel from one end position to the other

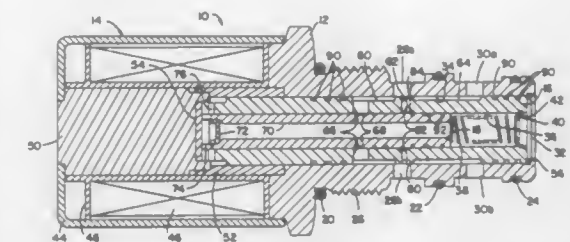


opposed end position, is supplied via said associated control air gate (13, 14) but the retaining force is also sufficiently small enough so that the retaining force is only effective when said first and second mating magnetic members are closely adjacent one another so that the retaining force does not appreciably interfere with motion of said plunger when traveling from the first end position to the second end position;

the retaining force is negligible once one of said two first mating magnetic members is separated from its associated second mating magnetic member by a distance of about 1.0 mm;

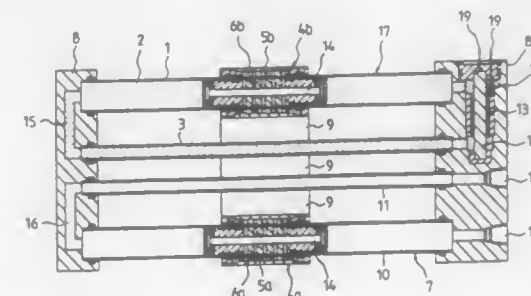
said two first mating magnetic members comprises a pair of permanent magnets and said two second mating magnetic members comprises a pair of soft iron cores; and each opposed end of said plunger is provided with a cylindrical projection which defines a cavity for receiving one of said first mating magnetic members therein, said cylindrical projection having an inner diameter slightly larger than an exterior diameter of the associated second mating magnetic member so that, as said associated second mating magnetic member is received within said cylindrical projection, an air gap is formed therebetween which allows air to escape and provide air cushioning as said first and second magnetic members are brought into engagement with one another.

5,377,720
PROPORTIONAL PRESSURE REDUCING AND RELIEVING VALVE
Thomas J. Stobbs, Brookfield, and James R. Ward, Milwaukee, both of Wis., assignors to Applied Power Inc., Butler, Wis.
Filed Nov. 18, 1993, Ser. No. 154,235
Int. Cl.⁶ F15B 13/04
U.S. Cl. 137—625.65 7 Claims



1. A pressure reducing and relieving valve, comprising:
a valve body having a pressure inlet port, a pressure relief port and a control port, said valve body defining an axial main bore;
a main spool slidably received in said main bore, said main spool being tubular from end to end and defining within it a sub-bore which is co-axial with said main bore, said main spool being axially moveable between a first position in which communication is established between said relief and control ports and a second position in which communication is established between said inlet and control ports;
a quill slidably received in said sub-bore, said quill having a passageway extending therethrough so as to establish communication through said quill from one end of said main spool to the other end of said main spool; and
means for exerting an operating force on said main spool for moving said main spool from one of said first and second positions to the other said position;
wherein a feedback pressure chamber is defined between said quill and said main spool, said feedback pressure chamber being in communication with said control port and exerting an axial force on said main spool which opposes said operating force.

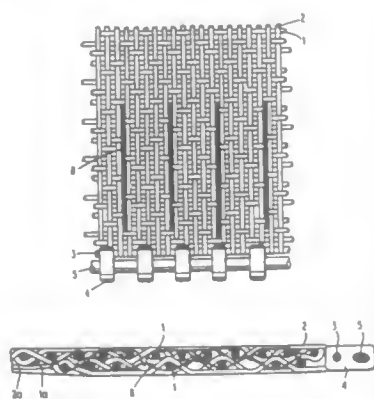
5,377,721
CONTROL APPARATUS FOR ELECTROVISCOUS FLUID
Noriaki Kiyohiro, Kofu, and Kazutoshi Ito, Aichi, both of Japan, assignors to CKD Corporation, Aichi, Japan
Filed Jan. 18, 1994, Ser. No. 182,555
Int. Cl.⁶ F15C 1/04
U.S. Cl. 137—807 6 Claims



1. A control apparatus for controlling an electroviscous fluid, the apparatus comprising:
a pair of electrodes between which the electroviscous fluid is disposed; and
control means for applying pulses of positive and negative

voltages alternately across the electrodes to control viscosity of the electroviscous fluid, said control means applying each pulse of positive voltage and negative voltage gradually so that the positive and negative voltages are applied as nearly-trapezoidal pulse signal waveforms.

5,377,722
FOLDED SPIRAL SEAM INCLUDING LONGITUDINAL BONDING STITCH
 Erkki Jaala, Tampere, Finland, assignor to Tamfelt Oy Ab, Tampere, Finland
 Filed Jan. 22, 1993, Ser. No. 7,883
 Claims priority, application Finland, Feb. 24, 1992, 920810
 Int. Cl.⁶ D03D 13/00; D21F 7/10; F16G 3/02
 U.S. Cl. 139—383 AA 12 Claims

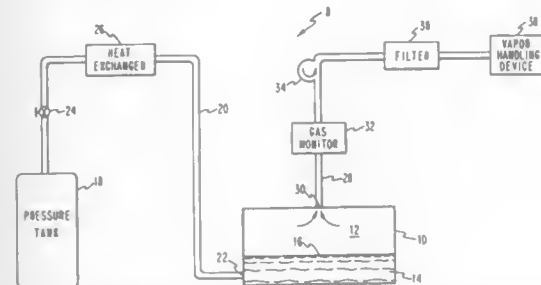


1. A method for forming a seam in a wire gauze in a paper machine, wherein the wire gauze has ends, a thickness, a wear or contact surface, a longitudinal direction in the intended direction of travel, and a transverse direction, which method comprises reducing the ends of the wire gauze by removing gauze material from the wear surface of the wire; folding the ends of the wire portion with the reduced thickness on the wear surface of the wire thereby forming a double gauze structure within the area of the portion with the reduced thickness; forming loops at the fold with warp threads at the fold form loops to which a seam spiral is attachable; and bonding the folded end portion to the wire gauze by sewing a bonding stitch through the double portion; wherein at least part of the bonding stitch is sewn as stitches running in the longitudinal direction of the wire with suitable spacings in the transverse direction of the wire in warp interspaces between the warp threads so that the thread of the bonding stitch lies below the contact surfaces of the warp threads.

5,377,723
METHOD AND APPARATUS FOR VENTING A STORAGE VESSEL
 Henry T. Hilliard, Jr., 3822 Piping Rock, Houston, Tex. 77027; Jerry B. Roach, Houston, and Gary N. Lawrence, Friendswood, both of Tex., assignors to Henry T. Hilliard, Jr., Houston, Tex.
 Filed Sep. 3, 1993, Ser. No. 117,397
 Int. Cl.⁶ F17C 5/00

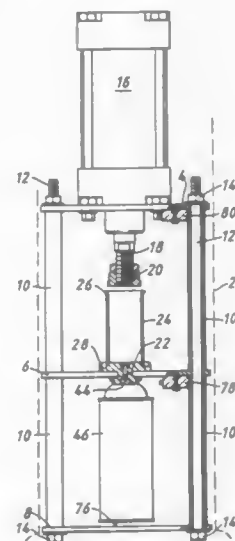
U.S. Cl. 141—4 8 Claims
 1. A method for venting vapors from a storage vessel, comprising the steps of:
 (i) connecting a fill line to a storage vessel containing vapors;
 (ii) connecting a vapor recovery line to said vessel;
 (iii) releasing a gas into said fill line;
 (iv) reducing the pressure on said gas to auto-refrigerate said gas;
 (v) introducing said gas in said vessel to establish a uniform interface between said gas and said vapors in said vessel;

(vi) forcing said vapors into said vapor recovery line until said gas is detected in said vapor recovery line;
 (vii) removing condensed liquids from said vapors in said vapor recovery line;



(viii) increasing the combustibility of said vapors in said vapor recovery line by combining said vapors with a high BTU source material in said vapor recovery line; and
 (ix) burning said vapors.

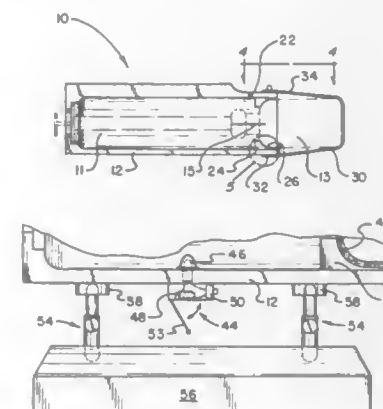
5,377,724
AEROSOL CAN FILLER
 George F. Ray, Green Lane, Chessington, Surrey KT9 2DT, United Kingdom
 Filed Aug. 6, 1992, Ser. No. 925,856
 Int. Cl.⁶ B65B 3/00
 U.S. Cl. 141—20 6 Claims



1. An aerosol dispenser filling apparatus comprising a cylinder (24) having a lower aerosol can valve engaging portion (36) for engaging an aerosol can around a periphery of the can's valve extension, the cylinder being removably mounted to a part (6) of the apparatus above an aerosol can receiving position, a piston (20) mounted in the apparatus, and means (16) to actuate the piston for movement with the cylinder to force liquid within the cylinder through a valve (44) of an aerosol (46) mounted to the valve engaging portion, wherein the piston is mounted for movement from a position outside and above the cylinder when mounted in the apparatus, and wherein the cylinder has an upper open mouth (26) having an inner surface opening outwardly to provide an upper extremity of greater diameter than that of the piston so as to provide a gradually decreasing entry for the piston into the cylinder and to guide the piston into the cylinder, wherein the aerosol can valve engaging portion has a cylindrical protrusion (52) within a hole (40) in the engaging portion for engaging an interior of the valve extension of the nozzle of the aerosol can without open-

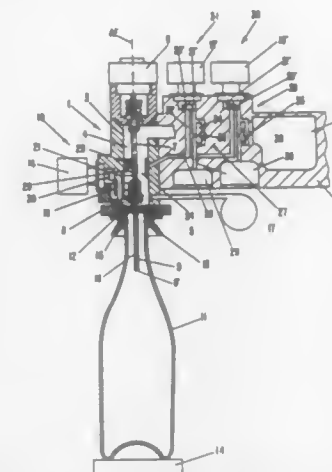
ing the aerosol can valve, the protrusion having a central conduit (56) for communicating from the interior (58) of the cylinder to a valve duct (60) of the aerosol can fitted into the apparatus such that when the piston is moved downwardly, the aerosol can valve will be opened by increased pressure from the liquid due to the piston, wherein the aerosol can valve engaging portion (36) comprises means for attaching the cylinder to an exterior periphery of the valve extension of the nozzle of the aerosol can, the means for attaching together with the cylindrical protrusion (52) defining an annular recess for receiving the valve extension of the nozzle.

5,377,725
VISUAL MAGNIFICATION APPARATUS FOR A SYRINGE
 Charles W. Neff, 953 Chartrand Ct., Ballwin, Mo. 63011-1515
 Filed Sep. 15, 1993, Ser. No. 120,917
 Int. Cl.⁶ B65B 3/00
 U.S. Cl. 141—27 8 Claims



1. A new and improved visual magnification apparatus for a syringe, comprising:
 a base portion,
 a lens support portion attached to said base portion,
 a magnifying lens attached to said lens support portion, and
 an illumination assembly supported by said base portion, said illumination assembly located on said base portion in opposition to said magnifying lens, such that said illumination assembly provides backlighting for the syringe when the syringe is positioned between said magnifying lens and said illumination assembly, wherein said illumination assembly includes a light source, a battery for powering said light source, and a switch connected between said light source and said battery for controlling power from said battery to said light source, wherein said illumination assembly also includes a housing for housing said light source, said battery, and said switch, wherein said battery, said switch, and said housing are supported on a back side of said base portion such that said base portion is located between a syringe and said battery, said switch, and said illumination assembly housing,
 wherein a syringe can be placed on said base portion and magnified by said magnifying lens, wherein said base portion includes an internally concave cross-sectional contour having a bottommost valley portion, such that a generally cylindrically-shaped syringe tends to rest in said valley portion under the influence of gravity, wherein said base portion includes an ampule-supporting portion, wherein said base portion includes a slot portion capable of supporting a top portion of a syringe placed on said base portion.

5,377,726
ARRANGEMENT FOR FILLING BOTTLES OR SIMILAR CONTAINERS
 Ludwig Clüsserath, Bad Kreuznach, Germany, assignor to Seltz Enzinger Noll Maschinenbau Aktiengesellschaft, Mannheim, Germany
 Filed Jul. 30, 1993, Ser. No. 99,602
 Claims priority, application Germany, Aug. 1, 1992, 4225476
 Int. Cl.⁶ B65B 31/00
 U.S. Cl. 141—39 20 Claims

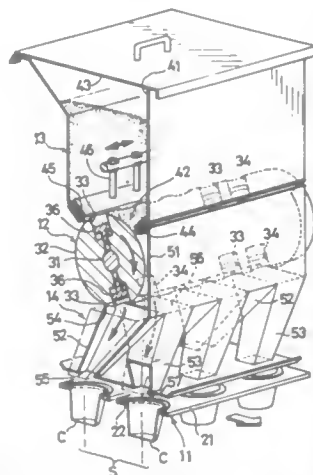


1. An arrangement for filling bottles or similar containers with a liquid filling material under counterpressure, comprising:
 at least one filling element defining a liquid flow path having a controlled liquid flow valve therein for filling a container with liquid, said filling element including seal means whereby during a filling process said container is sealingly engaged;
 at least one gas channel connected to a gas chamber means that communicates with an interior of said container for supplying gas thereto in a controlled manner from said gas chamber means, and for withdrawing to said gas chamber means return gas that is displaced from said container during a filling process; and
 said gas channel having at least one gas path disposed therein, said at least one gas path having first channel portion provided, in a series arrangement, with means for determining an effective flow cross-section thereof in response to direction of gas flow therein, and with an individually activatable control valve means, whereby said means for determining an effective flow cross-section automatically controls said flow cross-section such that for said return gas, which flows through said gas path in a first direction, said flow cross-section is smaller than for said gas, which flows through said gas path in a second, opposite direction.

5,377,727
APPARATUS FOR MEASURING OUT AND FILLING PARTICULATE OR GRANULAR MATERIAL
 Michio Ueda; Tetsuya Inchi; Takao Miki, and Hisanori Hamada, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Takushima, Japan
 Filed Oct. 8, 1993, Ser. No. 133,257
 Claims priority, application Japan, Oct. 8, 1992, 4-70226
 Int. Cl.⁶ B65B 43/00
 U.S. Cl. 141—178 5 Claims

1. An apparatus for measuring out and filling a particulate or granular material comprising:
 an intermittently drivable container conveyor extending through a filling station for a plurality of containers as

arranged in a feed direction to be fed and stopped at the filling station at a time by the operation of the conveyor, a horizontal feed roller disposed at the filling station and extending across the path of transport by the conveyor thereabove, the feed roller being formed in its outer surface with measuring pockets spaced axially of the roller and equal in number to the number of containers stopped at the filling station, a particulate or granular material hopper disposed above the feed roller, and



a filling chute disposed between the conveyor and the feed roller, the filling chute having a plurality of upward inlets arranged axially of the roller in a direction perpendicular to the direction of the transport path so as to communicate with the respective measuring pockets when the pockets are directed downward and a plurality of downward outlets arranged parallel to the direction of the conveyor transport path so as to be opposed from above to the respective containers stopped at the station.

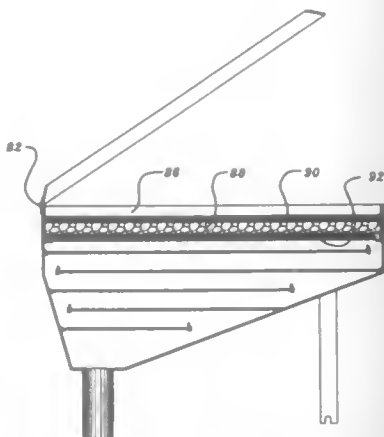
5,377,728

OIL FUNNEL WITH FILTER SYSTEM

Kevin L. McLeighton, 1602 Laramie, Marysville, Kans. 66508
Filed Sep. 3, 1993, Ser. No. 115,578
Int. Cl.⁶ B65B 39/00

U.S. Cl. 141—333

2 Claims



1. An apparatus for funneling waste oil into a drum and for filtering particulate matter from such oil comprising, in combination:

four trapezoidal sidewalls, each trapezoidal sidewall having an upper edge, a lower edge and side edges, two opposed trapezoidal sidewalls being of a similar configuration, the remaining two opposed trapezoidal sidewalls constituting

a large trapezoidal sidewall and a small trapezoidal sidewall, the side edges of the four trapezoidal sidewalls coupled to form a non-symmetric truncated pyramid having a vertical axis;

a drain pipe having a circular cross-section with a vertical axis coincident with the axis of the pyramid, the drain pipe having a lower end with external threads for coupling with an opening of a drum, the drain pipe having an upper end;

a coupling plate having a circular opening in the center thereof with means coupling the opening to the upper end of the drain pipe, the coupling plate having a rectangular periphery coupled to the lower edges of the pyramid; four rectangular sidewalls, each rectangular sidewall having an upper edge, a lower edge and side edges, two opposed rectangular side walls being of a similar configuration, the remaining two opposed rectangular sidewalls constituting a large rectangular sidewall and a small rectangular sidewall with the lower edges of the four rectangular sidewalls coupled to the upper edges of the truncated sidewalls and the side edges of the four rectangular sidewalls coupled to thereby form an extension of the pyramid, vertically extending support means depending from the apparatus sidewall having notches for positioning over the peripheral flange of a drum;

a splash guard extending upwardly from the upper edges of the rectangular sidewalls, the splash guard being formed of four trapezoidal side walls, each having an upper edge, a lower edge and side edges with the lower edges having hinges thereon, the hinges thereof pivotally coupled to the upper edges of the rectangular side walls and with the side edges thereof coupled to form an upper truncated pyramid with the upper edges thereof forming an area less than the area of the lower edges thereof; and

a filter supported within the apparatus.

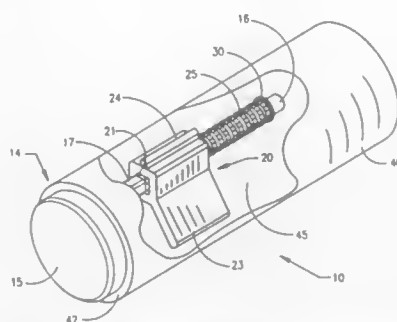
5,377,729

CHECK VALVE DEVICE FOR A FUEL PUMP NOZZLE

Alan J. Reep, Box 111, Stanley, N. Dak. 58784
Filed Dec. 13, 1993, Ser. No. 165,198
Int. Cl.⁶ B67D 5/00

U.S. Cl. 141—392

2 Claims



1. A check valve device for a fuel pump nozzle comprising: a support member having a bore therethrough and being engageable in a passage of said nozzle near a dispensing end thereof; a stopper which comprises a plug member and an elongate stem which is fixedly attached to said plug member which is biasedly adapted to seat in said dispensing end of said nozzle to substantially close a passage through said nozzle and which retractably slides out said dispensing end, effected by flow liquid dispensed through said nozzle, said stem being adapted for sliding and not rotating in said bore, said stem having an expanded portion to restrict sliding of said stem in said bore and to space said plug member from said support member; a spring mounted about said stem to bias said plug member

to close said passage to prevent liquid in said nozzle from leaking therefrom; and
a stop member removeably fastened about said stem to provide an abutment against which said spring engages for urging said plug member to seat into said dispensing end of said nozzle.

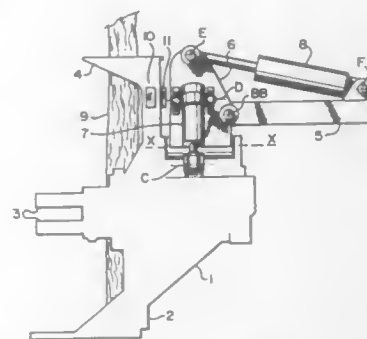
5,377,730

APPARATUS TO STABILIZE A CUT TREE IN THE VERTICAL POSITION DURING MOVEMENT BY A FELLER-BUNCHER

Douglas D. Hamilton, Mount Royal, Canada, assignor to Logging Development Corporation, Villa Mount Royal, Canada
Filed Nov. 2, 1992, Ser. No. 970,170
Int. Cl.⁶ A01G 23/08; B27B 1/00

U.S. Cl. 144—3 D

6 Claims



1. A load stabilizing means for elongated objects fixed by grapple means at or near one end and held substantially vertically comprising:

- (a) hydraulic cylinder means associated with said grapple means to permit universal adjustment of the longitudinal axis of said elongated objects with respect to the vertical;
- (b) hydraulic power and control means to actuate said cylinders;
- (c) sensing means associated with said grapple means to detect deviations in the attitude of the elongated object from the vertical and to transmit a corrective signal to the hydraulic power and control means; and
- (d) means in the hydraulic power and control means to receive and signal and convert it to a flow of hydraulic oil to the said cylinder means.

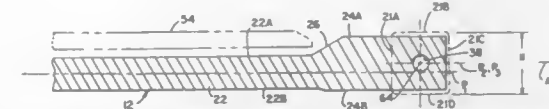
5,377,731

NARROW KERF SAW BLADE DISC FOR TREE FELLING HEAD

Allan J. Wildey, Paris, Canada, assignor to FMG Timberjack, Inc., Woodstock, Canada
Filed Dec. 15, 1993, Ser. No. 167,610
Int. Cl.⁶ B27B 33/08

U.S. Cl. 144—241

7 Claims



1. A disc for a circular saw blade of a tree felling head of a type which has cutting teeth fixed about a periphery of the disc and is rotated about a generally vertical axis so that the teeth cut a generally horizontal kerf through a standing tree, comprising:

- a circular disc plate of a certain thickness having an upper surface, a lower surface and a central plane midway between said upper and lower surfaces; and
- a rim around said disc plate of a different thickness than said

thickness of said disc plate, said rim having an upper surface, a lower surface and a central plane midway between said upper and lower surfaces of said rim, said central plane of said rim being offset from said central plane of said disc plate;

a plurality of tooth holders carried by said rim at angularly spaced locations about a periphery thereof, each said tooth holder mounting only a single cutting tooth that defines a cutting plane which is a central plane of a kerf produced by said tooth; wherein said cutting plane is offset from said central plane of said plate on the side of said central plane toward said upper surface of said plate.

5,377,732

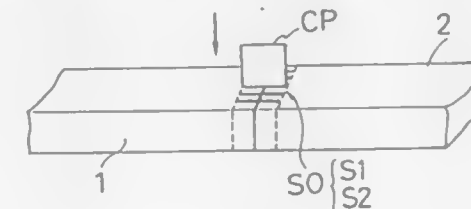
WOOD JOINING STRUCTURE AND METHOD THEREOF

Tsuyoshi Fujii, and Atsushi Miyatake, both of Ibaragi, Japan, assignors to Forestry and Forest Products Research Institute, Ibaragi, Japan

Division of Ser. No. 37,008, Mar. 25, 1993. This application Sep. 23, 1993, Ser. No. 126,127
Int. Cl.⁶ B27F 1/00

U.S. Cl. 144—347

20 Claims



1. A method for joining two wooden members each including a respective end portion, comprising the steps of: forming a plurality of slits in each end portion; abutting said end portions such that the slits of one of said end portions are aligned with the slits of the other of said end portions; fixing said end portions together with temporary fixing means; applying an adhesive agent to interior surfaces of said slits; inserting connecting plates into said aligned slits for connecting the abutted end portions of said wooden members and said connecting plates being affixed within said aligned slits upon hardening of said adhesive agent.

5,377,733

STORAGE APPARATUS FOR CARDS

Michael A. Halley, 7538 Hagen Ct., Hamilton, Ohio 45011, and John M. Neuhart, 7689 Athenia Dr., Cincinnati, Ohio 45244
Filed Mar. 23, 1994, Ser. No. 216,612

Int. Cl.⁶ A45C 11/18

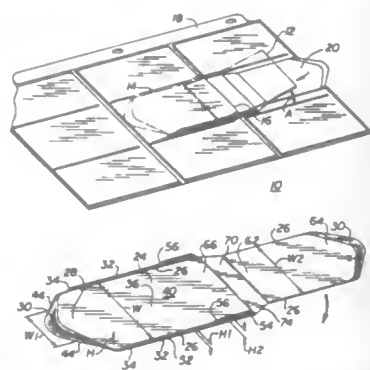
U.S. Cl. 150—147

16 Claims

1. A card storage apparatus for storing a card in a longitudinally extending pocket having an opening, said card storage apparatus comprising:

- a thin tool having a longitudinally extending flat insertion panel with a panel width smaller than the opening of the pocket,
- said panel having longitudinally extending side edges and insertion panel front and back ends,
- at least one longitudinally extending flange having a tapered

forward end and extending upward from a front side of said tool along a corresponding one of said side edges, and



a tapered edge at said front end for spreading apart the opening of the pocket.

5,377,734

HIGH EFFICIENCY ALL TERRAIN BICYCLE OR MOTORCYCLE TIRE

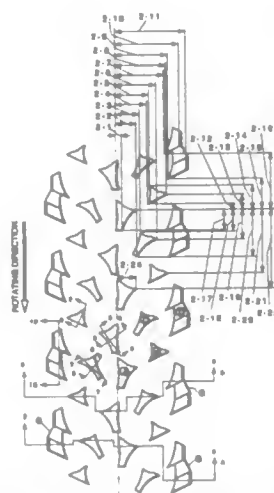
Gary G. Klein, and Darrell W. Voss, both of Chehalis, Wash., assignors to Klein Bicycle Corporation, Chehalis, Wash.

Filed Dec. 13, 1991, Ser. No. 805,516

Int. Cl.⁶ B60C 11/11

U.S. Cl. 152—209 R

9 Claims



1. In a light-weight, high performance, all-terrain tire for two-wheeled vehicles having a rubber impregnated fabric tire casing and a plurality of rows of discrete, rubber tread blocks molded thereon, said tire casing having two sidewall portions joined by a tread portion and means for securing said tire to a rim for inflation with air to a predetermined pressure, said tire having a centerline, the improvement wherein said plurality of rows of discrete tread blocks are arranged in circumferential rows, the tread blocks in the rows being overlapped a predetermined degree to permit a smooth shift of load from one block back to another with a minimum of casing hysteresis, and include a circumferentially extending linear array of elongated side tread blocks disposed to the lateral sides, respectively, of said tread portion, each said side tread block comprised of a first portion spaced toward said centerline and a second portion being spaced further from said centerline than said first portion and having outside edges which extends down the sidewall of said casing for a predetermined distance, and means forming a space laterally directed between said first and second portions, the side tread blocks on one side of said centerline being mirror images and circumferentially spaced relative to the side tread blocks on the other side of said centerline, said

tire further including a circumferential row of a substantially triangularly-shaped tread blocks to each side of said centerline, respectively, and adjacent said rows of side tread blocks, respectively, and correspondingly circumferentially spaced.

5,377,735

ANTI-SKID DEVICE FOR MOTOR VEHICLES

Peter Zeiser, Aalen-Wasserralfingen, and Anton Wolf, Ellenberg, both of Germany, assignors to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Unterkochen, Germany

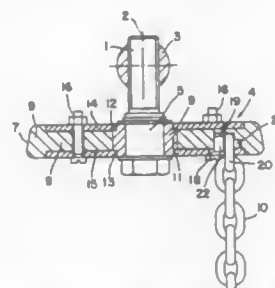
Filed Aug. 26, 1993, Ser. No. 112,111

Claims priority, application Germany, Sep. 2, 1992, 4229677

Int. Cl.⁶ B60C 27/02

U.S. Cl. 152—214

7 Claims



1. An anti-skid device for motor vehicles, said device having a holder rotatable along an axis of rotation, said holder being operatively associated with a wheel of said motor vehicle for driving said holder into rotational motion; a plurality of chain strands forming anti-skid means being connected, at one end thereof, to said holder, the ends of each of each of said plurality of chain strands not connected to said holder being propelled beneath said vehicle wheel driving said holder into said rotational motion as a result of the effect of centrifugal force; said holder being provided with a hub for a friction wheel forming part of said anti-skid device, said friction wheel being made from an elastic material, said friction wheel having a circumference which can be forced against a flank of said vehicle wheel; and a first annular plate forming a connecting member for said plurality of chain strands; wherein said hub is provided with a first central ring bar, and said friction wheel is provided with a second ring bar; said first and second ring bars having substantially the same axial width; said first plate forming said connecting member being disposed beneath said first and second ring bars and forms, together with a second annular plate disposed above said first and second ring bars, a pair of clamping plates; said pair of clamping plates being pressed against side faces of said first and second ring bars by screw connections; said second ring bar provided on said friction wheel defining chambers opened in a direction towards said first plate; and means for anchoring ends of said end links of said chain strands connected to said holder, said ends of said end links being placed through slots defined in said first plate, said slots preceding said chambers defined in said second ring bar.

5,377,736

DRIVEN AXLE VEHICLE INFLATION SYSTEM

Clyde G. Stech, LaGrange, Tex., assignor to MARKS-RMS, Inc., Corpus Christi, Tex.

Filed Nov. 18, 1993, Ser. No. 154,066

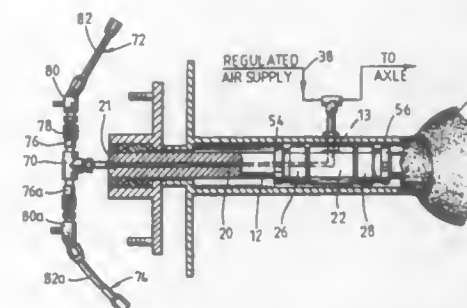
Int. Cl.⁶ B60C 23/00

U.S. Cl. 152—417

4 Claims

1. An air inflation system for tires on a vehicle having at least one driven axle with at least one pneumatic tire at each end of each axle and said vehicle having an air supply comprising, an air line connected to the air supply, said axle including a longitudinally extending air passageway therein, and a radially extending air passageway connected to the longitudinal passageway and extending out of the side of the axle,

an air connection between the longitudinal air passageway and at least one tire at the end of the axle, and a rotatable air coupling connected between the air line and the radially extending air passageway including, a stationary tubular sleeve surrounding the axle and having first and second ends and having a port in fluid communication between the air line and the radially extending air passageway, first and second seal means positioned at and sealing against the first and second ends, respectively, of the



sleeve, said first and second seal means rotatable with the axle and sealingly engaging the axle, said first and second seal means each including a longitudinally movable tubular member surrounding the axle and coaxially aligned with the sleeve, and said first and second seal means include beveled sealing surfaces and the ends of the sleeve include coating beveled ends, and spring means biasing the first and second seal means into sealing engagement with the first and second ends of the sleeve.

5,377,737

SCREEN RETRACTOR MECHANISM

Mamoru Moriya, and Mitsuhiro Chino, both of Tokyo, Japan, assignors to Seiki Hanbai Co., Ltd., Tokyo, Japan

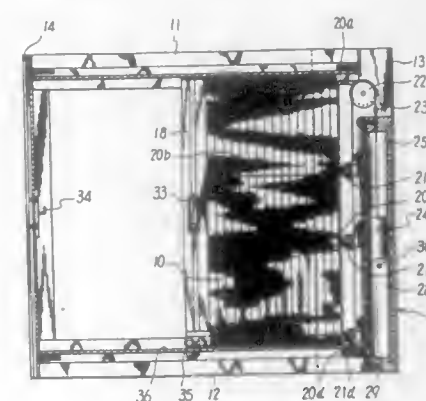
Filed Jun. 21, 1993, Ser. No. 78,823

Claims priority, application Japan, Dec. 17, 1992, 4-091697[U]; Jan. 25, 1993, 5-005110[U]

Int. Cl.⁶ E06B 3/94

U.S. Cl. 160—84.06

11 Claims



1. A screen retractor mechanism including an accordion type flexible stretchable screen having a large number of unfoldably foldable pleats in the fashion of an accordion, said accordion screen having the base end thereof fixedly connected to a receptacle box frame constituting one of side frame members of a screen support frame structure, and a movable frame attached to the fore end of said screen slidably along said screen support frame structure for opening and closing said accordion screen, characterized in that said screen retractor mechanism comprises:

a plural number of tension cords threaded through said screen and each having one end thereof fixedly connected

to said movable frame and the other end led into said receptacle box frame via a turn-guide member; a pendant weight connected to the other ends of said tension cords to hang down within said receptacle box frame and constantly applying a biasing force to said movable frame in a screen opening direction; and a resistant means adapted to apply a resistive force at least against descending movement of said pendant weight as soon as said pendant weight reaches a certain lowered position close to a lowest stop position in each screen opening stroke.

5,377,738

SHUTTER ASSEMBLIES AND LATHS FOR THEM

George A. Cooper, Shropshire, England, assignor to Alsecur Limited, Telford, England

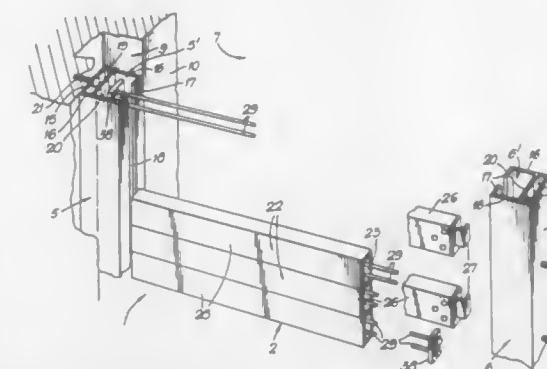
Filed Mar. 17, 1993, Ser. No. 32,508

Claims priority, application United Kingdom, Mar. 18, 1992, 9205834

Int. Cl.⁶ E06B 9/08

U.S. Cl. 160—133

21 Claims



1. A shutter assembly comprises a pair of side channels, a plurality of laths extending between said side channels, at least one of said laths having a main body and a multi-stranded member, each end of said multi-stranded member being retained to a respective said side channel by retention means associated with said multi-stranded member, wherein said multi-stranded member is adapted to extend as a consequence of a heavy blow being applied to the shutter assembly.

5,377,739

SECURITY DEVICE FOR CONTROLLING WINDOW BLINDS

Terry Kirby, 524 N. Manus Dr., Dallas, Tex. 75224

Filed Dec. 23, 1993, Ser. No. 172,182

Int. Cl.⁶ E05F 15/00

U.S. Cl. 160—188

5 Claims

1. A new and improved security device for controlling window blinds by automatically periodically lifting and lowering a single slat of a conventional blind set to simulate human activity to an observer located outside the window, the security device for controlling window blinds comprising:

clip means of transparent rigid material such as plastic removedly hookedly connected to the inside of a slat in a tilted-down closed window blind set, the slat being of the type having an inside and an outside, the clip means having an attachment point; fairlead means formed as a plurality of screw-eyes fixedly disposed across the top of the window blind; controller means for periodically motivating the blind slat, the controller means comprising: housing means having a plurality of apertures extending from the inside to the outside of the housing, the housing

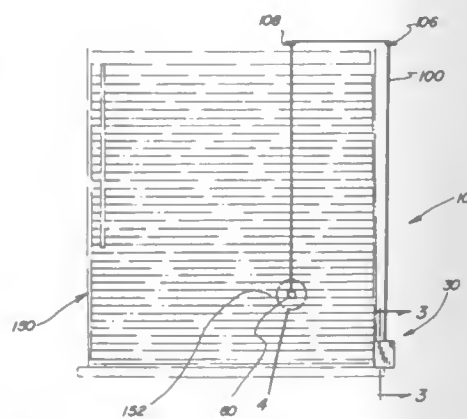
means being fixedly mounted to a surface adjacent to the window blind;

electrical energy source means formed as a battery functionally removedly mounted inside the housing means;

timer means wherefrom an electrical control signal is emitted from time to time, the control signal having a fixed period, the control signal also having a fixed duration, the timer means fixedly mounted inside the housing means, the timer means also being operationally electrically connected to the electrical energy source means;

an electrical motor fixedly mounted inside the housing means, the electrical motor having a motor shaft extending therefrom, the motor shaft having drive coupling means formed as a spur gear fixedly coaxially coupled thereto, the electrical motor being functionally electrically connected to the energy source means wherefrom motivating power is derived, the electrical motor also being functionally electrically connected to the timer means wherefrom control signals are derived whereby the motor is periodically started and stopped, the motor having a mechanical response to the timer control signal such that a single complete revolution of the motor shaft occurs during the duration of one period of the control signal;

actuator means whereby rotational motion of the motor shaft is converted to oscillatory linear motion to lift and lower the blind slat, the actuator means comprising:



a drive shaft journaled within the housing means, the drive shaft being parallel with the motor shaft, the drive shaft having drive coupling means such as a pinion fixedly coaxially coupled thereto in cooperative relationship with the drive coupling means of the motor shaft, the drive shaft further having a swivel coupling rotationally eccentrically connected thereto whereby rotation of the drive shaft causes the swivel coupling to orbit the drive shaft whereby the swivel coupling describes a relatively large circular excursion as compared to the excursion of a corresponding point on the surface of the drive shaft; and

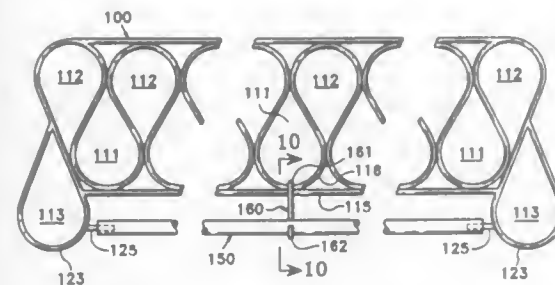
a cord fixedly connected at one end to the attachment point of the clip means, the cord extending generally vertically upward through the fairlead means then horizontally across the top of the window, the cord additionally extending generally vertically downward from the fairlead means through an aperture of the housing means, the cord further being fixedly connected at the free end to the eccentrically operating swivel coupling whereby a linear pulling then relaxing oscillatory motion is imparted to the cord as the swivel coupling revolves around the drive shaft, the linear oscillatory motion of the cord being transferred to the clip means and thence to the blind slat whereby the slat is raised then lowered at a speed determined by the duration of the timer control signal, the repetition rate of each raising and lowering action being determined by the period of the timer control signal.

5,377,740 MULTI-PURPOSE WINDOW TREATMENT SUPPORT DEVICE

Paul D. Gilley, and Margaret R. Gilley, both of 120 N. First St., Eufaula, Okla. 74432
Continuation-in-part of Ser. No. 964,159, Oct. 20, 1992, Pat. No. 5,238,044. This application May 24, 1993, Ser. No. 67,358
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.⁶ A47H 13/14

U.S. Cl. 160—348

11 Claims



1. A method for creating decorative treatment arrangements utilizing a relatively flat elongated support device having a row of spaced-apart material receiving apertures extending along the length thereof and having an elongated fabric rod positioned a spaced distance from and parallel to said row of apertures, the method comprising the steps of:

folding a plurality of sections of a first length of decorative material;

passing the folded sections through respective apertures in the support device with the folded portion of each section projecting forward of its respective aperture;

artistically arranging the material in selected ones of the projecting folded portions to form decorative shapes;

folding and passing other selected ones of the projecting folded portions through the opening between the said row of apertures and the support rod to form a valance forward of the support rod; and

mounting the support device and fabric thereon in a vertical plane in front of the area to be decorated with the said decorative shapes facing forwardly therefrom.

5,377,741 METHOD OF FORMING METAL MATRIX COMPOSITES BY USE OF AN IMMERSION CASTING TECHNIQUE

John T. Burke, Hockessin, Del., assignor to Lanxide Technology Company, LP, Newark, Del.
Continuation of Ser. No. 951,972, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 671,049, Mar. 18, 1991, Pat. No. 5,150,747, which is a continuation of Ser. No. 269,371, Nov. 10, 1988, Pat. No. 5,000,249. This application Oct. 13, 1993, Ser. No. 136,482

The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.
Int. Cl.⁶ B22D 19/14

U.S. Cl. 164—97

20 Claims

1. A method for forming a metal matrix composite body, comprising:

forming a pool of molten matrix metal;

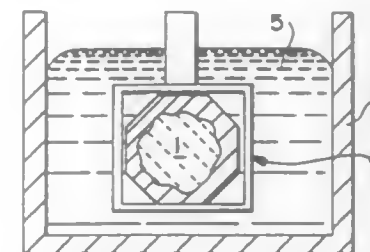
forming at least one preform comprising a permeable mass of a substantially non-reactive filler material;

completely immersing said at least one preform beneath the surface of said pool;

spontaneously infiltrating at least a portion of said at least one preform with molten matrix metal, thereby forming at least one at least partially infiltrated preform;

adding a second metal to said pool of molten matrix metal,

said second metal having a composition which differs from the composition of said matrix metal; and



infiltrating at least a portion of said preform with said second metal, thereby modifying at least one property of said at least one at least partially infiltrated preform.

5,377,742 PROCESS FOR OBTAINING BIMATERIAL PARTS BY CASTING AN ALLOY AROUND AN INSERT COATED WITH A METAL FILM

Philippe Jarry, Grenoble, France, assignor to Pechiney Recherche, Courbevoie, France
Filed Mar. 4, 1993, Ser. No. 26,680

Claims priority, application France, Mar. 4, 1992, 92 02798
Int. Cl.⁶ B22D 19/02

U.S. Cl. 164—100

13 Claims

1. A process for obtaining bimaterial parts comprising removing an oxide layer from a metal insert by a vacuum treatment, coating the resulting insert with a titanium based film by physical vapor deposition, placing the coated insert in a mold, and casting an aluminum alloy around the coated insert.

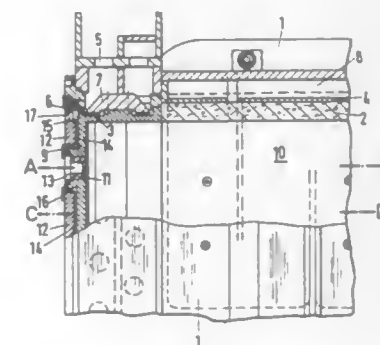
5,377,743 MOLD FOR HORIZONTAL CONTINUOUS CASTING

Joachim v. Schnakenburg, Hillesheim; Dieter Perings, Bielefeld; Siegfried Wagner, Dahlem; Franz Keutgen, Lissendorf; Rüdiger Winterhager, Freudenberg, and Peter Stadler, Siegen, all of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Jul. 16, 1993, Ser. No. 92,552
Claims priority, application Germany, Jul. 22, 1992, 4224590
Int. Cl.⁶ B22D 11/04, 11/10

U.S. Cl. 164—440

5 Claims



1. A mold for horizontal continuous casting of steel for producing large-size slab cross sections, the mold comprising a water-cooled metal casing forming a mold cavity for a slab, the mold cavity having a pour-in side and defining a free cross-sectional area, and a metal plate for closing the mold cavity on the pour-in side thereof along a portion of the free cross-sectional area of the mold cavity, the metal plate having at least one opening for receiving a break ring, each break ring being connected to a distributor through a casting tube for supplying melt, an end plate which overlaps the metal plate being arranged in front of the metal plate in surface contact therewith,

the end plate being provided with at least one opening which coincides with the at least one opening of the metal plate, the end plate defining ducts for conveying cooling water there-through.

5,377,744 METHOD AND DEVICE FOR CONTINUOUS CASTING AND EXTRUSION

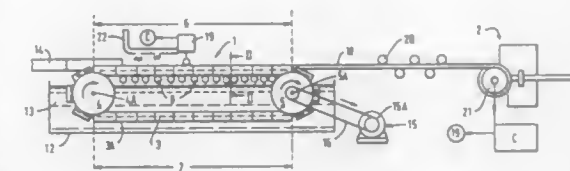
Brian Maddock, West Ridge, England, assignor to Holton Machinery Limited, Dorset, England
PCT No. PCT/GB91/01041, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO92/00156, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 27, 1991, Ser. No. 952,729
Claims priority, application United Kingdom, Jun. 28, 1990, 9014437

Int. Cl.⁶ B22D 11/06

U.S. Cl. 164—476

11 Claims



11. A method for continuously casting and extruding metal comprising the steps of:

continuously feeding molten metal into the upstream end of a moving articulated mould in a continuous casting machine to cast a bar,

feeding the cast bar directly from the continuous casting machine to a continuous extrusion machine,

operating at least one engine to drive the continuous casting machine and the continuous extrusion machine,

applying a compressive axial force to the cast bar characterised in that the drive to the continuous casting machine includes a slipping clutch to govern the compressive force, and

controlling the rate at which the continuous extrusion machine ingests the cast bar by a control unit responsive to the thickness of the bar being cast, whereby the speed of the casting machine is controlled by the speed of the continuous extrusion machine so that the bar thickness and feed rate of molten metal can be maintained constant.

5,377,745 COOLING DEVICE FOR CENTRAL PROCESSING UNIT

Hsin M. Hsieh, No. 6, E. Sec., Chiao Nan Li, Industrial 6th Rd., Pingtung City, Pingtung Hsien, Taiwan, Prov. of China
Filed Nov. 30, 1993, Ser. No. 159,662

Int. Cl.⁶ H01L 23/467

U.S. Cl. 165—80.3

5 Claims

1. A cooling device for a central processing unit, comprising:

a fin means including:

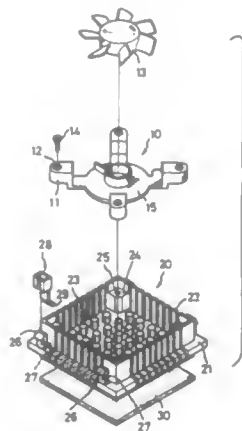
a base plate with an upper side, an underside, and a perimeter; and

a plurality of fins projecting upwardly from said upper side of said base plate and extending along said perimeter of said base plate thereby forming a second perimeter, four ledges being defined between said first-mentioned perimeter and said second perimeter, at least one hook member being formed on each of two opposed said ledges, a slot being formed in said ledge adjacent to each said hook member;

a fan means mounted above said fins; and

a fastener member having a first end for engaging with said hook member and a second hook end passing through said

contact members for electrical connection to said conductors being sealed within said body, the insulation of said contact members being bonded to said body of solid insulating material of high dielectric constant, said hanger having first and second

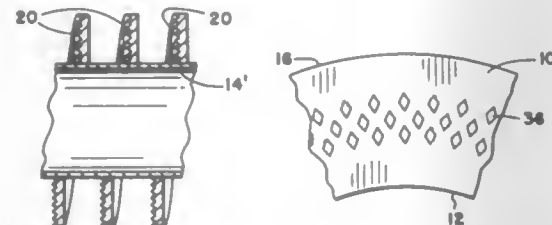


slot to securely retain a central processing unit to said underside of said base plate.

5,377,746
TEXTURIZED FIN
Don R. Reid, Jenks, and Larry J. Sims, Tulsa, both of Okla., assignors to Fintube Limited Partnership, Tulsa, Okla.
Filed Apr. 26, 1993, Ser. No. 51,788
Int. Cl.⁶ F28F 1/36

U.S. Cl. 165—184

2 Claims



1. A finned tube comprising a tube and a texturized solid fin attached thereto, the fin having a proximal edge and an opposite distal edge, the proximal edge being attached helically to the tube so the fin extends outwardly from the tube, the fin having two opposite faces extending from the proximal edge to the distal edge, the two faces of the fin being texturized by regular, small female impressions, wherein the is applied to the tube at a fin attachment station and wherein the fin is directed to the fin attachment station from a fin material supply station, wherein the texturizing rollers are provided with male projections which contact the faces of the fin only in a middle area centered between in the proximal edge and the distal edge and occupying no more than approximately 50% of the area lying between said edges.

5,377,747
ENVIRONMENTALLY SAFE WELLHEAD
Robert G. Didier, Santa Rosa, Calif., assignor to BIW Connector Systems, Inc., Norwood, Mass.
Filed Aug. 11, 1993, Ser. No. 104,647
Int. Cl.⁶ E21B 33/10

U.S. Cl. 166—65.1

10 Claims

1. In an environmentally safe wellhead having a tubing hanger for suspending production tubing and a feedthrough connector for a multi-conductor electrical cable in an oil well casing, the combination wherein said feedthrough connector comprises a metal shell, a body of solid insulating material of high dielectric constant disposed within said shell, insulated

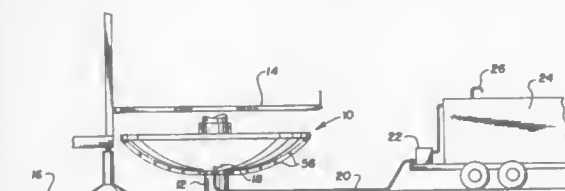


openings formed therethrough and peripheral grooves formed in the exterior wall thereof, O-rings being disposed in said grooves, and in sealing contact with said casing, said first opening accommodating said production tubing, and said second opening accommodating said feedthrough connector.

5,377,748
SPILL CONTAINER FOR WELLS WITH IMPROVED MOUNTING
Gilbert A. Gayaut, Sugarland, Tex., assignor to Pool Company, Houston, Tex.
Filed Sep. 23, 1993, Ser. No. 126,070
Int. Cl.⁶ E21B 33/08

U.S. Cl. 166—81

10 Claims



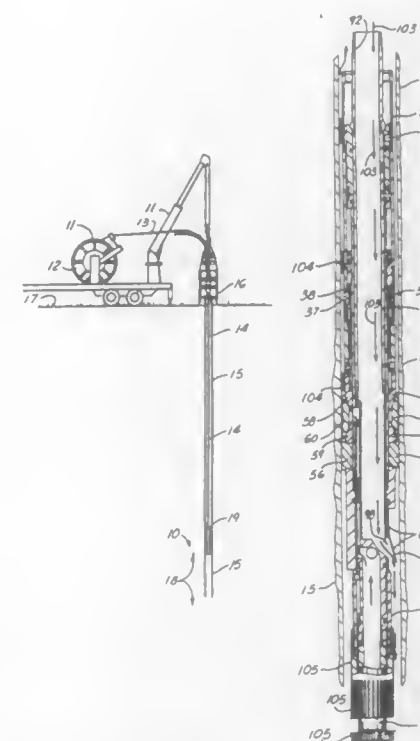
1. A device for use on a tubular portion of a well for reducing spills comprising: at least two sections forming an open-topped container with a bottom, the container being of a size to receive spills around the well, each said section having means thereon for releasably connecting the sections together around the well, means for sealing the sections together to prevent leaks of liquids from the container when the sections are assembled together, and an annular flange centrally located in the bottom of the container of a size and shape to fit around a tubular portion of the well, said annular flange being formed with walls extending upward from said at least two sections, each said wall having means thereon for releasably connecting the walls together around the well tubular portion; means for sealing said center walls together to prevent leaks, and said annular flange having an axial length extending axially upward when said device is installed on a well to a height to prevent liquids in said container from flowing through the annular space between the cylindrical flange and the tubular portion of the well.

5,377,749
APPARATUS FOR SETTING HYDRAULIC PACKERS AND FOR PLACING A GRAVEL PACK IN A DOWNHOLE OIL AND GAS WELL

Phil Barbee, P.O. Box 2005, Gretna, La. 70054-2005
Filed Aug. 12, 1993, Ser. No. 106,348
Int. Cl.⁶ E21B 33/128, 43/04

U.S. Cl. 166—120

16 Claims



1. A hydraulic oil and gas well down hole packer apparatus in well casing below a wellhead at the earth's surface comprising:

- a coil tubing unit having an elongated coil tubing portion, a reel portion for coiling the coil tubing thereupon and a free end portion that can be transmitted into the well casing below the wellhead;
- a tool body having a central, longitudinally extending tool body bore, and an upper end portion with means for connecting the tool body to the coil tubing unit;
- the coil tubing having a bore for transmitting pressurized fluid to the tool body bore;
- the tool body having a hydraulic piston movably disposed thereon between running and setting positions;
- the tool body having a sliding external sleeve portion connected at its lower end for movement with the hydraulic piston;
- slip means on the tool body for engaging the casing to anchor the tool body to the casing at a selected position;
- cone assembly means forming a connection between the piston and the slip means for activating the slip means to grip the well casing;
- annular packer means, expandable by the cone assembly means, for forming a seal between the tool body and the casing at a position below the piston;
- body lock ring means on the tool body for locking the sliding portion after it moves a certain downward distance; and
- the tool body including means for releasing the slips and the annular packer means so that the tool body can be retrieved, said means being operable responsive to tension applied to the tool body external sleeve portion.

5,377,750
SAND SCREEN COMPLETION
Bryant A. Arterbury, Houston; Henry L. Restarick, Plano, and James E. Spangler, Spring, all of Tex., assignors to Halliburton Company, Houston, Tex.

Continuation-in-part of Ser. No. 921,922, Jul. 29, 1992, Pat. No. 5,295,538. This application Mar. 22, 1993, Ser. No. 34,010

The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.⁶ E21B 43/08, 43/10, 43/12

U.S. Cl. 166—205

15 Claims



- Well completion apparatus comprising, in combination: a packer including a body mandrel having a longitudinal bore defining a production flow passage, anchor slips movably mounted on said packer body mandrel for radial expansion into set engagement against a well casing, and an annular seal element mounted on said body mandrel for radial expansion into set engagement against a well casing, thereby providing an annular fluid seal across the annulus between the body mandrel and a well casing in the radially expanded, set condition;
- a landing nipple attached to said packer body mandrel, said landing nipple having tubular mandrel intersected by a longitudinal bore disposed in flow communication with said packer mandrel bore;
- a locking mandrel disposed in releasable interlocking engagement with said landing nipple, said locking mandrel being intersected by a longitudinal bore defining a flow passage in flow communication with said packer mandrel bore; and,
- a sand screen coupled to said locking mandrel, said sand screen including:
 - a tubular mandrel having a bore defining a production flow passage, said mandrel being radially intersected by at least one flow aperture communicating with said flow passage,
 - a plurality of sintered, spherical plastic members along at least a portion of said mandrel covering said flow aperture; and
 - a circulation sub having a tubular mandrel intersected by a radial circulation port and by a longitudinal bore defining a flow passage, and having a tubular sleeve mounted within the bore of said circulation mandrel for opening and closing the circulation port, the mandrel of said circulation sub being suspended from said landing nipple, and said sand screen being concentrically disposed within the bore of said circulation sub.

5,377,751

APPARATUS AND METHOD FOR CENTRALIZING DOWNHOLE PIPE AND BLAST JOINTS

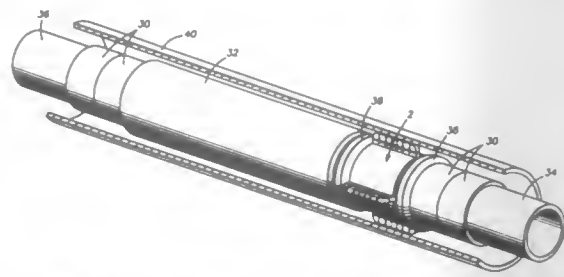
Robert J. Uherek, Stuart, Fla.; Brian Uherek, and George A. Moran, both of Houston, Tex., assignors to Rickert Precision Industries, Plymouth, Mich.

Filed Jan. 29, 1992, Ser. No. 827,622

Int. Cl.⁶ E21B 17/10

U.S. Cl. 166—241.6

9 Claims



5. A blast joint centralizer to be used in a well bore comprising:

- (a) a cylindrical body; and,
- (b) a plurality of segmented stress risers extending outwardly from said body.

5,377,752

GUARD DEVICE

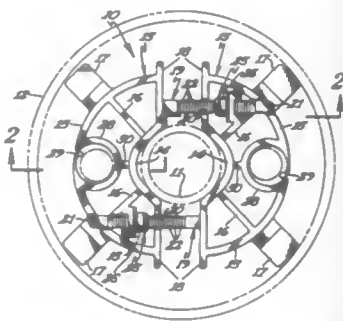
Robert N. Farrara, Hoosick Falls, N.Y., assignor to Campbell Mfg. Inc., Pa.

Filed Mar. 18, 1994, Ser. No. 214,546

Int. Cl.⁶ E21B 17/00

U.S. Cl. 166—241.6

7 Claims



1. A plastic guard device for use with a drop pipe positioned in a well casing having a pump attached to the lower end of the drop pipe, comprising:

- a pair of similar guard sections disposed in opposing relation and including an inner arcuate pipe engaging member and an outer arcuate member spaced outwardly of the inner arcuate member, a plurality of outwardly extending tabs on the outer arcuate member and a plurality of ribs interconnecting the inner and outer arcuate members of each section, means on each section defining a vertical passage through which electrical conductors, safety ropes and similar components may pass;
- each section including an elongate locking member and a lock engaging member, each locking member on one section engaging the lock engaging member on the other section to releasably interlock said sections together so that the inner arcuate members engage the drop pipe and the tabs on the outer arcuate members engage the well casing to thereby retain the drop pipe, electrical conductors and safety ropes in spaced relation with respect to the well casing.

5,377,753

METHOD AND APPARATUS TO IMPROVE THE DISPLACEMENT OF DRILLING FLUID BY CEMENT SLURRIES DURING PRIMARY AND REMEDIAL CEMENTING OPERATIONS, TO IMPROVE CEMENT BOND LOGS AND TO REDUCE OR ELIMINATE GAS MIGRATION PROBLEMS

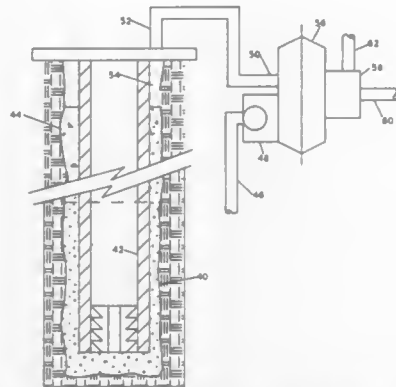
John P. Haberman, Houston, Tex.; Mark Delestatus, New Orleans, La., and Dan G. Brace, Needville, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 24, 1993, Ser. No. 80,547

Int. Cl.⁶ E21B 43/00

U.S. Cl. 166—249

15 Claims



1. A method of improving cement bonds and/or preventing gas migration in cement slurries during set up comprising the step of:

- applying pulsated pressure from the surface to a fluid mixture in an annulus between a wellbore and a casing positioned therein, said fluid mixture containing said cement slurry, said pulsed pressure being applied during substantially the entire setting operation.

5,377,754

PROGRESSIVE FLUID SAMPLING FOR BOREHOLES

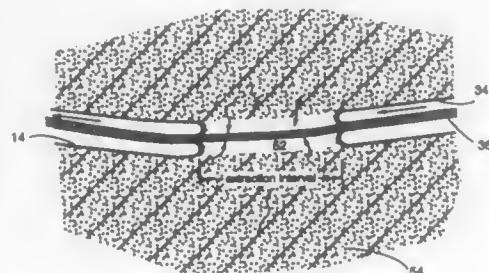
Carl E. Keller, P.O. Box 10129, Santa Fe, N. Mex. 87504-0129

Filed Mar. 2, 1994, Ser. No. 204,876

Int. Cl.⁶ E21B 49/08

U.S. Cl. 166—264

5 Claims



4. A method for continuously sampling along a borehole, having first and second accessible ends, comprising the steps of:

- disposing a first evert membrane through said first end;
- disposing a second evert membrane through said second end in operable proximity to said first evert membrane to define a sampling volume therebetween; and
- inverting said first evert membrane while evert said second evert membrane to continuously move said sampling volume through said borehole.

5,377,755

METHOD AND APPARATUS FOR ACQUIRING AND PROCESSING SUBSURFACE SAMPLES OF CONNATE FLUID

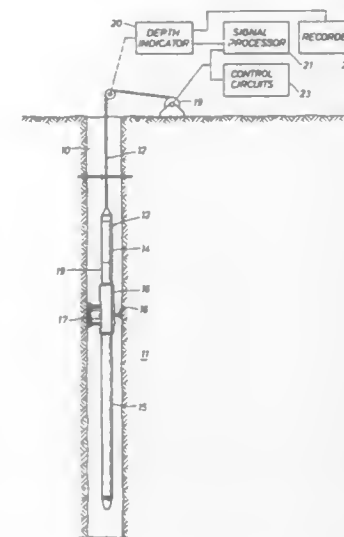
John M. Michaels, Houston; John T. Leder, Bellaire, and James T. Cernosek, Missouri City, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 976,488, Nov. 16, 1992, Pat. No. 5,303,775. This application Apr. 18, 1994, Ser. No. 228,740

Int. Cl.⁶ E21B 49/00

U.S. Cl. 166—264

24 Claims



1. A method of acquiring a phase intact connate fluid sample from a subsurface earth formation for subsequent analysis, by means of a formation testing and sampling instrument having at least one pressure containing sample tank with a movable internal fluid separator therein; in defining first and second variable volume fluid chambers within said sample tank and having pump means in selective communication with said variable volume fluid chambers of said sample tank, said method comprising:

- (a) positioning said formation testing instrument within a well bore with said first variable volume fluid chamber in fluid receiving communication with the formation;
- (b) operating said pump for lowering the fluid pressure within said second variable volume fluid chamber and transferring fluid from said second variable volume fluid chamber; and
- (c) permitting flow of a connate fluid sample from said formation into said sample tank by formation pressure thus filling said first variable volume chamber with said connate fluid sample while maintaining sample pressure thereof substantially at formation pressure.

5,377,756

METHOD FOR PRODUCING LOW PERMEABILITY RESERVOIRS USING A SINGLE WELL

Paul S. Northrop, and James L. Wilson, both of Bakersfield, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 28, 1993, Ser. No. 142,028

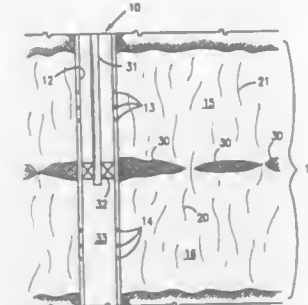
Int. Cl.⁶ E21B 43/24, 43/26, 43/40

U.S. Cl. 166—267

10 Claims

1. A method for recovering connate fluids from a low permeability subterranean reservoir, said method comprising: completing a wellbore into said reservoir; fracturing said reservoir from a first position within said wellbore to create a first vertical fracture system within said reservoir; fracturing said reservoir from a second position within said wellbore to create a second vertical fracture system within said reservoir; said second position being spaced

from said first position within said wellbore whereby there will be only some of the fracture(s) in said first vertical fracture system overlap some of the fracture(s) in said second vertical fracture system whereby a natural,



partial barrier to flow is formed between said fracture systems; and injecting a drive fluid into one of said first or second fracture systems and producing said connate fluids through the other of said first or second fracture systems.

5,377,757

LOW TEMPERATURE EPOXY SYSTEM FOR THROUGH TUBING SQUEEZE IN PROFILE MODIFICATION, REMEDIAL CEMENTING, AND CASING REPAIR

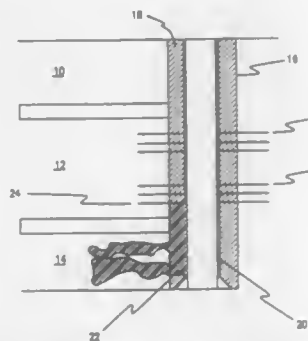
Ricky C. Ng, Dallas, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 994,853, Dec. 22, 1992, Pat. No. 5,295,541, and a continuation-in-part of Ser. No. 35,101, Mar. 19, 1993. This application Dec. 27, 1993, Ser. No. 173,038

Int. Cl.⁶ E21B 29/10, 33/138, 43/24

U.S. Cl. 166—277

47 Claims

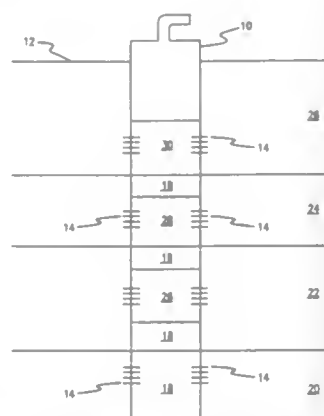


1. A method for repairing a damaged or corroded wellbore casing located within a wellbore comprising:

- a) directing a solidifiable epoxy resin mixture into a damaged or corroded section of said wellbore casing which solidifiable mixture is in an amount sufficient to fill a space or void existing in said damaged or corroded section where said mixture contains a critical amount of a hardener and a curing agent that substantially increases pumpability time of said resin as well as obtaining substantially more complete curing of said resin;
- b) allowing said resin, hardener, and curing agent to remain in said space or void for a time sufficient to form a hardened solid able to more substantially withstand environmental conditions existing in the wellbore while precluding fluid flow therethrough during the recovery of hydrocarbonaceous fluids from an underground formation or reservoir; and
- c) removing any excess solid material from the wellbore so as to form a solid wall bonded to and having a diameter substantially similar to said casing thereby repairing said damaged or corroded section.

5,377,758
METHOD FOR EFFECTIVE PLACEMENT OF A LONG LIFE SCALE INHIBITOR
 Eleanor R. Fieler, Dallas, Tex.; John Hen, Skillman, N.J., and Alfred R. Jennings, Jr., Plano, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
 Filed May 3, 1993, Ser. No. 55,594
 Int. Cl.⁶ E21B 41/02, 43/25
 U.S. Cl. 166—279

9 Claims



1. A method for effective placement of a scale inhibitor in a formation where variable density scale inhibitors are utilized comprising:

- a) loading via a wellbore all productive intervals of the formation with a low density non-reactive fluid which fluid is compatible with the composition of the formation;
- b) injecting a first stage scale inhibitor into the wellbore which inhibitor has a density greater than the non-reactive fluid and is sufficient in density to flow to the bottom of the wellbore so as to be in fluid communication with a lower productive interval of the formation;
- c) injecting thereafter a low density spacer or non-reactive fluid into the wellbore which spacer has a density less than the first stage scale inhibitor;
- d) injecting next a second stage scale inhibitor into the wellbore which inhibitor has a density less than the first stage inhibitor spacer injected in step c) which precludes liquid scale inhibitor from mixing with each other as the second stage inhibitor enters a productive interval above the interval in step b);
- e) injecting a spacer into the wellbore above the second stage scale inhibitor which spacer has a density less than the spacer in step c) and previously injected inhibitor stages thereby preventing mixing of the liquids;
- f) repeating the scale inhibitor stages and spacer injections with decreasing densities of liquids until all desired productive intervals have been treated with scale inhibitor; and
- g) overflushing all intervals of the formation with a non-reactive fluid that has a density greater than any of the previously injected inhibitor stages or spacers thereby forcing them into the intervals and preventing scale build-up.

5,377,759
FORMATION TREATING METHODS
 Billy W. Surles, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
 Filed May 20, 1993, Ser. No. 64,313
 Int. Cl.⁶ F21B 33/138

U.S. Cl. 166—295

1. A method for treating a well penetrating and in fluid communication with at least a portion of a subsurface formation, the temperature of the formation being known, comprising:

- (a) selecting a first oil soluble acid catalyst having a pK in

- the range of 0.1 to 1.0, and a second oil soluble acid catalyst having a pK in the range of 0.8 to 4.0;
- (b) forming a mixture comprising from 1.0 to 10.0 volume percent of the first acid and from 99.0 to 90.0 percent of the second acid;
- (c) providing a treating fluid comprising the polymerizable resin, a polar organic diluent for the resin, and a predetermined concentration of the mixture of the two oil soluble acid catalysts which will cause polymerization of the resin in from 1 to 24 hours at formation temperature;
- (d) injecting said fluid into the formation to enter and saturate at least a portion of the formation adjacent to the well; and
- (e) allowing the injected fluids to remain in the formations for at least four hours to accomplish at least partial polymerization of the resin, forming a consolidated resin-sand mass around the wellbore.

5,377,760
FIBER REINFORCED GEL FOR USE IN SUBTERRANEAN TREATMENT PROCESSES
 LaVaun S. Merrill, Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio
 Continuation-in-part of Ser. No. 856,007, Mar. 20, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 94,913
 Int. Cl.⁶ E21B 33/138

U.S. Cl. 166—295

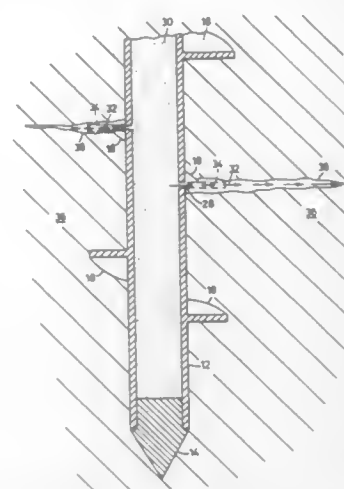
1. A process for plugging an opening in a subterranean formation, comprising the steps of:
- providing a gelation solution comprised of a water soluble crosslinkable polymer and a crosslinking agent;
 - introducing reinforcing fibers, said fibers having a length in the range of about 100 microns to about 3200 microns, into the gelation solution in an amount such that the weight ratio of the fibers to the solution is about 1% to about 60% and the solution can be readily pumped into the subterranean formation;
 - injecting the fiber-containing solution into the formation and into the opening to be plugged, the opening having a width of at least $\frac{1}{4}$ inch; and
 - crosslinking the gelation solution substantially to completion to form a fiber-reinforced crosslinked gel in the opening.

5,377,761
GROUND FRACTURING PROBE
 Keith M. Kosar; H. Glen Gilchrist, both of Calgary; Gordon T. Gnest, Bragg Creek, and Bryan Leach, Calgary, all of Canada, assignors to Golder Associates Ltd., Canada
 Filed Aug. 5, 1993, Ser. No. 102,407
 Int. Cl.⁶ E21B 43/26, 17/22

U.S. Cl. 166—308

17. A ground fracturing probe as defined in claim 16 wherein

said discharge means is in the form of at least one orifice provided in said body within said injection zone, said at least one



orifice communicating with the interior of said body and receiving pressurized fluid therefrom.

5,377,762
BORE SELECTOR
 Edwin C. Turner, Houston, Tex., assignor to Cooper Industries, Inc., Houston, Tex.
 Filed Feb. 9, 1993, Ser. No. 15,487
 Int. Cl.⁶ E21B 34/10
 U.S. Cl. 166—339

18 Claims

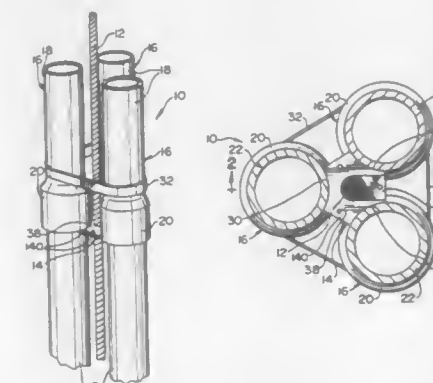


1. A bore selector comprising:
- a housing having a first end with at least a first bore and a second end with at least second and third bores, said housing having a central bore extending between said first and second ends;
 - a conduit member having a flow bore therethrough with a first terminus connected to said first end communicating said flow bore with said first bore and a second terminus adjacent said second end for communicating said flow bore with one of said second or third bores;
 - a yoke disposed within said central bore adjacent said second end and having an aperture therethrough for receiving said second terminus, said yoke being reciprocally mounted about said conduit member for reciprocation of said yoke with respect thereto;
 - a guide disposed on said yoke and about said conduit member for flexing and elastically bending said conduit mem-

ber as said yoke reciprocates with respect to said conduit member and thereby flexing said conduit member to laterally shift said second terminus between a first position where said flow bore communicates with said second bore and a second position where said flow bore communicates with said third bore; and means for reciprocating said yoke to cause said guide to flex said conduit member between said first and second positions.

5,377,763
RISER PIPE ASSEMBLY FOR MARINE APPLICATIONS
 Robert G. Pearce, and Donald D. Baldwin, both of Lincoln, Nebr., assignors to Brunswick Corporation, Lake Forest, Ill.
 Filed Feb. 22, 1994, Ser. No. 199,960
 Int. Cl.⁶ E21B 17/01, 19/02
 U.S. Cl. 166—367

28 Claims



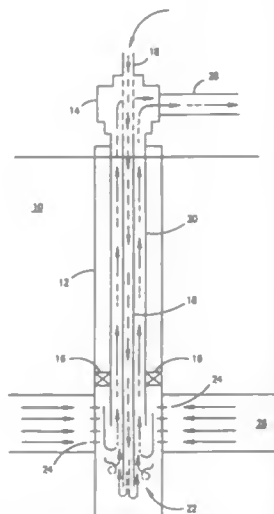
1. A riser pipe assembly for interconnecting a subsea wellhead on an ocean floor with an above-surface platform, comprising:

- at least one cable extending generally between the wellhead and the platform to provide vertical support for the assembly;
 - a plurality of support plates fixed to the cable at predetermined spaced locations therealong; and
 - at least one riser pipe string extending between the wellhead and the platform and including a plurality of riser pipes engaged end-to-end with each pipe including a lower bell-shaped end and an upper spigot-shaped end inserted into the bell-shaped end of the immediately adjacent riser pipe thereabove, the lower bell-shaped end of each riser pipe resting by gravity on and supported by one of said support plates.
19. A riser pipe assembly for interconnecting a subsea wellhead on an ocean floor with an above-surface platform, comprising:
- at least one cable extending generally between the wellhead and the platform to provide vertical support for the assembly;
 - a plurality of support members fixed to the cable at predetermined spaced locations therealong; and
 - at least one riser pipe string extending between the wellhead and the platform and including a plurality of riser pipes freely engaged end-to-end with each pipe including a radially outwardly projecting means for resting by gravity on and supported by one of said support members.

5,377,764
MEANS OF INJECTING CO₂ INTO CIRCULATION TUBING TO FACILITATE CO₂ GAS LIFT
 Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobile Oil Corporation, Fairfax, Va.

Filed Dec. 18, 1992, Ser. No. 992,667
 The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.

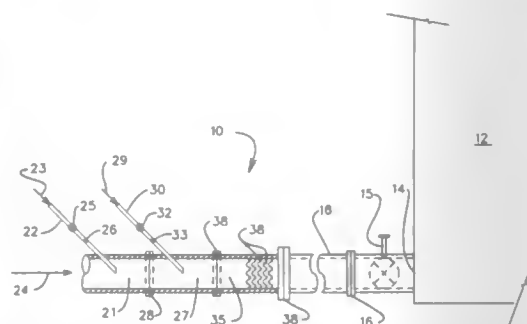
Int. Cl.⁶ F21B 43/00
 U.S. Cl. 166—372 17 Claims



1. A method for removing a heavy or viscous hydrocarbonaceous fluid from a formation comprising:
 - a) flowing oil from a productive interval of a formation into a well; and
 - b) injecting gaseous carbon dioxide by a pre-set time interval or a computer actuated valve means into said well near said productive interval for a time sufficient for the carbon dioxide and hydrocarbonaceous fluid to mix thereby decreasing the fluid's viscosity and facilitating gas lift of a fluid of reduced viscosity to the surface.

5,377,765
METHOD AND MEANS FOR EXTINGUISHING TANK FIRES
 Joseph B. Kaylor, Manassas, Va., assignor to Valkyrie Scientific Proprietary, L.C., Manassas Park, Va.

Filed Feb. 22, 1993, Ser. No. 21,014
 Int. Cl.⁶ A62C 3/06
 U.S. Cl. 169—44 11 Claims



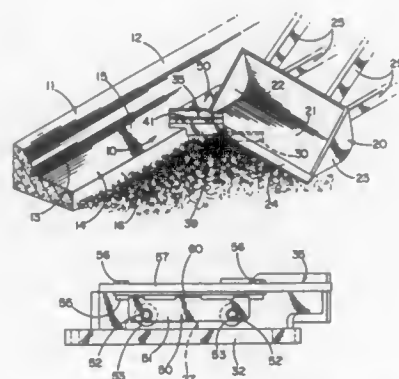
1. A method for extinguishing a fire burning in a tank containing a flammable liquid comprising adding a metered foam concentrate stream to a flowing stream of water in a first zone to obtain a mixture of water and foam concentrate, adding a metered stream of a liquified inert gas selected from the group consisting of liquid carbon dioxide, liquid nitrogen, and mix-

tures thereof into said water and foam concentrate mixture in a second zone downstream of said first zone and allowing the liquified gas to vaporize, dispersing the vaporized inert gas throughout said water and foam concentrate mixture in a third zone, and passing the resulting mixed fluids from said third zone into the tank at a location below the surface of the flammable liquid contained therein to create a multitude of gas filled foam bubbles which rise through the liquid and spread across the liquid surface to form a fire extinguishing foam layer atop the flammable liquid.

5,377,766
APPARATUS FOR CLEANING EXCESS ROADSTONE AWAY FROM A GUTTER

Wayne M. Klinger, Winnebago, Ill., assignor to Northern Illinois Service Co., Rockford, Ill.

Filed Apr. 12, 1993, Ser. No. 45,114
 Int. Cl.⁶ E02F 3/76
 U.S. Cl. 172—782 7 Claims



1. Apparatus for plowing excess roadstone away from an upright outer face of a longitudinally extending concrete gutter having a generally horizontal flag at the upper end of the face in order to establish a substantially level roadbed adjacent the face and a predetermined distance below the flag, said apparatus comprising an implement adapted to be propelled longitudinally along the roadbed in the direction of the gutter, said implement having a pair of spaced end walls and having a front scooping lip extending between said end walls, a blade attached to said implement and projecting forwardly from said lip adjacent one of said end walls and being angled so as to extend outboard of said one end wall, said blade being angled with respect to the direction of travel of said implement and being angled at an obtuse angle relative to said face, said blade having a forward end portion located adjacent said face whereby said blade plows roadstone away from said face upon being propelled forwardly, and a gage associated with said blade and riding along said flag to limit the depth to which said blade plows into said roadstone.

5,377,767
HOLE DIGGER
 Roger R. Briggs, 420 Main Road, Bryanston, Transvaal, South Africa

Continuation of Ser. No. 963,688, Oct. 20, 1992, abandoned.
 This application Nov. 30, 1993, Ser. No. 159,107
 Claims priority, application South Africa, Nov. 18, 1991, 91/9109

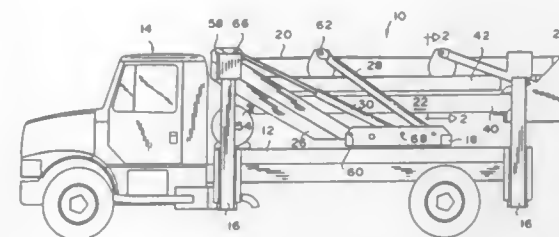
Int. Cl.⁶ E21B 7/02
 U.S. Cl. 173—28 14 Claims

1. A hole digger comprising:
 - A turntable base;
 - a fixed length boom having a first end, a second end, an underside, first and second longitudinally extending spaced side walls and at least one bridging member con-

necting said first and second side walls, said first and second side walls and said bridging member having an inverted U-shaped cross section defining an elongated recess along said underside of said boom;

link means having a lower end pivotally mounted to said turntable base for movement about a horizontal axis and an upper end pivotally mounted to said first end of said boom for movement about a horizontal axis;

a first adjustment means for varying the orientation of the boom relative to the link means;



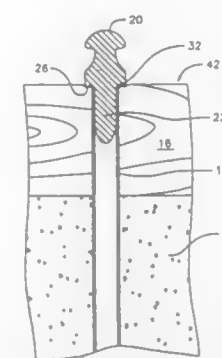
a second adjustment means for varying the orientation of the link means relative to the turntable base;

hole digging means pivotally mounted to said second end of said boom for limited pivotal movement about a horizontal axis relative to said second end of said boom; and

wherein said hole digging means between a storage position wherein said hole digging means is at least partially contained within said elongated recess of said boom and a ground engaging operative position wherein said hole digging means is pivoted away from said elongated recess.

5,377,768
TOOL FOR DRIVING A TUBULAR STAKE
 R. Michael Smith, 404 Western Ave., Apt. 1, Joliet, Ill. 60435
 Continuation of Ser. No. 983,653, Dec. 1, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 134,463

Int. Cl.⁶ E02D 7/04
 U.S. Cl. 173—90 5 Claims



1. A tool for transmitting driving forces to a stake having a wall member defining a hollow end portion of the stake in which the stake is driven through a material and in which the tool has a shaft portion for inserting into the hollow end portion of the stake and a head portion for receiving and conveying an applied impact to the stake member, comprising:
 - an annular groove disposed intermediate the shaft portion and the head portion and adjacent to an entire circumferential exterior of said shaft portion to engage the entire wall member of said hollow end portion of the stake and in which the annular groove forms an annular stop wall member spaced from said shaft portion to limit flaring of the wall member engaged by the annular groove; and
 - a flattening wall member adjacent to said annular stop wall member having a blunt surface positioned substantially transverse to the annular stop wall member and transverse

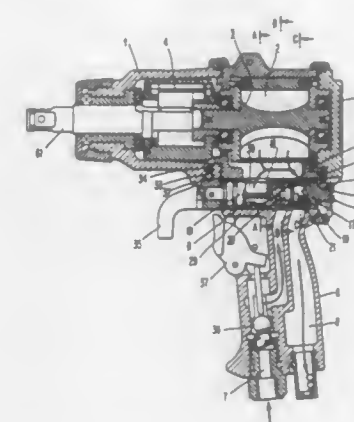
to an axis of said shaft portion to engage and compress the material through which the stake is driven adjacent to and extending away from the annular stop wall member to provide ease in removal of the flattening wall member from the material.

5,377,769
IMPACT WRENCH HAVING AN IMPROVED AIR REGULATOR

Hiromi Hasuo, Osaka; Kunio Suzuki, and Sakichi Minoura, both of Nagoya, all of Japan, assignors to Aichi Toyota Jidosha Kabushikikaisha, Nagoya, Japan

Filed Dec. 2, 1993, Ser. No. 160,210
 Claims priority, application Japan, Dec. 10, 1992, 4-090916
 Int. Cl.⁶ B23B 45/04

U.S. Cl. 173—169 2 Claims



1. An impact wrench having an improved air regulator for producing a fastening or an unfastening torque by rotating an impact clutch via an air motor, said air regulator comprising:
 - a cylindrical pipe provided between a handle and an impact wrench body,
 - an air supply valve movably inserted in a back section of the cylindrical pipe,
 - a changeover valve movably inserted in a front section of the cylindrical pipe,
 - said cylindrical pipe having two air supply inlets,
 - said air supply valve having a plurality of air supply regulating means,
 - said changeover valve having air supply reversing means,
 - said one air supply inlet which is adapted to communicate with the desired one of the air supply regulating means when the air motor is rotated clockwise and counterclockwise,
 - said other air supply inlet which is adapted to communicate with the air supply reversing means when the air motor is rotated counterclockwise and which is adapted not to communicate with the air supply reversing means when the air motor is rotated clockwise,
 - whereby the more compressed air flows to the air motor when the air motor rotates counterclockwise to produce an unfastening torque than when the air motor rotates clockwise to produce a fastening torque.

5,377,770
APPARATUS FOR IMPROVING IMPACT TOOL LUBRICATION

Lester L. Ritter, 37 Leisure World, Mesa City, Ariz. 85206

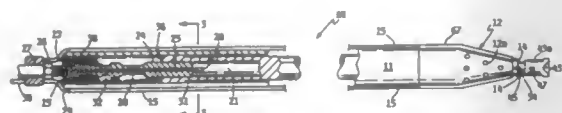
Filed Mar. 23, 1993, Ser. No. 35,939

Int. Cl.⁶ E21B 10/38

U.S. Cl. 175—21 11 Claims

1. In an impact device for tunneling through the ground, having an elongate cylinder with an air reciprocable piston and

hammer therein and means for reciprocating said piston and hammer to cause forwardly or rearwardly impacting against respectively front and rear ends of said cylinder, wherein the forward portion of said cylinder forms a narrowing conical taper joined to a forwardly-projecting shaft, the improvement comprising a front end piece sized for fitting over the forward portion of said cylinder, the front piece having a forward opening sized to permit passage of the forwardly-projecting shaft; a first slot through said forwardly-projecting shaft proximate the front end of said front piece; and a locking key in-



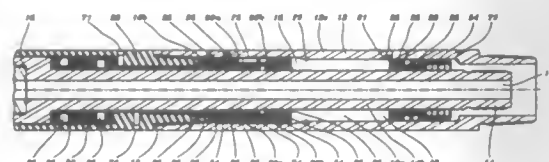
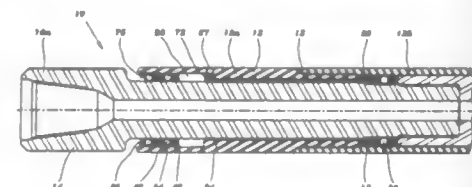
serted through said first slot; at least one slotted passage running along the inside surface of said front piece from the forward opening to the rear edge of said front piece; an enlarged headpiece affixed to said forwardly-projecting shaft at a spaced-apart distance from said front piece forward opening; and at least one fluid conduit along said elongate cylinder and fitted into said at least one slotted passage, said conduit having a front opening in said slotted passage and a rear opening proximate the rear end of said cylinder; and means for coupling a source of fluid to said conduit rear opening.

5,377,771 SEALED BEARING ASSEMBLY USED IN EARTH DRILLING

Kenneth H. Wenzel, Edmonton, Canada, assignor to Vector Oil Tool Ltd., Canada
Filed Nov. 16, 1993, Ser. No. 153,524
Int. Cl.⁶ E21B 4/02

U.S. Cl. 175-107

13 Claims



1. A shock absorber for use with a drilling machine, comprising:
a pair of oppositely disposed components adapted for connection into a drill string and positioned on opposite sides of a resilient member;
said resilient member being held between rigid rings around and separate from the components;
each said ring being secured to one of said oppositely disposed components and on the opposite side of said resilient member.

a. a fixed mechanical seal disposed in the sealed chamber intermediate the pump end sealing means and the drill bit end sealing means, the mechanical seal dividing the sealed chamber into a pump end portion and a drill bit end portion;

b. the pump end sealing means being pressure responsive, such that the pump end sealing means exerts a pressure

upon lubricant within the pump end portion of the sealed chamber in response to pressure exerted by drilling fluids pumped along the interior passage by surface pumps;
c. the drill bit end sealing means being pressure responsive, such that the drill bit end sealing means exerts a pressure upon lubricant within the drill bit end portion of the sealed chamber in response to pressure exerted by drilling fluids flowing externally to the first tubular member and the second tubular member; and
d. the mechanical seal comprising:

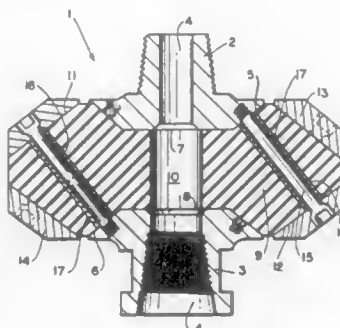
- means for non-rotatably coupling a first seal ring to the first tubular member;
- means for non-rotatably coupling a second seal ring to the second tubular member; and
- means to bring the first seal ring and the second seal ring into sealing engagement thereby forming a mechanical seal, the mechanical seal sealing a pressure differential between the pump end portion and the drill bit end portion of the sealed chamber.

5,377,772
DRILL STRING SHOCK ABSORBERS
Bernard L. Glen, P.O. Box 471, Edenvale 1610, South Africa
Filed Mar. 28, 1994, Ser. No. 218,742
Claims priority, application South Africa, Apr. 27, 1993, 93/2927

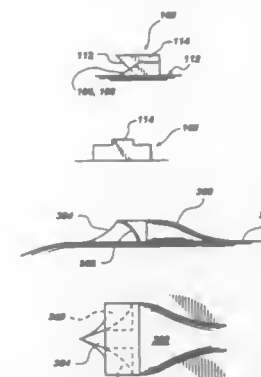
Int. Cl.⁶ E21B 17/00

U.S. Cl. 175-325.5

10 Claims



simultaneously at differing rake angles, one of said differing rake angles comprising a positive rake angle and at

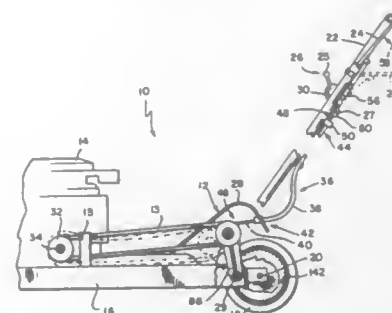


least another of said differing rake angles comprising a negative rake angle.

5,377,774
VARIABLE SPEED DRIVE SYSTEM
Thomas H. Lohr, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.
Filed Feb. 4, 1993, Ser. No. 13,623
Int. Cl.⁶ B62D 51/04

U.S. Cl. 180-19.3

25 Claims



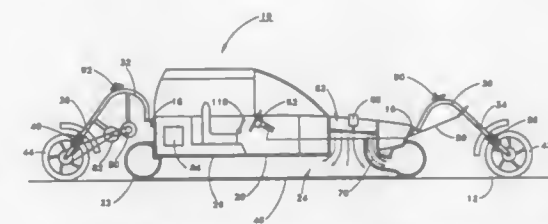
1. A variable speed drive system for a self-propelled device having a frame, an engine coupled to the frame, a drive pulley rotated by the engine, a handle coupled to the frame, a drive wheel assembly coupled to the frame for propelling the self-propelled device, and a bail pivotally coupled to the handle for movement between an engine-idling position away from the handle and a device-moving position adjacent to the handle, the system comprising:
a variable pitch pulley,
shaft means for rotatably supporting the variable pitch pulley,
a drive belt engaging the drive pulley and the variable pitch pulley,
means for turning the drive wheel assembly to propel the self-propelled device in response to rotation of the variable pitch pulley, the turning means including an endless chain engaging the shaft means and the drive wheel assembly and lying in tension, and
means for moving the shaft means and the variable pitch pulley relative to the frame from a disengaged position lying a first distance away from the drive pulley and relaxing tension on the drive belt engaging the drive pulley and the variable pitch pulley to block rotation of the variable pitch pulley in response to rotation of the drive pulley by the engine to an engaged position lying a greater second distance away from the drive pulley and tensioning the drive belt to cause rotation of the variable pitch pulley in response to rotation of the drive pulley by the engine in response to movement of the bail from the engine-idling position to the device-moving position without

varying tension applied to the endless chain turning the drive wheel assembly in response to rotation of the variable pitch pulley, the moving means being coupled to the bail for movement therewith relative to the frame.

5,377,775
HOVERCRAFT MOTORCYCLE
Joseph Rush, 275 R63 Hwy., Lot 8, Norwalk, Iowa 50211
Filed Jan. 10, 1994, Ser. No. 179,068
Int. Cl.⁶ B60V 3/02

U.S. Cl. 180-116

3 Claims



1. A hovercraft motorcycle for travel over a ground surface, comprising:
a body portion having a front end, a rear end, a longitudinal centerline extending from said rear end to said front end, and a lower surface spaced above the ground surface;
a generally horizontal, continuous, inflatable, resilient tubular member having an air inlet port;
an air plenum chamber defined between said tubular member, said lower surface of said body portion, and said ground surface;
means to supply pressurized air to said air plenum chamber;
a front wheel assembly, attached to the front end of said body portion and on the longitudinal centerline of the body portion, having a front wheel mounted thereon, said front wheel assembly further comprising a steerable front wheel assembly which is orientable to provide directional steering for said hovercraft motorcycle; and
a rear wheel assembly, attached to the rear end of said body portion and on the longitudinal centerline of the body portion, having a rear wheel mounted thereon, said rear assembly further comprising:
an electric motor mounted on said rear wheel assembly to provide motive power for said hovercraft;
a transmission mounted on said rear wheel assembly; said transmission connecting said motor and said rear wheel; and
a generator mounted in said body portion and connected to said electric motor for supplying electrical power.

5,377,776
FRAME STRUCTURE FOR A MOTORCYCLE
Terunari Saiki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 9, 1994, Ser. No. 194,002
Claims priority, application Japan, Feb. 9, 1993, 5-021149
Int. Cl.⁶ B62K 19/06

U.S. Cl. 180-219

5 Claims

1. A frame structure for a motorcycle comprising:
a head pipe;
left and right main pipes having forward end, rear end, and intermediate portions, the main pipes extending in a rearward and downward direction from said head pipe;
left and right pivot plates having upper and lower portions, the pivot plates being mounted at said rear end portions of said left and right main pipes and each having a rear fork pivot position;
a rear fork pivotally supported on said pivot plates at said rear fork pivot positions; and
left and right center pipes having upper end and lower end, and intermediate portions wherein said upper end portions

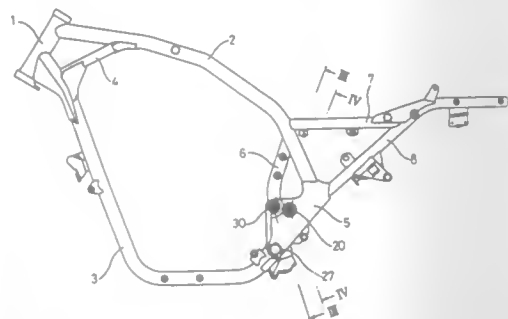
5,377,773
DRILL BIT HAVING COMBINED POSITIVE AND NEGATIVE OR NEUTRAL RAKE CUTTERS
Gordon A. Tibblitts, Salt Lake City, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.
Division of Ser. No. 837,035, Feb. 18, 1992, Pat. No. 5,314,033.
This application Dec. 8, 1993, Ser. No. 164,128
Int. Cl.⁶ E21B 10/42, 10/54

U.S. Cl. 175-397

31 Claims

11. A cutter adapted for use on a drill bit for cutting earth formations, comprising:
a body portion; and
a cutting portion adapted to engage a formation substantially

of said center pipes are coupled said to intermediate portions of said main pipes at a location between said head pipe and said rear end portions of said main pipes, and said lower end portions of said center pipes are coupled to said



lower portions of said pivot plates, and further, said intermediate portions of said center pipes are coupled to said pivot plates at positions forwardly of the rear fork pivot positions.

5,377,777

APPARATUS AND METHOD FOR SIGNALLING COINCIDENT MACHINE CONDITIONS

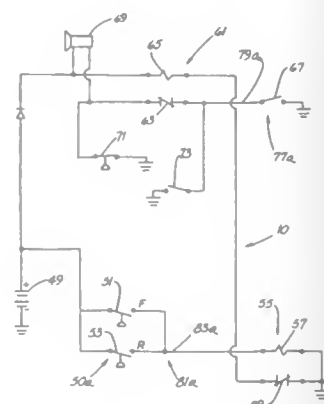
Byron R. Moore, and Michael G. Nahorny, both of Burlington, Iowa, assignors to Case Corporation, Racine, Wis.

Filed Dec. 21, 1993, Ser. No. 170,823

Int. Cl.⁶ B60Q 5/00

U.S. Cl. 180—272

13 Claims



13. In a material handling machine having a transmission with power and neutral modes and a seat mounted for rotational movement between a first position and a second position, an apparatus for annunciating coincidence of transmission power mode and seat first position and including:

- a source of electrical power;
- an annunciator connected to the source;
- an alarm relay having a coil connected to the source and an alarm relay contact connected to the annunciator;
- a first circuit including a seat switch which (a) is operated by rotational movement of the seat, (b) is connected to the alarm relay contact and (c) closes to provide a first conductive path between the alarm relay contact and circuit ground when the seat is rotated to the first position;
- a transmission relay having a coil and a transmission relay contact which is open when the machine transmission is in the power mode and which is connected to the coil of the alarm relay;
- a second circuit connected to the source and to the coil of the transmission relay, the second circuit including a transmission switch closed when the transmission is in the power mode; the second circuit providing a second conductive path from the source through the transmission

switch to the coil of the transmission relay when the transmission is in the power mode; and wherein:

when, coincidentally, the seat is in the first position and the transmission is in the power mode, the transmission relay contact is open, the alarm relay coil is de-energized by the open transmission relay contact, the alarm relay contact is closed and electrical power flows from the source through:

- a) the first conductive path;
- b) the second conductive path; and
- c) the annunciator.

5,377,778

EMERGENCY FIRE ESCAPE FOR MULTI-STORIED BUILDING

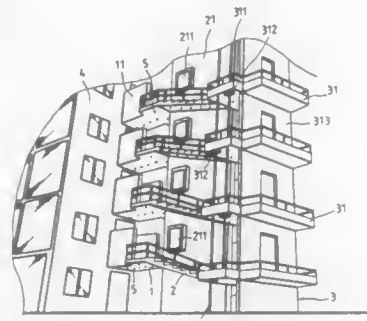
Tung-Hai Lan, No. 18, Lane 256, Section 3, Chung Shing Rd., Syh Jye Tsuen, Wu Jye Hsiang, Ilan Hsien, Taiwan, Prov. of China

Filed Sep. 22, 1993, Ser. No. 124,631

Int. Cl.⁶ A62B 1/20

U.S. Cl. 182—48

7 Claims



1. An emergency escape for permitting occupants to quickly and safely escape from a multi-story building during an emergency comprising:

- a) an exit formed through an exterior wall on each floor of a multi-storied building;
- b) a safety ladder positioned exteriorly of the building and extending between the floors thereof for evacuating occupants from the building to ground level;
- c) a bridge corridor extending outwardly from each exit for providing a passage between the exit and the safety ladder during evacuation;
- d) an emergency shelter extending outwardly from the safety ladder at each floor level for use by the occupants during evacuation down the safety ladder; and
- e) each emergency shelter including a sundeck and at least one escape rod means extending through the sundecks to ground level for providing an alternate means of evacuation for the occupants.

5,377,779

SELF-STOWABLE SAWHORSE WITH BEAM-SUPPORTING SADDLES

Elden R. Slapnicka, 765 Oak Knoll Dr., Ashland, Oreg. 97520

Filed May 11, 1994, Ser. No. 241,741

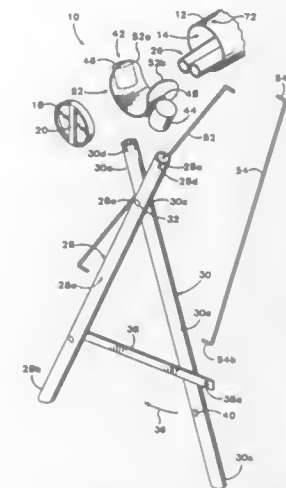
Int. Cl.⁶ E04G 1/00

U.S. Cl. 182—153

5 Claims

- 1. A sawhorse comprising:
 - a hollow elongate cylindrical work beam;
 - a pair of legs associated with each end of the work beam and having spaced-apart feet and spaced-apart upper ends;
 - a saddle assembly also associated with each end of the work beam for supporting an associated pair of legs relative to the work beam, each saddle assembly including a unitary saddle element made of a cylindrical resilient material, and

having a continuous arc with a circumference greater than 180° and less than 360°, thereby having an open side, and a diameter corresponding to the diameter of the beam for conforming the saddle element with the beam, the saddle



element being sufficiently resilient to allow the beam to be inserted through the open side, the saw horse being capable of being disassembled and the pairs of legs and the saddle assemblies being sized to be stowed in the work beam.

5,377,780

BRACKET ASSEMBLY FOR SAW HORSES

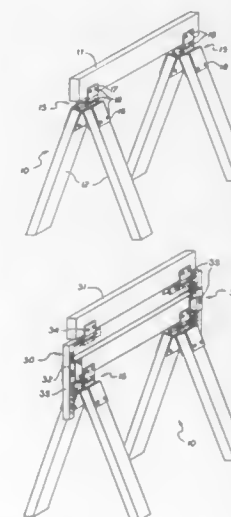
James T. Dunaway, 894 Wesley Dr., Fairfield, Ohio 45014

Filed Oct. 12, 1993, Ser. No. 134,686

Int. Cl.⁶ E04G 1/00

U.S. Cl. 182—185

12 Claims



1. A bracket assembly for use on a saw horse comprised of a cross-piece member and leg members to impart rigidity to said saw horse during use with folding or break-apart capability during non-use, said bracket assembly comprising:

- (a) a main bracket to hold an auxiliary bracket and two leg members of the saw horse, said main bracket having an inverted Y-shape formed of a central rib body with a vertical open-top channel with two parallel sidewalls extending upwardly therefrom, a first inclined open-bottom channel with two parallel sidewalls extending outwardly and downwardly therefrom, a second inclined

open-bottom channel with two parallel sidewalls extending outwardly and downwardly therefrom, wherein each of the sidewalls of the vertical open-top channel has at least one aligned hole to receive an attachment means so as to rigidly hold the auxiliary bracket and wherein at least one of each of the sidewalls of the first and second inclined open-bottom channels has at least one hole to receive an attachment means so as to rigidly hold a leg member of the saw horse; and

- (b) an auxiliary bracket removably attached to the main bracket and to permanently hold the cross-piece member of the saw horse, said auxiliary bracket having a H-shape formed of a body with a vertical open-bottom channel having two parallel sidewalls extending downwardly therefrom and a vertical open-top channel having two parallel sidewalls extending upwardly therefrom, wherein the sidewalls of the open-bottom channel have holes in alignment with the holes in the sidewalls of vertical open-top channel of the main bracket to receive attachment means and form the rigid attachment with the knock-down capability.

5,377,781

OIL PICK-UP DEVICE OF COMPRESSOR

Duk-Young Yun, Kyonggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

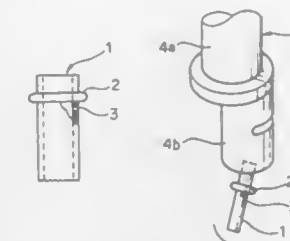
Filed Jan. 25, 1993, Ser. No. 8,324

Claims priority, application Rep. of Korea, Feb. 13, 1992, 92-2135

Int. Cl.⁶ F01M 11/08

U.S. Cl. 184—6.23

4 Claims



1. A compressor shaft having a hollow, oil pick-up tube for conducting oil upwardly from a reservoir into the compressor shaft in response to rotation of the compressor shaft, said oil pick-up tube comprising:

- scattering/restricting means for scattering oil ascending an outer surface of said oil pick-up tube and for restricting the generation of oil foam, said scattering/restricting means comprising a protrusion extending completely around an outer perimeter of said oil pick-up tube at a location above a lower end of said oil pick-up tube, and exhausting means for exhausting, to the outside of said oil pick-up tube, air bubbles and foreign substances from oil ascending the interior of said oil pick-up tube.

5,377,782

SWING ARM SHORT-RISE VEHICLE LIFT

Richard T. Francis, Easton, and Jerry A. Ohlmeier, St. Joseph, Mo., assignors to Gray Automotive Products Company, St. Joseph, Mo.

Filed Apr. 2, 1993, Ser. No. 42,121

Int. Cl.⁶ B66F 7/08

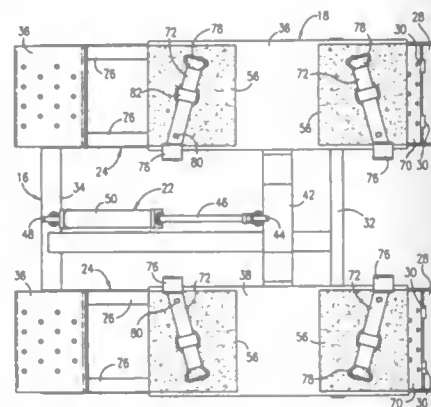
U.S. Cl. 187—219

12 Claims

- 1. A short-rise lift apparatus for a vehicle comprising:
 - a platform;
 - a means for moving the platform between a lowered position in which the platform is removed from engagement with the vehicle and a raised position in which the platform engages and lifts the vehicle;
 - a plurality of elongated lift arms attached to and extending

upward from the platform so that the vehicle is supported on the lift arms when the lift arms are positioned to underlie the vehicle and the platform is moved to the raised position;

a retaining means slidably engaging each lift arm for retaining a respective lift arm on the platform while permitting each lift arm to be linearly translated longitudinally in



opposite directions along a corresponding longitudinal axis thereof relative to the platform and pivoted about a vertical axis; and

a release means for permitting removal of each lift arm from the platform so that when the platform is moved toward the raised position the platform engages and lifts the vehicle.

5,377,783

ELEVATOR DOOR DRIVE

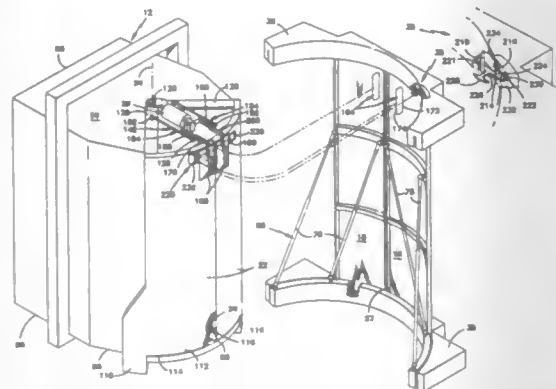
John K. Salmon, South Windsor, Conn., and Antoine Fritsch, Paris, France, assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 1, 1993, Ser. No. 146,682

Int. Cl.⁶ B66B 13/06

U.S. Cl. 187—325

11 Claims



1. A drive for opening a door attaching to a support that rotates about an axis, said drive comprising:

a motor providing a motive output, an arm attaching to said output, and a linkage having a first coupling allowing compound motion said first coupling attaching to said arm and a second coupling allowing compound motion said second coupling attaching to said support, said door moving as said arm rotates in response to motion of said output.

5,377,784

PASS DOOR FIRE LINTEL

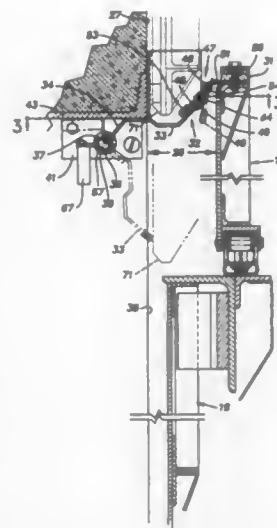
Stefan Walkowiak, St. James; Stephen Petrovich, East Patchogue, both of N.Y., and Herman Reis, Brampton, Canada, assignors to The Peelle Company, Bay Shore, N.Y.

Filed Sep. 8, 1993, Ser. No. 118,039

Int. Cl.⁶ D66B 13/00

U.S. Cl. 187—336

12 Claims



1. A hoistway for a freight elevator system having at least two landings with respective openings in a common wall and vertical sliding doors at said landings, a pass door unit at the lower one of said landings having counterbalanced upper and lower panels, the upper panel of the pass door unit being spaced from the wall by a gap of sufficient size to permit passage of a lower panel of the door above between it and the wall at the lower landing, fire lintel means having an operative position wherein it normally closes the gap by bridging under the lower panel of the door above from the landing to the pass door, the fire lintel means providing a baffle structure that includes mutually closely overlapping surfaces that overlap along substantially the full width of the pass door a distance that is a substantial fraction of the size of the gap, said fire lintel means being movable to a retracted position to allow passage of a lower panel of the door of the landing above the pass door landing into the gap.

5,377,785

DOOR CLOSING SYSTEM

David B. Pearson, Morristown, N.J., assignor to Inventio AG, Hergiswil, Switzerland

Filed Jul. 12, 1993, Ser. No. 89,646

Int. Cl.⁶ B66B 13/00

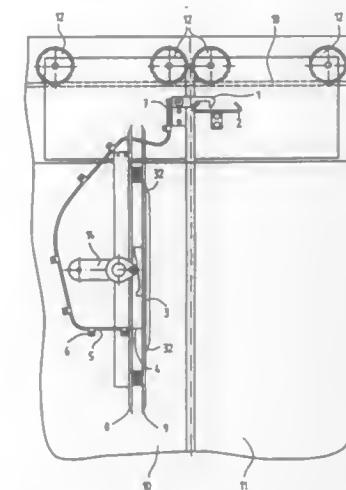
U.S. Cl. 187—308

8 Claims

1. A door closing system for retrofit installation on an automatic sliding door of an elevator car which, at floor stops, is coupled via cams and coupler brackets with a hoistway door and is opened and closed together therewith, wherein the closing system prohibits opening and closing of the car door from the interior of the car when the car is between two floors, that is, beyond the door opening zone of a floor, said door closing system including:

a rocker mechanism, said rocker mechanism being activated in the door opening zone, at the time of door opening, by a coupling system at the hoistway door; means for transmitting, activated by said rocker mechanism; a locking pawl, activated by said means for transmitting;

a hook retainer, said locking pawl being engaged with said hook retainer; and



said rocker mechanism including one of a fixed cam and a movable cam, with said rocker mechanism being retained on one of said fixed and movable cams.

5,377,786

ELEVATOR WITH A GOVERNOR

Toshiaki Nakagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

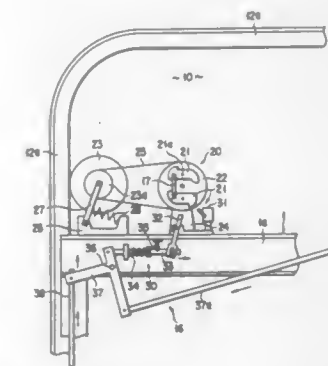
Filed Jan. 12, 1992, Ser. No. 897,820

Claims priority, application Japan, Jun. 13, 1991, 3-141752

Int. Cl.⁶ B66B 5/16

U.S. Cl. 187—287

5 Claims



1. An elevator comprising:
a guide rail arranged along a predetermined travel path;
a cab supported by the guide rail for travel along the guide rail;
a drive mechanism for moving the cab along the travel path, the drive mechanism including a linear motor having a plurality of primary-side stators arranged along the travel path and a secondary-side reaction member mounted on the cab and facing the primary-side stators;
a stop mechanism mounted on the cab, for engaging the guide rail to stop the travel of the cab; and
a governor for actuating the stop mechanism when the traveling speed of the cab exceeds a predetermined speed, the governor including a roller mounted on the cab to be rollable on the guide rail, a governor pulley rotatably arranged on the cab, a belt passed around and between the roller and the governor pulley, for rotating the governor pulley in interlocking engagement with the roller upon rotation of the roller, and an actuator mounted on the cab for actuating the stop mechanism when the governor pulley rotates at a speed higher than the predetermined

speed, the actuator including a link mechanism connected to the stop mechanism is, a lock mechanism having a safety lever located in proximity with the governor pulley, for locking the link mechanism in a nonoperating position, and a flyweight mounted on the governor pulley, for pushing the safety lever to release the lock mechanism and shift the lock mechanism to an operating position for actuation of the stop mechanism when the governor pulley rotates at a speed higher than the predetermined speed.

5,377,787

VERTICALLY DISPLACEABLE PLATFORM

Philippe Chabrier, Societa BP 4766, Libreville Gabon, South Africa

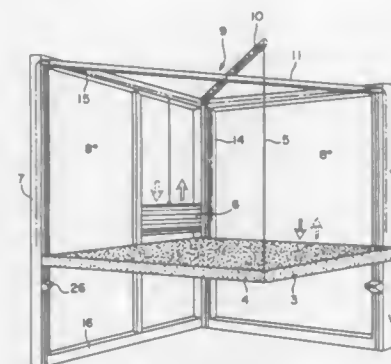
Filed Oct. 7, 1993, Ser. No. 132,823

Claims priority, application France, Oct. 13, 1992, 92 12507

Int. Cl.⁶ B66B 17/12

U.S. Cl. 187—404

6 Claims



1. Vertically displaceable a platform (1) comprising a fixed structure (2) and a plate (3) movable in translation comprising four corners (4), each corner (4) of said plate being secured to a different one of four vertical translation means (5) which end in a counterweight (6), said fixed structure comprising three guideposts (7, 14, 21) which coact with three of said translation means (5), and a support arm (9) supported by an upper portion of the fixed structure (2) and having an end that is disposed directly above the said corner (4) of said plate which is spaced from said three translation means (5), the fourth of said translation means being secured to the last-named corner and being carried by said end of said support arm (9).

5,377,788

SAFETY CATCH DEVICE FOR ELEVATORS

Joachim Biewald, Winnenden/Degenhof; Volker Scheub, Waiblingen; Helge Holler, Pforzheim; Karl Finkl, Stuttgart; Stefan Hugel, Schwaikheim; Jörg Rothaupt, Schwäbisch Gmünd; Peter Schneider, Ditzingen; Wolfgang Barth, Bietigheim-Bissingen; Hermann Moll, Weissach im Tal, and Horst Pollmann, Weil der Stadt, all of Germany, assignors to C. Haushahn GmbH & Co., Stuttgart, Germany

Filed Jul. 30, 1993, Ser. No. 100,615

Claims priority, application Germany, Aug. 8, 1992, 9210608

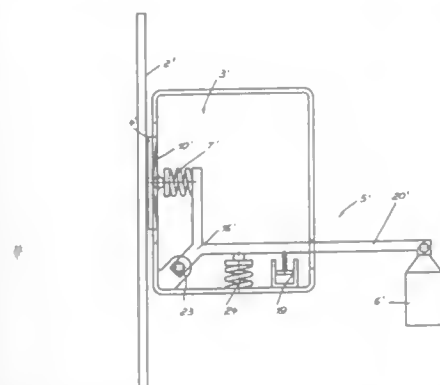
Int. Cl.⁶ B66B 5/16

U.S. Cl. 187—374

4 Claims

1. A safety catch device for elevator cars guided on at least one guide rail, the safety catch device comprising a braking device for applying a braking force on the at least one guide rail for braking a downward movement of the elevator car, a control device for controlling the braking force of the braking device in dependence on at least one of load and deceleration, the control device comprising a control mass subjected to movement by acceleration of the elevator car and a brake spring mounted so as to be deflected in accordance with the position of the control mass and acting on the braking device, further comprising a swivably mounted two-sided lever having a first arm and a second arm, wherein the braking device and

the control device are coupled through the two-sided lever, wherein the brake spring is configured to act on the first arm of the two-sided lever and the control mass is configured to act



on the second arm of the two-sided lever, and wherein the brake spring is a compression spring, such that a deflection of the control mass during deceleration of the elevator car reduces the pressure acting on the brake spring.

5,377,789

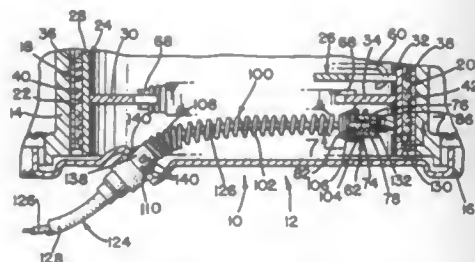
SNAP-IN PARK BRAKE CABLE

Frank W. Brooks, Sr., Dayton, and Gerald R. Spinks, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1993, Ser. No. 29,836
Int. Cl.⁶ F16D 65/22

U.S. Cl. 188—20

4 Claims



1. In a blind cable assembly having an enclosed mechanism; a lever arranged to actuate the enclosed mechanism; a cable having a button disposed on one end adapted to engage the lever, the button being substantially larger in diameter than the cable; a plate covering a part of the enclosed mechanism and the lever and having an opening through which the button and cable are inserted; and a lever return spring includes a helically coiled section disposed between the lever and the plate serving as a guide for the button and cable from the opening in the plate to the lever, wherein the improvement comprises: indicating and directing means, provided by the spring interacting with the lever, both for indicating complete insertion of the cable by a gradual increase in cable insertion load followed by a sudden decrease in cable insertion load and for directing the inserted button to an engagement surface of the lever as the cable is tensioned; means defining on the lever two sides forming an upwardly open channel, the channel beginning at a first end and terminating at a second end serving as the engagement surface; means defining a ramp surface on one of the sides of the channel; means defining on the lever a notch on a side common with the second end of the channel; means defining on the spring an end coil engaging the

lever at the first end of the channel and partially enclosing the ramp surface; means defining on the spring a hook section extending from the end coil wrapping around the notch in the lever thereby holding the end coil in engagement with the lever; and means defining on the spring a cable restraining section extending from the hook section toward the end coil, then extending in a direction away from the end coil and proximate to the ramp surface and past an end of the ramp surface and bending to be generally parallel to the second end of the channel; whereby as the cable is inserted into the enclosed mechanism the button travels freely through the helically coiled spring section to where the button exits the end coil and contacts both the ramp surface and the restraining section which resist further insertion until a predetermined insertion load is exceeded causing the restraining section to deflect allowing further insertion of the button along the ramp surface with the insertion load rapidly dropping as the button passes the end of the ramp surface thereby indicating complete cable insertion and the restraining section trapping the cable thereby keeping the cable generally aligned with the cable after the cable has been fully inserted and directing the button into engagement with the second end of the channel as the cable is tensioned.

5,377,790

BRAKE PAD CLIP WITH HOLDING, SIDE AND DAMPER PORTIONS

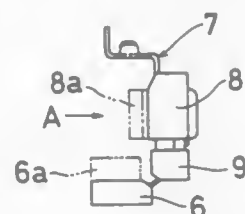
Matsuhisa Tsuruta, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 11, 1993, Ser. No. 29,604

Claims priority, application Japan, Mar. 12, 1992, 4-053807
Int. Cl.⁶ F16D 65/40

U.S. Cl. 188—73.38

5 Claims



1. A disc brake assembly comprising; a disc rotor rotated together with a wheel, a mounting member fixed to a stationary member of a vehicle and having at least one arm portion in which a pair of grooves extending toward the axial direction of the disc rotor are provided therein, a pair of brake pads disposed to both sides of the disc rotor and each having a pair of ear portions which are outwardly projected at the outer sides of both ends of at least one of the brake pads in the rotational direction of the disc rotor and which are fitted into the grooves of the arm portion of the mounting member so as to be able to slide in a parallel direction with respect to a rotational shaft of the disc rotor, a caliper member slidably supported on the mounting member so as to be movable in an axial direction of the disc rotor and pressing each of the brake pads against faces of the disc rotor, respectively, and at least one first pad clip engaged with a one side portion of the at least one arm portion of the mounting member which is positioned at the entry side in the rotational direction of the disc rotor due to the forward movement of the vehicle so as to cover one of the grooves and having a holding portion which is unitarily formed on the first

pad clip and which normally urges the one brake pad in substantially the diametrical direction of the disc rotor through one of the ear portions formed on one end of the at least one brake pad, a side spring portion which is unitarily formed on the first pad clip and which normally urges the one brake pad toward the tangential direction in the rotational direction of the disc rotor through the one ear portion so as to normally contact the other end of the one brake pad with the other side portion of the arm portion of the mounting member positioned at the exit side in the rotational direction of the disc rotor due to the forward movement of the vehicle and a damper portion which is unitarily formed on the first pad clip and which is provided with an arm portion extending between the first pad clip and a one end of the one ear portion of the one brake pad in the rotational direction of the disc rotor toward the axial direction of the disc rotor and contacted with the first pad clip at a top end thereof.

5,377,791

REGENERATIVE BRAKE DEVICE AND A POWER TRANSMISSION DEVICE FOR ELECTRIC MOTOR VEHICLES

Yoshinori Kawashima; Kenji Tamaki; Shoji Motodate; Yoshihiro Nakazawa; Masayuki Toriyama; Noriyuki Maeda, and Yoshimi Osanai, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 700,520, May 15, 1991, abandoned.

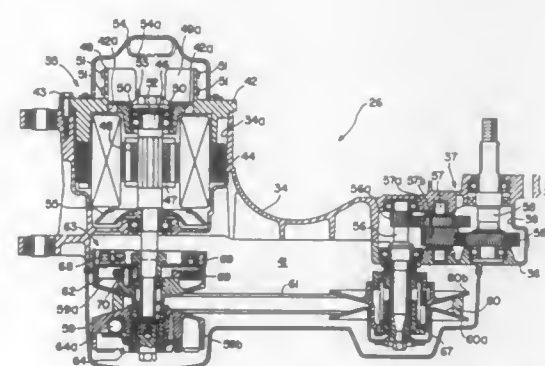
This application Mar. 16, 1993, Ser. No. 35,528

Claims priority, application Japan, May 16, 1990, 2-51139; Mar. 18, 1991, 3-078551

Int. Cl.⁶ B60L 7/10

U.S. Cl. 188—159

19 Claims



3. A regenerative braking system for providing braking power without impairing driveability due to excessive braking power, comprising: an electric motor; a driving wheel; power transmission means for connecting said electric motor to said driving wheel; a re-chargeable power source; charging means for charging said re-chargeable power source with electric power generated by said electric motor; and control means, operatively connected to said charging means, for controlling when said charging means transfers electric power to said re-chargeable power source by generating control signals having a duty factor and for controlling braking power; said control means controlling said duty factor of said control signals to be set at a small value when a rotational speed of said electric motor is high; said control means controlling said braking power to increase over a predetermined range without having said braking power exceed a predetermined braking power level as a rotational speed of said electric motor increases.

5,377,792

FRICTION PAD OF A DISC BRAKE FOR A VEHICLE

Isao Idesawa, Nagano, Japan, assignor to Nissan Kogyo Kabushiki Kaisha, Nagano, Japan

PCT No. PCT/JP91/00535, § 371 Date Dec. 20, 1991, § 102(e)

Date Dec. 20, 1991, PCT Pub. No. WO91/16554, PCT Pub.

Date Oct. 31, 1991

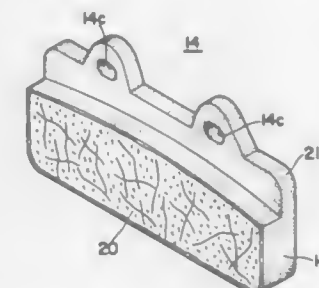
PCT Filed Apr. 24, 1991, Ser. No. 778,892

Claims priority, application Japan, Apr. 23, 1990, 2-43361[U]

Int. Cl.⁶ F16D 69/00, 69/02

U.S. Cl. 188—264 G

3 Claims



1. A rigid friction pad of a disc brake for a vehicle comprising: a lining formed of a carbon-carbon composite material and friction-engageable with a brake disc; and a coating layer made of either glass or a heat resistant resin and formed on a back surface of the lining, a torque receiving surface on a side of the lining and on the sides of the lining.

5,377,793

SLEEVE FOR A DRUM BRAKE ADJUSTER SCREW

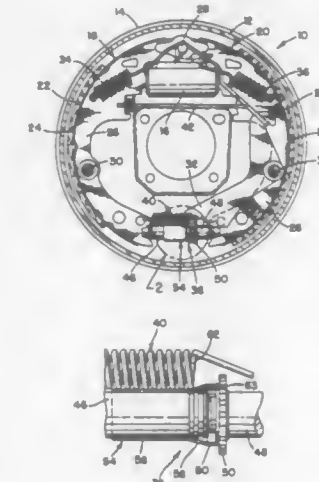
Alan G. Livingston, Huber Heights, and Michael W. Fanelli, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 28, 1993, Ser. No. 174,087

Int. Cl.⁶ F16D 51/20; F16B 37/14

U.S. Cl. 188—331

18 Claims



1. An automotive drum brake assembly, comprising: (a) a backing plate; (b) brake shoe assemblies mounted on the backing plate for guided braking movement; (c) a wheel cylinder for braking actuation of the brake shoe assemblies; and (d) an adjuster screw assembly for maintaining desired positions of the brake shoe assemblies, the adjuster screw assembly including

- (i) a pivot nut,
 (ii) a screw threadingly mated on to the pivot nut,
 (iii) means for rotating the screw as the brake shoe assembly wears,
 (iv) an adjuster spring connected to each brake shoe assembly adjacent the pivot nut and screw, and
 (v) a sleeve covering a portion of the screw unthreaded from the pivot nut, the sleeve having a portion of sufficient diameter to contact the adjuster spring and, responsive to said contact, is slid to an extended position as the screw is unthreaded from the pivot nut.

5,377,794

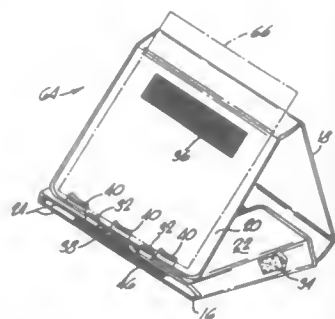
FOLDABLE COVER WITH EASEL OPTION

Steven C. Book, 10220 Scenario La., Los Angeles, Calif. 90077
 Filed Nov. 22, 1993, Ser. No. 156,089

Int. Cl.⁶ A45C 9/00

U.S. Cl. 190—1

18 Claims



1. A device that is convertible between a carrying case configuration and an easel configuration, comprising:
 a foldable cover having a generally "T"-shaped configuration, with a first surface and a second surface, the cover having (a) a longitudinal portion comprising a first end section defined by a first lateral edge, a second end section defined by a second lateral edge, and a central section between the first and second end sections, and (b) a lateral cross-bar portion comprising the first end section and a flap portion on either side of the first end section;
 first fastening means on the first surface of the second end section;
 second fastening means located on the second surface of the first end section so as to be removably fastenable to the first fastening means when the cover is folded so as to bring the first surface of the second end section into contact with the second surface of the first end section;
 third fastening means on the first surface of the central section; and
 fourth fastening means located on the second surface of each of the flap portions so as to be (a) removably fastenable to the third fastening means when the first and second fastening means are fastened to each other and the flap portions are folded toward each other so as to bring the second surface of the flap portions into contact with the first surface of the central section, and (b) removably fastenable to the second fastening means when the flap portions are folded toward each other so as to bring the second surface of the flap portions into contact with the second surface of the first end portion;
 whereby the cover forms the carrying case configuration when the first and second fastening means are fastened together and the third and fourth fastening means are fastened to each other; and
 whereby the cover forms the easel configuration when the second and fourth fastening means are fastened to each other, and when the longitudinal portion of the cover is folded so as to form a three-sided configuration with the first and second lateral edges in mutual contact.

5,377,795

TWO-WAY TOWABLE LUGGAGE

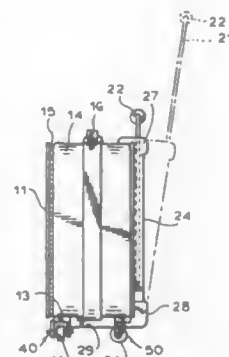
Joseph Berman, Hillsdale, N.J., assignor to Vt International Ltd., New York, N.Y.

Filed May 6, 1994, Ser. No. 238,920

Int. Cl.⁶ A45C 13/00

U.S. Cl. 190—18 A

5 Claims



1. A two way towable luggage case comprising
 (a) a generally parallelepiped body portion having a bottom wall, a top wall, a front wall, a rear wall, and two side walls;
 (b) said bottom wall having a predetermined longitudinal axis and a predetermined width axis perpendicular to and shorter than said longitudinal axis;
 (c) said longitudinal axis defining a first towable direction and said width axis defining a second towable direction;
 (d) a pair of longitudinally spaced first wheels mounted in fixed axle casters adjacent a first edge of said bottom wall and proximate to said front and rear walls; said first wheels rotating about caster axes parallel to said width axis;
 (e) a pair of longitudinally spaced second wheels mounted in swivelable casters mounted adjacent a second edge of said bottom wall opposite said first edge;
 (f) said swivelable casters having swivelable caster axes, whereby said second wheels may rotate on axes parallel to either of said predetermined longitudinal and said predetermined width axes;
 (g) a telescopic handle associated with said first edge and deployable from a retracted position to a fully extended position;
 (h) said body being towable by said handle on both said first and second wheels in said longitudinal direction or being towable on said second wheels alone in said width direction with said bottom wall canted from a horizontal plane.

5,377,796

APPARATUS FOR TRANSMITTING FORCE BETWEEN ROTARY DRIVING AND DRIVEN UNITS

Oswald Friedmann, Lichtenau, and Johann Jäckel, Baden-Baden, both of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Buhl, Germany

Filed May 1, 1992, Ser. No. 881,994

Claims priority, application Germany, May 2, 1991, 4114321

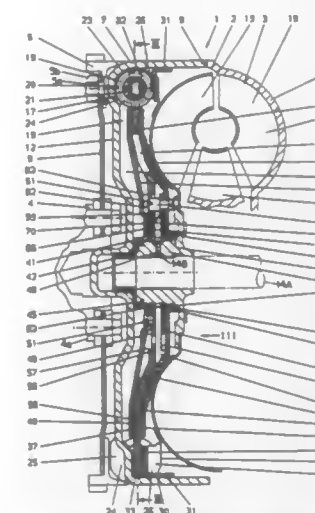
Int. Cl.⁶ F16D 3/14

U.S. Cl. 192—3.29

79 Claims

1. Apparatus for transmitting force from a rotary driving unit to a rotary driven unit, comprising at least one rotary casing having a circumference and being connectable with the driving unit; and means for transmitting torque between said at least one casing and the driven unit, including at least one pump driven by said at least one casing, at least one turbine connectable with the driven unit and damper means including at least one elastic damper between said at least one casing and a part of the driven unit, said at least one casing having a substantially axially extending confining portion and said at least one damper comprising a plurality of energy storing

elements acting at least in the circumferential direction of said at least one casing, said elements being elongated in said circumferential direction and being at least partially surrounded by said confining portion axially as well as circumferentially of



said at least one casing and said elements bearing against said confining portion under the action of centrifugal force in response to rotation of said at least one casing, said torque transmitting means further comprising a lock-up clutch in series with said at least one damper.

5,377,797

CLUTCH ENGAGEMENT CONTROL METHOD IN RESPONSE TO TRANSMISSION SHIFT LEVER POSITION

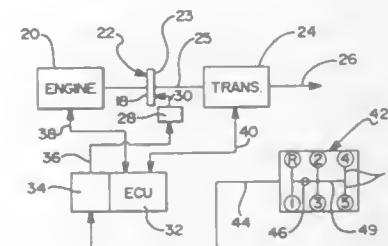
Adam M. Mustapha, Dearborn, and Donald J. Rozsi, Marshall, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 30, 1993, Ser. No. 99,499

Int. Cl.⁶ B60K 41/22

U.S. Cl. 192—3.55

3 Claims



1. A method of clutch control for a vehicle driveline including an engine and transmission based on position and direction of travel of a transmission gearshift lever comprising:
 providing a driveline clutch drivingly interposed between the engine and the transmission where the engagement or disengagement of said driveline clutch is selected by an electronically controlled clutch actuator;
 providing a gearshift lever movable in a plurality of directions into a plurality of gear selection gates to indicate an operator's choice of a transmission ratio;
 providing a position sensing means responsive to at least two positions of said gearshift lever and generating a signal during selection of a gear ratio;
 providing a clutch control system connected to said position sensing means and said clutch actuator, said clutch control system including means responsive to said position sensing means for issuing command output signals to said clutch actuator;
 engaging said driveline clutch when said position sensing

means indicates that said gearshift lever has moved past a gear selection gate position of approximately 80 percent into a gear selection gate position of approximately 100 percent;
 disengaging said driveline clutch when said position sensing means indicates that said gearshift lever has moved from said gear selection gate position of approximately 100 percent to a gear selection gate position of approximately 20 percent.

5,377,798

CLUTCH PLATE WITH BLOCKING WALL FOR A VISCOUS FLUID CLUTCH

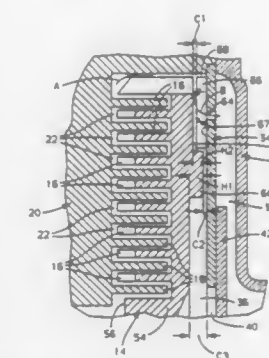
David M. Hudson, Kettering; David B. Drennen, Bellbrook, and Lawrence C. Kennedy, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 7, 1993, Ser. No. 116,841

Int. Cl.⁶ F16D 35/00

U.S. Cl. 192—58 B

5 Claims



1. A viscous fluid fan clutch comprising:
 (a) a housing;
 (b) a cover cooperating with the housing to contain a viscous fluid;
 (c) a pump plate, mounted between the housing and cover, dividing an interior of the clutch into a working chamber and a reservoir;
 (d) a driven clutch plate, disposed in the working chamber, having a hub portion and a disk portion, wherein a front surface of the disk portion is adjacent the pump plate;
 (e) at least one wiper mounted on the pump plate adjacent a discharge orifice in the pump plate so that a first clearance is provided between the wiper and the front surface of the disk portion; and
 (f) a non-sliding annular blocking wall integrally formed on the front surface of the disk portion radially inward of the wiper, the blocking wall of sufficient height so that a second clearance formed between the blocking wall and the pump plate is less than or substantially equal to the first clearance.

5,377,799

ELECTROMAGNETIC CLUTCH WITH IMPROVED ACTUATION

Richard S. Mullaney, Franklin, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 14, 1993, Ser. No. 136,052

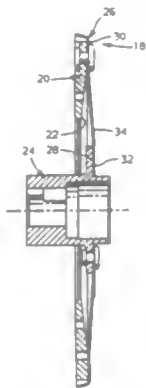
Int. Cl.⁶ F16D 27/00

U.S. Cl. 192—84 C

2 Claims

1. An electromagnetic clutch assembly in combination with a fluid pumping apparatus having a central drive shaft and a powered rotor with a generally annular drive member supported for free rotation about said shaft, said clutch assembly comprising:
 a central hub secured to said drive shaft and having a flange

that defines a plane that is axially fixed and perpendicular relative to said drive shaft, an annular armature radially spaced from said hub and adapted to be electromagnetically actuated and pulled axially into abutment with said drive member when said clutch assembly is actuated, said armature being subject to an axial wear allowance over the life of said clutch, and, a resilient, generally annular and circumferentially complete diaphragm member having an outer rim fixed to said armature and an inner edge fixed to said hub flange so as to be located axially inboard of said rim when said dia-



phragm member is in a free state, and a dished web interconnecting said inner edge and rim which, in said free state, is concave relative to said rim so that said rim, as it is forced out of said free state and axially toward said hub flange and inner edge acts to flatten and stress said web, thereby creating a resilient return force which initially rises, then falls to a plateau as said rim moves over a predetermined axial stroke, said hub being fixed to said shaft so as to space said armature from said drive member with an initial axial gap which, when added to said wear allowance, falls generally within said predetermined axial stroke.

5,377,800
HYDRAULICALLY-ACTUATED SHIFT SYSTEM FOR A TRANSFER CASE

David Sperduti, Auburn; Randy W. Adler, Seneca Falls, and Victor L. Brezee, Auburn, all of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Filed May 4, 1993, Ser. No. 57,272

Int. Cl.⁶ F16D 25/08, 23/02

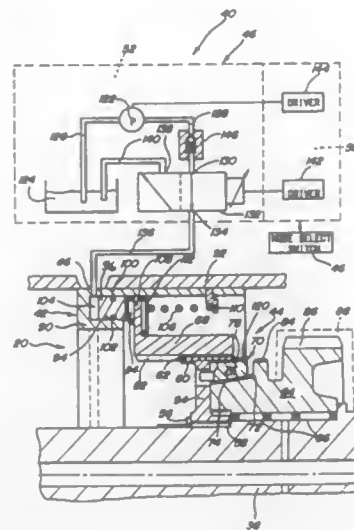
U.S. Cl. 192—85 CA

7 Claims

1. A transfer case for a motor vehicle having an engine and first and second sets of wheels, comprising:

- a first output shaft for transmitting drive torque from the engine to the first set of wheels for normally establishing a two-wheel drive mode;
- a second output shaft for selectively transmitting drive torque to the second set of wheels for establishing a four-wheel drive mode;
- a shift mechanism having a clutch sleeve fixed for rotation with said first output shaft and supported for movement thereon between a first position uncoupled from said second output shaft for establishing said two-wheel drive mode, and a second position coupling said second output shaft for rotation with said first output shaft to establish said four-wheel drive mode;
- a hydraulic actuator acting on said clutch sleeve;
- a source of pressurized fluid in communication with said hydraulic actuator;
- a mode select mechanism for permitting a vehicle operator to select one of said two-wheel drive and four-wheel drive modes and generate an input signal indicative thereof; and

control means for controlling the flow of said pressurized fluid between said hydraulic actuator and said fluid source



for selectively moving said clutch sleeve between said first and second positions in response to said input signal.

5,377,801
CONTROL APPARATUS FOR A TRANSMISSION AND THE LIKE

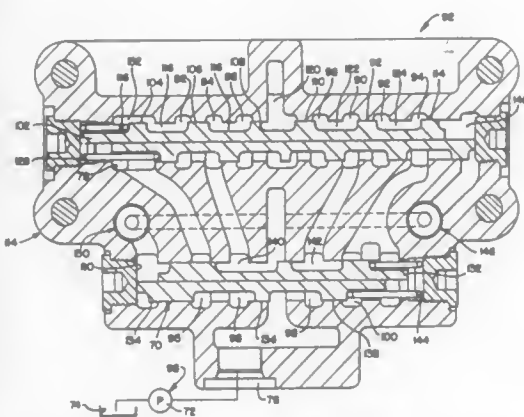
Guy T. Stoeve, Naperville, Ill., assignor to Case Corporation, Racine, Wis.

Filed Dec. 9, 1992, Ser. No. 987,615

Int. Cl.⁶ F16D 25/11

U.S. Cl. 192—87.13

1 Claim



1. An electro/hydraulic control apparatus for selectively operating a multi-speed transmission of an off-highway implement by controlling any one of four fluid pressure operated mechanisms arranged in combination with the transmission of the off-highway implement at any given time, said control apparatus comprising:

- a fluid pressure source;
- a valve body having an inlet passage connected to said fluid pressure source, first elongated valve bore having four motor ports arranged in axially adjacent relationship along the length of said first valve bore, with each motor port being connected to one of said fluid pressure operated mechanisms, a first inlet port provided along the length of said first valve bore between two axially adjacent motor ports, a second inlet port provided along the length of said first valve bore between two other axially adjacent motor ports, and a second elongated valve bore extending generally parallel to said first valve bore and

having first and second ports axially arranged along the length of said second valve bore on opposite sides of said inlet passage, the first port of said second valve bore having arranged in fluid communication with said first inlet port of said first valve bore and with said second port of said second valve bore arranged in fluid communication with said second inlet port of said first valve bore, and wherein said second valve bore further includes two axially spaced exhaust ports;

a first valve mounted for linear reciprocation between first and second positions within said first valve bore, said first valve being hydraulically interposed between the inlet and outlet ports of said first valve bore, wherein in a first position said first valve directs actuating fluid from one of the inlet ports in to a first of said motor ports to effect operation of a first fluid pressure operated mechanism while connecting the remaining motor ports to exhaust thereby disabling the remaining fluid pressure operated mechanisms from conditioning the transmission for operation, and wherein in a second position said first valve directs actuating fluid from the other inlet port in the first valve bore to a second of said motor ports to effect operation of a second fluid pressure operated mechanism while connecting the remaining motor ports to exhaust thereby disabling the remaining fluid pressure operated mechanisms from conditioning the transmission for operation;

a first solenoid valve connected to said fluid pressure source for controlling the position said first valve in response to electrical signals received from an operator;

a second valve mounted for linear reciprocation between first and second positions in said second valve bore, said second valve being hydraulically interposed between said inlet passage in the valve body and said first and second ports of said second valve bore, wherein said first position said second valve directs actuating fluid to an inlet port of said first valve bore from whence the actuating fluid is directed to the third motor port to effect operation of a third fluid pressure operated mechanism while the remaining motor ports are connected to exhaust thereby disabling the remaining fluid pressure operated mechanisms from conditioning operation, and wherein a second position said second valve directs actuating fluid to the other inlet port of said first valve bore from whence the actuating fluid is directed to the fourth motor port to effect operation of a fourth fluid pressure operated mechanism while the remaining motor ports are connected to exhaust thereby disabling the remaining fluid pressure operated mechanisms from conditioning the transmission for operation;

a second solenoid valve connected to the fluid pressure source for controlling the position of the second valve in response to electrical signals received from the operator; and

said first and second valves and said first and second solenoid valves being the only valves affecting fluid pressure between said source and said fluid pressure operated mechanisms; and

first and second springs for linearly biasing said first and second valves, respectively, positions whereby allowing actuating fluid to flow through the valve body thereby assuring operation of at least one of said fluid pressure operated mechanisms thus enabling transmission operation notwithstanding failure of one or both solenoid valves.

5,377,802
FRICTION PAD FOR FRICTION ENGAGEMENT DEVICE

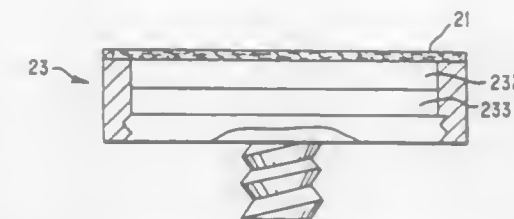
Russell D. Ide, P.O. Box 744, 641 Arnold Rd., Coventry, R.I. 02816

Division of Ser. No. 668,216, Mar. 12, 1991, Pat. No. 5,203,438. This application Mar. 30, 1993, Ser. No. 40,376

Int. Cl.⁶ F16D 13/68, 13/60

U.S. Cl. 192—107 C

15 Claims



1. A friction pad for use in a friction engagement device in which the friction pad engages a relatively moving surface, the friction pad having an actively controllable smart structure comprising:

- a structural skeletal portion;
 - a sensor portion; and
 - an actuator portion;
- the skeletal portion comprising at least one friction lining and a support structure supporting the friction lining, the support structure being designed for deflection under load;
- the sensor portion comprising at least one element capable of sensing an operating condition indicative of proper orientation of the friction lining and emitting a signal in response to said sensed condition;
- the actuator portion including an adjustment element for adjusting the deflection characteristics of the structural skeletal portion in response to the signal emitted from the sensor portion.

5,377,803
PRESSURE PLATE ARRANGEMENT FOR A MOTOR VEHICLE FRICTION CLUTCH

Achim Link, Schweinfurt; Reinhold Weidinger, Unterspriesheim; Heiko Schulz-Andres, Poppenhausen; Klaus Elsner, Schweinfurt; Rainer Wiedmann, Hambach; Ralf Nenninger, Werneck, and Michael Weiss, Dittelbrunn, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 4, 1993, Ser. No. 57,087

Claims priority, application Germany, May 6, 1992, 4214996; Mar. 4, 1993, 4306688

Int. Cl.⁶ F16D 13/50, 13/75

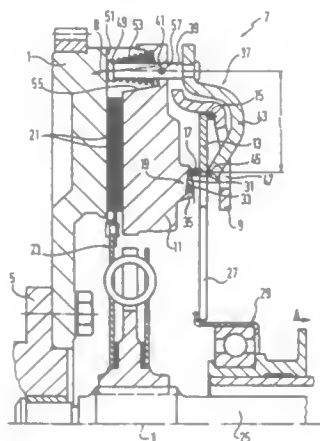
U.S. Cl. 192—111 A

26 Claims

1. A pressure plate arrangement for a friction clutch of a motor vehicle, comprising

- a clutch housing (9), which is adapted to be fastened on a flywheel (1) for rotation therewith around an axis of rotation (3)
- a pressure plate (11), which is disposed on the clutch housing (9) and is fixed against rotation relative to the clutch housing but is axially displaceable, and is adapted to be supported on the flywheel (1) via friction lining (21) of a clutch disk (23),
- a diaphragm spring (13) supported under prestress between a shoulder on the clutch housing (9) and shoulder on the pressure plate (11), and
- an adjustment device (19) between the diaphragm spring (13) and the pressure plate (11), the adjustment device having at least one wear path compensation member (31) which is movable along an adjustment path and causes an axial movement of the pressure plate (11) away from the diaphragm spring (13) when the friction linings (21) of the

clutch disk (23) are worn and the friction clutch is disengaged, characterized in that a plurality of play transfer devices (37) are arranged in spaced-apart relation in the circumferential direction of the pressure plate (11) and are guided so as to be at least approximately axially movable, but arrestable, on the pressure plate (11) by friction,



that first limit stops (51), which limit the movement of the play transfer devices (37) towards the flywheel (1), are provided on a component which is operationally connected with the clutch housing (9), and that each of the play transfer devices (37) has a second stop (45), which limits the adjustment path of the wear path compensation member (31) in relation to the pressure plate (11).

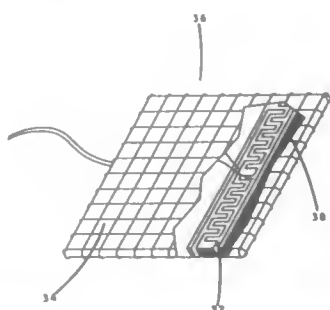
5,377,804

MOISTURE DETECTING AND POWER SHUT OFF APPARATUS FOR BILL VALIDATORS, COIN MECHANISMS AND THE LIKE

David C. Robirds, 809 Briarwood, Abilene, Tex. 79603
Filed Oct. 21, 1992, Ser. No. 963,722
Int. Cl.⁶ G07F 9/02

U.S. Cl. 194—202

4 Claims



1. A moisture detecting and power shut-off apparatus a vending machine which includes a bill validator and a coin mechanism, the apparatus comprising:
an S.C.R. (silicon-controlled rectifier), a relay and means for detecting moisture;
said means for detecting moisture is comprised of an electronic probe having a main strip of copper foil which has a one millimeter wide zig-zag groove etched across the middle thus creating two electrically isolated copper strips, said copper strips are folded over and around a circuit board 180 degrees, and, form in effect a 360 degree double-sided moisture-sensing probe;
said moisture-sensing probe is activated by the presence any electrically-conductive fluid, thereby energizing the S.C.R. which in turn allows current to flow into the relay,

thus activating the normally closed contacts of the relay, thereby opening the contacts, and shutting-off the power to the bill validator and coin mechanism.

5,377,805

BILL DISCRIMINATING APPARATUS

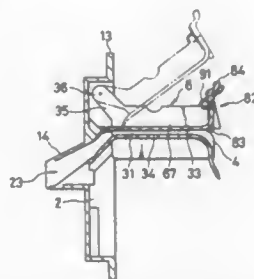
Takashi Ono, Sakado; Masayuki Watabe, Saitama, and Yoshinori Maruyama, Kawagoe, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed May 20, 1993, Ser. No. 64,868

Claims priority, application Japan, May 29, 1992, 4-161645
Int. Cl.⁶ G07F 7/04; B65H 5/02

U.S. Cl. 194—206

4 Claims



1. A bill discrimination apparatus comprising:
first and second bill feeding plates confronting each other to form a bill feeding passage having a predetermined clearance therebetween; and
a bill conveyor means equipped in said bill feeding passage and a detecting means for discriminating a bill conveyed by said bill conveyor means; wherein
said first bill feeding plate is hingedly supported at its base end on said second bill feeding plate;
a bill feeding plate opening lever is hingedly supported with a shaft on the swingable end of said first bill feeding plate, urged by a spring means in the same direction as a closing direction of the first bill feeding plate and provided with an engaging hook at its one end and an operating projection at the other end; and
an engaging piece formed on an exterior member of said apparatus for engaging with the engaging hook of said bill feeding plate opening lever so that said first bill feeding plate can be positioned to form said bill feeding passage.

5,377,806

TOKEN- OR CARD-OPERATED LOCK FOR SHOPPING OR LUGGAGE CART

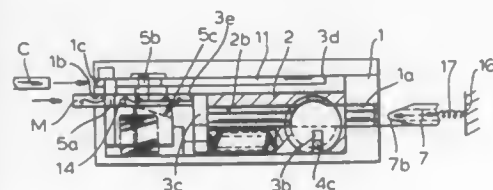
Horst Merchel, Bietigheim, Germany, assignor to Vendoret Holding S.A., Luxembourg-Hesperange, Luxembourg

Filed Jun. 7, 1993, Ser. No. 73,141

Claims priority, application Germany, Jun. 5, 1992, 4218527
Int. Cl.⁶ G07F 17/00

U.S. Cl. 194—212

15 Claims



1. A lock system comprising:
a housing formed with an outwardly open latch port and an actuating port;
a latch member adapted to be inserted into the latch port;
an actuator adapted to be inserted into the actuating port;

a latch element pivotable about an axis between a holding position retaining the latch member against removal from the latch port and a freeing position permitting such removal;
a control element movable on insertion of the actuator into the actuating port from a locked to an unlocked position; and
means including an eccentric crank on the latch element and an actuating surface on the control element for displacing the latch element into the freeing position on displacement of the control element by the actuator into the unlocked position.

5,377,807

COIN VALIDATOR WITH OPTICAL COUPLING

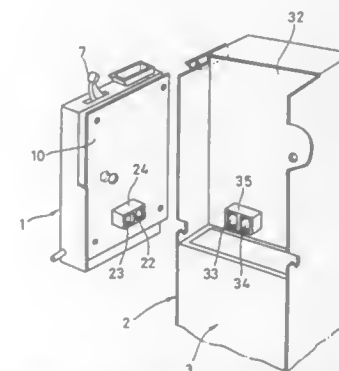
Takayuki Kojima, Kawagoe; Michihiro Ota, Sakado, and Osamu Kobayashi, Tsurugashima, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1993, Ser. No. 175,099

Claims priority, application Japan, Dec. 30, 1992, 4-359999
Int. Cl.⁶ G07F 3/00

U.S. Cl. 194—215

8 Claims



1. A coin changer comprising coin acceptor means for identifying authenticity of a deposited coin and sorting out the coin by denomination, and change control means for receiving the coin sorted out by said coin acceptor means and performing control to count the received coin and to deliver the received coin as a change when necessary, said coin acceptor means being removably attached to said change control means, said coin changer further comprising:
a first light emitting element provided for said coin acceptor means, for transmitting first optical signals from said coin acceptor means; and
a first light receiving element provided for said change control means for receiving the first optical signals to convert the first optical signals into first electrical signals.

5,377,808

MOTOR DRIVEN DOOR RELEASE LATCH

Scott D. Baer, and Douglas W. Woycheshin, both of Shiner, Tex., assignors to Kaspar Wire Works, Inc., Shiner, Tex.
Continuation of Ser. No. 799,381, Nov. 27, 1991, abandoned.
This application Jul. 6, 1993, Ser. No. 88,402

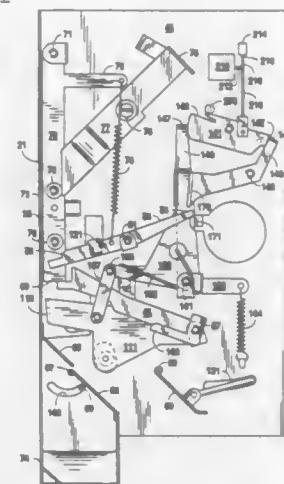
Int. Cl.⁶ G07F 11/04

U.S. Cl. 194—216

7 Claims

1. A newspaper vending rack having a coin box installed which rack and coin box, after coin box installation, includes:
a closed paper receiving cabinet;
a hinged door on said cabinet;
a protruding door hook for closing said door;
a closed coin receiving housing supported by said cabinet;
door hook closure means cooperatively latching said door hook on closure thereof, said door hook closure means comprising:
lever mechanism means capable of alternately latching and releasing said door hook;

spring means tending to position said lever mechanism means so as to release said door hook; and
latch setting means capable of setting said door hook closure means in a position against said spring means so as to prevent release of said door hook;
an electrically-powered coin measuring means mountable inside said housing;
motor-driven rotary motion means, operatively controlled



by said coin measuring means for repositioning said door hook closure means to permit release of said door hook and to thereby permit opening of said door; and
an electric power supply operatively connected to said coin measuring means to power said motor-driven means when coins received in said electrically-powered coin measuring means reach a predetermined total;
wherein said coin measuring means momentarily energizes said motor-driven means to release said door hook.

5,377,809

COIN CONTROL SYSTEMS FOR AUTOMATIC MACHINES

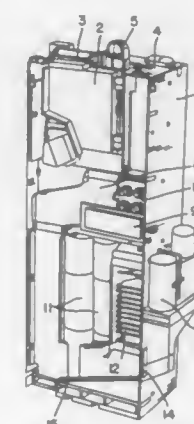
Jesus E. Ibarrola, Pamplona Navarra, Spain, assignor to Azkoyen Industrial, S.A., Peralta, Spain
PCT No. PCT/ES91/00042, § 371 Date May 5, 1992, § 102(e) Date May 5, 1992, PCT Pub. No. WO92/01271, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 10, 1991, Ser. No. 838,701

Claims priority, application Spain, Jul. 12, 1990, 9001908
Int. Cl.⁶ G07D 5/08

U.S. Cl. 194—317

3 Claims



1. A coin control system for automatic machines, comprising a prismatic rectangular and vertically elongated frame box, a

coin selector accommodated within an upper part of said frame box, a slot for introduction of coins in an upper surface of said frame box, a return button for return of rejected coins thereof and projecting through an opening provided in said upper surface of said frame box, a classifier provided in a middle section of said frame box, immediately below the coin selector, for deviating and classifying the coins received from the coin selector, an alphanumeric display disposed at the classifier and being visible through a window in said frame box for showing messages to a user, said classifier opening into a lower duct which channels the coins into a definitive collecting box, a series of vertical tubes established in a lower section of the frame box below said classifier and corresponding to respective return mechanisms, said classifier unloading into said series of vertical tubes, a module for temporary storage of coins and being accommodated in the lower section of the frame box for allowing return of the coins introduced by a user when the machine is unable to supply a desired product or service, external return mechanisms located on at least one of the side walls of the frame box, a guiding ramp and a coin return duct coupled to said external return mechanisms and accommodated below said module in said frame box, said return mechanisms unloading coins through a slot provided in one of the side walls of said frame box onto said guiding ramp which leads the coins towards said coin return duct, a closing cover, and function buttons provided on said closing cover, wherein said closing cover of said frame box further comprises openings for both visual control of the display and for acting on said function buttons and vertical slots for visual control of the contents of the vertical tubes.

5,377,810

CONVEYOR SYSTEM

Harri Lehtonen, and Jorma Kempas, both of Tampere, Finland, assignors to Lokomo Oy, Tampere, Finland

Filed Jun. 2, 1993, Ser. No. 70,219

Claims priority, application Finland, Jun. 3, 1992, 922557

Int. Cl.⁶ B65G 41/00

U.S. Cl. 198—303

27 Claims



1. A method for joining at least two longitudinal conveyors provided with a feeding and a discharge end such that the discharge end of the preceding conveyor is always joined to the feeding end of the following conveyor, whereby a conveyor chain is formed which has a feeding end and a discharge end and at least one joining point, for transporting material by means of the chain from the feeding end to the discharge end, and for disassembling the chain, comprising the steps of:

forming a conveyor chain such that in at least one joining point, the conveyors are joined to each other by an articulation which allows the conveyors to turn relative to each other on a horizontal plane and a vertical plane, the articulation being supported on the ground by a movable support; supporting the feeding end of the chain on a support extending from a crushing unit so that the feeding end is turnable relative to the crushing unit; transporting material from the feeding end of the chain to its discharge end; and disassembling the chain.

5,377,811
METHOD AND APPARATUS FOR COLLECTING GOODS
Nobuhiro Tanaka, Saitama, Japan, assignor to Kao Corporation, Tokyo, Japan

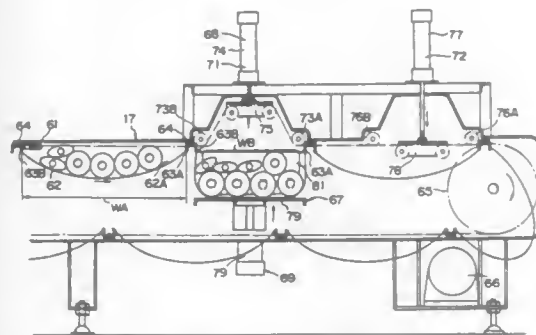
Filed Feb. 14, 1994, Ser. No. 196,654

Claims priority, application Japan, Feb. 18, 1993, 5-051330

Int. Cl.⁶ B65G 47/30

U.S. Cl. 198—418.6

5 Claims



1. A method of collecting goods comprising: using goods drop-out units each for accommodating goods of a single kind and capable of dropping out a given quantity of goods comprising; arranging a plurality of goods drop-out units prepared for respective different kinds of goods along a goods collection path of a conveyor; and collecting goods dropped out from each goods drop-out unit in a goods receptacle provided in the conveyor which has a flexible U-shaped goods receptacle each provided in correspondence to the opening of each goods drop-out unit; each goods receptacle being successively brought to the position of the openings of each goods drop-out unit with intermittent feeding of the conveyor such as to bring each goods receptacles of the conveyor to the positions of the openings of each goods drop-out units at a time; successively collecting in each goods receptacle the goods dropped out from each goods drop-out unit, thereby collecting the plurality of different kinds of goods in the respective goods receptacles.

5,377,812

APPARATUS FOR ORIENTATING AND FEEDING
ROD-LIKE OBJECTS

Hiromitsu Oohara, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Nov. 3, 1993, Ser. No. 145,186

Claims priority, application Japan, Nov. 5, 1992, 4-296052

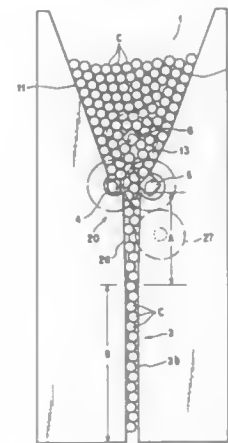
Int. Cl.⁶ B65G 47/12

U.S. Cl. 198—455

15 Claims

1. An apparatus for orientating and feeding a large number of rod-like objects, comprising: a hopper for containing rod-like objects arranged at random; an orientation passage, open in a bottom of the hopper, for feeding the rod-like objects in an orientated state, said orientation passage having an entrance opening which communicates with an internal region of the hopper and which has a width greater than a diameter of the rod-like objects, said orientation passage being tapered and decreasing in width in a direction away from the entrance opening; a pair of rotatable entrance agitator rollers located on opposite sides of the entrance opening of the orientation passage, said entrance agitator rollers having a non-circular section; a rotatable central agitator roller arranged in a lower region of the hopper and located above the entrance agitator rollers, said central agitator roller having a non-circular section; and

rotating means for rotating the central and entrance agitator rollers, said rotating means rotating the entrance agitator



rollers in the same direction and rotating the central agitator roller in an opposite direction to that of the entrance agitator rollers.

5,377,813

CORNER TRACK FOR A CONVEYOR SYSTEM

Rodney S. Markin, Omaha, Nebr.; Eldon L. Tackett, Neola, Iowa, and Stephen J. Hoskinson, Omaha, Nebr., assignors to Board of Regents - Univ. of Nebraska, Lincoln, Nebr.

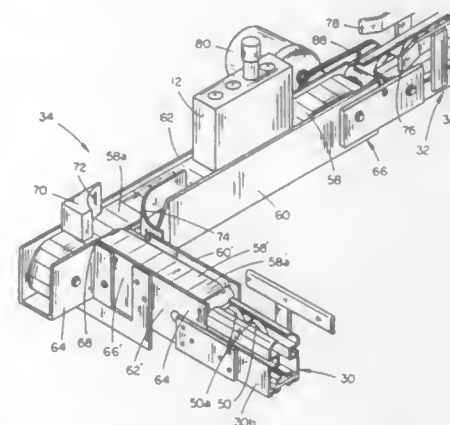
Division of Ser. No. 75,682, Jun. 7, 1993, Pat. No. 5,351,801.

This application Mar. 15, 1994, Ser. No. 213,849

Int. Cl.⁶ B65G 37/00

U.S. Cl. 198—465.1

2 Claims



1. An automated lab conveyor system, including a conveyor track for transporting a specimen carrier, said track comprising:

a first length of track having upstream and downstream ends; a second length of track having upstream and downstream ends, connected at its upstream end to the downstream end of said first track length; said first and second track lengths oriented at an angle with respect to one another to form a corner at the connection thereof; said conveyor track including inner and outer spaced-apart guide rails therealong for directing a specimen carrier therebetween, and an operable transport surface for moving a specimen carrier; a first auxiliary transport surface aligned with said first track length and connected to the downstream end thereof, said first auxiliary transport surface operating at a speed less

than that of first track length transport surface, to slow the movement of a specimen carrier carried thereon; a second auxiliary transport surface aligned with said second track length and connected to the upstream end thereof; a downstream end of said first auxiliary transport surface located adjacent to and slightly above an upstream end of the second auxiliary transport surface, to convey a specimen carrier from the first auxiliary transport surface to the second auxiliary transport surface.

5,377,814

TRANSPORT CARRIER FOR USE IN AN ARTICLE
SORTING SYSTEM

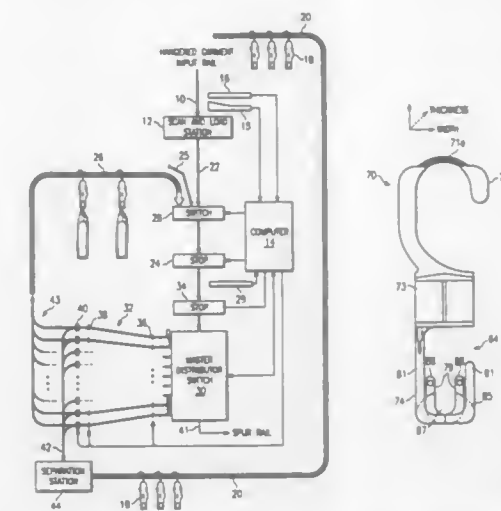
Barry W. Smith, Dallas, and Michael W. Freitas, Irving, both of Tex., assignors to Fabri-Check, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 541,282, Jun. 20, 1990, Pat. No. 5,072,822. This application Dec. 16, 1991, Ser. No. 807,730

Int. Cl.⁶ B65G 47/34

U.S. Cl. 198—465.4

4 Claims



3. A transport carrier for use in an article sorting system having transport rails, including at least screw-type conveyor rails, for transporting a plurality of said carriers, comprising: a frame member; a hook fixed to said frame member for engagement with the transport rails so that the carrier can be moved along the transport rails, wherein the hook comprises an apex which is narrower in thickness than the thickness of the frame for enabling ease of mechanical separation of the carriers; and a connector fixed to said frame for removably attaching an article to said transport carrier.

5,377,815

CONVEYOR APPARATUS FOR BATCH TREATMENT OF
OBJECTS

Helmut Vetter, Ravensburg; Gerhard Ruppenthal, Vogt, and Klaus Steinbach, Baienfurt, all of Germany, assignors to Arzneimittel GmbH Apotheker Vetter & Co., Ravensburg, Germany

Filed Mar. 11, 1994, Ser. No. 212,179

Claims priority, application Germany, Mar. 12, 1993, 4307906

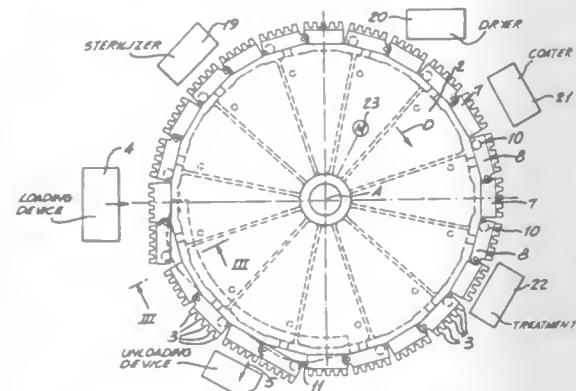
Int. Cl.⁶ B65G 47/34

U.S. Cl. 198—476.1

9 Claims

1. In combination with a loading device capable of loading a plurality of objects as a batch at a loading station, an unloading device capable of unloading a plurality of objects as a batch at an unloading station offset angularly relative to an axis to the loading station, and a plurality of treatment stations spaced angularly relative to the axis between the loading and unloading station, a conveyor system comprising:

a carousel rotatable about the axis in steps and having an outer periphery along which the stations are spaced; drive means for rotating the carousel about the axis in steps; a plurality of fixed segments spaced along the periphery and each having a straight outer edge; a plurality of movable segments spaced along the periphery, interleaved with the fixed segments, each having a straight outer edge, and each having a pair of ends; means including respective pivots secured between one of the ends of each of the movable segments and the carousel for movement of each of the movable segments between an inner position with its outer edge nonparallel to the



outer edges of adjacent fixed segments and an outer position with its outer edge parallel to the outer edge of a one of the adjacent fixed segments; control means at the loading and unloading stations for pivoting the movable segments into the outer positions when same are stopped in the loading and unloading stations and for otherwise normally maintaining the movable segments in the inner positions; and a row of a plurality of holders for the objects on each of the outer edges, whereby when a fixed segment block and a movable segment block are in the loading or unloading station all of the respective holders are aligned and can be loaded or unloaded simultaneously.

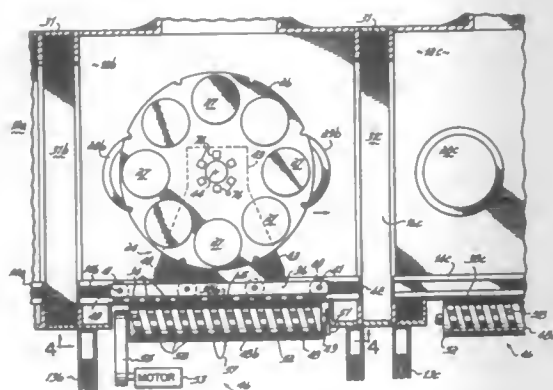
5,377,816 SPIRAL MAGNETIC LINEAR TRANSLATING MECHANISM

Mario Deligi, Newton, N.J., and Senia Derbinsky, River Edge, N.Y., assignors to Materials Research Corp., Orangeburg, N.Y.

Filed Jul. 15, 1993, Ser. No. 92,004
Int. Cl.⁶ B65G 35/00

U.S. Cl. 198—619

37 Claims



1. A magnetic translating mechanism to move a wafer along a path through a wafer processing chamber having at least one wall comprising:
an elongated cylindrical shaft located externally of the pro-

cessing chamber and mounted to extend parallel to said path, the shaft rotating on its longitudinal axis adjacent a wall of the processing chamber;
at least one elongated magnetic drive, comprising successive drive sections, wound spirally around the shaft to rotate with the shaft; and
a wafer support structure for holding a wafer, said support structure mounted to be movable within the chamber proximate the wall so as to move generally along said path parallel to the axis of the elongated shaft, the structure having at least one magnetic thread segment thereon to magnetically couple the structure to a section of the magnetic drive, rotation of the shaft exposing the thread segment to different successive sections of the drive disposed further along the length of the shaft, such that the thread segment is coupled to the successive drive sections and moves the structure linearly along said path parallel to the elongated shaft as the shaft rotates.

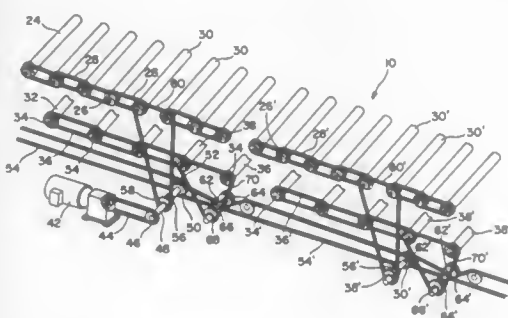
5,377,817 BI-DIRECTIONAL ACCUMULATION ROLLER CONVEYOR

Robert E. Kohl, Duxbury, Mass., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Dec. 22, 1993, Ser. No. 173,774
Int. Cl.⁶ B65G 13/06

U.S. Cl. 198—781

12 Claims



1. A bi-directional accumulation roller conveyor comprising:
a frame structure including a pair of longitudinally extending transversely connected side frames;
a first plurality of parallel upper load carrying rollers supported between said side frames, said upper load carrying rollers being arranged in a series of successive upper groups, each of said upper groups having a driving connection between the rollers thereof;
a second plurality of parallel lower load carrying rollers supported between said side frames below said upper load carrying rollers, said lower load carrying rollers being arranged in a series of successive lower groups each having a driving connection between the rollers thereof;
a drive unit supported by said frame structure;
driving means extending from said drive unit to each of said upper groups and to each of said lower groups for driving the rollers of said upper groups in one direction of rotation and the rollers of said lower groups in the opposite direction of rotation whereby articles supported on said upper load carrying rollers are conveyable by successive upper groups to a terminal upper group at one end of the conveyor and articles supported on said lower load carrying rollers are conveyable by successive lower groups to a terminal lower group at the opposite end of the conveyor;
said driving means including for each of said series of upper and lower groups a respective series of upper and lower drive trains, each drive train including clutch means therein for selective engagement and disengagement thereof; and

upper and lower accumulation means for disengaging said clutch means of said drive trains of said upper groups and said lower groups respectively in response to the presence of an article on each of said terminal upper and lower groups and on successive groups upstream from each of said terminal upper and lower groups.

5,377,818

CONVEYOR BELT SPLICE COVER

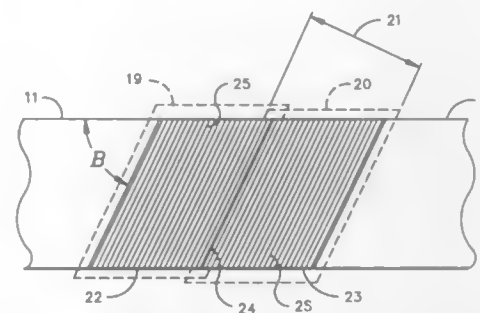
Richard J. White, Vancouver, Canada, assignor to Suncor, Inc., Fort McMurray, Canada

Filed Dec. 6, 1993, Ser. No. 162,225

Claims priority, application Canada, Jan. 27, 1993, 2088203
Int. Cl.⁶ B65G 15/30

U.S. Cl. 198—844.2

10 Claims



1. In the method of joining elastomeric conveyor belts by splicing them with panels of a cover material to provide a splice, the improvement which comprises laying panels consisting of an elastomer reinforced solely with weft strands in abutment over the area at which the splice is to be made at a bias angle and in a manner so that said weft strands are continuous across the full width of the belt throughout the area of the splice.

5,377,819

CONVEYOR APPARATUS AND METHOD

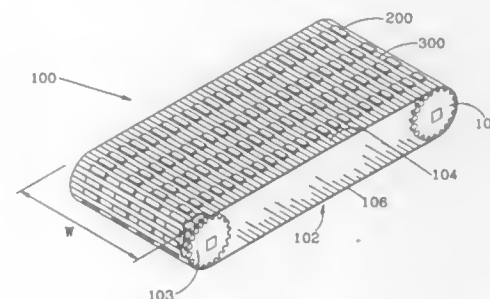
Paul L. Horton, and John J. Carbone, both of Metairie, La., assignors to The Laitram Corporation, Harahan, La.

Continuation of Ser. No. 87,479, Jul. 2, 1993, abandoned. This application May 2, 1994, Ser. No. 236,666

Int. Cl.⁶ B65G 17/06

U.S. Cl. 198—853

31 Claims



9. A conveyor apparatus for moving items comprising:
(a) an endless loop belt comprising a succession of individual components selected from a first set of components having high-friction characteristics and a second set of components having low friction-characteristics, the individual components comprising
(1) a first end,
(2) a second end,
(3) an inner surface, and
(4) an outer surface, such that the first end and the second end comprise a pivot, the second end of each of the

components being attached to the first end of at least one of the next components of the succession of components to form the endless conveyor belt, the outer surface of the first set of components protruding beyond the outer surface of the second set of components to form a high-friction conveying surface, and

(b) a wear strip for supporting the belt, the first and second sets being further attached such that a longitudinal band of components is formed having low surface-friction characteristics on the inner surface, and the low surface-friction, longitudinal band is operationally associated with the wear strip for reducing the energy consumption and drive friction while increasing the pulling strength associated with the conveyor.

5,377,820

MAGNETIC DISPLAY ASSEMBLY

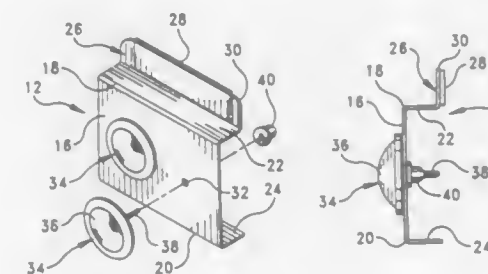
Pamela Christman, 8 Oak St., Rehoboth, Mass. 02769

Filed Jun. 16, 1993, Ser. No. 76,972

Int. Cl.⁶ A45C 11/04

U.S. Cl. 206—6.1

10 Claims



6. A magnetic display card comprising:
a face portion;
means on said face portion for mounting an article which is to be displayed, said article mounted on said face portion having a portion which extends forwardly from said face and a portion which extends rearwardly from said face portion;
a first arm portion extending rearwardly from said face portion, said first arm portion having a length so as to provide a space for accommodating the rearwardly extending portion of said article;
a first flange portion extending from said arm portion; and
magnetic means on said flange for attaching the card to a metallic surface.

5,377,821

CARTON WITH FLAG FOR DISPLAYING MERCHANDISE

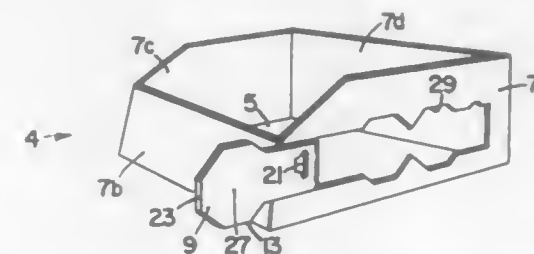
Robert W. Fierek, Duluth, Minn., assignor to Portable Products, Inc., St. Paul, Minn.

Filed Aug. 25, 1993, Ser. No. 111,718

Int. Cl.⁶ G09F 3/00; B65D 73/00, 5/50

U.S. Cl. 206—44 R

6 Claims

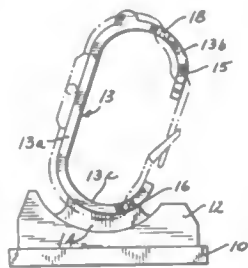


1. An apparatus for displaying merchandise, the apparatus comprising:

- a) a carton for the display of merchandise having a bottom and at least one side;
- b) at least one arm having a hinged edge and a mutually exclusive periphery edge, the hinged edge hingably connected to the carton, wherein the arm has a packing position and an operable position, the arm being moveable from the packing position to the operable position thereby causing the arm to project from at least one side of the carton and form a flag; and
- c) a means for securing the arm in the operable position comprising a first tab operably connected to the box and a second tab operably connected to the arm, the first and second tabs being interlockable thereby securing the arm in the operable position.

5,377,822
PACKAGE FOR SUPPORTING AND DISPLAYING A STRAP-TYPE WRISTWATCH
 Jack L. Herzog, 5702 Durocher Street, Montreal, Canada H2V 3Y2

Filed Jul. 14, 1993, Ser. No. 91,251
 Int. Cl.⁶ B65D 85/40
 U.S. Cl. 206—45.14 5 Claims



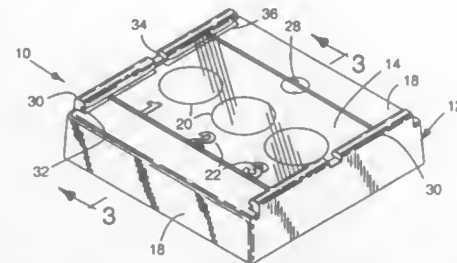
1. In a package for supporting and displaying a strap-type wristwatch that has a pair of straps, adapted to be buckled together when worn on the wrist of a user, without requiring that said straps be buckled together for purposes of such support and display in the package, said package including a support member that comprises a substantially C-shaped element having an elongated central segment terminating in opposite end portions that are positionally displaced from said central segment, and strap retaining means integral with said supporting member, the improvement wherein said central segment is free of means for retaining a wristwatch in place on said support member, said strap retaining means including at least two slots, one in each of said end portions, extending transverse to the direction of elongation of said central segment, each of said slots opening into an edge of its associated end portion, said slots being provided to hold a strap-type wristwatch in place on said support member by slipping the two straps of a wristwatch into said two slots respectively, at least one of said end portions also including a flexible clip positioned in overlying relation to said end portion, said clip being integral with a second edge of said one end portion opposite the edge into which the slot in said one end portion opens, said clip extending from said second edge across said one end portion in spaced substantially parallel relation to the slot in said one end portion.

5,377,823
COMPACT DENTAL DISPENSING TRAY WITH SLIDING COVER

Dirk L. Steen, Apple Valley; Malcolm W. Wilcox, Woodbury, and Thomas W. Martin, Little Canada, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

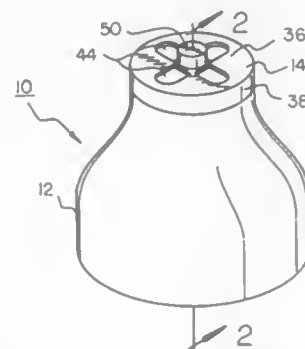
Continuation of Ser. No. 978,117, Nov. 18, 1992, abandoned.
 This application Jan. 4, 1994, Ser. No. 177,204
 Int. Cl.⁶ A01B 19/02; A61G 15/00

U.S. Cl. 206—63.5 8 Claims



7. A dispensing tray for dental material comprising: a substrate having at least one well for containing a quantity of dental material curable by exposure to actinic radiation; a cover that transmits at least part of the visible light spectrum and does not transmit a substantial portion of the actinic radiation; and means for slidably coupling said cover to said substrate in order to enable said cover to move from a first orientation covering said at least one well to a second orientation at least partially uncovering said at least one well, said substrate having overall dimensions sufficiently small to enable said substrate to entirely fit within the confines of a human hand, wherein said means for slidably coupling said cover to said substrate comprises a pair of upstanding, elongated bars connected to said substrate, said bars presenting opposed grooves for contact with said cover, and wherein said bars have relief notches for enhancing sliding movement of said cover.

5,377,824
DEVICE FOR STORING TOOTHBRUSHES
 Clyde O. Seymour, P.O. Box 286, Medicine Bow, Wyo. 82329
 Filed Dec. 2, 1993, Ser. No. 160,216
 Int. Cl.⁶ B65D 81/24, 51/18; A47B 73/00; A61L 2/18
 U.S. Cl. 206—209.1 2 Claims



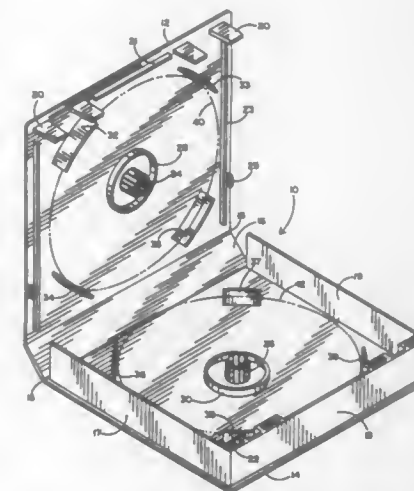
1. A container for the storage of toothbrushes in an antiseptic liquid comprising, in combination: a container having a circular bottom wall, an annular upper opening, and a side wall therebetween, the side wall having an annular lower extent and an annular upper extent and curved intermediate extent therebetween, the upper extent terminating in external threads; a quantity of antiseptic fluid located within the container;

- a cap having an upper circular surface and downwardly extending side walls in an annular configuration with internal threads matable with the external threads of the container;
- a plurality of apertures formed in the circular surface of the cap of a sufficient size to receive and allow passage of the bristle end of a toothbrush therethrough;
- a handle in a cylindrical configuration extending upwardly from the center of the cap between the apertures; and
- a rotatable cover positionable over the cap, the cover having a circular upper surface and downwardly extending side walls terminating in inwardly directed flanges received in a first annular recess formed in the cap and a second annular recess formed in the cover for receiving the handle of the cap.

5,377,825
COMPACT DISC STORAGE CASE
 Philip K. Sykes, 209 Stonecliffe Aisle, Irvine, Calif. 92715, and Dennis B. Barnett, 321 Catalina Dr., Newport Beach, Calif. 92663

Continuation of Ser. No. 250, Jan. 4, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 183,629
 Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—232 3 Claims



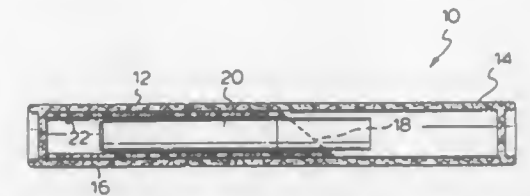
1. A container for enclosing at least one compact disc of the type used for storing digital information recoverable by operation of a laser producing light incident on the disc surface between inner and outer radial disc edges; the container comprising:

- a unitary, injection-molded plastic housing having at least one substantially planar interior surface and having a plurality of integral flexible fingers extended perpendicularly from said planar interior surface; said fingers being arranged in an annular configuration to form a hub for receiving said inner radial edge of said disc in press fit engagement therewith, at least one of said fingers having an outwardly radially disposed integral knob formed below an upper surface of said finger; said planar interior surface also having an integral support ring extending perpendicularly therefrom and disposed in spaced symmetrical relation about said hub to receive said disc surface above said interior planar surface for securing said disc between said ring and said knob in spaced parallel relation to said planar interior surface; and a plurality of curved documentation support members spaced from said ring and also extending integrally from said interior planar surface, each of said documentation support members being elongated and having a height above said interior planar surface for supporting overlying documentation in

- a position spaced from said disc to prevent contact between said documentation and said disc within said container.

5,377,826
CIGARETTE EXTINGUISHING STORAGE DEVICE
 George E. Ayres, Campbellville; Gary D. Black, Brampton; Larry Bowen, Orangeville, all of Canada; Warren A. Brackmann, Collins, Mo.; Benedict Keaveney, Rexdale, and John D. Kilpatrick, Aurora, both of Canada, assignors to Rothmans, Benson & Hedges, Inc., North York, Canada
 Filed Jan. 22, 1993, Ser. No. 8,347
 Int. Cl.⁶ A24F 13/18

U.S. Cl. 206—246 5 Claims



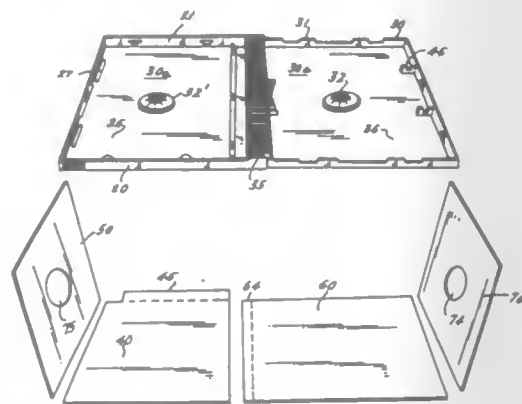
1. A tubular cigarette extinguishing and storage device, comprising: a first individual tubular element closed at one end and open at the other, a second individual tubular element closed at one end and open at the other, said first and second individual tubular elements being provided by a first tubular element having an inner diameter which is substantially constant along its length and a second tubular element having the open end thereof swagged to an outer diameter corresponding to the inner diameter of said first tubular element and tapering slightly toward the open end thereof, whereby said first and second tubular elements telescope together into a friction-fit relationship to define an enclosure for extinguishing a cigarette and storing an extinguished cigarette, said first and second individual tubular elements being dimensioned to receive a cigarette in sliding fit relationship with an internal surface of overlapping portions of said first and second individual tubular elements, and deodorant means located in said enclosure for minimizing the adverse effects of cigarette smoke condensates in said enclosure.

5,377,827
MEDIA DISK STORAGE CONTAINER WITH PRINTED PAPERBOARD SHEETS
 Richard Roth; Paul D. Miller, and William L. Plumb, all of New York, N.Y., assignors to Queens Group, Inc., Long Island City, N.Y.
 Continuation-in-part of Ser. No. 904,342, Jun. 22, 1992, Pat. No. 5,284,242. This application Feb. 7, 1994, Ser. No. 192,829
 The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
 Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—310 16 Claims

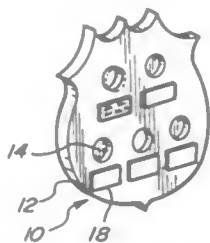
1. A media disk storage container, comprising: a lid comprising a first panel having an inner surface and an outer surface, and a first sidewall extending at least partially around the periphery of the first panel, the outer surface of the first panel being recessed with respect to a peripheral edge of the first sidewall; a base comprising a second panel having an inner and an outer surface, and a second sidewall extending at least partially around the periphery of the second panel, the outer surface of the second panel being recessed with respect to a peripheral edge of the second sidewall; means for hingedly connecting the lid and the base together;

- a first sheet of material adhered to the recessed outer surface of the lid;
- a second sheet of material adhered to the inner surface of the lid;
- a third sheet of material adhered to the recessed outer surface of the base; and



- a fourth sheet of material adhered to the inner surface of the base;
- wherein the first, second, third and fourth sheets of material are separate from each other.

5,377,828
HOCKEY PUCK DISPLAY APPARATUS
 Daniel P. Jaroszewich, 2109 Wattles, Troy, Mich. 48098
 Filed Sep. 10, 1993, Ser. No. 119,499
 Int. Cl.⁶ B65D 85/20, 73/00; A97F 7/00
 U.S. Cl. 206—315.1 **7 Claims**



1. An ornamental hockey puck display apparatus comprising:
 - a board member, said board member having two opposed substantially planar surfaces, each surface peripherally defined by a completely free edge, one of said surfaces providing a backing;
 - at least one hockey puck holding member associated with said one surface of said board member, each holding member having an arcuate surface portion engaging a cylindrical side surface of a hockey puck for supporting the cylindrical surface of the hockey puck, and displaying the hockey puck such that a flat portion of the hockey puck is in a plane parallel to said board member.

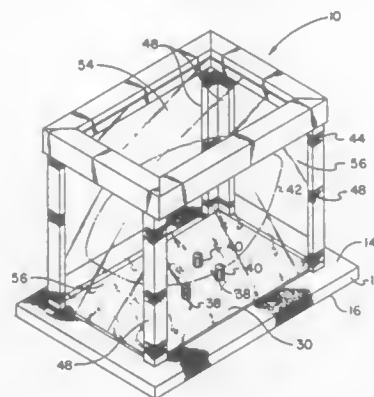
5,377,829
FOOTBALL DISPLAY CASE
 Ronald J. Bahl, 4408 S. 8th St. Terr., Blue Springs, Mo. 64015
 Filed Apr. 4, 1994, Ser. No. 222,435
 Int. Cl.⁶ B65D 85/00; A47F 7/00
 U.S. Cl. 206—315.9 **3 Claims**

2. A football display case comprising:
 - a base in a rectangular configuration having an upper surface and a lower surface, the base being sanded, stained and finished with polyurethane;
 - a piece of plywood in a rectangular configuration having an

upper and lower surface and glued at its lower surface to the upper surface of the base;

a piece of artificial turf in a rectangular configuration having an upper surface and a lower surface and glued at its lower surface to the upper surface of the plywood, the piece of turf having a length and width substantially the same as that of the plywood;

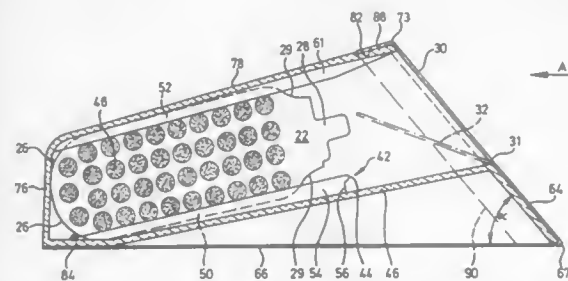
four apertures formed in the base, plywood and turf, the four apertures arranged to define rectangular configuration, a



dowel located in the apertures to an extent for holding a football on the dowels above the artificial turf; and

an oak frame resting on the base, the frame having a rectangular upper section with an external periphery greater than the plywood and turf but less than the base, the frame also including four vertical posts, each post coupled at its upper end to the rectangular upper section at one of the upper section corners and resting at its lower end upon the turf and base.

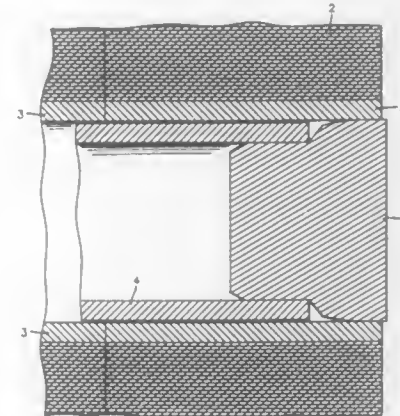
5,377,830
BRUSHHEAD MAGAZINE FOR TOOTHBRUSHES
 Roland Jeannot, Duesseldorf, Germany; Robert Leutwyler, Boppelsen, and Werner Leutwyler, Zurich, both of Switzerland, assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
 Continuation of Ser. No. 13,274, Feb. 4, 1993, abandoned. This application Feb. 7, 1994, Ser. No. 192,754
 Claims priority, application Germany, Feb. 19, 1992, 4205028
 Int. Cl.⁶ B65D 85/00
 U.S. Cl. 206—362.1 **17 Claims**



1. Brushhead magazine for receiving a number of brushheads, comprising a plurality of containers which lie parallel alongside one another in mutual separation, said containers having side walls, in each of which containers is fully enclosed a brushhead and the height of which is dimensioned to correspond approximately to the width of a brush base of each brushhead, each container having a top side, a container opening, said brush base having a longitudinal border, said brushhead having a bristle zone, a coupling end of the brushheads in each case facing towards the container opening, which is closed by a wall of packing material which can be opened by

a thrust movement of the coupling end of a brush handle for attaching the brushhead to the brush handle, characterized in that the wall exhibits, in the area of each container opening, a closing flap made from essentially dimensionally stable material, which closing flap is defined by a target rupture line and a hinge, formed by an attenuation line in the dimensionally stable material, in that the closing flap, at its target rupture line is destroyed, can be pivoted by means of the coupling end of the brush handle about the hinge into an open position in the interior of the container, and in that in each container there is disposed a locking device, by means of which the closing flap can be locked in its open position.

5,377,831
CORE OR TUBE PLUG AND ROLL ASSEMBLY THEREWITH
 David M. Crooks, Paducah, Ky., assignor to Westvaco Corporation, New York, N.Y.
 Filed Dec. 21, 1993, Ser. No. 170,738
 Int. Cl.⁶ B65D 85/66
 U.S. Cl. 206—394 **13 Claims**



1. A plug capable of protecting an end of a hollow core suitable for supporting material wrapped thereover and further capable of securing and aligning each of opposite ends of a hollow tube within the hollow core, the plug comprising a substantially rotation-symmetrical body having the following axially-sequential segments:
 - a) a section which is shaped for insertion into the hollow core;
 - b) a conical section which assists in alignment of the hollow core and precludes over-insertion into the hollow tube;
 - c) a conical section suitable for insertion into the hollow tube; and
 - d) a conical starter section which assists in alignment of the plug in the hollow tube.

5,377,832
FILM CANISTER WITH SELF-LOCATING ASSEMBLY FEATURES
 Stuart J. Wyman, St. Paul, Minn., and Devin L. Cantonwine, Medford, Oreg., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
 Continuation of Ser. No. 945,536, Sep. 16, 1992, abandoned. This application Jan. 4, 1994, Ser. No. 177,699
 Int. Cl.⁶ B65D 85/67
 U.S. Cl. 206—397 **1 Claim**

1. A light-tight canister for a roll of photosensitive media, comprising:
 - an opaque tubular sleeve having outer ends with edges, including:
 - a media exit slot extending between the outer ends; and
 - a first alignment key structure adjacent each edge and positioned with respect to the media exit slot; and
 - a pair of opaque end caps with peripheral edges config-

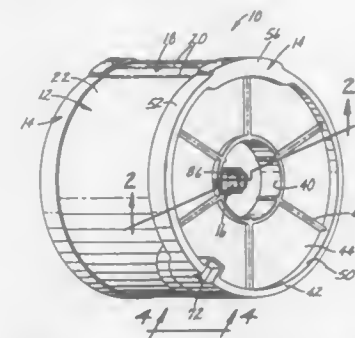
ured to engage the edges and enclose the outer ends of the sleeve, each end cap including:

- a media exit slot accommodating structure; and
- a second alignment key structure configured to mate with the first alignment key structure and positioned with respect to the exit slot accommodating structure providing only one alignment in which the exit slot accommodating structure is aligned with the media exit slot of the sleeve when the end cap is engaged with the sleeve and the second alignment key structure is mated with the first alignment key structure;

wherein each first alignment key structure includes a notch in the edge of the sleeve;

wherein each second alignment key structure includes a tab extending from the peripheral edge of the end cap and sized to fit within the notch in the edge of the sleeve;

wherein the notch of each first alignment key structure includes tapered edges;



wherein the tab of each second alignment key structure includes tapered edges,

wherein each end cap further includes:

- inner and outer peripheral wall flanges defining an edge of the tubular sleeve;
- a taper on a portion of the inner wall flange adjacent the tab; and
- a skirt extending from the outer wall flange to cover the notch in the sleeve when the end cap is engaged with sleeve;

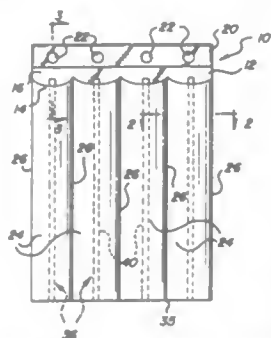
wherein each end cap is a molded polymer member and the skirt further includes:

- an inside surface extending in a perpendicular direction from an inside surface of the outer wall flange to fit flush with an outer surface of the sleeve when the cap is engaged with the sleeve; and
- an outer surface having at least a portion extending from an outer surface of the outer wall flange at a non-perpendicular draft angle.

5,377,833
BEVERAGE CONTAINER HOLDER
 Celeste A. Ranger, 1184 Glendale, Burton, Mich. 48509
 Filed Sep. 29, 1993, Ser. No. 129,451
 Int. Cl.⁶ B65D 75/00
 U.S. Cl. 206—430 **14 Claims**

1. A device for storing containers comprising: a bag member having opposed front and back panels extending lengthwise between top and bottom ends of said bag member, said panels being joined at their bottom and opposite edges and at laterally spaced zones across the width of said bag member to define a plurality of elongate pockets extending between said top and bottom ends, each of said pockets being of suitable size for accommodating a plurality of such containers therein, each of said pockets being open at its upper end to enable the introduction thereto of containers, each of said pockets being closed except at its upper end, said pockets having a rip cord secured

to and extending longitudinally of at least one of said panels, whereby the application of an opening force to an end of said



rip cord causes said one of said panels to tear along the length of said rip cord thereby opening the associated pocket.

5,377,834

DISPENSER PACKAGE FOR LIGHT-SENSITIVE PRODUCTS

Frank Müller, Rengsdorf; Peter Weckwarth, Solingen, and Hans-Uwe Richter, Wuppertal, all of Germany, assignors to Lohmann GmbH & Co. KG, Neuwied, Germany

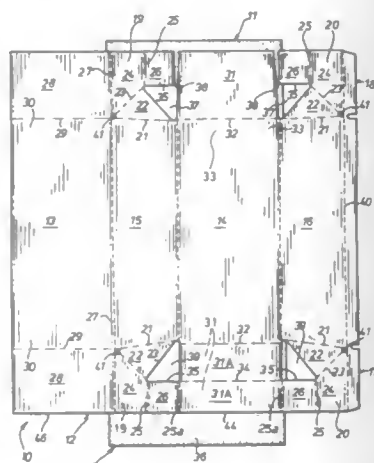
Filed Aug. 2, 1993, Ser. No. 103,391

Claims priority, application Germany, Jul. 31, 1992, 4225347

Int. Cl.⁶ B65D 85/62

U.S. Cl. 206—455

12 Claims



1. A dispenser package for a light-sensitive product, comprising:

an erectable outer box and a tubular protective foil received in said box and containing said product, said box comprising:

a lower panel;

an upper panel;

two substantially parallel side panels, one of said side panels connecting said upper and lower panels along opposite longitudinal edges thereof, the other of said side panels being connected to said upper panel along a longitudinal edge thereof;

respective lower inwardly foldable flaps at opposite ends of the lower panel and at opposite ends of said outer box;

respective upper inwardly foldable flaps at opposite ends of the upper panel and at opposite ends of said outer box;

respective inwardly foldable end flaps at opposite ends of said outer box and at each side panel, each of said end flaps including:

a respective triangular segment having a base connected

by a respective first fold line with the respective one of said side panels,

a respective trapezoidal segment connected laterally to a respective side of a respective triangular segment by a second fold line, and

a respective rectangular segment connected by a third fold line to an upper side of each trapezoidal segment; a fourth fold line connecting a base of each of said trapezoidal segments of the end flaps of said one of said side panels with a respective lower foldable flap;

each of said lower foldable flaps being provided with a respective fifth fold line connecting each lower flap with said lower panel;

each of said upper foldable flaps being provided with a respective sixth fold line connecting each upper flap with said upper panel;

means at at least one of said ends of said outer box for connecting the respective upper flap with the two end flaps at the said one end of said outer box;

a seventh fold line substantially parallel to said sixth fold line subdividing said upper flap at said one end of said outer box into outer and inner rectangular panel segments, each of the rectangular segments of the end flaps at said one end of said outer box being formed with a respective eighth fold line extending perpendicular to the seventh line, said eighth fold lines delimiting between them the outer panel segment of said upper flap of said one end of said outer box, said outer panel segment being folded over said inner panel segment along the seventh fold line upon erecting the dispenser package; and

a closed end of said foil extending from said one end of said outer box upon closure thereof.

5,377,835

RECLOSABLE FILM PACKAGE

Herman L. Cornelissen, Aartselaar, and Dirk Peeters, Kontich, both of Belgium, assignors to AGFA-Gevaert N. V., Mortsel, Belgium

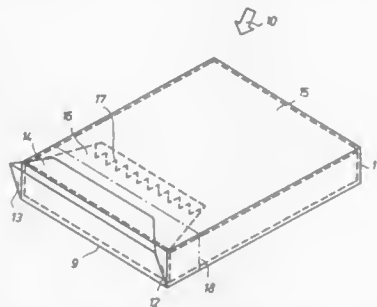
Continuation of Ser. No. 890,251, May 29, 1992. This application Oct. 1, 1993, Ser. No. 130,423

Claims priority, application Belgium, Jun. 18, 1991, 91201539.3

Int. Cl.⁶ G03B 42/04

U.S. Cl. 206—455

8 Claims



1. A reclosable film package comprising:

1) A filmpack formed of a multiplicity of rectangular film sheets arranged in a stack having upper and lower faces, two opposed sides, and two opposed ends, said stack being contained within a bag of flexible light-tight wrapping material comprising upper and lower panels joined along opposite sides and one end to define a bag fitting around the sheet stack, extensions on said panels at an end opposite said one end, said extensions projecting beyond a corresponding stack end to constitute a foldable tubular flap on said bag opposite said one end, said extensions terminating in free edges and having generally adjacent said free edges sealing means for light-tightly sealing said

tubular flap, said sealing means being unsealable to open said tubular flap of the bag for removal of film sheets from said bag through the thus-opened flap end while the remainder of the sheet stack remains intact within the bag, the unsealable sealing means being a peelable seal, said tubular flap being folded over a portion of the bag in overlying relation to one of said panels of the bag and being re-foldable thereafter after removal of film sheets from the bag from the unsealed flap; and

2) A rectangular carton for enclosing the filmpack in generally close-fitting relation, said carton having upper and lower faces, opposed side walls, a bottom end wall, and at an end opposite said bottom end wall a top end closure flap connected along a hinge line to an edge of one of the carton faces, which edge is opposite said bottom end wall, and being adapted to be pivoted along said hinge line from and to a closed position closing the top end of the carton and to an open position opening that end for sliding withdrawal through the thus-opened end of the filmpack from the carton sufficient to allow the folded tubular flap of said bag to be accessed and unsealed to open said flap for removal of film sheets from the bag end and for return within the carton of the opened filmpack with the tubular flap in its re-folded position and being held by the carton in said re-folded position in said overlying relation to said one panel of the bag.

5,377,836

BLISTER CARD DISPLAY PACKAGE

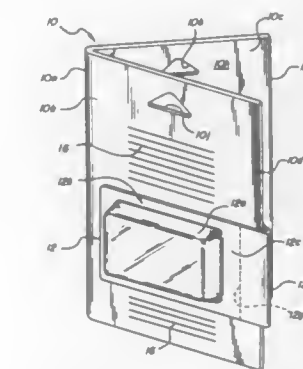
Kenneth D. Eisenbraun, Birmingham, Mich., assignor to United Industrial Trading Corporation, Troy, Mich.

Filed Oct. 4, 1993, Ser. No. 130,702

Int. Cl.⁶ B65D 73/00

U.S. Cl. 206—461

9 Claims



1. A blister card display package comprising:

a card folded to form a folder having a front sheet, including a front face and a free edge, and a rear sheet having a free edge generally aligned with the free edge of the front sheet with the folder in a folded configuration; and

a unitary blister pack formed of a clear plastic material mounted on the front face of the front sheet and including a blister portion for containing an article to be displayed and an integral locking portion operative to releasably maintain the folder in a folded configuration, the locking portion comprising a tab portion positioned along the free edge of the front sheet and having a hook configuration to enable the tab portion to be positioned over the free edge of the rear sheet to releasably maintain the folder in a folded configuration.

5,377,837

FLEXIBLE BAG FOR PACKAGING COMPRESSIBLE PRODUCTS, PARTICULARLY SANITARY ARTICLES SUCH AS NAPPIES, AND A PACKET OF COMPRESSED SANITARY ARTICLES THEREBY PACKAGED

Jean Roussel, Teteghem, France, assignor to Peaudouce, Linselles, France

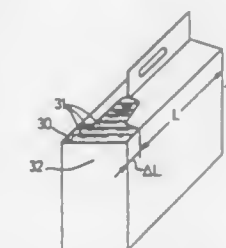
PCT No. PCT/FR91/01039, § 371 Date Aug. 24, 1993, § 102(e) Date Aug. 24, 1993, PCT Pub. No. WO92/12069, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 20, 1991, Ser. No. 81,246

Claims priority, application France, Dec. 26, 1990, 90/16280 Int. Cl.⁶ B65D 75/58, 33/36

U.S. Cl. 206—494

14 Claims



1. A bag made of flexible material for packaging products compressed in one direction, the bag surrounding and holding the products in a compressed state, the bag comprising:

expansion means on a first side of the bag, the first side being perpendicular to the direction of compression of the products, the expansion means having a pouch shape and extending toward the inside of the bag;

immobilization means for holding the expansion means in the pouch shape inside the bag; and

opening means provided on a second side of the bag in a zone adjacent to the first side, wherein upon opening the bag using the opening means, the expansion means permits the inner volume of the bag to increase uniformly over substantially the whole of the first side resulting in a decompression of products in the bag.

5,377,838

FLEXIBLE CONTAINER FOR WASHING AND IN-SERVICE INTEGRATION OF DIALYSIS CIRCUITS AND FILTERS

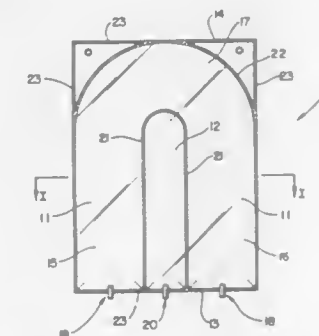
Ariel D. Segre, Milan, Italy, assignor to S.I.F. RA. Società Italiana Farmaceutica Ravizza S.p.A., Italy

Filed Nov. 24, 1993, Ser. No. 157,752

Int. Cl.⁶ B65D 30/22

U.S. Cl. 206—527

4 Claims



1. A flexible container of plastic material for washing and in-service integration of extracorporeal blood circulating circuits and filters of dialysis equipment, said container comprising at least a first sealed chamber containing a first predetermined quantity of physiological saline solution; and at least a second sealed chamber containing a second predetermined

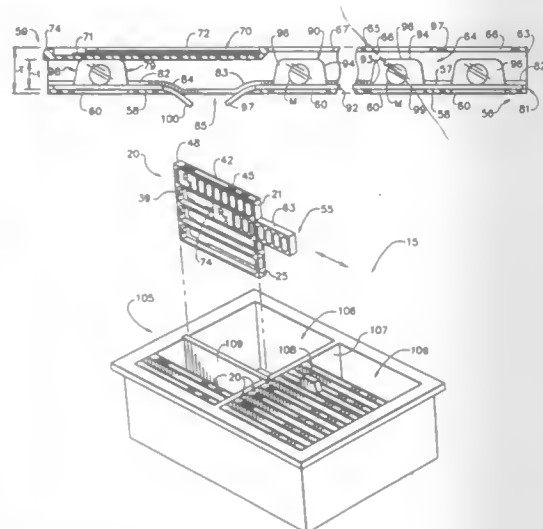
quantity of physiological saline solution; said first and second chambers being independent and noncommunicating fluidically; said first chamber presenting two inlet and drain fittings connectable fluidically to said circuit; and said second chamber presenting a single inlet and drain fitting connectable fluidically to said circuit; characterized by the fact that said first chamber is in the form of an upside down U with axially spaced arms extending from said two fittings towards the opposite part of the container, where they are connected by a curved portion; said second chamber being located axially between said arms of said first chamber and extending from said single fitting towards the opposite part of the container; and said first and second chambers being separated by at least one hermetic heat seal.

5,377,839
EXCHANGEABLE UNIT DOSE MEDICAMENT DOSING SYSTEM AND METHOD

Christopher M. Relyea, Columbus; Mark A. Relyea, Powell, and Michael S. Relyea, Grove City, all of Ohio, assignors to Drustar, Inc., Grove City, Ohio
Division of Ser. No. 821,480, Jan. 15, 1992, Pat. No. 5,251,757.
This application Jul. 23, 1993, Ser. No. 96,929
Int. Cl.⁶ B65D 83/04

U.S. Cl. 206—531

13 Claims



1. An exchangeable patient dosing system for medicaments, said system comprising:

at least one reusable cartridge having a longitudinal length and oppositely disposed first and second ends, and a medicament support surface having a plurality of longitudinally spaced dispensing openings formed therethrough;
a replaceable blister package comprising a longitudinal strip having a number of individually sealed spaced pockets corresponding in number and spacing with said dispensing openings of said cartridge and each housing a certain dose of medicament to be dispensed, said strip being slidably insertable into and removable from said reusable cartridge;

a reusable patient dispensing frame, said frame comprising means for receiving and releasably supporting a plurality of said cartridges such that medicament housed within said blister package can be dispensed through said cartridge dispensing openings without removing said cartridge from said frame; and

means associated with said cartridge for releasably locking said cartridge at least partially within said reusable dispensing frame.

5,377,840
Patent Not Issued For This Number

5,377,841
SLEEP THERAPY PACKAGE

Steven C. Varon, Neshanic Station, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

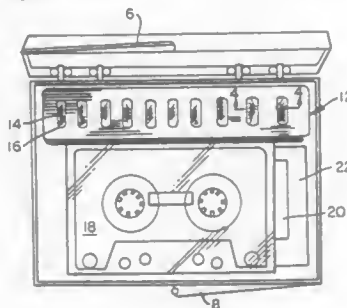
Filed Dec. 10, 1993, Ser. No. 165,386

The portion of the term of this patent subsequent to Oct. 4, 2011, has been disclaimed.

Int. Cl.⁶ B65D 71/00, 85/672, 85/42

U.S. Cl. 206—570

4 Claims



1. A sleep therapy package comprising:
a box having a cover;
an audio recording of program material within said box for inducing sleep;
a card having removably mounted thereon a plurality of doses, some of which are a medicine for inducing sleep and at least one of which is a placebo;
patient instructions within said box setting forth material required by law for said medicine; and
instructions within said box for the use of said doses and said recording for inducing sleep.

5,377,842
CONTAINER OF DEVICES FOR COSMETIC AND PERSONAL HYGIENE PURPOSES, SUCH AS MAKE-UP BRUSHES AND SHAVING-BRUSHES, LIPSTICKS, APPLICATORS IN GENERAL, PERFUME DISPENSERS, TOOTHBRUSHES AND SO ON

Paolo Sorini, Milan, Italy, assignor to Sorini & Migliavacca S.p.A., Milan, Italy

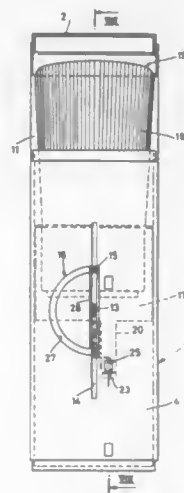
Filed Dec. 2, 1993, Ser. No. 160,644

Claims priority, application Italy, Dec. 4, 1992, MI92A002774

Int. Cl.⁶ A45D 44/18, 40/02, 40/26

U.S. Cl. 206—581

17 Claims



1. A container for cosmetic or personal hygiene devices, comprising:
a box-shaped base having a longitudinal axis and a cover for closing said base;

a device-support longitudinally slidably housed in said base; first connecting means arranged between said base and said cover to allow translation of said cover along said longitudinal axis of said base and rotation thereof through 180° so that said cover is movable between a closed position on said base and an open position below said base; and, second connecting means arranged between said cover and said device-support so that motion of said cover between said closed position and said open position causes longitudinal translation of said device-support and thereby said device between a rest position wherein said device is withdrawn inside said base and a working position wherein said device is partially extracted from said base.

5,377,843
CLASSIFYING WHEEL FOR CENTRIFUGAL-WHEEL AIR CLASSIFIER

Georg Schumacher, Gessertshausen, Germany, assignor to Hosokawa Alpine Aktiengesellschaft, Angsburg, Germany

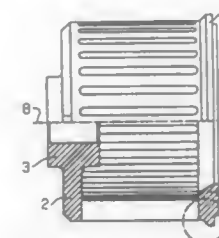
Filed Dec. 10, 1992, Ser. No. 991,549

Claims priority, application Germany, Dec. 10, 1991, 4140656

Int. Cl.⁶ B07B 7/08

U.S. Cl. 209—139.2

9 Claims



1. Classifying wheel for an air classifier equipped with a rotating classifying wheel through which the classifying air flows from outside to the inside against its centrifugal action, the wheel having blades which are arranged in a ring, extend parallel to the axis of rotation of the wheel and are positioned between a circular disc carrying the classifying wheel hub and an annular cover disc, the classifying wheel comprising:

- a) a circular disc (2), hub (3), cover disc (4), and blades (5) positioned between the discs and extending parallel to the axis of rotation (8) of the wheel,
- b) said discs, hub and blades being entirely a one piece construction of a sintered material; and
- c) the blades (5) being spaced circumferentially of each other to define axially extending elongated flow channels (6) formed by surfaces of the blades (5) which extend parallel to each other and in direction of the axis of rotation (8), the axial ends of the flow channels (6) forming arc-like surfaces in the areas adjacent the circular disc (2) and the cover disc (4).

5,377,844
SEPARATION OF NORMALLY HYDROPHOBIC PLASTIC MATERIALS BY FROTH FLOTATION

Jiann-Yang Hwang, Houghton, Mich., assignor to Nimco Shredding Co., Newark, N.J.

Continuation of Ser. No. 740,046, Aug. 2, 1991, abandoned. This application May 10, 1993, Ser. No. 60,698

Int. Cl.⁶ B03D 1/02, 1/008, 1/012

U.S. Cl. 209—167

25 Claims

1. A process for separating by froth flotation a targeted particulate synthetic, organic plastic material having normally hydrophobic surface characteristics from a mixture of said targeted plastic material and at least one other different type of such particulate plastic material, said process comprising the steps of:

- (a) conditioning said mixture in an aqueous medium consisting essentially of a heteropolar surfactant having a hydrophile-lipophile balance (HLB) value greater than 5 and

water to produce a conditioned pulp, the amount of said heteropolar surfactant being sufficient to depress said targeted plastic material by making the surfaces thereof hydrophilic without substantially affecting the hydrophobicity of the surfaces of said at least one other type plastic material;

- (b) introducing gas bubbles into the conditioned pulp while in a flotation cell, whereby the gas bubbles selectively adhere to the surfaces of said at least one, other different type plastic material and cause said at least one other different type plastic material to float;
- (c) recovering a cell product containing said targeted plastic material; and
- (d) recovering a float fraction containing said at least one other different type plastic material.

5,377,845
METHOD OF SEPARATING PULP CONTAINING MAGNETIC CONSTITUENTS IN A WET-MAGNETIC, LOW-INTENSITY CONCURRENT SEPARATOR AND APPARATUS THEREFOR

Ilkka O. Hämen, Malmberget, and Eskil Lindgren, Sala, both of Sweden, assignors to Sala International AB, Sala, Sweden

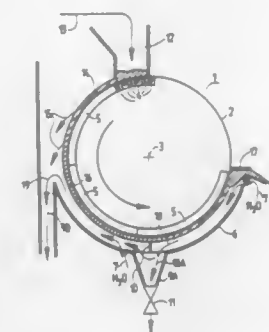
Filed May 29, 1992, Ser. No. 889,957

Claims priority, application Sweden, Jun. 26, 1991, 9101960.4

Int. Cl.⁶ B03C 1/14

U.S. Cl. 209—223.2

10 Claims



8. A wet-magnetic separator for separating pulp containing magnetic constituents comprising a cylindrical, horizontally mounted, rotatable drum, magnets mounted inwardly of the drum periphery, a magnetic concentrate outlet, a waste outlet located in the bottom of the separator, means for delivering pulp to the highest level of the drum, water inlets arranged substantially along the full length of the drum in the vicinity of the magnetic concentrate outlet so that water will flow in contact with the pulp constituents that accompany drum rotation and thereby cause non-magnetic constituents thereof to accompany said water flow counter to the drum rotation to said waste outlet, and wherein the magnets are mounted with a pole pitch of 45 to 150 mm to at least a part of the total extension of the magnetic yoke formed by said magnets.

5,377,846
PARTICLE SCREENING SYSTEM

Terry Askew, Warners Bay, Australia, assignor to Western Wire Works, Inc., Portland, Oreg.

Continuation of Ser. No. 821,249, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 570,380, Aug. 21, 1990, abandoned. This application Mar. 25, 1993, Ser. No. 37,721

Claims priority, application Australia, Aug. 25, 1989, PJ5978

Int. Cl.⁶ B07B 1/49

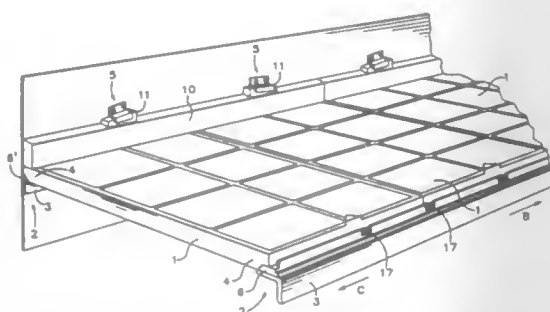
U.S. Cl. 209—405

20 Claims

1. A screening apparatus comprising:
a plurality of elongated support bars which are generally

parallel and transversely spaced with respect to each other:

- a plurality of elongated rail members which are mounted on said support bars and which are generally parallel and transversely spaced with respect to each other, each elongated rail member having a pair of transversely-spaced, longitudinally-extending protrusions; and
- a plurality of screen panel modules mounted on said elongated rail members in side-by-side abutting relationship, each said screen panel module having side portions which extend longitudinally of an adjacent rail so as to be supported thereby, adjacent side portions of adjacent screen panel modules cooperating to secure the screen panel modules to the elongated rail members, each of said mounted screen panel modules being supported only on



two sides, each side portion having (a) a longitudinally-extending recess (b) a longitudinally extending resilient skirt, and a longitudinally extending groove projecting from the recess in a direction normal to the recess, each protrusion having a transverse cross-section complementary to its associated recess and groove and being positioned securely therein so as to be engaged between opposing parts of its associated module with the adjacent skirt portions of adjacent modules abutting each other to facilitate retaining the modules in position secured to the elongated rail members, each said elongated rail member providing means for preventing movement of said screen panel modules in a longitudinal direction with respect to the longitudinal axis of said rail elongated member.

5,377,847
DEVICE FOR SEPARATING METAL PARTICLES FROM A FLOW OF MATERIAL

Guntram Kind, Gummersbach, Germany, assignor to Pulsonic Merten GmbH & Co. KG, Gummersbach, Germany
Filed Feb. 11, 1993, Ser. No. 16,331

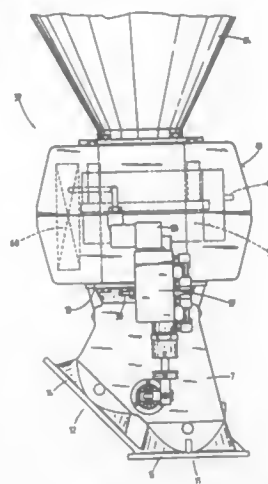
Claims priority, application Germany, Feb. 12, 1992, 9201767[U]; Feb. 14, 1992, 9201851[U]; Mar. 7, 1992, 4207348
Int. Cl.⁶ B07C 9/00

U.S. Cl. 209—655

23 Claims

1. A device for separating metal particles from a flow of material, the device comprising
a substantially self-contained selector module comprising a movable selecting member and a selector housing including an inlet and at least two outlets,
a substantially self-contained metal detector module comprising a metal detector for detecting the passage of a metal particle, control means for controlling the selecting member in response thereto and a detector housing including an inlet and an outlet,
each of the inlets having connection means associated therewith for enabling connection between the inlet and at least one of the outlets,
each of the outlets having connection means associated therewith for enabling connection between the outlet and at least one of the inlets,
the connection means associated with each of the inlets and

the connection means associated with each of the outlets having mutually matching structures,



whereby the selector housing and the detector housing are assemblable in a plurality of different sequences to thereby form metal separators of different construction and operation.

5,377,848
ROLLER SCREEN FOR SCREENING BULK MATERIAL, ESPECIALLY WOOD CHIPS

Mikko Jokinen, and Timo Kurki, both of Rauma, Finland, assignors to Consilium Bulk Babcock Oy, Rauma, Finland
PCT No. PCT/FI92/00038, § 371 Date Sep. 13, 1993, § 102(e)
Date Sep. 13, 1993, PCT Pub. No. WO92/16311, PCT Pub. Date Oct. 1, 1992

PCT Filed Feb. 12, 1992, Ser. No. 117,183

Claims priority, application Finland, Mar. 21, 1991, 911383
Int. Cl.⁶ B07B 13/05

U.S. Cl. 209—673

4 Claims



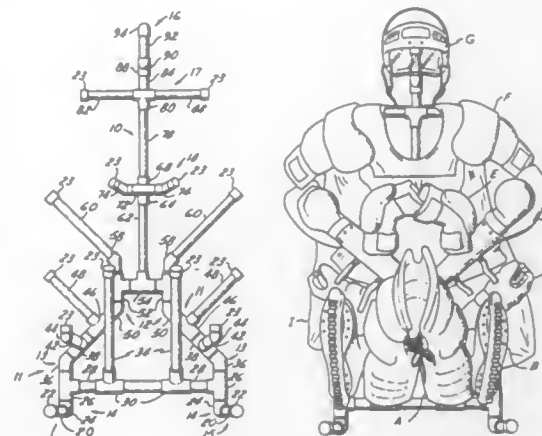
1. A roller screen for separating finer and coarser material fractions of bulk material from each other, especially for separating sawdust from wood chips, the roller screen comprising a plurality of successive rollers rotating about parallel axes of rotation, the upper surfaces of the rollers providing a path for the material to be screened; at least one drive means for rotating the rollers; and a means for feeding the material to be screened to the infeed end of said path, wherein there are radial and essentially axial grooves on the surface of the rollers, the grooves forming teeth onto the surface of the rollers, and that the teeth of each roller interdigitate with the radial grooves of the adjacent roller, whereby a pocket is formed between each circumferentially adjacent pair of teeth on each roller and the radial groove of the adjacent roller in which said pair of teeth is interdigitated, the axial clearance between each said pair of teeth and each side of the groove in which said pair of teeth is

interdigitated being less than the circumferential distance between said pair of teeth, only said finer particles being able to pass through said roller screen via said pockets.

5,377,849
SPORTS EQUIPMENT RACK
Harold G. Martin, 48360 Romeo Plank, Macomb Township, Macomb County, Mich. 48044
Filed Apr. 14, 1993, Ser. No. 48,425
Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—13

18 Claims

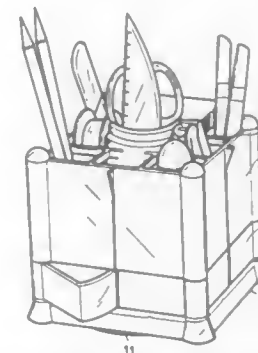


1. An improved rack for supporting varied sports equipment in spaced relationship to each other, the rack comprising:
a plurality of straight tubular pieces;
a plurality of right angle tubular pieces, the right angle tubular pieces cooperating with some of the straight tubular pieces to form vertical and horizontal supports for some of the equipment; and
a plurality of obtuse angle tubular pieces, the obtuse angle tubular pieces cooperating with others of the straight tubular pieces to form angular supports for others of the equipment and to space such equipment by such angular supports.

5,377,850
MODULAR STATIONERY STAND
Peter Liaw, No. 25, Lane 60, Alley 164, Fu Lin Street, Taipei, Taiwan, Prov. of China
Filed Jul. 20, 1993, Ser. No. 94,809
Int. Cl.⁶ A47F 5/00

U.S. Cl. 211—163

1 Claim



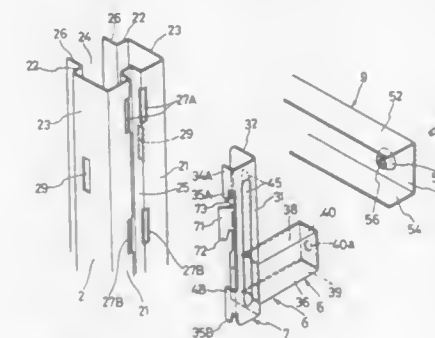
1. A modular stationery stand comprising: a rotary base, a lower case with multiple separate spaces, an upper case and a lattice cover;
said rotary base includes a trapezoidal section rotatably affixed to a steel plate, said base further includes cylinders with a projection mounted in each of the four corners, a

large hollow cylinder is installed in the center of said trapezoidal section, and protuberant pieces connect both a lower end of said large hollow cylinder and with said trapezoidal section to form separate spaces;
said lower case comprises four quarter circle shaped containers, each having a hollow cylinder at its small end which is placed over the cylinders in the four corners of said base, which enables the containers to pivot about the cylinders in the corners of the base;
said upper case is a rectangle case having a hole in the bottom of said case to receive said large hollow cylinder of said base, multiple separate plates in different height and shapes installed in its interior, and four hollow cylinders in its four corners, said hollow cylinders jointing with the top ends of said cylinders in said base, an exterior of the upper case including grooves in each side;
said cover is a lattice frame having hemispheric caps installed in the top of four rounded corners which are received in the hollow cylinders of said lower case, said cover including triangular pieces installed in the frame to slide into the grooves of the upper case, and further including a hole installed in the center of the cover to receive the large hollow cylinder of said rotary base.

5,377,851
RACK ASSEMBLY
Teruo Asano, Moriyama; Shunji Nobukawa, Kagamihara; Etsuo Taniguchi, and Tetsuro Yokota, both of Shiga, all of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Continuation of Ser. No. 32,755, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 893,414, Jun. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,714, Jan. 28, 1991, abandoned. This application Feb. 9, 1994, Ser. No. 193,810
Int. Cl.⁶ A47B 43/00

U.S. Cl. 211—191

2 Claims



1. A rack assembly comprising:
a vertically extending support post;
a member to be mounted to said support post;
said support post consisting of an outer plate portion and a pair of side plate portions so as to be in a shape of a profile, said outer plate portion and each of said side plate portions having at least one vertically elongated engagement hole;
said member having a front plate portion adapted to abut on said outer plate portion of said support post and a side plate portion adapted to abut on one of said side plate portions of said support post;
at least one first engaging projection formed integrally with said front plate portion, bent perpendicularly to said front plate portion and adapted to be inserted into said engagement hole formed in said outer plate portion of said support post;
at least one second engaging projection formed integrally with said side plate portion of said member, bent obliquely in alignment with said front plate portion and adapted to be inserted into said engagement hole formed in said side plate portion of said support post;

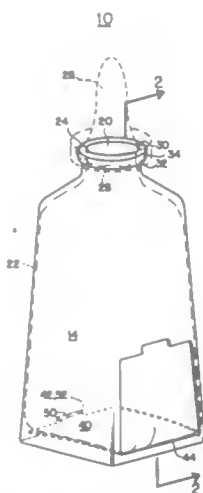
said first engaging projection inserted into said engagement hole formed in said outer plate portion when said member is brought close to said support post from the front side slantwise;

said second engaging projection inserted into said engagement hole formed in said side plate portion of said support post when said member is moved pivotally after inserting said first engaging projection into said engagement hole formed in said outer plate portion in order to abut said front and side plate portions of said member on said outer and side plate portions of said support post respectively;

first and second locking pawls formed integrally with and extending downwardly from lower portions of said first and second engaging projections respectively in such a manner that, when said member is lowered after inserting said first and second engaging projections into said engagement holes in said outer plate portion and said side plate portion of said support post respectively, said first and second locking pawls engage with a lower edge of said engagement holes; and

a third locking pawl which is plastically deformable so as to be incapable after being bent of returning to its original form, said third locking pawl being formed integrally with said member at a location above said second engaging projection in such a manner that, when said first and second locking pawls have been engaged with said lower edge of said engagement holes after inserting said first and second engaging projections into said engagement holes respectively, said third locking pawl is in the state of the same plane as said side plate portion of said member and then said third locking pawl is subjected to plastic deformation and is inserted into said engagement hole partially occupied by said second engaging projection and disposed above said second engaging projection.

5,377,852
CALF SUCKER BOTTLE HOLDER
 Robert E. Demorest, 18434 U.S. 20, Bellevue, Id. 83313
 Filed Mar. 1, 1993, Ser. No. 24,672
 Int. Cl.⁶ A61J 9/00
 U.S. Cl. 215—11.1 6 Claims



3. A bottle holder for use with a nipple assembly and a flexible liner having an opening for receiving and dispensing liquid and having an edge surrounding the opening, the bottle holder comprising:

an enclosure wall comprising an exterior surface, an interior surface surrounding and defining an interior space for receiving the liner, first and second opposing wall sections, an open bottom, and an open mouth opposing the open bottom,

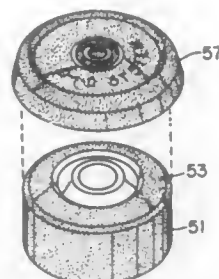
a lip integrally extending from the enclosure wall around the open mouth, the lip adapted for removably receiving the

edge of the liner to hold open the opening of the liner and the lip comprising threads for cooperating with a threaded-style nipple assembly to form a leak-free seal between the nipple assembly and the liner,

a bottom support flap having a pivot end and an opposing extension end, the pivot end pivotally attached to the first opposing wall section near the open bottom and the extension end retractably extending across the open bottom toward the second opposing wall section, the bottom support flap being for supporting the liner when filled with liquid and for pivoting away from the open bottom for allowing access to the interior space, and

a latch means for detachably holding the bottom support flap across the open bottom of the bottle holder.

5,377,853
DECORATION, IDENTIFICATION AND DIFFERENTIATION CLOSURE SYSTEM
 Charles Papciak, Exton, Pa., assignor to The West Company, Incorporated, Lionville, Pa.
 Continuation of Ser. No. 50,851, Apr. 21, 1993, Pat. No. 5,284,263, which is a continuation of Ser. No. 807,458, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 605,494, Oct. 30, 1990, abandoned. This application Jan. 24, 1994, Ser. No. 185,402
 The portion of the term of this patent subsequent to Feb. 4, 2011, has been disclaimed.
 Int. Cl.⁶ A61J 1/00 2 Claims



1. A closure for containers for pharmaceutical products comprising a cap seal having a top and a depending skirt, a removable overseal overlying the top of the cap seal and removably mounted thereto, means defining color indicia and instructive indicia on the top of the cap seal and the overseal including characters which contrast in color with the surface on which the characters are placed on said cap seal and said overseal and with the color indicia on the cap seal being the same as the color indicia on the overseal.

2. A closure for containers for pharmaceutical products comprising a cap seal having a top and a depending skirt, a removable overseal overlying the top of the cap seal and removably mounted thereto, means defining color indicia and instructive indicia on the top of the cap seal and the overseal including characters which contrast in color with the surface on which the characters are placed on said cap seal and said overseal and with the color indicia on the cap seal being different from the color indicia on the overseal.

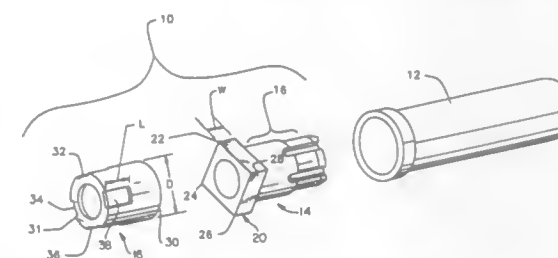
5,377,854
STOPPER APPARATUS FOR A TEST TUBE OR SIMILAR ARTICLE
 Robert Cusack, Edison, N.J., assignor to International Technology Corp., Edison, N.J.
 Filed Apr. 16, 1993, Ser. No. 48,810
 Int. Cl.⁶ B65D 41/28 5 Claims

U.S. Cl. 215—364

1. A stopper in combination with a test tube, comprising: an elastomeric body of a predetermined color having a generally square head with four salient points equally

disposed around a center point and a generally cylindrical structure extending from said head adapted to be received within the test tube;

wherein said generally cylindrical structure has a first region proximate said head that has a first diameter and a second region extending from said first region that has a diameter large enough to engage the test tube but smaller than said first diameter, whereby a ridge exists at a point of transition from said first region to said second region; and

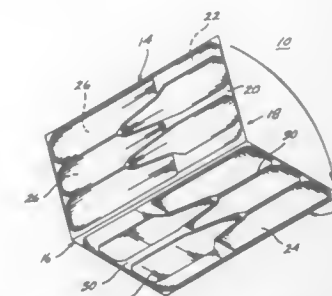


wherein a plurality of grooves are symmetrically disposed on said generally cylindrical structure, each of said grooves extending across all of said second region and partially into said first region, whereby when said second region is inserted into the test tube, the test tube engages said ridge and gases are free to pass out of the test tube through said plurality of grooves and when said first region is inserted into the test tube, a gas impervious by said first region.

5,377,855
TRAY FOR FREEZING SEAFOOD
 Harold T. Cook, Jr., Bainbridge Island; Mimi S. Fielding, Glg Harbor, and Donn B. Furlong, Bellevue, all of Wash., assignors to Marco Seattle, Inc., Seattle, Wash.
 Filed Jun. 10, 1991, Ser. No. 713,132
 Int. Cl.⁶ B65D 1/36 12 Claims

U.S. Cl. 220—4.23

12 Claims



1. A foldable tray for receiving a plurality of seafood pieces in a layer for compaction and freezing with a stack of adjacent layers of seafood pieces, comprising:

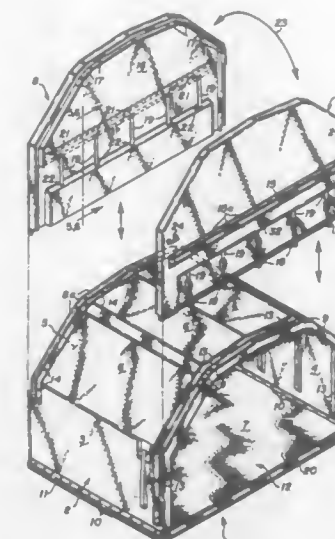
- a foldable sheet of material including a first portion formed to define a plurality of first recesses, each recess capable of receiving and substantially surrounding a piece of seafood to form a layer of individual separated seafood pieces;
- a second portion defining a plurality of second recesses, wherein each second recess is capable of receiving and substantially surrounding a piece of seafood to form a second layer of individual separated seafood pieces, wherein said second recesses are oriented relative to said first recesses such that when said sheet is in an unfolded condition said second recesses are inverted relative to said first recesses; and
- a flexible hinge portion defined between the first portion and the second portion, the sheet being foldable along the hinge portion so that when the sheet is in an unfolded condition the second portion overlies and is substantially parallel to the first portion and the first and second recesses

open in the same direction when said second portion overlies said first portion, the sheet being constructed and contoured to be deformable and to enable seafood pieces, when received in the first and second recesses, to deform within the first and second recesses under the force of compaction, to form first and second layers of substantially separate seafood pieces.

5,377,856
AIR CARGO SECURITY VAULT
 Dennis M. Brierton, 1678 Langport Dr., Sunnyvale, Calif. 94087
 Filed Mar. 29, 1993, Ser. No. 38,025
 Int. Cl.⁶ B05D 7/00 15 Claims

U.S. Cl. 220—1.5

15 Claims



1. An air cargo container (1) comprising:
 - a. a unitary container body (2) having a floor (7) with a top surface for placement of cargo;
 - b. a body of rigid material attached to and creating an enclosure over said top surface of said floor (7), the body including at least two opposing sidewalls (3, 4) joined to said floor (7), a top wall (6) joined to said sidewalls (3, 4) and a rear wall (5) joined to said floor (7) and said sidewalls (3, 4) and said top wall (6) the body having an opening (12) opposite said rear wall (5) and of predetermined size to provide substantially full access to the interior of said enclosure, and with a peripheral edge about an upper and generally opposed lateral side edges of said opening (12);
 - c. a unitary slidable door panel (8) being slidably removable and detachable from the body and having an exterior surface and an interior surface;
 - d. a means for sealing (9, 17) said body directly with said door panel (8) about said peripheral edge and said opening (12) and for subsequently removing said door panel (8) from about said opening (12) and said peripheral edge;
 - e. a means for storing and securely engaging (9a, 17) said door panel (8) directly with said body about said rear wall when said door panel (8) is removed from said opening (12), whereby said door panel (8) remains stationary on said body (2) when removed from about said opening (12).

5,377,857
STACKABLE BIN WITH COLLAPSIBLE CORNER
CONSTRUCTION

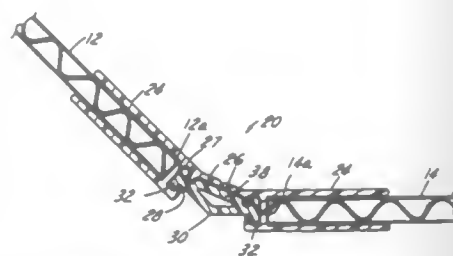
Philip Taravella, Grosse Pointe Shores; Edward J. Blair, New Baltimore; Ronald S. Domanski, St. Clair Shores, and Joseph C. Shippell, Roseville, all of Mich., assignors to Anchor Bay Packaging Corporation, St. Clair Shores, Mich.

Filed Jan. 13, 1994, Ser. No. 180,735

Int. Cl.⁶ B65D 6/12

U.S. Cl. 220—4.33

11 Claims



1. A collapsible bin comprising:

a plurality of side walls having upper edges, at least one of said side walls having a first left side edge, a first left side wall portion adjacent said first left side edge, a first right side edge, and a first right side wall portion adjacent said first right side edge, said first left and right side edges being separable from said other side walls, at least one other of said side walls having a second right side edge and a second right side wall portion adjacent said second right side edge, and at least another of said side walls having a second left side edge and a second left side wall portion adjacent said second left side edge, said first left side edge being adjacent said second right side edge and said first right side edge being adjacent said second left side edge;

a floor hingedly attached to said side walls, said side walls being generally orthogonal to said floor and at least one of said side walls being collapsible into the plane of said floor; and

a pair of collapsible corner constructions joining said at least one of said side walls to said at least one other of said side walls and said at least another of said side walls, each of said collapsible corner constructions including a casement section for sandwiching one of said edges and said wall portions, each casement section having a T-slot along an edge of said casement and a lip extending from said edge of said casement, and an anchor pin having a pair of T-sections, said T-sections being slidably received in the T-slots of said pair of casements to join said casements and said walls sandwiched therein in a configuration shaping the bin.

5,377,858
SPACE-AVING RECTANGULAR CONTAINER HAVING
CHILD RESISTANT LID ASSEMBLY

Glenn H. Morris, Sr., 1192 Cumberland Rd., Chattanooga, Tenn. 37419

Filed Jan. 21, 1993, Ser. No. 6,538

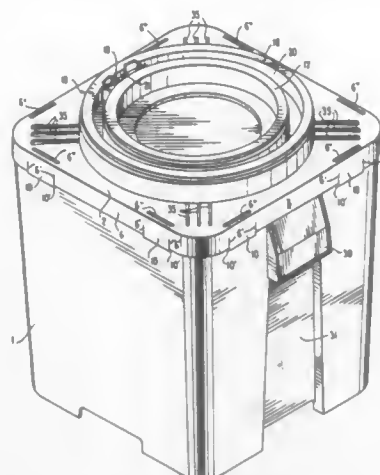
Int. Cl.⁶ B65D 51/18

U.S. Cl. 220—254

28 Claims

1. A space saving rectangular container having a child resistant lid assembly comprising, a rectangular container having a rectangular open end, a rectangular closure removably connected to the open end of said container, a central opening provided in said closure, a lid removably mounted on said closure for closing said opening, said closure provided with a pair of radially spaced annular walls surrounding said opening, threads provided on at least the outer annular wall of said pair of annular walls cooperating with threads provided on said lid, whereby the lid is threadably connected to said closure, and a resiliently biased locking member movably connected on said lid and engageable with a portion of the closure to secure the

lid to the opening in the closure, whereby, when a plurality of the containers are selectively stacked or placed in side-by-side relationship, the lid and associated locking member on each



container are positioned inwardly from the side wall of an adjacent container, thereby preventing damage to the lid and associated locking member by the adjacent container during shipment and storage.

5,377,859
COVER FOR PAN HAVING VARIABLE
CONVENTIONAL WIDTHS

Terry F. Hacker, Manitowoc, Wis., assignor to Anchor Hocking Corporation, Freeport, Ill.

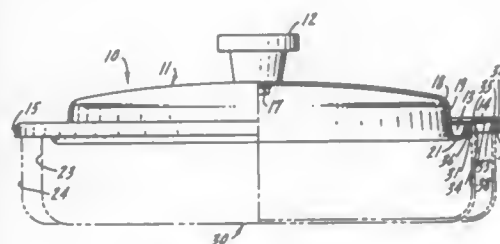
Continuation-in-part of Ser. No. 860,941, Mar. 31, 1992,

abandoned. This application Mar. 29, 1993, Ser. No. 37,852

Int. Cl.⁶ B65D 51/00

U.S. Cl. 220—287

4 Claims



assisting in realigning the closure in the stack if it is askew in the stack.

5,377,862

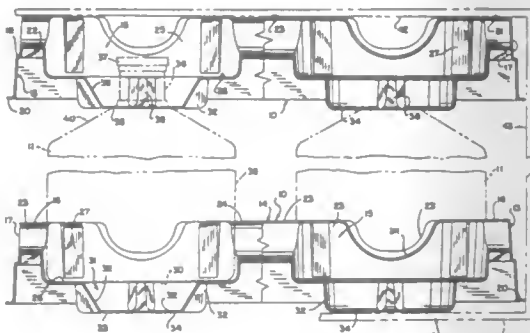
BOTTLE HOLDER AND BOTTLE HOLDING SYSTEM
Shawn A. Oakes, 315 Hamburg St., Ripon, Wis. 54971; Richard T. Steichen, 4545 W. Fisk Ave., Oshkosh, Wis. 54904; Michael S. Freitas, 1004 Santa Ana St., Laguna Beach, Calif. 92651; Joseph G. Toma, Jr., 198 Stonecliffe Alsie, Irvine, Calif. 92715, and Daryl J. Gray, 27818 N. Crookshank Dr., Saugus, Calif. 91350

Filed Sep. 20, 1993, Ser. No. 123,150

Int. Cl.⁶ B65D 21/00, 81/16

U.S. Cl. 220—513

11 Claims



1. A holder for an array of frangible bottles comprising a unitary flexible plastic frame having a peripheral outer edge and integral cross members extending between opposite edges, a series of receptacles between said outer edge and cross members and formed integrally therewith, each of said receptacles defining a well having a flat annular intermediate floor portion adapted to receive and support the base of a bottle, an open center part in the intermediate floor portion defined by a downwardly depending collar terminating in a flat annular lip disposed parallel to said intermediate floor portion, said lip defining a lower floor portion and having a free inner edge defining an opening in said lower floor portion smaller than and concentric with said open center part and adapted to receive the neck of the bottle.

7. A packaging system for an array of frangible bottles, each bottle having a base, a neck and a tapered transition surface between the base and neck, said system comprising:

a pair of thin, flexible plastic bottle holders, each holder including a main frame portion having a planar upper surface and an interior array of receptacles for the bottles; each of the receptacles having an intermediate floor portion adapted to receive and support the base of a bottle and an integral downwardly depending cushion including a lower floor portion;

one of said holders having an opening in each of said lower floor portions, said opening adapted to receive the bottle neck therethrough with the part of the lower floor portion defining said opening resting on an upper part of the bottle above the base and the top of the bottle neck positioned below the planar upper surface of said main frame portion; and,

an enclosing carton having a planar bottom wall, a planar top wall, and enclosing side walls, said carton adapted to receive the bottle holders and bottles with the lower floor portions of the other of said holders resting on the carton bottom wall, the bases of the bottles resting on the intermediate floor portions of said other holder, the lower floor portions of said one holder resting on the upper parts of the bottles, the carton top wall resting on the upper surface of the main frame portion of said one holder, and the outer edges of the frame portions of both holders engaging the carton side walls;

whereby the bottles are held spaced from the carton walls and cushioned from direct impact.

10. A holder for a frangible bottle comprising a unitary

flexible plastic frame having a peripheral outer edge, a receptacle enclosed within said outer edge and formed integrally therewith, said receptacle defining a well having a flat annular intermediate floor portion adapted to receive and support the base of a bottle, an open center part in the intermediate floor portion defined by a downwardly depending collar terminating in a flat annular lip disposed parallel to said intermediate floor portion, said lip defining a lower floor portion and having a free inner edge defining an opening in said lower floor portion smaller than and concentric with said open center part and adapted to receive the neck of the bottle.

11. A packaging system for a frangible bottle having a base, a neck and a tapered transition surface between the base and neck, said system comprising:

a pair of identical thin, flexible plastic bottle holders, each holder including a main frame portion having a planar upper surface and an interior receptacle for the bottle; said receptacle having an intermediate floor portion adapted to receive and support the base of a bottle and an integral downwardly depending cushion including a lower floor portion;

an opening in said lower floor portion defined by an annular lip, said opening adapted to receive and hold the bottle neck therein with the top of the bottle neck positioned below the planar upper surface of said main frame portion; and,

an enclosing carton having a planar bottom wall, a planar top wall, and enclosing side walls, said carton adapted to receive the bottle holders and bottle with the lower floor portions of one of said holders resting on the carton bottom wall, the base of the bottle resting on the intermediate floor portion of said one holder, the annular lip of the other holder resting on the transition surface of the bottle, the carton top wall resting on the upper surface of said main frame portion, and the outer edges of the frame portions engaging the carton side walls; whereby the bottle is held spaced from the carton walls and cushioned from direct impact.

5,377,863

MANIPULATABLE CONTAINER CLAMP

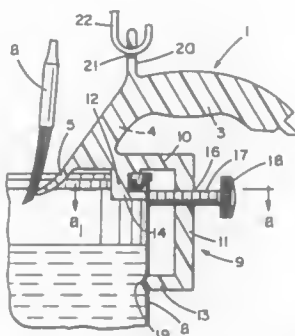
Bruno Widman, 534 E. Lincoln Highway, DeKalb, Ill. 60115

Filed Jun. 7, 1994, Ser. No. 255,744

Int. Cl.⁶ B01D 35/28

U.S. Cl. 220—696

10 Claims



1. A manipulatable detachable container clamp adapted to engage a container formed with a continuous sidewall which terminates in a set of top and bottom peripheral edges separated one from the other by the sidewall and with the container having a top access opening defined by the top peripheral edge, comprising an elongated body formed into a manual gripping handle and a platform support with the handle located at opposite ends of the body, a flared brush-cleaning and brush-support platform fixed to the platform support so as to project away from the handle, a container-engaging clamping bracket having a pair of spaced fingers with the bracket fixed to the body and with each finger facing opposite sides of the

container sidewall when the bracket is seated upon the upper edge of the container so that the brush-cleaning and brush-support platform projects into the container access opening and the handle projects away from the opening, and manually adjustable means coupled to the bracket for clamping the bracket tightly upon any container engaged by the bracket.

5,377,864

DRUG DISPENSING APPARATUS

Joseph Blechl, Ingleside; Panos Hadjimitsos, Buffalo Grove; James R. Kurtz, Mundelein, all of Ill.; Hiroyasu Shimizu, and Manabu Haraguchi, both of Gunma, Japan, assignors to Baxter International Inc., Deerfield, Ill. and Sanyo Electric Co., Ltd., Osaka, Japan

PCT No. PCT/JP90/00674, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO90/14065, PCT Pub. Date Nov. 29, 1990

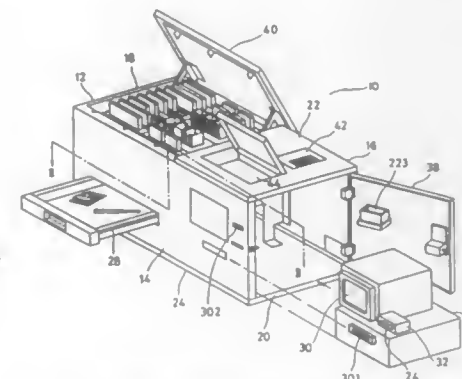
PCT Filed May 25, 1990, Ser. No. 640,427

Claims priority, application Japan, May 25, 1989, 1-132059; Apr. 23, 1990, 2-107295

Int. Cl.⁶ G07F 11/18

U.S. Cl. 221—2

20 Claims



1. A drug dispensing apparatus comprising:

microprocessing means;
a housing defining an interior medication storage area, the interior medication storage area including means for receiving a plurality of different sized dispensers in multiple orientations, the receiving means further including means for establishing electrical communication between the dispensers and the microprocessing means; and
a receiving drawer oriented below the interior medication storage area to receive medication vertically falling from the dispensers, and to dispense the medication through an open position of said receiving drawer, said receiving drawer having a width substantially equal to a width of said plurality of dispensers and having a depth less than a depth of said plurality of dispensers.

5,377,865

DISPENSER FOR FLAT OBJECTS

Graham A. Thomson, London, England, assignor to Unilever Patent Holdings B.V., AT Vlaardingen, Netherlands

Filed May 11, 1993, Ser. No. 50,406

Claims priority, application European Pat. Off., Sep. 25, 1991, 91308723

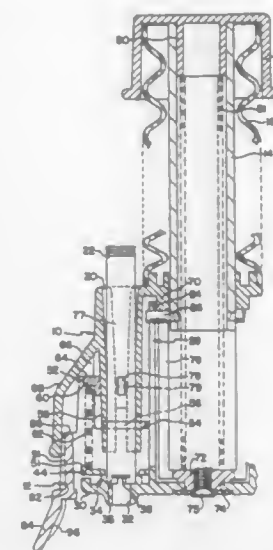
Int. Cl.⁶ B65H 3/44

U.S. Cl. 221—93

11 Claims

1. A dispenser for dispensing flat objects from a stack of similar objects housed in a cartridge, comprising: a body portion; a plurality of receptacles within the body portion, each receptacle being adapted to receive a respective object-containing cartridge; a plurality of dispensing ports, one associated with each receptacle; a plurality of tamping pins, one associated with each dispensing port, for tamping an object through the associated dispensing port; transport means arranged for rotary motion to transport an object from each cartridge in a

receptacle to a dispensing position in alignment with the associated tamping pin and dispensing port; retaining means fixed with respect to the receptacles, for retaining the objects in position during transport from a cartridge to the associated



5,377,866

MULTIPLE-ROLL TOILET PAPER DISPENSER RACK

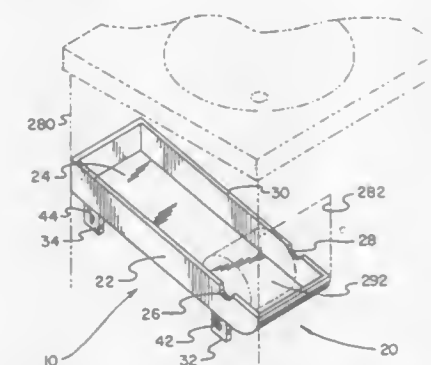
William R. Watters, II, 407 Pine St., Clayton, N. Mex. 88415

Filed Jan. 6, 1994, Ser. No. 178,007

Int. Cl.⁶ G07F 11/28

U.S. Cl. 221—194

3 Claims



1. A new and improved multiple-roll toilet paper dispenser rack for storing a plurality of rolls of toilet paper within the unused space of a bathroom cabinet and dispensing the rolls one at a time through an opening in the cabinet, the multiple-roll toilet paper dispenser rack comprising:

an elongated shallow pan of smooth rigid material such as plastic or metal having a front, a back, sides, a bottom, and an open top, the pan having an inside width essentially the same as the width of one of said plurality of rolls of toilet paper, the pan having a length substantially longer than a diameter of one of said plurality of rolls of toilet paper whereby a plurality of rolls may be placed therein, the sides, front, and back having exposed top edges, the sides also having a plurality of integral planar mounting tabs extending downwardly therefrom, the mounting tabs having a hole therethrough where through a mounting

screw may extend, the mounting tabs being coplanar with the sides whereby the dispenser rack may be mounted flush against an inside surface of a cabinet side panel at an incline whereby the toilet paper rolls will roll toward the front of the pan by the force of gravity, the top edge of each side also having identical semicircular notches formed thereon, the notches being opposite each other, the notches being located near the front of the pan nearest the cabinet opening whereupon a toilet paper roll spindle may be removably engaged whereby the roll may be revolvedly retained on the dispenser rack for unrolling and dispensing individual sheets of paper.

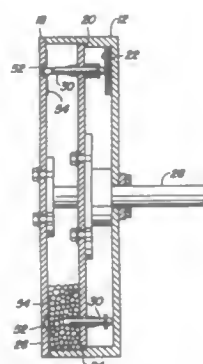
5,377,867

SELECTOR PIN SEED METER

Jeffrey C. Schick, Davenport, Iowa, and James I. Lodico, Hampton, Ill., assignors to Deere & Company, Moline, Ill.
Filed Dec. 13, 1993, Ser. No. 166,753
Int. Cl.⁶ A01C 9/00

U.S. Cl. 221—217

13 Claims



1. A seed meter for metering seed for seeding equipment, the seed meter comprising:

- a stationary casing having an inlet and an outlet, the casing being provided with a seed receiving zone and a seed discharge zone, the seed receiving zone is in communication with the inlet and the seed discharge zone is in communication with the outlet;
- a first disc being rotatively mounted in the casing, the first disc is provided with a plurality of spring biased selector pins located on the disc, each pin has an engagement surface and a cam follower surface, the disc having a cam follower side and an engagement side;
- a second disc being rotatively mounted in the casing, the second disc rotates with the first disc, the second disc is provided with a plurality of seed cells opposite the selector pins; and
- a stationary camming surface is located across from the cam follower side of the first disc and engages the cam follower surface of the selector pins, whereby the camming surface drives the selector pins towards the seed cells trapping seeds in the cells, as the selector pin is rotated through the seed receiving zone and releases the selector pins when the selector pins are rotated into the seed discharge zone.

5,377,868

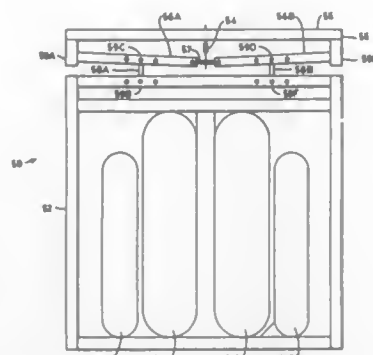
CONCRETE ADMIXTURE WEIGHING AND DISPENSING SYSTEM

Nelson Hernandez, Sunrise, Fla., and Randall Fierke, Bridgeview, Ill., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 732,251, Jul. 18, 1991, Pat. No. 5,224,626. This application Jul. 2, 1993, Ser. No. 86,422
Int. Cl.⁶ B27B 7/00

U.S. Cl. 222—1

2 Claims



1. An admixture dispensing system, comprising:
 - a. one or more vertically-oriented admixture storage containers;
 - b. means for supporting said one or more storage containers;
 - c. weight sensing means associated with said means for supporting said one or more storage containers, said weight sensing means coupled to said means for supporting said one or more storage containers, so as to support a proportion of less than 100% of the weight of said one or more storage containers on said admixture storage container support means.
2. A process for dispensing admixtures based upon weight, comprising:
 - a. arranging one or more admixture storage containers on admixture storage container support means in a vertical orientation, each of said admixture storage containers having fill means and discharge means associated therewith;
 - b. supporting less than 100% of the weight of said admixture storage container support means on weight sensing means;
 - c. filling said one or more of said admixture storage containers with admixture via said fill means to a pre-determined weight as measured by said weight sensing means;
 - d. discharging said admixture from one or more of said admixture storage containers.

5,377,869

PUMP DISPENSER WITH MOVABLE BOTTLE

Stephan Weiss, 211 E. 70th St., New York, N.Y. 10021, and David Seidler, 69-10 108th St., Forest Hills, N.Y. 11375

Continuation-in-part of Ser. No. 938,889, Aug. 31, 1992, abandoned, and a continuation-in-part of Ser. No. 937,656, Aug. 27, 1992, and a continuation-in-part of Ser. No. 936,253, Aug. 27, 1992. This application Aug. 24, 1993, Ser. No. 111,291
Int. Cl.⁶ B67D 5/64

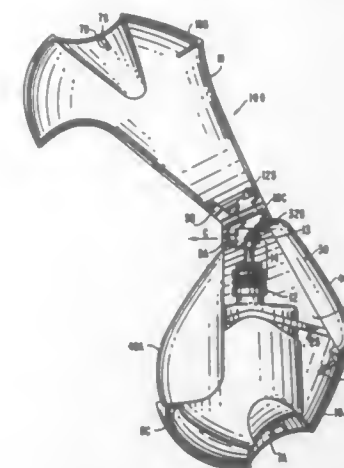
U.S. Cl. 222—1

33 Claims

1. A method for spray dispensing a liquid from a vessel comprising the steps of
 - 1) maintaining a dispensing means of the vessel for dispensing the liquid which is a pump spray nozzle in a substantially stationary position in a housing which is for the vessel and is adapted to hold the pump spray nozzle in a substantially stationary position; and
 - 2) providing an activating force to a movable member at the surface of the housing which moves said movable member

to operate a spring member connected to the vessel to move the vessel in a direction relative to the pump spray

said piston, said conduit extending, in the closed position of said piston, between said internal wall of said envelope and said external wall of said chimney.



nozzle which causes a pump mechanism in the pump spray dispense the liquid.

5,377,870

AXIALLY SLIDABLE DISPENSING CLOSURE CAP

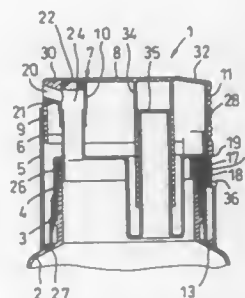
Simone Morel, Montmirail, France, assignor to Societe de Conseils Et d'Etude des Emballes (S.C.E.E.), Societe Anonyme, Soisy sous Montmorency, France

Filed Apr. 22, 1993, Ser. No. 51,202

Claims priority, application France, Apr. 23, 1992, 92 05017
Int. Cl.⁶ B56D 3/00

U.S. Cl. 222—23

20 Claims



1. A dispenser capsule for material including liquid, paste or cream products comprising:
 - a tubular envelope including an internal wall and a recessed portion;
 - a cowl affixed to said envelope and adapted to be assembled on a neck of a receptacle;
 - a chimney affixed to said cowl, said chimney including two ends, one of said two ends adapted to communicate with the neck of the receptacle and said other of said two ends comprising a reduced opening;
 - a piston including a flow passage, said piston being slidably mounted in and axially guided by said tubular envelope and said chimney between a closed, retracted position wherein said flow passage is blocked, and an open, raised position wherein said reduced opening of said chimney is in communication with said flow passage opening to permit flow of material, said piston including a top and a lateral wall, and one portion of said lateral wall comprising a maneuvering thruster within said recessed portion;
 - said top of said piston includes an internal wall and said chimney includes an external wall, said piston further comprising a sealing skirt external to said chimney and extending from said internal wall of said top of said piston inwardly against said external wall of said chimney; and
 - said flow passage comprises a conduit laterally positioned in

1. In a fluid dispenser for dispensing a fluid from a flexible dispenser compartment of a pouch of the type having a discharge passage that extends along a tortuous path to a discharge opening at a lower end of the pouch, the fluid dispenser having a housing comprising a dispenser station through which the fluid is to be dispensed along a dispenser path that extends therethrough, the improvement of the fluid dispenser comprising:

- (a) said dispenser housing including means for supporting the pouch;
- (b) backstop on one side of the dispenser path below said support means;
- (c) cam means having an arcuate face portion confronting the backstop and located on the other side of the dispenser path;
- (d) pushbutton means confronting the backstop and engaging said cam means, the pushbutton means being pivotally attached to said housing, said cam means being pivotally coupled to said pushbutton means;
- (e) spring bias means coupled between said cam means and said dispenser housing, wherein pushing said pushbutton means toward said backstop causes said cam means to pivot with respect to said pushbutton means and to move downwardly along said backstop and against the action of said spring bias means with said flexible dispenser compartment between said cam means and said backstop thereby expelling a quantity of fluid from said dispenser;
- (f) a view port for looking into the interior of said dispenser station; and
- (g) indicator means engaging to said pouch when said pouch is supported within said dispenser housing for indicating when the pouch has been substantially depleted of fluid and in need of being replaced, wherein said indicator means is a visual indicator means comprising an arm with opposed ends, a visually distinctive portion mounted at

one end of the arm and a pouch engagement member attached to the other end of the arm, the arm being pivotally mounted in close proximity to said pouch with said pouch engagement member bearing against said pouch so that when the pouch is substantially filled the visually distinctive portion is not viewable through said view port and as fluid is depleted from said pouch the pouch collapses causing the arm to pivot until the visually distinctive portion comes into view through said view port.

5,377,872

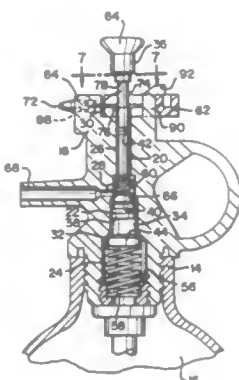
INDICATOR VALVE FOR A FIRE EXTINGUISHER
 Ronald C. Mauney, Snow Camp, N.C., assignor to Walter Kidde Portable Equipment, Inc., Mebane, N.C.

Filed Nov. 9, 1993, Ser. No. 149,466

Int. Cl.⁶ B67D 5/22

U.S. Cl. 222—47

22 Claims



12. A container comprising:

- a container housing having an outlet;
- a valve housing being disposed in said outlet, said valve housing having a through bore, said bore having a first section and a second section of different diameters and a transition segment therebetween;
- a valve stem having a first axial end and a second axial end, said valve stem at least partially being disposed within said bore and being axially movable between a first position, a second position and a third position, said valve stem including sealing means adjacent to said second axial end for sealing with said first section of said bore; and
- a cap being disposed within said second section of said bore, said cap being axially movable between a first position and a second position, sealing means between said cap and said bore for sealing said cap with said bore when said cap is in said first position, said cap sealing means being impermeable to solids and permeable to gas when said cap is in said first position.

5,377,873

DISPENSING CLOSURE

Jeffrey C. Minnette, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Apr. 8, 1994, Ser. No. 225,255

Int. Cl.⁶ B67D 5/22

U.S. Cl. 222—48

6 Claims

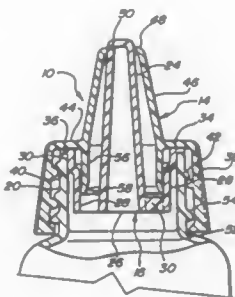
1. In a dispensing closure-container package comprising, in combination:

- a container having a cylindrical neck with an external thread and an outwardly extending flange below said thread;
- a fitment having a centrally located cylindrical plug member and a concentric outer skirt sealably received on said container neck;
- a cap having a top with a dispensing orifice therein and a cylindrical outer skirt with an internal thread engaging said external neck thread allowing axial movement of said cap along said neck, engaging said plug member with said

dispensing orifice in a closed position and disengaging said dispensing orifice in an open dispensing position;

said cylindrical cap outer skirt having an inwardly directed bead below said internal thread which snaps over said outwardly extending flange on the container neck when said cap is initially applied to said container neck;

the improvement comprising means for sensing the approach of said open dispensing position and for locking said cap in said position, said means including:



- a pair of circumferentially spaced axially extending walls on said container flange; and
 - a lug extending axially upward from said inwardly directed cap skirt bead;
- wherein as said cap is being turned in an opening direction, said lug will pass over a first one of said pair of walls allowing the user to feel the approach of said open position, and, as said cap is turned further, said lug will abut against a second one of said pair of walls to stop any further rotation of said cap.

5,377,874

SINGLE PORTION LIQUID DISPENSER

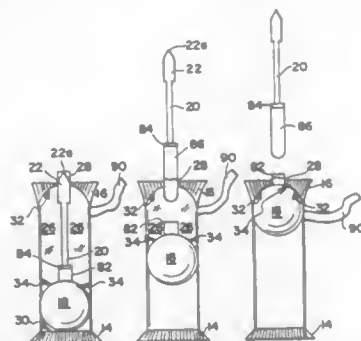
Donald W. Brown, Pawtucket, R.I., assignor to John G. Brown, North Providence, R.I.

Continuation-in-part of Ser. No. 91,859, Jul. 14, 1993, Pat. No. 5,330,075. This application Apr. 25, 1994, Ser. No. 232,659

Int. Cl.⁶ B67D 5/00

U.S. Cl. 222—82

17 Claims



1. A dispenser for fluids, comprising:

- an elongated tubular body having first and second opposing ends; said first end being closed;
- a dispensing nozzle at said second end of the tubular body;
- a plunger disposed within said tubular body; said plunger having a recess therein;
- an elongated spreader member connected to said plunger; said spreader member having a swab end which removably resides in said recess; and
- whereby said plunger, upon external manipulation of said tubular body into communication with said plunger, is movable toward said nozzle to cause ejection of fluid material out of said nozzle and ejection of said connected spreader member through said nozzle and outside said elongated tubular body into the open air for use in spread-

ing the ejected material; said spreader member being removable from said recess upon ejection of said spreader member through said nozzle.

5,377,875

PACKAGE WITH REPLACEABLE INNER RECEPTACLE

HAVING LARGE INTEGRALLY MOLDED FITMENT
 Ronald W. Kock, Wyoming; William J. Willhite, Cincinnati, and Richard D. Satterfield, Bethel, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

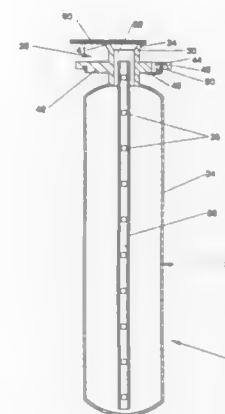
Continuation of Ser. No. 120,694, Sep. 13, 1993, Pat. No. 5,305,921, which is a continuation of Ser. No. 809,986, Dec. 18, 1991, abandoned. This application Dec. 21, 1993, Ser. No.

171,041

Int. Cl.⁶ B65D 35/28

U.S. Cl. 222—95

8 Claims



1. A replaceable inner receptacle for use in a dispenser, wherein said dispenser comprises an outer bottle having a finish and a closure having an internal depending annular wall leading to a dispensing orifice, and wherein said replaceable inner receptacle comprises a single piece flexible bag containing a fluid product and including:

- a) a thin walled portion having a bottom end, an upper end, an interior, an overall dimension, and a thickness small enough that said thin walled portion readily collapses when said fluid product is dispensed from said flexible bag;
- b) a rigid fitment portion connected to said upper end of said thin walled portion, said rigid fitment portion having a fluid passage therethrough providing fluid communication with said interior of said thin walled portion, said rigid fitment portion including:
 - i) a flange having a periphery attachable to said finish of said outer bottle, said flange having an overall dimension greater than said overall dimension of said thin walled portion of said flexible bag, in order to insert said thin walled portion of said flexible bag, completely filled with said fluid product, into said outer bottle through said bottle finish;
 - ii) a one way vent valve mounted to said flange to vent air into said outer bottle of said dispenser after said thin walled portion of said flexible bag collapses when fluid product is dispensed therefrom; and
- c) a perforated diptube loosely inserted into said single piece flexible bag through said fluid passage, said perforated diptube extending from said fluid passage of said rigid fitment to said bottom end of said thin walled portion of said flexible bag.

5,377,876

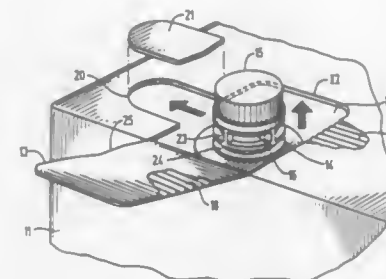
DISPOSABLE CONTAINER FOR POURABLE MATERIALS HAVING AN INTERLOCKING SPOUT
 Ronald Smernoff, 118 Starlite St., South San Francisco, Calif. 94080-6310

Filed Apr. 14, 1993, Ser. No. 48,018

Int. Cl.⁶ B65D 35/56

U.S. Cl. 222—105

23 Claims



19. A disposable container for pourable materials, comprising:

- an outer container formed of corrugated cardboard, the cardboard having a first direction parallel to the corrugations in the cardboard, and a second direction perpendicular to the corrugations in said cardboard;
- an inner fluid-tight bladder having a resealable dispensing opening therein and an interlocking portion adjacent the opening;
- a slotted portion of said outer container defining a slotted opening therein having an elongated dimension corresponding to the first direction of the cardboard forming said outer container, the interlocking portion of said inner liner being inserted into said slotted portion in the first direction to interlock with said outer containment;
- a locking flap portion of said outer container defining a hinged flap and an opening in said outer container, which opening interconnects with said slotted opening, the hinge of the locking flap of said outer container being coextensive with an edge fold of said outer container, and said flap rotating about a hinge axis parallel to the first or relatively rigid direction of the cardboard of said outer container, thereby bending in the second or relatively flexible direction, said locking flap portion operable to access the interlocking portion of the resealable dispensing opening of said inner bladder and insert the interlocking portion into said slotted portion, said locking flap portion being closable to retain said interlocking portion within said slotted portion.

5,377,877

DISPENSING VALVE FOR PACKAGING

Paul E. Brown, Midland, and Timothy R. Socier, Essexville, both of Mich., assignors to Liquid Molding Systems, Inc., Midland, Wis.

Continuation-in-part of Ser. No. 804,086, Dec. 6, 1991, Pat. No. 5,213,236. This application Apr. 23, 1993, Ser. No. 52,113

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.⁶ B65D 35/56

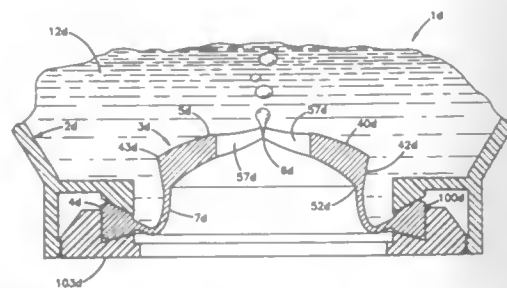
U.S. Cl. 222—105

42 Claims

31. A dispensing valve for fluid product packaging of the type having a container with a discharge opening; said dispensing valve comprising:

- a marginal valve portion shaped to seal about the discharge opening of the container; a connector sleeve portion having a resiliently flexible construction, with one end area thereof connected with said marginal valve portion; and a valve head portion connected with an opposite end area of said connector sleeve portion, and having an orifice which opens to permit fluid flow therethrough in response to a

predetermined discharge pressure within the container, and closes to shut off fluid flow therethrough upon removal of the predetermined discharge pressure; said valve



head portion having an outwardly flared crown shape, wherein a marginal edge of said valve head portion tapers radially inwardly toward said connector sleeve portion to alleviate nesting during handling.

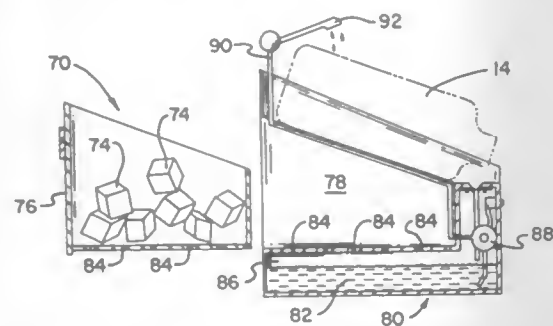
5,377,878 CONTAINER SUPPORTING AND DISPENSING APPARATUS

Donald S. Rainey, and Sharon R. Rainey, both of 1117 Judith Cove, Memphis, Tenn. 38018

Filed Nov. 12, 1993, Ser. No. 151,005
Int. Cl.⁶ B67D 5/62

U.S. Cl. 222—146.6

2 Claims



1. A container supporting and dispensing apparatus for use with a bottle having contents therein, said apparatus comprising:

- a container support means for supporting said bottle in a sloped position, said container support means comprising a pair of similarly shaped side walls; a front wall fixedly secured to a front end of said side walls, said front wall having a rectangular aperture formed at a top end of said front wall; a rear wall fixedly secured to a rear end of said side walls; and an arcuately shaped inner wall positioned between said side walls, said inner wall defining a cradle operable to support said bottle in a sloped position;
- a valve assembly releasably couplable to said bottle for selectively dispensing said contents from said bottle, said valve assembly comprising a coupling threadably engagable to said bottle; a mount secured to said coupling, said mount having a groove extending therearound; a nozzle coupled to said mount in fluid communication with said bottle; and a valve means coupled to said nozzle for selectively permitting fluid communication through said nozzle, wherein said groove can be slidably engaged to said rectangular aperture to support said valve assembly relative to said front wall;
- a pump means coupled to said valve assembly and positioned in fluid communication with said bottle for selectively pressurizing said bottle;
- an ice container means coupled to said container support for containing ice, said ice container means comprising a

cavity positioned below said cradle; and a tray slidably positioned within said cavity; and, a water circulation means for collecting water generated by a melting of said ice and cascading said water over said bottle.

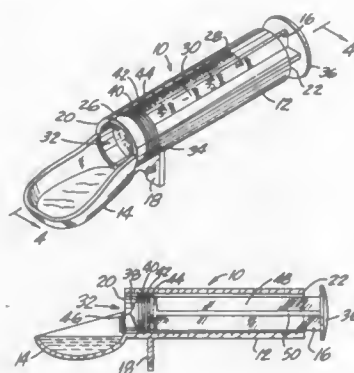
5,377,879 MEASURING SPOON

Linda R. F. Isaacs, 517 Cedar Hill Rd., Far Rockaway, N.Y. 11691

Filed Dec. 22, 1993, Ser. No. 172,572
Int. Cl.⁶ B67D 5/06, 1/07

U.S. Cl. 222—205

15 Claims



1. A measuring spoon, comprising a hollow substantially cylindrical filler tube having a uniform diameter throughout, first and second equal open ends and having a level indicator thereon for use in measuring an amount of a liquid substance therein;
- a spoon extending from a first open end of the filler tube; and
- a plunger for insertion into the second open end and moveable through the tube the plunger including a substantially circular rubber tip and an enlarged handle on opposite ends thereof, the plunger being of a length such that, when fully inserted so the handle contacts the second open end, the rubber tip partially extends past the first open end to a position above the spoon whereby all of the liquid substance within the filler tube will be ejected into the spoon.

5,377,880 FLUID SUBSTANCE DISPENSER WITH DEFORMABLE HEAD

Remo Moretti, Cremona, Italy, assignor to Lumson S.r.l., Capergnanica-Cremona, Italy

Filed Nov. 10, 1993, Ser. No. 149,761

Claims priority, application Italy, Dec. 4, 1992, MI92 A 002790

Int. Cl.⁶ B65D 37/00

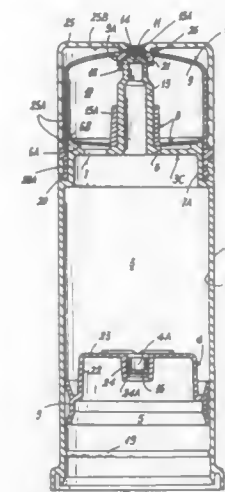
U.S. Cl. 222—207

3 Claims

1. A fluid substance dispenser with a deformable head comprising:

- a container defining an elongate chamber for containing the fluid substance therein and having a piston movable along said chamber which closes a first end of the container, said piston including a sealing member contacting an inner cylindrical wall of the chamber, and a transverse fixed wall located in said container for closing a second end of the container, the fixed wall having at least one passage formed therein;
- a non-return valve positioned in said at least one passage to allow the substance to be discharged from the chamber, wherein the valve extends outside of said container and is rigid therewith;
- a deformable cap mounted on said container and defining with said transverse wall a compression chamber, said cap having a hole formed therein;

a nozzle formed by said hole in said cap for discharging the substance from said compression chamber and a closure member for closing said nozzle, wherein said closure member includes at least one elongate appendix which extends from said transverse fixed wall into said compression chamber, a free end of said appendix being positioned at the hole provided in said deformable cap, and wherein an edge of the cap corresponding with said hole is elastically urged to seal said free end of said appendix when the cap is in a rest state.



sion chamber, a free end of said appendix being positioned at the hole provided in said deformable cap, and wherein an edge of the cap corresponding with said hole is elastically urged to seal said free end of said appendix when the cap is in a rest state.

5,377,881 FLUID PUMP WITH SECURE MOUNTING TO RECEPTACLE STOPPER

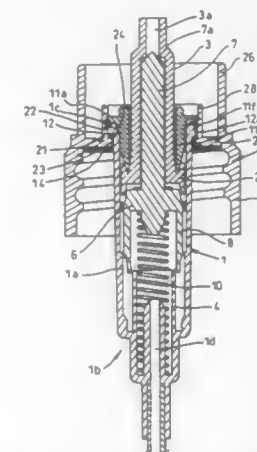
Claude Jouillat, Montigny-Sur-Avre, France, assignor to Société Technique de Pulvérisation S.T.E.P., Verneuil-Sur-Avre, France

Filed Aug. 5, 1993, Ser. No. 102,261

Claims priority, application France, Aug. 10, 1992, 92 09881
Int. Cl.⁶ B65D 88/54

U.S. Cl. 222—321

5 Claims



1. A device for dispensing a fluid substance, the device including a pump mounted on a stopper designed to be fixed on a neck of a receptacle for said fluid substance, wherein: the pump includes a pump body extending axially between a first end that includes an inlet orifice and an open second end provided with an outside collar, the pump further including a piston that slides axially inside said pump body, and a return spring that urges the piston towards the open second end of the pump body, and the pump includes a ferrule constituted by a single piece fixed in said second

end of the pump body to limit motion of the piston towards said second end;

the stopper includes an axial internal passage passing therethrough, said passage including a substantially cylindrical first length towards the outside of the receptacle and a narrower second length towards the inside of the receptacle, said first and second lengths defining a shoulder facing towards the outside of the receptacle, said first length having an inside diameter that is substantially equal to the outside diameter of the collar on the pump body;

the ferrule includes a flange which extends radially outwards;

the pump body passes through the second length of the internal passage of the stopper, and the collar is disposed inside said first length of the internal passage of the stopper in abutment against the shoulder of the stopper; and wherein said flange of the ferrule has an outside diameter close to the outside diameter of said collar of the pump body and slightly greater than the inside diameter of the first length, and said flange is engaged as a force-fit inside said first length of the internal passage of the stopper to hold the pump in said stopper, preventing the pump body from moving towards the outside of the receptacle, both the ferrule and the stopper being made of plastics material, and the ferrule being made of a material that is harder than the stopper so that said radial flange bites into said stopper.

5,377,882 CONTAINER AND CLOSURE

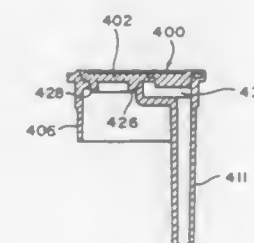
Ninh G. Pham, #511, 2401 W. Sam Houston Pkwy., Houston, Tex. 77043; Joseph A. Decker, Jr., 22331 Joshua Kendall, Katy, Tex. 77449, and Canh S. Bui, 1578 King Stream Cir., Herndon, Va. 22070

Continuation-in-part of Ser. No. 870,884, Apr. 20, 1992, Pat. No. 5,228,603, which is a continuation-in-part of Ser. No. 576,800, Sep. 4, 1990, Pat. No. 5,105,986. This application Jul. 19, 1993, Ser. No. 93,394

Int. Cl.⁶ B67D 3/00

U.S. Cl. 222—479

13 Claims



1. A closure device for releasably closing off an opening in a fluid container, the closure device securable at the opening, the closure device comprising:
 - a body member with a fluid flow channel therethrough, the fluid flow channel having a top fluid flow opening and a bottom fluid flow opening, the body member having an air flow opening therethrough spaced apart from the fluid flow channel,
 - a hollow vent member having a top vent opening in fluid communication with the air flow opening and a bottom vent opening at a bottom of the hollow vent member, the hollow vent member extending beyond the bottom fluid opening and beyond the body member to inhibit egress of fluid from the container through the hollow vent member when the container is tilted,
 - a lid connected with a hinge member to the body member for sealingly and releasably closing off the fluid flow opening and the top vent opening,
 - the lid having a first seal member for releasably sealing shut the fluid flow channel,

the lid having a second seal member for releasably sealing shut the air flow opening,
a vent cavity in the body member below the air flow opening and above top vent opening of the hollow vent member and in fluid communication with the hollow vent member and with the top vent opening, the vent cavity having two ends and open at both ends for fluid flow therethrough, the second seal member comprising a solid raised member which projects downwardly into the vent cavity, and the second seal member wholly above and outside of the top vent opening of the hollow vent member when the second seal member is closing off the air flow opening.

5,377,883

NECKTIE INSERT

Guy Melton, and Raymond Fleeman, both of Wilmington, N.C., assignors to Remington Apparel Co., Inc., Wilmington, N.C.
Filed Dec. 20, 1993, Ser. No. 169,367
Int. Cl.⁶ D06C 15/00; B65D 85/18

U.S. Cl. 223—82

13 Claims



1. A necktie insert member for cooperating mounted engagement between the front panel and rear panel of a necktie for assisting in drying the necktie after washing, said necktie insert member comprising

- A. an elongated, substantially continuous unitary body portion formed from a single sheet of material and having
 - a. a size and shape consistent with the size and shape of the necktie with which the insert member cooperates,
 - b. a first narrow end, and
 - c. a second wide end;
- B. a plurality of apertures formed throughout the body portion providing air flow passageways;
- C. an elongated, substantially centrally disposed slit,
 - a. formed in the body portion
 - b. extending longitudinally from the first narrow end through a major length of said body portion; and
 - c. establishing a pair of independent, elongated arm members on opposed sides thereof; and
- D. a pair of independent, elongated arm members formed in the body portion by said elongated slit, with each arm member
 - a. comprising a free terminating end formed at the first narrow end thereof, and
 - b. being flexibly movable independently of the other arm member to assure ease of insertion into the necktie when desired;

whereby a necktie insert member is attained which is capable of being quickly and easily advanced longitudinally into a substantial length of the necktie for secure abutting interengagement with the necktie, assisting in providing efficient, rapid drying of the necktie after washing.

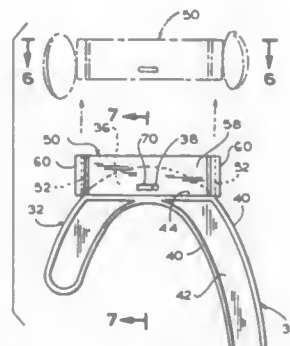
5,377,884

INDICATOR AND GARMENT HANGER

Andrew M. Zuckerman, Forest Hills, N.Y., assignor to Different Dimensions Inc., Rego Park, N.Y.
Filed Oct. 1, 1993, Ser. No. 130,623
Int. Cl.⁶ A47G 25/14

U.S. Cl. 223—85

18 Claims



1. In combination, a hanger for garments and other articles and a separately formed indicator secured to said hanger for indicating information associated with the; articles
said hanger defining a hook adapted to engage a rail or other supporting means, said hook defining support means for receiving and engaging said indicator; and
said indicator being received and engaged by said support means, said indicator including a hollow four-sided body defining an open bottom, an open top, a generally parallel pair of opposed sides and a generally parallel pair of opposed ends connecting said sides, each said side having a generally planar outer side surface and each said end having a generally planar outer end surface extending beyond both of said planar outer side surfaces.

5,377,885

DETACHABLE LEVER ACTION ARTICLE CARRIER

Philip W. Wyers, Englewood, Colo., assignor to Bard-Wyers Company, Denver, Colo.

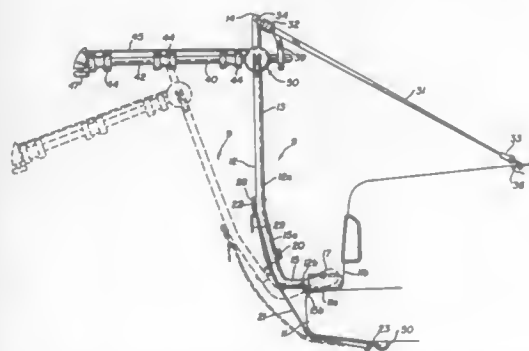
Continuation of Ser. No. 809,970, Dec. 18, 1991, abandoned.

This application Jan. 7, 1994, Ser. No. 178,425

Int. Cl.⁵ B60R 9/00

U.S. Cl. 224—42.03 R

17 Claims



1. An article carrier adapted for mounting to a vehicle comprising: frame means including
a pair of laterally spaced substantially straight side portions, a cross portion connecting said side portions,
a pair of laterally spaced, offset portions rigidly connected to and extending from the lower extremities of said side portions and extending generally transverse to said side portions,
said offset portions being adapted to seat on a generally horizontal top support surface of a vehicle, said side por-

tions and offset portions providing a lever arm that turns in a lever action about a fulcrum established at a contact area between a bottom forward surface of said offset portions and said top support surface about which said lever arm will rotate in either direction,
first fastening means attached to and extending from a lower portion of said side portions above said fulcrum to a lower fastening structure of the vehicle below said fulcrum to fasten the frame means to the vehicle to pull the frame means downwardly against said support surface and forwardly toward the vehicle to turn said frame means in one direction with respect to said fulcrum, said offset portions offsetting said side portions forming said lever arm a substantial distance rearwardly of an in-line position with said fulcrum to enable said first fastening means to provide said downward and forward pull on said side portions,
second fastening means attached to and extending from an upper portion of said frame means to an upper fastening structure of the vehicle above said fulcrum to releasably fasten the frame means to the vehicle above said fulcrum and pull said frame means toward the vehicle to turn said frame means in an opposite direction with respect to said fulcrum,
whereby said frame means disposed upright with a lower surface of said offset portions supported on said support surface is held in position by said first and second fastening means, and
article support means extending outwardly from said side portions in an extended position, said article support means being movable to a folded position.

5,377,886

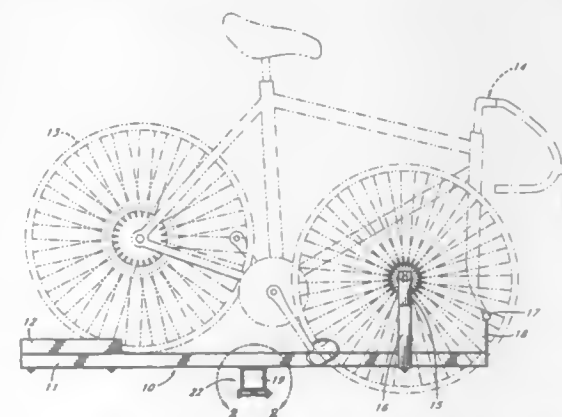
MODULAR BICYCLE RACK FOR MOTOR VEHICLES

John R. Sickler, 14963 San Feliciano, La Mirada, Calif. 90638
Filed Jul. 1, 1993, Ser. No. 84,479

Int. Cl.⁶ B60R 7/00

U.S. Cl. 224—42.45 R

5 Claims



1. An improved bicycle rack having a bicycle holding assembly including a support bar, a channel for a bicycle rear wheel held by said support bar, a pair of threaded studs held on a shaft supported by said support bar for a bicycle front fork and a pair of yokes for a bicycle front wheel also supported by said support bar, wherein the improvement comprises:

- a clamp assembly on said support bar and said support bar having a top, two sides and a bottom and said clamp assembly being affixed to the bottom of said support bar and wherein said clamp assembly comprises a short length of square channel having a top affixed to the bottom of said support bar, two sides and a bottom and the bottom including a gap across which tightening means are positioned to squeeze the short length of square channel against the square supported channel;
- a trailer hitch assembly having a single square hitch channel affixed to the rear of a vehicle and a single square sup-

ported channel supported within and extending rearwardly from the hitch; and
at least one bicycle holding assembly with an associated support bar and said bicycle holding assembly being removably held by said clamp assembly on said square supported channel of said trailer hitch assembly and wherein the support bar is positioned at about a 90 degree angle to said square supported channel.

5,377,887

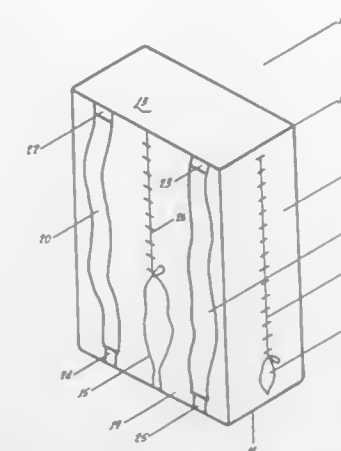
MULTI-PURPOSE LUGGAGE CONVERTIBLE FROM A BACKPACK TO A HANDBAG

Lawrence Garcia, 4542 Mimosa Dr., Yorba Linda, Calif. 92686
Filed Jul. 12, 1993, Ser. No. 90,301

Int. Cl.⁶ A45F 4/02

U.S. Cl. 224—153

18 Claims



1. Multi-purpose luggage comprising a bag, a pair of handles, and a pair of shoulder straps, said bag being convertible, by turning the bag inside-out, between a handbag configuration wherein said pair of handles is outside of said bag and said pair of shoulder straps is inside said bag, and a backpack configuration wherein said pair of shoulder straps is outside of said bag and said pair of handles is inside said bag.

5,377,888

CARRIER APPARATUS FOR THE TRANSPORT OF ARTICLES ON THE ROOF OF A MOTOR VEHICLE

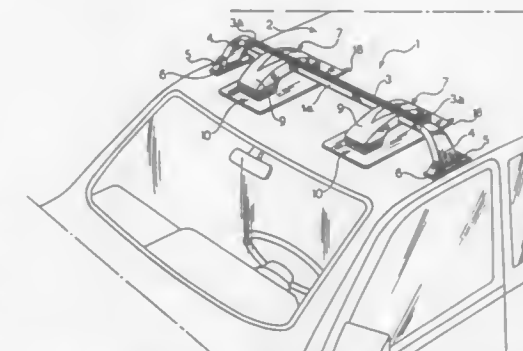
Ugo Baravalle, Torino, Italy, assignor to FAPA S.p.A., Beinascio, Italy

Filed Jul. 7, 1993, Ser. No. 87,051

Int. Cl.⁶ B60R 9/00

U.S. Cl. 224—309

12 Claims



1. Carrier apparatus for the transport of articles on the roof of a motor vehicle, comprising:

a support structure having feet for resting on opposite side edge portions of the roof,
at least one magnetic plate adapted to be applied to the roof intermediate said feet, at least one retaining member mounted on said plate and engaging said support structure to retain said support structure on said roof and at least one load bearing member positioned between said retaining member and said plate whereby said bearing member enables substantially without a load transmission to the carrier to be transferred to the roof substantially through said feet.

5,377,889

AUTOMOBILE ROOF CARRIER

Kozo Sumino, Funabashi, and Masaaki Toya, Chiryu, both of Japan, assignors to Autobacs Seven Co., Ltd., Toyonaka, Japan

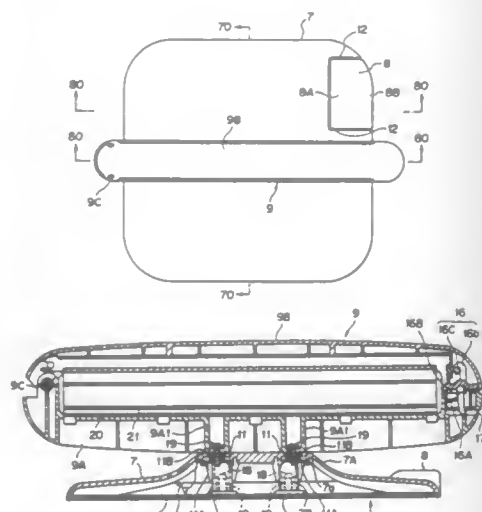
Filed Sep. 1, 1993, Ser. No. 115,900

Claims priority, application Japan, Sep. 10, 1992, 4-070069[U]; Sep. 10, 1992, 4-070070[U]

Int. Cl.⁶ B60R 9/00

U.S. Cl. 224—315

4 Claims



1. An automobile roof carrier comprising:

- a magnetic base portion, magnetically attracted onto an upper surface of a roof of an automobile;
- a gripping portion for removal formed in an appropriate position of said magnetic base portion;
- a covering member, disposed over said magnetic base portion and integrally united therewith so as to cover the portion other than the attracted surface of said magnetic base portion and said gripping portion for removal;
- a loading article holding portion, disposed above said covering member, integrally jointed thereto and having means to be opened and closed to hold articles;
- an auxiliary cover attached to said covering member so as to be opened and closed for lidding said gripping portion for removal from the top;
- a first locking mechanism disposed in said auxiliary cover to be locked for maintaining the closed state of said auxiliary cover when said auxiliary cover is closed;
- a second locking mechanism disposed in said loading article holding portion to be locked for maintaining the closed state of said loading article holding portion when said loading article holding portion is closed; and
- a common key for unlocking said first and second locking mechanisms.

5,377,890

ROOF RACK FOR VEHICLES

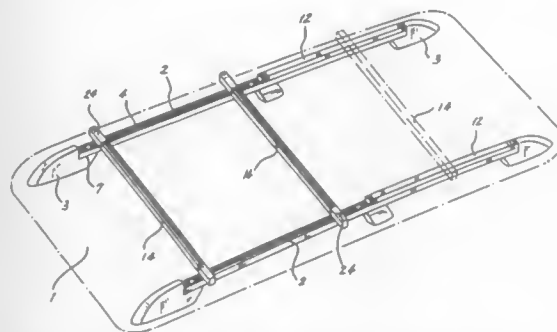
Harald Brunner, Solingen; Klaus Kolodziej, and Karl-Heinz Lumpe, both of Wuppertal, all of Germany, assignors to Gebr. Happich GmbH, Germany

Filed Mar. 18, 1994, Ser. No. 210,214

Claims priority, application Germany, Apr. 24, 1993, 4313526 Int. Cl.⁶ B60R 9/04

U.S. Cl. 224—321

15 Claims



1. A roof rack for placement on the roof of a vehicle, the rack comprising two rails extending substantially parallel to each other along the sides of the roof, each rail having a top and a bottom side; support feet beneath and connected to the bottom sides of the rails for supporting the rails on the roof surface;

each rail comprising a hollow profile extending in the longitudinal direction of the rail and having a longitudinal channel which opens on the top side of the rail and extends in the longitudinal direction of the rail;

a profiled support strip extending over at least part of the length of one of the respective rails, the profiled support strip having opposing end regions;

anchoring means at one of the end regions of each profiled support strip for anchoring the support strip to the respective rail in one of the directions of either extending along the length of the respective rail or transversely of the respective rail and between the rails, the anchoring means being loosenable and securable for enabling the profiled support strip to be swung between the respective directions, the anchored end region of the profiled support strip engaging the respective rail in a manner for enabling the anchoring means and the respective anchored end region of the support strip to be displaced longitudinally along the respective rail and to be anchored at a selected location along the respective rail by securing the anchoring means to the respective rail.

5,377,891

PROCESS FOR CONTROLLING THE FORCE ON A MOVING WEB OF MATERIAL

Dieter Peltzer, Krefeld; Heinz Hermanns, Korschbroich, and Hans Seibold, Anhausen, all of Germany, assignors to Erhardt & Leimer GmbH, Angsburg, Germany

Filed Sep. 24, 1992, Ser. No. 950,474

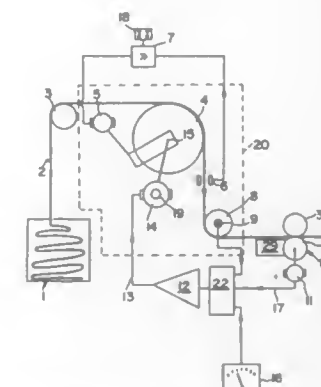
Claims priority, application Germany, Sep. 24, 1991, 4131760 Int. Cl.⁶ B65H 43/00

U.S. Cl. 226—024

2 Claims

1. A process for controlling the force exerted on a moving web of material, comprising the steps of:
selecting a predetermined tension value;
pulling the web across a guiding and breadth-stretching roller and a fixing roller to guide and spread the web;
generating a first signal representative of the force exerted on the web as it passes the fixing roller;
generating a second signal representative of the rotational speed of a driven wheel located downstream of the fixing roller;
generating a control signal by

- (i) comparing the first signal to the predetermined tension value, and
- (ii) compensating for the running speed of the web based on the second signal;
amplifying the control signal; and



controlling the speed of the guiding and breadth-stretching roller dependent upon the amplified control signal so that a constant predetermined force is exerted on the moving web whereby difficult and sensitive fabrics are spread without creating undesirable distortions in the fabric.

5,377,892

FLUID PRESSURE TENSIONING APPARATUS FOR A WEB THREADING ENDLESS ROPE

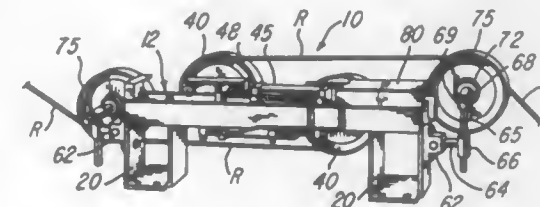
Charles D. Kimball, Yellow Springs, Ohio, assignor to Wespatt, Inc., Springfield, Ohio

Filed Aug. 12, 1993, Ser. No. 105,149

Int. Cl.⁶ B65H 59/38

U.S. Cl. 226—92

10 Claims



1. Apparatus adapted for tensioning an endless rope used for threading a web in a papermaking machine and for taking up stretch which develops in a rope over a period of use, said apparatus comprising means forming an elongated track, a pair of carriages mounted for movement on said track towards and away from each other, a sheave mounted on each of said carriages for free rotation and positioned to receive at least a partial wrap of the rope, a separate fluid pressure actuated cylinder mounted on said track for each of said carriages, each of said cylinders enclosing a piston connected to a piston rod projecting from one end of said cylinder, said cylinders being positioned on said track with said piston rods extending therefrom in opposite directions, means for connecting each said piston rod to the corresponding said carriage, means for applying fluid operating pressure to one of said cylinders to move the corresponding said piston and piston rod in one direction within said cylinder, means defining a fluid passage interconnecting portions of said cylinders, and said passage and said cylinder portions interconnected thereby being filled with hydraulic fluid to cause said piston in the other said cylinder to move in the opposite direction in response to fluid operating pressure applied to said piston in said one cylinder.

5,377,893

ULTRASONIC TAPE GUIDE DEVICE

Etsuro Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

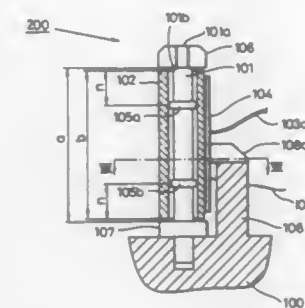
Filed Aug. 3, 1992, Ser. No. 923,459

Claims priority, application Japan, Aug. 8, 1991, 3-199502

Int. Cl.⁶ B65H 27/00

U.S. Cl. 226—196

1 Claim



1. An ultrasonic tape guide device comprising:
a shaft;

a tubular tape guide for guiding a tape therearound, said tubular tape guide having a given length and being disposed around and supported on said shaft said tubular tape guide also having a flat surface on an outer circumferential surface thereof; and

a longitudinally extending piezoelectric ultrasonic vibrator formed of a substantially flat plate-like configuration for vibrating said tubular tape guide in an axial direction thereof, said piezoelectric ultrasonic vibrator having a length not greater than said given length and being fixed to said tubular tape guide said, piezoelectric ultrasonic vibrator having a partially unconfined free surface facing away from said tubular tape guide, and a pair of electrodes attached respectively to opposite sides of said piezoelectric ultrasonic vibrator, said piezoelectric ultrasonic vibrator also having a flat surface fixedly mounted on said flat surface of the guide member.

5,377,894

WIRE BONDER SYSTEM

Kiyoshi Mizoguchi, Ryoetsu Sato, and Morikazu Gotoh, all of Tokyo, Japan, assignors to Kan Electronics Co., Ltd., Tokyo, Japan

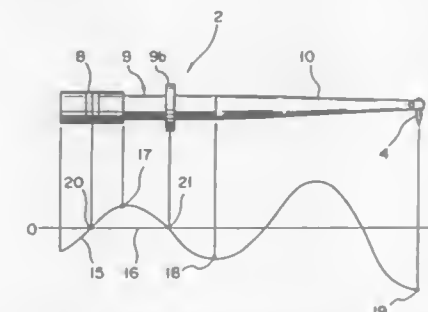
Filed Aug. 31, 1993, Ser. No. 113,649

Claims priority, application Japan, Sep. 29, 1992, 4-258758

Int. Cl.⁶ H01L 21/60

U.S. Cl. 228—1.1

8 Claims



1. A wire bonder system comprising an electric power unit to supply high frequency electric power, a transducer to convert the electric power to mechanical vibration and to enlarge an effective component of the mechanical vibration, and a tool means for ultrasonic bonding of wire by utilizing the mechanical vibration of the transducer, said tool being mounted at a first end of said transducer, wherein a length with which the

tool protrudes from said transducer is adjusted to determine a minimum value of impedance to thereby maximize on conversion of electrical power to mechanical vibration.

5,377,895

VACUUM ACTUATED SOLDER SUCKER

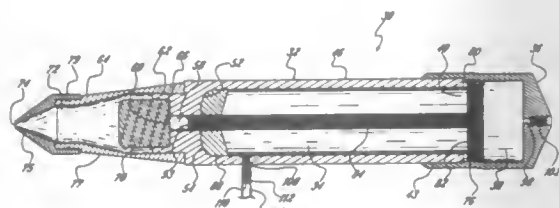
C. Johan Masreliez, 3301 - 181st Pl. Northeast, Redmond, Wash. 98052

Filed Mar. 8, 1994, Ser. No. 207,557

Int. Cl.⁶ B23K 3/00

U.S. Cl. 228—20.5

13 Claims



1. A vacuum type solder removal device comprising:
 - a device body having a chamber formed therein;
 - a nozzle attached to a first end of said device body;
 - a piston axially slidable within said chamber, said piston separating said chamber into a body chamber and a cover chamber, thereby inhibiting air flow between said body chamber and said cover chamber;
 - an air passage connecting said nozzle to said body chamber;
 - a primary air valve controlling air flow through said air passage, such that in an open position said primary air valve permits air to flow between said nozzle and said body chamber and in a closed position said primary air valve inhibits air from flowing between said nozzle and said body chamber, said primary air valve being opened and closed in response to said piston sliding axially within said chamber;
 - a vacuum port on said device body in communication with said body chamber for connection of a vacuum source to said chamber; and
 - a secondary air valve controlling the pressure differential across said piston to selectively actuate said primary air valve to its open and closed positions.

5,377,896

AUTOMATIC MASS HANDLING SYSTEM FOR SMALL ELECTRONIC COMPONENTS

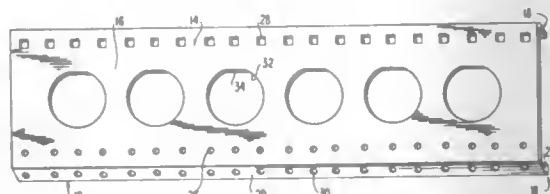
Thomas P. Lopata, Earl Township, Berks County, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Nov. 12, 1993, Ser. No. 151,443

Int. Cl.⁶ H01L 21/68

U.S. Cl. 228—49.5

27 Claims



1. An automatic mass handling system for the bonding of electronic components in small electronic devices, said system comprising:
 - a plurality of module means for holding a plurality of said

electronic devices in a predetermined orientation, each said module means including:

an upper surface having a plurality of component holding holes therein for retaining said plurality of said electronic devices in said predetermined orientation, and vacuum hold down means, positioned below said upper surface, for holding said electronic devices in said predetermined orientation in said plurality of component holding holes when a vacuum is applied through said vacuum hold down means; and

boat means for holding a plurality of said module means in a predetermined orientation for transportation.

21. A module for holding a plurality of small electronic devices in a predetermined orientation in a boat, said module comprising:

a cup-shaped main body having a circumferential wall and a bottom wall which closes a bottom of said circumferential wall,

a top component holding wall secured to an upper surface of said circumferential wall and having a plurality of component holding holes therein for retaining said plurality of electronic devices therein,

aligning means for aligning said electronic devices in said component holding holes in a predetermined orientation, and

a vacuum hold down hole formed in said bottom wall, for holding said electronic devices in said predetermined orientation in said plurality of component holding holes when a vacuum is applied through said vacuum hold down means.

5,377,897

COMPENSATION OF NON-PARALLELISM (BALANCING) OF A FIRST BODY TO A SECOND BODY

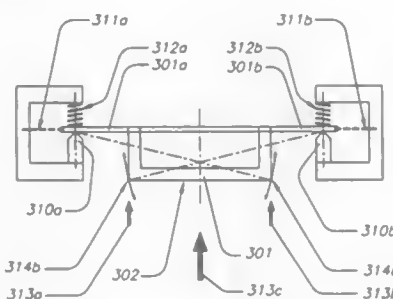
Gero Zimmer, 655 Deep Valley Dr., Suite 125, Palos-Verdes, Calif. 90274

Filed Jul. 29, 1993, Ser. No. 99,225

Int. Cl.⁶ H05K 3/32

U.S. Cl. 228—106

9 Claims



1. A process for applying a force between at least two bodies each having surfaces to be snuggled against each other, while maintaining balance and parallelism between the surfaces during static and dynamic modes of operation, comprising:

resiliently holding at least one of the bodies substantially against movement in a transverse direction, transverse to a nominal force direction used for snuggling the surfaces toward each other, using at least one mechanically resilient member;

resiliently mounting at least one of the bodies for rotation about no fixed point of rotation for balancing parallelism between the surfaces, all points of rotation for said rotation being spaced laterally away from the surfaces;

applying a static force to at least one of the bodies for snuggling the surfaces toward each other during a static mode of operation for establishing parallelism between the surfaces;

while applying the static force to establish the parallelism between the surfaces, adjusting the resilient mounting for

pre-balancing the bodies with respect to each other to maintain the parallelism; and applying dynamic snuggling force between the bodies to snuggle the surfaces against each other during a dynamic mode of operation while maintaining parallelism and balancing through resiliency of the resilient holding and adjusted resilient mounting.

5,377,898

METHOD FOR EXPLOSION WELDING OF JOINTS AND CATHODE PROTECTION OF PIPES

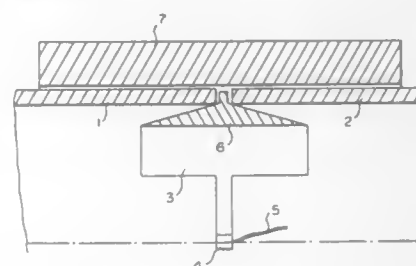
Tor Persson, Kristianstad, Sweden, assignor to International Technologies A/S, Oslo, Norway

Filed Sep. 22, 1993, Ser. No. 124,633

Int. Cl.⁶ B23K 20/08

U.S. Cl. 228—107

4 Claims



1. A method for joining abutting pipes by explosion welding, where there is placed inside the two pipes positioned end-to-end, an explosive charge which is detonated, there first having been placed on the outside of the joint a support in the form of an annular member surrounding the region of the joint, characterized in that the annular member includes or is composed of a material which will, through the explosive welding, form an electrically conductive connection with the pipe material and have properties of a sacrificial anode relative to the pipe.

5,377,899

METHOD FOR PRODUCING SOLDER THAT CONTAINS THEREIN ADDITIVE PARTICLES MAINTAINING ITS SHAPE

Mitsuru Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

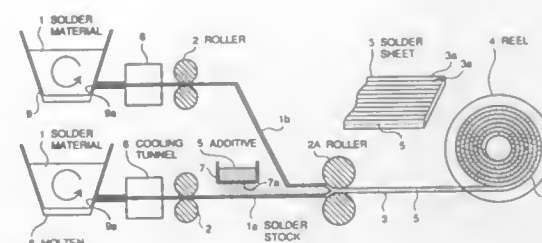
Filed Jan. 31, 1994, Ser. No. 188,831

Claims priority, application Japan, Jan. 29, 1993, 5-013956

Int. Cl.⁶ H01L 21/58; B23K 35/14

U.S. Cl. 228—117

8 Claims



1. A method for producing a solder by laminating two sheets of solder material so as to form a solder used for bonding a semiconductor chip onto a die bonding substrate, the method including:

a spreading step for feeding one of said solder material sheets at a constant speed, and for spreading a constant amount of additive particles having a constant particle diameter on an upper surface of said one solder material sheet, and a rolling and laminating step for stacking the other of said solder material sheets on the upper surface of said one solder material sheet where the additive particles have

been spread and for rolling the stacked solder material sheets so that the stacked solder material sheets are integrally laminated.

5,377,900

METHOD OF PRECISELY POSITIONING AND MATING TWO WORKPIECES

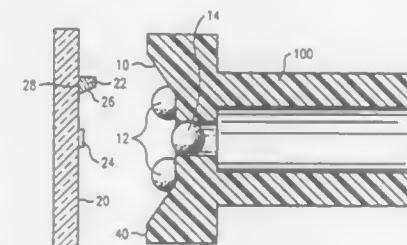
Ernest E. Bergmann, Fountain Hill, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,062

Int. Cl.⁶ B23K 31/02, 101/36

U.S. Cl. 228—124.1

28 Claims



1. A method of orienting first and second workpieces in a desired physical alignment by aligning a physical feature on a surface of the first workpiece with a surface of the second workpiece, thereby facilitating mating of first and second workpieces lacking directly physically matable surfaces, the method comprising the steps of:

(a) forming an adaptor having a first adaptor surface defining a physical feature mechanically matable with the physical feature of the first workpiece and a second adaptor surface configured for mounting to the second workpiece surface;

(b) defining a mounting region on the second workpiece surface for mountedly receiving the adaptor such that when the adaptor is mounted on the second workpiece surface the first adaptor surface defines a physical feature on the second workpiece surface configured for mechanically mating with the physical feature of the first workpiece at preselected points of contact for establishing said desired physical alignment;

(c) selectively metalizing at least a portion of the mounting region on the second workpiece and at least a portion of the second adaptor surface to define at least one solderable point on each;

(d) relatively positioning the adaptor and the second workpiece so that the solderable point on the second adaptor surface is disposed in close confronting relation to the solderable point on the second workpiece mounting region; and

(e) solder bump mounting the adaptor to the second workpiece surface by soldering together the solderable points positioned in said step (d) to fixedly mount the adaptor to the second workpiece surface so that said desired physical alignment is obtained by mating said physical feature on the second workpiece surface with the physical feature of the first workpiece.

5,377,901

METHOD FOR IMPROVING CORROSION RESISTANCE OF PLATE-TYPE VACUUM BRAZED EVAPORATORS

Ravi Rungta, East Amherst, and William H. Anthony, Clarence Center, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1993, Ser. No. 52,975

Int. Cl.⁶ B23K 1/19

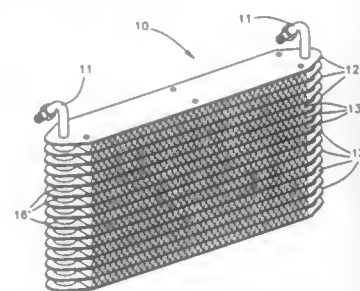
U.S. Cl. 228—183

9 Claims

1. A method for forming a brazed aluminum alloy assembly

having improved corrosion resistance, the method comprising the steps of:

forming at least two members from a brazing alloy stock material comprising a 3000 series aluminum alloy which is clad with a brazing alloy, the brazing alloy stock material having copper in solid solution such that CuAl_2 precipitates are substantially absent from the grain boundaries of the 3000 series aluminum alloy, the forming step including the steps of heating an aluminum alloy ingot to a hot rolling temperature for a duration sufficient to substantially prevent the precipitation of CuAl_2 within the grain boundaries of the aluminum alloy ingot, rolling the aluminum alloy ingot while the aluminum alloy ingot remains at approximately the hot rolling temperature so as to form the brazing alloy stock material, and forming the members from the brazing alloy stock material;



annealing the members at a temperature of about 650° F. to about 680° F. and for a duration of about one to about three hours so as to substantially prevent the precipitation of CuAl_2 within the grain boundaries of the 3000 series aluminum alloy;

heating the members such that the brazing alloy melts and forms a braze joint between the members so as to form the brazed aluminum alloy assembly;

rapidly cooling the brazed aluminum alloy assembly at a rate of at least about 350° F. per minute so as to substantially maintain the copper in solid solution and thereby substantially prevent precipitation of CuAl_2 within the grain boundaries of the 3000 series aluminum alloy as the brazed aluminum alloy assembly cools;

such that intergranular corrosion of the brazed aluminum alloy assembly is significantly inhibited as a result of the copper remaining substantially and homogeneously in solid solution throughout the 3000 series aluminum alloy.

5,377,902 METHOD OF MAKING SOLDER INTERCONNECTION ARRAYS

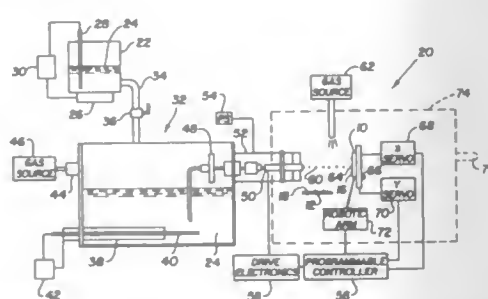
Donald J. Hayes, Plano, Tex., assignor to MicroFab Technologies, Inc., Plano, Tex.

Filed Jan. 14, 1994, Ser. No. 180,975

Int. Cl. 6 B23K 1/20; H05K 3/34

U.S. Cl. 228—254

21 Claims



1. The method of making a solder interconnection array on a first surface comprising the steps of:

(a) positioning and maintaining a first surface having a plu-

rality of predetermined locations in a controlled environment;

- providing an ejection device capable of ejecting drops of liquid solder which may vary in volume from drop to drop;
- aligning said ejection device to deliver drops of liquid solder to an initial location on said first surface;
- providing a sequence of relative movements between said ejection device and said first surface to align said ejection device with a plurality of locations on said first surface in a predetermined sequence; and
- activating said ejection device to cause drops of liquid solder to be ejected and delivered to each of said predetermined locations and form solid solder deposits which vary in diameter and height in accordance with a predetermined pattern.

5,377,903 REDUCED WARP PAPERBOARD TRAY

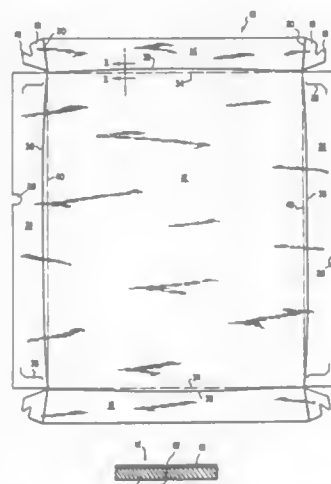
Robert L. Gordon, Monroe; George H. Naugle, Central Valley, and David E. Stier, Middletown, all of N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Jun. 16, 1994, Ser. No. 261,076

Int. Cl. 6 B65D 5/20

U.S. Cl. 229—116.1

18 Claims



1. A flat unitary blank of paperboard having a plurality of intersecting score lines on a first of two surfaces of said blank, said first of said two surfaces having a polymer coating thereon, said score lines enclosing and defining a base for a tray, a plurality of tray sidewall forming panels located radially outwardly of said base, each said sidewall forming panel bordered by one of said score lines, each said score line being curved, a plurality of cut lines on the other of said two surfaces of said blank, said cut lines each extending into said blank from said other of said two blank surfaces and toward said first of said two blank surfaces, said score and cut lines being at least substantially aligned.

5,377,904 ONE PIECE MAILER FORM AND METHOD OF PROCESSING

Irving R. Michlin, Katonah, N.Y., and Jerome B. Schwartz, Danbury, Conn., assignors to Transkrit Corporation, Roanoke, Va.

Continuation of Ser. No. 856,577, Mar. 24, 1992, abandoned.

This application Sep. 22, 1993, Ser. No. 125,494

Int. Cl. 6 B65D 27/00

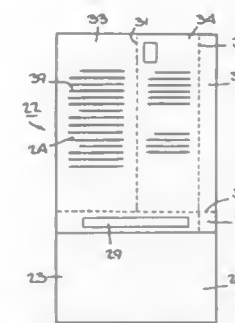
U.S. Cl. 229—70

22 Claims

1. An integrated mailer form of rectangular shape comprising

an envelope portion having a front part for receiving addressee information thereon, a back part disposed over said front part to define an open pocket therewith, an adhesive securing said parts to each other, a flap part extending from said front part for folding over said back part to close said pocket and an adhesive on said flap part for securing said flap part to said back part;

an insert portion extending from said flap part of said envelope portion, said insert portion having a line of weakening extending perpendicular to said envelope portion to define a tear-off portion and a fold line extending perpen-



dicular to said envelope portion to define two parts extending from said flap portion for selectively receiving printed information, each of said two parts being of a length parallel to said fold line greater than said height of said pocket and sized to permit folding about said fold line and stuffing of said two parts into said pocket after removal of said tear-off portion therefrom; and

a line of weakening between said portions to permit removal of said insert portion from said envelope portion and subsequent folding of said two parts of said insert portion about said fold line for insertion in said pocket.

5,377,905 PACKAGING BOX, BLANK THEREFOR, AND METHOD OF ASSEMBLY

Albert Sigrist, Colombier, Switzerland, assignor to Philip Morris Incorporated, New York, N.Y.

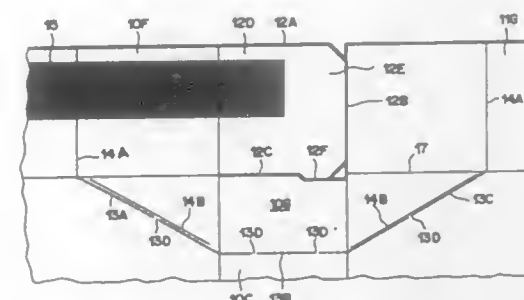
Filed Aug. 11, 1993, Ser. No. 104,574

Claims priority, application European Pat. Off., Aug. 28, 1992, 92810661.6

Int. Cl. 6 B65D 5/54

U.S. Cl. 229—231

37 Claims



1. A packaging box, especially for products of the tobacco industry, made from a one-piece blank, said packaging box comprising:

- a first wall including a first perforation line;
- second and third walls adjacent to said first wall and respectively including second and third perforation lines;
- a top wall including a transverse fold line meeting said second and third perforation lines;
- a lid portion including an upper part of said first side wall and of upper side portions of said second and third side

walls and bounded by said perforation lines and said transverse fold line; and

a closure flap adjoining said top wall and including a portion formed to said lid portion as a continuation thereof via a second fold line, said closure flap further comprising a free end portion extending from said portion.

5,377,906 DEVICE FOR DETECTING AND SIGNALLING THE PRESENCE OF OBJECTS IN A CLOSED CONTAINER AND A MAILBOX CONTAINING THE SAME

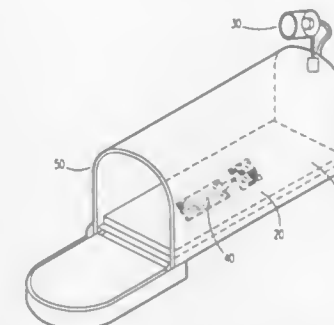
Randall Mason, 1010 Rock Dr., Raleigh, N.C. 27610-3140

Filed Oct. 29, 1993, Ser. No. 143,070

Int. Cl. 6 B65D 91/00

U.S. Cl. 232—34

14 Claims



1. A device for detecting and signalling the presence of an object in a closed container, comprising:

- a housing;
- one or more sensors each consisting essentially of an electronic circuit having a detection means and an optical signal triggering means, wherein said one or more sensors are coupled to said housing, wherein said detection means consists of an infrared transmitter which emits an infrared signal and an infrared detector for detecting said infrared signal after said infrared signal is reflected off the object to be detected and wherein said optical signal triggering means consists of an electrical circuit having an amplifying transistor in electrical connection with a capacitor which functions as a charge pump circuit for triggering said optical signalling means to generate a signal;
- a power source electrically connected to said one or more sensors; and
- an optical signalling means electrically connected to said optical signal triggering means.

5,377,907 ASSEMBLY FOR HOUSING MULTIPLE WASTE RECEPTACLES

Paul P. Guard, 3327 SE. 18th Ave., Cape Coral, Fla. 33904

Filed Sep. 24, 1992, Ser. No. 950,458

Int. Cl. 6 B65D 91/00; B07C 5/00

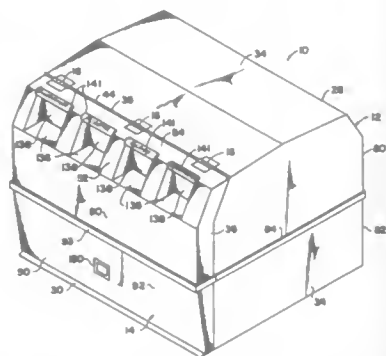
U.S. Cl. 232—43.2

15 Claims

1. An assembly for housing multiple rows of waste receptacles, said assembly comprising:

- a generally hollow enclosure that includes a floor portion, a pair of spaced apart side portions attached to and extending upwardly from said floor portion, a rearward portion interconnecting said side portions, and an opening into the interior of said enclosure, which opening extends between said floor portion and an upper edge region of said rearward portion and further extends between said side portions; said rearward portion including a back wall segment and a roof segment that is connected to said back wall segment and includes said upper edge region of said rearward portion, said enclosure being sufficiently large to contain, between said back wall segment and said opening,

forward and rearward rows of waste receptacles, each said row including a plurality of receptacles; and a door hingedly connected to at least one of said upper edge region of said rearward portion and said side portions; said door being selectively raised to expose said opening, whereby waste receptacles are introduced into and removed from said enclosure, and lowered to generally close said opening; said door including a first plurality of drop holes in communication with corresponding waste receptacles of said forward row for receiving waste there-through and directing said waste to said corresponding waste receptacles in said forward row, said rearward enclosure portion including a second plurality of drop



holes that communicate with corresponding waste receptacles in said rearward row for receiving waste there-through and directing waste to said corresponding waste receptacles in said rearward row; said door further including a rod element pivotably mounted to said door and extending across said respective drop hole, and a flap element folded over and attached to said rod element for selectively opening and closing said respective drop hole, said flap element including a forward segment that is smaller than and pivots freely through said drop hole and a rearward segment that is larger than said drop hole and hangs inside of said door to close said respective drop hole when said door is closed.

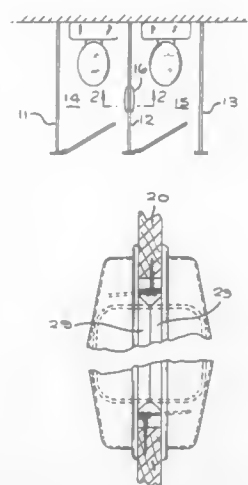
5,377,908
DUAL SANITARY NAPKIN DISPOSAL
Dennis W. Redman, Acton, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.
Filed Aug. 4, 1993, Ser. No. 101,914
Int. Cl. B65D 91/00

U.S. Cl. 232-43.4

6 Claims

1. A dual disposal unit for mounting in openings in panels of different thicknesses, comprising
first and second plates for positioning on opposing faces of a panel having an opening therethrough;
each of said plates having first and second flanges spaced from each other for projecting into the panel opening with said first flange of each plate overlying the second flange of the other plate within the panel opening,
said first and second flanges having openings with aligned openings in said overlying flanges for receiving fasteners,

each of said plates having a cover carried thereon for movement between a closed position overlying the panel opening.

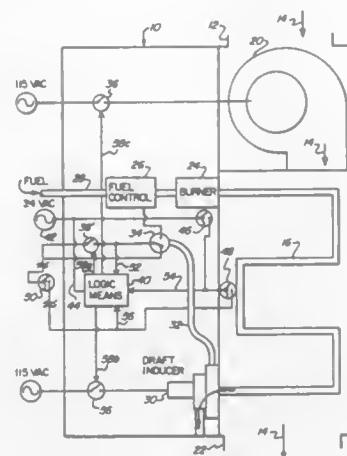


ing and an open position providing access to the panel opening.

5,377,909
LIMIT SWITCH CONTROL ESPECIALLY FOR WARM AIR FURNACES
Michael E. Kirkpatrick, West Lafayette, Ind., assignor to Consolidated Industries Corp., Lafayette, Ind.
Filed Dec. 10, 1993, Ser. No. 165,354
Int. Cl. F23N 5/20

U.S. Cl. 236-11

11 Claims



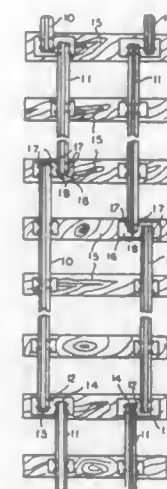
1. In a control system for a heating furnace of the type comprising an enclosure housing defining an air path, a blower for forcing air to be heated through the air path, a heat exchanger in the air path, a burner for combusting fuel to supply heat to the heat exchanger and a fuel control unit for controlling the flow of fuel to the burner, the improvement comprising:

- a primary limit switch in the enclosure housing having a closed or ON state for allowing the furnace to operate and an open or OFF state for shutting down the furnace for a shutdown period, and being normally ON and being capable of switching from ON to OFF when the temperature in the enclosure housing exceeds a predetermined level;
- a timer control means responsive to the limit switch and comprising a timer for measuring the shutdown period and for comparing the shutdown period to a predetermined reference interval, and for opening at least one

lockout switch for locking out the operation of the furnace if the shutdown period exceeds the reference interval;
wherein at least the fuel control unit is not operable when the at least one lockout switch is open.

5,377,910
RAILROAD SYSTEM
Alan R. Newton, 67 Bluebird Ave., East Wareham, Mass. 02538
Filed Feb. 18, 1993, Ser. No. 19,288
Int. Cl. F01B 11/34; B61F 9/00
U.S. Cl. 238-121

15 Claims



1. A railroad track system having railroad track on a road bed with cross ties longitudinally spaced along the length thereof for supporting vehicle wheels, said railroad track comprising a double-gauge track system on said road bed having an outer track gauge and an inner track gauge of a lesser lateral dimension than the outer track gauge, the outer track gauge including a plurality of outer rail sections having opposite ends and the inner track gauge having a plurality of inner rail sections with opposite ends, said inner and outer rail sections alternating along an extended length of track with the ends of one rail section at least partially overlapping the ends of the adjacent rail sections, the inner and outer rail sections adapted to receive pairs of vehicle wheels on each end of an axle to continuously contact either the inner or outer rail sections to provide a smooth ride.

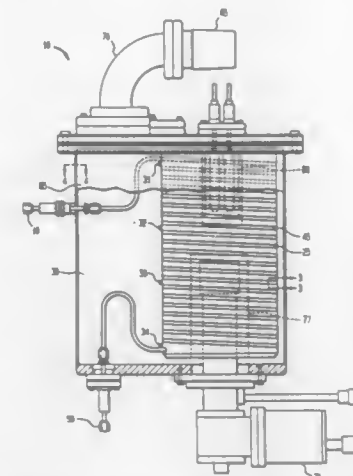
5,377,911
APPARATUS FOR PRODUCING CRYOGENIC AEROSOL
Tibor L. Bauer, Hopewell Junction; William A. Cavaliere, Verbank, both of N.Y.; Charles R. Dart, II, Coral Springs, Fla.; Timothy H. Freebern, LaGrangeville, N.Y.; David C. Linnell, Poughkeepsie, N.Y.; James M. Miller, Pawling, N.Y., and Jin J. Wu, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 14, 1993, Ser. No. 76,052
Int. Cl. B05B 1/26; F17C 7/02

U.S. Cl. 239-135

38 Claims

1. An apparatus for producing aerosol from a substance, comprising:
a heat exchanger for receiving and cooling a substance, said heat exchanger comprising a housing;
a cryogenic reservoir comprising a solid material mounted within said housing; temperature control means comprising cooling means for controllably cooling said reservoir, and a heat source for heating said reservoir for allowing precise monitoring of temperature; and energy exchange means for allowing thermal contact between said reservoir and the substance for effectuating transfer of cooling

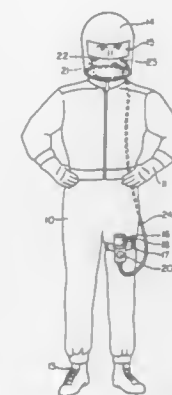
energy from said cryogenic reservoir to the substance for controllably cooling the substance;
a delivery line having an inlet for receiving the substance from said heat exchanger at a first pressure;
a nozzle connected to said delivery line for receiving the substance from said delivery line, said nozzle having at



least one exit opening which allows passing of the substance therethrough for expanding the substance from the first pressure to a second pressure which is lower than the first pressure for solidifying the substance and producing aerosol; and
condensation preventing means for preventing condensation from forming on said delivery line and on said nozzle.

5,377,912
PERSONALIZED FIRE RETARDANT DISPENSING SYSTEM
James Webb, 877 Avenue B, Redondo Beach, Calif. 90277
Filed Feb. 7, 1994, Ser. No. 192,450
Int. Cl. A62C 3/00; B05B 9/08
U.S. Cl. 239-154

6 Claims



1. A personalized and portable fire retardant dispensing system comprising:
a head enclosure adapted to be worn by the user;
a supply of pressurized fire retardant substance carried on the user remote from said head enclosure;
a fire retardant substance distribution means interconnecting said supply with the interior of said head enclosure;
activation means carried on said supply for selectively providing fire retardant substance to said head enclosure via said distribution means;
said distribution system includes a dispensing ring disposed

within said head enclosure and an elongated hose connected between said supply and said dispensing ring; a plurality of jets carried on said dispensing ring for discharging said fire retardant substance within said head enclosure; and
at least two discharge tubes carried on said dispensing ring for directional discharging fire retardant substance in a direction other than the direction of discharge by said jets.

5,377,913

HYDRAULIC ROBOT JET LANCE

Meino J. Van Der Woude, Oude Slingsweg 2, NL-9204 WS Drachten, Netherlands

PCT No. PCT/NL92/00214, § 371 Date Jul. 16, 1993, § 102(e) Date Jul. 16, 1993, PCT Pub. No. WO93/09880, PCT Pub. Date May 27, 1993

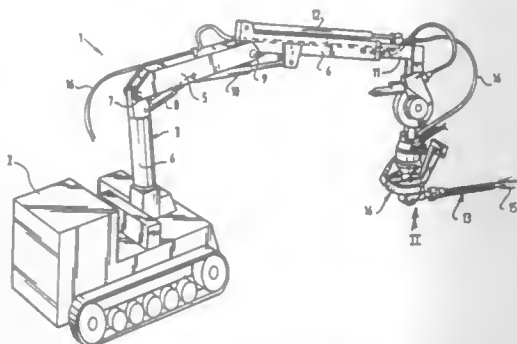
PCT Filed Nov. 20, 1992, Ser. No. 90,037

Claims priority, application Netherlands, Nov. 20, 1991, 9101939

Int. Cl.⁶ B05B 13/00; B25J 5/00

U.S. Cl. 239—227

5 Claims



1. Jet lance device comprising a hydraulic crane with an articulated jib, said articulated jib having a plurality of rotatably connected arm parts movable by hydraulic motors whereby said arm parts rotate about horizontal rotational axes, said articulated jib having one end connected to the crane and a free end opposite the end connected to the crane, a hydraulic rotator mounted on said free end of said jib such that a rotatable support element thereof is turnable about a rotational axis extending vertically through said jib, and a jet member mounted on the support element, which jet member comprises a jet lance, and pivoting means connected to said jet lance for pivoting the jet lance on a pivot axis transversely of said rotational axis of the rotator and said jet lance connected to a source of jet liquid under high pressure, and wherein the device further comprises control and drive means for operating said jib, rotator, and pivoting means.

5,377,914

SPEED CONTROLLED ROTATING SPRINKLER

Hans Christen, La Verne, Calif., assignor to Rain Bird Sprinkler Mfg., Corp., Glendora, Calif.

Filed Feb. 3, 1993, Ser. No. 12,996

Int. Cl.⁶ B05B 3/06

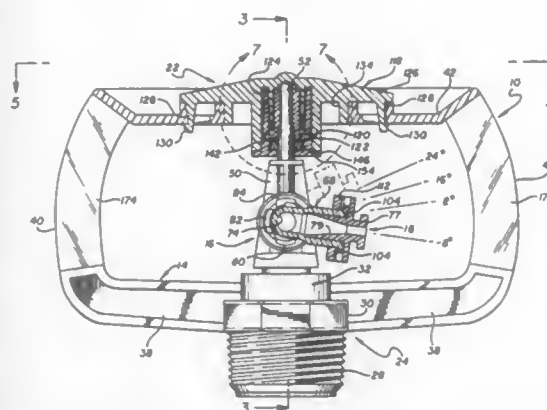
U.S. Cl. 239—252

27 Claims

1. In an irrigation sprinkler of the spinner type having a stationary support bridge adapted to be coupled with a source of pressurized water, a spinner assembly mounted to the support bridge for rotation about a generally vertical axis and including a spinner body and a nozzle assembly coupled thereto, the nozzle assembly having a nozzle member disposed to extend tangentially of the axis of rotation for projecting a water spray outwardly away from the sprinkler in a generally horizontal direction, and a brake assembly mounted to the support bridge and to the spinner assembly for controlling the rate of rotation of the nozzle assembly, the improvement wherein:

said support bridge includes a pair of laterally spaced, gener-

ally vertically projecting support posts, said posts each having a generally triangular cross-section and disposed



to have an apex lying in a plane extending in a direction parallel with said tangential direction of extension of said nozzle member.

5,377,915

FUEL INJECTION NOZZLE

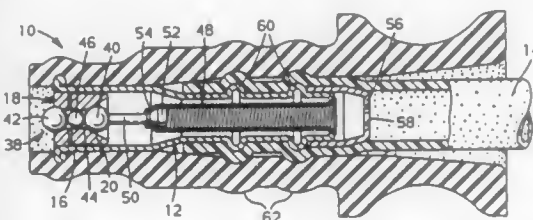
Corrine A. Volo, Webster, and Jeffrey A. Rock, West Henrietta, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1993, Ser. No. 143,892

Int. Cl.⁶ F02M 61/20

U.S. Cl. 239—533.9

2 Claims



1. A fuel injection nozzle adapted to receive pulsed pressurized fuel from a source, comprising a valve seat assembly having a first, upstream seat and a second, downstream seat, said seats interconnected by a longitudinally extending passage, a first, upstream valve member engageable with said upstream valve seat to regulate fuel flow therethrough and a second, downstream valve member engageable with said downstream valve seat to regulate the flow of fuel therethrough, said valve members and said longitudinally extending passage defining a chamber therebetween, said chamber housing a spacer member having a flow enhancing spherical configuration operable to interconnect said first, upstream and said second, downstream valve members to define a valve assembly, a bypass extending from upstream of said first seat to a location within said chamber and biasing means operable to urge said valve assembly in an upstream direction, against the force of said pressurized fuel such that said first valve member is displaced from said first valve seat and said second valve member is biased into engagement with said second valve seat to interrupt fuel flow through said second valve seat and out of said nozzle, said pulsed pressurized fuel operable to establish intermittent pressure differentials across said valve assembly to thereby overcome the force of said biasing means and urge said valve assembly downstream such that said first valve member is biased to engage said first valve seat to interrupt fuel flow therethrough and said second valve member is displaced from said second valve seat to permit flow through said bypass to

said chamber, wherein said fuel is subject to a pressure drop and rapid movement in said chamber to promote atomization of said fuel as it is discharged from said nozzle through said second, downstream valve seat.

5,377,916

SURFACE ABRASIVE TREATMENT OF SMALL OBJECTS

Alexander S. Anderson, Solihull, Great Britain, assignor to Koolmill Systems Limited, Solihull, Great Britain

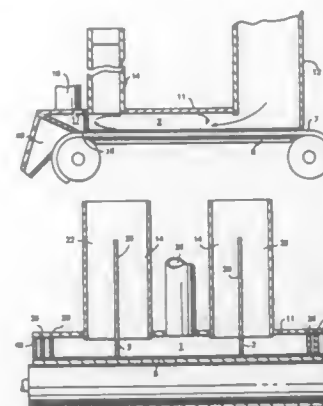
PCT No. PCT/GB90/00222, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO91/12078, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 12, 1990, Ser. No. 926,253

Int. Cl.⁶ B02B 3/00

U.S. Cl. 241—7

22 Claims



14. A method of abrading small objects to remove surface material therefrom comprising: supplying objects to a chamber having a lid and an abrasive moving bottom which passes under a transverse wall of the chamber; so that objects recirculate in said chamber and material removed from said objects passes under the transverse wall; exerting pressure on the recirculating objects by means of the lid, to press the objects adjacent the bottom against the bottom; and removing abraded objects from an outlet to the chamber.

5,377,917

PROCESSING WASTE MATERIALS FOR ANAEROBIC DIGESTION OF THE BIOGENIC-ORGANIC CONSTITUENTS

Harry Wiljan; Ulrich Niefnecker, both of Munich; Ottokar Mueck, Berlin; Hans Kubler, Munich; Roland Schnell, Berlin; Roland Carra, and Matthias Wild, both of Munich, all of Germany, assignors to REA Gesellschaft für Recycling von Energie und Abfall mbH, Munich, Germany

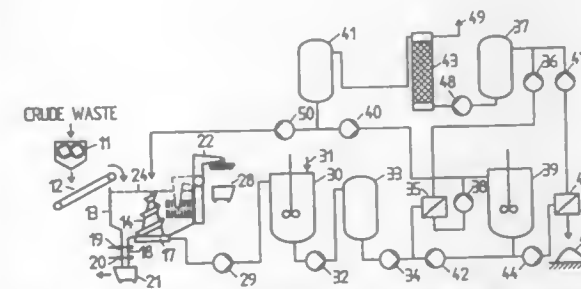
Filed Jun. 9, 1992, Ser. No. 896,017

Claims priority, application Germany, Jun. 24, 1991, 4120808

Int. Cl.⁶ B02C 23/00

U.S. Cl. 241—14

24 Claims



1. A process of treating waste and/or waste-like mixtures for

anaerobic digestion of biogenic-organic substances, comprising the following process steps:

preparing an easily dewaterable suspension of biogenic-organic substances by mechanical treatment of waste and/or waste-like mixtures in a pulping vessel which contains a rotatable impeller; the mechanical treatment comprising blending waste and/or waste-like mixtures and water and subsequently or consecutively selectively dissolving and/or defibrating said biogenic-organic substances with a controlled action of flow-dynamical forces; wherein the flow-dynamical forces are formed by said rotatable impeller and the speed of the impeller is controlled so the substances contained in the waste and/or waste-like mixtures which are not suitable for anaerobic digestion are not subject an appreciable disintegration by the mechanical treatment.

5,377,918

PULPERS FOR DISINTEGRATING CELLULOSE PULP
Daniel Garcia Pastor, and Francisco Garcia Pastor, both of Valencia, Spain, assignors to D.G. International S.A., Bunol, Spain

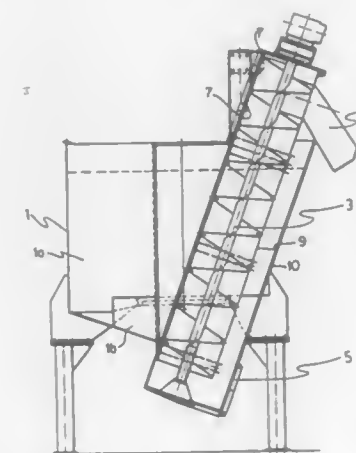
Filed Aug. 11, 1992, Ser. No. 928,944

Claims priority, application Spain, Aug. 13, 1991, 9102241

Int. Cl.⁶ B02C 23/22

U.S. Cl. 241—46.17

8 Claims



1. A pulper for recycling cellulose pulp from waste paper, comprising:

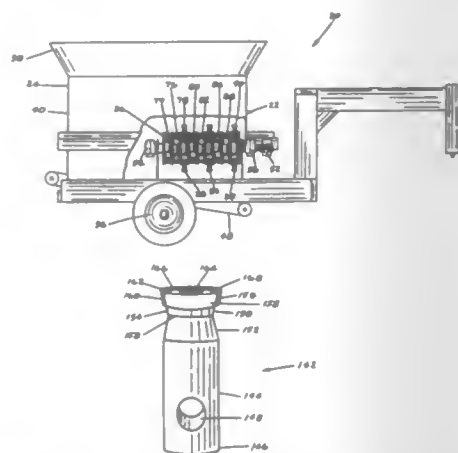
a vessel into which said waste paper is fed;
a rotor provided within said vessel to disintegrate said waste paper into a pulp;
a screen having first openings for allowing passage of a portion of said pulp, said screen located beneath said rotor in the bottom of said vessel;
first evacuating means for evacuating a portion of said pulp to an archimedes screw housed within a first cylindrical housing, said first housing being surrounded by a second cylindrical housing, said first and second housings each having a first outlet at a top portion thereof, a bottom end portion of said first housing being connected to said first evacuating means;
means to inject water onto said screw;
wherein said vessel has a spiral cross section at least at a bottom portion thereof;
wherein said first cylindrical housing has second openings having diameters of predetermined size that are sufficiently wide to allow passage of readily recycled paper pulp but too narrow to allow passage of larger solids, whereby said larger solids are carried by said screw to said first outlets;
second evacuating means located beneath said screen for collecting said recycled paper pulp.

5,377,919
HAMMERMILL
Chester D. Rogers, Olathe, and Walter L. McLain, Gardner,
both of Kans., assignors to The Toro Company, Bloomington,
Minn.

Filed Mar. 8, 1993, Ser. No. 47,549
Int. Cl.⁶ B02C 13/04

U.S. Cl. 241—189.2

9 Claims



1. A hammermill for comminuting material received therein comprising:

- means for supporting a plurality of hammers such that each hammer rotates in a plane about a longitudinal axis;
- drive means for rotating said hammer support means about said longitudinal axis;
- a plurality of hammers, each hammer being formed to include a proximate end and a remote end, the remote end being shaped as a modified right cylinder, the right cylinder having a curved surface on each of two opposing sides of the right cylinder, the two opposing curved sides being joined by substantially flat surfaces, each flat surface being parallel to a diameter of the right cylinder, the diameter bisecting a midpoint of each of the two opposing curved sides of the right cylinder; and
- means coupling said plurality of hammers to said support means at circumferentially spaced intervals thereabout whereby said hammers extend radially outward from said hammer supporting means during rotation thereof, each of said hammers presenting the curved surfaces thereon for engaging the material to be comminuted.

5,377,920
METHOD FOR THE DISPOSAL OF NICKEL-CADMIUM OR NICKEL-HYDRIDE CELLS
Kamal Alavi, Walchwil, and Bahman Salami, Rotkreuz, both of
Switzerland, assignors to Inter-Recycling AG, Kussnacht,
Switzerland

Filed Aug. 23, 1993, Ser. No. 110,434
Claims priority, application Switzerland, Sep. 2, 1992,
02750/92-8

Int. Cl.⁶ B02C 23/30, 23/14

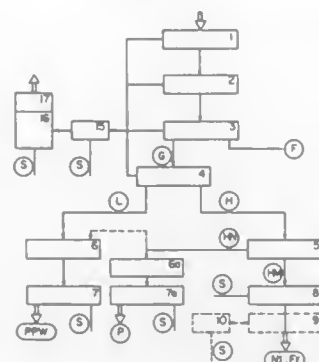
U.S. Cl. 241—17

10 Claims

1. A method for disposing of nickel-cadmium or nickel hydride cells by means of mechanical reduction in size, said method comprising the steps of:
- reducing the cells to smaller pieces in a shredder;
 - grinding the pieces in a cross shear cutting shredder;
 - screening the ground pieces to form a screen coarse fraction (G) and a screen fine fraction (F);
 - separating the screen coarse fraction (G) by means of an air separator into a light fraction (L) and a heavy fraction (H);
 - separating the heavy fraction (H) by means of a magnetic separation into a magnetic portion (HM) and a non-magnetic portion (HN);
 - drying and subsequently screening the light fraction (L) and

the non-magnetic portion (HN) in order to separate the non-metallic components (P,PPW) from predominantly metallic fine portions (S);

mechanically scouring and/or washing the magnetic portion (HM) to free the magnetic portion (HM) of adhering electrolyte and predominantly metallic fine portions (S) to obtain a smeltable nickel-iron mixture (Ni,Fe);



subjecting the screen fine fraction (F) as well as at least the fine portion (S) produced by the air separation to an acid bath to dissolve their metallic portions, and filtering out the undissolved components (PPW) from the acid bath and subsequently selectively extracting at least the metallic nickel (Ni) from the acid bath.

5,377,921
PROCEDURE AND DEVICE FOR TREATING WASTE MATERIALS, IN PARTICULAR ORGANIC CATERING WASTE
Heinz Wirth, Langenargen, Germany, assignor to SQ Services AG, Steinhausen, Switzerland

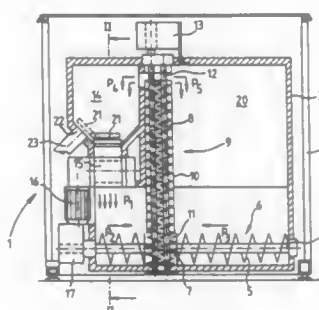
Filed Sep. 17, 1993, Ser. No. 122,290

Claims priority, application Germany, Sep. 18, 1992, 4231293

Int. Cl.⁶ B02C 18/40

U.S. Cl. 241—29

11 Claims



1. A method of treating waste material, comprising the following steps:

- (a) introducing the waste material into a hopper;
- (b) advancing the waste material from the hopper to a cutting mechanism;
- (c) comminuting the waste material by the cutting mechanism;
- (d) advancing the waste material from the cutting mechanism to a horizontal feeder;
- (e) advancing the waste material by the horizontal feeder to a raising feeder;
- (f) lifting the waste material by the raising feeder to a level of an input of the hopper;
- (g) introducing a first part of the waste material from the raising feeder into the hopper for recirculation;
- (h) introducing a second part of the waste material from the raising feeder into a chamber;
- (i) allowing the second part of the waste material to descend

by gravity through the chamber to the horizontal feeder; and

(j) advancing the second part of the waste material by the horizontal feeder to the raising feeder for recirculation.

5,377,922
SENSING AND/OR ANALYSIS SYSTEM FOR THREAD FEEDER

Lars-Berno Fredriksson, Kinna, and Joachim Fritzson, Ulricehamn, both of Sweden, assignors to IRO AB, Ulricehamn, Sweden

PCT No. PCT/SE91/00406, § 371 Date Feb. 2, 1993, § 102(e)
Date Feb. 2, 1993, PCT Pub. No. WO91/18818, PCT Pub. Date Dec. 12, 1991

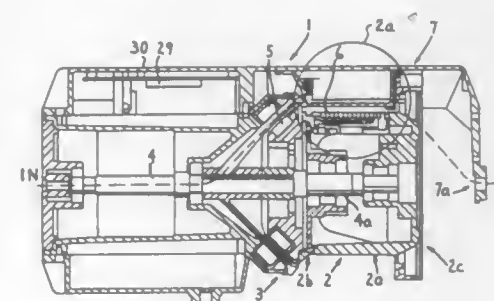
PCT Filed Jun. 6, 1990, Ser. No. 969,182

Claims priority, application Sweden, Jun. 6, 1990, 9002031-4

Int. Cl.⁶ B65H 51/20

U.S. Cl. 242—47.01

26 Claims



1. A yarn feeding device comprising:
- a stationary motor housing having an electric drive motor mounted therein, said motor driving a rotatable longitudinally extending hollow shaft;
 - a spool body rotatably supported by said hollow shaft and extending substantially coaxially from said housing, said spool body defining a peripheral, longitudinally extending yarn storage surface thereon;
 - means for holding said spool body stationary relative to said housing;
 - a rotatable winding member fixedly attached to said hollow shaft and positioned between said housing and said spool body, said winding member tangentially winding yarn fed axially through said hollow shaft onto said yarn storage surface at an end thereof adjacent said housing, and yarn being withdrawn from said yarn storage surface at an end thereof remote from said housing;
 - a rail fixedly secured to and extending longitudinally from said housing past said spool body and being radially spaced apart from said yarn storage surface; and
 - a yarn sensing system including active sensor means positioned within said spool body for signalling the presence or absence of yarn in a yarn sensing area of said yarn storage surface, first wireless communication means located apart from said spool body for receiving signals indicative of the presence or absence of yarn in said yarn sensing area, second wireless communication means located within said spool body for communicating signals from said active sensor means to said first wireless communication means, circuit means for processing signals from said active sensor means, and means located within said spool body for supplying electrical input energy to at least said active sensor means and said second wireless transmission means.

5,377,923
YARN UNWINDING ASSISTING DEVICE AND YARN UNWINDING METHOD IN AN AUTOMATIC WINDER
Isamu Matsui, Kyoto; Yoshiyasu Maeda, Yamatokohriyama, and Yuji Todo, Nagoakakyo, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

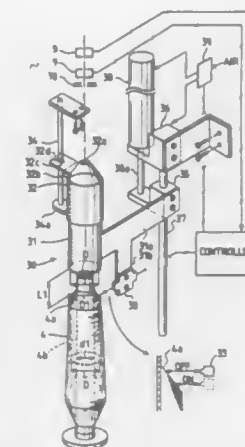
Filed Jan. 29, 1992, Ser. No. 905,899

Claims priority, application Japan, Jul. 1, 1991, 3-188166; Sep. 19, 1991, 3-268834; Nov. 6, 1991, 3-099743[U]

Int. Cl.⁶ B65H 49/02, 54/00

U.S. Cl. 242—128

15 Claims



1. A device for assisting the unwinding of yarn from a bobbin in an automatic winder, the bobbin comprising a take-up tube and defining a top end and the yarn on the bobbin defining a chase portion, the device comprising:

- a first member, means for maintaining a substantially constant distance between the chase portion and the first member at least a portion of the yarn on the bobbin is unwound, and
- a second member having an aperture provided at a position above the top end of the bobbin.

5,377,924
EXTENDED COVER FOR A COVER TYPE FISHING REEL
Shinji Takeuchi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

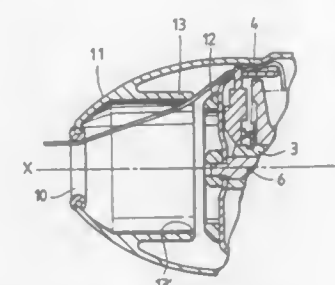
Continuation of Ser. No. 864,945, Apr. 7, 1992, abandoned. This application Dec. 17, 1993, Ser. No. 168,395

Claims priority, application Japan, Apr. 11, 1991, 3-032376[U]

Int. Cl.⁶ A01K 89/01

U.S. Cl. 242—238

1 Claim



1. A cover type fishing reel comprising:
- a reel casing;
 - an extended cover disconnectably mounted on said reel casing, said reel casing and said extended cover forming a pocket therebetween and said extended cover having a fishing line guide hole distal from said reel casing, said fishing line guide hole having a first diameter;

- a rotor having a second diameter, said rotor is movable in said pocket along and around an axis, said fishing line guide hole is aligned with said axis, wherein a distance along said axis between said rotor and said fishing line guide hole is greater than a dimension of said rotor along said axis;
- a fishing line pressing part disposed on said rotor, said pressing part defines a leading surface of the rotor and is disposed at an acute angle with respect to said axis;
- a cylindrical fishing line engaging part projecting into said pocket from said extended cover, said fishing line engaging part has a constant inside diameter which extends between a distal end and a proximal end with respect to said reel casing, said constant inside diameter being larger than said first diameter and smaller than said second diameter, said fishing line engaging part having, at said distal end, an engagement surface which is aligned with and confronts said leading surface of said fishing line pressing part; and
- a fishing line extending through a gap between said fishing line engaging part and said fishing line pressing part, said fishing line is bent and contiguously guided by said engagement surface, wherein translation by said rotor along said axis to close said gap grips said fishing line between said engagement surface and leading surface, wherein said leading surface is partially received within said cylindrical fishing line engaging part.

5,377,925 FISHING REEL

Takeo Miyazaki, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

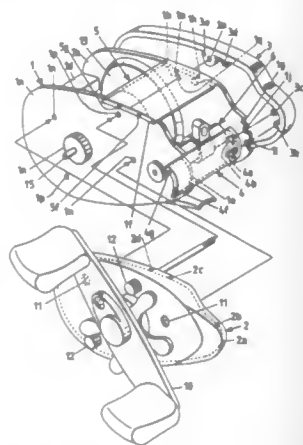
Continuation of Ser. No. 803,557, Dec. 9, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 148,532

Claims priority, application Japan, Dec. 21, 1990, 2-404061[U]

Int. Cl.⁶ A01K 89/00

U.S. Cl. 242—312

7 Claims



1. A fishing reel in which a spool is supported by a frame for rotation about an axis, said fishing reel comprising:
said frame including a first side plate provided at a first axial end of said spool, said spool being adapted to be inserted into and pulled out of said frame through said first side plate, and a second side plate provided at a second axial end of said spool;
- a first side cover provided on an outer surface of said first side plate;
- a second side cover provided on an outer surface of said second side plate; and
- at least one auxiliary cover member abutting with and extending between said first and second side covers, said auxiliary cover member having first projection means for preventing transverse movement with respect to said axis and allowing longitudinal movement parallel to said axis,

said first side plate having notch means for cooperatively engaging said first projection means, and said second side cover having means for restricting said transverse movement, wherein said auxiliary cover member is removably engaged with said first side plate, and adapted to be removed from said first side plate upon removal of said second side cover, and second projection means preventing said longitudinal movement in the direction of said first side plate upon removal of said first side.

5,377,926 TAPE TENSION REGULATOR

Young-hoon Min, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

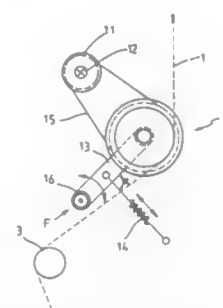
Filed Aug. 4, 1993, Ser. No. 102,043

Claims priority, application Rep. of Korea, Oct. 6, 1992, 92-19059

Int. Cl.⁶ B65H 23/26

U.S. Cl. 242—334.6

2 Claims



1. A tape tension regulator comprising:
a guide roller having a fixing shaft and upper and lower flanges;
- a minute tension arm, one end of which is connected to said fixing shaft of said guide roller, and the other end of which is connected to be rotatable around an arm-fixing shaft;
- a minute tension spring connected to a portion of said minute tension arm to apply a spring bias to said arm; and
- a wire pole positioned on the opposite side of said minute tension arm with respect to said minute tension spring for retaining an endless belt-type wire which is also wrapped around said lower flange of said guide roller.

5,377,927 TAPE GUIDE FOR A DATA CARTRIDGE

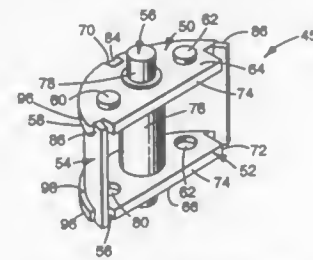
Leif O. Erickson, River Falls, Wis.; Jay J. Ignaszewski, Woodbury, and David D. Madsen, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 1, 1993, Ser. No. 86,322

Int. Cl.⁶ G11B 23/04; B65H 23/00

U.S. Cl. 242—346

12 Claims



1. A belt driven reel-to-reel tape cartridge comprising:
a base plate;
- a pair of tape reels mounted on the base plate;

- tape convolutely wound on the tape reels in opposite directions;
- a drive roller mounted on the base plate;
- rotatable belt guide rollers mounted on the base plate;
- a belt mounted around the drive roller and rotatable guide rollers, wherein the belt contacts the tape reels to drive the tape reels;
- two tape guides mounted for guiding the tape to and from respective tape reels, wherein each tape guide has a bearing surface and at least one tape guide comprises:
- a top flange piece;
- a bottom flange piece;
- a tape surface piece which is connected, at each end, to a flange piece;
- a post which is connected, at each end, to a flange piece, and wherein the two flange pieces are separated by the tape surface piece and the post, wherein a radius of curvature of the post is less than a radius of curvature of the tape surface piece;
- means for securing the post to the top and bottom flange pieces; and
- means for securing the tape surface piece between the two flange pieces, wherein the perpendicular distance along the post between the flange pieces is less than the width of the tape surface piece to lock the flange pieces against the tape surface piece, to maintain contact between the tape surface piece and the flange pieces, and to set the distance between the flange pieces, and wherein the two flange pieces form flanges bordering the tape bearing surface with a trough, wherein the flanges and the trough guide and align the tape to improve tape tracking and provide clearance for the tape without an interference fit; and
- a guide pin disposed intermediate the two tape guides for guiding the tape, wherein the tape guides and guide pin define a tape guide path between the reels.

5,377,928 INTEGRALLY MOLDED RECYCLABLE VIDEO TAPE CASSETTE

Paul J. Gelardi, John A. Gelardi, and David A. Capotosto, all of Cape Porpoise, Me., assignors to LCV Associates, Kennebunkport, Me.

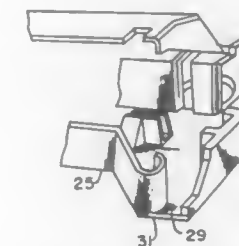
Division of Ser. No. 522,361, May 11, 1990, Pat. No. 5,092,536.

This application Feb. 4, 1992, Ser. No. 830,845

Int. Cl.⁶ G11B 15/32

U.S. Cl. 242—347

11 Claims



1. A video cassette case having a molded base, comprising a bottom wall, first and second opposite side walls and a front wall formed together and having tape-passing openings in the front wall, a first living hinge along a rearward edge of the bottom wall, a rear wall joined to the first living hinge, a second living hinge along a remote edge of the rear wall, a top wall having a rear edge joined to the second living hinge, the top wall having first and second spaced side edge portions overlying the side walls and having a front edge, connectors connected to the top wall and to at least one of the first and second side walls and the front wall for holding the case assembled with the top wall overlying the front and side walls, and a dust door having a portion extended in front of the front wall

and connected to the case for moving upward to expose tape in front of the front wall and downward to cover the tape.

5,377,929 METHOD AND APPARATUS FOR INTERLEAVING PLASTIC BAGS

Peter J. Gletman, Jr., Combined Locks, and Stephen A. Saindon, Appleton, both of Wis., assignors to Custom Machinery Design, Inc., Appleton, Wis.

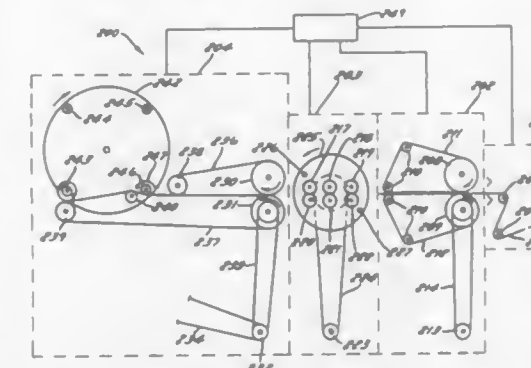
Filed May 1, 1992, Ser. No. 877,629

The portion of the term of this patent subsequent to Nov. 8, 2011, has been disclaimed.

Int. Cl.⁶ B65H 18/08

U.S. Cl. 242—521

15 Claims



1. An apparatus for winding a roll of adjacent bags having a leading and a trailing end from a strip of bags comprising:
a haul-in assembly, including at least one haul-in roll operating at a haul-in speed;
- a tumbler assembly disposed to receive the strip from said haul-in assembly, said tumbler assembly including a rotating tumbler means for periodically increasing the path length the strip travels in said tumbler assembly, wherein said rotating tumbler means increases the length of the path the trailing end of each bag travels; and
- a winding assembly disposed to receive the strip from said tumbler assembly; wherein said rotating tumbler means separates adjacent bags.

5,377,930 PAPER TURN-UP SYSTEM AND METHOD

Steven Noyes, Crown Point, N.Y., assignor to International Paper Company, Purchase, N.Y.

Filed Jan. 15, 1993, Ser. No. 4,985

Int. Cl.⁶ B65H 19/26, 19/28

U.S. Cl. 242—521

17 Claims



1. A method for severing and turning up a web of paper in the absence of a knife-like tool for severing the web, the web moving in a tensioned condition across the surface of a rotating reel at a winder of a paper making machine from a first drum about which the paper web is being wound to a second drum wherein the first drum is disposed adjacent the reel and the second drum is superposed upon the reel so as to overlie the

paper web moving thereacross toward the first drum, the method comprising the steps of:

providing a conduit for receiving air from a pressurized air source and having a discharge end through which pressurized air from the source exits the conduit in an air stream; moving the conduit from a non-operative, out-of-the-way position disposed to one side of the reel and an operative position at which the discharge end of the conduit is disposed adjacent and is directed toward an edge portion of the web which overlies the surface of the reel at a location generally between the first and second drums and wherein the air stream which exits the discharge end moves toward the web edge portion along a path having one directional component which is directed generally upstream of the web; and

initiating a sudden stream of air through the conduit so that the stream of air which exits the conduit severs the web into upstream and downstream sections of web and urges the upstream section of web away from the surface of the reel and toward the second drum for winding thereabout, the upstream and downstream sections of web being disposed on opposite sides along a path of separation extending from the corresponding portion adjacent the edge of the web, whereby the tension to which the web is exposed completes severance of the web along the formed path of separation to provide the web with a severed edge extending between the opposite side edges of the web.

5,377,931

APPARATUS FOR REELING A WOUND WEB REEL

Gerhard W. Dörfel, Boll, and Jürgen Treutner, Ostfildern, both of Germany, assignors to Beloit Technologies, Inc., Wilmington, Del.

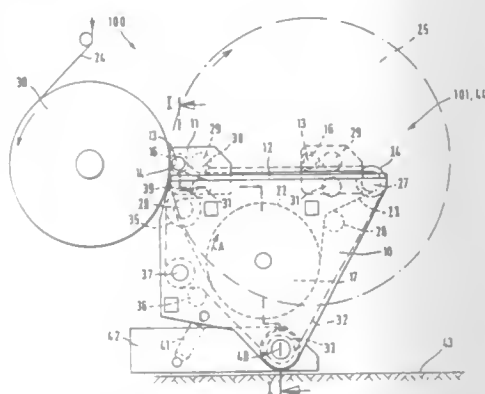
PCT No. PCT/EP90/01430, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO91/18813, PCT Pub. Date Dec. 12, 1991

PCT Filed Aug. 28, 1990, Ser. No. 949,647

Claims priority, application Germany, Jun. 8, 1990, 4018314 Int. Cl.⁶ B65H 18/10, 18/16

U.S. Cl. 242—530

7 Claims



1. A reeling apparatus for reeling a traveling web, such as one of a plurality of longitudinally slit paper webs from an unwinding web reel the apparatus including a backing roll for supporting the traveling web, at least two movable, laterally spaced support arms disposed with one support arm near either side of the web, and for supporting a corresponding core chuck for engaging an end of a tube on which the web is to be reeled while nipped with the backing roll, the combination comprising:

carriage means mounted on each support arm for translational movement therealong, including a rotatably mounted drive shaft for rotatably supporting a core chuck;

traction means attached to the carriage means and movably mounted on at least one support arm for traveling along a path thereon, the traction means comprises a flexible loop

and is mounted on a support arm about a plurality of rotatable rolls for defining its path of travel;

a traction drive motor mounted to at least one of the support arms for engaging the traction means to selectively move the carriage means on the support arms;

drive wheel means mounted in at least one of the carriage means and operatively engaged with the drive shaft for applying torque to the drive shaft;

tube drive means, including a looped belt means and a tube drive motor operatively associated with the belt means, mounted in the apparatus in association with at least one support arm and operatively associated with the drive wheel means for rotatably driving the drive shaft, and the tube and reel thereon, while the reel is nipped with the support roll.

5,377,932

UNWINDING DEVICE FOR PAPER REELS

Luciano Meschi, Castiglione, Italy, assignor to Industria Grafica Meschi SRL, Livorno, Italy

PCT No. PCT/EP92/02639, § 371 Date Sep. 14, 1993, § 102(e) Date Sep. 14, 1993, PCT Pub. No. WO91/10031, PCT Pub. Date May 27, 1993

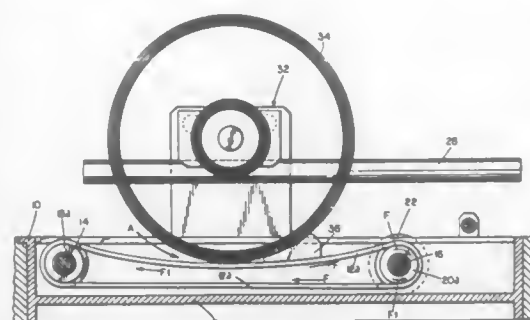
PCT Filed Nov. 17, 1992, Ser. No. 90,018

Claims priority, application Italy, Nov. 18, 1991, M1910001009[U]; Nov. 18, 1991, M1910001010[U]

Int. Cl.⁶ B65H 16/02, 16/10, 19/10

U.S. Cl. 242—559

18 Claims



1. A device for unwinding a paper reel and removing it from an unwinding mechanism, wherein said unwinding mechanism includes endless conveyor means rotatably mounted on a pair of spaced oppositely disposed roller means for unwinding a paper reel to be unwound, said endless conveyor means having a concave portion between said oppositely disposed roller means for receiving said paper reel to be unwound and, means supporting said paper reel above said endless conveyor means for frictional engagement of an outermost surface of said reel with said endless conveyor means for movement of an end of the paper from said reel in a direction of movement of said endless conveyor means; and said device comprises:

stopping means being positionable on said endless conveyor means between said oppositely disposed roller means downstream of said paper reel, and said stopping means being positioned on said endless conveyor means prior to a substitution of another paper reel for the paper reel already on said endless conveyor means; and

said stopping means comprising a wedge-shaped member having an upper inclined surface substantially in conformity with the outer surface of said paper reel and a lower surface in conformity with an upper surface of said endless conveyor means.

5,377,933

TAPE SPOOL ASSEMBLY MACHINE

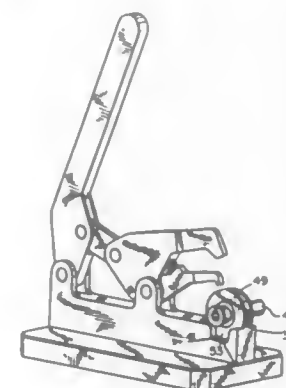
Edward T. Rude, Columbia, Md., and Robert L. Mozdzer, Stamford, Conn., assignors to General Clutch Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 37,491, Mar. 26, 1993. This application Aug. 12, 1993, Ser. No. 105,442

Int. Cl.⁶ B65H 75/28

U.S. Cl. 242—586.3

29 Claims



1. A system for enabling the assembly of a length of tape to a rotatable core of a spool prior to tape winding about said core, comprising:

a clamp member adapted for selectively pressing down on an end of said length of tape at a first location therealong away from said rotatable core;

an arm member adapted to inwardly force a retention member located substantially above said tape end toward said rotatable core in order to urge said tape and at a second location therealong toward the rotatable core; and

a spring means connected between said clamp member and said arm member for urging said clamp member toward said tape end; wherein said clamp member and said arm member operate in an integrated fashion.

5,377,934

HELICOPTER CONVERSION

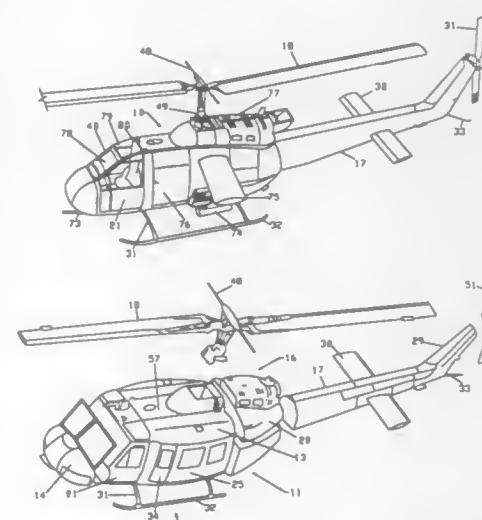
Jamie R. Hill, 1325 SE Fourth St., Cape Coral, Fla. 33904

Filed Jan. 25, 1993, Ser. No. 8,541

Int. Cl.⁶ B64C 27/00

U.S. Cl. 244—17.11

2 Claims



1. A special purpose helicopter conversion of a UH-1H/V and/or UH-1D helicopter, a dual piloted, multi-passenger

airframe, power train, and engine, for providing greatly enhanced performance, payload, speed and maneuverability, said helicopter comprising:

a boxlike airframe structure reduced in size and shape from a dual piloted, multi-passenger helicopter, to a single pilot configuration with an aft cabin, said airframe structure having a vertical tower section and a nose section, a pair of longitudinal members connecting said vertical tower section to said nose area, said structure providing a lighter weight, narrower airframe than said dual-piloted, multi-passenger UH-1H/V and/or UH-1D airframe for mounting exterior surfaces and all other equipment, including the engine and transmission, landing skids, tail boom, fuel system, electrical system, and flight controls and equipment;

a single pilot's seat, a single flight control system, and a single flight instrument panel, mounted on said airframe, an engine, transmission, rotor and controls and accessories mounted on said vertical tower section,

new, reduced profile, nose area, vertical ribs and horizontal spars affixed to said airframe,

an exterior skin and cabin sides, glass panels, swingout, jettisonable doors, swingout panels for access to an aft cabin, hinged service access covers, and all other accessories and equipment required for the intended mission, installed on said boxlike airframe structure, and

a standard design tailboom and rotor attached to said airframe,

whereby a highly successful helicopter airframe, power train, and engine are converted to provide greatly enhanced performance, payload, speed and maneuverability.

5,377,935

SPACECRAFT CERAMIC PROTECTIVE SHIELD

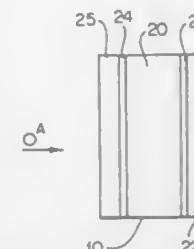
René F. Larriva, Fairfax Station, Va.; Anne Nelson, Washington, D.C.; James G. Czechanski, Arlington, and Ray E. Poff, Vienna, both of Va., assignors to Interferometrics Inc., Vienna, Va.

Filed May 14, 1993, Ser. No. 61,073

Int. Cl.⁶ B64C 1/40

U.S. Cl. 244—121

20 Claims



13. A protective shield apparatus for protecting spacecraft from impact with hypervelocity objects comprising a bumper defined by a front and back face and further comprising:

a bumper ceramic layer, defined by a front and back face; a first bumper shock attenuator layer, defined by a front and back face, with the front face of the shock attenuator layer placed substantially against the back face of the ceramic layer; and

a first bumper confining layer, defined by a front and back face, with the front face of the confining layer placed substantially against the back face of the shock attenuator layer

wherein the ratio of the thickness of said first bumper confining layer and said bumper ceramic layer is no greater than 1 to 2, and

wherein said bumper ceramic layer has a Vickers hardness of greater than 1000 kg/mm², a density less than 5.0 g/cm³, and a melting point greater than 1700° C.

5,377,936
**NET KINETIC ENERGY DIFFERENTIAL GUIDANCE
 AND PROPULSION SYSTEM FOR SATELLITES AND
 SPACE VEHICLES**

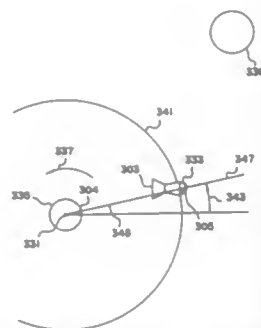
Maurice Mitchell, 601 Terra California, #4, Walnut Creek, Calif. 94595

Filed Mar. 19, 1992, Ser. No. 854,346

Int. Cl.⁶ B64G 1/24, 1/34

U.S. Cl. 244—167

3 Claims



1. A fully self-stabilized satellite for geosynchronous Earth orbit within the gravitational influence of the earth, comprising:

- a first antennae end designed for facing toward an Earth station;
- a second massive end designed for facing away from the Earth;
- a centerline extending from said antennae end to said massive end and designed to line along an on-station line when said satellite is in proper orientation, wherein the center of the Earth and said station lie along said on-station line; and
- self-stabilizing means for establishing satellite orientation by interaction with said gravitational influence of the earth, including positioning; the center of mass of said satellite is closer to said massive end of said satellite thereby affecting said gravitational influence to constantly maintain said antennae end oriented toward said earth station without adjustment of said satellite.

5,377,937
**AIRCRAFT FLARE CONTROL SYSTEM UTILIZING AN
 ENVELOPE LIMITER**

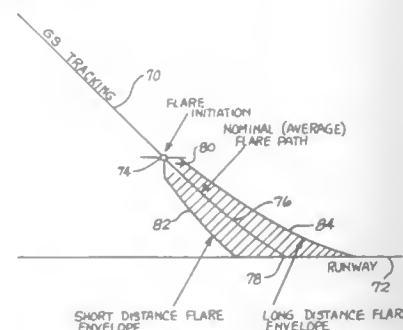
Brian K. LaMay, Seattle; Asamitsu Maeshiro, and William F. Shvitz, both of Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 3, 1991, Ser. No. 754,083

Int. Cl.⁶ G06F 15/50; G05D 1/02; B64C 13/18

U.S. Cl. 244—185

22 Claims



1. A control system for directing aircraft flight path during flare to a runway comprising:
 input means adapted to receive predetermined aircraft flight path status signals; and
 processing means for processing said input means which are received from said aircraft flight path status signals and

producing output control signals adapted the coupled aircraft actuators to control aircraft flight along a nominal flare path,

said processing means further comprising means for:

- a) defining an aircraft flare envelope;
- b) comparing the aircraft's actual flight path with said flare envelope and, in the event the aircraft is outside of said flare envelope;
- c) predeterminedly revising said output control signals to redirect the aircraft's flight path within said flare envelope.

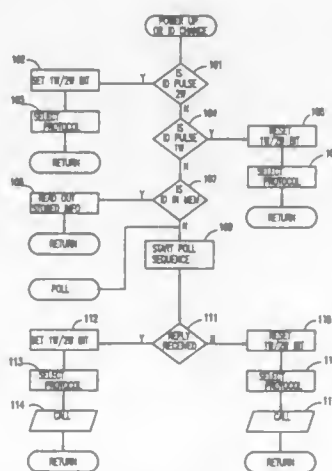
5,377,938
RAILROAD TELEMETRY AND CONTROL SYSTEMS
 Angel P. Bezos, Rockville; Clive Wright, Germantown, both of Md., and Emilio A. Fernandez, McLean, Va., assignors to Pulse Electronics, Inc., Rockville, Md.

Filed Dec. 1, 1992, Ser. No. 983,683

Int. Cl.⁶ B61L 23/00

U.S. Cl. 246—167 R

17 Claims



1. An End of Train (EOT) and Head of Train (HOT) railroad telemetry system comprising:

- first means at a HOT unit for automatically detecting whether an EOT unit attached to the rear of a train is a one-way or two-way device; and
- second means at the HOT unit for detecting the particular code format transmitted by the EOT unit, wherein said first means comprises:
 polling means at the HOT unit for polling the EOT unit;
 receiving means at the HOT unit for receiving a response from the EOT unit when polled; and
 detection means at the HOT unit responsive to the receiving means for deciding, based on receiving or not receiving a response from said EOT unit, whether said EOT unit is a one-way or two-way device.

5,377,939
**DEVICE FOR MOUNTING ELONGATED
 COMPONENTS, SUCH AS ELECTRICAL WIRING,
 ESPECIALLY IN AN AIRCRAFT**

Safa Kirma, Wedel/Holstein, Germany, assignor to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Filed Mar. 10, 1993, Ser. No. 28,829

Claims priority, application Germany, Mar. 11, 1992, 4207666

Int. Cl.⁶ F16L 3/22

U.S. Cl. 248—68.1

17 Claims

1. A device for blind mounting at least one elongated component to a support wall (4) having at least one mounting throughhole in said support wall, comprising at least one first mounting section (2) and at least one second mounting section (2A) cooperating with said first mounting section (2) to form a

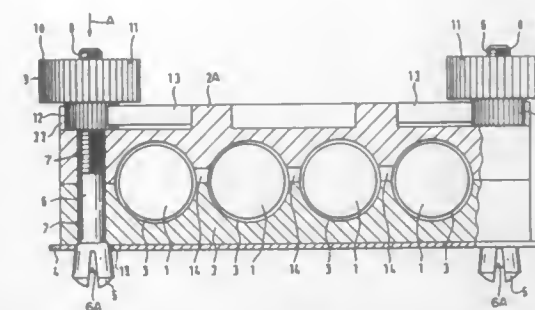
5,377,941
SUPPORT FRAME FOR SINK WASTE BAGS
 Michael Har, 304 S. Court, Fairfield, Iowa 52556, and John Stimson, Fairfield, Iowa, assignors to Michael Har, Fairfield, Iowa

Continuation-in-part of Ser. No. 933,030, Aug. 20, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 114,373

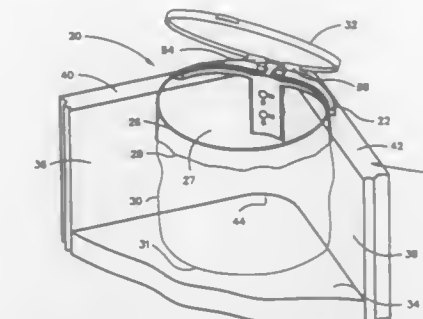
Int. Cl.⁶ B65B 67/04

U.S. Cl. 248—101

21 Claims



and a clamping member (9, 28) for axially displacing said connecting bolt (6) in said bore for expanding said locking dowel (5) thereby simultaneously holding said first and second mounting sections (2, 2A) together, holding said elongated component (1) in said channels (3), and tightening said locking dowel (5) behind said support wall (4) to blind mount said mounting block in place, and wherein at least one of said mounting sections (2, 2A) comprises a recess for an improved elastic clamping action.



1. A sink device for supporting a flexible garbage bag in a sink, said device comprising a frame having an open center portion through which said bag may be interfitted with a bottom of the bag resting on a floor of the sink, said frame having intersecting legs adapted to rest upon two intersecting rims of the sink forming a corner of said sink, said corner legs receiving folded over top portions of the bag in close proximity with said corner rims with an additional leg of said frame receiving a further folded over top portion of the bag to present a frame supported open mouth of the bag to receive garbage material, a portion of said frame being moveable from a rest position above said corner rim to a raised position to receive a top edge portion of said bag, back to the rest position overlying said edge portion of said bag and the corner rims and top surface of the sink to secure said top edge portion of the bag therebetween.

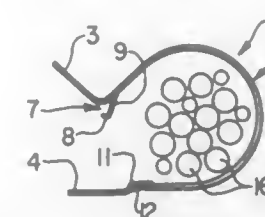
5,377,940
SELF-RESTRAINING LOOP CLAMP
 Carlton L. Cabe, Watagua, and Andrew T. Hill, Fort Worth, both of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.

Filed Mar. 19, 1993, Ser. No. 34,347

Int. Cl.⁶ F16L 3/08

U.S. Cl. 248—74.3

4 Claims



1. A self-restraining loop clamp comprising:
 a strap bent to form a loop terminating in two opposed, substantially flat legs that can be brought together in an overlying relationship to secure one or more wires, one or more conduits, or the like within said loop;
 each said leg having an aperture for receiving a fastener therethrough;
 a retaining member comprising a shank having a hook at one end thereof, said shank projecting inwardly from an inner surface of said loop; and
 a slot in said loop positioned to receive said hook in an engaging relationship when said legs are brought together.

5,377,942
COLUMN UNIT
 Axel Knopp, Eitelborn; Andreas Binder, Koblenz-Gondorf; Hans-Josef Hosan, Neuwied, and Castor Fuhrmann, Brachtendorf, all of Germany, assignors to Stabilus GmbH, Koblenz-Neuen-dorf, Germany

Continuation of Ser. No. 783,984, Oct. 29, 1991, abandoned.

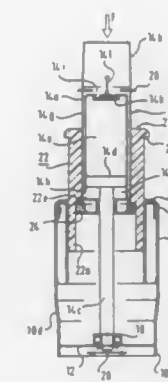
This application May 10, 1994, Ser. No. 240,605

Claims priority, application Germany, Oct. 31, 1990, 4034633

Int. Cl.⁶ F16M 11/00

U.S. Cl. 248—161

38 Claims



1. A chair column unit, comprising:
 a base tube, said base tube having a base tube axis (A—A), an

axially inner base tube end and an axially outer base tube end;
 tubular guiding means extending axially into said base tube through said outer base tube end and including a radially outer face in axially sliding engagement therewith, said guiding means having an axially inner end and an axially outer end;

a pressurized gas spring positioning device extending axially into said base tube through said guiding means and having a device axis substantially coinciding with said base tube axis (A—A);

said positioning device including an axially inwardly extending piston rod member, an axially outwardly extending cylinder member, said piston rod member and said cylinder member being axially movable with respect to each other due to the force of said pressurized gas, and means for selectively locking said piston rod member and said cylinder member with respect to each other in a plurality of relative axial positions;

positioning device support means carried by one of said base tube and said guiding means adjacent the respective axially inner end thereof for axially supporting the inner end of said piston rod member while permitting relative rotation between said piston rod member and said base tube; said cylinder member extending axially beyond said outer base tube end and said outer guiding means end and carrying means adjacent the axially outer end thereof for connection to a chair seat carrier;

said cylinder member carrying a radially outer face in axially sliding guiding engagement with said guiding means; and means for moving said guiding means axially relative to said base tube upon axial movement of said cylinder member relative to said piston rod member in at least the axially outward direction so as to maintain said guiding means in overlapping relation to at least a substantial axial portion of said cylinder member.

5,377,943

CHAIR BASE

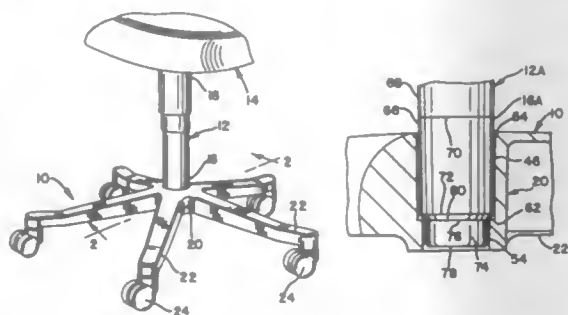
Ludovic A. Perl, Willowdale, Canada, assignor to Shepherd Products, Inc., Canada

Filed Dec. 21, 1993, Ser. No. 172,600

Int. Cl.⁶ A47B 91/00

U.S. Cl. 248—188.7

7 Claims



1. A chair base adapted to support a column for a seat including:

a hub having a central axis;

a plurality of legs radially extending from said hub;

a bore extending concentrically along said axis through said hub defining an interior wall, said interior wall including an upper tapered wall portion extending between a first upper edge and a first lower edge, said first upper edge defining a larger cross-sectional area than said first lower edge such that said tapered wall portion tapers inwardly and downwardly;

a lower wall portion disposed below said upper wall portion extending between a second upper edge and a second lower edge, said second upper edge of said lower wall

portion defining a smaller cross-sectional area than said first lower edge of said upper wall portion; and

a peripheral wall portion extending between said second upper edge of said lower wall portion and said first lower edge of said tapered wall portion forming an inwardly extending step for engaging and supporting a lower end of the column when the column is inserted into said bore, said step adapted to limit the downward movement of the column within the bore and thereby prevent the column from moving past a predetermined location.

5,377,944

FLAG HOLDER

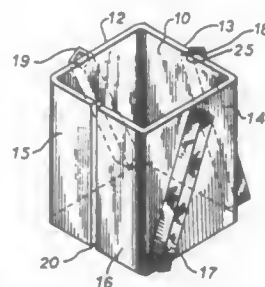
Victor C. Getsinger, Phoenix, Ariz., assignor to PAR Financial Services, Inc., Phoenix, Ariz.

Continuation of Ser. No. 909,885, Jul. 7, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 156,991

Int. Cl.⁶ F16B 2/20

U.S. Cl. 248—218.4

1 Claim



1. A flag holder for mounting a flag on a post, the post having four lateral sides, the holder comprising:

a sleeve that is in the form of a band having five peripheral side wall segments that extend more than 270 degrees around a central internal cavity, the central cavity extending to a bottom end of the band;

three pockets formed on and parallel to three of said side wall segments of the sleeve so as to run along the cavity, and so that when the sleeve is mounted on the post the pockets will be arrayed around the post and at an angle to a longitudinal axis of the post and at an angle to a longitudinal axis of the sleeve, the pockets each having an elongated internal bore that is open at its top; and

a longitudinal slit defined by two adjacent sleeve side wall segments of said five side wall segments, the sleeve being formed of a flexible material and configured such that the size of the slit can be varied by flexing parts of said sleeve wall segments relative to each other and such that the sleeve acts as a flexible jaw to grip onto the sides of the post without the need for a separate fastener to force the sleeve tightly against the post;

the sleeve and its slit comprising means to permit the mounting of the sleeve on the post by sliding the sleeve along a longitudinal axis of the post;

wherein at least a first one of the pockets is on a first side wall segment of said five wall segments that is opposite the slit, and the other two pockets are on two different ones of said side wall segments respectively other than the first side wall segment and other than the side wall segments adjacent the slit, and wherein each of the three pockets is upwardly sloped, with one of the other two pockets having a lower end adjacent the first side wall segment and being upwardly sloped towards said side wall segments adjacent the slit, and the other one of said other two pockets being upwardly sloped towards the first wall segment; and

wherein when the holder is not mounted on a post, said means assuming in top view a rest position where an angle between at least one of the peripheral side wall segments

and another of the peripheral side wall segments that it intersects is less than 90° at the intersection.

5,377,945

MOUNT FOR REDRESSABLY MOUNTING A SIGN

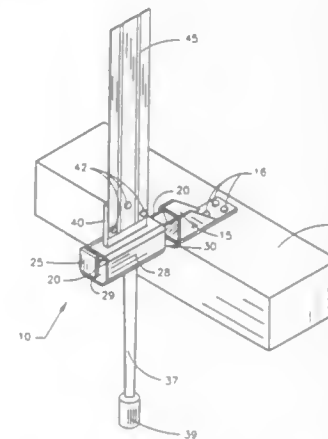
Michael E. Steinke, Rte. 2, Box 8, Hope, N. Dak. 58046

Filed Dec. 13, 1993, Ser. No. 165,197

Int. Cl.⁶ E04G 3/00

U.S. Cl. 248—292.1

9 Claims



1. A mount for redressably mounting a sign comprising: a bracket member for mounting said mount to a structure; an elongate support member having an end fixedly attached to said bracket member and having an angled cross section;

a tubular rotatable member having open ends, a top, bottom, and side walls, said tubular rotatable member being coaxially and rotatably mounted about said support member and upon which said sign is fixedly mounted;

a pendulum swingably depending from said rotatable member, said pendulum having a weighted member attached to an end thereof to generally redress and balance said sign in an upright resting position when external forces are not present.

5,377,946

COMBINED BED TRAY AND BOOK HOLDER

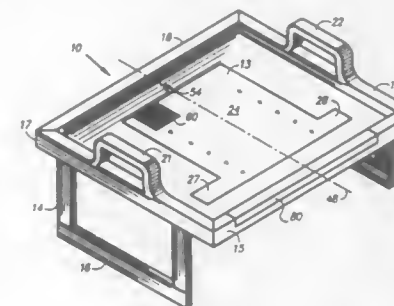
Jasdeep S. Pannu, 7100 Alameda Rd., #1123, Houston, Tex. 77054

Filed Jan. 27, 1994, Ser. No. 186,977

Int. Cl.⁵ A47G 1/24

U.S. Cl. 248—456

4 Claims



assembled and disassembled by pivoting and sliding the first and second brackets and binding upon the cross rods when the first and second brackets are assembled and drawn toward the battery tray to prevent sliding of the cross rods in the channels.

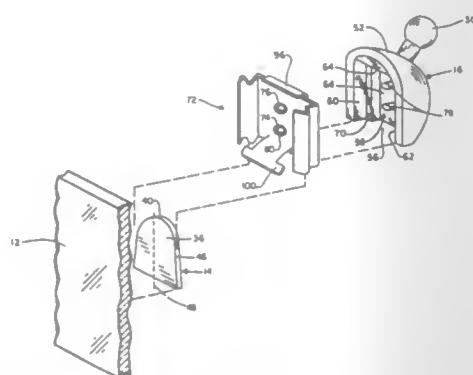
5,377,948
BREAKAWAY REARVIEW MIRROR MOUNTING BRACKET

Danny L. Suman, West Olive; Wayne J. Rumsey, and Paul C. De Kleine, both of Holland, all of Mich., assignors to Gentex Corporation, Zeeland, Mich.

Continuation of Ser. No. 840,870, Feb. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 703,381, May 21, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,881 Int. Cl.⁶ B60R 1/00

U.S. Cl. 248—549

40 Claims



1. A breakaway bracket adapted for mounting a rearview mirror to a button having a rear surface secured to an inner surface of a motor vehicle windshield, said button having opposed side surfaces forming rails at an outer surface, a top surface, a bottom surface, a front surface extending between the top and bottom surfaces and facing away from said inner surface of said windshield, said front surface being generally parallel to said inner surface of the windshield, and a locking flange edge at a juncture of the front and bottom surfaces, said bracket comprising:

- a body having a mounting surface;
- a unitary spring clip securely mounted to the mounting surface, said spring clip having a base portion, longitudinally extending, opposed, resilient side flanges projecting upwardly from the base portion, each of the side flanges defining a groove adapted to slidably receive a corresponding one of the button side surface rails in tongue-and-groove fashion, said spring clip further having a resilient locking flange projecting upwardly from the base portion, a portion of said locking flange being adapted to slidably engage the front surface of the button to cause said locking flange to elastically flex toward a plane of the base portion as the side flanges become fully engaged with the button side surface rails and without any audible clicking sounds caused by a sliding movement of said portion of said locking flange over the front surface, button rest means for engaging the top surface of the button to limit, as the side flanges become fully engaged with the button side surface rails, further movement of said body and said spring clip in a first direction relative to the button, said portion of said locking flange moving suddenly to a position firmly engaging the bottom surface of the button as said portion of said locking flange moves past the bottom surface of the button and at about the same time as said button rest means engages the top surface of the button, said sudden moving of said locking flange producing a clearly perceived indication that the bracket is fully mounted to the button, wherein said locking flange includes first means defining a tab having a surface firmly engaging the bottom surface of the button when the

bracket is fully seated on the button and second means which strikes the front surface of the button to emit a single and pronounced audible click in response to said tab moving past the locking flange edge, said audible click being said clearly perceived indication that said bracket is fully seated on the button, whereby the bracket will be securely retained on the button under ordinary conditions when the button is slidably received in the spring clip but is adapted to be snapped off the button in a direction away from the windshield when a force of predetermined magnitude is applied thereto.

5,377,949
BREAKAWAY ACCESSORY MOUNTING FOR VEHICLES

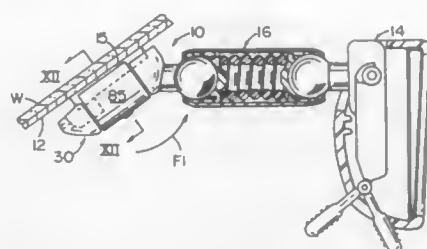
Theodore M. Haan, Byron Center; Edward R. Adams, Spring Lake, and Wayne Vandenbrink, West Olive, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Feb. 25, 1993, Ser. No. 22,968

Int. Cl.⁶ F16M 13/00

U.S. Cl. 248—549

36 Claims



1. A breakaway accessory mounting assembly for vehicles for supporting rearview mirrors or other accessories on a base of the type having a surface for attachment to a surface of a vehicle panel such as a window, and another surface adapted to slidably receive a coupler for supporting a rearview mirror or other accessory thereover, said assembly comprising:

- a coupler for slidably engaging the base, said coupler including a body having a support for mounting an accessory such as a rearview mirror, a first surface for positioning said coupler on the base, and an outer, exterior surface extending away from but generally aligned with said first surface;
- a resilient, flexible retaining band extending around said outer coupler body surface, said band including a pair of resilient, spaced, depending flanges which expand away from one another during sliding installment of said coupler on the base, and engage and releasably retaining said coupler and band on the base when said mounting assembly is installed thereon, said band engaging said outer coupler body surface at a position spaced from and independent of said support whereby when installed on the base, said assembly will be retained on and be releasable from the base independent of the mounting of any rearview mirror or other accessory on said coupler.

5,377,950
PLATFORM MOUNTINGS

Septim E. Salcudean, Vancouver, Canada, and Daniel Bendov, Haifa, Israel, assignors to The University of British Columbia, Vancouver, Canada

Filed Sep. 10, 1992, Ser. No. 943,022

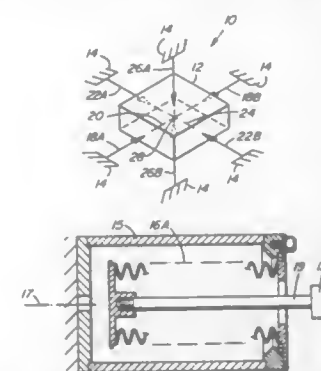
Int. Cl.⁶ F16M 13/00; B25J 17/00

U.S. Cl. 248—581

20 Claims

1. A mounting system for mounting a platform to a stator comprising at least one counteracting pair of bellows means connected to and acting between said stator and said platform for each degree of freedom of movement of said platform, each of said bellows means of said counteracting pair being arranged on opposite sides of at least portions of said platform

and including a bellows that is expandable, contractible and deformable, said bellows means further including a rotatable connection to at least one of said platform and said stator such that rotation of a first end of said bellows relative to a second end of said bellows about a longitudinal axis of said bellows is prevented so that said bellows means may be expanded and contracted axially and curved in a direction deviating from its respective longitudinal axis without said relative rotation of said first end and second ends about its longitudinal axis, said



bellows means further including a sealed chamber containing said bellows and a shaft extending from said first end of said bellows which is a sealed end contained within said sealed chamber, through said bellows and out of the second end of said bellows remote from said sealed end, one of said chamber and said shaft being connected to said platform in force transmitting relationship and the other of said shaft and said chamber being connected to said stator in force transmitting relationship.

5,377,951
ADJUSTABLE COMPUTER WORKSTATION ASSEMBLY AND METHOD THEREOF

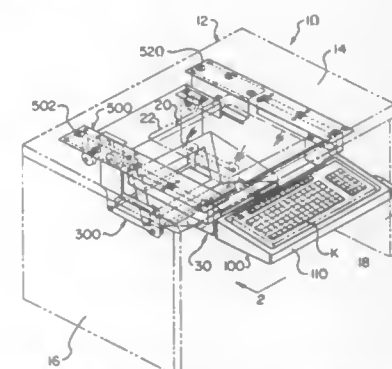
Mack E. Johnson, Arvada; Macy J. Price, Jr., Louisville; Matthew P. Drabczyk, Westminster; Daniel C. Starkey, Englewood, and Timothy J. Pickles, Brighton, all of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.

Continuation-in-part of Ser. No. 779,378, Oct. 18, 1991, abandoned. This application Jun. 5, 1992, Ser. No. 894,742

Int. Cl.⁶ A47B 47/02

U.S. Cl. 248—639

14 Claims



1. A workstation assembly for an underdesk monitor workstation, said assembly comprising:
an underdesk support assembly;
a monitor support member on said underdesk support assembly for supporting a monitor;
means for infinitely and randomly adjustably positioning said monitor support member vertically and angularly;
means for locking said monitor support member in a selected vertical and angular position relative to the workstation;

means for affixing said underdesk monitor support assembly to a workstation;
a keyboard support assembly for supporting a keyboard;
means for adjustably positioning said keyboard support assembly without interfering with the viewing and operation of a monitor on said underdesk monitor support assembly; and
means for affixing said keyboard support assembly to a workstation.

5,377,952
SHUT-OFF VALVE

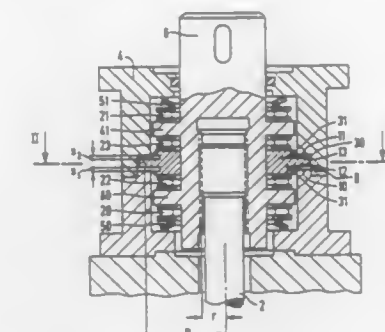
Hans-Peter Schabert, Erlangen, and Erwin Laurer, Mührendorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 26, 1992, Ser. No. 967,405

Claims priority, application Germany, Apr. 25, 1990, 4013176 Int. Cl.⁶ F16K 31/04, 31/50

U.S. Cl. 251—129.13

40 Claims



1. A valve, comprising:
a housing;
a rotationally fixed threaded part being rotationally fixed and axially displaceable in said housing;
a rotatable threaded part being axially resiliently and rotatably supported in said housing;
a brake device having at least one brake ring being axially displaceably disposed on said rotatable threaded part, and at least two friction surfaces facing one another, one of said friction surfaces being rotationally fixed in said housing, and the other of said friction surfaces being rotationally fixedly joined to said rotatable threaded part and located on said at least one brake ring;
said friction surfaces being pressed against one another by an axial displacement for braking a rotary motion of said rotatable threaded part and forming a braking surface, if a predetermined command force upon said rotationally fixed threaded part is exceeded; and
at least one of said friction surfaces having a predetermined free angle defined by end positions for rotational fixations, whereby after the free angle has been traversed, the friction surfaces are lifted from one another so that no braking torque exists until another of the end positions has been reached.

5,377,953
DISPOSAL CLOSURE VALVE

Edgar T. Lordier, Columbus, Ohio, assignor to Lynn A. Steinmetz, Columbus, Ohio

Filed Dec. 20, 1993, Ser. No. 169,370

Int. Cl.⁶ F16K 1/22

U.S. Cl. 251—305

1 Claim

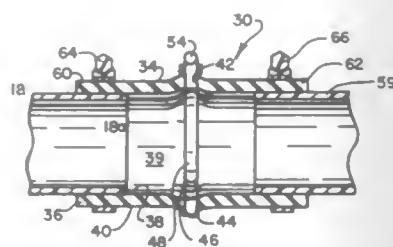
1. A disposal outlet closure valve assembly comprising:
a resilient, deformable, substantially cylindrical tubular housing having a wall with an inner surface which defines a fluid passage and an outer surface;
a rigid, generally circular valve element having an outer

circumferential surface and pivotally mounted in said housing;

the diameter of said valve element being greater than the diameter of said inner surface of said tubular housing to provide an interference fit therebetween;

said valve element pivotal between an open position in which said valve element extends parallel to said fluid passage to allow fluid flow past said valve element and a closed position in which said valve element extends perpendicular to said fluid passage to thereby prevent fluid flow past said valve element;

wherein when said valve element is in said closed position, said entire outer circumferential surface engages said inner surface of said housing wall causing said housing wall to expand outwardly and sealingly engage said outer circumferential surface;



pivot means on said valve element for enabling said valve element to pivot;

said pivot means including a pair of diametrically opposite cylindrical projections formed on said valve element;

a pair of diametrically opposite openings formed in said housing wall each adapted to receive one of said projections;

at least one of said projections has a handle extension which passes through said housing wall and extends beyond said outer surface of said housing to enable an operator to grasp said handle extension to move said valve element between said open and closed positions;

a pair of adjustable clamps mounted on the outer surface of said housing one at each end thereof; and

said handle extension engages one of said clamps when said valve element is in said open position.

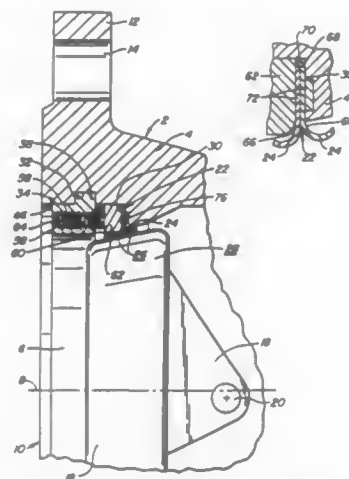
5,377,954
VALVE WITH SEAL RING HAVING EDGE-WELDED LAMINATIONS
Siegbert Adams, Bochum, and Thomas Heitmann, Herne, both of Germany, assignors to Adams GmbH & Co. Armaturen KG, Herne, Germany
Filed Dec. 6, 1993, Ser. No. 163,141
Int. Cl.⁶ F16K 1/22

U.S. Cl. 251—306

29 Claims

1. A laminated seal ring for a valve for establishing a seal along a seat of the valve, the seal ring comprising first and second, aligned, flat annular laminations constructed of a metal, opposing surfaces of the laminations being in mutual abutment, each lamination defining an inner edge and an outer edge, means proximate one of the inner and outer edges of the laminations defining a sealing surface of the seal ring for engag-

ing the valve seat, and a metal weld connecting the laminations along their other edges, the weld being leakproof to prevent

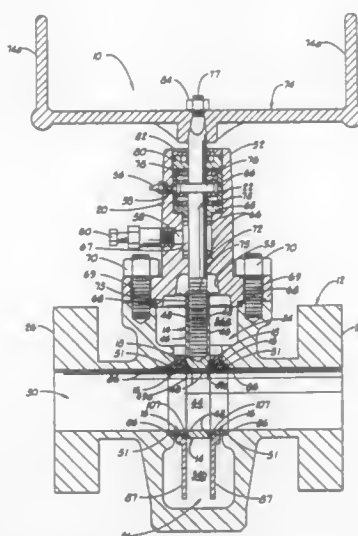


the passage of fluid between abutting surfaces of the laminations.

5,377,955
GATE VALVE
Dwight Baker, P.O. Box 249, Rush Springs, Okla. 73082
Filed Feb. 15, 1994, Ser. No. 196,684
Int. Cl.⁶ F16K 3/00

U.S. Cl. 251—327

28 Claims



1. A gate valve, comprising:

a valve body having a flow bore extending therethrough, a gate chamber traversing the flow bore, and a seat surface;

a gate disposed in the gate chamber for reciprocating movement across the flow bore to control flow through the flow bore, the gate having a closure area, a flow opening extending through the gate, and a recess circumscribing the flow opening and the closure area, the recess having a material disposed therein and case hardened to form a sealing surface about the flow opening and the closure area having a hardness of greater than about 50 Rockwell, the sealing surface being engagable against the seat surface to provide a substantially fluid tight seal when the gate is in an open position, wherein the flow opening of the gate is aligned with the flow bore, and a closed position, wherein the closure area of the gate is aligned with the flow bore; and

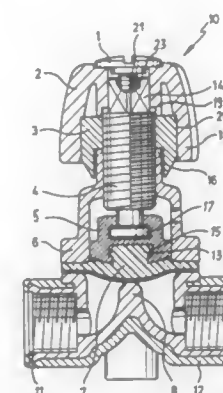
actuating means connected to the gate for reciprocally mov-

ing the gate across the flow bore between the open position and the closed position.

5,377,956
DIAPHRAGM VALVE
Fritz Müller, Ingelfingen, Germany, assignor to Gebrüder Müller Apparatebau GmbH & Co. KG, Ingelfingen, Germany
Filed Jan. 24, 1994, Ser. No. 186,329
Claims priority, application Germany, Jan. 29, 1993, 4302556
Int. Cl.⁶ F16K 7/16

U.S. Cl. 251—331

6 Claims



1. A diaphragm valve, comprising:

a valve body accommodating a valve stem placed axially therein and having an external thread;

a diaphragm connected to said valve stem for regulating a flow of fluid;

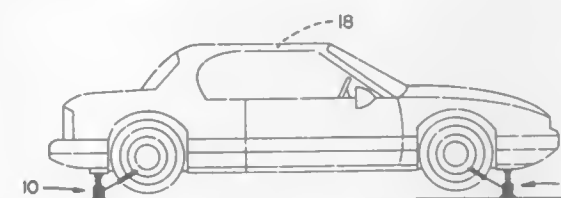
an actuator having a portion thereon detachably secured to said valve stem for actuating said diaphragm and having an internal toothing disposed on another portion of said actuator; and

a limiter extending axially between said valve body and said actuator for restricting a movement of said valve stem in a closing direction by impacting on said valve body, said limiter including a screw nut threadably engaging with said external thread of said valve stem and said internal toothing of said actuator, with said other portion surrounding a portion of said limiter so that upon actuation of said actuator said valve stem and said limiter are moved in unison relative to movement of said diaphragm between open and closed positions.

5,377,957
VEHICLE MOUNTED HYDRAULIC JACK SYSTEM
J. David Mosley, 7290 Columbus Rd., Lizella, Ga. 31052
Filed Jan. 27, 1994, Ser. No. 187,208
Int. Cl.⁶ B66F 3/24

U.S. Cl. 254—423

9 Claims



1. A vehicle mounted hydraulic jack comprising:

a hydraulically operated jack having upper and lower ends;

a substantially flat base pivotally mounted to said lower end of said jack, said base being weighted so as to maintain a substantially horizontal orientation;

a first mounting hinge pivotally mounted to said upper end of said jack, said mounting hinge being securable to a frame rail of a vehicle;

a hydraulically operated positioning assembly having first

and second ends and being pivotally mounted to said jack at said first end thereof;

a second mounting hinge pivotally coupled to said second end of said positioning assembly, said mounting hinge being securable to said frame rail of said vehicle in a spaced relationship with respect to said first mounting hinge such that said positioning assembly may effect a pivoting of said jack;

a fluid control means for selectively, simultaneously supplying hydraulic fluid to both said jack and said positioning assembly, said control means comprising a fluid reservoir for receiving hydraulic fluid; a pump in fluid communication with said reservoir; a first pair of solenoids each in fluid communication with said pump, said fluid reservoir, and said jack; and a second pair of solenoids in fluid communication with said pump, said fluid reservoir, and said positioning assembly, said solenoids being electrically connectable to a power source and cooperatively operable to effect a pivoting of said jack, said first pair of solenoids including an extend solenoid and a retract solenoid, and said second pair of solenoids including an extend solenoid and a retract solenoid, said extend solenoids being electrically coupled together to effect simultaneous operation thereof, and said retract solenoids being electrically coupled together to effect simultaneous operation thereof;

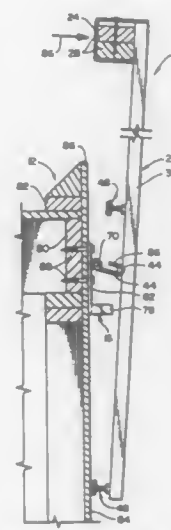
a thumb screw; and

a nut, wherein said base includes a pair of spaced plates coupled to and extending substantially orthogonally from said base, said plates having a plurality of inwardly projecting teeth, and further wherein said jack includes a pair of tangential members positioned in a diametrically opposed relationship and secured to said lower end of said jack, said tangential members being positioned between said plates and including grooves operable to receive said teeth, said tangential members and said spaced plates each having an aperture through which said thumb screw can pass and engage said nut, thereby securing an angular position of said base with respect to said jack.

5,377,958
SAFETY RAILING SYSTEM
Theodore R. Palmer, Coquitlam, Canada, assignor to PRS Industries Inc., Burnaby, Canada
Filed May 29, 1992, Ser. No. 891,637
Int. Cl.⁶ E04G 3/00; E04H 17/00

U.S. Cl. 256—59

16 Claims



1. A safety railing for installation about a roof edge of a building, said safety railing comprising:

a vertically elongate stanchion member having an upper end

configured to extend above said roof edge and a lower end, said upper end of said stanchion member being configured for mounting to a railing member;

a bracket member configured for mounting to a vertical outer surface of a wall of said building, said bracket member comprising:

a plate member configured to lie flat against said vertical outer surface of said wall, and

fastening means extending perpendicularly from said plate member to said vertical surface of said wall so as to mount said bracket member thereto, said fastening means having a predetermined resistance to a force in a combined pull-out and shear direction which is greater than a resistance of said fastening means to forces in either pure pull-out or pure shear directions;

a pivoting link member for interconnecting said bracket member and a middle portion of said stanchion member; and

upper and lower stopper assemblies mounted, respectively, above and below said pivoting link member so that said pivoting link member is vertically flanked by said stopper assemblies, each said stopper assembly extending inwardly from said stanchion member so as to abut said wall of said building;

so that in response to application of outwardly-directed and inwardly-directed loading to a said railing member mounted to said upper end of said stanchion member, said lower and upper stopper assemblies, respectively, are forced inwardly against said wall of said building, and said pivoting link member swings outwardly to an acute angle to said vertical wall surface such that said loading is transmitted through said link member to said bracket member in said combined pull-out and shear direction to which said fastening means has said predetermined resistance which is greater than said resistance to forces in said pure shear or pull-out directions.

5,377,959

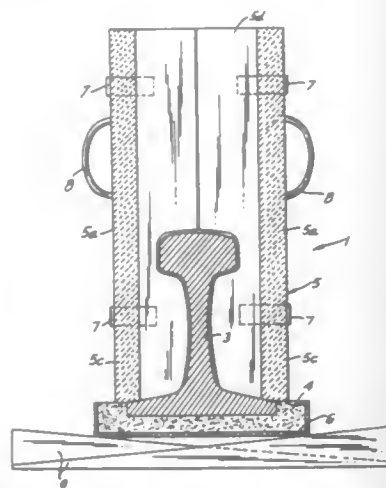
APPARATUS FOR IMPROVING SERVICE LIFE OF THERMITE RAIL WELDS

Gordoo O. Besch, New Brighton, Minn.; Robert H. Kachik, Lakehurst; Swartz Mark A., Brick, both of N.J.; Frank K. Kuster, Ratingen, and Hans J. Guntermann, Essen, both of Germany, assignors to Orgo-Thermit Inc., Lakehurst, N.J. Division of Ser. No. 955,947, Oct. 2, 1992, Pat. No. 5,306,361. This application Sep. 15, 1993, Ser. No. 121,829

Int. Cl.⁶ C21B 15/00

U.S. Cl. 266—167

6 Claims



1. Apparatus for heat treating a thermite weld between adjacent rail ends where the rail ends and the weld have a bottom flange, a web extending upwardly from the bottom flange, and a head at an upper end of the web, comprising

means for enclosing the rail ends and thermite weld and forming a space for holding an aluminothermic material mixture in contact with and enclosing the rail ends and the weld, said means comprise a bottom pan side walls and end walls, said bottom pan is formed of steel and is aligned with and spaced below the bottom flanges of the rail ends and the thermite weld, said pan having upwardly extending edges located laterally outwardly from opposite sides of the flanges, said bottom pan arranged to contain a given amount of aluminothermic mixture, said side walls located on opposite sides of and spaced outwardly from the rail ends and web and bearing on and extending upwardly from an upper side of the bottom flanges to above the rail head, said side walls located inwardly from said edges of said bottom pan, end walls extending transversely of and inwardly from said container walls into contact with the rail ends and extending upwardly above the rail head, said side walls and end walls are formed of graphite plates and form a laterally closed space for the aluminothermic mixture about the rail ends and thermite weld.

5,377,960

OXYGEN/CARBON BLOWING LANCE ASSEMBLY

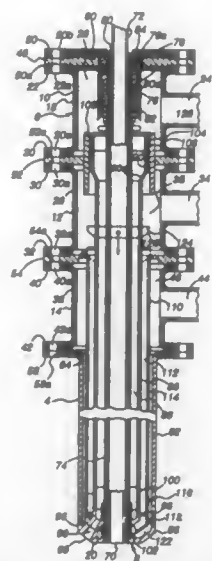
Theodore J. Leczo, Wexford; Nicholas M. Rymarchyk, Jr., Baden, and Gary S. Bugar, Ellwood City, all of Pa., assignors to Berry Metal Company, Harmony, Pa.

Filed Mar. 1, 1993, Ser. No. 24,422

Int. Cl.⁶ C21C 5/32

U.S. Cl. 266—225

7 Claims



1. A steelmaking lance assembly comprising:
a housing;

an elongated hollow barrel attached to said housing, said hollow barrel having a free end, a nozzle mounted on said free end and having a pair of outlets for directing a flow to a molten bath within a steelmaking vessel; and

coolant conduit means operatively arranged internally within said housing and said barrel for circulating a flow of coolant, said coolant conduit means including coolant shut off means internally of said housing for blocking said flow of coolant through said barrel upon failure of said nozzle.

5,377,961

ELECTRODYNAMIC PUMP FOR DISPENSING MOLTEN SOLDER

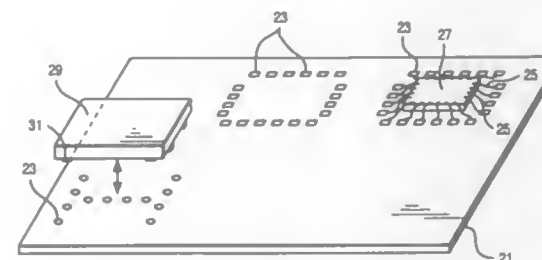
Ted M. Smith, Austin, Tex., and Russell E. Winstead, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1993, Ser. No. 48,446

Int. Cl.⁶ B22D 37/00

U.S. Cl. 266—237

9 Claims



1. A system for depositing a specific quantity of electrically conductive liquid on a component, comprising:
means for supplying said conductive liquid;
means for applying a magnetic field in a direction perpendicular to said means for supplying;
means for transmitting electric current directly through said conductive liquid to exert a force on said conductive liquid in a first direction; and
means for reversing a direction of said electric current to correspondingly reverse the direction of said force exerted on said conductive liquid to a second direction opposite said first direction to form a droplet of said conductive liquid.

5,377,962

ROTATIONAL VIBRATION DAMPER

Winfried Ochs, Alsbach-Hähnlein, and Jürgen Elchhorn, Weinheim-Sulzbach, both of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr., Germany

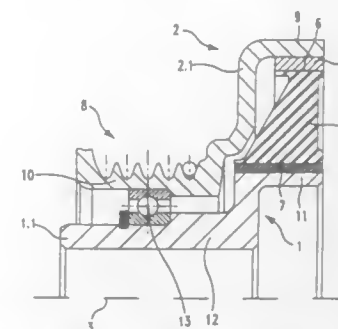
Filed Apr. 30, 1993, Ser. No. 55,733

Claims priority, application Germany, Aug. 8, 1992, 4228350

Int. Cl.⁶ B60G 11/23

U.S. Cl. 267—281

26 Claims



1. Rotational vibration damper comprising

a hub ring having an outside surface,
a rotating ring outside of said hub ring and having an inside surface concentric to said outside surface of said hub ring,
a friction layer fixed relative to one of said inside surface and said outside surface,

an elastomeric body fixed relative to the other of said inside surface and said outside surface, and supported by said friction layer so that said rotating ring rotates with said hub ring unless slippage occurs at said friction layer, and
a bearing situated between said hub ring and said rotating ring.

5,377,963

MACHINE VISE

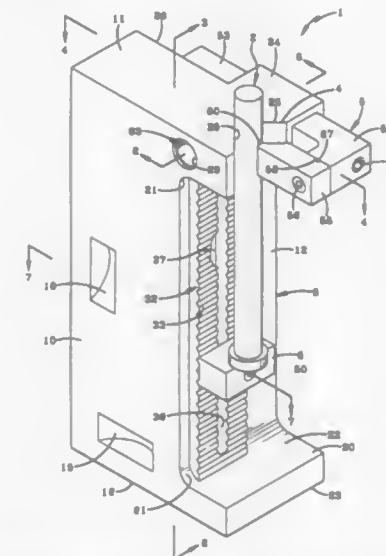
Lynn D. Lehman, 6876 Blough Ave., SW., Navarre, Ohio 44662

Filed Dec. 10, 1993, Ser. No. 164,818

Int. Cl.⁶ B25B 1/10

U.S. Cl. 269—156

17 Claims



1. A machine vise adapted for securing a workpiece adjacent a cutting tool comprising:
a body having an aperture;
a stationary jaw formed on said body;
a moveable jaw bar slidably received within said aperture;
adjustment means for moving the jaw bar within said aperture between clamped and unclamped positions;
block means separate from said moveable jaw and said stationary jaw for supporting an end of a workpiece in a selected position between said stationary jaw and said moveable jaw;
positioning means for positioning the block means longitudinally on said body in said selected position; and
lock means for securing the block means in a selected position.

5,377,964

DEVICE FOR CUTTING A WEB INTO SECTIONS

Ralf Haller, Oftersheim, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

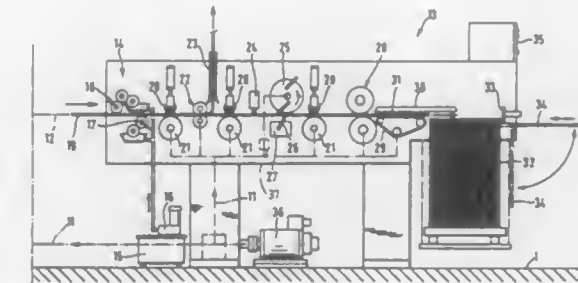
Filed Jan. 29, 1993, Ser. No. 11,219

Claims priority, application Germany, Jan. 29, 1992, 4202363

Int. Cl.⁶ B41F 13/56

U.S. Cl. 270—21.1

14 Claims



1. In combination, a rotary printing press having a drive, and a device for cutting a web into sections, the device being disposed downline from the rotary printing press in travel direction of a web therethrough and comprising a cutting

station having a drive dependent upon the drive of the rotary printing press; a pre-folding station disposed upline of said cutting station, said pre-folding station having a drive being coupled to said drive of said cutting station, said pre-folding station comprising, for the web, at least one register-adjusting roller, at least one pull roller and at least one funnel for folding the web, and said cutting station comprising cutting means for cutting the web, and a cut-register sensor disposed upline and adjacent said cutting means, said cut-register sensor being operatively connected to a drive of said cutting means for adjusting an exact location of cut on the web; and means defining a horizontal travel plane for the folded web, said horizontal travel plane extending from said pre-folding station to at least a location upline and adjacent said cut-register sensor.

5,377,965

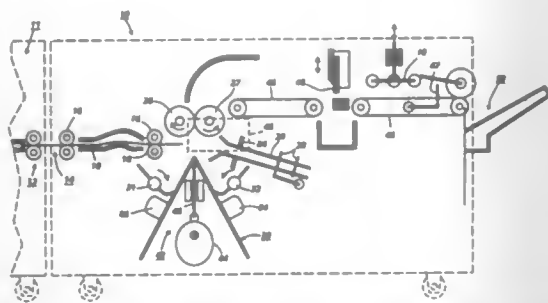
AUTOMATIC ON-LINE SIGNATURE BOOKLETS FINISHER FOR ELECTRONIC PRINTERS

Barry P. Mandel, Fairport, and Gerald A. Buddendeck, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 8, 1993, Ser. No. 148,454
Int. Cl.⁶ B41L 43/12; B65H 39/02

U.S. Cl. 270—37

12 Claims



1. In a signatures finishing system for on-line center folding of sets of signature sheets outputted by a reproduction system using a saddle compiler with two opposite sides forming an inverted "V"; the improvement comprising:

- a pair of reversible folding rollers closely adjacent to said saddle compiler and forming a folding rollers nip;
- an input sheet feeding system for feeding the central area of each outputted signature sheet into said folding rollers nip for sequentially individually fully folding said signature sheets in said folding rollers nip as they are outputted by said reproduction system;
- a reversible drive for said folding rollers which is automatically reversed at a position which will sequentially stack each so folded signature sheet on said adjacent saddle compiler to form plural sheet compiled pre-folded signature sheet booklets, and
- a set ejector for ejecting said compiled folded signatures booklet from said saddle compiler fully through said same folding rollers nip to a booklet output system, while said reversible drive for said folding rollers is re-reversed.

5,377,966

AUTOMATIC DOCUMENT FEEDER

Masaki Ohmori, Yamanashi, Japan, assignor to Nisca Corporation, Yamanashi, Japan

Filed Jul. 2, 1993, Ser. No. 85,081

Claims priority, application Japan, Jul. 3, 1992, 4-200293
Int. Cl.⁶ B65H 1/06, 31/20

U.S. Cl. 271—3

13 Claims

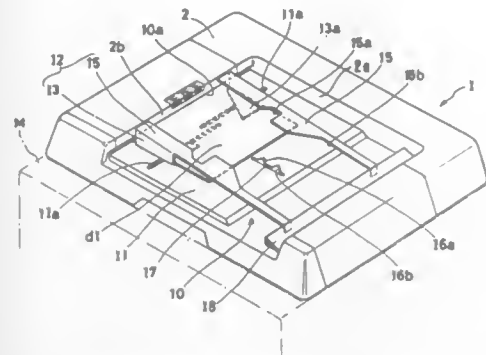
1. An automatic document feeder for automatically feeding given original documents one by one to an image reading station of an image processing device and discharging the document from the image reading station, which comprises:

- a document tray for placing one or more of said original

documents thereon, said document tray being defined by at least one side wall, a front wall and a rear wall;

a document transporting means having a document feeding part located on one end of the document tray for transporting the documents one by one from said document tray to the image reading station, and a document discharging part located on the other end of the document tray for sending out the document from the image reading station; and

document receiving means having a pair of document holding members standing upright on said document tray and each having an upper end, and at least one document supporting member extending horizontally from said upper end of at least one of said document holding members;



wherein:

- said document holding members are slidably movable width wise in accordance with the original document or documents placed on said document tray;
- said document feeding part has a document intake port formed in said front wall of said document tray and a feed passage curved in substantially U-shape, through which the document is fed from said intake port to said image reading station; and
- said document discharging part has a document discharge port formed in said rear wall of said document tray and a discharge passage curved in substantially U-shape, through which the document is sent out from said image reading station to said document discharging part and discharged onto said document receiving means.

5,377,967

METHOD AND APPARATUS FOR LIFTING PRINTING PRODUCTS OFF A STACK

Jürg Eberle, Hinwil, Switzerland, assignor to Ferag AG, Zurich, Switzerland

Filed Jan. 22, 1993, Ser. No. 7,536

Claims priority, application Switzerland, Jan. 30, 1992, 00274/92

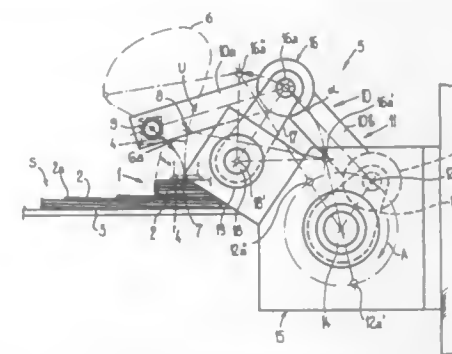
Int. Cl.⁶ B65H 5/08

U.S. Cl. 271—11

13 Claims

1. An apparatus for lifting printing products off a stack, comprising: at least one suction head, periodically connectable to a vacuum source, for gripping and carrying along one product at a time, and a drive mechanism coupled to a drive motor for the suction head for moving the latter along a movement path from a pick-up point at which the suction head grips one product at a time, to a delivery point at which the suction head releases the gripped product, and back again, characterized in that the drive motor has a rotary driven output member and is coupled to the drive mechanism via an intermediate transmission unit, said drive mechanism having a rotatably driven input member and said intermediate transmission unit having a rotatably driven input member rotatably connected to the output member of the drive motor and having a rotatably driven output member rotatably connected to the rotatably driven input

member of the drive mechanism as to convert the speed of rotation (ω_1) of the drive motor into a varying input driving



speed (ω_2) for the drive mechanism in order to move the suction head along its path of movement at a varying speed determined other than by the drive mechanism alone.

5,377,968

FEEDER OF A PAPER SHEET PROCESSING MACHINE

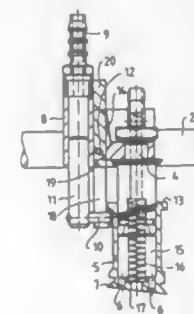
Peter Sobotta, Heidelberg, and Isolde Maxeiner, Östringen, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Dec. 13, 1993, Ser. No. 165,982

Claims priority, application Germany, Dec. 11, 1992, 4241788
Int. Cl.⁵ B65H 3/08

U.S. Cl. 271—11

7 Claims



1. A feeder in a paper sheet processing machine, comprising: a lifting sucker for lifting a paper sheet from a stack of paper sheets; transport means operatively associated with said lifting sucker for entraining the lifted paper sheet and for transporting the paper sheet from a lifted position above the stack to a paper sheet processing unit; force potential means permanently acting on said lifting sucker downwardly in a direction towards the stack; means connected at said lifting sucker for lifting said lifting sucker against said force potential in a cyclically controlled manner; a retaining collar formed on said lifting sucker; retaining means mounted shiftably parallel to a stroke direction of said lifting sucker, said retaining means including a support permanently disposed below said retaining collar in a stroke area of said retaining collar; and controlled pneumatic means communicating with said retaining means for shifting said retaining means in dependence of a stroke motion of said lifting sucker.

5,377,969

METHOD AND DEVICE FOR SEPARATING SHEET-TYPE RECORDING MEDIA

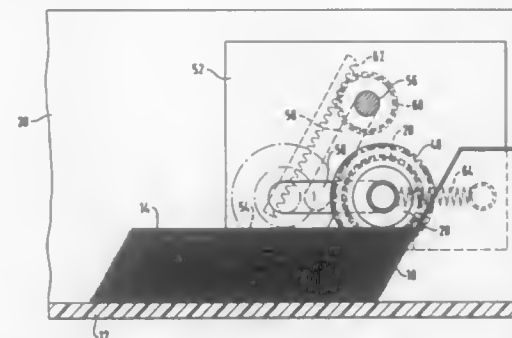
Friedhelm Steinhilber, Schauinslandweg, D-7210 Rottweil, Germany

Filed Sep. 11, 1992, Ser. No. 943,174

Claims priority, application Germany, Sep. 24, 1991, 4131726
Int. Cl.⁶ B65H 3/06

U.S. Cl. 271—21

20 Claims



19. A method of separating a sheet from a stack comprising: placing a stack of sheets with an edge thereof against a ramp, engaging the first sheet of the stack with a frictional element and applying to said first sheet by said frictional element a force urging said first sheet towards said ramp, causing said frictional element to move away from said ramp proportionally to the stiffness of said first sheet until the resistance to bending of said first sheet is smaller than the force applied by said frictional element to said first sheet.

5,377,970

SHEET FEEDING APPARATUS WITH REDUCED VIBRATION SEPARATOR

Yutaka Kikuchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

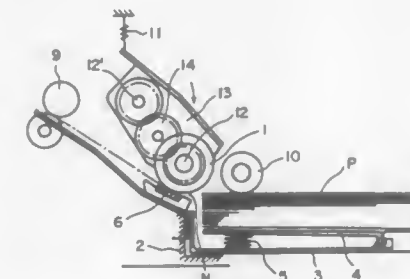
Continuation of Ser. No. 687,033, Apr. 18, 1991, abandoned.

This application Mar. 4, 1993, Ser. No. 26,091

Claims priority, application Japan, Apr. 20, 1990, 2-105063
Int. Cl.⁶ B65H 3/52

U.S. Cl. 271—121

11 Claims



1. A sheet feeding apparatus, comprising: sheet stack means for stacking sheets thereon; feeding means for feeding out the sheets from said sheet stack means; separation means for separating the sheets fed out by said feeding means one by one, said separation means comprising a stationary frictional separating means, a rotary roller mounted on support means provided rotatably around a pivot axis provided downstream of said frictional separating means with respect to a sheet feeding direction for movement in contact with and in separation from said frictional separating means, and bias means for urging said rotary roller against said frictional separating means; and drive transmitting means for transmitting a rotation to said

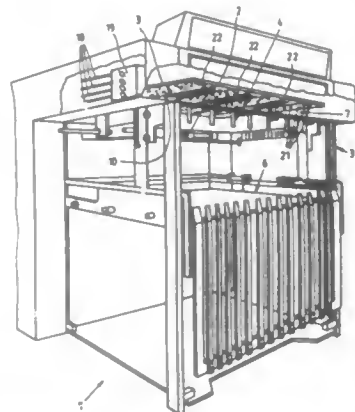
rotary roller, said drive transmitting means including a driven shaft disposed on said pivot axis, and at least one transmitting member for transmitting the rotation from said driven shaft to said rotary roller, wherein a first moment of said support means which acts in a direction that tends to separate said rotary roller from said frictional separating means is applied by friction between said rotary roller and said frictional separating means, and a second moment of said support means which draws said rotary roller to said frictional separating means is applied by rotation transmitted by said at least one transmitting member.

5,377,971

AIR-FLOW GENERATING DEVICE FOR A SHEET DELIVERY OF A SHEET-FED PRINTING MACHINE
Udo Ganter, Hirschberg-Leutershausen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Apr. 21, 1993, Ser. No. 50,709
Claims priority, application Germany, Apr. 21, 1992, 4213020
Int. Cl.⁶ B65H 31/00

U.S. Cl. 271-207

12 Claims



1. A sheet delivery apparatus for a sheet-processing machine having a sheet-conveying device for successively conveying sheets to a device for receiving a sheet pile thereon, comprising a device disposed above a sheet-pile receiving device for generating an air flow to facilitate with air depositing of the sheets upon the pile-receiving device, said air-flow generating device having an air-supplied air-volume chamber having a basal surface and formed with outlet openings distributed over said basal surface thereof, said basal surface having an area corresponding approximately to a maximum sheet format; and covering means for sealing at least some of said outlet openings so as to adjust at least one of air-flow intensity and air diffusion of air escaping from said air-volume chamber.

5,377,972
SORTER

Yoshio Sugishima; Youichiro Irie; Toorn Himegi; Hiroyuki Nagai; Nobukazu Otsuka; Takatoshi Nishimura, all of Osaka; Kenichi Honda, Kawasaki; Shouichiro Tajima, Sagami-hara; Keiichi Asano, Nerima; Hiroyuki Kawaguchi; Shigeki Tamura, both of Kawasaki; and Motohisa Washitani, Kaisou, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 8, 1993, Ser. No. 28,032
Claims priority, application Japan, Mar. 12, 1992, 4-053830; Mar. 12, 1992, 4-053833; Mar. 12, 1992, 4-053873; Mar. 12, 1992, 4-053874

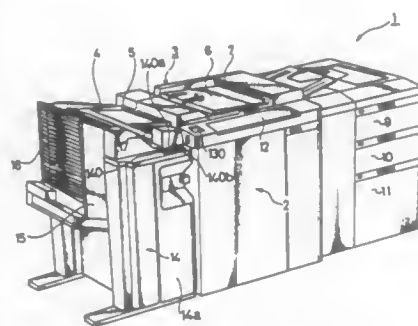
Int. Cl.⁶ B65H 31/24

U.S. Cl. 271-293

22 Claims

1. A sorter for sorting sheets comprising:
a bin unit including a plurality of bins having a specified

length and width, said bins being vertically spaced apart and being adapted for placing the sorted sheets thereon;
a shifting means for shifting the bin unit upward and downward;
a projected member provided at the bin unit;
a first detector means for detecting that the bin unit has been moved down to a home position by detecting the presence of the projected member;



a second detector means including a detection lever provided projectingly below the first detector means in such a position as to cross the moving path of the projected member and adapted for detecting that the bin unit has reached a lower limit position when the projected member comes into contact with the detection lever; and
a common guide means for guiding the projected member to the first detector means and to the contact position with the detection lever of the second detector means.

5,377,973

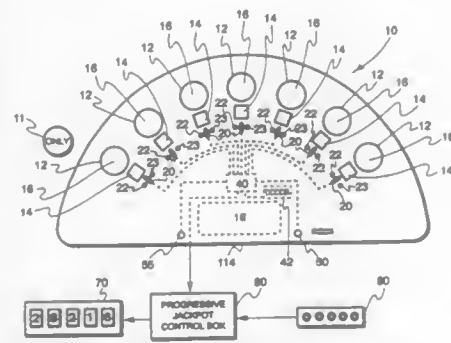
METHODS AND APPARATUS FOR PLAYING CASINO CARD GAMES INCLUDING A PROGRESSIVE JACKPOT
Daniel A. Jones, Las Vegas, Nev., and Mark W. Duron, Ft. Lauderdale, Fla., assignors to D&D Gaming Patents, Inc., Pompano Beach, Fla.

Continuation-in-part of Ser. No. 140,688, Oct. 21, 1993, Ser. No. 40,925, Mar. 31, 1993, Ser. No. 74,301, Jun. 9, 1993, and Ser. No. 88,785, Jul. 8, 1993, each, said Ser. No. 40,925, said Ser. No. 74,301, said Ser. No. 88,785, is a continuation-in-part of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, said Ser. No. 140,688, is a continuation-in-part of Ser. No. 74,301, Jun. 9, 1993, which is a continuation-in-part of Ser. No. 800,631, Jun. 9, 1993, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,863,553. This application Feb. 14, 1994, Ser. No. 195,482

Int. Cl.⁶ A63F 1/00

U.S. Cl. 273-85C P

20 Claims



18. Apparatus for including a progressive jackpot component in a live casino card table game, comprising:
a gaming table having a plurality of player locations at which a player receives playing cards from a dealer;

means associated with each player location for the player to select one of at least two wagering options consisting of (2) placing a wager to participate only in the progressive jackpot component, and (3) placing wagers to participate in both the underlying card game and the progressive jackpot component;
means for indicating on a jackpot meter the amount in the jackpot; and
means for decreasing the amount shown on the jackpot meter by the amount won by a player if the player achieves a predetermined arrangement of the playing cards.

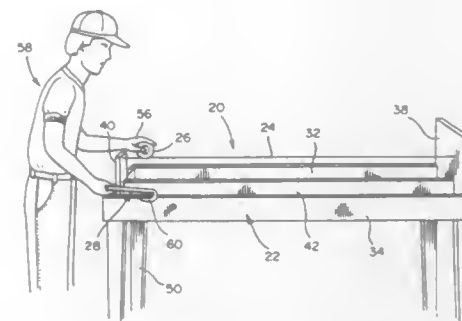
5,377,974

HOOP BALANCING GAME

Angel L. Rodriguez Rivera, Calle Clavel 3-J-17, Lomas Verdes, Bayamón, Puerto Rico 00956
Continuation of Ser. No. 64,929, May 24, 1993, abandoned. This application Oct. 7, 1993, Ser. No. 133,265
Int. Cl.⁶ A63F 7/00

U.S. Cl. 273-126 R

9 Claims



1. A balancing game comprising:
two string supports spaced from each other,
a string stretched between said two string supports and secured at opposite ends to said two string supports, and
a plurality of hoops having a groove in a peripheral surface for rolling along said string in a balanced condition in an attempt to prevent falling of each of said plurality of hoops from said string.

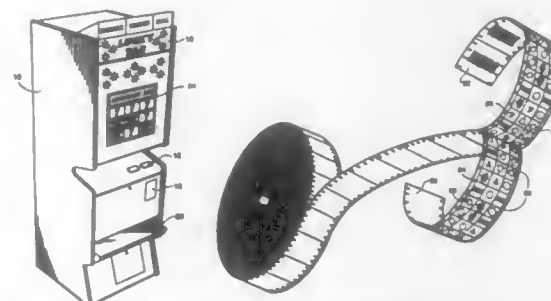
5,377,975

ELECTRONIC GAMING APPARATUS AND METHOD
Ronald C. Clapper, Jr., 20753 Horace St., Chatsworth, Calif. 91311

Continuation-in-part of Ser. No. 879,747, May 6, 1992, Pat. No. 5,348,299. This application Nov. 16, 1992, Ser. No. 999,268
Int. Cl.⁶ A63F 9/24

U.S. Cl. 273-138 A

22 Claims



7. An electronic gaming apparatus capable of dispensing a segment of a strip containing indicia thereon upon actuating

the apparatus and simultaneously displaying the indicia in the dispensed segment, said apparatus comprising:

- a primary strip containing indicia thereon;
- means for severing a segment of the primary strip and dispensing same upon actuation of the apparatus;
- a plurality of machine readable codes associated with the indicia on the primary strip and each code being correlated to a separate one of the indicia, said machine readable codes not being readily discernable by visual examination;
- means for reading the machine readable codes of each segment which is dispensed; and
- means connecting to said reading means for simultaneously displaying the indicia on the dispensed segment.

5,377,976

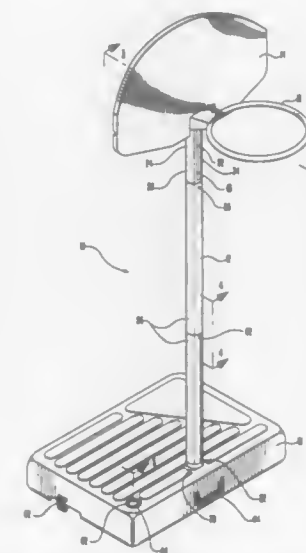
PORTABLE BASKETBALL SYSTEM

Lonny R. Matherne, Pleasant View; Barry D. Mower, and Kelly Taylor, both of Layton, all of Utah, assignors to Lifetime Products, Inc., Clearfield, Utah

Continuation-in-part of Ser. No. 13,611, Feb. 4, 1993, Pat. No. 5,248,140. This application Jul. 27, 1993, Ser. No. 97,678
Int. Cl.⁶ A63B 63/08; F16M 13/00

U.S. Cl. 273-1.5 R

33 Claims



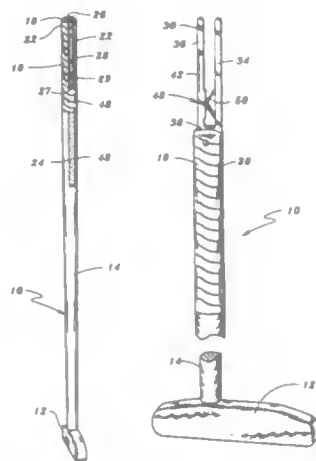
1. A portable basketball system comprising:
a plurality of pole sections capable of assembly to form a pole having a proximal end and a distal end;
a backboard for connection to said pole near the distal end of said pole;
a basketball goal for connection to said pole; and
a hollow ballast-receiving base capable of assembly with said pole, backboard, and basketball goal to form the basketball system wherein said base supports said pole in a stationary, substantially upward disposition and is connected to said pole near the proximal end of said pole and wherein said basketball goal and said backboard are connected to said pole so that said basketball goal is suspended at an elevation above said base, said base having an exterior contour for receiving and retaining said pole sections, backboard, and basketball goal and for impeding shifting movement of said pole sections, backboard, and basketball goal during transport of said base.

5,377,977
COMBINATION GOLF CLUB PUTTER AND REPAIR TOOL

John P. MacNeary, 345 Vine Hill Rd., Santa Cruz, Calif. 95065
Filed Jul. 30, 1993, Ser. No. 100,131
Int. Cl.⁶ A01B 1/04

U.S. Cl. 273—32 B

15 Claims



1. In combination with a golf club having a ball striking clubhead mounted to an elongated shaft and a portion of said shaft having a hand grip secured about a portion of the shaft adjacent to an opposite end of the shaft and including an aperture in the shaft in said portion of the shaft adjacent to an opposite end of the shaft, a golf green repair tool, comprising: an elongated support member secured within said shaft and extending adjacent to said opposite end of the shaft; a cylindrical housing operably secured to said elongated support member and including at least one elongated slot in a wall thereof; a prong element hingedly secured within said cylindrical housing allowing extension of said prong element through said elongated slot so that the prong element operably extends from said opposite end of the shaft; said prong element including a first member and a second member secured to a base element having an engagement notch therein; said first member including a grip means allowing for hand operated extension of the prong element to an operating position; and a prong lock means for securing said prong element in an open position allowing extension of said prong element though said elongated slot in said cylindrical housing to a golf green repairing orientation.

5,377,978
GOLF CLUB HOSEL SHIFT
Michael C. W. Lee, No. 82-12 San Lung Road, Ta-Liao Hsiang, Kaohsiung, Taiwan, Prov. of China
Filed Jul. 5, 1994, Ser. No. 266,886
Int. Cl.⁶ A63B 53/00

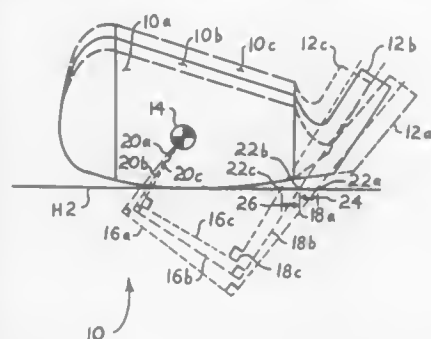
U.S. Cl. 273—77 A

6 Claims

1. A set of golf club irons comprising one through nine irons, a pitching wedge, and a sand wedge; said club irons each including a head having a geometric center and a weight concentrated at a fixed center of gravity substantially coincident with said geometric center, and a hosel extending therefrom, with each said hosel having a centerline; said club irons further each having a lie angle defined as the angle between the intersection of the projected said centerline of said hosel and a horizontal ground plane tangent to said head; said club irons further each having an arm defined as the distance between said projected said centerline of said hosel and said center of gravity, with said arm and said

concentrated weight at said center of gravity of each of said club irons defining a moment of inertia for each of said club irons;

said one iron having a relatively longer arm and greater moment of inertia than said sand wedge and a positive hosel shift away from said center of gravity of said club head, with said positive hosel shift defined as a positive hosel shift distance from said intersection of said projected centerline of said hosel and said ground plane of said sand wedge to said intersection of said projected centerline of said hosel and said ground plane of said one iron; said sand wedge having a relatively shorter arm and smaller moment of inertia than said one iron and a negative hosel

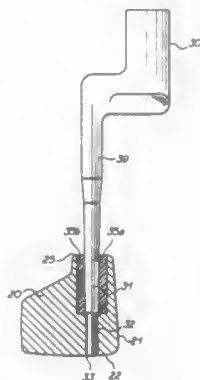


shift toward said center of gravity of said club head, with said negative hosel shift defined as a negative hosel shift distance from said intersection of said projected centerline of said hosel and said ground plane of said one iron to said intersection of said projected centerline of said hosel and said ground plane of said sand wedge, whereby; said relatively greater moment of inertia of said one iron relative to said sand wedge provides greater stability and less controllability for said one iron relative to said sand wedge, and said relatively smaller moment of inertia of said sand wedge relative to said one iron provides relatively greater controllability and less stability for said sand wedge relative to said one iron.

5,377,979
BACKSPIN REDUCING PUTTER
Dabbs C. Long, Albany, Ga., assignor to ProGroup, Inc., Ooltewah, Tenn.
Filed Feb. 3, 1994, Ser. No. 191,552
Int. Cl.⁶ A63B 53/02

U.S. Cl. 273—80.1

20 Claims



11. A golf putter comprising: (a) a shaft with a distal end and a proximate end; (b) a grip on the proximate end of said shaft; (c) a neck having a distal end and a proximate end;

- (d) a hosel on the proximate end of the neck which receives the distal end of the shaft;
- (e) a tang on the distal end of said neck, said tang having a tang end of relatively thin cross-section in a first direction and of relatively thick cross-section in a second direction perpendicular to said first direction;
- (f) a head having a forward striking face, and a sole;
- (g) a cavity within the head larger than said tang and wherein said tang end is fixed so that the relatively thick cross-section of the tang end is parallel to the forward striking face;
- (h) a resilient material within the cavity encircling the tang so that approximately 0.25 to 0.5 inch of said resilient material is located forward of the tang;
- (i) a center of gravity of said head located approximately 0.4 to 0.8 inch above the sole of the head; and
- (j) a rotational axis of said head located approximately 0.25 to 0.5 inch above the sole of the head.

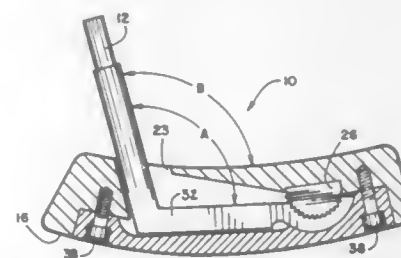
5,377,980
GOLF CLUB WITH LOCKABLE HEAD-TO-SHAFT ANGLE ADJUSTMENT

Richard H. Hannon, Oceanside, and Jacob H. Schmidt, Jr., Cardiff, both of Calif., assignors to Plop Golf Company, Carlsbad, Calif.

Continuation-in-part of Ser. No. 48,295, Apr. 19, 1993, Pat. No. 5,292,123. This application Mar. 7, 1994, Ser. No. 206,734
Int. Cl.⁶ A63B 53/02

U.S. Cl. 273—80.2

13 Claims



1. A golf club having an adjustable, lockable, shaft-to-head angle which comprises: a club head having top and bottom surfaces and an elongated cavity extending upwardly from the bottom surface of the club head; an opening through the top surface of said club head communicating with a first end of said elongated cavity; a locking element having a convex end extending downwardly into a second end of said elongated cavity; said convex end having a serrated surface; a club shaft having a first end extending into said cavity through said top surface opening; an extension secured to said first end of said shaft at a selected angle to said shaft and extending along the length of said elongated cavity adjacent to said convex end; said extension having a concave recess having a serrated surface complementary to the serrated surface of said convex end and lying adjacent thereto; said convex end and said concave recess both having substantially identical partially circular cross-sections; said shaft and said extension being pivotable about an axis generally perpendicular to the elongated cavity and passing through the center of the convex end; stop means for limiting the pivoting of both said shaft and said extension; a removable sole plate forming a portion of the bottom surface of said club head, closing a bottom opening of said cavity and contacting said extension opposite both said recess and said element end; and means for securing said sole plate to said club head and urging said extension recess into pressure contact with said element end.

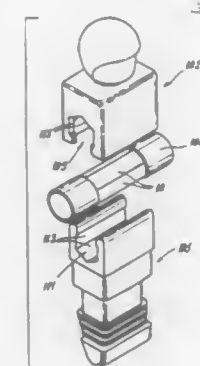
5,377,981
FIGURINE SUPPORT ROD AND FIGURINE ASSEMBLY FOR TABLE FOOTBALL

Alain Monneret, Montain, France, assignor to Monneret Jouets, Lons-le-Saunier, France

Filed Aug. 4, 1993, Ser. No. 102,066
Claims priority, application France, Aug. 20, 1992, 92 10273
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.⁶ A63F 7/06

U.S. Cl. 273—85 D

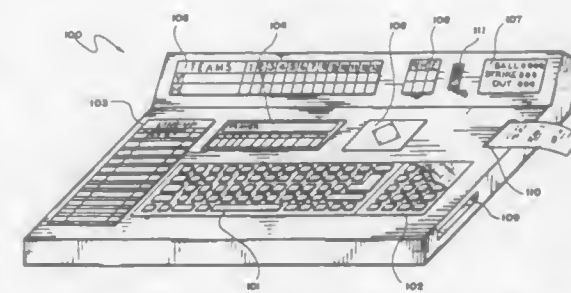
13 Claims



1. A figurine support rod and figurine assembly for table football, comprising: a rod segment having at least one hollowed-out deformation that does not open outwardly away from the rod segment; and a figurine comprised of a female piece and a complementary male piece that can be assembled together after engagement with the rod segment, each of the female piece and the male piece having a notch formed therein with a bottom shaped so as to match the rod segment, the notch of at least one of the female piece and the male piece including at least one projection of complementary shape engaging, without play, the corresponding at least one hollowed-out deformation of the rod segment.

5,377,982
PORTABLE ELECTRONIC SCOREKEEPING DEVICE
Oscar Villarreal, Jr., 807 Ebony Dr., Harlingen, Tex. 78550
Filed Sep. 3, 1993, Ser. No. 116,501
Int. Cl.⁶ G06F 15/40; A63F 9/22; A63B 71/04
U.S. Cl. 273—148 R

15 Claims



1. A portable electronic scorekeeping device for sports comprising: first means for inputting player data including names of players with their defensive position in accordance with a predetermined order and the player's present offensive and defensive statistics, said first means including a first plurality of touch-sensitive switches; second means for inputting each play event as it occurs, said second inputting means including a second plurality of

touch sensitive switches proximate said first plurality of touch sensitive switches;
 first storage means for storing control logic, said control logic defining a protocol for updating said offensive and defensive statistics, said first storage means comprising at least read only memory;
 second storage means for storing said player data from said first input means, said second storage means comprising at least random access memory;
 means for updating said offensive and defensive statistics according to said play event input via said second inputting means and said protocol; and
 means for visually displaying data including a representation of predetermined player data, said predetermined data selected by said update means, said display means further including a playing surface display configured so a visual representation of the playing surface and locations of players on the playing surface are provided.

5,377,983

FOUR-WAY DIAMOND-CUT SOLE FOR GOLF CLUB HEAD

Frank Fenton, Sarasota, Fla., assignor to Lisco, Inc., Tampa, Fla.

Filed Jul. 6, 1993, Ser. No. 86,396
 Int. Cl.⁶ A63B 53/04

U.S. Cl. 273—164.1

9 Claims



9. A golf club head having a striking face having an upper and lower extremity, a rear wall having an upper and lower extremity, a head, a toe and a sole, said sole comprising a peak, said peak defining a point on said sole; and a plurality of adjacent substantially planar surfaces extending angularly from said peak on said sole, said planar surfaces forming substantially linear junction lines between adjacent surfaces, said junction lines extending selectively from said peak to said lower extremities of said striking face and said rear wall.

5,377,984

UNIVERSAL HAND GRIP DEVICE

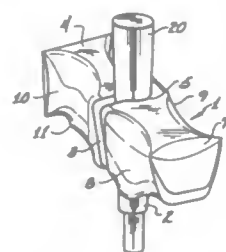
Samuel J. Ciccia, 375 Grant St., Buffalo, N.Y. 14213

Filed Feb. 8, 1994, Ser. No. 193,575

Int. Cl.⁶ A63B 53/14

U.S. Cl. 273—165

18 Claims



1. A universal golf club grip comprising a substantially

rectangular unit having a front, back, top, bottom and two side portions, said grip having a slotted conduit extending through its entire height and originating from a top substantially central section of said top portion and terminating at said bottom portion, said conduit tapered from a larger top terminal opening to a smaller bottom terminal opening, said two side portions being configured to receive the palm of either a right or left hand, said bottom portion having finger grooves to receive the fingers of either a right or left hand.

5,377,985

HEAD FOR IRON TYPE GOLF CLUB

Akio Ohnishi, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

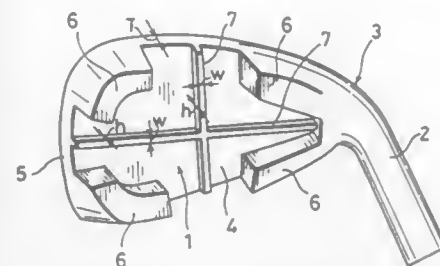
Filed Jul. 20, 1993, Ser. No. 93,611

Claims priority, application Japan, Jul. 28, 1992, 4-058693[U]

Int. Cl.⁶ A63B 53/04

U.S. Cl. 273—169

13 Claims



1. A head for an iron type golf club, comprising a head body portion including a plate-shaped face wall portion of approximately 2 mm to approximately 3.5 mm in thickness and a shaft connecting portion, said face wall portion having a rear surface weighted in four corners thereof with weighting projections at toe side upper and lower portions and heel side upper and lower portions, wherein a distance A between outer peripheral ends of said projections on an upper side of said rear surface of said head, a distance B between opposed surfaces of said projections on said upper side of said rear surface of said head, a distance C between outer peripheral ends of said projections on a sole side of said rear surface of said head, a distance D between opposed surfaces of said projections on said sole side of said rear surface of said head, a distance E between outer peripheral ends of said projections on said toe side of said rear surface of said head, a distance F between opposed surfaces of said projections on said toe side of said rear surface of said head, a distance G between outer peripheral ends of said projections on said heel side of said rear surface of said head, and a distance H between opposed surfaces of said projections of said heel side of said head meet the requirements of $90\% \geq B/A \geq 40\%$, $90\% \geq D/C \geq 40\%$, $90\% \geq E/F \geq 30\%$ and $90\% \geq H/G \geq 30\%$.

5,377,986

PROCESS FOR MANUFACTURE OF A GOLF CLUB HEAD COMPRISING A MOUNTED HITTING SURFACE

Francois Viollaz, Evian, and Robert Maestri, Alby sur Cheran, both of France, assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.

Filed Mar. 1, 1993, Ser. No. 24,368

Claims priority, application France, Feb. 27, 1992, 92 02555

Int. Cl.⁶ A63B 53/04

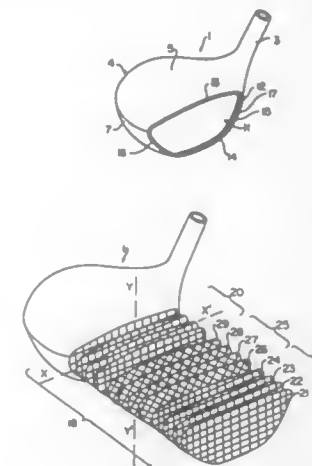
U.S. Cl. 273—173

8 Claims

1. A process for manufacture of a golf club head comprising a mounted hitting plate (18), said process consisting of the steps of:

(a) manufacturing a body of the head itself from an upper wall (5), a lower wall (6), a peripheral wall (7) and a front wall (8) comprising a front support face (11);

(b) bonding a hitting plate (18) made of a plastic or composite material on said front support face (11); and



(c) imparting to a hitting surface (2) of said hitting plate a curved shape which is convex toward the front.

5,377,987

GOLF PUTTER AND METHOD FOR PUTTING

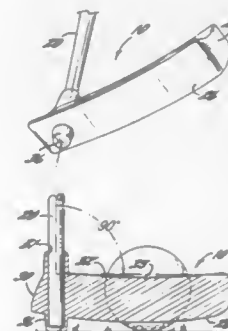
James H. Irvin, Jr., 4414 Piper Glen Dr., Charlotte, N.C. 28277

Filed May 16, 1994, Ser. No. 242,772

Int. Cl.⁶ A63B 69/36

U.S. Cl. 273—194 R

5 Claims



1. A golf ball putter comprising:
 an elongated shaft having a gripping handle at one end and a putter head affixed to the end opposite said gripping handle;
 said elongated shaft being affixed to said putter head at a substantially right angle with respect to a horizontal axis extending between the heel end portion and the toe end portion of the putter head;
 said putter head having a ball striking surface having a length greater than its height, a bottom surface, a top surface, a rear surface, said bottom surface and said top surface being joined by a toe end portion and a heel end portion; and
 a single pivotal member formed on said bottom surface and extending therefrom, said pivotal member being located proximate said heel end portion and substantially in alignment with a longitudinal axis extending through said elongated shaft.

5,377,988

GOLF BALL PRACTICE DEVICE

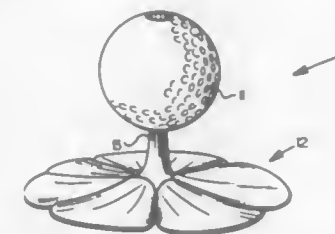
Jim Westman, and Torbjorn Westman, both of #607, 75 John Street, Waterdown, Ontario, Canada L0R 2H0

Filed Dec. 10, 1993, Ser. No. 164,672

Int. Cl.⁶ A63B 69/36

U.S. Cl. 273—199 A

20 Claims



12. A golf ball practice device, comprising:
 a ball having substantially the same size, shape, and appearance as a regulation golf ball;
 a substantially disc shaped drag element, having drag inducing openings and surface manifestations provided therein;
 a shaft connecting said drag element and ball so that they are integral;
 said substantially disc shaped drag element extending substantially perpendicular to said shaft, and said shaft extending radially with respect to said ball; and
 wherein said shaft and said drag element comprise a one-piece molded resilient plastic or rubber structure.

5,377,989

GOLF BALLS WITH ISODIAMETRICAL DIMPLES

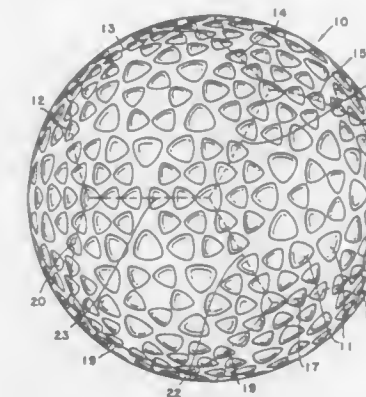
Brian F. Machin, Wakefield, England, assignor to Dunlop Limited, London, England

Continuation-in-part of Ser. No. 892,431, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 657,506, Feb. 19, 1991, abandoned. This application Aug. 13, 1993, Ser. No. 106,137

Int. Cl.⁶ A63B 37/14

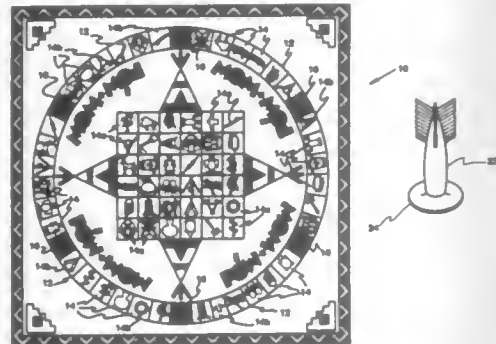
U.S. Cl. 273—232

13 Claims



1. A golf ball having a spherical surface and in said surface a multiplicity of dimples arranged in a repeating pattern over the entire surface of the ball and each of which has the shape, as viewed from above, of a regular isodiametrical figure with an odd number of curved sides and arcuate apices formed at junctures of adjacent sides of said isodiametrical figure.

5,377,990
**BOARD GAME INCORPORATING NATIVE AMERICAN
 SYMBOLS AND KNOWLEDGE**
 Sarah E. Seene-Sullivan, P.O. Box 310, Cheswold, Del. 19936
 Filed Oct. 27, 1993, Ser. No. 141,518
 Int. Cl.⁶ A63F 3/00, 9/18
 U.S. Cl. 273—236 10 Claims



1. A board game incorporating native American symbols and knowledge, comprising:
 - a game board having a peripheral first plurality of native American symbols, and a second plurality of like and matching native American symbols disposed in a central area within said peripheral first plurality of native American symbols, with said peripheral first plurality of native American symbols being divided into a series of groups;
 - a plurality of position markers;
 - a projectile for use in the play of said board game, said projectile having means for selecting one of said native American symbols disposed on said central area when said projectile is thrown toward said central area and strikes one of said native American symbols;
 - chance means for use in the play of said board game;
 - a plurality of native American symbol cards matching said symbols of said first plurality and said second plurality; and
 - a plurality of trivia cards relating to native American subject matter, for use in the play of said board game.

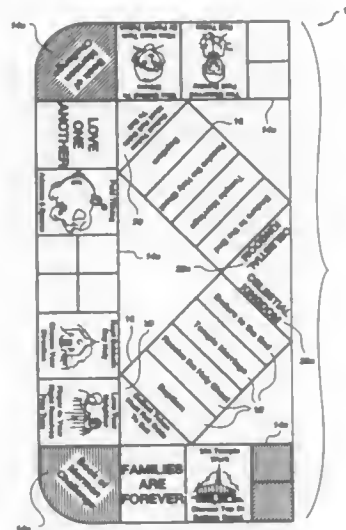
5,377,991
GAME METHOD AND APPARATUS
 M. Ardell Olsen, 4305 Harrison Blvd., Suite 287, Ogden, Utah 84403
 Filed Apr. 1, 1994, Ser. No. 221,872
 Int. Cl.⁶ A63F 3/00

U.S. Cl. 273—249 28 Claims

1. A method for at least one player to play a game with a game board having at least one player advancement track interrelated with a closed loop movement track, said advancement track comprising a linear progression of advancement spaces having beginning and terminal positions, and said closed loop movement track comprising a closed-loop linear progression of movement spaces extending in an unending, configuration around the game board, said method comprising the steps of:

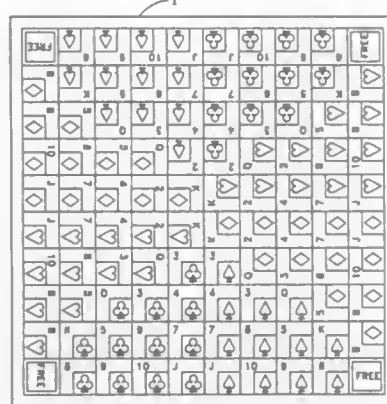
- (a) placing a movement piece for each player upon a beginning space of the closed loop movement track;
- (b) imposing a requirement upon each player in turn which, if successfully accomplished, entitles that player to select a random number and move a movement piece along the movement track a number of spaces corresponding to said random number;
- (c) moving an advancement marker of a particular player along the player advancement track toward the terminal position of said player advancement track each time that player's movement piece lands upon either (i) an individual advancement-activating space of the movement track assigned to that player, or (ii) a common advancement-

activating space of the movement track common to all participating players, whereby the game is won by a



player whose advancement marker first lands upon the terminal position of the player advancement track.

5,377,992
**METHOD OF PLAYING A BOARD GAME UTILIZING
 PLAYING CARDS AND TOKENS**
 Yvonne Andet, R.R. #2, Box 2252, Brandon, Vt. 05733
 Filed Jul. 5, 1994, Ser. No. 270,732
 Int. Cl.⁶ A63F 3/06
 U.S. Cl. 273—271 2 Claims



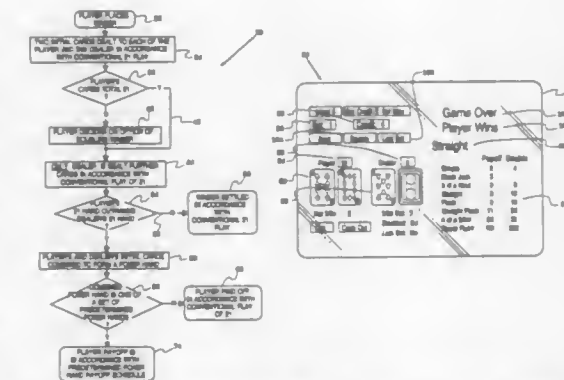
1. A method for playing a board game comprising the steps of:

- a) providing a rectangular game board;
- b) division of the face of said game board into one hundred rectangular spaces all of the same size area;
- c) providing a first deck of fifty two different playing cards without jokers;
- d) providing a second deck of fifty two different playing cards without jokers one each of which said playing cards in said second deck is exactly identical to each one of said playing cards in said first deck;
- e) providing that ninety-six of said one hundred rectangular spaces correspond with indicia imprinted thereupon to each of the playing cards in said first deck and said second deck except the aces;
- f) providing that four of said one hundred rectangular spaces correspond with indicia imprinted thereupon to each of four free spaces;

- g) providing a plurality of distinct sets of game tokens for occupation of said rectangular spaces;
- h) shuffling said first deck of cards and said second deck of cards, then combining them all with one another;
- i) dealing a portion of said shuffled and combined decks evenly amongst players of the game;
- j) placing the undealt portion of said shuffled and combined cards into a draw pile;
- k) requiring that a first discard one of the said dealt portion of cards in said first player's hand and effectuate occupation of the one of said rectangular spaces that correspond to said discarded card with one of said tokens within the one of said distinct sets of tokens previously assigned for use by said player;
- l) requiring that said first player then draw a card from the top of the said undealt portion of said shuffled and combined cards in said draw pile;
- m) requiring that each of the other players of the game in each said other player's respective turn of play, play by discarding one of the said dealt cards in said other player's hands and effectuate occupation respectively of the one of said rectangular spaces that corresponds to said other player's discarded card with each of said other player's opponents to do so as well with respect to one of the said tokens within the said distinct sets of tokens previously assigned for use by each of said players opponents respectively and further requiring that each said other player in each said other player's turn of play then draw a card from the top of said undealt portion of said shuffled and combined cards in said draw pile;
- n) providing that discarding of a red ace by said first player or any said other player shall permit said discarding player to place one of said discarding player's said tokens found in said player's said set of tokens on any one of said rectangular spaces said discarding player wishes to cover;
- o) providing that any of said players beginning with the first play of the first of said other players playing directly after said first player and thereafter in turn said first player may, discard a black ace that shall permit that discarding player to remove any opponent's token from the one of said rectangular spaces where that opponent's said token is to be found and require said discarding player to then in the same turn replace said removed token with a token of said discarding player on said one of said rectangular spaces;
- p) proceeding to play until said first player or one of said other players will have been the first to cover five of said imprinted rectangular spaces or four of said imprinted rectangular spaces and one of said free spaces in order to form on said game board a first shape in the form of the letter Z and then cover five more of said imprinted rectangular spaces or four more of said imprinted rectangular spaces and one more of said free spaces to form on said same board a second shape in the form of a reverse letter Z or to form in such manner instead said second shape in the form of a reverse letter Z and then in such manner said first shape in the form of the letter Z and thereby win the game;
- q) providing that, if after all cards in said draw pile have been drawn by all players of the game during the course of play and if, in such event, no player has been able by then to so form said first shape in the form of the letter Z and then so form said second shape in the form of a reverse letter Z or to so form said first shape in the form of the letter Z, then all cards previously discarded by all players are gathered up, shuffled and combined into a new draw pile with play then continuing, and, if need be, new discards further regathered, shuffled and combined into newer draw piles with play still continuing until, at last, a player wins the game;
- r) providing further that no player may place a token on any said rectangular board space occupied by any other player's token unless said other player's said token will have

- first been removed therefrom by virtue of the playing of a black ace;
- s) providing finally that if said first player or any said other player draws a card from any said new draw pile for which there is no unoccupied corresponding said rectangular board space, that then said first player or any other said player may discard said drawn card and redraw from said new draw pile until drawing a card for and with respect to which there is a corresponding unoccupied said rectangular board space.

5,377,993
WAGERING GAME
 Ronald H. Josephs, 4122 Clarinda Dr., Tarzana, Calif. 91356
 Filed Mar. 4, 1994, Ser. No. 217,415
 Int. Cl.⁶ A63F 1/00
 U.S. Cl. 273—292 18 Claims



1. A method for a player and a dealer to play a modified version of the game of Twenty-One with playing cards, comprising the steps of:

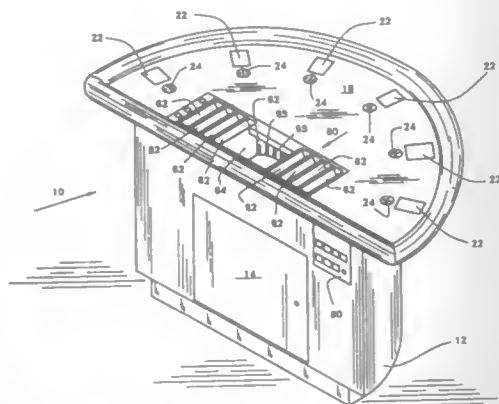
- said player placing a first wager;
- distributing two initial cards to said player and two initial cards to said dealer in accordance with conventional Twenty-One play;
- providing, only to said dealer, additional cards if required in accordance with conventional Twenty-One play;
- determining a winner or a push in accordance with conventional Twenty-One play;
- forming, if said player is said winner, a combined poker hand of the player's initial cards and predetermined ones of the dealer's cards;
- comparing, if said player is said winner, said combined poker hand with a set of predetermined poker hands;
- disbursing, if said player is said winner and said combined poker hand is not one of said poker hand set, a payoff to said player in accordance with conventional Twenty-One play; and
- disbursing, if said player is said winner and said combined poker hand is one of said poker hand set, a payoff to said player in accordance with a predetermined poker hand payoff schedule.

5,377,994
GAMING TABLE APPARATUS
 Daniel A. Jones, Las Vegas, Nev., assignor to D&D Gaming Patents, Inc., Pompano Beach, Fla.
 Filed Dec. 30, 1991, Ser. No. 814,712
 Int. Cl.⁶ A63F 9/00

U.S. Cl. 273—309 16 Claims

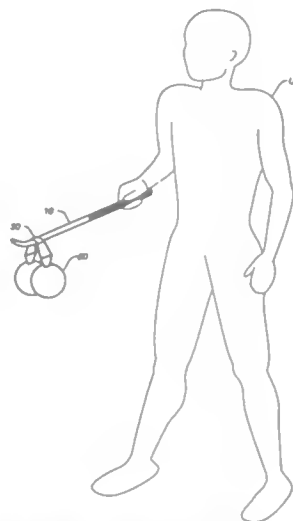
1. A gaming table apparatus comprising:
 - a) a gaming table including at least one player location provided on the surface of the table,
 - b) each player location including a coin head having a coin slot therein,
 - c) a coin bin mounted in the gaming table, the coin bin

comprising a generally hollow body having walls extending below the surface of the gaming table, and



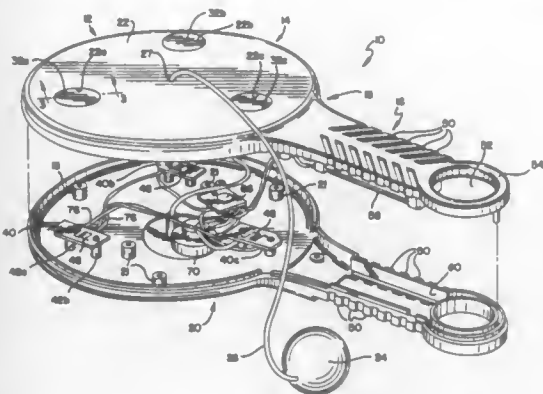
(d) a coin chute extending from the coin slot to the coin bin whereby coins placed in the coin slot roll down the coin chute and into the coin bin for access by a dealer whenever the coin supply for the gaming table runs low.

5,377,995
GAME APPARATUS
Nattkemper L. Clark, 5555 Montgomery Dr. #G104, Santa Rosa, Calif. 95409
Filed Feb. 17, 1994, Ser. No. 197,889
Int. Cl.⁶ A63B 65/00
U.S. Cl. 273-327 10 Claims



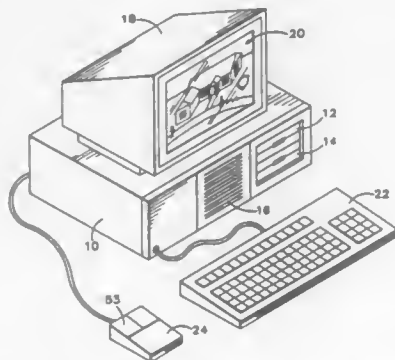
1. A game apparatus comprising:
a dual-bodied missile member consisting of two body elements connected to each other by a flexible strap portion comprising a bi-tapered, symmetrical strap member with a generally narrow center portion, expanding to a pair of generally wider medial portions, and then tapering to a pair of generally narrow distal portions, and ending in terminal portions which are connected to each of said missile bodies; and
a tossing/catching implement to launch and receive said missile.

5,377,996
ELECTRONIC PADDLE GAME DEVICE
Thomas S. Shure, Chicago, Ill., assignor to Shure Products Inc., Chicago, Ill.
Filed May 20, 1993, Ser. No. 64,959
Int. Cl.⁶ A63B 67/20
U.S. Cl. 273-330 25 Claims



1. An electronic paddle game device comprising, in combination,
a hand-holdable paddle having a generally circular paddle portion defining a pair of opposite outwardly facing substantially rigid striking surfaces, and having a handle portion fixed to said paddle portion for enabling said paddle to be manipulated to impact an object with said striking surface;
impact sensing means cooperative with one or more discrete areas on at least one of said striking surfaces less than the full area thereof for sensing an impact between said discrete areas of said striking surface and said object;
electronic means carried within said paddle and coupled to said impact sensing means for electronically generating an audible output signal when said impact sensing means senses an impact with a discrete area by said object; and
sound transducing means responsive to said audible output signal for outputting an audible sound.

5,377,997
METHOD AND APPARATUS FOR RELATING MESSAGES AND ACTIONS IN INTERACTIVE COMPUTER GAMES
Mark A. Wilden, Oakhurst; Jonathan M. Hood, Coarsegold; Brian K. Hughes, Oakhurst; Jane S. Jensen, Oakhurst; Larry L. Scott, Oakhurst, and Christopher F. Smith, Oakhurst, all of Calif., assignors to Sierra On-Line, Inc., Oakhurst, Calif.
Filed Sep. 22, 1992, Ser. No. 950,084
Int. Cl.⁶ G09B 19/04; G11B 31/00
U.S. Cl. 273-434 17 Claims



1. A method of implementing an interactive computer game designed for play on a computer system having a display

screen, an input device, and a cursor displayed on the display screen and controlled at least in part by the input device, the method comprising:

providing memory accessible by the computer system, where the memory includes a code file and a message file that is separate from the code file;

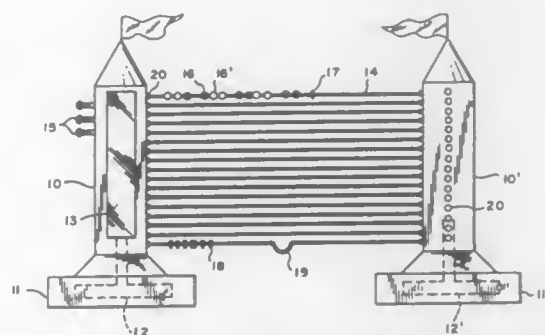
storing, in the code file, software code which defines the play of the game, which causes objects to be displayed graphically on the display screen, which defines operations a game player may perform during the game, and which allows the game player to perform a predefined action in the game by selecting an operation, positioning the cursor adjacent an object on the display screen and then inputting a predetermined signal through the user input device to perform the selected operation on the object;

storing, in the message file, a message to be communicated to the game player at the occurrence of the predefined action in the game, where the message communicates information concerning the object associated with the predefined action;

assigning an identifier to the message to distinguish the message from other messages and to relate the message to the predefined action by incorporation of the assigned identifier in the software code; and

retrieving the message from the message file and communicating the message to the game player at the occurrence of the predefined action in the game by retrieving and communicating the message to which the identifier incorporated in the code is assigned.

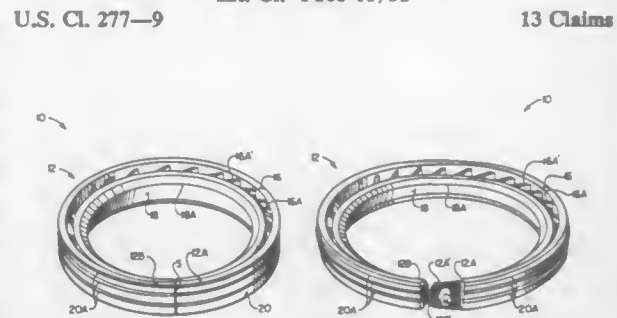
5,377,998
MACHINE TO TRACK GAME EFFECTS
Joshua Schainbaum, 102 E. Pine St., Wenonah, N.J. 08090
Filed Aug. 17, 1993, Ser. No. 107,194
Int. Cl.⁶ A63F 9/00
U.S. Cl. 273-459 17 Claims



1. A device for tracking a fantasy roll playing board game, comprising:

a plurality of towers adapted to support a plurality of straight crossbars therebetween,
a plurality of beads slidably arranged on said crossbars, said beads being of at least two different colors and being arranged in pairs on said crossbars,
said plurality of crossbars including a crossbar having a plurality of disks of at least two colors, said disks being arranged in groups of five,
said beads being used to track duration of game effects on individual game entities, and said disks being used to track overall game duration.

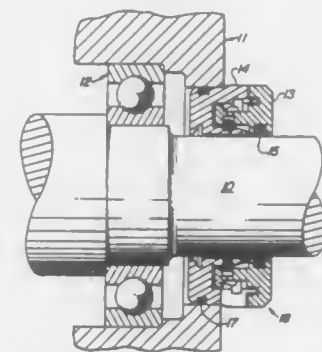
5,377,999
GUILDED SPLIT PACKING RING
G. W. Gorman, Midlothian, Tex., assignor to Gorman Company, Inc., Cedar Hill, Tex.
Filed Oct. 20, 1992, Ser. No. 963,920
Int. Cl.⁶ F16J 15/32 13 Claims



1. In combination a fluid seal device and an annular space between an internal surface of a cylinder and a member having an outer cylindrical surface disposed therewithin wherein said fluid seal device comprises an annular body having an inner side and an outer side, each carrying at least one sealing lip, a closed end face, and an at least partially open end face; the improvement wherein said annular body includes a joint for opening and closing said body to facilitate replacement in said cylinder annular space, said joint comprising:

(a) a split in the circumference of said annular body comprising a first end and a second end wherein said first end defines a nose and said second end defines a cavity for matingly receiving said nose therein; and
(b) said annular body further defining a radially enlarged outside diameter relative to said cylinder annular space which is sufficient to urge said first end and said second end together into sealing engagement when said annular body is positioned in said cylinder annular space.

5,378,000
SHAFT SEAL ASSEMBLY
David C. Orlowski, Milan, Ill., assignor to Inpro Companies, Inc., Rock Island, Ill.
Filed Oct. 19, 1992, Ser. No. 962,946
Int. Cl.⁶ F16J 15/447 12 Claims



1. A bearing isolator for sealing a rotating shaft exiting a housing comprising:

a housing;
a shaft extending through said housing; an annular stator member, said stator member includes means for affixing said stator to said housing;
said stator member having a radial cavity in the surface face parallel to said shaft;
an annular rotor member, said rotor member rotatively connected to said shaft and having a radial cavity in the surface face parallel to said shaft;

- e. said rectangular cavity in said stator is of different dimensions than the rectangular cavity in said rotor;
- f. a solid resilient annular elastomeric sealing member;
- g. The width of said rotor cavity shall be slightly less than the diametric cross-section of said elastomeric sealing member;
- h. said parallel surface faces overlapping with said cavities aligned and juxtaposed to form a single cavity;
- i. said solid resilient annular sealing member substantially occupying said single cavity to seal the housing interior from the environment external said housing.

5,378,001

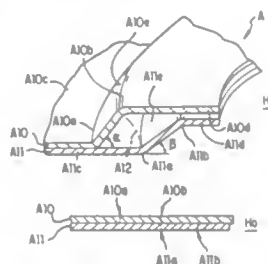
METAL LAMINATE GASKET WITH HALF BEADS
Yoshio Miyaoh, Tokyo, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,221

Claims priority, application Japan, Feb. 18, 1992, 4-006502[U]
Int. Cl.⁶ F16J 15/08

U.S. Cl. 277—235 B

9 Claims



1. A metal laminate gasket for an engine part having at least one hole to be sealed, comprising:

- a first metal plate including a first hole corresponding to the hole of the engine part, a first outer bending line surrounding the first hole, a first inner bending line surrounding the first hole and located inside the first outer bending line, a first inner portion situated inside the first inner bending line, a first outer portion situated outside the first outer bending line, and a first inclined wall situated between the first outer bending line and the first inner bending line and inclined relative to the first inner and outer portions so that the first inner and outer portions extend substantially parallel to each other without overlapping with each other, and

- a second metal plate situated under the first metal plate, said second metal plate including a second hole corresponding to the hole of the engine part, a second outer bending line surrounding the second hole, a second inner bending line surrounding the second hole and located inside the second outer bending line, said second outer and inner bending lines being located closer to the hole of the engine part relative to the first inner bending line when the first and second metal plates are assembled together, a second inner portion situated inside the second inner bending line, a second outer portion situated outside the second outer bending line, and a second inclined wall situated between the second outer bending line and the second inner bending line and inclined relative to the second inner and outer portions so that the second inner and outer portions extend parallel to each other without overlapping with each other, said second outer bending line being located to substantially overlap the first inner bending line when the first and second metal plates are compressed so that surface pressures at the first inner bending line and the second outer bending are directed in opposite directions at a position equally spaced from the hole of the engine part and wide surface pressure is formed between the first outer bending line and the second inner bending line when the first and second metal plates are compressed.

5,378,002

SELF-TIGHTENING DRILL CHUCK

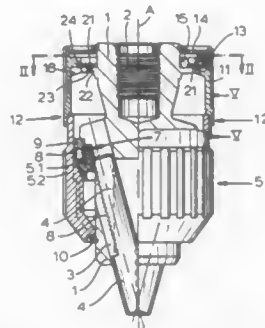
Günter H. Röhm, Heinrich-Röhm-Strasse 50, 89567 Sontheim, Germany

Filed Nov. 16, 1993, Ser. No. 153,441

Claims priority, application Germany, Nov. 16, 1992, 4238465
Int. Cl.⁶ B23B 31/12

U.S. Cl. 279—62

13 Claims



1. A self-tightening drill chuck comprising:
a chuck body centered on and rotatable about an axis;
an adjustment body rotatable but axially not displaceable on the chuck body;
a plurality of jaws radially displaceable on one of the bodies and each formed with a row of teeth, the other body being formed with a screwthread meshing with the jaw teeth, whereby rotation of the one body relative to the other body in a tightening direction moves the jaws together and rotation in the opposite direction moves the jaws apart;
a radially outwardly projecting tab fixed on the chuck body having a pair of angularly oppositely directed front and back end faces spaced angularly apart by a predetermined tab width;
a locking ring axially displaceable on the chuck body between a freeing position and a locking position and formed with a radially inwardly open pocket receiving the tab and having a pair of angularly confronting front and back end faces engageable with the respective end faces of the tab and spaced angularly apart by a distance substantially greater than the tab width, whereby the tab can move angularly in the pocket;
a tightening spring connected between the locking ring and chuck body urging the locking ring rotationally on the body in the tightening direction;
axially interengageable coupling formations on the locking ring and adjustment body rotationally coupling the locking ring to the adjustment body in the locking position of the locking ring and permitting relative rotation of the locking ring and adjustment body in the freeing position of the locking ring; and
at least one locking spring braced between the chuck body and the locking ring urging the locking ring into the locking position.

5,378,003

MECHANIC'S CREEPER

Wayne D. Burd, High Ridge, and Charles D. Mills, St. Louis, both of Mo., assignors to Koller Enterprises, Inc., Fenton, Mo.

Filed May 20, 1993, Ser. No. 64,419

Int. Cl.⁶ B25H 5/00

U.S. Cl. 280—32.6

9 Claims

1. A creeper for supporting the body of a worker and facilitating movement of the worker under and around an object such as an automobile, the creeper comprising:
a platform having a top surface and an underside;
four corner casters mounted on the underside of said platform for spacing the platform above a generally flat horizontal floor and for facilitating rolling of the platform on the floor, said casters being so spaced with respect to said platform that lines connecting adjacent casters define a quadrangle with a corresponding caster at each corner of the quadrangle;
a fifth caster mounted on the underside of said platform within a central portion of said quadrangle;
said corner casters and fifth caster being adapted for simultaneously contacting the floor and supporting the platform

zontal floor and for facilitating rolling of the platform on the floor, said casters being so spaced with respect to said platform that lines connecting adjacent casters define a quadrangle with a corresponding caster at each corner of the quadrangle;

- a fifth caster mounted on the underside of said platform within a central portion of said quadrangle;
said corner casters and fifth caster being adapted for simultaneously contacting the floor and supporting the platform



when the worker rests upon the top surface of the platform; and

- said platform being resiliently flexible and adapted, upon accepting the weight of a person, to flex from a relaxed position in which an intermediate region of the platform between opposite ends of the platform is spaced a first distance above the floor, to a flexed position in which the platform bows downwardly and the intermediate region is spaced a second distance above the floor less than said first distance.

5,378,004

DEVICE FOR REMOVING BRAKE DRUM AND HUB ASSEMBLY

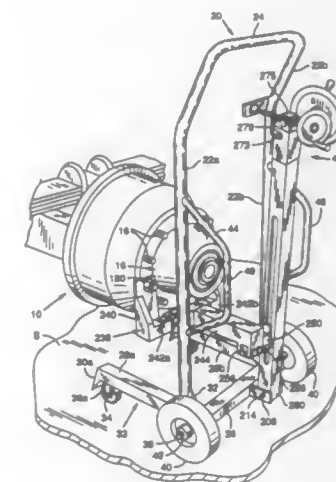
Danny E. Gunlock, Helena; C. Craig Rawlings, and Ed J. McGee, both of Missoula, all of Mont., assignors to The Prodx Company, Missoula, Mont.

Filed Feb. 1, 1993, Ser. No. 12,294

Int. Cl.⁶ B62B 3/02

U.S. Cl. 280—47.2

27 Claims



1. A device for attaching to and carrying a brake drum and/or hub assembly of a vehicle, comprising:
an elongated handle portion extending away from a support base, the elongated handle portion defining the longitudinal axis of the device;
an attachment member which is adjustable to conform to brake drum and hub assemblies having various dimensions, number of studs and spacing between studs and is capable of securely attaching thereto; and
a lifting device, mounted on the device, that moves the attachment unit towards and away from the base along the longitudinal axis.

5,378,005

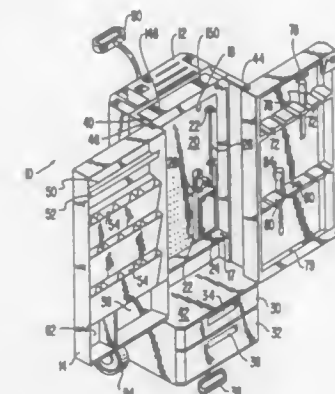
PORTABLE TOOL TRUCK WITH DIVERSE TOOL ORGANIZATIONAL CAPABILITY

George W. Norton, 306 Dennis Ave., Silver Spring, Md. 20901
Filed Oct. 9, 1992, Ser. No. 959,099

Int. Cl.⁶ B62B 1/04

U.S. Cl. 280—47.26

4 Claims



1. A portable tool truck for transporting a variety of tools in an organized manner such tool truck comprising:

- a) a body including a front and a back, a top, a bottom, and spaced side walls,
b) said body being formed as a unitary molding of durable, impact resistant plastic,
c) a ledge extending toward the front of said body, but spaced above, and parallel to, the bottom of said body,
d) a chamber situated between said ledge and the top of said body, and adapted to receive tools therein,
e) a first door and a second door, said doors being equal in size,
f) first mounting means defined between said first door and one side of said body for securing said first door for pivotal movement relative to said body,
g) second mounting means defined between said second door and the opposite side of said body for securing said second door for pivotal movement relative to said body,
h) said second door, when pivoted to its closed position, overlapping said first door and said compartment,
i) said portable tool truck further including a forwardly extending base, said base being defined vertically between said ledge and said bottom and being defined horizontally between said spaced side walls,
j) said base having recesses defined therein, and
k) drawers are slidable within said recesses.

5,378,006

SLIDER SUSPENSION FOR SEMI-TRAILERS

John W. Stuart, Springfield, and Donald D. Critten, Gallatin, both of Mo., assignors to Reyco Industries, Inc., Springfield, Mo.

Filed Jul. 21, 1993, Ser. No. 94,219

Int. Cl.⁶ B62D 53/06

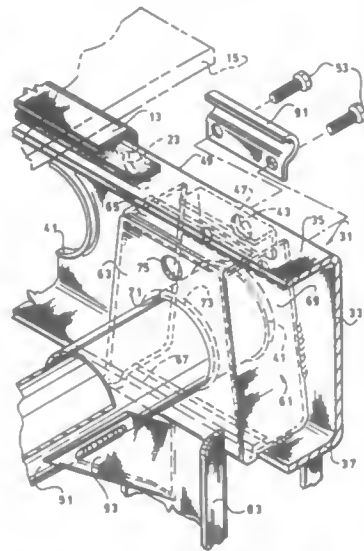
U.S. Cl. 280—149.2

4 Claims

1. A slider frame adapted to be slidably mounted on a semi-trailer having a pair of transversely spaced longitudinally extending body rails on the underside thereof, said slider frame including:

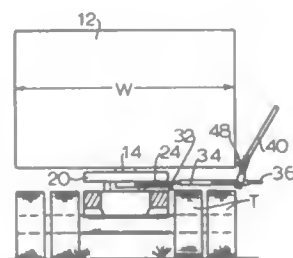
- a pair of longitudinally extending side rails of C-channel shape,
suspension hangers fastened to said C-channel rails,
a reinforcing pan mounted in said C-channel rail above each suspension hanger,

each reinforcing pan having at least one side wall located inside said C-channel rail,



tubular cross members extending between said side rails and attached to said reinforcing pans and said side rails, and means to removably lock said slider frame to said body rails.

5,378,007
TRAILER HITCH UNCOUPLING APPARATUS AND METHOD OF USE
Ronald W. Joyce, Mt. Airy, N.C., assignor to R. H. J. of Mt. Airy, Inc., Mt. Airy, N.C.
Continuation-in-part of Ser. No. 65,181, May 20, 1993, abandoned. This application Nov. 12, 1993, Ser. No. 151,526
Int. Cl.⁶ B62D 53/06
U.S. Cl. 280—433 7 Claims



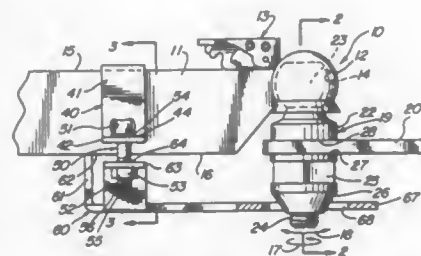
1. A trailer hitch uncoupling apparatus adapted for use by a standing operator for uncoupling a tractor-trailer hitch assembly having an adjustably positionable tractor mounted notched coupling plate for receiving a coupling pin of a trailer by said hitch assembly and having an elongated hitch release handle extending between an inner end connected to a coupling pin latch member and an outer end positioned below and substantially within the width of the trailer, said trailer having opposed side surfaces and said uncoupling apparatus comprising:

- (a) an integral elongated horizontally positioned bar member extending between a bar member inner end formed for being releasably connected to the outer end of said release handle and a bar member outer end and adapted to reside at a level below a lower horizontal bottom edge of and proximate a selected side surface of said trailer when said bar member inner end is releasably connected to the outer end of said release handle;
- (b) an elongated first class lever having a lower end portion adjacent to and pivotally connected to said bar member outer end, a pivot portion adjacent to and integral with said lower end portion and adapted to bear against said

selected side surface of said trailer to serve as a fulcrum for said lever and an upper end portion adjacent to and integral with said pivot portion whereby when said bar member inner end is releasably connected to said release handle outer end, said lever is pivotable about said pivot portion bearing against the selected side surface to pull said release handle and thereby release the coupling pin latch member without requiring operator entry below the trailer;

- (c) said bar member having means enabling the location of the connection between said bar member and said lever to be shifted to adjust the length of said bar member between said connection and said bar member inner end; and
- (d) wherein said pivot portion resides in a position adjacent a straight line between said lower and upper end portions of said lever.

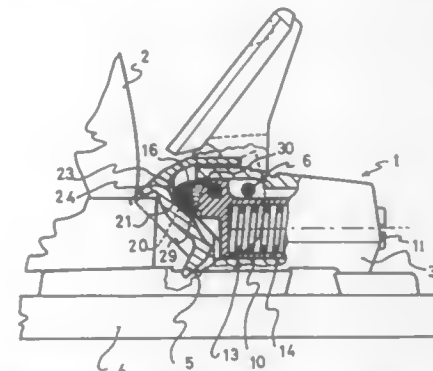
5,378,008
TRAILER TONGUE LOCKING DEVICE HAVING THEFT PREVENTION FEATURE
Gurdon A. McCrossen, 9828 S. 230th E. Ave., Broken Arrow, Okla. 74014
Filed Mar. 19, 1993, Ser. No. 34,682
Int. Cl.⁶ B60D 1/06
U.S. Cl. 280—507 9 Claims



1. For use in coupling a towing vehicle to a trailer having a tongue supporting a ball socket, a trailer locking device comprising:

- a first member defining a generally planar portion having an elongated slot therein and a spacer flange extending upwardly to said trailer tongue;
- attachment means for securing said first member to said trailer tongue such that said elongated slot is positioned beneath, spaced from and aligned with said ball socket, said attachment means including a second member coupled to the upper surface of said tongue and securing means for securing said first and second members together, said second member defining an inverted generally U-shaped portion receivable upon said trailer tongue;
- a hitch bar securable to said towing vehicle; and
- a ball member secured to said hitch bar and defining a ball portion extending upwardly above said hitch bar and a downwardly extending portion extending below said hitch bar and defining a chamfered surface having a taper which narrows in the downward direction; and
- said attachment means and said first member cooperating to secure said ball member within said ball socket and to slidably secure said downwardly extending portion within said slot to couple said trailer to said towing vehicle in a two-axis pivotal attachment, and
- said first and second members each defining a pair of outwardly extending flanges each having apertures defined therein and said securing means including a threaded fastener received within two said apertures and a locking pin received within the remaining two of said apertures.

5,378,009
SKI BINDING
Vincent Dogat, Annecy, France, assignor to Salomon S.A., Chavanod, France
PCT No. PCT/FR91/00791, § 371 Date May 17, 1993, § 102(e)
Date May 17, 1993, PCT Pub. No. WO92/08527, PCT Pub. Date May 29, 1992
PCT Filed Oct. 11, 1991, Ser. No. 66,076
Claims priority, application France, Oct. 15, 1990, 90 14342
Int. Cl.⁶ A63C 9/08
U.S. Cl. 280—630 10 Claims



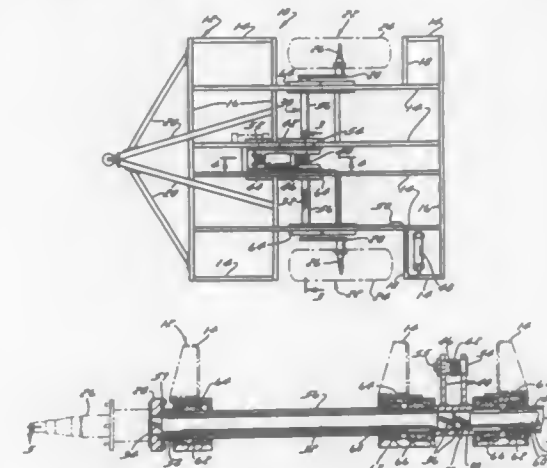
1. Alpine ski safety binding designed to hold a boot in place on a ski and to release this boot when the latter exerts excessive stress on the binding, comprising:

- a base (3, 53, 82) mounted on the ski,
- a boot-retention device (5, 55, 86) for holding the boot in position which is movable in relation to said base (3, 53, 82) between a boot-retention position in which said device holds the boot on the ski and a release position in which said device release the boot,

spring means (10, 60, 87) designed to generate an elastic return force drawing said boot retention device (5, 55, 86) back toward its boot-retention position, said force being variable as a function of the distance separating the position of the boot-retention device from its boot-retention position, and

linkage means between said boot-retention device and said spring means, which imposes stress on said spring means (10, 60, 87) in accordance with the movements and the position of said boot-retention device (5, 55, 86) and which retransmit back to said boot-retention device said elastic return force generated by said spring means, wherein said linkage means comprise a movable pressure element (13, 37, 63, 90) drawn elastically back by said spring means (10, 60, 87) against a support which is movable in relation to said pressure element in accordance with the movements of the boot-retention device; said pressure element (13, 37, 63, 90) incorporates a head equipped with two pressure tips (20/21, 40/41, 72/71, 92/93); said support of said pressure element is an assembly incorporating two rolling surfaces (24/23, 44/45, 74/73, 94/95); each pressure tip being positioned opposite a rolling surface so as to form two distinct linkage elements between said spring means and said boot-retention device, and components of one of said assembly incorporating said rolling surfaces and said pressure tips (20/21, 40/41, 72/71, 92/93) are integrally connected to each other, while components of the other one of said assembly incorporating said rolling surfaces and said pressure tips are movable in relation to each other and connected by dynamic damping means (30, 42, 63, 98-99), whereby, in the event the boot is subjected to a violent stress, one of the linkage elements becomes functional, and, in the event of a mild stress, the dynamic damping means retract and the other linkage element becomes functional.

5,378,010
SUSPENSION SYSTEM FOR TRAILER
Robert L. Marino; Donald J. Burns, both of Bradenton, Fla., and Leo Davis, Richardson, Tex., assignors to Oshkosh Truck Corporation, Oshkosh, Wis.
Filed Sep. 23, 1992, Ser. No. 950,419
Int. Cl.⁶ B60G 11/60
U.S. Cl. 280—723 14 Claims



1. A suspension system used in improving quality of ride and roll stability for a vehicle having a support frame subjected to various loads, said suspension system comprising:

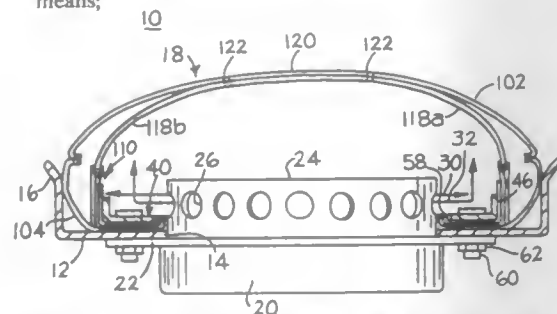
- a set of wheel assemblies in opposed relationship for rolling support of a vehicle, each including an axle;
- a swing arm attached to each of said wheel assemblies;
- a torsion bar assembly interconnecting said swing arms;
- a pair of sleeves supported about said torsion bar assembly;
- a shock absorbing device disposed between said support frame and said torsion bar assembly and connected to a collar intermediate said pair of sleeves;
- a first set of bearings operatively associated with an outer end of each sleeve in proximity to each swing arm;
- a second set of bearings independent from said first set of bearings and operatively associated with an inner end of each sleeve and disposed at a spaced distance from said first set of bearings;
- a third set of bearings operatively associated with said collar intermediate said pair of sleeves;
- whereby a load imposed on one of said wheel assemblies will transmit a torque to one portion of said torsion bar assembly, which torque is resisted by said shock absorbing and dampening device and another portion of said torsion bar assembly; said wheel load further transmitting a bending moment to said sleeves, which moment is resisted by said sleeves, the resulting effect being a balance between quality of ride and roll stability.

5,378,011
AIR BAG ASSEMBLY
William E. Rogerson, Rochester Hills, and Daniel F. Kopitzke, Rochester, both of Mich., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Continuation of Ser. No. 783,295, Oct. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 708,556, May 31, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 87,913
Int. Cl.⁶ B60R 21/16
U.S. Cl. 280—728 R 1 Claim

1. An air bag assembly comprising:

- an upper panel (102) and a lower panel (104) both of woven material sewn together forming an air bag having generally circular structure, the lower panel including a first central opening (34);
- tether means (116, 118a, 118b, 130a, 130b) of the same mate-

rial as one of the upper and lower panels for controlling the shape of the air bag as same is inflated by inflation gas and for absorbing a shock load created upon inflation, the tether means comprising a central portion (116) secured to the upper panel and only two tethers (118a, 118b) extending oppositely therefrom, the central portion and tethers being of integral construction, and being of sufficient strength such that each tether can separately withstand a shock load created during inflation without being damaged, and reinforcement means (130a, 130b) secured to the lower panel (104) and to respective ends of the each tether (118a, 118b) remote from the center portion for securing the ends of each tether relative to the lower panel, wherein the upper panel (102) is coated on one side to reduce gas permeability and wherein the tether means is fabricated of the same material as the upper panel also being coated on one side thereof, and wherein the coated sides of the upper panel and tether means are in facing relationship and wherein the center portion (116) is secured to the upper panel (102) by sewing with stitches extending from an outer uncoated surface of the upper panel through the facing coated sides and an uncoated surface of the tether means;



wherein the reinforcement means (130a, b) comprises a plurality of oblong shaped reinforcement panels of the same material as one of the upper and lower panels and arranged in a facing relationship; wherein the reinforcement means are rectangular in shape and wherein ends of each tether are sandwiched and secured between corresponding ends of two facing reinforcement panels; a retaining ring (40) inserted into the air bag (18) and including a second central opening (44) of diameter greater than the diameter of the first central opening (34) a gas generator (20) inserted into the air bag through the first and second central openings (34, 44) and secured relative to a housing member (12), the material of the air bag proximate the first central opening (34) contacting the exterior of the gas generator (20) to form a gas seal (58) to reduce leakage of inflation gas; wherein the retaining ring is square shaped having a curved transition surface between a bottom and each side of the retaining ring and wherein each of the two tethers extend outwardly perpendicular to opposite sides of the retaining ring (40) and are uniformly positioned relative to the sides and upon inflation of the air bag each of the two tethers envelopes a corresponding curved transition surface and side of the retaining ring.

5,378,012

LID STRUCTURE OF AIR BAG SYSTEM

Kazuhiro Seiki; Yukihiro Yamaguchi, and Minoru Kanda, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 651,834, Feb. 7, 1991, abandoned. This application Jul. 9, 1992, Ser. No. 912,132

Claims priority, application Japan, Feb. 9, 1990, 2-12123[U] Int. Cl.⁶ B60R 21/22, 21/20

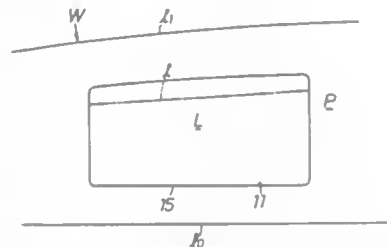
U.S. Cl. 280—728 B

8 Claims

1. A lid structure in an air bag system in which an air bag

stored in an instrument panel is expanded and spread between a top surface of the instrument panel and a front windshield inclined relative to the width of the vehicle upon colliding of a vehicle, said lid structure comprising:

- a lid mounted on the top surface of the instrument panel;
- a lid-turning center line provided at a front edge side of the lid; and



a rear edge side of the lid provided with a free end which is to abut against the front windshield when the lid is opened, a relative position, in a longitudinal direction of the vehicle, of the lid-turning center line and the free end being determined so that the lid-turning center line and the free end are not parallel to each other in a widthwise direction of the vehicle so as to bring the free end into abutment against the front windshield substantially concurrently along a widthwise entire length of the free end.

5,378,013

COVER RETAINER ASSEMBLY FOR INFLATABLE RESTRAINT AIR BAG

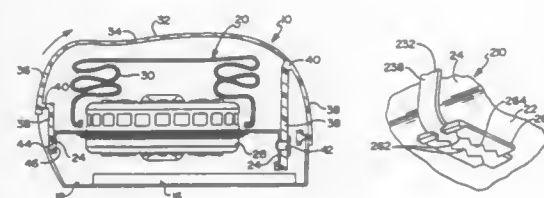
Larry R. Warner, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1993, Ser. No. 102,921

Int. Cl.⁶ B60R 21/20

U.S. Cl. 280—728 B

4 Claims



3. A cover retainer assembly comprising: a support member having a cavity; a reaction member disposed within said cavity and secured to said support member; an air bag disposed within said cavity and operatively connected to said reaction member; a cover member closing said cavity and having opposed first and second edges; means for fixedly securing said first edge of said cover member to said reaction member; and a jaw member attached to said reaction member and having a plurality of teeth spaced longitudinally and extending laterally inwardly on opposed sides to form channel, said second edge being disposed longitudinally in said channel for releasably retaining said second edge of said cover member to said reaction member to allow said cover member to swing open toward said first edge upon deployment of said air bag.

5,378,014

DUAL DOOR ARRANGEMENT FOR AIR BAG DEPLOYMENT

Robert Cooper, Oshawa, Canada, assignor to Davidson Textron Inc., Dover, N.H.

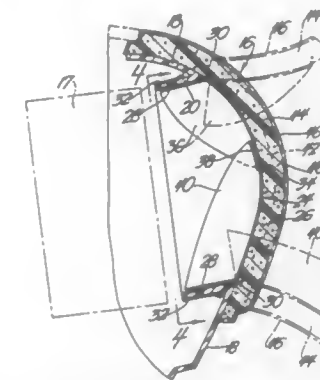
Continuation of Ser. No. 975,724, Nov. 13, 1992, abandoned.

This application Dec. 1, 1993, Ser. No. 159,957

Int. Cl.⁶ B60R 21/22

U.S. Cl. 280—728 B

24 Claims



1. A dual door arrangement for providing an opening in a decorative panel for the deployment of an air bag that is covered by the decorative panel comprising: a frame that is adapted for securement between a deflated air bag and a decorative panel covering the deflated air bag and that defines a generally rectangular opening for deployment of the air bag, the frame having spaced sides opposite each other that project inwardly toward the deflated air bag, a first metal door of one piece construction having a closure portion, a portion for attaching the first metal door to one side of the frame, and a portion that acts as a hinge for swinging the closure portion from a closed position behind the decorative panel to an open position extending through the decorative panel, a second metal door of one piece construction having a closure portion, a portion for attaching the second metal door to an opposite side of the frame, and a portion that acts as a hinge for swinging the closure portion of the second metal door from a closed position behind the decorative panel to an open position extending through the decorative panel, the second metal door having a depressed shelf at an end margin of its closure portion that is remote from the opposite side of the frame, the depressed shelf underlying an end margin of the closure portion of the first metal door that is remote from the one side of the frame for stabilizing the metal doors in the closed position.

5,378,015

INFLATABLE RESTRAINT SYSTEM INFLATOR EMISSION TREATMENT

Linda M. Rink, Liberty; William G. Lowe, Ogden, and Daniel R. Leininger, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed May 24, 1993, Ser. No. 66,809

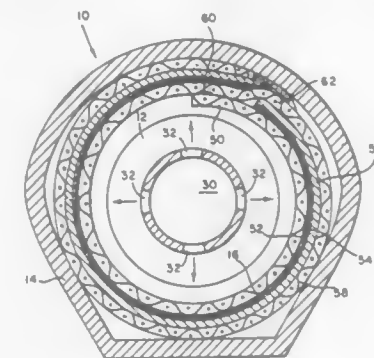
Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—736

19 Claims

1. An inflator module assembly comprising: a module diffuser housing; an inflator housed within said housing, said inflator, upon actuation, emitting gas from one lateral side or end thereof, and a multi-layer filter assembly mounted within said housing external the side or end of the inflator from which gas is emitted, said filter assembly being effective for treating the gaseous emission including: a) filtering therefrom

particulate having a size of at least about 0.4 to about 3 microns in diameter and b) redirecting the gaseous emis-



sion within said module diffuser housing, in an axial direction.

5,378,016

CONNECTING ELEMENT FOR CONDUIT SEGMENTS THROUGH WHICH HOT FLUE GAS CAN FLOW

Wolfgang Vollmer, Erlangen, and Werner Kraupa, Fuerth, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

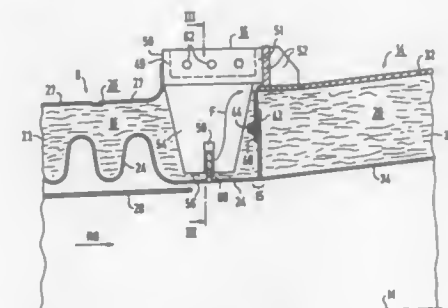
Filed Aug. 18, 1993, Ser. No. 108,387

Claims priority, application Germany, Jun. 9, 1993, 9310270[U]

Int. Cl.⁵ F16L 27/00, 51/00

U.S. Cl. 285—47

8 Claims

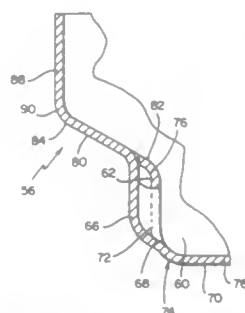


1. In a conduit assembly including: an outwardly insulated first conduit segment having a supporting inner casing; and an inwardly insulated second conduit segment having a supporting outer casing being radially outwardly offset from the supporting inner casing of the first conduit segment, the supporting casings each having a flange-like structure and being joined together in a connection region between the conduit segments, a connecting element for the conduit segments, comprising: a shaped element surrounding the first conduit segment and being firmly joined to the supporting outer casing of the second conduit segment, said shaped element having a plurality of radially extending ribs with free ends being form lockingly joined to the supporting inner casing of the first conduit segment.

5,378,017
AUTO IGNITION IN GAS GENERATOR
 David W. Lindsey, Ogden, and Kurt E. Kottke, Bountiful, both of Utah, assignors to Morton International, Inc., Chicago, Ill.
 Filed Jun. 11, 1993, Ser. No. 76,618
 Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—736

20 Claims



1. A gas generator auto ignition enclosure adapted for holding an auto ignition material in an auto ignition device adapted for use in a gas generator that employs solid fuel gas generant material to effect inflation of a protective bag to cushion a passenger from impact with the structure of a vehicle in the event of a crash, which gas generator includes a tubular housing having an elongated chamber therein containing the solid fuel gas generant material and aperture means therein for directing generated gases to the protective bag, said enclosure comprising:

a retention cup with an inside adapted for holding at least one auto ignition material and an outside having at least five spaced ribs adapted for press fit insertion of the device within the gas generator whereupon at least one of said ribs undergoes deformation resulting in retention of the device within the gas generator and thermal contact between the device and the housing to result in the solid fuel gas generant igniting and the gas generator functioning when the device is first subjected to a predetermined high temperature below the ignition temperature of the solid fuel gas generant, said retention cup including an axially extending side wall, an end wall which extends inwardly from one end of said side wall at least partially to close one end of said retention cup, and a bendable flange which extends outwardly from an end of said side wall opposite from said one end, and surface means for defining a plurality of openings through which hot gas and particulate from the auto ignition material flow outwardly from said cup, said surface means being securable in said enclosure by means of said bendable flange.

5,378,018
PROCESS FOR INFLATING A GAS CUSHION AND SAFETY SYSTEM OF THE AIR BAG TYPE
 Dieter Ketterer, deceased, Oberndorf am Neckar; Ketterer Brigitte, Schlehenweg 1, 7238 Oberndorf am Neckar; Raimund Fritz, Raichsbergweg 2, 7218 Trossingen; Heinz Seeger, Gartenstrasse 19, 7204 Schopfloch; Ralf Conzelmann, Schumarkplatz 3, 7238 Oberndorf am Neckar; Michael Schumacher, Ob der Sulzhaide 18, 7238 Oberndorf am Neckar, and Tilo Moeller, Ob der Sulzhaide 24, 7238 Oberndorf am Neckar, all of Germany

PCT No. PCT/EP91/00166, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO91/11347, PCT Pub. Date Aug. 8, 1991

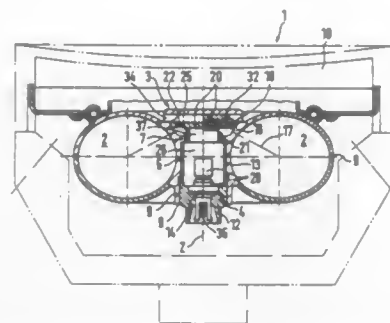
PCT Filed Jan. 29, 1991, Ser. No. 768,914
 Claims priority, application Germany, Jan. 30, 1990, 4002662
 Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—737

29 Claims

1. Method for rapid inflation of at least one gas cushion in an air bag safety system, comprising the steps of storing in reservoirs at least two pressurized gases shielded

from each other and from the outside with a rupture seal common to at least two reservoirs; releasing, upon need, the filling gases from their reservoirs;



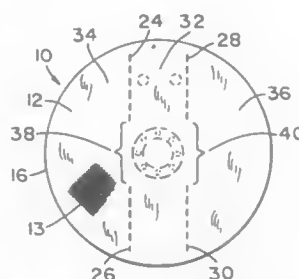
combining the filling gases essentially outside their reservoirs; inflating the gas cushion with the filling gas.

5,378,019
CONTROLLED DEPLOYMENT DRIVER'S SIDE AIR BAG
 Bradley W. Smith, Ogden, and Bradley D. Harris, Farmington, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Mar. 11, 1993, Ser. No. 29,690
 Int. Cl.⁶ B60R 21/16

U.S. Cl. 280—743 R

25 Claims



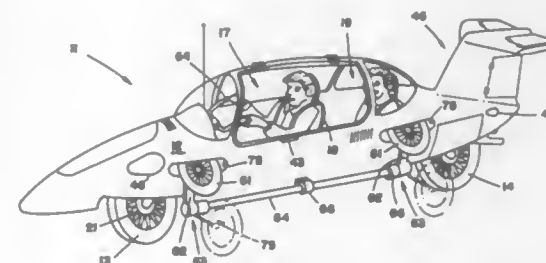
1. A vehicle air bag for inflation in the event of a crash to cushion a vehicle occupant, the air bag comprising:

- A) a rear panel defining an inlet opening adapted for attachment to a source of inflation gas;
- B) a front panel, the front and rear panels being joined together along their peripheral edges;
- C) the front and rear panels further joined together by releasable stitching deployed to provide the air bag with two substantially equally sized lateral lobes symmetrically disposed with respect to the inlet opening, each lateral lobe being defined by substantially more than one-fourth of each of the front and rear panels, said stitching further deployed to provide a passageway for direct flow of inflation gas to each of the lateral lobes upon initial gas generation and consequent deployment of the air bag, and said releasable stitching adapted to release prior to full inflation of the air bag.

5,378,020
STABILIZED HIGH SPEED BI-WHEELED VEHICLE
 Arthur Horn, 5001 Thorndale Dr., Oakland, Calif. 94611
 Continuation-in-part of Ser. No. 663,318, Mar. 1, 1991, Pat. No. 5,181,740. This application Jan. 26, 1993, Ser. No. 9,863
 The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
 Int. Cl.⁶ B60S 9/10

U.S. Cl. 280—755

13 Claims



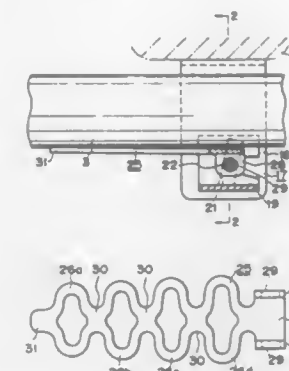
1. In a vehicle having a body defining an operator's compartment and having front and rear primary road wheels disposed in tandem relationship and situated substantially midway between opposite sides of the body and further having an engine for driving at least one of said road wheels and steering means for selectively angling said front road wheel relative to said rear road wheel, the combination comprising:

the lower regions of the opposite sides of said vehicle being convergent in the downward direction enabling sideward leaning of said vehicle during high speed turns, said vehicle having a configuration which enables sideward tilting of said vehicle into an orientation at which the vehicle has an inclination that is more horizontal than vertical, at least one pair of pivot arms each having an inner end pivoted to said vehicle for vertical pivoting movement about pivot axes that extend longitudinally relative to said vehicle, said pivot arms being at opposite sides of said vehicle, each of said pivot arms having an outer end that extends sidewardly relative to said vehicle, at least a pair of auxiliary road wheels each being carried by a separate one of said pivot arms at said outer end thereof, the axes of rotation of said auxiliary road wheels being substantially at right angles to said pivot axes of said pivot arms, said auxiliary road wheels and pivot arms being vertically movable between a lowered position at which said auxiliary road wheels ride on the underlying roadway and a raised position at which said auxiliary road wheels extend laterally outward at opposite sides of said vehicle in position to ride on said roadway when said vehicle reaches a predetermined degree of sideward tilting at which the inclination of the vehicle is more horizontal than vertical, further including interlinkage means for constraining said pivot arms to pivot synchronously in opposite directions and to undergo equal amounts of angular travel and wherein said interlinkage means includes an extendible and contractible hydraulic actuator and a pair of pivotable links each of which couples said actuator to a separate one of said pivot arms, and control means for enabling selective raising and lowering of said pivot arms by operation of said hydraulic actuator.

5,378,021
COLLAPSIBLE STEERING COLUMN APPARATUS
 Mikio Yamaguchi, Takasaki, and Takahiro Saitoh, Maebashi, both of Japan, assignors to NSK Ltd., Tokyo, Japan
 Filed Mar. 3, 1993, Ser. No. 25,752
 Claims priority, application Japan, Mar. 13, 1992, 4-21980[U]
 Int. Cl.⁶ B62D 1/11

U.S. Cl. 280—777

9 Claims

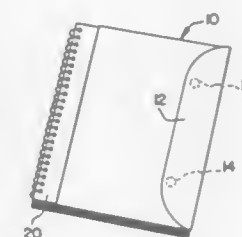


1. A collapsible steering column apparatus, comprising: a steering column capable of receiving therein a steering shaft having one end to which a steering wheel is fixed; and an energy absorbing member composed of a plastically deformable material and having a front end connected to an outer peripheral surface portion of said steering column, a rear end connected to a part fixed to a vehicle body; and an energy absorbing intermediate portion which is substantially flat and which has a laterally undulating configuration, with the lateral extent of the respective undulations relative to a front to rear axis of said energy absorbing member decreasing from said rear end toward said front end thereof.

5,378,022
POUCH FOR PAPER NOTEBOOKS
 Diana J. French, and Charlotte M. Odau, both of 2009 Linden Lake Rd., Fort Collins, Colo. 80524
 Filed Nov. 12, 1993, Ser. No. 152,188
 Int. Cl.⁶ B42D 3/00

U.S. Cl. 281—31

4 Claims



1. In combination with a notebook of the type having a cover secured at one edge to a binding, a pouch having an interior pocket and closure means for closing said pocket; wherein said pouch includes a rear face; and further comprising attachment means on said rear face detachably securing said pouch to said cover; wherein said attachment means comprises a sleeve having upper and lower edges and a side edge; wherein said pouch includes upper and lower edges and a side edge; wherein said upper edge of said sleeve is secured to said upper edge of said pouch and said lower edge of said sleeve is secured to said lower edge of said pouch, and wherein said side edge of said sleeve is secured to said side edge of said pouch.

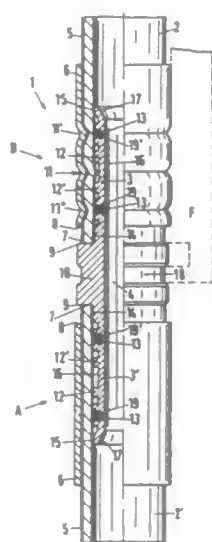
5,378,023 PIPE CONNECTION, PARTICULARLY ON COMPOSITE PIPES

Kurt Olbrich, Moersatal, Germany, assignor to Hewing GmbH, Ochtrup, Germany

PCT No. PCT/EP91/02261, § 371 Date Jul. 21, 1992, § 102(e)
Date Jul. 21, 1992, PCT Pub. No. WO92/09840, PCT Pub.
Date Jan. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 915,692
Claims priority, application Germany, Nov. 30, 1990,
9016310[U]

Int. Cl.⁶ F16L 35/00
U.S. Cl. 285—24 20 Claims



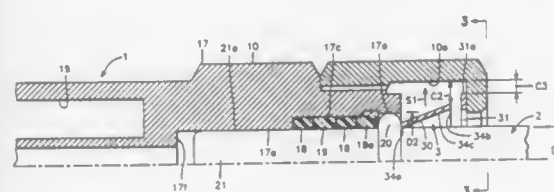
1. A pipe connection for composite pipes comprising:
 - a) a supporting sleeve extending in an axial direction and including:
 - i) a shoulder,
 - ii) at least one connection region each connection region including:
 - A) an outer end,
 - B) an external, at least essentially cylindrical working, support surface, which is defined by an inner supporting part adjoining the shoulder, an outer supporting part adjacent to the outer end of the connection region, and an intermediate part between said inner and outer supporting parts, said intermediate part having an intermediate part diameter,
 - C) main ring-shaped beads in said intermediate part, said main ring-shaped beads being separated from one, another to form an annular channel therebetween, said main ring-shaped beads having a diameter greater than said intermediate part diameter,
 - D) additional ring-shaped beads axially separated from one another in said intermediate part and having a diameter greater than said intermediate part diameter, the axially separated additional ring-shaped beads forming an accommodating groove therebetween, said additional ring-shaped beads being axially spaced from said main ring-shaped beads,
 - E) an elastomeric ring-shaped body positioned in said accommodating groove,
 - b) a plastically deformable pressure sleeve assigned to each connection region, the pressure sleeve, in a position adjacent to the shoulder, embracing an end of a pipe that is positioned on the connection region, the pressure sleeve, in a state before deformation, being constructed as a cylindrical body of constant diameter, and in a final state of the pipe connection, including ring-shaped, inwardly directed depression regions, which are axially offset, and which sealingly immobilize the pipe end by providing an undu-

lating deformation of a wall of the pipe between the supporting sleeve and the pressure sleeve, with at least one depression region of the compression sleeve being assigned to said annular channel and at least one other depression region of the compression sleeve overlying said intermediate part at a location spaced from said annular channel, whereby said pipe is captured and sealingly immobilized between said deformed pressure sleeve, and said connection region.

5,378,024
QUICK CONNECTOR
Toshihiro Kumagai, Tajimi; Hirokazu Kitamura, Kasugai; Tsutomu Kodama, Komaki, and Kazuhiro Kato, Nagoya, all of Japan, assignors to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Mar. 25, 1993, Ser. No. 38,981
Claims priority, application Japan, Mar. 25, 1992, 4-67457;
Dec. 22, 1992, 4-342808; Jan. 28, 1993, 5-012474

Int. Cl.⁶ F16L 39/00
U.S. Cl. 285—39 18 Claims



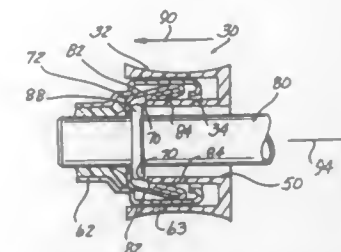
1. A quick connector comprising:
 - a tubular-shaped female member having an opened flange which is projected in the centripetal direction and installed at an open end in an axial direction, and an annular-shaped concave portion which is adjacent to and inside said opened flange and whose inner diameter is larger than that of said opened flange;
 - a tubular-shaped male member which has a ring-shaped engager projection projected in the centrifugal direction at a predetermined distance from a top end, and which is inserted into said annular-shaped concave portion through said opened flange;
 - an engager member which is supported in said annular-shaped concave portion of said female member, and having a spring elasticity for connecting said female member and said male member inserted into said annular-shaped concave portion;
 - said engager member comprising:
 - a "C"-shaped ring stopper whose diameter can be increased in said annular-shaped concave portion, and which has plural tapered walls arranged in a circumferential direction, and tapered from said opened flange to an inner side of said female member, and having smaller diameter ends having an inner diameter smaller than an outer diameter of said engager projection of said male member to engage said engager projection, and having the larger diameter ends having a diameter larger than that of said opened flange of said female member to face the inside end surface of said opened flange and which has at least one linkage wall extending in an axial direction to connect said tapered walls;
 - a regulator which is lined with said stopper in an axial direction, and which is projected in the centrifugal direction over said larger diameter ends of said stopper, and which is brought into contact with an inner peripheral surface of said annular-shaped concave portion to regulate the displacement in a radial direction of said stopper; and
 - a linkage for connecting said stopper and said regulator.

5,378,025 QUICK CONNECTOR WITH INTEGRAL RELEASE MEMBER

George Szabo, Ortonville, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Nov. 3, 1993, Ser. No. 147,059
Int. Cl.⁶ F16L 39/04

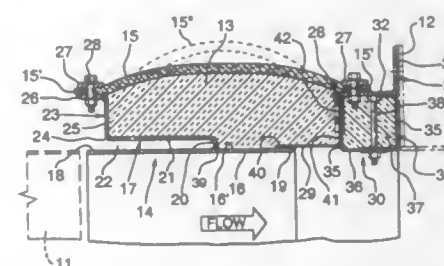
U.S. Cl. 285—39 15 Claims



1. A release member for a fluid connector formed of a housing having a bore opening through a tubular end of the housing, a retainer with at least one deflectable leg mounted in the bore and engaging a radial abutment surface on a male connector part insertable into the bore to retain the male connector part in the housing, the release member comprising:
 - an inner tubular sleeve having one end and an opposite end and also having a through bore extending therethrough; means, formed on the inner sleeve and coacting with the housing, for retaining the release member in the bore in the housing;
 - an outer sleeve integrally joined to the one end of the inner sleeve and extending concentrically thereover, the outer sleeve disposed externally of the tubular end of the housing when the release member is mounted in the housing and having an external finger gripping surface formed thereon; and
 - at least one retainer leg engaging surface formed on the inner sleeve and engagable with a deflectable retainer leg upon axial movement of the release member into the bore in the housing to radially outwardly deform the at least one deflectable leg a sufficient distance to enable the radial abutment surface on the male connector part to be disengaged from the retainer member and separated from the housing.

5,378,026
CYLINDRICAL FLEXIBLE JOINT UNIT
Michel D. Ninacs, 1200 McGill College, Suite 1100, Montreal, Quebec H3B 4G7, and Rodney P. Bell, Campbellville, both of Canada, assignors to Michel D. Ninacs, Vaudreuil, Canada
Filed Aug. 9, 1993, Ser. No. 111,701
Int. Cl.⁶ F16L 55/00

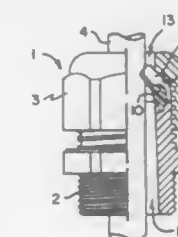
U.S. Cl. 285—47 19 Claims



1. A cylindrical flexible joint unit for interconnecting a circular hot gas duct of circular cross-section to a further circular cross-section of another structure, said unit comprising an inlet annular flexible wall structure for connection to said hot gas duct and an outlet flexible annular connector, heat insulating means retained between said annular wall structure, said annular connector and an outer flexible annular membrane, said inlet wall structure being a metal wall and defining

a cylindrical inner sleeve and an annular step connecting flange secured about an outer surface thereof, said inner sleeve having a duct connecting end and a free end, said step connecting flange having a short transverse connecting wall and an elongated annular spaced wall section extending from said connecting wall and disposed substantially parallel above said outer surface of said inner sleeve toward said duct connecting end of said inner sleeve and defining an air gap therebetween, a membrane connecting bracket connected to and extending above a free end of said spaced wall section to and connected with a side edge of said annular membrane thereabove, said free end of said annular sleeve being displaceably disposed with relation to said outlet flexible annular connector, said outlet annular connector having a duct connecting end for connection to said duct of another structure and having an opposed side edge of said annular membrane connected thereto.

5,378,027
FITTING FOR CABLES AND THE LIKE
Peter Gehring, Simonswald-Griesbach, Germany, assignor to Anton Hummel Verwaltungs GmbH, Waldkirch, Germany
Filed Aug. 14, 1992, Ser. No. 930,729
Claims priority, application Germany, Aug. 16, 1991, 4127162
Int. Cl.⁶ F16L 21/06
U.S. Cl. 285—322 87 Claims



1. A fitting for engaging outer surfaces of articles, comprising first and second tubular components each having a first end and a second end, said first and second components respectively having complementary external and internal threads at the first ends thereof and one of said components having a substantially ring-shaped internal deforming surface and an axial article-receiving passage adjacent said deforming surface, said passage having a diameter smaller than a root diameter of one of said threads; and a tubular clamping device carried by the other of said components and comprising an annulus of substantially axially parallel deformable prongs and elongated slots alternating with said prongs, each of said slots having a closed end and an open end and each of said prongs having an end face at the open ends of adjacent slots, an internal surface and an external surface, said device being disposed at the first end of said other component and said end faces being engaged and moved by said deforming surface radially inwardly of said device in response to threading of said components into each other, at least some of said prongs having first portions and second portions which, in undeformed condition of said prongs, are of substantially constant greater radial thickness and lesser radial thickness, respectively, the thickness of said first portions being at least 60 percent of the difference between said diameters.

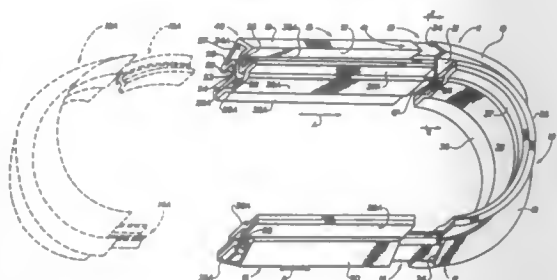
5,378,028
APPARATUS FOR CONNECTING OVAL DUCT
SECTIONS

Robert Imaghollan-Havai, Tujunga, and George J. Ohandjanian,
Los Angeles, both of Calif., assignors to MEZ Industries, Inc.,
Scottsdale, Ariz.

Filed Jan. 25, 1993, Ser. No. 8,683
Int. Cl.⁶ F16L 25/00

U.S. Cl. 285—331

3 Claims



1. A duct joint frame for connecting the end portion of a pair of generally oval ducts, comprising

(a) first and second frame members (15, 16) each arranged to be simultaneously secured to flat planar portions of each of the pair of oval ducts, each of said frame members including

(i) first and second spaced apart stays (51, 35A) defining a first elongate opening for receiving a linear edge of one of the pair of oval ducts,

(ii) third and fourth spaced apart stays (52, 22A) defining a second elongate opening for receiving a linear edge of the other of the pair of oval ducts,

(iii) a first housing (19, 50) attached to said first and third stays and defining an elongate sleeve means generally parallel to said first and second elongate openings and to the edges of the oval ducts inserted in said first and second openings;

(b) third and fourth frame members (10, 10A) each arranged to be simultaneously secured to curved planar portions of each of the pair of oval ducts, each of said frame members including

(i) fifth and sixth spaced apart stays (72, 35) defining a third elongate opening for receiving an arcuate edge of one of the pair of oval ducts,

(ii) seventh and eighth spaced apart stays (71, 22) defining a fourth elongate opening for receiving an arcuate edge of the other of the pair of oval ducts,

(iii) a second housing (34, 70) attached to said fifth and seventh stays and defining an elongate sleeve means generally parallel to said third and fourth elongate openings and to the edges of the oval ducts inserted in said third and fourth openings,

(iv) an elongate arm (13) fixedly engaging said elongate sleeve means of said second housing and extending outwardly from said second housing to slidably engage said elongate sleeve means of said first housing to permit the distance between said stays of said first and second frame members with respect to said stays of said third and fourth frame members to be adjusted, said elongate arm including

a first pair of spaced apart stays (25, 27) defining an elongate opening for receiving an edge of one of the pair of oval ducts, and a second pair of spaced apart stays (24, 27) defining an elongate opening for receiving an edge of the other of the pair of oval ducts, said first and second pairs of stays of said elongate arm slidably engaging selected ones of said stays of one of said first and second frame members.

5,378,029
CONNECTING DEVICE

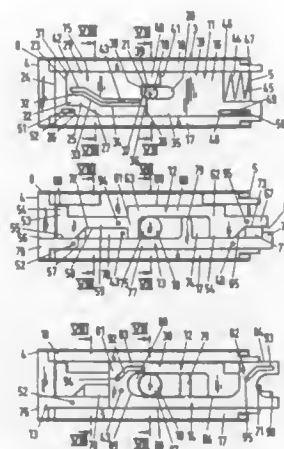
Wolfgang Hoffeins, Obere Paulusstr. 71, 7000 Stuttgart 1, Germany

Filed May 28, 1993, Ser. No. 70,712

Claims priority, application Germany, May 30, 1992, 4217951
Int. Cl.⁶ E05C 19/10

U.S. Cl. 292—30

32 Claims



1. A connecting device for a fastening element having a through opening; said connecting device comprising:

a housing;
a first pulling member slidably connected within said housing, said first pulling member comprising a hook for penetrating the through opening and engaging an edge of the through opening from behind;

an actuator connected within said housing for moving said first pulling member from an initial position into a clamping position, wherein said hook in said clamping position exerts a force onto said edge, said force directed toward said housing;

at least one pressurizing member slidably connected within said housing so as to be movable into clamping engagement with said first pulling member in said clamping position such that in said clamping position said first pulling member is clamped against said pressurizing member with the fastening element interposed between said first pulling member and said pressurizing member, wherein said pressurizing member has at least one section resting at the fastening element; and

a means for securing said hook against displacement relative to the through opening of the fastening element.

5,378,030
KEYLESS LOCKING DEVICE AND METHOD

George Georgopoulos, Pine Brook, and Richard C. Dreisbach, North Arlington, both of N.J., assignors to E.J. Brooks Company, Newark, N.J.

Filed Apr. 14, 1993, Ser. No. 48,263

Int. Cl.⁶ B65D 45/30

U.S. Cl. 292—256.6

27 Claims

1. A locking device for sealing a hole of a given transverse dimension in a member, said hole defining an axis normal thereto and being defined by a member given thickness, said device comprising:

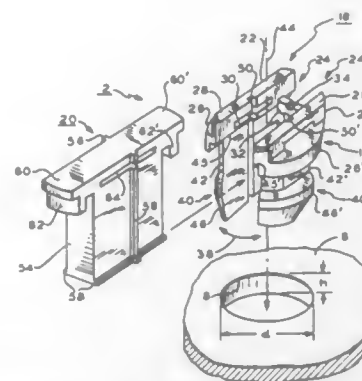
a female member comprising:

a flange; and

at least one leg depending from the flange, said flange and leg being arranged so that the at least one leg is resiliently displaced transversely said axis in response to a corresponding displacement force, said at least one leg having a first portion adjacent to said flange transversely dimensioned to be received in said hole along said axis in a first insertion direction and a second portion depending from

the first portion having a transverse outer dimension relative to said axis greater than said hole transverse dimension such that convergence of the at least one leg toward said axis is required to insert said second portion through said hole in said first direction; and
a male locking member dimensioned to be inserted in said

when a bolt is not fastened successfully to the nut of the bumper stay through the bolt insertion hole in said bumper bracket, said bolt is automatically discharged to the outside through the insertion hole in the bottom plate at the front end portion of said side member.



female member along said axis abutting said at least one leg for precluding said convergence in a locking state, said male locking member and female member being dimensioned to receive said male locking member in a second direction transverse the first direction and for restricting displacement of the male locking member from the female member in a direction opposite the first direction.

5,378,031
BUMPER MOUNTING CONSTRUCTION
Moriyuki Ohno, and Yasuhisa Nakada, both of Hamamatsu, Japan, assignors to Suzuki Motor Corporation, Hamamatsu, Japan

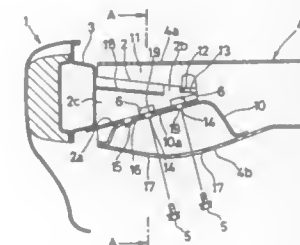
Filed Sep. 20, 1993, Ser. No. 124,294

Claims priority, application Japan, Oct. 13, 1992, 4-274043

Int. Cl.⁶ B60R 19/24

U.S. Cl. 293—102

3 Claims



1. A bumper mounting construction wherein a bumper stay protruding from a bumper beam is inserted on a side member to fix a bumper, comprising:

a bumper bracket disposed on said side member to form a space expanding toward the front in the front end portion of said side member, and defining an inclined portion a step portion for positioning disposed at the upper part of the end portion of said bumper stay, and a stopper situated in said space,

said step portion for positioning of said bumper stay is engaged with said stopper while said bumper stay is inserted in said space along said bumper bracket when a bumper is installed, and

wherein bolt insertion holes are formed in the inclined portion of said bumper bracket, insertion holes are formed in said bumper stay corresponding to said bolt insertion holes, nuts are installed above the insertion holes in said bumper stay, the bottom plate of the front end portion of said side member is curved, and insertion holes are formed near the lowest position of said bottom plate, by which,

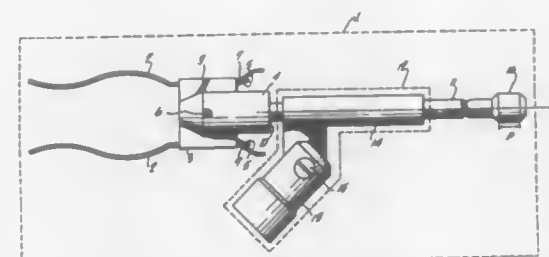
5,378,032
WIRE JAW STONEHOLDER
Richard C. Agnew, Norwalk, and Robert Van-Den Heuvel, Culver City, both of Calif., assignors to GIA Gem Instruments Corporation, Santa Monica, Calif.

Continuation of Ser. No. 44,275, Apr. 7, 1993, abandoned, which is a continuation of Ser. No. 825,200, Jan. 24, 1992, Pat. No. 5,242,203. This application Feb. 22, 1994, Ser. No. 200,922

Int. Cl.⁶ B25B 9/00; G04D 1/02

U.S. Cl. 294—99.2

1 Claim



1. A method for supporting or handling diamonds and other gemstones comprising the steps of:

providing a stoneholder for handling said diamonds and other gemstones, said stoneholder comprising

a pair of clamping members, each of said clamping members comprising a pair of stone support members having proximal and distal ends, said stone support members of each clamping member being separated by an aperture and being joined at the distal end by a bend which is substantially circular in shape and which forms a seat for supporting a cutlet of a stone; and

a pair of mounting means, each mounting means being fixed to the proximal end of said stone support members, said mounting means being operatively coupled such that said clamping members oppose each other and are movable toward and from each other; and grasping a diamond or other gemstone between said pair of clamping members.

5,378,033
MULTI-FUNCTION MECHANICAL HAND WITH SHAPE ADAPTATION

Gongliang Goo, Lexington, Ky.; Xikang Qian, Beijing, China, and William A. Gruver, British Columbia, Canada, assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed May 10, 1993, Ser. No. 60,104

Int. Cl.⁶ B25J 15/10

U.S. Cl. 294—116

20 Claims

1. A mechanical hand assembly for gripping an object in prosthetic and robotics applications comprising:

a plurality of fingers, each finger including a base, a plurality of pivotally interconnected phalanges and means for bending/straightening said plurality of fingers to simulate human finger movement;

an annular palm subassembly including means for engaging each said finger base and holding said fingers in relative, spaced operative positions substantially around a periphery of said annular palm subassembly and means, moveable relative to said engaging means, for actuating said finger bending/straightening means in concert, movement of said actuating means in a first direction bending all of

said fingers and movement of said actuating means in a second direction straightening all of said fingers; and



means for selectively driving said actuating means in said first and second directions.

5,378,034

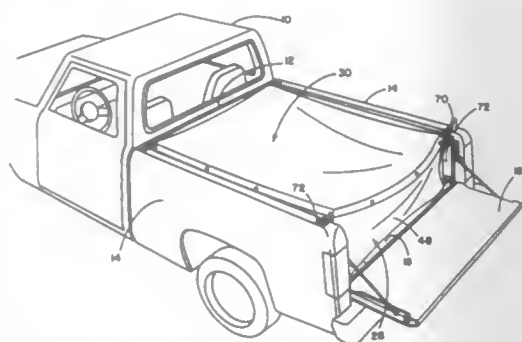
FLEXIBLE CARGO CONTAINER FOR TRUCK BEDS
Robert J. Nelsen, 529 N.W. 3rd St., Chisholm, Minn. 55719

Filed Jan. 29, 1993, Ser. No. 10,799

Int. Cl.⁵ B60R 13/01

U.S. Cl. 296—39.2

5 Claims



1. A flexible cargo container for use in a truck bed, the truck bed having two opposing sidewalls, a front wall, a bottom, and a hinged gate forming a back wall, said container comprising: a flexible fabric sheet constructed and arranged to form a container having a bottom surface with a perimeter, two opposing side surfaces, a front surface, and a back surface extending generally vertically upward from the perimeter of the bottom surface to form a container with an opening, said container generally corresponding to the bottom and walls of the truck bed, and a top surface extending generally from a side surface over the container opening and configured to form a container cover, said container cover comprising: a top surface having a perimeter, and a first, second, and third sidewall extending generally downward from the perimeter of the top surface to engage with a side surface, front surface, and back surface of the container.

5,378,035

AUTOMOBILE SUNSHADE

Cheng-Ju Wu, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Dec. 6, 1993, Ser. No. 161,578

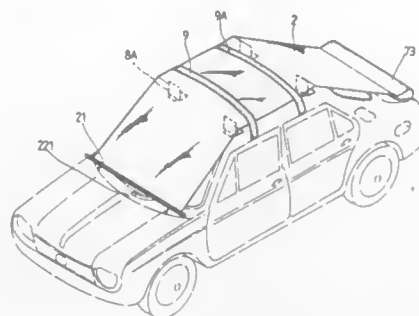
Int. Cl.⁶ B60J 11/00

U.S. Cl. 296—136

1 Claim

1. An automobile sunshade assembly comprising: a winding device including an axle assembly on which is wound a curtain having a rod at the outer edge, said rod being provided with a plurality of hooks, said axle assembly having a right end connected with a first bearing connected with a first wire element provided with a planar member and a left end formed with a slot connected with a left hook end of a spring, said axle assembly further

having a second wire element provided with a horizontal portion having a stop at the right end and a planar member at the left end and a second bearing connected with the left end of said axle and a sleeve, the stop of said axle assembly being engaged with the right hook end of said spring, a casing for receiving said axle assembly, a base tray for receiving said casing;



four supporting brackets each provided with a rotatable rod along the top of each bracket and a plurality of magnets along the bottom of each bracket, said brackets being used for supporting said curtain; and two bands each having a rod at both ends thereof for keeping said curtain on an automobile and engaging with doors of the automobile.

5,378,036

SLIDING AUTOMOBILE DOOR

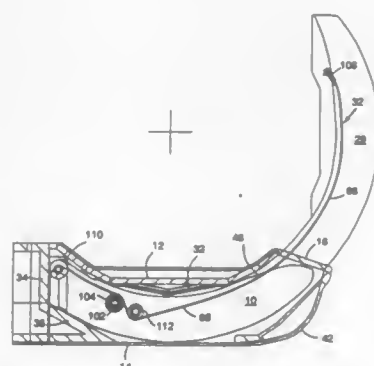
John A. Townsend, 543 Esplanade, Pacifica, Calif. 94044

Filed Jul. 13, 1992, Ser. No. 912,790

Int. Cl.⁶ B60J 5/06

U.S. Cl. 276—155

3 Claims



2. An improved vertically sliding door assembly of the type having a door structure which becomes a structural member of a wheeled vehicle chassis structure when in a closed position, wherein the improvement comprises:

means for moving said door structure within said chassis structure;

a pair of sprockets carried by said door structure and having teeth;

a pair of flexible tape segments carried by said chassis structure, said segments including evenly spaced apertures, the apertures being of a complementary size, shape and pitch for engagement with said teeth of said sprockets, said flexible tape segments each having two ends, each end rigidly attached to a portion of the chassis structure adjacent said door structure and stationary with respect thereto, and wherein said sprockets are located on and movable with said door structure, said tape segments extending substantially along paths followed by said sprockets when said door structure moves from an open position to a closed position.

5,378,037

RELOADING BENCH

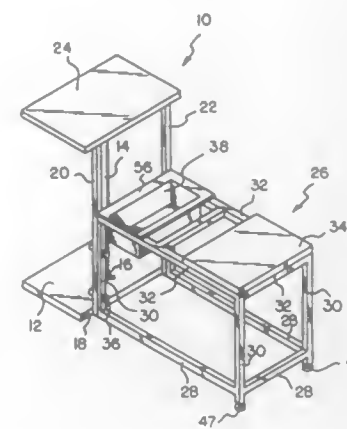
Rodney P. Beasley, and Bernice F. Beasley, both of 1014 Doan St., Texarkana, Ark. 75502

Filed Apr. 1, 1993, Ser. No. 41,152

Int. Cl.⁶ A47B 39/00

U.S. Cl. 297—174

10 Claims



1. A new and improved reloading bench apparatus, comprising:

a horizontal base unit,

a first vertical support projecting vertically from said horizontal base unit,

a second vertical support projecting vertically from said horizontal base unit,

a third vertical support projecting vertically from said horizontal base unit,

a work platform supported by said first, second, and third vertical supports,

a seat assembly which includes vertical leg members and upper horizontal frame members supported by said vertical leg members,

a seat platform supported by said upper horizontal frame members, and

first connectors for connecting at least one of said vertical leg members to at least one of said second or third vertical supports,

further including a receptacle, supported by said upper horizontal frame members in a position between said seat platform and said at least one of said second or third vertical supports.

5,378,038

RESTRAINING PROTECTIVE FOLDABLE SEAT FOR INFANTS

Toehiro Koyanagi; Yayoi Hashimoto, both of Hikone, and Haruyuki Takagi, Tokyo, all of Japan, assignors to Takada Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,477

Claims priority, application Japan, Dec. 5, 1991, 3-22094

Int. Cl.⁶ A47C 1/08; B60R 22/00

U.S. Cl. 297—256.13

6 Claims

1. An infant-restraining protective seat, comprising:

a seat portion (2) for seating an infant on an upper surface of the seat portion, said seat portion having a front end and a rear end and having a left side and a right side;

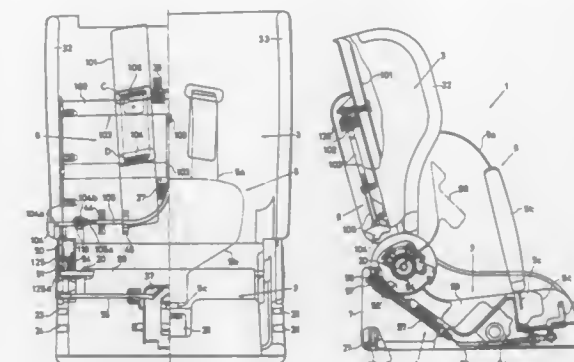
a seat back (3) for supporting the back of the seated infant against a front surface of the seat back, said seat back having an upper end and a lower end and having a left side (32) and a right side (33);

infant restraining means (5) for restraining and protecting the seated infant;

said lower end of said seat back being tiltably attached to said rear end of said seat portion in such a manner that said front surface of said seat back is foldable towards said

upper surface of said seat portion from a reclined-state position to a folded-state position;

wherein said seat back left and right sides are respectively provided with left and right side walls (32, 33), the distance between inner side faces of said left and right side walls being set in such a manner that at least part of said seat portion will be received between said left and right side walls when said seat portion and seat back are folded to said folded-state position; and



a seat tilting control means (4) for both locking said seat back in said reclined state and for locking said seat back in a folded-state, said control means including a locking pin (56) which is fittable into respective locking holes which correspond to said reclined state and said folded-state, said locking holes being provided on a member (50) which is fixed relative to said seat back.

5,378,039

TORSION SPRING AND ADJUSTABLE MOUNTING FOR CHAIR

Tore Lie, Moelv, Norway, assignor to Ring Mekanikk AS, Moelv, Norway

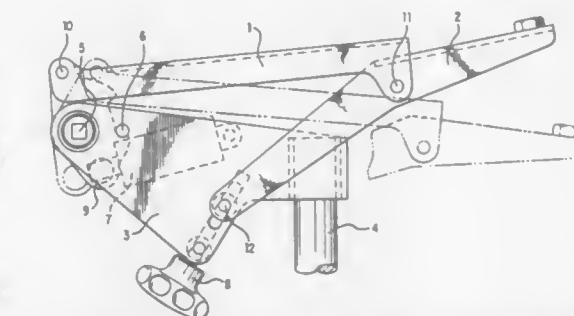
PCT No. PCT/NO90/00134, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO92/03072, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 20, 1990, Ser. No. 983,553

Int. Cl.⁶ A47C 1/032

U.S. Cl. 297—301

3 Claims



1. An adjustable mounting for a chair including a seat frame, a back frame and a mounting bracket, said adjustable mounting comprising:

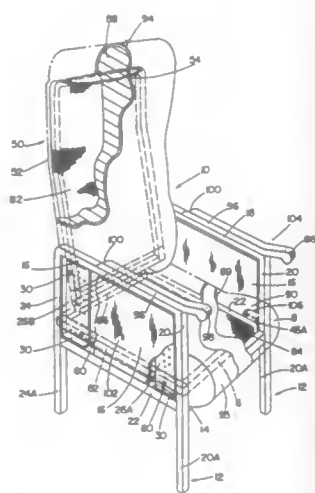
a torsion spring secured to said mounting bracket, said torsion spring having first and second ends;

a tilting lever connected to said torsion spring; wherein an upper end of said tilting lever is pivotally connected to a front portion of said seat frame and a rear portion of said seat frame is pivotally connected to said back frame;

wherein a forward end of said back frame is pivotally and adjustably connected to said mounting bracket such that

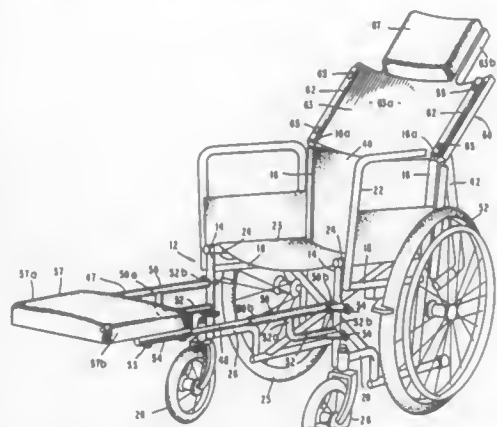
the connection of said back frame to said mounting bracket thereby enables adjustment of the angle of said back frame; and wherein a stop pin is fixed to said mounting bracket, thereby limiting the rotational movement of said tilting lever between two outermost positions in which said stop pin abuts shoulders on said lever and thus limiting movement of the seat frame.

5,378,040
ADJUSTABLE GERIATRIC CHAIR
David B. Chaney, Powell, Ohio; Rex K. Chaney, Hartford City, Ind., and Joseph A. Koncelik, Powell, Ohio, assignors to Zoetech, Inc., Westerville, Ohio
Filed Jan. 22, 1993, Ser. No. 7,485
Int. Cl.⁶ A47C 1/032, 7/38
U.S. Cl. 297—338 16 Claims



14. An adjustable chair comprising:
- a pair of laterally spaced apart, floor-engaging upright frames, each defining a side enclosure bounded by relatively adjoining upper, front, lower, and rear support members;
 - a front mounting bracket disposed in a relatively adjoining relation to the upper, lower and front support members and a rear mounting bracket disposed in relatively adjoining relation to the upper, lower and rear support members, each bracket recessed within the side enclosure of each of the floor-engaging frames and provided with a plurality of mounting bores;
 - a back frame having a pair of laterally opposing, longitudinally extending side members, each of the side members having a pair of mounting sockets, said back frame being movable to align the mounting sockets with a selected pair of bores in an upper rear portion of each of the rear mounting brackets; and
 - a seat frame having a pair of laterally opposing, longitudinally extending side members, each of the side members having a front mounting socket and a rear mounting socket, said seat frame being movable to align the front mounting socket with a selected mounting bore in each of the front mounting brackets and to align the rear mounting socket with a selected bore in a lower rear portion of each of the rear mounting brackets.

5,378,041
WHEELCHAIR
Don W. Lee, 1330 Bennet, Pasadena, Calif. 91103-2705
Continuation of Ser. No. 881,248, May 11, 1992. This application Apr. 6, 1994, Ser. No. 223,750
Int. Cl.⁶ A47C 7/52
U.S. Cl. 297—391 11 Claims

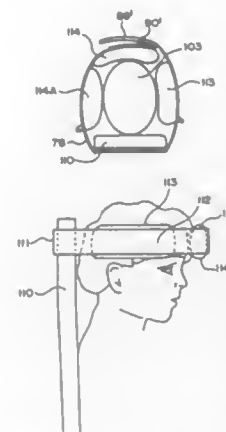


- A wheelchair, comprising:
 - a patient supporting structure including a mainframe having transversely spaced pairs of upstanding front and rear members;
 - wheels rotatably connected to said patient supporting structure;
 - a foot support assembly removably connected to each of said front members of said mainframe, said foot support assembly including a foot support connector tab;
 - a connector element provided on each said front member of said mainframe for cooperative engagement with one of said connector tabs of one of said foot supports;
 - a patient leg support removably connected to said patient supporting structure, said patient leg support comprising:
 - a pair of spaced-apart, forwardly extending support members;
 - a leg support connector tab provided on each said support member for cooperative engagement with one of said connector elements provided on said front members of said mainframe;
 - a transverse member having a first margin connected to one of said support members and a second margin connected to the other of said support members; and
 - a patient back support assembly removably interconnectable with said mainframe, said back support comprising:
 - a pair of spaced-apart, upwardly-extending, rigid members;
 - a pair of connectors each having first and second portions, said second portions extending at an obtuse angle with respect to said first portions, said first portions of said connectors being telescopically receivable within said upwardly extending rigid members and said second portion being telescopically receivable within the upstanding rear members of said mainframe; and
 - a patient back support having a first margin connected to one of said upwardly extending rigid members and a second margin connected to the other of said upwardly extending rigid members.

5,378,042
BALLOONS AND HEAD WRAPS FOR A SEATED USER
Yousef Daneshvar, 33200 Slocum, Farmington, Mich. 48024
Filed Jun. 11, 1992, Ser. No. 896,981
Int. Cl.⁶ A47C 7/38
U.S. Cl. 297—393 9 Claims

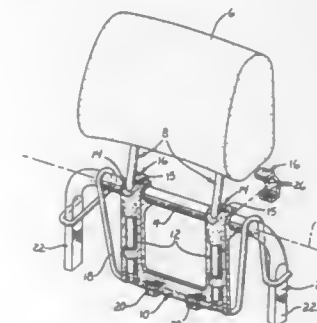
- A device adapted to support the head of a seated user relative to a generally upstanding portion of a seat, stroller, or

the like, comprising a strap adapted to encircle the head of the user and said generally upstanding portion, said strap comprising a plurality of inflatable balloons having generally flat rear



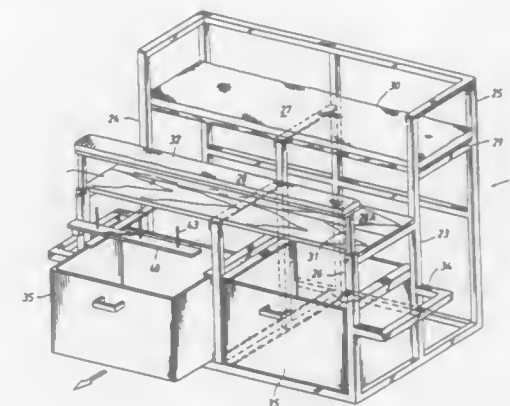
surfaces and expandable frontal surfaces, whereby upon inflation the generally flat rear surfaces of the balloons remain flat, and the frontal surfaces bulge outwardly from the rear surfaces to contact and support the user's head.

5,378,043
VEHICLE PIVOTAL HEADREST
David C. Viano, Bloomfield Hill; Richard J. Neely, Casco, and Mladen Humer, East Detroit, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 1, 1993, Ser. No. 69,317
Int. Cl.⁶ B60R 21/00
U.S. Cl. 297—408 12 Claims



- A vehicle seat and headrest arrangement comprising:
 - a seat bun frame having fore and aft ends;
 - a seatback frame joined to the bun frame means adjacent the aft end of the bun frame; and
 - a headrest pivotally attached with the seatback frame along a pivotal axis generally perpendicular to the fore and aft direction whereby, upon a rear impact of a vehicle in which the arrangement is mounted, the pivotal attachment allows the headrest to move in a forward direction toward the head of an occupant of the vehicle seat, wherein the headrest has a cushion portion and an impact target operatively associated with the cushion portion and pivotally associated with the seatback frame, wherein a force upon the impact target causes the headrest to rotate forwardly.

5,378,044
TAPE WRAPPING APPARATUS
Sidney R. Rhodes, P.O. Box 56, Karnes City, Tex. 78118
Continuation of Ser. No. 852,017, Mar. 16, 1992, abandoned.
This application Dec. 6, 1993, Ser. No. 163,394
Int. Cl.⁶ A47C 7/50
U.S. Cl. 297—423.25 8 Claims



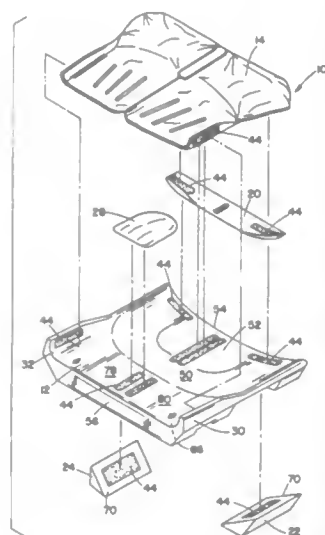
- Apparatus for facilitating the wrapping of a tape by a first individual about the ankle of a second individual, comprising an upright stand having front and back sides and opposite ends, means forming a first elongate surface extending laterally across the stand near the back side thereof for supporting a second seated individual, wherein the back side extends above the level of the first elongate surface means forming a second elongate and relatively horizontal surface extending laterally across the stand forwardly of the first surface and on generally the same level as that first surface for supporting the calf of a leg of the second individual with the ankle in position to be wrapped by the first individual while standing in front of the stand and spaced forwardly of the first surface, and means forming a laterally elongate walkway intermediate the space between the first and second surfaces for facilitating movement of the second individual into and out of a seated position on the first surface.

5,378,045
SEAT CUSHION FOR WHEELCHAIRS
Allen R. Siekman, Avon Lake, and Julius E. Nachod, III, Elyria, both of Ohio, assignors to Invacare Corporation, Elyria, Ohio
Continuation of Ser. No. 791,872, Nov. 13, 1991, abandoned.
This application Aug. 18, 1993, Ser. No. 108,827
Int. Cl.⁶ A47C 7/02
U.S. Cl. 297—452.25 8 Claims

- A seat cushion apparatus for use in an associated wheelchair, said seat cushion comprising:
 - a shaped tray, said tray having front, back, and first and second side edges and top and bottom surfaces, said tray shaped to receive the buttocks of the user when the user is in a sitting position, the legs of said user extending forward toward said front edge of said tray;
 - attaching means;
 - an envelope, said envelope filled with a flowable material which is displaced within the envelope under the weight of the user, said envelope attached to said top surface of said tray via said attaching means;
 - a back wedge, said back wedge having a bearing surface, a bottom surface, and a back surface, said back wedge attached to said tray near said back edge via said attaching means, said bearing surface of said back wedge lying adjacent to an edge of said envelope and effective to prevent said envelope from sliding over said back edge of said tray due to movement by said user;

first and second side wedges, said first side wedge selectively affixed to said bottom surface of said tray near said first side edge via said attaching means, said second side wedge selectively affixed to said bottom surface of said tray near said second side edge via said attaching means, said first and second side wedges selectively removable from said bottom surface of said tray to accommodate cross braces of an associated drop seat wheelchair;

first and second side wings, said first side wing rising upwardly from said top surface of said tray on said first side edge of said tray near said front edge, said second side wing rising upwardly from said top surface of said shaped



tray at said second side edge near said front edge, said first and second side wings effective to retain the legs of said user in a generally forward manner and preventing them from splaying outwardly; and,

an abductor, said abductor selectively attached to said top surface of said shaped tray near said front edge and positioned approximately equal distantly between said first and second side wings, said abductor cooperating with said first and second side wings to create a first and second channel, said first and second channels effective to receive the legs of the user and to discourage them from splaying outwardly or twisting about each other while the user is sitting within the wheelchair.

5,378,046

PORTABLE SHOPPING CART SEAT BELT

Thomas L. Gordy, and Lee S. Gordy, both of 707 H St., Salida, Colo. 81201

Filed Jan. 11, 1993, Ser. No. 2,792

Int. Cl.⁶ A62B 35/00

U.S. Cl. 297—485

3 Claims

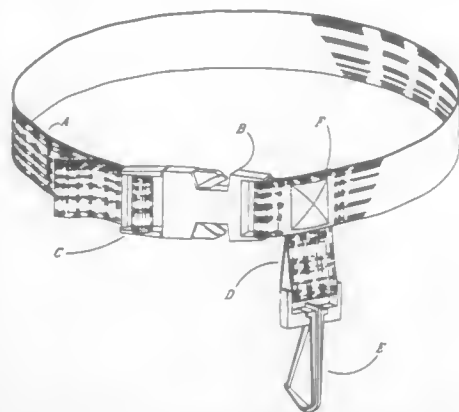
1. A child waist belt restraint having increased utility due to its portability anchoring feature, comprising:

a buckle having first and second engageable sides, said first side including an aperture, and said second side including a serpentine connector;

a waist belt having two ends, one of said ends extending through the aperture of said first side of said buckle and being attached to itself at an attachment point adjacent to said first side; the other of said ends extending through the serpentine connector of said second side of said buckle for an adjustable attachment thereto; and

an anchor apparatus comprised of a closed loop strap fixed

to said waist belt at said attachment point and extended perpendicular thereto;



whereby said anchor apparatus can be connected to a wire portion of a shopping cart to anchor a child within the shopping cart.

5,378,047

CONTAINER UNLOADING ASSEMBLY FOR GRAVITY UNLOADING OF PARTICULATE MATERIAL

Ronald G. Merrett, and Oscar Eakin, Jr., both of Houston, Tex., assignors to Intermodal Container Systems, Houston, Tex.

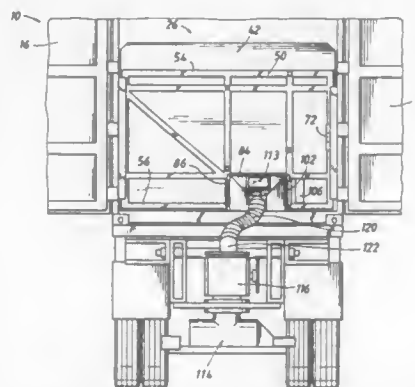
Continuation of Ser. No. 897,419, Jun. 15, 1992, abandoned.

This application Apr. 20, 1994, Ser. No. 230,876

Int. Cl.⁶ B60P 1/16; B65G 53/46

U.S. Cl. 298—17 R

10 Claims



2. In a container removably mounted on a highway trailer for the transport and gravity unloading of particulate lading from the rear end of the container through a discharge outlet upon the raising of the front end of the container to tilt the container about its rear end, the container having a rear generally rectangular bulkhead and rear doors; the improvement comprising:

a one piece generally rectangular rear support frame removably secured to opposed sides of said container between said rear bulkhead and said rear doors and adapted to support said rear bulkhead particularly upon tilting of the container to a predetermined angular relation with the trailer, said rear support frame having a lower discharge opening adjacent its lower end adapted to receive said discharge outlet therein for controlling the flow of particulate lading from the container;

said one piece generally rectangular rear support frame being formed of rigid frame members secured to each other and including a pair of vertically extending side frame members along opposite sides of said support frame; and

interfitting mounting means on said vertically extending side

frame members and opposed sides of said container for removably mounting said rear support frame to opposed sides of said container.

5,378,048

SPRAY NOZZLE FOR MINING

George A. Parrott, Barnsley, England, assignor to Minnovation Limited, Barnsley, England

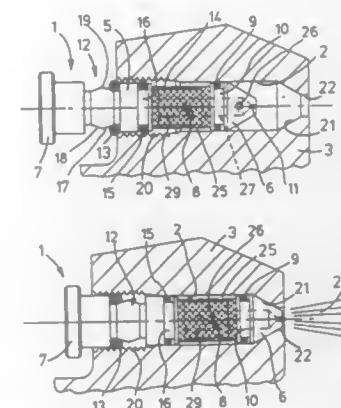
Filed Sep. 14, 1993, Ser. No. 121,345

Claims priority, application United Kingdom, Sep. 29, 1992, 9220537

Int. Cl.⁶ B05B 15/06; E21C 35/22

U.S. Cl. 299—81

14 Claims



1. A water spray nozzle for location in a receiving bore of a pick box of a rotary cutting head of a mining machine, comprising an elongate and generally cylindrical body member, an entry nose located at one end of said body member and an enlarged extraction head located at an opposite end of said body member, said enlarged head, in use, remaining outside said receiving bore; a radial, water inlet orifice intermediate said ends of said body member, a water receiving chamber in communication with said inlet orifice, a retaining groove in said body member between said water inlet orifice and said nose, a water sealing ring located in said groove, a water discharge orifice in communication with said chamber, a reduced diameter formation on said body member, a resilient, nozzle-retaining ring located on said reduced diameter formation, said retaining ring being of material and/or dimensions such that it is compressible and/or deformable, into a nozzle retaining mode, while to extract said nozzle from said receiving bore, sufficient extraction force must be applied to said enlarged head to re-deform and/or re-compress said retaining ring to permit extraction, wherein a secondary retaining groove is provided intermediate said water inlet orifice and said enlarged head, and a second water seal is located in said second groove.

5,378,049

ROTARY CUTTER FOR EXTRACTING HARD ROCK

Wolfgang Fleischhaker, Bad Schwartau, and Joachim Mett, Lübeck, both of Germany, assignors to Krupp Fördertechnik GmbH, Duisburg, Germany

PCT No. PCT/EP92/01410, § 371 Date Aug. 23, 1993, § 102(e)

Date Aug. 23, 1993, PCT Pub. No. WO93/01392, PCT Pub.

Date Jan. 21, 1993

PCT Filed Jun. 23, 1992, Ser. No. 84,214

Claims priority, application Germany, Jul. 13, 1991, 4123307

Int. Cl.⁶ E21C 25/16, 47/00

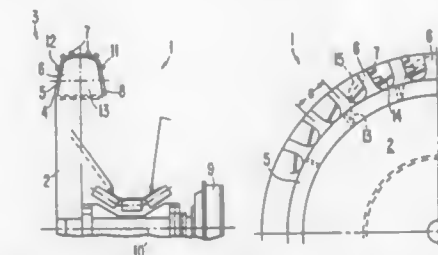
U.S. Cl. 299—89

8 Claims

1. A rotary cutter for continuous excavation of hard mineral rock layers comprising:

a supporting element having a plurality of end faces; and a plurality of cutting elements formed on a circumference of the supporting element and the plurality of end faces, the

supporting element being supported by a cantilever arm of an excavation device for operation in a vertical plane and coupled to a drive assembly producing an installed power of at least 0.3 kW per m³/h of theoretical conveying power; and



at least 14 cutting elements, each cutting element having at least four teeth; the rotary cutter providing a cylindrical compressive strength of equal to or greater than 20 MPa.

5,378,050

CYLINDER-SHAPED CUTTING BODY FOR A COAL CUTTING MACHINE

Karl Kammerer, Fluorn-Winzeln, Germany, and Bernhard Diessner, Fulpmes, Austria, assignors to BETEK Bergbau- und Hartmetalltechnik Karl-Heinz, Germany

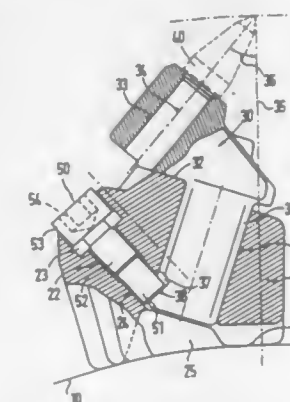
Filed Aug. 31, 1993, Ser. No. 115,156

Claims priority, application Germany, Sep. 1, 1992, 9211739[U]

Int. Cl.⁶ E21C 35/18

U.S. Cl. 299—91

14 Claims



1. In a cylinder-shaped cutting body for a coal cutting machine having one of a clearing and loading worm and a clearing screw comprising basic parts disposed at even spacings and placed on the cutting body surface so that it projects away from said cutting body surface, whereby a chisel holder interchangeably receiving a chisel can be connected to each basic part,

the improvement comprising:

said chisel holder (30) forming a chisel receptacle and comprising a plug-in neck (31) which, in the direction of said chisel receptacle (33), transforms into a shoulder (32), said shoulder (32) limiting an insertion movement of said plug-in neck (31) into a plug-in receptacle (21) of the basic part (20),

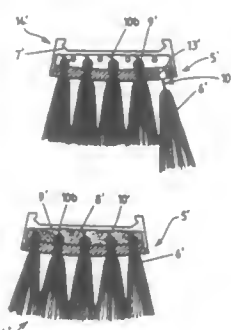
looking in the direction of running of the cutting body, behind the chisel receptacle (33) of the chisel holder (30), a pressure screw (50), accessible from the top of the basic part (20), disposed in the basic part (20) and adjustable with respect to the plug-in neck (31) of the chisel holder (30), said pressure screw (50) exerting a retracting force on the plug-in neck (31) of the chisel holder (30), and said shoulder (32) of the chisel holder (30) supported on the

basic part (20) at least behind and on a side of the plug-in neck in the running direction of the cutting body.

5,378,051
METHOD OF MAKING A BRUSH ELEMENT FOR A BRUSH ROLLER
Mauno Kirkkala, Lankipohja, and Reijo Kuivikko, Tampere, both of Finland, assignors to Oy C.E. Lindren Ab, Porvoo, Finland

Division of Ser. No. 933,112, Aug. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 583,797, Sep. 17, 1990, Pat. No. 5,155,875. This application Nov. 30, 1993, Ser. No. 159,772. Claims priority, application Finland, Sep. 18, 1989, 894378; Mar. 16, 1990, 901314

Int. Cl.⁶ A46B 3/02, 3/16; A46D 3/00
U.S. Cl. 300—21 4 Claims



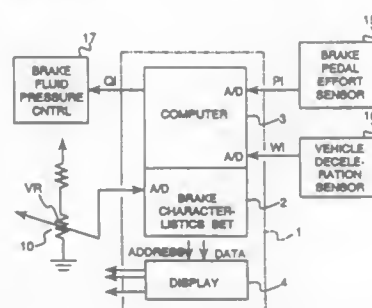
1. A method of making a brush element for a brush roller, the brush roller including a mounting means for mounting the brush element, the method comprising the steps of:
fabricating a frame including a base portion having outer and inner sides and also an attachment section including first and second sides; the inner side facing and spaced from the second side;
forming apertures in the base portion;
forming bunches of bristles, each bunch being formed by folding a plurality of bristles in half over a U-shaped staple having a bent portion, leg portions and ends, such that the bristles have folded portions with free ends extending in a direction away from the leg portions of the U-shaped staple;
inserting the staples of the bunches, one into each of the formed apertures in the base portion such that the folded portions of the bristles are on the inner side of the base portion and the free ends extend from the outer side of the base portion;
pouring a hardenable adhesive along the inner side of the base portion around the folded portions of the bristles and staples to bond the staples in the adhesive as it hardens and to affix the bristles to the base portion;
bending the leg portions of the inserted staples prior to pouring the hardenable adhesive, thereby impeding any removal of said staples from said apertures and hardened adhesive;
wherein the step of bending comprises colliding the leg portions with the second side of the attachment section.

5,378,052
ELECTRONIC BRAKE PEDAL ADJUSTMENT APPARATUS AND METHOD THEREFOR
Masato Yoshino, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jul. 22, 1993, Ser. No. 95,701
Claims priority, application Japan, Jul. 30, 1992, 4-203841
Int. Cl.⁶ B60T 13/66

U.S. Cl. 303—3 12 Claims
1. An electronic brake pedal adjustment apparatus comprising:

means for setting a braking characteristic which defines a

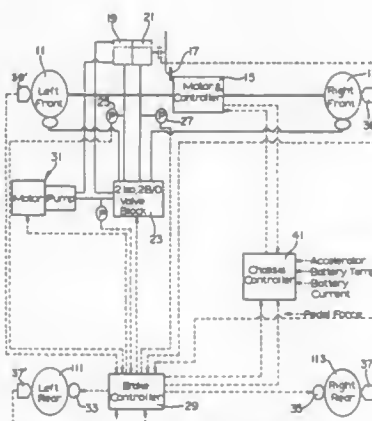
relationship between a desired brake fluid pressure with respect to a given brake pedal effort;
brake pedal effort detection means for detecting an actual brake pedal effort;



control means for calculating a desired brake fluid pressure based on the set braking characteristics of the detected brake pedal effort; and
brake fluid pressure control means for controlling an actual brake fluid pressure commensurate with the calculated brake fluid pressure.

5,378,053
MAXIMIZED REGENERATIVE BRAKING VEHICLE BRAKING CONTROLLER
Daniel J. Patient, Davison, Mich., and Jack R. Phipps, Granger, Ind., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Dec. 7, 1993, Ser. No. 163,252
Int. Cl.⁶ B60T 13/74

U.S. Cl. 303—3 5 Claims

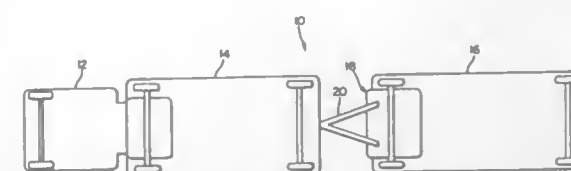


1. In an electrically powered apparatus having front drive wheels coupled to and powered by at least one electric motor selectively operated as a generator to effect regenerative braking of said front wheels, and having individual friction brakes associated with, said front wheels and with rear wheels, the method of apportioning a commanded vehicle deceleration braking task among the wheels comprising:
determining the maximum regenerative braking deceleration achievable by said front wheels;
braking the vehicle solely by regenerative braking at the front wheels so long as the commanded deceleration is less than the determined maximum deceleration;
maintaining the maximum regenerative braking and supplementing the regenerative braking with friction braking of said rear wheels and in the event the commanded deceleration exceeds the determined maximum;
further supplementing the maximum regenerative braking of said front wheels with additional friction braking of those front wheels if the combined deceleration of the regenerative braking of said front wheels and the friction braking

of said rear wheels is inadequate to achieve the commanded deceleration; and
sensing vehicle speed and disabling the regenerative braking when vehicle speed is below a predetermined threshold such that braking is achieved solely by friction braking of said front and rear wheels.

5,378,054
SYSTEM TO CONSERVE STOP LAMP CIRCUIT POWER ON INTERMEDIATE VEHICLES OF VEHICLE TRAIN
Charles E. Eberling, Wellington, Ohio, assignor to AlliedSignal Inc., Morristown, N.J.

Filed May 4, 1993, Ser. No. 57,599
Int. Cl.⁶ B60T 13/00
U.S. Cl. 303—7 8 Claims

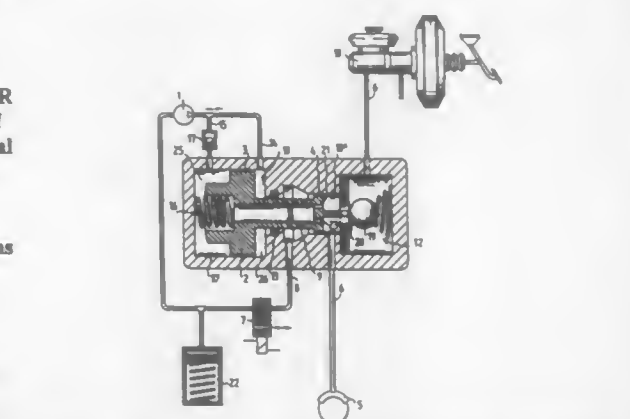


1. Fluid pressure braking system and stoplight control circuit in a towed vehicle equipped with stoplights and having fluid pressure operated brakes, said towed vehicle being either an intermediate unit or the last unit of a vehicle train, said braking system including an inlet supply connection for receiving fluid pressure from a preceding unit in the train and an outlet supply connection for transmitting fluid pressure to a succeeding unit in the vehicle train if the towed vehicle is an intermediate unit in the vehicle train, said stoplight control circuit being activated only when a brake application is effected and including means for receiving power from said preceding unit when a brake application is effected for operating said stoplight control circuit and a pressure responsive switch connected to said outlet supply connection when the vehicle is the last unit in the vehicle switch, said pressure responsive switch being switchable from an enabling condition to a disabling condition disabling a portion of said stoplight control circuit operating the vehicle stoplights when said vehicle is an intermediate unit and enabling said stoplight control circuit when the vehicle is the last unit in the vehicle train.

5,378,055
HYDRAULIC BRAKE SYSTEM WITH ANTI-LOCK CONTROL
Joachim Maas, Bad Vilbel, and Klaus Michaelis, Waechtersbach, both of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Germany
Continuation of Ser. No. 934,756, Oct. 13, 1992, abandoned.
This application May 11, 1994, Ser. No. 241,064
Claims priority, application Germany, Feb. 12, 1991, 4104144
Int. Cl.⁶ B60T 8/32, 8/48

U.S. Cl. 303—113.1 13 Claims
1. A hydraulic brake system with anti-lock control, in particular for automotive vehicles, comprising a braking pressure generator, at least one wheel brake, an auxiliary-pressure pump, a pressure accumulator system, as well as comprising at least one outlet valve for controlling the braking pressure and a shut-off valve for isolating the braking pressure generator from the wheel brake, the shut-off valve being inserted into a main pressure line interconnecting the braking pressure generator and the wheel brake, while the outlet valve is inserted into a return line interconnecting the wheel brake and a low-pressure accumulator, wherein the auxiliary-pressure pump takes pressure fluid from the low-pressure accumulator, and wherein a stepped piston guided in a correspondingly stepped housing bore and furnished with an extension cooperates with the shut-off valve such as to enable the extension to govern the pressure-fluid connection between the braking pressure gener-

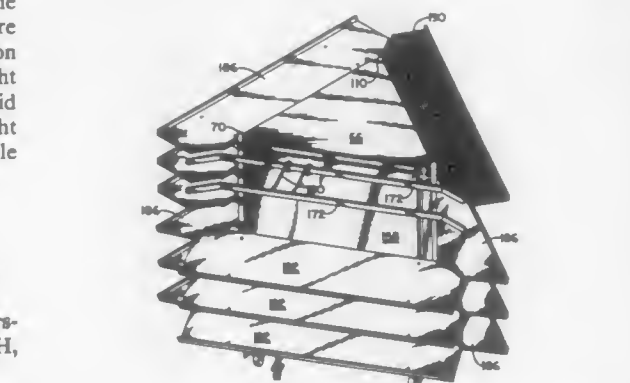
ator and the wheel brake, characterized in that the stepped piston acted upon by the auxiliary-pressure pump accommodates a hydraulic connection which is provided with defined restrictors and which leads to the main pressure line communi-



cating with the wheel brake and to the return line including the outlet valve and in that a permanent hydraulic connection is established, through the restrictors, between the auxiliary-pressure pump, the wheel brake and the outlet valve.

5,378,056
TRIANGLE DISPLAY AND STORAGE STAND
Jewell Wilson, 309 S. 50th Ave., and Alvin Norman, 8101 W. Noghil, both of Yakima, Wash. 98908
Filed Sep. 28, 1992, Ser. No. 953,532
Int. Cl.⁶ A47F 5/00

U.S. Cl. 312—249.8 4 Claims



1. A triangular merchandise display and storage stand comprising:
a planar bottom triangular piece, a planar center triangular piece a planar top triangular piece, the triangular pieces being vertically spaced apart with their triangular planar surfaces horizontal, each of said triangular pieces being of the same dimensions, and each of said triangular pieces being truncated at each apex such that the periphery of each triangular piece consists of three long sides interconnected by three short sides;
a narrow side element extending downwardly from each of the six sides each triangular piece, with each of the side elements of each triangular piece being joined to another of said side elements such that a continuous downwardly-extending element is formed completely around the periphery of each triangular piece;
the portion of the downwardly-extending element which extends down from each short side of each triangular piece being bolted to a vertical bar, such that each vertical

bar interconnects one of short sides of each triangular piece;

a planar first panel extending from the top triangular piece to the bottom triangular piece, said first panel being secured to that portion of the downwardly-extending element which extends down from a first of said long sides of each triangular piece, and having a width substantially equal to the length of said long sides;

a planar second panel extending from the top triangular piece to the bottom triangular piece, said second panel being secured to that portion of the downwardly extending element which extends down from a second of said long sides of each triangular piece, and having a width substantially equal to the length of said long sides;

a door hinged to the top triangular piece and to the bottom triangular piece, and fully extending across the third of said long sides of each triangular piece when the door is closed; and

the bottom triangular piece having wheels fitted to an underside thereof near each short side thereof.

5,378,057

METAL CASE

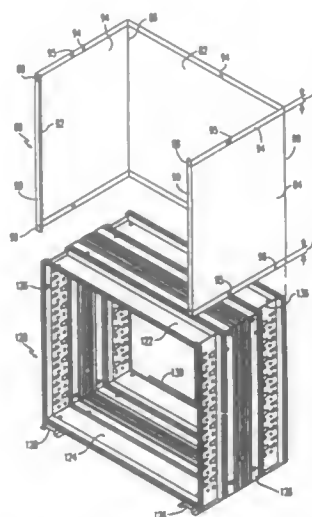
David F. Bach, Walker, and William K. Hofman, Coopersville, both of Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 29, 1992, Ser. No. 891,353

Int. Cl.⁶ A47B 43/00

U.S. Cl. 312-257.1

13 Claims



1. A metal case comprising:
 - a plurality of vertically oriented corrugated metal side panels, each of said side panels having a top edge and a bottom edge, said side panels having openings therein;
 - a horizontally oriented corrugated top panel having a first edge and a second edge, said first edge of said top panel attached to said top edge of one of said side panels and said second edge of said top panel attached to said top edge of the other of said side panels;
 - a horizontally oriented corrugated bottom panel having a first edge and a second edge, said first edge of said bottom panel attached to said bottom edge of one of said side panels and said second edge of said bottom panel attached to said bottom edge of the other of said side panels, said top, bottom and side panels comprising a box-like structure including a front portion and a rear portion;
 - a metal outer wrapper disposed around said side panels and said rear portion; and
 - a plurality of drawer glides for accommodating drawers in said case, said drawer glides being snapped into and dis-

posed in said openings of said corrugated metal side panels.

5,378,058

SERVICE PEDESTAL

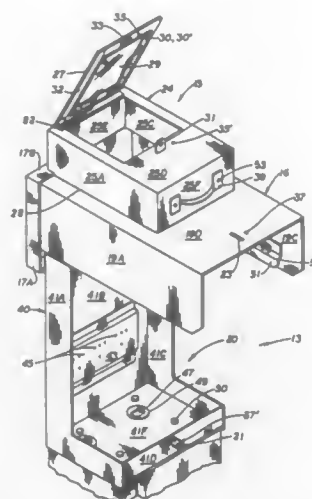
Wallace D. Tessmer, Sacramento, Calif., assignor to Tesco Controls, Inc., Sacramento, Calif.

Filed Jul. 7, 1993, Ser. No. 87,053

Int. Cl.⁶ A47B 77/08

U.S. Cl. 312-298

43 Claims



1. An improved service pedestal for an electrical control system, which pedestal is adapted to be mounted on a supporting surface and which is configured as a vertically oriented box like structure, which pedestal comprises:

- A. an upper portion and;
 - B. a lower portion, connected to said upper portion to form a unified structure, and which lower portion is adapted to be mounted to a supporting surface and;
- wherein said upper portion includes a first section and a cover unit for said first section,
- a second section and a third section;
- wherein the upper portion comprises:
- a. said first section having spaced sidewalls, each connected to a front wall, and
 - b. the cover unit comprising a cover having an inverted open box configuration of a top wall, spaced front and rear walls, and spaced side walls normal to said front and rear walls;
- said cover unit also having the second section mounted on the front thereof and communicating therewith,
- c. the third section comprising spaced sidewalls disposed normal to a rear wall and being generally open at the front and top, said first section being pivotally mounted to said third section for upward movement of said first section,
- and wherein the lower portion contains a raceway in communication with the upper portion for the delivery of cabling from said lower portion to said upper portion.

5,378,059
COMBINED ASPHALT PLANT AND SOIL
REMEDICATION SYSTEM

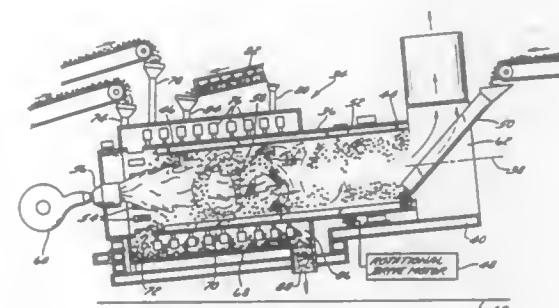
J. Donald Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Nov. 12, 1993, Ser. No. 150,872

Int. Cl.⁶ B28C 5/20

U.S. Cl. 366-7

20 Claims



1. An asphalt plant comprising:
 - a. a rotary drum mixer having first and second inlets and an outlet;
 - b. means for introducing aggregate into the first inlet of the rotary drum mixer;
 - c. means for heating the rotary drum mixer;
 - d. means for introducing a solid contaminated material into the second inlet of the rotary drum mixer;
 - e. means for mixing the aggregate and the solid contaminated material, so as to remediate the solid contaminated material using heat from said aggregate and so as to form a mixture of the aggregate and solid contaminated material; and
 - f. means for discharging the mixture from the outlet of the rotary drum mixer.

5,378,060

COMBUSTION CHAMBER HAVING REDUCED NO_x
EMISSIONS

J. Don Brock; Erbie G. Mize, both of Chattanooga, Tenn., and Malcom L. Swanson, Chickamauga, Ga., assignors to Astec Industries, Inc., Chattanooga, Tenn.

Continuation of Ser. No. 682,750, Apr. 9, 1991, Pat. No. 5,334,012, which is a continuation-in-part of Ser. No. 633,334, Dec. 27, 1990, abandoned. This application Nov. 12, 1993, Ser. No. 151,149

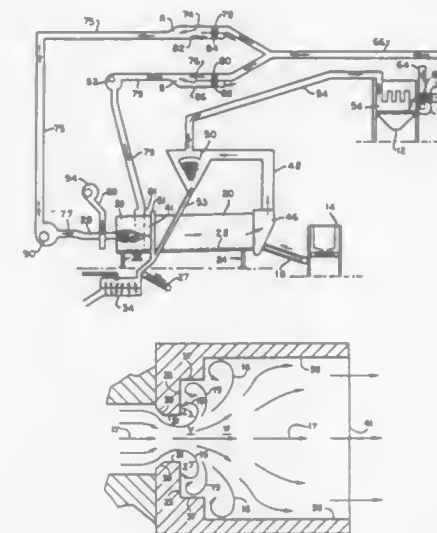
The portion of the term of this patent subsequent to Aug. 2, 2001, has been disclaimed.
Int. Cl.⁶ B28C 5/46

U.S. Cl. 366-25

5 Claims

1. A method for increasing heating efficiency and reducing NO_x production in a combustion chamber of an asphalt dryer for drying asphalt aggregate, comprising the steps of:
 - introducing a main current of combustion gases into a first cross-sectional area of said combustion chamber of said asphalt dryer;
 - passing said main current of gases from said first cross-sectional area into a second cross-sectional area having a cross-sectional area greater than said first cross-sectional area such that a first portion of gases is separated from said main current and directed to run contrary to said main current in part of said second cross-sectional area;
 - passing said main current of gases from said second cross-sectional area into a third cross-sectional area having a cross-sectional area greater than said second cross-sectional area such that a second portion of gases is separated from said main current and is directed to run contrary to said main current in part of said third cross-sectional area; feeding said asphalt aggregate into said asphalt dryer;

heating said asphalt aggregate with said combustion gases; and



discharging said heated asphalt aggregate from said asphalt dryer.

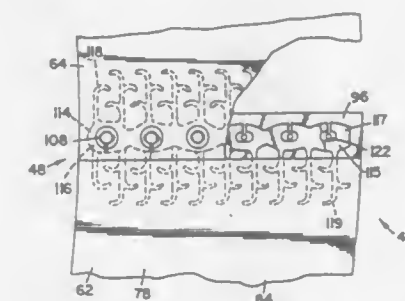
5,378,061

CONCRETE MIXING DRUM FIN STRUCTURE
Ronald E. Christenson, Kasson, Minn., assignor to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.

Continuation-in-part of Ser. No. 788,256, Nov. 5, 1991, abandoned. This application Jan. 31, 1994, Ser. No. 188,776
Int. Cl.⁶ B28L 5/20; F16B 5/02

U.S. Cl. 366-59

1 Claim



1. An assembly which is adapted for mounting within a mixing space defined by a mixing drum of the type used in a mobile system for mixing and dispensing concrete, comprising:
 - (a) a spiral fin assembly extending transversely into the mixing space for mixing and guiding the concrete within the mixing space when the mixing drum is rotated, said fin assembly being constructed of a lightweight polymeric material which is flexible and resistant to abrasion, said fin assembly comprising a base portion, a central blade portion extending transversely inward from said base portion, and a distal portion angularly extending inwardly from said blade portion, said fin assembly comprising:
 - (i) at least one pair of fin sections with each fin section having a connector plate embedded therein extending transversely along a first longitudinal end thereof, the connector plate comprising a plurality of transversely spaced anchor members defining a plurality of apertures therein, and a plurality of transversely spaced, longitudinally extending hook members extending from said anchor members toward a second longitudinal end; and

(ii) means for joining said fin sections extending through said apertures; and
 (b) means for securing said fin assembly to said mixing drum comprising a plurality of metal inserts having a plurality of spaced apertures therein which are disposed within said base portion, wherein said base portion has a plurality of access bores therethrough for exposing said apertures in the metal inserts, said means for connecting comprises a plurality of bolts which extend through said access bores in said base portion and through said apertures in said metal insert and wherein said plurality of spaced apertures and said plurality of access bores are disposed on opposite sides of said central blade portion of said fin assembly for receiving said plurality of bolts therethrough, said bores and bolts being positioned to maintain said base portion in tight engagement with said mixing drum, preventing ingress of concrete material therebetween.

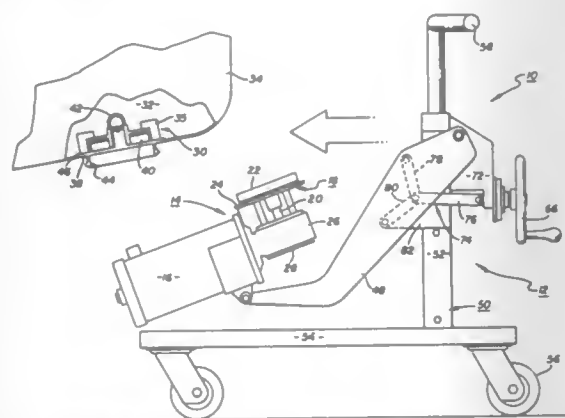
5,378,062

TRANSFER ASSEMBLY FOR DISASSEMBLY DEVICE
 Robert L. Rains, Oxnard, Calif., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 23, 1993, Ser. No. 21,026
 Int. Cl.⁶ B01F 13/08

U.S. Cl. 366—273

6 Claims



1. An apparatus for coupling an outer magnetic assembly to any one of a plurality of inner magnetic assemblies, each one of said plurality of inner magnetic assemblies located within one of a plurality of tanks, and for coupling the outer magnetic assembly to another one of said plurality of inner magnetic assemblies located within another one of a plurality of tanks, comprising:

coupling means for moving the outer magnetic assembly rotationally so that the outer magnetic assembly is coupled to an inner magnetic assembly of a first tank; and transportation means for moving the outer magnetic assembly and said coupling means from the first tank to a second tank that has a second inner magnetic assembly with the outer magnetic assembly positioned to be coupled to the second inner magnetic assembly by the coupling means.

5,378,063

STATIC MIXING MODULE

Ken Tsukada, Tokyo, Japan, assignor to Tokyo Nisshin Jabara Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1993, Ser. No. 160,252

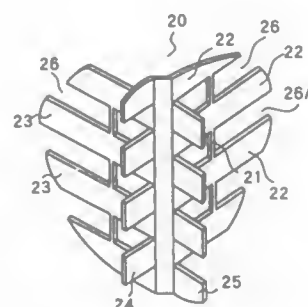
Int. Cl.⁶ B01F 5/06

U.S. Cl. 366—337

14 Claims

1. A static mixing module comprising at least one pair of mixing parts, wherein a plate is punched out in an elliptical shape such that a central strip portion extending along the minor axis of the ellipse is left, wing portion having a predetermined width and extending in a direction perpendicular to said central strip portion are left on both sides of said central strip

portion, and a cut-out portion is formed between adjacent two wing portions located on at least one side of said central strip portion; and the wing portions on both sides are bent at working lines for bending which define the both sides of said central strip portion by an angle of about 45° in the same direction with respect to said central strip portion so as to prepare each



of said mixing parts such that it substantially has a circular outer shape, and wherein the wing portions of said pair of mixing parts are faced each other and the central strip portions are arranged in parallel to each other with their both ends being aligned, and the wing portions are then inserted into the corresponding cut-out portions.

5,378,064

CONTROL ROD DRIVING SYSTEM

Yoshifumi Satoh, Kawasaki, and Akira Nakamura, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

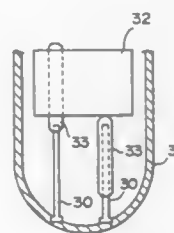
Filed Sep. 30, 1992, Ser. No. 954,048

Claims priority, application Japan, Sep. 30, 1991, 3-251587; Feb. 24, 1992, 4-036146; Jun. 9, 1992, 4-149589

Int. Cl.⁶ G21C 7/06

U.S. Cl. 376—230

12 Claims



1. A control rod driving system for controlling a nuclear reactor core disposed in a reactor pressure vessel comprising: a control rod comprising a cylindrical tube having an inner hollow portion extending axially thereof and a neutron absorber means mounted on an outer surface of the cylindrical tube, the neutron absorber means having a crossing blade shape; and

a control rod driving mechanism to be inserted in to the inner hollow portion of said control rod to drive the control rod wherein said control rod driving mechanism is provided with a piston-cylinder mechanism driven by hydraulic means and wherein said control rod driving mechanism is disposed in the reactor pressure vessel.

5,378,065

CONTAINER

Stefan Tobolka, 2146 Olde Base Line Road, Ingelwood, Ontario, Canada

Filed Dec. 30, 1993, Ser. No. 175,938

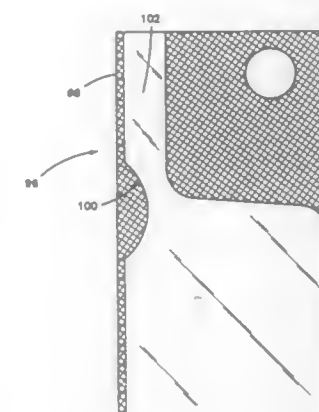
Int. Cl.⁶ B65D 30/16, 33/36

U.S. Cl. 383—9

9 Claims

1. A container which comprises: a single, unitary piece of plastic folded and bonded together to form a container, said

container having a base portion, a body portion extending upwardly from the base, a shoulder portion extending upwardly from the body portion, and an integral spout portion extending upwardly from the shoulder and forming an integral straw, bonded portions of said plastic extending upwardly from the base along the body portion, shoulder portion and spout portion, wherein the spout portion has an end portion, a length, an opening in the end portion and an open channel along the length thereof to provide access to the container,



including at least one constricted area formed by bonded regions in said open channel to prevent increase in velocity upon dispensing the container contents, and wherein the spout portion includes a lower portion thereof adjacent the shoulder portion with the constricted area being located in the lower portion adjacent the shoulder, and wherein the length of the spout downstream of the constricted area is equal to at least about one-half the length of the body portion from the base to the shoulder.

5,378,066

OPENING DEVICE FOR FLEXIBLE PACKAGING

Steven E. Wade, Winona, W. Va., assignor to Greenbrier Innovations, Inc., Hinton, W. Va.

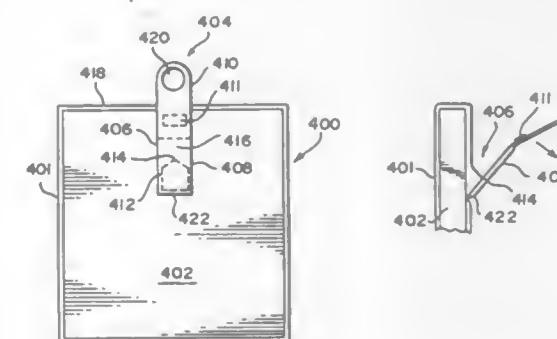
Continuation-in-part of Ser. No. 863,016, Apr. 3, 1992, Pat. No. 5,215,381, which is a continuation-in-part of Ser. No. 510,203, Apr. 17, 1990, Pat. No. 5,127,065. This application May 28, 1993, Ser. No. 69,278

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.⁶ B65D 3/26

U.S. Cl. 383—205

17 Claims



1. A package comprising: a product;

a flexible packaging material surrounding said product in close conformance therewith including in an area at which said flexible packaging material is bonded to an opening device; and

said opening device comprising a lever arm having a proximal end portion, said proximal end portion being bonded to said flexible packaging material at an area of said prod-

uct, a bond between said proximal end portion and said packaging material existing at least at a portion of said proximal end region located at a distance away from a bottom edge of said lever arm, an upper part of said proximal end portion not being bonded to said packaging material; and

whereby said product provides a surface against which and about which said bottom edge of said lever pivots, causing rupture of said packaging material.

5,378,067

NETWORK INTERFACE APPARATUS AND METHOD FOR REDUCING CONFLICTS THROUGH THE USE OF TIMES

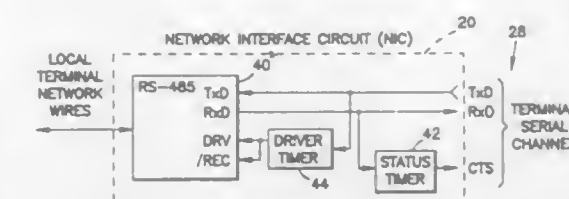
Verne L. Severson, and John D. Hardy, Jr., both of Chaska, Minn., assignors to DataCard Corporation, Eden Prairie, Minn.

Continuation of Ser. No. 651,726, Feb. 7, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,682

Int. Cl.⁶ G06F 13/36, 13/14

U.S. Cl. 395—800

5 Claims



1. In a communications network for transmitting data on a communication medium coupling a plurality of terminal processors, a network interface circuit associated with each terminal processor comprising:

a transceiver for interfacing said terminal processor to said network, said transceiver including a driver for driving data on said communication medium, said driver continuing to drive the communication medium for a period of time, t(DRIVER HOLD), beyond the time data is transmitted;

status means for providing status information to said terminal processor indicating whether data is being transmitted on said communication medium, said status means further comprising a status line coupled to said terminal processors, wherein said status line is made inactive when data is transmitted on said communication medium, and is made active when no data is transmitted on said communication medium, said status line being held inactive for a period of time, t(STATUS HOLD), beyond the time data is transmitted, t(STATUS HOLD) being greater than t(DRIVER) to ensure that a transmitting terminal processor and a receiving terminal processor never drive the communication medium at the same time, said terminal processor means including further delay means for delaying transmission of data a period of time, t(TURN HOLD), after said status line becomes active so as to ensure that a receiving terminal processor can send an acknowledge data message to a transmitting terminal processor;

enabling means for automatically enabling said driver upon initiation of data transfer from said terminal processor to the network interface circuit; and

wherein said enabling means includes a driver timer for automatically enabling said driver and continuing to hold said driver enabled until all bits of said data have been transmitted, said enabling means disabling said driver once all bits of said data have been transmitted, said terminal processor re-initiating transfer of the data to the network interface circuit card if an acknowledgment message is not received within a defined time-out period, whereby said enabling means will again automatically enable said driver

and continue to hold said driver enabled until all bits of said data have been transmitted, said terminal processor including retransmission delay means for delaying re-initiating transfer of the data so that multiple terminal processors do not retransmit data at the same time.

5,378,068

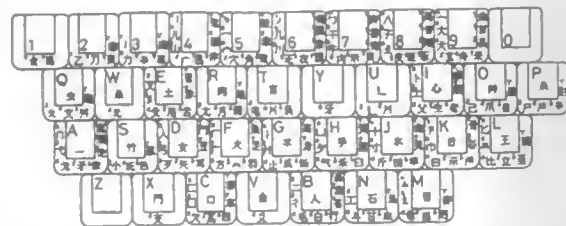
WORD PROCESSOR FOR GENERATING CHINESE CHARACTERS

Teyh-Fwu Hua, No. 5, Fu-Shou Lane, Chiu-Che Rd., Tien-Chung Tsun, Lung-Ching Hsiang, Taichung Hsien, Filed Oct. 12, 1993, Ser. No. 134,579

Int. Cl.⁶ B41J 5/10

U.S. Cl. 400—110

1 Claim



1. A word processor for producing Chinese characters, each of said Chinese characters including at least one radical, said word processor comprising:

- ar. internal memory unit for storing a dictionary of radicals of Chinese characters from which selected Chinese characters are derived;
- a standard United States keyboard having numeral and letter keys and being coupled to said internal memory unit, said numeral keys including co-functioning numeral keys, each of said co-functioning numeral keys being inscribed with at least one of said radicals and a letter or numeral representative of a letter or numeral key used in combination with said each co-functioning numeral key to select said at least one of said radicals, said letter keys including co-functioning letter keys, each of said co-functioning letter keys being inscribed with at least one of said radicals and a letter or numeral representative of a letter or numeral key used in combination with said each co-functioning letter key to select said at least one of said radicals;
- a screen coupled to said internal memory unit for displaying the characters derived from said memory unit; and
- a memory disk coupled to said memory unit for storing the characters appearing on said screen, wherein said numeral and letter keys are inscribed as shown in FIG. 2.

5,378,069

ENVIRONMENTALLY SAFE TOUCH TYPING KEYBOARD

James H. Bowen, Catharpin, Va., assignor to Product Engineering & Mfg., Inc., Catharpin, Va.

Continuation of Ser. No. 933,749, Aug. 24, 1992, abandoned.

This application Dec. 15, 1993, Ser. No. 166,906

Int. Cl.⁶ B41J 5/10

U.S. Cl. 400—477

25 Claims

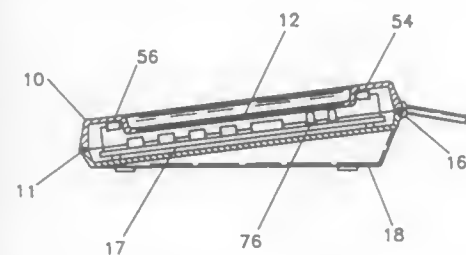
1. A keyboard for data entry that the positional detection of an operators fingers are made prior to said operators fingers contacting said keyboard, the keyboard further comprising in combination:

- a planar surface forming a substantially flat bottom of an unilocular area;
- a removable overlay with opaque indicia thereon, disposed on said planar surface;
- said opaque indicia being at a plurality of discrete locations disposed in a pattern for indicating key text at each of said plurality of discrete locations;
- a plurality of light emitters and a plurality of light detectors disposed in a pattern about a border surrounding said

plurality of discrete locations and above said planar surface;

said plurality of light emitters are paired with said plurality of light detectors;

an electronic circuit that illuminates said light emitters to emit light in a path substantially straight to said light detectors, and to scan said pair of light emitters and light detectors in an unimpeded path above and substantially parallel to and coextensive with said planar surface;



a printed circuit board disposed adjacent to and below said planar surface, connecting said electronic circuit to said plurality of light emitters and said plurality of light detectors; and

means for scanning said pair of light emitters and light detectors to detect said operators fingers that break said path of said pair of light emitters and light detectors before said operators finger contacts said planar surface at each of said plurality of discrete locations.

5,378,070

TAPE POSITIONING APPARATUS FOR MAILING MACHINE

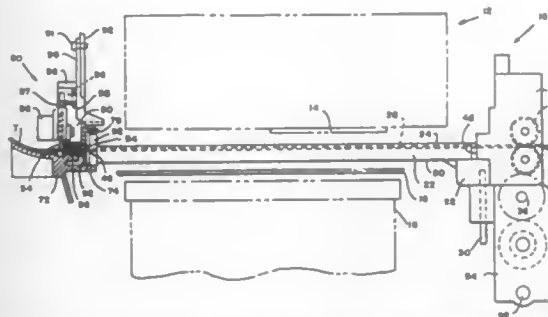
Thomas M. Lyga, Torrington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 8, 1993, Ser. No. 14,600

Int. Cl.⁶ B41J 15/18

U.S. Cl. 400—615.2

9 Claims



1. A tape positioning apparatus for use in a mailing machine having means for printing a postage indicia on a discrete portion of a strip of tape of indefinite length which is fed intermittently through the mailing machine, said apparatus comprising:

- a) a printing device mounted in the mailing machine and defining a printing position, said printing device including means for printing a postage indicia on the strip of tape as it is fed intermittently through the mailing machine,
- b) an elongate chute having wall means for defining a first tape channel extending through said chute, said first tape channel having inlet and outlet ends through which the strip of tape is adapted to be fed,
- c) tape guide means disposed adjacent said outlet end of said first tape channel for defining a second tape channel extending therethrough, said second tape channel having an inlet end normally disposed adjacent said outlet end of

said first tape channel and an outlet end spaced from said inlet end of said second tape channel,

d) tape cutting means disposed adjacent said outlet end of said second tape channel for cutting said tape after a printed portion thereof passes said outlet end of said second tape channel,

e) means mounted in the mailing machine for supporting said chute for reciprocatory movement between a home position in which said chute is disposed remote from said printing position and said first and second tape channels are in longitudinal alignment, and said printing position in which the tape therein is in operative relationship with said printing device and said first and second tape channels are disposed out of longitudinal alignment, and

f) means mounted adjacent said outlet end of said first tape channel for latching said chute adjacent said outlet end of said first tape channel so that said outlet end of said first tape channel is in precise alignment with said inlet end of said second tape channel, whereby a leading edge of an unsevered strip of tape passes smoothly from said elongate chute to said cutting means after each successive printing operation.

5,378,071

VIDEO PRINTER

Masahiro Uehara, Kanagawa, Japan, assignor to Sony Corporation, Japan

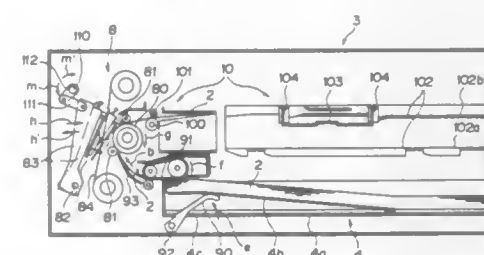
Filed Jun. 18, 1993, Ser. No. 77,938

Claims priority, application Japan, Jun. 25, 1992, 4-190137

Int. Cl.⁶ B41J 13/03

U.S. Cl. 400—636.1

14 Claims



1. A printer for printing an image on a sheet of paper, comprising:

- a printing device having a thermal head, a platen and an ink ribbon;
- a head moving means for moving said thermal head between a printing position and a paper-ejecting position;
- a paper feeding device for intermittently supplying to the printing device sheets of paper from a paper stack in a paper feeding tray;
- a lever means for selectively moving said paper stack into engagement with said paper feeding device;
- a paper-ejecting device comprising a paper-ejecting roller and a pressing roller for ejecting the sheet of paper from the printing device; and
- a pressing means for selectively moving the pressing roller into and out of engagement with the paper-ejecting roller; wherein said pressing means, lever means and head moving means are synchronized by a cam assembly such that in a first position of said cam assembly the lever means moves said paper stack into engagement with said paper feeding device, said pressing means moves said pressing roller into engagement with the paper-ejecting roller and said head moving means moves said head into said paper-ejecting position, and in a second position of said cam assembly said lever means moves said paper stack away from said paper feeding device, said pressing means moves said pressing roller away from the paper-ejecting roller and said head moving means moves said head into said printing position.

5,378,072

TRANSFER MATERIALS SUPPLIER

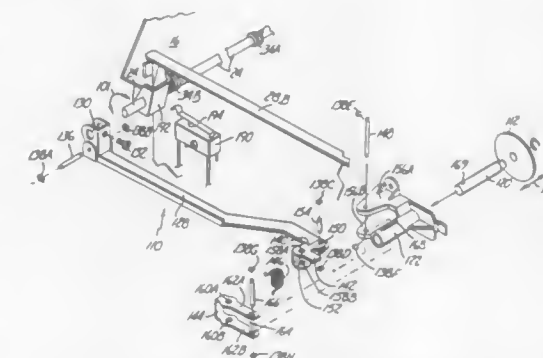
Ernest M. Gunderson, Minneapolis, Minn., assignor to Fargo Electronics, Inc., Eden Prairie, Minn.

Filed Sep. 14, 1993, Ser. No. 121,752

Int. Cl.⁶ B41J 29/02

U.S. Cl. 400—692

9 Claims



1. An entry controlled ribbon core engager for a recorder having an interior space accessible through a cover means that is selectively movable between an open position, in which a ribbon core having a supply ribbon at least partially wound therearound can selectively be provided in said interior space and removed therefrom, and a closed position, in which such providing and removing is prevented, said ribbon core engager comprising:

- a drive hub means located in said interior space having a drive hub portion that is selectively rotatable about a hub axis, said drive hub portion having a core engagement means for engaging a said ribbon core forced thereagainst to correspondingly force rotation of that said ribbon core when said drive hub portion is rotated;
- a positioning hub means located in said interior space having a positioning hub portion spaced apart from said drive hub portion along said hub axis and being movable back and forth along, and rotatable about, said hub axis such that a said ribbon core can be positioned between said positioning hub and said drive hub portions when said positioning hub means is moved back from said drive hub portion; and
- a motion converter means connected to both said cover means and said positioning hub means so as to move said positioning hub portion back and forth along said hub axis when said cover means is correspondingly moved between said open and closed positions therefor, whereby said cover means being placed in said open position therefor causes said positioning hub portion to be positioned back from said drive hub portion, and said cover means being placed in said closed position therefor causes said positioning hub portion to be positioned toward said drive hub portion to thereby force any said ribbon core positioned therebetween against said core engagement means.

5,378,073

RING BINDER CARRIER RAIL

Chan C. Law, Hong Kong, Hong Kong, assignor to World Wide Stationery Manufacturing Co., Ltd., Kwai Chung, Hong Kong

Filed Apr. 30, 1993, Ser. No. 55,967

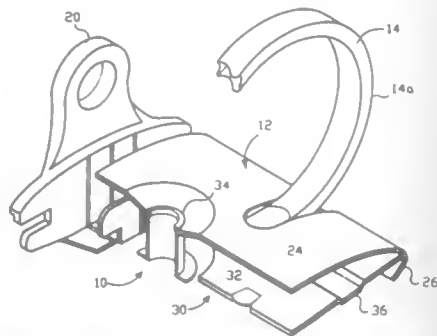
Int. Cl.⁶ B42F 13/26

U.S. Cl. 402—31

9 Claims

1. A ring binder comprising a housing member, a pair of carrier rails and a plurality of ring members, said housing member supporting said pair of carrier rails which are pivot-

ally mounted relative to each other, at least one of said carrier rails being provided with one or more longitudinal ribs, and



each of said ring members being supported by said carrier rails and extending through said housing member.

5,378,074

TUBULAR CONNECTION

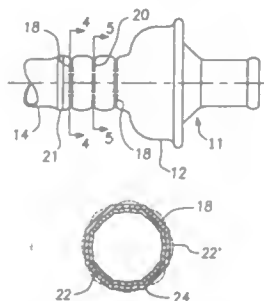
Joseph D. Blouin, Sturgis; Keith A. Leu, Dearborn, and Larry K. Diller, Fairview, all of Mich., assignors to Fabex, Incorporated, Novi, Mich.

Filed Aug. 24, 1992, Ser. No. 934,572

Int. Cl.⁶ B25G 3/28

U.S. Cl. 403—284

17 Claims



1. A connection for joining metal tubes such that a fluid communication path is established between the tubes, the connection comprising:

- means for fixing an end portion of a first metal tube coaxially within an end portion of a second metal tube;
- means for sealing said end portions against each other;
- said fixing means being separate from and different from said sealing means;
- said fixing means including at least one first circumferential crimp defined in metal engaging surfaces of both said end portions;
- said sealing means including at least one second circumferential crimp defined in metal engaging surfaces of both said end portions;
- said first and second circumferential crimps having different shapes; and
- said fixing means includes a pair of said first circumferential crimps spaced axially from each other along said end portions, and said second circumferential crimp is disposed axially intermediate said pair of first circumferential crimps.

5,378,075 LOCKING MECHANISM FOR STOCK RESTRAINING EQUIPMENT

Henry E. Mitchell, Timaru, New Zealand, assignor to Prattley Engineering Limited, Temuka, New Zealand

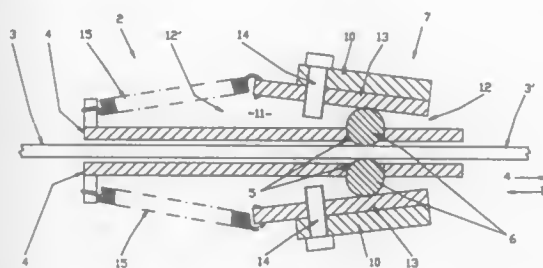
Filed Jun. 1, 1993, Ser. No. 70,044

Claims priority, application New Zealand, Jun. 2, 1992, 242978

Int. Cl.⁶ F16G 11/00

U.S. Cl. 403—314

8 Claims



1. A locking mechanism for locking a bar in position at any position along a major part of the length of the bar, said mechanism comprising:

- a bar;
- a housing which includes walls inclined together to form a tapered passage through which the bar passes, with the longitudinal axis being substantially parallel to that of the bar;

at least one roller located in said passage and arranged to bear against the side of the bar, with the longitudinal axis of the roller perpendicular to that of the bar, said roller being capable of rotation about its longitudinal axis and of movement along the length of the passage;

said bar, passage and roller being arranged and dimensioned such that the roller can move along the passage between a lock position in which the roller lies adjacent the narrow end of the passage and bears hard against the side of the passage and the side of the bar, and locks the bar against movement in a predetermined direction, and a release position in which the roller lies adjacent the wider end of the passage and is in light rolling contact with the bar and the bar can move freely relative to the housing;

and means for moving said roller from the lock position to the release position.

5,378,076

DEVICE FOR THE PRECISE COUPLING OF TWO CYLINDRICAL PARTS, ESPECIALLY TO FORM COMPOUND TOOLS

Ermanno D'Andrea, Lainate, Italy, assignor to D'Andrea S.p.A., Lainate, Italy

Filed Dec. 11, 1992, Ser. No. 988,997

Claims priority, application Italy, Dec. 20, 1991, MI91 A003435

Int. Cl.⁶ B23B 29/00; F16D 1/00

U.S. Cl. 403—379

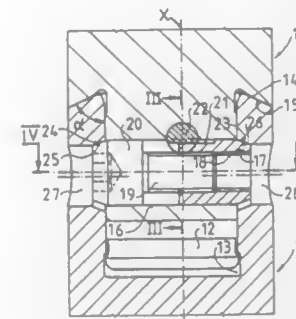
8 Claims

1. A coupling arrangement, comprising:

- a) a first coupling member having a generally cylindrical pin extending along a longitudinal axis, and a generally cylindrical passage extending through the pin between opposite open end regions along a transverse axis that is generally perpendicular to the longitudinal axis;
- b) a second coupling member having an annular wall bounding a generally cylindrical seat that extends along the longitudinal axis, and a pair of spaced-apart ports extending through the annular wall and having frusto-conical inner surfaces;
- c) means for coupling the members between a coupled state in which the pin is lockingly received in the seat, and an

uncoupled state in which the pin is unlocked from the seat, said coupling means including

- i) a bushing having a generally cylindrical portion which has an exterior, generally flattened surface, a frusto-conical end portion which has a frusto-conical outer surface, and a threaded bore that extends through the cylindrical and end portions of the bushing;
- ii) a threaded element having a frusto-conical outer surface and threadably engaging the bushing, said element having a threaded shaft in threaded engagement with the bore, and a head having a frusto-conical end portion.



- iii) said frusto-conical outer surfaces being located at said opposite open end regions of the passage of the pin, and
- iv) means for moving the bushing and the element from a retracted position in which the bushing and the element are entirely contained within the passage of the pin in the uncoupled state, in opposite directions apart from each other away from the longitudinal axis, to an extended position in which the frusto-conical outer surfaces extend outwardly of the passage and respectively engage the frusto-conical inner surfaces of the posts in the coupled state;
- d) a dowel mounted in the first coupling member and having a flat that engages the flattened surface of the bushing.

5,378,077

SHAPED CONNECTING PIECE FOR CONNECTING STRUCTURAL PROFILE MEMBERS

Hans-Dieter Paulsen, Zwingenberg, Germany, assignor to Masco Industries, Inc., Taylor, Mich.

PCT No. PCT/DE90/00901, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO91/08367, PCT Pub. Date Jun. 13, 1991

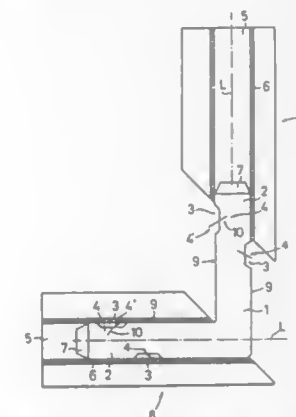
PCT Filed Nov. 24, 1990, Ser. No. 859,452

Claims priority, application Germany, Nov. 24, 1989, 3938996; Jan. 16, 1990, 4000983; Apr. 21, 1990, 4012808

Int. Cl.⁶ F16B 12/02

U.S. Cl. 403—402

37 Claims



1. A shaped connecting member for connecting structural

profile members such as door or window casement sections, said connecting member comprising:

- at least one elongated attachment leg to be inserted into an attachment chamber of a respective profile member and fixed in position therein;
- said attachment leg having opposite side surfaces each having therein a separate recess;
- resilient elements on respective of said opposite side surfaces in regions of respective said recesses; and
- each said resilient element including a free end segment extending outwardly beyond the respective said side surface of said attachment leg, such that as said attachment leg is inserted into the attachment chamber said end segment elastically deforms toward said recess and thereafter acts against a surface of the profile member defining the attachment chamber to prevent removal of said attachment leg therefrom, and each said resilient element being part of a clip that fits into the respective said recess, said clip including a central portion and axially opposite end portions bent from said central portion in opposite directions.

5,378,078

MANHOLE COVER

Michael E. Lewis; Richard C. Lewis, both of 1555 Copper Hill Pkwy., Santa Rosa, Calif. 95403, and Rodney E. Schapel, P.O. Box 60039, Reno, Nev. 89506

Continuation-in-part of Ser. No. 777,098, Oct. 15, 1991, abandoned. This application Oct. 15, 1992, Ser. No. 961,147

Int. Cl.⁶ E02A 29/14

U.S. Cl. 404—25

6 Claims



1. A method for manufacturing a manhole cover comprising the steps of:

- providing a homogenous frusto-conical core portion having an included angle of between twenty degrees and forty degrees;
- providing a ply layer comprising a plurality of unidirectional fiber tape pieces each having a radial orientation, the orientation of each piece generally offset relative to the orientation of the adjacent piece; and
- bonding a plurality of said ply layers above and below said frusto-conical core portion.

5,378,079

ROAD PAVEMENT COMPOSITION AND METHOD THEREFORE

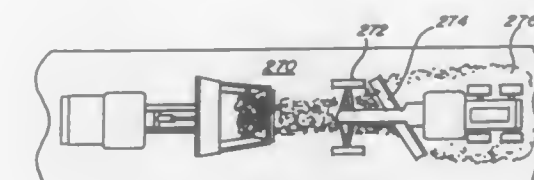
James S. Omann, 11235 Park Dr., Rogers, Minn. 55374

Continuation-in-part of Ser. No. 27,277, Mar. 5, 1993. This application Aug. 24, 1993, Ser. No. 111,292

Int. Cl.⁶ F01C 7/18

U.S. Cl. 404—75

3 Claims



1. A method of manufacturing and applying a road pave-

ment composition for roadbeds, roadways, driveways, walkways and like surfaces, comprising:

- reducing sticky, abrasive waste shingles and portions thereof to shingle granules;
- loading the shingle granules on a vehicle;
- applying the shingle granules from the vehicle to a surface to receive pavement; and
- grading the applied shingle granules into the surface with the blade of a grader to create a low grade pavement from the shingle granules without adding asphalt oil to the shingle granules.

5,378,080

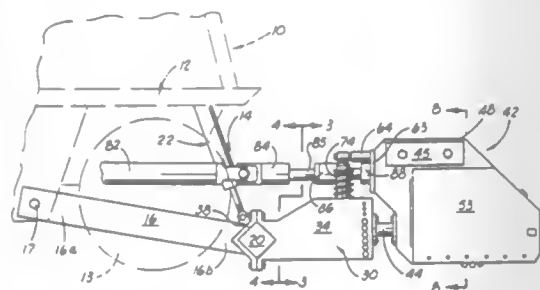
ROAD SURFACE TREATING APPARATUS

Wayne E. Dickson, Tecumseh, Okla., assignor to Dickson Industries, Inc., Tecumseh, Okla.
Division of Ser. No. 880,181, May 7, 1992, Pat. No. 5,236,278, which is a division of Ser. No. 757,235, Sep. 10, 1991, Pat. No. 5,129,755. This application May 14, 1993, Ser. No. 61,919. The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.⁶ E01C 23/08; E21C 47/00

U.S. Cl. 404—90

5 Claims



1. A road surface treating apparatus for use with a powered vehicle, said apparatus comprising:

- a pair of arms each having a forward end and a rear end, said rear end being adapted for pivotal connection to the vehicle for pivotation about a horizontal, substantially transversely extending axis;
- a transverse tool bar extending substantially horizontally and transversely with respect to the direction of movement of said vehicle, said transverse tool bar being mounted on the forward end of said arms;
- a tool-supporting frame subassembly detachably and adjustably mounted on said tool bar;
- a drum housing pivotally mounted on said tool-supporting frame subassembly on the opposite side thereof from said tool bar for pivotation about a substantially longitudinal, horizontal axis for facilitating free floating, rocking movement of said drum housing about said longitudinal axis;
- a generally cylindrical cutter drum subassembly rotatably mounted in said drum housing for rotation about a substantially horizontal, transversely extending axis; and
- a power train connected to said generally cylindrical cutter drum subassembly and adapted for connection to a prime mover on said vehicle for driving said cutter drum subassembly in rotation.

5,378,081

MILLING MACHINE WITH FRONT-MOUNTED CUTTER

George W. Swisher, Jr., 1500 Dorchester Dr., Oklahoma City, Okla. 73210

Filed Feb. 16, 1994, Ser. No. 197,089

Int. Cl.⁶ E01C 23/12

U.S. Cl. 404—90

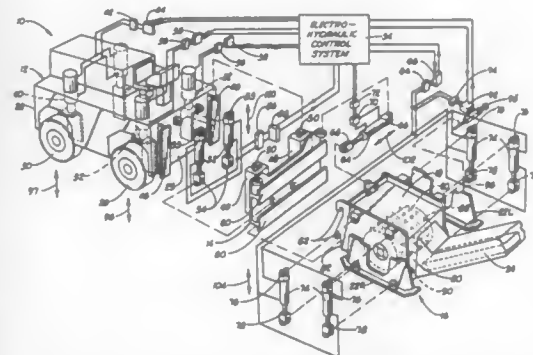
18 Claims

1. A milling machine comprising:

a frame having a front end, a rear end and a pair of vertical rack guides mounted to the front end of said frame;

a cutter rack having a pair of front horizontal housing guides and a pair of rear rack followers, each rack follower being slidably mounted to a corresponding one of the rack guides of said frame;

a cutter housing having a bottom with a cutter opening and a pair of rear housing followers, each housing follower being slidably mounted to at least one of the housing guides of said cutter rack;



a cutter drum rotatably mounted within said cutter housing with a portion of said cutter drum protruding through the cutter opening of said cutter housing;

a pair of rack cylinders mounted between said frame and said cutter rack for vertically moving said cutter rack to an operating elevation over the surface; and

a horizontal cylinder mounted between said cutter rack and said cutter housing for horizontally moving said cutter housing to a milling position.

5,378,082

SHIP LIFTING INSTALLATION

Manfred Hiller, Ilvericher Str. 13, D-4150 Krefeld-Stratum, and Norbert Umlauf, Haferkamp 64, D-5800 Hagen 1, both of Germany

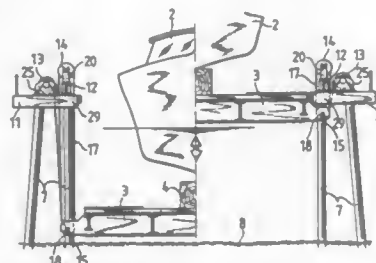
Continuation-in-part of Ser. No. 140,719, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 777,566, Dec. 31, 1991, abandoned. This application Feb. 25, 1994, Ser. No. 202,851

Claims priority, application Germany, Mar. 27, 1990, 4009744

Int. Cl.⁶ B63C 3/06

U.S. Cl. 405—3

10 Claims



1. A ship lifting installation, comprising:
- a platform for docking ships and having opposite longitudinal sides; and at least two lifting mechanisms arranged, at said opposite sides, respectively, for lifting and lowering said platform;
 - wherein each of the lifting mechanisms comprises:
 - a grooved cable drum including a planetary gear unit located in the cable drum for rotating the same;
 - at least one upper pulley block arranged separately from said cable drum on a cable pulley support;
 - at least one lower pulley block fixedly connected with said platform;

a cable extending about said upper and lower pulley blocks and said cable drum; and

a standard electric motor with an integrated brake for driving said planetary gear unit in opposite direction to rotate said cable drum in the opposite directions to wind and unwind, respectively, said cable on and from said cable drum thereby to lift and to lower said lower pulley block together with said platform.

5,378,083

DUST RECYCLING FOR SOIL REMEDIATION SYSTEM

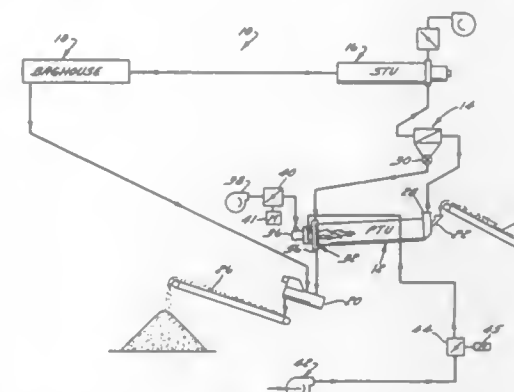
Malcolm L. Swanson, Chickamauga, Ga., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Jul. 13, 1993, Ser. No. 35,343

Int. Cl.⁶ B09B 3/00

U.S. Cl. 405—128

15 Claims



1. A method of remediating dust, comprising:
- driving volatiles from said dust, at a location outside of but proximate a remediated soil outlet of a soil remediation unit, using heat from soil remediated by said soil remediation unit to vaporize said volatiles; then
 - directing said volatiles into said soil remediation unit; and then
 - oxidizing at least a portion of said volatiles in said soil remediation unit.

5,378,084

BACKPACK SYSTEMS

William D. Walters, 2230 Biscay Ct., Byron, Calif. 94514; Jay G. Stone, 29943 Harvester Rd., Malibu, Calif. 90265, and Steve D. Walters, 2230 Biscay Ct., Byron, Calif. 94514

Continuation of Ser. No. 800,442, Nov. 18, 1991, abandoned.

This application Mar. 24, 1994, Ser. No. 217,776

Int. Cl.⁶ B63C 11/08

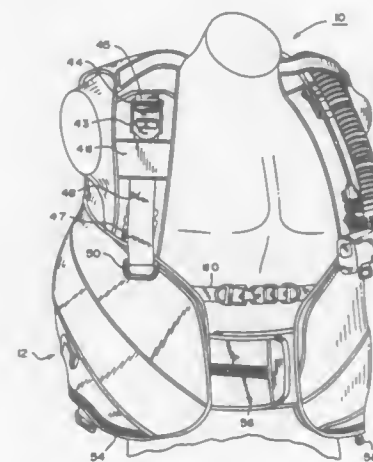
U.S. Cl. 405—186

13 Claims

1. A pack unit for enabling a user to carry a substantial back supported load with comfort and mobility, comprising:

- a flexible load container having a base panel for engagement on the back of a user, the base panel having integral shoulder extensions fitting over each shoulder, and integral waist extensions fitting around a portion of the waist of the user; and
- harness means having a number of elements, disposed on the front of the user, the harness means including waist belt segments for adjustably interconnecting the waist extensions of the flexible load container across the front of the waist of the user, and shoulder segments for adjustably interconnecting the shoulder extensions to the waist extensions, at least the waist belt segments of the harness means each being longitudinally flexible within a selected

range, such that load forces are transmitted to the load container at the waist of the user while holding the load in



conformity to the user without restricting body movement.

5,378,085

METHODS FOR IN SITU CONSTRUCTION OF DEEP SOIL-CEMENT STRUCTURES

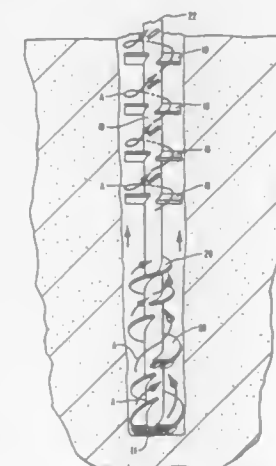
Ikuo Kono, Tokyo, Japan, and David S. Yang, Fremont, Calif., assignors to S. M. W. Selko, Hayward, Calif.

Filed Oct. 1, 1993, Ser. No. 130,626

Int. Cl.⁶ E02D 5/46

U.S. Cl. 405—233

12 Claims



1. A method for creating an in situ mixture of a slurry with soil as an auger penetrates the soil, the mixture intended for use in producing soil-cement structures, the method comprising the steps of:

- drilling downward through soil with an auger;
- injecting downwardly through the tip of the auger a non-hardening slurry into the soil during the downward drilling to nonstructurally consolidate the non-hardening slurry with the soil, to thereby reduce the friction between the fractured soil, the auger, and soil adjacent to the auger;
- drilling upward to remove the auger from the soil; and
- injecting into the soil through the auger a hardening slurry during the upward drilling of the auger to structurally consolidate the soil and the slurry.

5,378,086
SYSTEMS TO EXTERMINATE AND CONTROL
SUBTERRANEAN TERMITES AND OTHER
SUBTERRANEAN PESTS

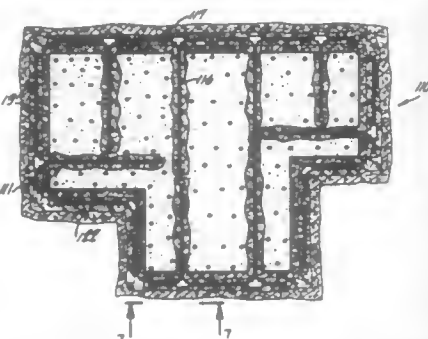
Albert E. Campbell, Jr., 19326 Firestone Cir., Huntington Beach, 92648, and Charles F. Stevenson, 29500 Heathercliff, No. 195, Malibu, both of Calif. 90265

Filed Sep. 15, 1993, Ser. No. 122,613

Int. Cl.⁶ A01M 1/20; E02B 11/00

U.S. Cl. 405—229

4 Claims



1. A system to exterminate and control subterranean termites and other subterranean pests inhabiting a subterranean area surrounding or in close proximity to a structure having a perimeter near ground level, said system comprising:

- a plurality of first pipes each of which has a plurality of holes in its sidewall, said first pipes being disposed beneath ground level along the perimeter of the structure;
- a source of steam fluidly coupled to said first pipes;
- a plurality of temperature sensors each of which is disposed adjacent to one of said first pipes whereby said temperature sensors generate temperature signals; and
- a temperature display electrically coupled to said temperature sensors and displays a temperature reading adjacent to each of said first pipe in response to said temperature signals.

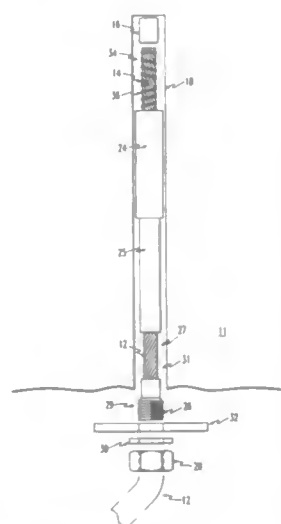
5,378,087
MINE ROOF SUPPORT APPARATUS AND METHOD
 Frank M. Locotoa, 230 Teepee Rd., Bridgeville, Pa. 15017

Filed Sep. 25, 1991, Ser. No. 765,374

Int. Cl.⁶ E21D 20/00

U.S. Cl. 405—259.5

10 Claims



1. A method of supporting rock in the roof of a mine comprising the steps of:

drilling a first bore hole and a second bore hole each having a first diameter and a first length into the rock; drilling a first countersink hole and a second countersink hole, concentric with the first and second bore holes, respectively, each having a second diameter larger than the first diameter and a second length smaller than the first length; anchoring a first rock bolt within the first bore hole, said first rock bolt is attached to the first end of a cable with a first connector element, said first connector element disposed within the first countersink hole after the first rock bolt is anchored; and anchoring a second rock bolt within the second bore hole, said second rock bolt is attached to the second end of a metal cable with a second connector element, said second connector element disposed within the second countersink hole and the cable is taut after the second rock bolt is anchored.

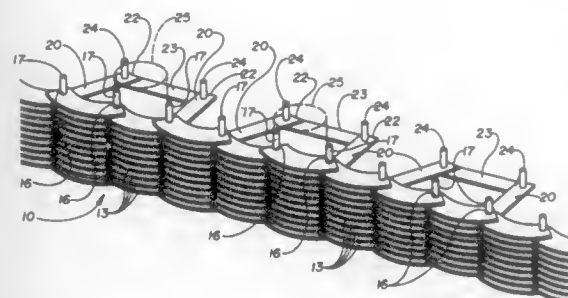
5,378,088
RETAINING WALL AND METHOD FOR FORMING,
USING SEGMENTED AUTOMOBILE TIRES
 Nicholas A. Foehrkolb, 2899 Breezy Point Ct., Baltimore, Md. 21221

Filed Aug. 20, 1993, Ser. No. 110,066

Int. Cl.⁶ E02D 29/02; E02B 3/06

U.S. Cl. 405—284

18 Claims



1. A retaining wall formed from a plurality of segmented automobile tires, each tire having a tread portion around a circumference of the tire and a pair of sidewalls, said tread portion being removed and each residual sidewall portion being cut into segments of approximately equal sizes, the retaining wall comprising the sidewall segments being disposed as horizontal members, each horizontal member having respective opposite ends and an opening being formed near each end of each member, a plurality of horizontal members being disposed adjacent to one another along a length to form a row, the respective ends of adjacent members overlapping, the openings near the respective ends of adjacent members being aligned to cooperate with one another, a plurality of rows being formed and aligned vertically with respect to one another wherein the openings in the members of each row are vertically aligned and cooperate with the openings in the members in the rows above and rows below to form a height of the wall, a plurality of rods, one rod being disposed in each vertical alignment of openings whereby the rows of horizontal members are interconnected to form the wall and wherein the wall may be a desired height and a desired length and the wall may be formed to conform to the topography of the ground on which the wall is constructed.

5,378,089
APPARATUS FOR AUTOMATICALLY FEEDING HOT
MELT TANKS

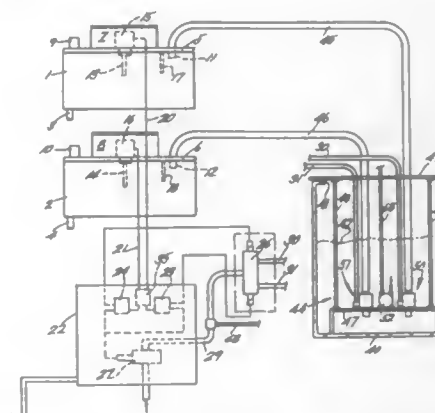
R. Thomas Law, 17314 Noakes Rd., Vernonia, Oreg. 97064

Filed Mar. 1, 1993, Ser. No. 24,365

Int. Cl.⁶ B65G 53/24

U.S. Cl. 406—123

2 Claims



2. An apparatus for automatically transferring discrete material for processing purposes, said apparatus comprising, a storage container for the discrete material and having an opening therein, receptacles for intermittently receiving material from said storage container, each of said receptacles including a level switch and a transmitter in circuit therewith for providing a signal upon the level of material reaching a predetermined depth in each of said receptacles, transfer conduits each communication said storage container with one of said receptacles, a control panel remote from said receptacles and including switch means responsive to said signal from the transmitter of each of said receptacles, valve means actuated by said switch means and in communication with an air pressure source, and signal sequencing means receiving a signal from each transmitter to actuate said switch means in a sequential manner, a transducer assembly including a base in said storage container and having vacuum transducers on said base, said vacuum transducers each including an inlet for receiving the discrete material and an annular nozzle served by said air pressure source for injecting an airflow into one of said transfer conduits to induce and propel the discrete material to the receptacles.

5,378,090
ADAPTER FOR DRILLING MACHINES
 Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

Filed Nov. 5, 1993, Ser. No. 147,534

Claims priority, application Germany, Nov. 6, 1992, 4237560

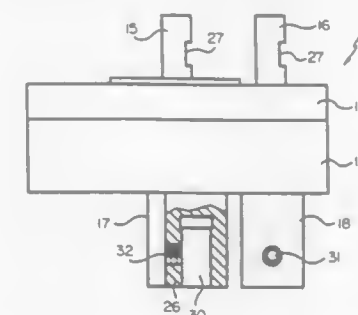
Int. Cl.⁶ B23B 47/30

U.S. Cl. 408—42

5 Claims

1. An adapter for a drilling machine having at least one drill spindle, said adapter comprising: a housing with two mutually parallel input shafts extending from one side, said housing having at least three drill spindles with attachment means for drill bits, said at least three drill spindles being arranged on a side of said housing opposite to said side from which said two mutually parallel input shafts extend, and transmission means for connecting together at least two of said at least three drill spindles of said housing with one of said two input shafts in a driving manner and for connecting

ing together only one of said at least three drill spindles of said housing with the other of said two input shafts in a



driving manner so that said two input shafts are driven independent of each other.

5,378,091
METHOD AND APPARATUS FOR MACHINING A
WORKPIECE

Makoto Nakamura, Kawasaki, Japan, assignor to Makino Milling Machine Co., Ltd., Tokyo, Japan

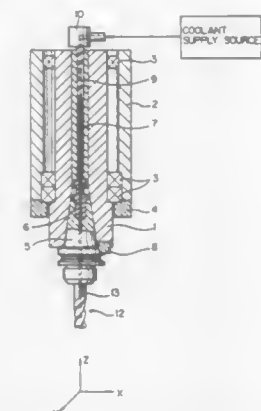
Filed Jun. 3, 1993, Ser. No. 72,229

Claims priority, application Japan, Jnn. 17, 1992, 4-047883[U]; Jun. 17, 1992, 4-181571; Nov. 20, 1992, 4-085879[U]; Nov. 20, 1992, 4-333799

Int. Cl.⁶ B23C 5/28; B23B 35/00

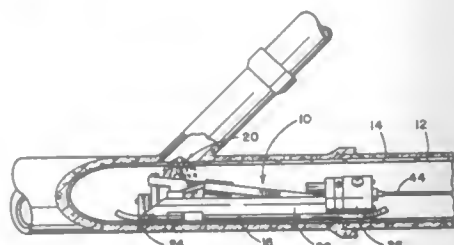
U.S. Cl. 409—132

18 Claims



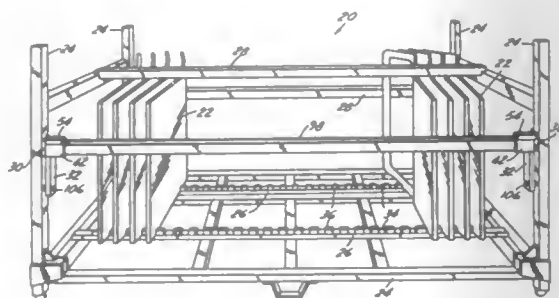
1. A method of machining a workpiece by a rotating cutting tool including a shank adapted to be inserted into a tool fitting bore of a tool holder, a cutting part integrally formed therewith and having a cutting edge terminated at a free end of said cutting tool, and at least one coolant channel extended on the outer surface of the cutting tool from the rear end of said shank to a region adjacent to said free end of said cutting tool, which method comprises the steps of: supplying coolant into said tool fitting bore of said tool holder, said coolant having sufficient pressure and flow rate to remove heat and chips generated during said machining; directing said coolant in the form of a jet from the rear end of said shank to substantially said free end of said cutting tool in a direction parallel to an axis of said cutting tool through said at least one coolant channel so that said coolant is directly applied onto the faces of said cutting edges at said free end of said cutting tool without interruption; and feeding said cutting tool relative to said workpiece in at least one direction corresponding to one of a plurality of feed axes.

5,378,092
APPARATUS FOR CUTTING A HOLE IN A PIPE LINER
 Ward J. Griner, 913 Northside Dr., Mt. Dora, Fla. 32757
 Division of Ser. No. 740,395, Aug. 5, 1991, Pat. No. 5,286,144.
 This application Oct. 15, 1993, Ser. No. 138,492
 Int. Cl.⁶ B23C 5/02; E03F 3/06
 U.S. Cl. 409—143 4 Claims



1. An apparatus for cutting a hole in a liner installed in the conduit, the apparatus comprising:
 a cutting head on a shaft;
 a motor for driving said shaft;
 enclosure means for supporting said motor and said cutting head;
 an arm slidably coupled to said enclosure means;
 said arm having a first connecting rod extending perpendicular to the surface of said arm;
 a cam having a first and second side, said first side having a first guide extending diagonally across the surface of said cam and being adapted to slidably receive said connecting rod, said second side having a second guide extending diagonally across the surface of the second side of said cam;
 an outer housing having a second connecting rod slidably coupled to said second guide; and
 means for moving said cam in a first direction and for moving said cam in a second direction opposite to said first direction such that when said cam is moved in the first direction said first connecting rod slides along said first guide and said second connecting rod slides along said second guide to raise said arm and said cutting head, and when said cam is moved in the second direction said first connecting rod slides along said first guide and said second connecting rod slides along said second guide to lower said arm and said cutting head.

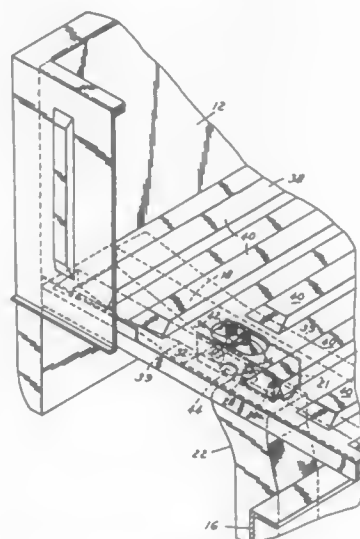
5,378,093
DUNNAGE BAR LOCK
 Robert C. Schroeder, 7435 Gills Pier Rd., Northport, Mich. 49670
 Filed Mar. 5, 1993, Ser. No. 27,226
 Int. Cl.⁶ B61D 45/00; B60P 7/15
 U.S. Cl. 410—32 27 Claims



1. A bar and bar lock arrangement comprising:
 a bar having spaced ends,

means at each end of said bar for releasably securing each end of said bar to a frame,
 a pair of swing arms respectively extending from each end of said bar, each said swing arm having a first end affixed to said bar and a second end spaced from said bar, and means on each said swing arm for pivotally mounting said second end of said swing arm to the frame, so that said swing arms and said bar are pivotable as a unit with respect to the frame about an axis parallel to said bar and defined by said pivotally mounting means.

5,378,094
CARGO TIE-DOWN ARRANGEMENT FOR PICK-UP TRUCKS
 James B. Martin, Wyandotte, and George L. Rickett, Detroit, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
 Filed Jan. 31, 1994, Ser. No. 188,858
 Int. Cl.⁶ B60P 7/08
 U.S. Cl. 410—112 8 Claims

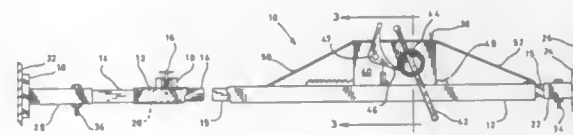


1. For use on a pick-up truck including a frame having mounting brackets secured thereon, with a cab mounted on the frame and a cargo box mounted on the mounting brackets, wherein the cargo box includes a cargo box floor and cross members, each cross member having a bottom wall and side walls, said cross members being secured to the mounting brackets by bolts extending upwardly through aligned openings formed in the mounting brackets and cross members, said cargo box floor extending across ends of the cross member side walls and thereby prohibiting access from above to the cross members, the improvement comprising cargo tie-down plate and pin means seated within one of said cross members and secured by said bolts thereto and further including at least one access opening formed in the cargo box floor above said plate and pin means.

5,378,095
LOAD SECURING DEVICE FOR TRUCKS
 Cormey Shultz, Rte. 1, Box 72, Dutch Valley Rd., Lake City, Tenn. 37769
 Filed Apr. 28, 1993, Ser. No. 54,188
 Int. Cl.⁶ B60P 7/15; B61D 45/00
 U.S. Cl. 410—151 16 Claims

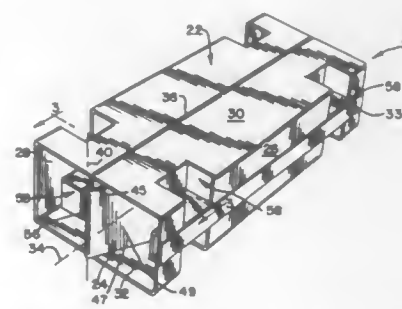
1. A load securing device for holding cargo within a truck from shifting of the cargo within the truck, said load securing device comprising:
 a primary rod having first and second ends and provided with a bore from said first end to said second end of said

primary rod, said primary rod provided with a slot parallel to an axis of said primary rod and extending to said bore;
 a first adjustment rod having a first end and a second end, said first end slidably received in said bore of said primary rod at said first end of said primary rod;
 a foot member attached to said second end of said first adjustment rod for engagement with a wall of the truck;
 a second adjustment rod having a first end and a second end, said first end slidably received in said bore of said primary rod at said second end of said primary rod so as to be axially aligned with said first adjustment rod;
 a second foot member attached to said second end of said second adjustment rod for engagement with an opposite wall of the truck;
 a toothed bar fixedly attached to said second adjustment rod and aligned along an axis of said second adjustment rod, said toothed bar having gear teeth projecting through said slot of said primary rod, said slot having a length greater than a length of said toothed bar;



a housing attached to one side of said primary rod so as to be aligned with said slot;
 a pinion gear mounted on an axle for rotation with said axle, said axle journaled in said housing, said pinion gear having gear teeth continuously engaged with said gear teeth of said toothed bar;
 a handle engaged with said axle for rotating said axle and said pinion gear;
 a toothed wheel carried by said axle for rotation with said axle;
 a pawl member pivotally mounted on said housing, said pawl member engageable with said toothed wheel to prevent rotation of said axle in one direction but permit rotation in an opposite direction;
 whereby rotation of said pinion gear against said toothed bar moves said toothed bar axially within said slot to effect a change in length of said device from said first foot member to said second foot member.

5,378,096
COLLAPSIBLE AND EXPANDABLE VOID FILLER
 Thomas C. Keenan, Brentwood, Tenn.; Philip B. Lo Presti, Chicago, and Donald L. Van Erden, Wildwood, both of Ill., assignors to Shippers Paper Products Company, Glenview, Ill.
 Filed Dec. 9, 1993, Ser. No. 163,532
 Int. Cl.⁶ B61D 45/00; B63B 25/24; B65D 81/04
 U.S. Cl. 410—154 20 Claims

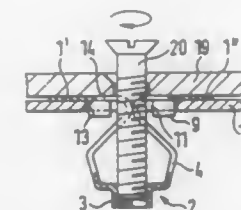


1. A collapsible void filler device foldable into a flat, collapsed configuration for storage, and unfoldable into an ex-

panded configuration for preventing damage to cargo during transit, comprising:

an outer housing comprising a four-sided, generally tubular member having a bottom wall, a top wall, and two side walls, and a longitudinal axis extending the length thereof; said side walls of said outer housing tubular member extending upwardly from said bottom wall of said outer housing tubular member to said top wall of said outer housing tubular member when said void filler is disposed in said expanded configuration and including means for permitting said side walls of said outer housing tubular member to move outwardly so as to collapse said outer housing tubular member into said collapsed configuration;
 an inner core member disposed within said outer housing tubular member and having a bottom wall connected to said bottom wall of said outer housing tubular member; a top wall connected to said top wall of said outer housing tubular member; and side walls, having longitudinally spaced edges and planar surfaces extending therebetween, interconnecting said bottom wall and said top wall of said inner core member; and having further a width which extends across a majority of the length of said outer housing member, and a length which is sized so as to contact and space apart said side walls of said outer housing tubular member so as to prevent inward movement of said side walls of said outer housing tubular member and thereby rigidify said outer housing tubular member when said void filler is disposed in said expanded configuration;
 said side walls of said inner core member having means for permitting said side walls of said inner core member to be folded and collapsed when said outer housing tubular member is collapsed; and
 said outer tubular housing member including means thereon for engaging said planar surfaces of said side walls of said inner core member so as to prevent said side walls of said inner core member from collapsing so as to in turn prevent said void filler from collapsing into said collapsed configuration so that said void filler remains in said expanded configuration.

5,378,097
SHEET METAL NUT FOR BLIND FASTENING
 Charles Barnaval, Grenoble, France, assignor to A. Raymond & CIE, Grenoble-Cedex, France
 Filed Oct. 15, 1993, Ser. No. 136,206
 Claims priority, application Germany, Oct. 15, 1992, 4234778
 Int. Cl.⁶ F16B 13/04, 37/04
 U.S. Cl. 411—38 4 Claims



1. A sheet-metal nut for blind fastening a threaded member in a hole in a carrier plate formed from a single, rectangular piece of sheet metal comprising a top plate formed of two plate halves and adapted to bear against a front side of the carrier plate, said top plate halves lying in the same plane and each having an inner end adjacent each other, an aperture in said top plate located between said inner ends of the two plate halves for passage of the threaded member, a base plate extending parallel to and spaced from said top plate having a threaded portion aligned with said aperture for receiving the threaded member and two pairs of bendable, connecting webs integrally connected between said base plate and said top plate, a first pair integrally connected at one end to a first side of the base

plate and at the other end to an inner end of one of said two top plate halves and a second pair integrally connected at one end to an opposite side of the base plate and at the other end to an inner end of the other one of said two top plate halves, whereby when the base plate of the nut is inserted into the hole in the carrier plate, and the threaded member is inserted into the aperture in the top plate and threaded into the threaded portion of the base plate, the base plate will be drawn towards the top plate, the connecting webs folding outwardly and being brought to bear against a rear side of the carrier plate, said sheet-metal nut having a plurality of lugs extending perpendicularly from the sides of the top plate halves toward said base plate that are adapted to fit in the hole in the carrier plate when the nut is inserted into the hole to prevent the nut from turning in the hole when the threaded member is threaded into the threaded portion of the base plate.

5,378,098

HOLE FILLING BLIND RIVET

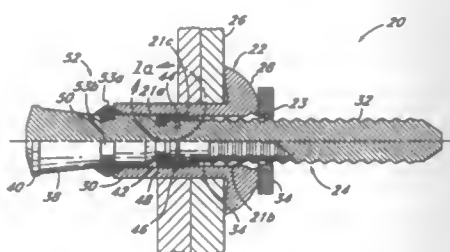
George A. Andrews, Anaheim Hills; John D. Pratt, Laguna Niguel, and Soheil Eshraghi, Irvine, all of Calif., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 987,659, Dec. 9, 1992, Pat. No. 5,252,014. This application Oct. 5, 1993, Ser. No. 132,502. The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.

Int. Cl.⁶ F16B 13/04, 13/06

U.S. Cl. 411—43

10 Claims



1. A fastener for securing workpieces having aligned openings therein, comprising:

a tubular sleeve;

an elongated stem extending through said sleeve, said stem having a hole filling shoulder which will interfere with said sleeve to radially enlarge the sleeve so that clearance between the sleeve and the workpiece is eliminated when the fastener is installed in said opening, and said shoulder being capable of removing excess material from the interior of the sleeve as the stem is pulled with respect to said sleeve;

said stem including an annular reservoir open to said shoulder for receiving said excess sleeve material not used to fill said clearance when said fastener is installed; and

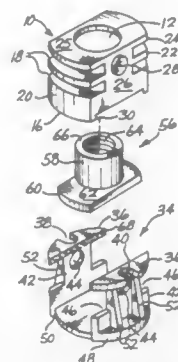
said stem including an annular lock ring groove for receiving a lock ring to axially lock the stem and sleeve together, said reservoir being positioned between said shoulder and said lock ring groove, the volume of said reservoir being sufficiently large to accommodate all of said excess material in the maximum interference condition between said stem shoulder and said sleeve;

said reservoir having a forward edge which is radially aligned with a rear wall of said lock ring groove, with said wall forming a lock ring shoulder.

5,378,099
INSET PANEL FASTENER WITH
SHOULDER-ENGAGING FLOATING MEMBER
Richard F. Gauron, 1400 19th Ave. NW., Issaquah, Wash. 98027
Filed Jul. 1, 1993, Ser. No. 86,547
Int. Cl.⁶ F16B 39/02, 37/04

U.S. Cl. 411—82

6 Claims



1. A fastener element receivable into an opening in a structure adapted to cooperate with a screw fastener or the like to connect an object to the structure, said fastener element comprising:

a body including a first portion, and a second portion mechanically interlocked with said first portion; said portions together defining an axial opening having an outer end that opens onto a radial end surface of said body, and one of said portions having a radial shoulder facing away from said outer end and defining an increased width inner portion of said axial opening;

anchoring portions carried by said body that interlock with the structure to anchor the fastener element in the opening in the structure; and

a floating member positioned in said axial opening in said body; said member including an engagement portion aligned with said outer end of said axial opening for engaging a fastener, an outer end positioned adjacent to and spaced inwardly from said outer end of said axial opening, and an opposite inner end including a head that is received in said inner portion of said axial opening and has a radial surface confronting said shoulder to transmit axial loads created by engagement of said member by a fastener from said member to said body;

said floating member and said axial opening being shaped and dimensioned to substantially prevent rotation of said member in said axial opening while permitting radial movement of said member in said axial opening to automatically adjust for misalignments between the structure and said object.

5,378,100
METHOD AND APPARATUS FOR RAPIDLY ENGAGING
AND DISENGAGING THREADED COUPLING
MEMBERS

Robert L. Fullerton, P.O. Box 4119, Incline Village, Nev. 89450
Filed Apr. 16, 1993, Ser. No. 47,199

Int. Cl.⁶ F16B 37/08, 39/36; B23P 11/02

U.S. Cl. 411—267

9 Claims

1. A coupling device, comprising:

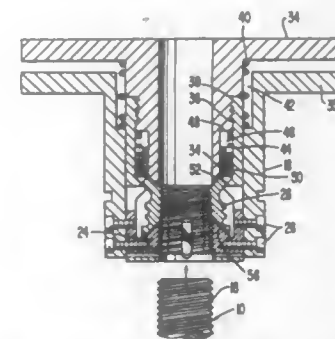
a first member provided with threads;

a second member having an opening therein lying along a longitudinal axis into and out of which said first member may be inserted and removed;

threaded elements movably mounted with respect to said second member;

means permitting said first member, as it is inserted within said opening and moved inwardly to cause said threaded elements to move radially outward permitting said first member to be moved inwardly along said axis by axial

sliding movement, after which brief rotating movement of said first member tightly moves said first member into engagement with said second member; and



means moving said threaded elements radially outward, permitting said first member to be removed from said member along said axis by axial sliding movement.

5,378,101

TAMPER-PROOF DRIVE SYSTEM BASED UPON
MULTI-LOBULAR CONFIGURATION

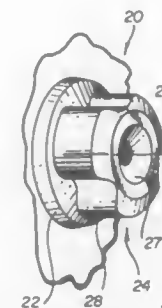
Gregory R. Olson, Rockford, and Clayton A. Allen, Loves Park, both of Ill., assignors to Textron Inc., Providence, R.I.

Filed Dec. 22, 1992, Ser. No. 994,683

Int. Cl.⁶ F16B 23/00, 35/06

U.S. Cl. 411—405

21 Claims



1. A fastener member for use in a tamper-proof drive system wherein the fastener is adapted to be driven by a drive tool of complementary shape, the fastener including an axis and multiple lobular configurations disposed equidistant about the axis of the fastener, said lobular configurations being defined by structure including a series of axially extending drive surfaces for mating engagement with the drive surfaces on a complementary tool, said fastener structure defining the drive surfaces of each said lobular configurations including:

a first series of arcuate surfaces, each having terminuses and being generated from a center which extends parallel to the fastener axis and is disposed approximately equidistant from the fastener axis about a circle generated from said fastener axis, each said surface of said first series having a configuration which are approximately equal to each other;

a second arcuate surfaces generated from a common axis which is approximately coextensive with the fastener axis, such that said second surfaces includes such surfaces which are disposed generally on a common circle and intermediate said first series of surfaces, each said second surface having a radius of curvature which is approximately equal to each other and each said second curved surface defining terminuses;

and a third series of arcuate surfaces including multiple pairs of arcuate surfaces with one said surface of each pair being associated with the terminus of one of said first series of surfaces and merging smoothly and tangentially therewith and not by a straight line portion, and one of said surfaces

of each pair being associated with the terminuses of one of said second series of surfaces and merging smoothly therewith; the axes of the surfaces making up said third series of surfaces being disposed radially inward of the axis of said first series of surfaces, each said surface of said third series being similar and generated from the same geometric configuration.

5,378,102

BARREL ASSEMBLY AND COMPOSITE STRESS PLATE

Jeffrey L. Moesman, Olmsted Falls, Ohio, assignor to SFS

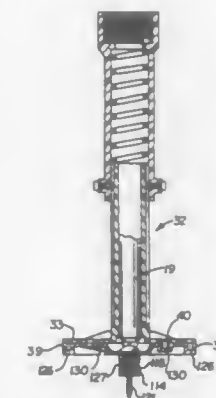
Stadler, Inc., Reading, Pa.

Filed Sep. 30, 1991, Ser. No. 768,035

Int. Cl.⁶ F16B 43/00

U.S. Cl. 411—531

20 Claims



1. In combination, a composite stress plate for securing a layer of insulation to a roof deck with a threaded fastener, and a barrel assembly for an installation tool operating to rotate said fastener by threading it into the composite stress plate, said barrel assembly having a plate retaining member at a distal end thereof, comprising:

a metal plate having a drawn central cup with a concentric aperture, and a rim;

a plastic insert having a central throughbore completely therethrough for receiving a threaded fastener therethrough in an interference-fit relationship, said plastic insert corresponding in shape to and engaging the cup in the metal plate and forming said composite stress plate therewith;

means for preventing relative rotation between the plastic insert and the metal plate when the plastic insert is engaged in the cup and the fastener threads engage the central throughbore;

said plate retaining member including an engagement face, at least one locator projection extending downwardly from said engagement face, and a peripheral rib; and

at least one recessed ramp provided in said plate and terminating in a contact point,

said locator projection being received in said recessed ramp as said barrel assembly is pressed down onto said composite stress plate so as to facilitate engagement of the locator projection with the contact point during rotation of the composite stress plate along with the fastener and to prevent further relative rotation between said composite stress plate and the barrel assembly when the fastener is threaded into the plastic insert,

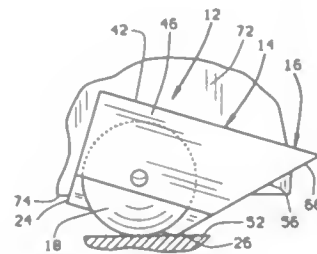
said peripheral rib of said plate retaining member engaging said rim of said metal plate when said barrel assembly is pressed onto said composite stress plate.

5,378,103
DOOR TRANSPORTING AND ELEVATING APPARATUS
 Gregory R. Rolnicki, 301 W. Vorhees St., Danville, Ill. 61832,
 and Joseph M. Rolnicki, 12553-1 Lighthouse Way Dr., St.
 Louis, Mo. 63141

Filed Feb. 12, 1993, Ser. No. 17,477
 Int. Cl.⁶ B62B 1/26

U.S. Cl. 414—10

15 Claims



1. An apparatus for transporting a swing-type door having a bottom plane over a surface, and for selectively raising and lowering the door relative to the surface with the door bottom plane substantially parallel with the surface, the apparatus comprising:

- a base configured to receive a swing-type door thereon and to support the door over the surface with the door bottom plane substantially parallel with the surface;
- means provided on the base for supporting the base on the surface and for conveying the base over the surface and thereby enabling the base to transport a swing-type door supported on the base over the surface from one location to a second location;
- means provided on the base for selectively enabling raising and lowering at least a portion of the base relative to the surface and thereby selectively enabling raising and lowering, respectively, a swing-type door supported on the base relative to the surface with the door bottom plane substantially parallel with the surface;
- the means for supporting the base on the surface and for conveying the base over the surface includes at least a pair of rollers with each roller of the pair being positioned on an opposite lateral side of the base and each roller of the pair being mounted on the base for rotation of the roller relative to the base;
- the base has longitudinally opposite first and second ends and a support surface extending between the first and second ends, and the base has a pair of laterally spaced sidewalls that extend upward from opposite lateral side edges of the base support surface, the sidewalls having a lateral spacing therebetween sufficiently dimensioned to enable a swing-type door to be placed between the sidewalls and on the base support surface; and,
- each roller of the pair of rollers is mounted to a sidewall of the pair of sidewalls with the rollers being coaxial and having a lateral axis of rotation positioned vertically above the base support surface.

5,378,104
APPARATUS FOR LIFTING A LARGE ROLL OF PAPER
 J. Edwin Payne, Jr., R.R. #1, Box 670, Perkins, Okla. 74059
 Filed Jun. 30, 1992, Ser. No. 906,532

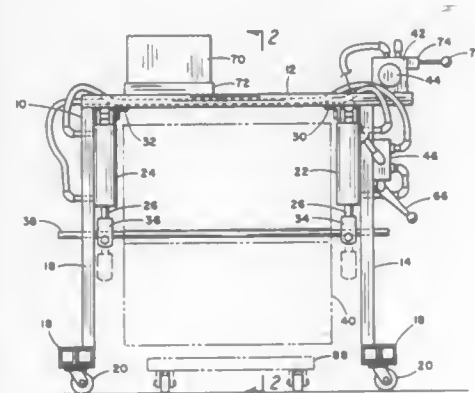
Int. Cl.⁶ B60P 3/00; B21C 47/24; F15B 11/00
 U.S. Cl. 414—460

3 Claims

1. An apparatus to raise and lower a paper roll, comprising: an inverted U-shaped frame including a horizontal member and two vertical members connected on each end thereof;
- a first hydraulic cylinder containing a piston with a piston rod attached thereto and a second hydraulic cylinder containing a piston with a piston rod attached thereto, each cylinder supported from the horizontal member of said frame in a manner such that each cylinder is adjacent to and parallel with one of the vertical members with each

said cylinder having an upper port and a lower port which are on opposite sides of the piston within each said cylinder;

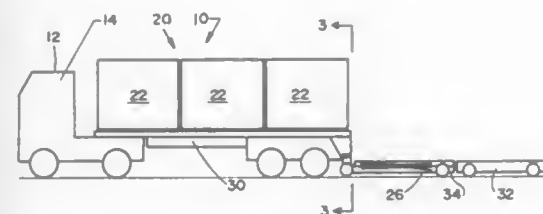
- a hydraulic fluid pump having a power side and a return side;
- a starter solenoid to actuate the hydraulic fluid pump;
- a power supply for driving said hydraulic fluid pump;
- a pump starter means to control the actuation of the hydraulic fluid pump;
- a hydraulic fluid reservoir;
- a hydraulic directional control valve;
- a paper roll support including a rod supported from the piston rod of the first hydraulic cylinder, extending through the paper roll and supported from the piston rod of the second hydraulic cylinder;



- a first hydraulic fluid line containing hydraulic fluid therein extending from the power side of said hydraulic fluid pump to the hydraulic directional control valve;
- a second hydraulic fluid line containing hydraulic fluid therein extending from the hydraulic directional control valve to the lower port of the first hydraulic cylinder;
- a third hydraulic fluid line containing hydraulic fluid therein extending from the upper port of the first hydraulic cylinder to the lower port of said second hydraulic cylinder;
- a fourth hydraulic fluid line containing hydraulic fluid therein extending from the upper port of the second hydraulic cylinder to the hydraulic directional control valve;
- a fifth hydraulic fluid line containing hydraulic fluid therein extending from the hydraulic directional control valve to the hydraulic fluid reservoir.

5,378,105
CARGO HANDLING SYSTEM
 Richard L. Palko, Rte. 4, Box 168, Fayetteville, Tenn. 37334
 Filed Nov. 2, 1992, Ser. No. 970,067
 Int. Cl.⁶ B65G 67/02
 U.S. Cl. 414—540

6 Claims



1. A cargo handling and restraining system for use in loading, unloading, and transporting of cargo containers in a carrier having a cargo supporting floor comprising:
- a plurality of tracks extending longitudinally along said floor, said tracks having an upper surface provided with a

pair of spaced, laterally extending portions and a channel extending between said laterally extending portions;

said container having support members on the bottom thereof, said support members disposed for riding in said channel of said tracks during loading and unloading of said containers and for locked relation with said tracks during transportation of said containers, said containers being permitted to move longitudinally along said track while in said locked relation with said tracks;

first locking means cooperating with said container and said tracks to securely lock said containers to said tracks during the transportation thereof;

said cargo containers being provided with forward, rear, top, and bottom surfaces, and said first locking means being defined as a container/track locking assembly which is positioned in mating adjacent relation with said rear surface adjacent to said bottom surface of the last container placed on said cargo supporting floor, said first locking means having securing means for securing said last container to said tracks;

said first locking means including an upper plate, first and second downwardly extending side portions, and a pair of track engaging portions, each track engaging portion respectively extending in substantially normal relation to said downwardly extending portions; and

said securing means is a disc eccentrically, rotatably mounted on a shaft extending between said downwardly extending portions, said disc having a lever arm extending therefrom for movement therewith, and retaining means for engaging said lever arm for retaining said lever arm in a predetermined position responsive to rotational movement thereof, whereby said disc performs a camming action against said track and said upper plate for secured relation of said first locking means to said track.

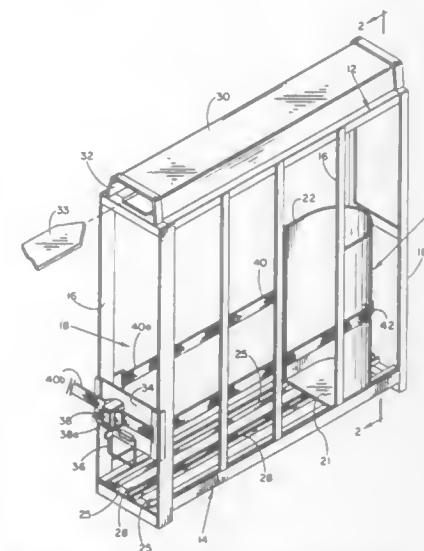
5,378,106
COMPRESSED GAS CYLINDER SAFETY TRANSPORT DEVICE

Kevin S. Risley, Hixson, and Jack H. Daniel, Chattanooga, both of Tenn., assignors to Cannon Equipment Company, Cannon Falls, Minn.

Filed Mar. 26, 1993, Ser. No. 37,761
 Int. Cl.⁶ B65G 1/10

U.S. Cl. 414—608

16 Claims



1. A carrier for securely and releasably holding a plurality of objects, comprising:
- a rigid frame, the frame having a top end and a bottom end and sidewalls secured thereto and extending there between, and the frame having an access end for receiving the objects and a second end opposite therefrom, and the

frame sidewalls and top, bottom, access and second ends defining a carrier interior space for retaining a plurality of the objects therein,

sled means slideably secured to the bottom end for moving between the access and second ends within the interior space and for retaining and carrying one of the objects thereon, and the carrier access and second ends having a width slightly greater than a width of each object and the carrier sidewalls having a height slightly greater than a height of each object so that the objects are positioned in a single file arrangement within the carrier interior space, and the sidewalls and the bottom, top, access and second ends being structured to protectively retain within and prevent the objects from falling out of the carrier, and the access end having means for providing releasable opening and closing thereof so that when in an open position the second end permits placing into or removal there through of the objects into the carrier interior space and when in a closed position the access end not permitting such movement of the objects there through sled moving and retaining means for moving the sled means in a direction from the second end towards the access end and for retaining the sled in a plurality of positions there between so that when an object is carried on the sled the sled can be moved and retained against the access end or moved and retained against one or more further objects positioned between the access end and the sled when the means for providing releasable opening and closing of the access end is in the closed position, and

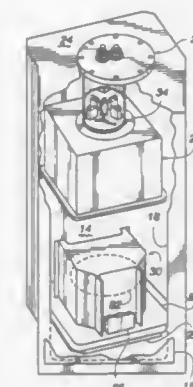
the frame having means for facilitating the lifting and carrying of the carrier.

5,378,107
CONTROLLED ENVIRONMENT ENCLOSURE AND MECHANICAL INTERFACE
 Oskar U. Vierny, Palo Alto, and Philip M. Salzman, San Jose, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Apr. 1, 1993, Ser. No. 42,917
 Int. Cl.⁶ B65G 49/00, 65/00

U.S. Cl. 414—786

18 Claims

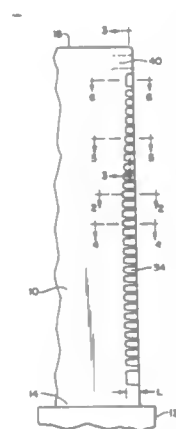


1. A method for moving articles from a first chamber into a second chamber without exposing either chamber to elements making particulate-producing sliding contact, the method comprising the steps:

- (a) providing a carrier for an array of articles, the carrier having first and second carrier portions for defining the first chamber, the articles being supported by the second carrier portion;
- (b) enclosing the carrier within the second chamber;
- (c) supporting the first carrier portion within the second chamber without producing sliding contact within each of the first and second chambers; and,
- (d) opening the carrier by moving the second carrier portion away from the first carrier portion and out of contact

therewith without producing sliding contact within the second chamber, whereby the articles are accessible within the second chamber.

5,378,108
COOLED TURBINE BLADE
 Mark F. Zelesky, Coventry, Conn., assignor to United Technologies Corporation, Hartford, Conn.
 Filed Mar. 25, 1994, Ser. No. 218,499
 Int. Cl.⁶ F01D 5/18
 U.S. Cl. 416—97 R 5 Claims



1. An air cooled gas turbine blade comprising: a hollow body of airfoil shape with a pressure side and a suction side, said body longitudinally extending from a root end to a tip end; said body having an airfoil trailing edge of a thickness "E" increasing toward the tip end; an air supply passage within said body; a plurality of trailing edge air discharge openings, each in fluid communication with said air supply passage, and having a passageway of width "S"; a suction wall on said suction side extending completely to said trailing edge; a pressure wall on said pressure side, shortened a distance "L" from said trailing edge at the location of each discharge passage, whereby said pressure wall has a thickness "T" at the discharge opening; and the distance "L" at discharge openings toward the tip end of said body being less than toward the root of said body.

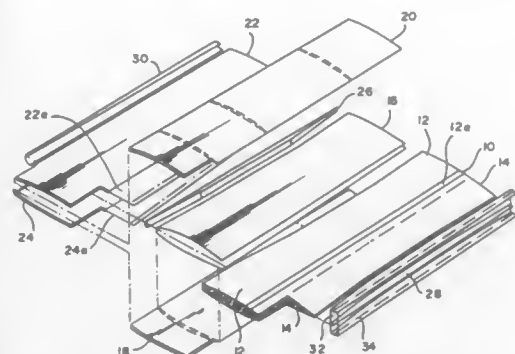
5,378,109
CO-CURED COMPOSITE FAN BLADE AND METHOD
 Arthur J. Lallo, Edgmont, and Thomas J. Falasco, Broomall, both of Pa., assignors to The Boeing Company, Seattle, Wash.
 Continuation-in-part of Ser. No. 589,652, Sep. 28, 1990, Pat. No. 5,248,242. This application Aug. 28, 1991, Ser. No. 750,585
 The portion of the term of this patent subsequent to Sep. 3, 2010, has been disclaimed.

Int. Cl.⁶ B64C 27/46; B23P 15/04
 U.S. Cl. 416—226 9 Claims
 6. A method for fabricating an aerodynamic blade assembly from fiber-reinforced resin composite material, comprising the steps of:

- providing a single piece foam core having a spar portion and a trailing edge portion which together define outer surfaces in the form of an airfoil, said single piece foam core also defining a leading edge and a trailing edge;
- laying-up fiber-reinforced composite material to cover the outer surfaces of the foam core defining the spar portion to thereby form an inner spar wrap;
- laying-up fiber-reinforced composite material to cover the outer surface of one side of the inner spar wrap to thereby form a lower spar pack;
- laying-up fiber-reinforced composite material to cover the

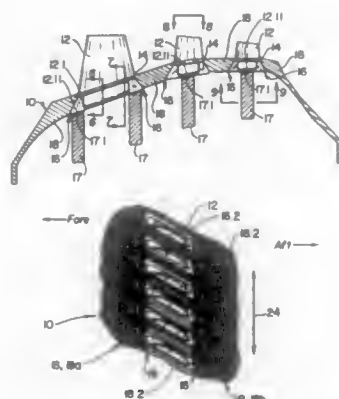
outer surface of the other side off the inner spar wrap to thereby form an upper spar pack;

- laying-up fiber-reinforced composite material to cover the outer surface of the lower spar pack and lower outer surface of the trailing edge portion to thereby form a lower outer spar wrap;
- laying-up fiber-reinforced composite material to cover the outer surface of the upper spar pack and upper outer surface of the trailing edge portion to thereby form an upper outer spar wrap;



- laying-up fiber-reinforced composite material in contact with the leading edge of the foam core to thereby form a leading edge block; and
- laying-up fiber-reinforced composite material in contact with the trailing edge of the foam core to thereby form a trailing edge wedge, said foam core, inner spar wrap, lower spar pack, upper spar pack, lower outer spar wrap, upper outer spar wrap, leading edge block and trailing edge wedge forming a total lay-up assembly of the aerodynamic blade assembly.

5,378,110
COMPOSITE COMPRESSOR ROTOR WITH REMOVABLE AIRFOILS
 Robert A. Ress, Jr., Carmel, Ind., assignor to United Technologies Corporation, Hartford, Conn.
 Filed Sep. 14, 1992, Ser. No. 944,387
 Int. Cl.⁶ F03B 3/12
 U.S. Cl. 416—244 R 11 Claims



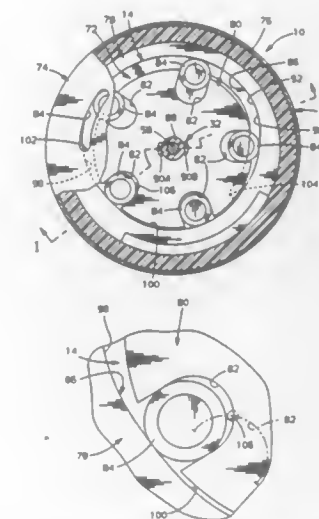
1. A gas turbine engine rotor assembly characterized by: a first plurality of continuous fibers in a binder, said fibers extending parallel with each other between ends of the rotor at an angle to a rotor rotational axis;
- a second plurality of fibers in a binder, said fibers being located between longitudinal locations along said rotational axis on the rotor and extending circumferentially around a rotational axis of the rotor to define first and

second bands in which the first and second plurality of fibers overlap and to define a third band, between said first and second bands, containing only said first plurality of fibers;

apertures located in said third band between two fibers in said first plurality of fibers; and

an airfoil located in said aperture.

5,378,111
MOTOR VEHICLE FUEL PUMP ASSEMBLY WITH PRESSURE RELIEF ORIFICE
 Brian J. Christopher, Clio, Mich., assignor to General Motors Corporation, Detroit, Mich.
 Filed Jun. 21, 1993, Ser. No. 80,248
 Int. Cl.⁶ F04B 23/14
 U.S. Cl. 417—203 5 Claims



1. In a motor vehicle fuel pump assembly having a tubular shell, an electric motor in said tubular shell including an armature shaft supported on said shell for rotation about a centerline of said shell at speeds varying between a minimum corresponding to a minimum fuel demand and a maximum corresponding to a maximum fuel demand, and a roller vane pump stage including an inlet side plate in said shell in a plane perpendicular to said centerline having an arc-shaped inlet port therein whereat an inlet fluid pressure of said roller vane stage prevails, a discharge side plate in said shell in a plane perpendicular to said centerline having an arc-shaped discharge port therein whereat a discharge fluid pressure of said roller vane pump stage prevails, a rotor between said inlet and said discharge side plates connected to said armature shaft for rotation as a unit therewith and having a plurality of outward opening circumferentially spaced roller pockets therein, a plurality of rollers each disposed in a respective one of said roller pockets, and a cam ring between said inlet and said discharge side plates having a cam edge facing said rotor with an inlet ramp in a first angular interval subtended by said inlet port and a discharge ramp in a second angular interval subtended by said discharge port and an intermediate ramp in a third angular interval subtended between a downstream end of said discharge port and an upstream end of said inlet port, rotation of said rotor being operative to move each of said pockets successively through said third angular interval in a direction from said second angular interval toward said first angular interval so that a fluid pressure prevailing in each of said successive pockets wholly within said third

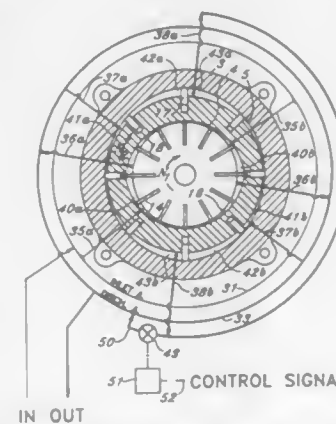
angular interval is generally equal to said discharge pressure of said roller vane pump stage,

the improvement comprising:

means defining a bleed orifice in said inlet side plate substantially smaller than each of said roller pockets and located radially to intercept said successive ones of said roller pockets during rotation of said rotor about said centerline and located circumferentially in a segment of an angular interval subtended by said intermediate ramp characterized by flow communication of said bleed orifice with said successive ones of said roller pockets and simultaneous isolation of said successive ones of said roller pockets from each of said inlet and said discharge ports, and

means effecting flow communication between said bleed orifice and a receiver means remote from said inlet port having a prevailing pressure therein substantially equal to said inlet pressure of said roller vane pump stage and operative to accept a variable flow rate from said bleed orifice.

5,378,112
POSITIVE DISPLACEMENT, VARIABLE DELIVERY PUMPING APPARATUS
 Pius J. Nasvytis, Avon, Conn., assignor to P. J. Nasvytis International, Ltd., Avon, Conn.
 Filed Jun. 9, 1993, Ser. No. 73,552
 Int. Cl.⁶ F04B 49/00
 U.S. Cl. 417—213 18 Claims

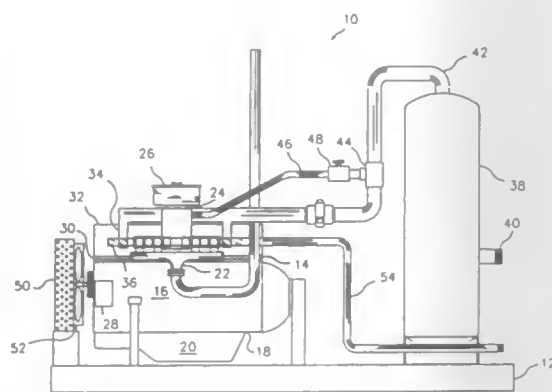


1. Positive displacement, variable delivery pumping apparatus, comprising: a primary liquid source, a primary vane pump having a primary vaned rotor driven within an intermediate casing and adapted to pump liquid from said primary liquid source to a user, a governor vane pump comprising said intermediate casing disposed within a housing, said intermediate casing having vanes and being rotatably mounted within said housing, primary conduit means including an inlet annulus and a discharge annulus each communicating with said intermediate casing and providing a primary pumped liquid flow path from said primary liquid source to said user through said primary vane pump, a governing liquid source, a flow control valve, and governor conduit means providing a governing liquid flow path from a governing liquid source through said governor vane pump and through said flow control valve and back to said governing liquid source, whereby operation of said flow control valve adjusts rotational speed of said intermediate casing and provides variable delivery from said primary liquid source to said user.

5,378,113
APPARATUS FOR COMPRESSING GAS
 Lynn Caldwell, Rte. 2, Box 159-1, Wetumka, Okla. 74883
 Filed Dec. 28, 1993, Ser. No. 173,988
 Int. Cl.⁶ F04B 41/00

U.S. Cl. 417—236

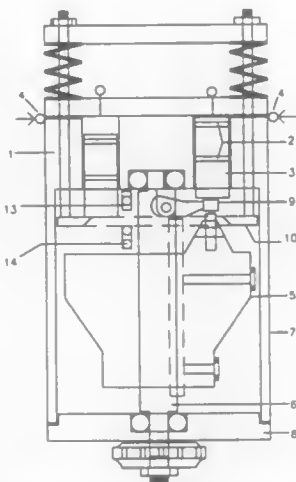
26 Claims U.S. Cl. 417—269



1. An apparatus for compressing gas, comprising:
 a cylinder block having a plurality of cylinder bores in a single bank, wherein one or more of the cylinder bores is used for energizing the apparatus and one or more of the cylinder bores is used for compressing gas;
 a crankshaft rotatably disposed in said cylinder block;
 an engine piston disposed in each of the cylinder bores used for energizing the apparatus;
 a compressor piston disposed in each of the cylinder bores used for compressing gas;
 a plurality of connecting rods for connecting said engine pistons and said compressor pistons to said crankshaft;
 a head attached to said cylinder block, wherein said head is adjacent the cylinder bores;
 an engine manifold attached to said head;
 an intake compressor valve pocket located in said head adjacent each cylinder bore used for compressing gas;
 a discharge compressor valve pocket located in said head adjacent each cylinder bore used for compressing gas;
 a gas intake manifold attached to said head;
 a gas discharge manifold attached to said head;
 a sealing means for sealing said engine manifold, said gas intake manifold and said gas discharge manifold to said head;
 an intake compressor valve securing means located in said intake compressor valve pocket, wherein said intake valve securing means has a gas intake flow path in communication with said gas intake manifold;
 a means for securing said intake compressor valve securing means in said intake compressor valve pocket;
 an intake compressor valve;
 a means for attaching said intake compressor valve to said intake valve securing means, wherein said intake compressor valve is in communication with the gas intake flow path;
 a discharge compressor valve securing means located in said discharge compressor valve pocket, wherein said discharge valve securing means has a gas discharge flow path in communication with said gas discharge manifold;
 a means for securing said discharge compressor valve securing means in said discharge compressor valve pocket;
 a discharge compressor valve; and
 a means for attaching said discharge compressor valve to said discharge valve securing means, wherein said discharge compressor valve is in communication with the gas discharge flow path.

5,378,114
GASEOUS FUEL INJECTION PUMP
 William H. Howe, 256 Swift Street, Pentticon, B.C., Canada
 Filed Feb. 1, 1993, Ser. No. 11,857
 Int. Cl.⁶ F04B 1/12; F02B 43/00

4 Claims



1. A dry un-lubricated gaseous fuel injection device comprising:
 (a) a pump body having an integral housing and a plurality of chambered bores circumferentially spaced and axially aligned;
 (b) a cam-spool retained within said housing and adapted to a rotational motion about an axis to reciprocate a plurality of plungers in aforesaid bores, into a compression mode;
 (c) a keyed axial shaft onto which the cam-spool is slidable but incorporates a means to lock the cam-spool and thus govern the overall plunger stroke;
 (d) a sliding throttle ring that abuts the plungers at the outer end of the radial periphery of each and connects by attached rods to the external throttle plate.
 (e) said plungers of three piece construction so as to enable the fitment of machined polyamide resin seal rings that also act as slidable surfaces and create working clearances and obviate metal to metal contact.

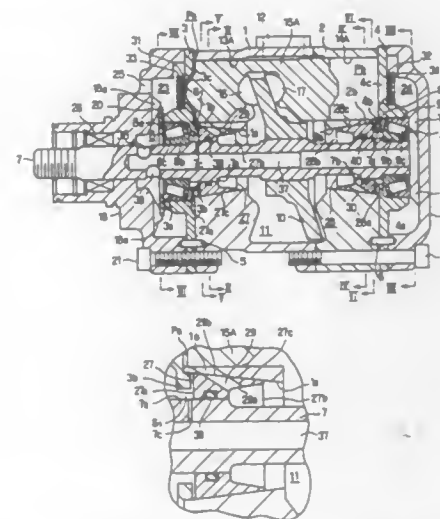
5,378,115
SWASH PLATE TYPE COMPRESSOR
 Toshiro Fujii, Hitoshi Inukai, and Kazuaki Iwama, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
 Filed Aug. 3, 1993, Ser. No. 101,178
 Claims priority, application Japan, Aug. 7, 1992, 4-211168
 The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.
 Int. Cl.⁶ F04B 1/12

U.S. Cl. 417—269

8 Claims

1. A swash plate type refrigerant compressor comprising:
 a cylinder block having formed therein a suction compartment, a plurality of axial cylinder bores, and a pair of front and rear radially central bores, each of said cylinder bores receiving therein a reciprocally movable double-headed piston,
 front and rear housings clamped to axial ends of said cylinder block and having formed therein front and rear discharge chambers, respectively, communicable with said cylinder bores,
 a drive shaft rotatably supported in said cylinder block and having a swash plate accommodated in said suction compartment and fixedly mounted on said drive shaft at an angle of inclination so as to make a wobbling movement when driven to rotate by said drive shaft, each of said

pistons being held by said swash plate by shoe means, whereby the wobbling movement of said swash plate is converted into reciprocal axial movement of each said piston in its associated cylinder bore,
 a pair of front and rear suction valves disposed in said front and rear radially central bores, respectively, such that opposite axial ends of each of said suction valves are subjected to suction and discharge pressures of refrigerant gas, respectively,



each of said suction valves being mounted on said drive shaft for rotation therewith, having formed therein a fluid passage in communication with said suction compartment, and being operable to bring said fluid passage in communication with the cylinder bores successively in synchronism with rotation of said drive shaft,
 said drive shaft having formed therein an axial discharge passage in communication with said discharge chambers in said front and rear housings.

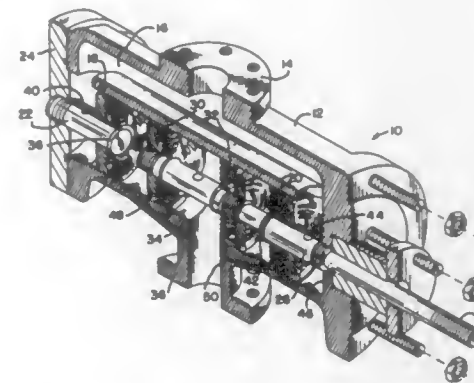
5,378,116
OVER-PRESSURE RELIEF MEANS
 Robert A. Bennitt, Painted Post, and Derek Woollatt, Campbell, both of N.Y., assignors to Dresser-Rand Company, Corning, N.Y.

Filed Apr. 29, 1994, Ser. No. 234,688

Int. Cl.⁶ F04B 49/00

U.S. Cl. 417—296

14 Claims



1. In a reciprocating-piston, fluid-pressuring machine, having a cylinder, over-pressure relief means, comprising:
 a passageway, in said cylinder, which opens at one end thereof onto an interior of said cylinder, and at the end

opposite which opens onto an exterior of said cylinder; and
 means movable within said cylinder, in response to over pressure in said cylinder, from a first position occluding said one end from said cylinder interior to a second position exposing said one end to said cylinder interior; wherein
 said movable means comprises a fluid inlet valve assembly.

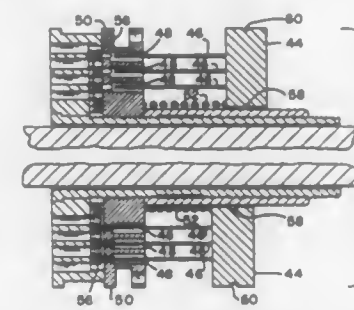
5,378,117
VALVE UNLOADING MEANS, AND A VALVE UNLOADING ACTUATOR THEREFOR
 Robert A. Bennitt, Painted Post, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.

Filed Mar. 28, 1994, Ser. No. 218,404

Int. Cl.⁶ F04B 49/00

U.S. Cl. 417—298

10 Claims



1. In a gas compressor having (a) a straight cylinder, (b) inlet and discharge valves confined within said cylinder, (c) means for admitting gas into, and discharging gas from said cylinder, and (d) means for reciprocating said discharge valves to compress gas within said cylinder, means for unloading at least one of said inlet valves, comprising:
 a platform slidably confined within said cylinder;
 a plurality of fingers projecting from said platform; and
 porting means, formed in said cylinder, for admitting a pressurized fluid into said cylinder to cause a slidable displacement of said platform.

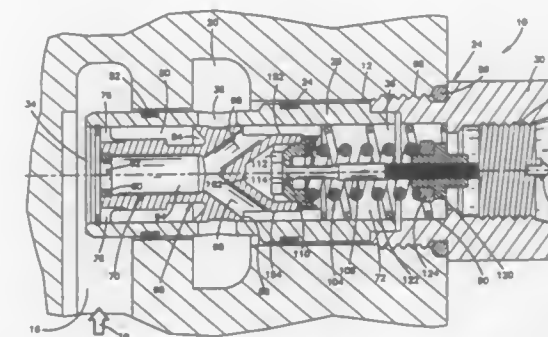
5,378,118
CARTRIDGE ASSEMBLY WITH ORIFICE PROVIDING PRESSURE DIFFERENTIAL
 Robert S. Phillips, Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio

Filed Aug. 12, 1993, Ser. No. 105,797

Int. Cl.⁶ F04B 49/00

U.S. Cl. 417—308

15 Claims



1. A cartridge assembly for use in a pump, said cartridge assembly comprising:
 a housing to be secured to the pump, said housing including surface means for defining a fluid inlet through which

fluid from a working chamber of the pump enters said cartridge assembly and surface means for defining a fluid outlet through which fluid flows from said cartridge assembly to a system to be supplied with fluid by the pump; orifice means disposed in said housing and connected in fluid communication with said fluid inlet and said fluid outlet for establishing a pressure differential in fluid flow from said fluid inlet to said fluid outlet;

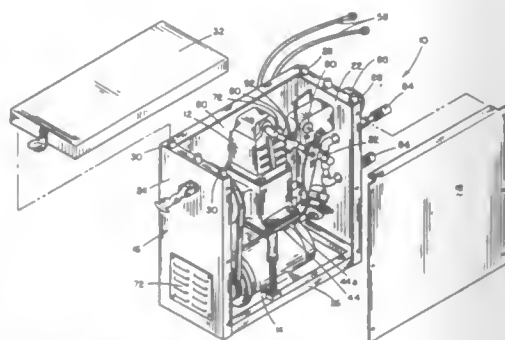
a fluid bypass port formed in said housing to conduct excess fluid flow from said cartridge assembly;

flow control valve means disposed in and movable relative to said housing for controlling fluid flow through said bypass port, said flow control valve means being movable relative to said housing in response to changes in the fluid pressure differential established by said orifice means to vary the rate of fluid flow through said bypass port; and pressure relief valve means disposed in said housing for effecting a reduction in the fluid pressure at said fluid outlet, said pressure relief valve means being connected with said flow control valve means for movement therewith relative to said housing, said pressure relief valve means being operable from a closed condition blocking fluid flow to an open condition under the influence of fluid pressure in excess of a predetermined fluid pressure at said fluid outlet.

5,378,119
AIR COMPRESSOR HAVING VENTILATED HOUSING AND MOTOR/COMPRESSOR PULLEY ADJUSTMENT
 Dennis D. Goertzen, R.R. 1, Box 157, Henderson, Nebr. 68371
 Filed Feb. 15, 1994, Ser. No. 196,635
 Int. Cl.⁶ F04B 35/00

U.S. Cl. 417—313

6 Claims



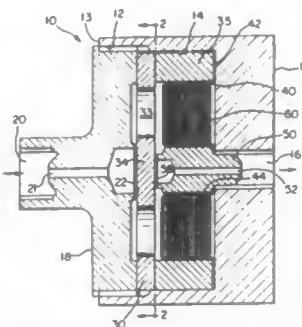
1. An air compressor, comprising:
 an enclosed housing, including opposing front and rear panels, opposing right and left side panels, a top cover and a bottom frame;
 drive means for driving a pump, mounted within said housing on the bottom frame;
 a pump mounted within said housing and located vertically above said drive means;
 said pump having an air outlet connected to a conduit and fluidly communicating therethrough, said conduit projecting outwardly through said housing;
 said drive means operably connected to said pump for operating the same to provide compressed air through said conduit; and
 ventilation means for circulating air into and out of said housing, including:
 a perforated ventilation panel located in a lower end of said housing to permit air flow therethrough;
 at least one ventilation opening in an upper end of said housing to permit air flow therethrough; and
 a plurality of studs projecting upwardly from an upper edge of said side panels, supporting said top cover spaced above the upper edge of said side panels to form said ventilation opening.

5,378,120
ULTRASONIC HYDRAULIC BOOSTER PUMP AND BRAKING SYSTEM
 Alistair G. Taig, Edwardsburg, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Feb. 22, 1994, Ser. No. 199,870
 Int. Cl.⁶ F04B 17/00

U.S. Cl. 417—322

24 Claims



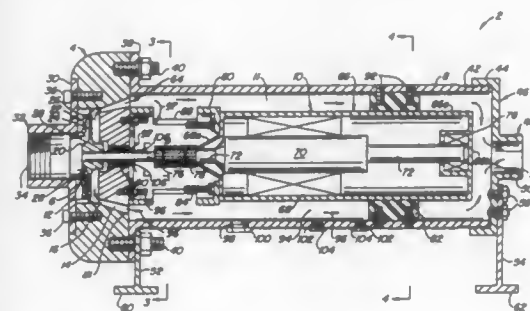
1. An ultrasonic pump, comprising a backing plate housing defining therein a cavity communicating with an end opening, an end cap located at the end opening, the end cap having a first port and the backing plate housing having a second port, a ring housing located within the cavity, a diaphragm located within the cavity between the end cap and backing plate housing, the diaphragm having therein a plurality of openings, a plurality of piezoelectric rings disposed in the ring housing and located in the cavity between the diaphragm and backing plate housing, and second port plug member means located within the rings and ring housing and between the backing plate housing and diaphragm, the plug member means having a through opening communicating with the second port, such that excitation of said piezoelectric rings effects resonance of said diaphragm to cause hydraulic fluid located within the cavity to be transmitted between the ports.

5,378,121
PUMP WITH FLUID BEARING
 William F. Hackett, 79028 Lake Club Dr., Bermuda Dunes, Calif. 92201

Filed Jul. 28, 1993, Ser. No. 98,553
 Int. Cl.⁶ F04B 17/00

U.S. Cl. 417—363

18 Claims



1. A pump comprising:
 a tubular shell that defines a motor chamber;
 a motor disposed in said motor chamber and spaced from said shell such that a channel is formed therebetween, said motor having an output shaft;
 an impeller housing coupled to said shell, said impeller housing having a cavity and a passageway formed therein, said passageway having an inlet in fluid communication with said cavity and an outlet in fluid communication with said channel;

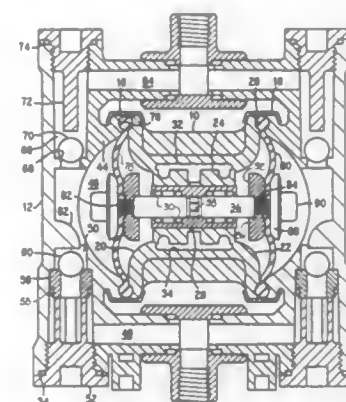
an impeller disposed in said cavity;
 an impeller shaft having a first portion coupled to said impeller and a second portion coupled to said output shaft; and
 a bearing coupled to said impeller housing, said bearing having an inner circumferential surface defining an opening through which said impeller shaft extends, said surface having a groove formed therein that extends between and fluidly couples said cavity and motor chamber.

5,378,122
AIR DRIVEN DIAPHRAGM PUMP
 Greg S. Duncan, Corona, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Filed Feb. 16, 1993, Ser. No. 17,822
 Int. Cl.⁶ F04B 43/06

U.S. Cl. 417—395

3 Claims



1. An air driven double diaphragm pump comprising an air chamber housing having a center section and two outwardly facing concave discs rigidly positioned to either side of said center section;
 two pump chamber housings fixed to said air chamber housing and mating with said two outwardly facing concave discs about the periphery thereof, respectively;
 a control rod slidably extending through said center section of said air chamber housing and extending concentrically through said two outwardly facing concave discs;
 two diaphragms concentrically fixed to the ends of said control rod, respectively, and extending outwardly to the mating peripheries of said two outwardly facing concave discs and said two pump chamber housings, respectively;
 two pistons on said control rod between said two diaphragms and said air chamber housing, respectively, each piston including a stop facing said air chamber housing to abut against said air chamber housing to define the extent of slidable movement of said control rod;
 an actuator valve coupled with said air chamber housing to provide alternating pressure to said diaphragms independently of the position of said control rod.

5,378,123
APPARATUS FOR RECOVERING REFRIGERANT WITH OFFSET CAM

Carmelo J. Scuderi, 173 Prospect St., Springfield, Mass. 01107, and Charles K. Forner, Longmeadow, Mass., assignors to Carmelo J. Scuderi, Springfield, Mass.
 Division of Ser. No. 778,734, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 551,936, Jul. 12, 1990, abandoned, which is a division of Ser. No. 474,925, Feb. 2, 1990, Pat. No. 4,981,020. This application Ang. 14, 1992, Ser. No. 930,156

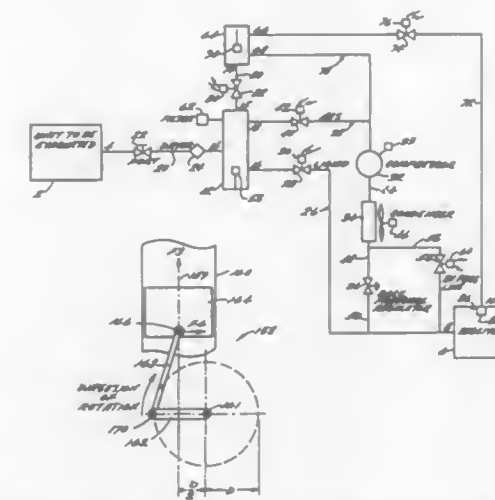
Int. Cl.⁶ F04B 17/00

U.S. Cl. 417—415

11 Claims

1. An apparatus for compressing a gas phase refrigerant comprising:

a tubular cylinder wall extending from a first end to a second end;
 a cylinder head enclosing the second end of the cylinder wall and defining an intake port and an outlet port;
 valve means for controlling flow through the intake port and the outlet port;
 a piston slidably received with the cylinder wall for reciprocating movement, said piston being rotationally symmetrical about a centerline and axially aligned with said cylinder wall for reciprocating movement;
 a first annular groove circumscribing said piston;



self-lubricating bidirectional annular seal means disposed in said first annular groove for sealing between the piston and the cylinder wall; and,
 means for reciprocally moving the piston axially within the tubular cylinder wall to provide an intake stroke and an outlet stroke, said means including an electric motor, a crankarm having a center of rotation and being operatively associated with said electric motor, said piston being laterally displaced toward the compression side relative to the center of rotation of the crankarm such that an extension of the centerline of said piston is laterally displaced from the center of rotation of the crankarm.

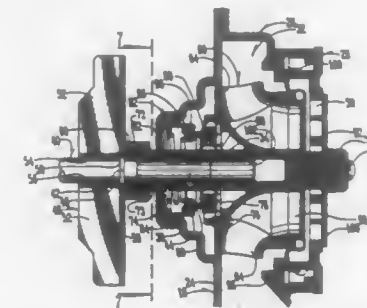
5,378,124
METHOD AND MEANS FOR ASSEMBLING A PUMP AND MOTOR

Rodney M. Welch, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa

Filed Jun. 7, 1993, Ser. No. 55,114
 Int. Cl.⁶ F04B 17/00

U.S. Cl. 417—423.1

19 Claims



1. An improvement in a pump assembly including a motor with a rotatable motor shaft, a pump housing wall having an exterior side, an interior side and a shaft opening extending

therethrough, said motor being fixedly attached to said exterior side of said pump housing wall with said motor shaft extending through said shaft opening to said interior side of said housing wall, said improvement comprising:

- first coupling means mounted on said motor shaft on said exterior side of said housing wall;
- impeller means mounted on said shaft on said interior side of said housing wall, said impeller means being axially slideable on said shaft;
- second coupling means fixedly attached to said impeller means and having an annular clearance groove therein;
- said first and second coupling means retentively and movably engaging one another whereby relative rotation therebetween will cause said impeller means to move axially on said shaft from a first position wherein said annular clearance groove is spaced axially from said shaft opening to a second position wherein said annular clearance groove is registered within said shaft opening.

5,378,125

DEVICE FOR SUPPLYING FUEL FROM SUPPLY TANK TO INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLE

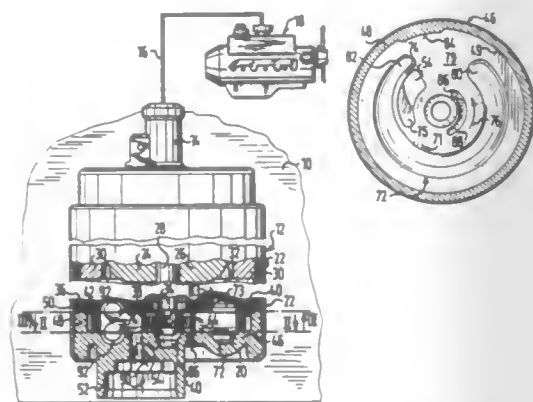
Kurt Frank, Schorndorf-Haubersbrunn; Werner Schmid, Tamm; Willi Strohl, Beilstein; Jochen Thoennissen, Stuttgart, and Martin Ungerer, Renningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 28, 1993, Ser. No. 70,107

Claims priority, application Germany, Jun. 27, 1992, 4221184
Int. Cl.⁶ F04B 17/00

U.S. Cl. 417—423.3

12 Claims



1. A device for supplying fuel from a supply tank to an internal combustion engine of a motor vehicle, comprising means forming a pump chamber with end-side chamber walls and also having an inlet opening and an outlet opening; a drive motor; a supply pump having an impeller driven by said drive motor, said impeller rotating in said pump chamber and having a substantially disc-shaped hub part provided on its periphery with a plurality of radially outwardly extending vanes, at least one of said chamber walls in the region of radially outer ends of said vanes having an approximately ring shaped, groove-like supply passage which surrounds a rotary axis of said impeller, said inlet opening in a ring region of said pump chamber which is limited radially inwardly by said hub part of said impeller and radially outwardly by an inner ring edge of said ring-shaped supply passage which surrounds said hub part.

5,378,126

DIAPHRAGM CASSETTE FOR SOLUTION PUMPING SYSTEM

Kent D. Abrahamson, and John E. Ogden, both of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

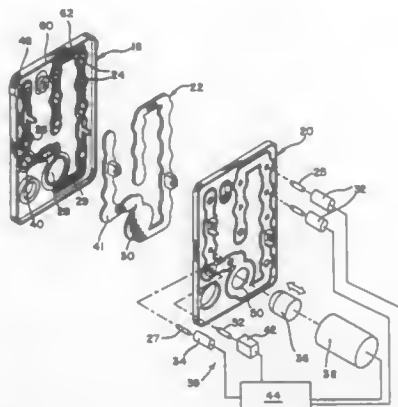
Continuation of Ser. No. 998,232, Dec. 30, 1992, abandoned.

This application Jun. 6, 1994, Ser. No. 254,446

Int. Cl.⁶ F04B 43/02

U.S. Cl. 417—479

8 Claims



1. A pump cassette for use with a related pump driver having a reciprocable pump plunger and a plurality of valve actuators, the pump plunger having a face surface, said pump cassette comprising:

- a rigid cassette body having a front body member and a rear body member;
- a plurality of liquid inlets and at least one liquid outlet provided in the cassette body;
- a liquid flow path for joining said liquid inlets and at least one liquid outlet in fluid communication; and
- an elastomeric diaphragm positioned between the front and rear body member in said cassette body, the diaphragm including a diaphragm pumping portion operably associated with the pump plunger of said related pump driver for pumping liquid through the flow path from a selected one of said liquid inlets to said at least one liquid outlet, the diaphragm pumping portion including a reinforced diaphragm portion for contacting the face surface of the plunger and having a surface size equal or greater than the size of the face surface of the associated plunger and an unreinforced diaphragm portion surrounding the reinforced portion so that the unreinforced diaphragm portion is not in contact with the face surface of the plunger, the unreinforced diaphragm portion for stretching and relaxing in response to the reciprocation of the pump plunger.

5,378,127

MANUAL DISPLACEMENT CONTROL FOR HYDROSTATIC TRANSMISSIONS AND METHOD OF PRECISE SYMMETRY ADJUSTMENT THEREFORE

William L. Welscher, Ankeny, Iowa, assignor to Sauer Inc., Ames, Iowa

Filed Apr. 16, 1993, Ser. No. 49,988

Int. Cl.⁶ F04B 39/08

U.S. Cl. 417—506

8 Claims

1. A control assembly for hydrostatic transmissions including a pump, and a valve element to control flow of hydraulic fluid to said pump, comprising:

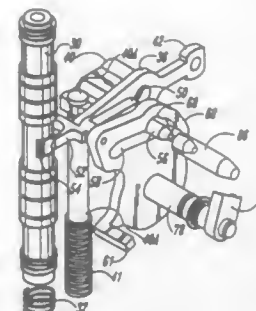
- a pump body,
- a movable valve element in said pump body connected to a source of hydraulic fluid under pressure and having a neutral position,
- a cover member for said body member,
- means for securing said cover member to said body member,

a control shaft extending through said cover member and having interior and exterior ends,

a manual control lever on said exterior end of said control shaft,

a cam plate having an elongated cam slot on the interior end of said control shaft,

linkage means including a first arm pivotally connected to said pump body and having a first upstanding pin thereon interconnecting said pump and said valve element, and a second arm pivotally mounted on said first upstanding pin, and a second upstanding pin mounted offset from said first upstanding pin on said second arm for interconnecting



said control lever and said valve element by way of said control shaft and said cam plate,

a detent portion in said cam slot aligned with said second upstanding pin and defining a concurrent neutral position of said control shaft whereby said valve element will concurrently be in said neutral position of said valve element when said second upstanding pin is aligned with said detent portion,

and resilient means in said cover member to yieldingly hold said control shaft, said control lever, and said cam plate in said concurrent neutral position, and said valve element and said linkage means in said neutral position.

5,378,128

MULTI-STAGE SCREW VACUUM PUMP

Kiyoshi Yanagisawa, Kanagawa, Japan, assignor to Ebara Corporation, Tokyo, Japan

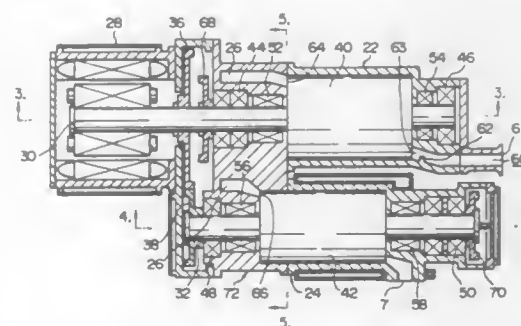
Filed Jul. 7, 1993, Ser. No. 86,886

Claims priority, application Japan, Aug. 5, 1992, 4-208741

Int. Cl.⁶ F01C 1/30

U.S. Cl. 418—9

4 Claims



1. A multi-stage screw vacuum pump comprised of plural stages of screw vacuum pump provided in series said plural stages including a former stage and a latter stage as viewed in a direction of flow of a fluid being pumped, each said stage including a male rotor and a female rotor rotatable around respective axes parallel to each other in a meshing manner, comprising:

- an electric motor having a driving shaft drivingly mounted to a rotor shaft of said female rotor in said former stage screw vacuum pump to drive said former stage screw

vacuum pump, said electric motor being overhung on a discharge end of said former stage screw vacuum pump,

a speed up mechanism for transmitting drive from said rotor shaft to a latter stage screw vacuum pump while speeding up rotational speed of the drive from said rotor shaft, said speed up mechanism including a speed up driving gear provided on a discharge end of said former stage screw vacuum pump and a speed up driven gear driven by said speed up driving gear and provided on a suction end of said latter stage screw pump, said speed up driving gear being provided on said rotor shaft of said female rotor in said former stage screw vacuum pump, and said speed driven gear being provided on said female rotor in said latter stage screw vacuum pump, and

timing gears for said former stage screw vacuum pump, said speed up driving gear and said speed up driven gear being positioned in a same space at said discharge end of said former stage screw vacuum pump, and an oil disk on a rotor shaft of said male rotor of said former stage screw vacuum pump for subjecting the speed up driven gear and speed up driving gear to splash lubrication.

5,378,129

ELASTIC UNLOADER FOR SCROLL MACHINES

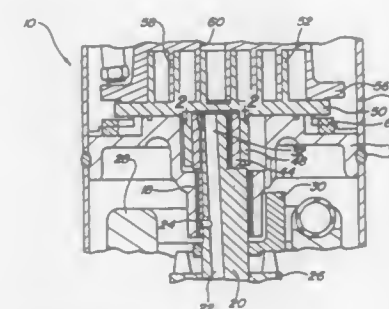
Valery Dunaevsky, Fairview Park, and Mark Bass, Sidney, both of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Dec. 6, 1993, Ser. No. 163,345

Int. Cl.⁶ F01C 1/04, 17/06

U.S. Cl. 418—55.5

24 Claims



1. A scroll machine comprising:

a first scroll member and a second scroll member mounted for orbital movement with respect to one another in an inter-meshed relationship;

a powered drive shaft having a generally flat driving surface for causing said relative orbital movement;

a drive bushing drivingly connected to one of said scroll members;

a driven surface on said drive bushing, said driving surface driving said driven surface to cause said one scroll member to orbit with respect to the other of said scroll members; and

an elastomeric member disposed between said driving and driven surfaces for providing limited movement between said drive shaft and said one scroll member due to the deflection of said elastomeric member, said limited movement being in a direction providing radial compliance to said one scroll member.

5,378,130
TANDEM TYPE GEAR PUMP HAVING AN INTEGRAL
INNER MIDDLE PARTITION WALL

Tadasi Ozeki, Fusimi; Shigekazu Kitano, Kusatsu, and Kyoji Sera, Joyo, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

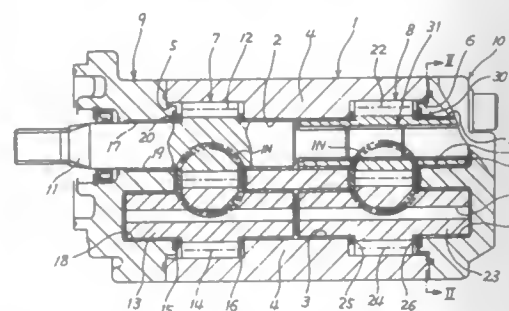
Filed Mar. 18, 1993, Ser. No. 34,127

Claims priority, application Japan, Mar. 31, 1992, 4-018740[U]

Int. Cl.⁶ F04C 2/18, 11/00, 15/00

U.S. Cl. 418-102

1 Claim



1. A tandem type gear pump comprising:
a housing having a body and an inner middle partition wall portion integral with said body as one piece, said body being provided at opposite axial end faces thereof with a pair of recesses which are each shaped like a pair of glasses, and a pair of covers each attached to a corresponding one of said axial end faces of said body so as to close said recesses;

each said pair of gear pump units including a drive shaft with corresponding drive gear fixed thereto for simultaneous rotation with said drive gear, and a driven shaft with corresponding driven gear fixed thereto for simultaneous rotation with said driven gear and meshing simultaneous rotation with said drive gear, each said pair of gear pump units being set in one of said recesses so as to be rotatable in synchronism with the other of said pair of gear pump units;

bearing means for rotatably supporting said gear pump units and comprising, for each said pair of gear pump units, a middle pair of parallelly disposed bearing bores formed in and extending axially through said inner middle partition wall portion and an end pair of bearing bores formed in an adjacent one of said end covers so as to be axially aligned with said middle pair when assembled;

each said drive and driven shaft being journaled in said bearing means, a first of said drive shafts being attached to and simultaneously rotatable with a second of said drive shafts, with said first of said drive shafts having an externally splined portion telescopic within an internally splined portion of said second of said drive shafts;

inlet port means, of said gear pump units, for inputting fluid thereto and outlet port means, of said gear pump units, for outputting fluid therefrom; and

at least one of said covers comprising:

means, in said cover, for redirecting fluid therethrough;
means for routing fluid leaking from said drive gears and passing said leaking fluid between and in lubricating contact with said splined portions and returning said leaking fluid to said inlet port via said redirecting means; and

gasket means for providing sealing at an interface between at least one of said covers and said housing while facilitating said redirecting, said gasket means comprising a gasket shaped like a number 3 opening normal to longitudinal axes of said shafts, so as to cause said fluid being redirected by said cover to return to said inlet port means.

5,378,131
CHEWING GUM WITH DENTAL HEALTH BENEFITS
EMPLOYING CALCIUM GLYCEROPHOSPHATE

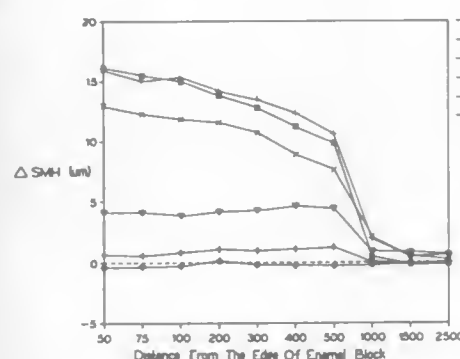
Michael J. Greenberg, Northbrook, Ill., assignor to The Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Feb. 18, 1993, Ser. No. 19,230

Int. Cl.⁶ A61K 9/68, 33/06

U.S. Cl. 424-440

10 Claims



1. A chewing gum for reducing the generation of dental caries, the chewing gum not including fluoride and comprising:

a water insoluble base portion;

a water soluble portion;

a flavor agent; and

at least 0.5% by weight calcium glycerophosphate incorporated in the water insoluble base portion and water soluble portion.

5,378,132
APPARATUS FOR PRODUCING GRANULES OR
PASTILLES FROM FLOWABLE MATERIAL

Herbert Kaiser, Friedensstrabe 241, D-4150 Krefeld II, Germany

PCT No. PCT/EP91/00771, § 371 Date Dec. 1, 1992, § 102(e)

Date Dec. 1, 1992, PCT Pub. No. WO91/16151, PCT Pub. Date Oct. 31, 1991

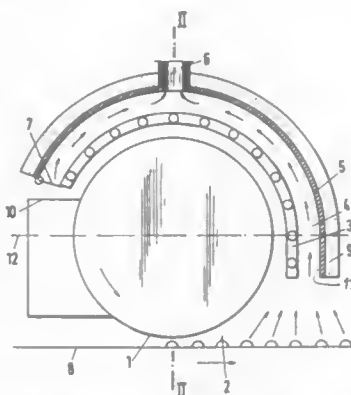
PCT Filed Apr. 22, 1991, Ser. No. 940,956

Claims priority, application Germany, Apr. 26, 1990, 4013405

Int. Cl.⁶ B29B 9/00

U.S. Cl. 425-6

20 Claims



1. In an apparatus for producing granules or pastilles from flowable material in which the material is supplied to a pressing gap between a revolving hollow roll with internal toothings and an externally toothed extrusion roll in engagement with said internal toothings, said hollow roll rotating in a predetermined direction, bores being provided which extend from the respective teeth bottoms of the internal toothings of the hollow roll to the outside of the hollow roll and through which the material is extruded on engagement with the extrusion roll and

deposited in the form of pastilles or granules on a moving cooling surface having a pastille discharge region, further wherein at least a portion of an outer periphery of the hollow roll that is remote from the cooling surface is surrounded by a heating jacket,

the improvement which comprises providing on an outer side of said heating jacket and spaced therefrom a second jacket means having an inner side and an outer side arranged in such a manner that, between said heating jacket and said second jacket means, a generally arcuate waste gas well is formed comprising a first inlet opening in an upstream region as seen in said predetermined direction of rotation of said hollow roll and above said pastille discharge region, and two end faces, said waste gas well communicating with extraction connection means for withdrawing any gases emerging from said material as it cools.

5,378,133

DOUGH EXTRUDING FEEDER

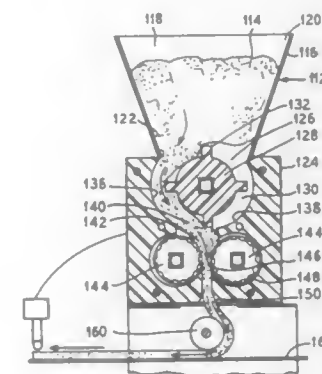
Harold Atwood, and Thomas A. Atwood, both of Dolton, Ill., assignors to AM Manufacturing Company, Dolton, Ill.

Filed Sep. 13, 1993, Ser. No. 120,087

Int. Cl.⁶ A21C 3/04, 11/16

U.S. Cl. 425-136

12 Claims



1. A device for feeding dough comprising:

a hopper having downwardly and inwardly angled side walls and an open bottom for receiving a supply of dough;
a housing positioned below said hopper, said housing having a first space therein defined by two opposed arcuate side walls and a bottom opening leading to a second space;

a first rotatable member positioned in said first space, at least partially below said open bottom of said hopper, to engage dough from said hopper and to carry said dough downwardly along a first of said arcuate side walls, said rotatable member having an outer surface with at least one paddle extending therefrom to enhance engagement and movement of said dough by said rotatable member, said paddle being spaced from said first side wall to permit passage of said dough between said first side wall and said paddle, said paddle being positioned closely adjacent to a second of said arcuate side walls to prevent dough from being carried by said rotatable member beyond said bottom opening;

a pair of opposed second rotatable members located in said second space below said first rotatable member, said second members having a gap therebetween to receive dough therethrough, said second rotatable members being rotatable in counter directions to each other for urging said dough downwardly therebetween; said second rotatable members each having a surface configuration to enhance engagement and movement of said dough by said second rotatable members;

an orifice positioned below said second rotating members for receiving dough from said second rotating members, wherein dough is urged out of said orifice by said second

rotatable members in the form of a continuous cylinder having a diameter of the same size as said orifice; and a roller positioned below said orifice to redirect said dough cylinder exiting said orifice.

5,378,134

PRESS FOR FORMING AN ARTICLE OF COMPOSITE MATERIAL COMPRISING REINFORCING FIBERS IN A POLYMER MATRIX

Philippe Blot, Nantes; Joël Angereau, La Chapelle Lannay; Joël Bretagne, Saint Nazaire, and Jean-Jacques Dittberner, Saint Andre Des Eaux, all of France, assignors to ACB and Societe Nationale Industrielle et Aerospaciale, both of Paris, France

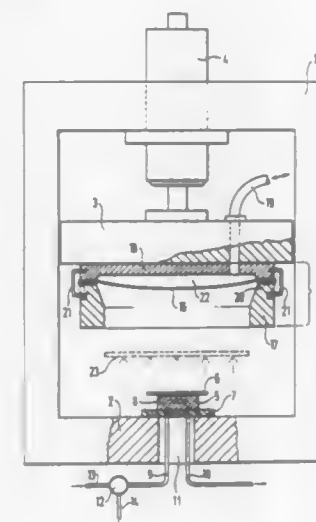
Filed Aug. 19, 1993, Ser. No. 108,402

Claims priority, application France, Aug. 20, 1992, 92 10156

Int. Cl.⁶ B29C 51/28, 51/46

U.S. Cl. 425-149

8 Claims



1. A press for forming an article of composite material of reinforcing fibers embedded in a polymer matrix, forming taking place between a resilient membrane and a former of complementary shape to the article to be formed, the press comprising:

a lower platen carrying said former;

an upper platen;

clamping means for applying a clamping force between the platens; fluid introduction means for introducing fluid under pressure between the upper platen and the membrane;

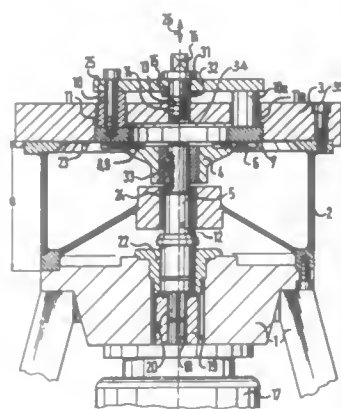
means for heating and cooling the article to be formed, wherein the means for heating and cooling are completely integral with said former, the former being mounted on the lower platen via a thermal insulation means, and wherein the upper platen carries the resilient membrane; and

servo-control means, responsive to the fluid introduction means, to control the clamping means so that the force exerted between the platens by the clamping means always exceeds the force exerted on the membrane by the fluid introduction means by an amount lying between two thresholds.

5,378,135
APPARATUS FOR ALIGNING THE CUTTING SURFACES OF CUTTING BLADES OF A GRANULATING DEVICE
 Willi Flottmann, Wendelstein, and Siegfried Kuklinski, Stuttgart, both of Germany, assignors to Werner & Pfleiderer GmbH, Stuttgart, Germany
 Filed Jun. 17, 1993, Ser. No. 78,612
 Claims priority, application Germany, Jul. 2, 1992, 4221776
 Int. Cl.⁶ B29C 37/00

U.S. Cl. 425—168

17 Claims



1. Apparatus for adjusting and aligning the cutting surfaces of cutting blades of a granulating device for thermoplastic material, said apparatus comprising:

- a granulating hood,
- a rotatable cutting head in said granulating hood, said cutting head including cutting blades having cutting surfaces, drive means for driving said cutting head in rotation, and
- an abrasive plate detachably mounted in facing relation to said cutting blades, said abrasive plate having an abrasive surface facing said cutting surfaces of said cutting blades for grinding said cutting surfaces upon rotation of said cutting head to adjust and align said cutting surfaces longitudinally along an axis of rotation of said cutting head and in a transverse plane perpendicular to said axis of rotation, said abrasive plate comprising a base plate detachably mounted on said granulating hood, said base plate having an annular recess therein coaxial with said axis of rotation and a ring in said recess secured to said base plate concentrically on said axis of rotation, said abrasive surface being on said ring.

5,378,136
APPARATUS FOR PRE-SHAPING PLASTICATED PLASTICS MATERIAL
 Jürgen Henning, Wiesbaden; Norbert Klein, Sulzbach/Taunus, and Heinrich Hncke, Minden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main
 Filed Jul. 20, 1993, Ser. No. 94,943
 Claims priority, application Germany, Jul. 22, 1992, 4224141
 Int. Cl.⁶ B29C 47/10, 47/12

U.S. Cl. 425—188

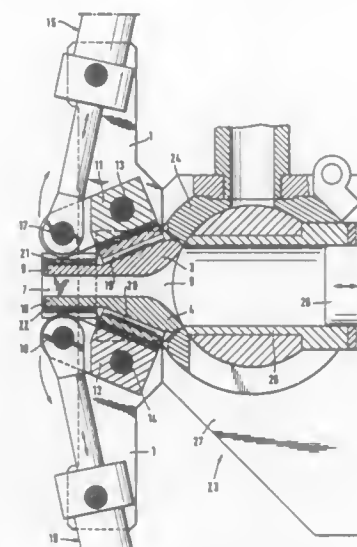
6 Claims

1. An apparatus for pre-shaping plasticated plastic material, comprising:

- (a) a mold assembly comprising:
 - (i) two opposing supports, each having an inner surface;
 - (ii) two opposing stationary plates each positioned adjacent one opposing support inner surface;
 - (iii) a first and second opposing rotatably mounted calibration jaw positioned between said two opposing stationary plates, thereby forming a mold,
 - (iv) each of said first and second opposing rotatably mounted calibration jaw having an inner opposing surface of a specific profile;
 - (v) a first and second drive device;
 - (vi) a first and second opposing lever, each slidably and

rotatably mounted to and between said two opposing supports; and

- (vi) each of said levers having a first and second end wherein said first end of the first lever is rotatably mounted to said first opposing calibration jaw, and said first end of said second lever is rotatably mounted to said second opposing calibration jaw; and wherein said second end of said first lever operationally engages said



first drive device, and said second end of said second lever operationally engages said second drive device, whereby said levers rotate said first and second calibration jaws between a closed and open position such that rotating motion between said closed and open position pulls a remainder of a predetermined amount of plasticated plastic material through said mold thereby shaping said remainder to said profile of said inner opposing surface of each calibration jaw.

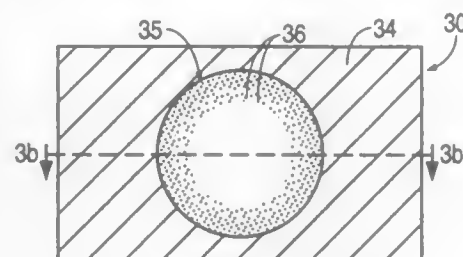
5,378,137
MASK DESIGN FOR FORMING TAPERED INKJET NOZZLES

Stuart D. Asakawa, San Diego, Calif.; Paul H. McClelland, Monmouth; Ellen R. Tappan, Corvallis, both of Oreg.; Richard R. Vandepoli, Vancouver, Wash.; Kenneth E. Trueba, and Chien-Hua Chen, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 10, 1993, Ser. No. 59,686
 Int. Cl.⁶ B23K 26/06; B41J 2/16

U.S. Cl. 425—174.4

8 Claims



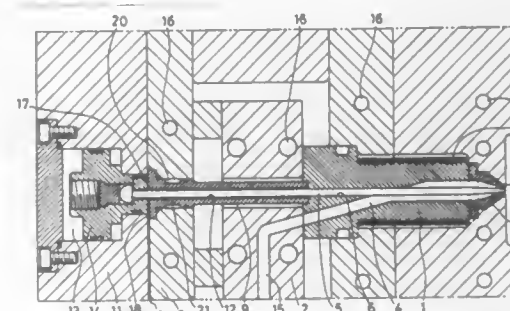
1. An apparatus for forming one or more tapered nozzles in a nozzle member for a printhead, said apparatus comprising: a radiation source; and a mask positioned between said radiation source and said nozzle member, said mask comprising: a transparent mask substrate; and

an opaque layer formed on said substrate, said opaque layer defining at least one opening, each of said at least one opening corresponding to one of said one or more tapered nozzles to be formed in said nozzle member, each of said at least one opening having opaque portions formed therein, each of said opaque portions being substantially completely opaque to radiation emitted by said radiation source, said opaque portions being distributed and arranged from a center of each of said at least one opening in an increasing density to a periphery of each of said at least one opening such that said radiation emitted by said radiation source completely ablates through said nozzle member when passing through the center of each of said at least one opening and is blocked by said opaque portions defining said at least one opening to thereby form said one or more tapered nozzles.

5,378,138
VALVE GATE INJECTION MOLDING APPARATUS
 Susumu Onuma, and Kin-ichi Yokoyama, both of Yonezawa, Japan, assignors to Seiki Kabushiki Kaisha, Tokyo, Japan
 Filed Dec. 16, 1993, Ser. No. 168,466
 Claims priority, application Japan, Dec. 21, 1992, 4-340206
 Int. Cl.⁶ B29C 45/23

U.S. Cl. 425—549

4 Claims



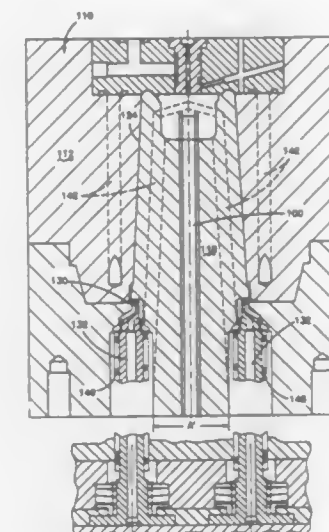
1. An injection molding apparatus for producing a molded product comprising:

- a heated nozzle having a rear end engaging with a manifold, a front end having a nozzle tip attached thereto and a resin melt passage extending through said heated nozzle and communicating said rear end to said front end, said nozzle tip having a resin melt passage in communication with a mold cavity, whereby the resin melt passage of said heated nozzle is in alignment with said resin melt passage of said nozzle tip, said heated nozzle also having a valve pin receiving hole communicating with said resin melt passage of said heated nozzle;
- a sleeve pin having a rear end secured to a temperature control plate and a front end positioned through said manifold and connected to said heated nozzle, said sleeve pin having a receiving hole extending through said sleeve pin and communicating said rear end of said sleeve pin to said front end of said sleeve pin;
- a valve pin being slidably mounted through said receiving hole of said sleeve pin and said valve pin receiving hole, a rear end of said valve pin connected to a driving assembly and a front end of said valve pin engaging said nozzle tip, said driving assembly reciprocating said valve pin whereby reciprocal motion of said valve pin opens and closes said resin melt passage of said nozzle tip, said driving assembly being secured to a mounting plate;
- said manifold being provided with a resin melt passage for supplying said resin melt to the resin melt passage of said heated nozzle;
- a gas discharge outlet positioned the length of said receiving holes and extending through a rear surface of said temperature control plate to the exterior of said temperature control plate to allow gas produced from the melted resin to escape; and
- a fluid channel in said temperature control plate for circulating a cooling fluid for controlling the temperature of said sleeve pin.

5,378,139
HOOK NOZZLE FOR INSIDE GATED MOLD
 Robert D. Schad, Toronto, and Harald Schmidt, Georgetown, both of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada
 Filed Sep. 7, 1993, Ser. No. 116,965
 Int. Cl.⁶ B29C 45/22

U.S. Cl. 425—549

15 Claims



1. An apparatus for injection molding plastic articles having an inner wall portion, said apparatus comprising:

- a mold cavity portion;
- a mold core portion defining a cavity space in the shape of a plastic article to be molded with said mold cavity portion; said cavity space having a first portion defining said inner wall portion;
- nozzle means for injecting molten plastic material into said inner wall portion;
- a gate communicating with an inside edge of said inner wall portion;
- a hook-shaped passageway in said mold core portion between said nozzle means and said gate for carrying molten plastic material between said nozzle means and said gate; said nozzle means being offset with respect to a center line of said mold core portion as a result of said hook-shaped passageway; and
- said apparatus having enhanced core strength and an enlarged area for cooling channels as a result of said offset of said nozzle means.

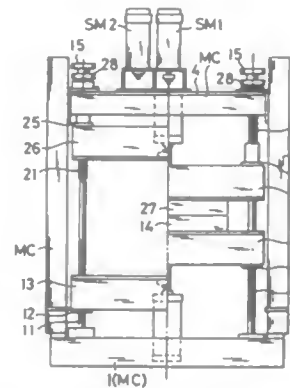
5,378,140
MOLD CLAMPING APPARATUS
 Kazuo Asano, and Toshihiro Takai, both of Nagoya, Japan, assignors to Tsukishima Kikai Co., Ltd., Tokyo, Japan
 Filed Aug. 9, 1993, Ser. No. 103,140
 Claims priority, application Japan, Aug. 27, 1992, 4-252304
 Int. Cl.⁶ B29C 33/22

U.S. Cl. 425—451.2

6 Claims

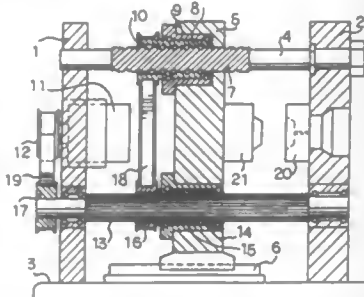
- 1. A mold clamping apparatus comprising: a pair of reversible prime movers, a plurality of screw rod pairs, each of which includes a first screw rod having an unthreaded extension and a hollow second screw rod embracing the unthreaded extension therein so as to freely rotate relative to the first screw rod, a pair of means for transmitting rotary forces from the pair

of prime movers respectively to the first screw rods and to the hollow second screw rods,
a plurality of nut member pairs, each of which consists of a first nut member and a second nut member respectively threadedly engaged with the first and second screw rods so as to move up or down when the screw rods are rotated in a first or a second direction,



first and second molds respectively connected to the first and second nut members so as to move toward or apart from each other, and
means for giving a mold clamping force to the engaged two molds when said prime movers are stopped.

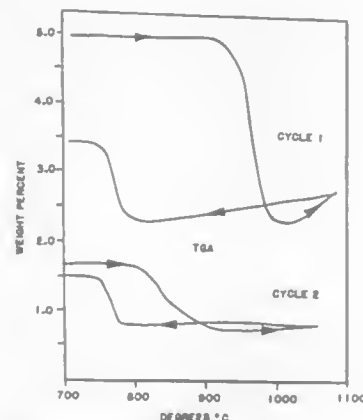
5,378,141
MOTOR DRIVEN TYPE DIE TIGHTENING APPARATUS FOR AN INJECTION MOLDING MACHINE
Hidemi Aoki, Sakakimachi, Japan, assignor to Nissel Plastic Industrial Co., Ltd., Nagano, Japan
Filed Aug. 31, 1993, Ser. No. 114,658
Claims priority, application Japan, Aug. 31, 1992, 4-255651
Int. Cl.⁶ B29C 45/66
U.S. Cl. 425—589



1. A motor driven die tightening apparatus for an injection molding machine, comprising:
a plurality of tie bars bridged between a pair of stationary die boards mounted on a platform of said injection molding machine,
a movable die board displaceably arranged on said platform of said injection molding machine between said stationary die boards with said tie bars inserted therethrough,
a ball screw shaft formed across a part of each of said tie bars inserted through said movable die board,
a ball nut member threadably engaged with each of said ball screw shafts and having a geared pulley provided therewith, said ball nut members being rotatably received in said movable die board,
an electric motor to rotate said ball nut members so that said movable die board is slidably displaced toward or away from one of said stationary die boards, said electric motor being installed on one of said stationary die boards,
a rotary sleeve having a number of balls arranged on an inner

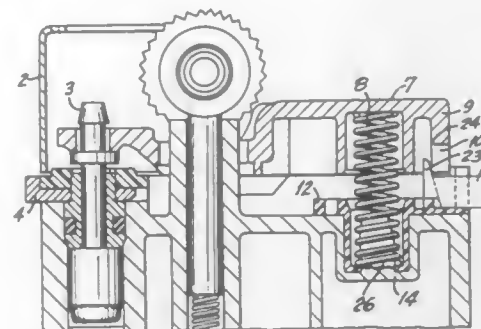
peripheral surface thereof being received in a stationary case fitted into said movable die board, and
a rotational shaft inserted through said rotary sleeve, said rotational shaft having a plurality of splines formed along an outer surface thereof, said balls of said rotary sleeve being in engagement with said splines of said rotational shaft so as to enable said movable die board to be displaced in an axial direction along said rotational shaft, wherein the ball nut members, the rotational shaft and the electric motor are operatively connected to each other via rotational power transmitting members, and
as said electric motor is rotationally driven to rotate said ball nut members, said movable die board is slidably displaced toward or away from one of said stationary die boards.

5,378,142
COMBUSTION PROCESS USING CATALYSTS CONTAINING BINARY OXIDES
Teresa Kennelly, Belle Mead; John K. Hochmuth, Monmouth Junction, both of N.J.; Ting C. Chou, San Jose, Calif., and Robert J. Farrauto, Westfield, N.J., assignors to Engelhard Corporation, Iselin, N.J.
Filed Apr. 12, 1991, Ser. No. 684,409
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.⁶ F23D 3/40; B01J 38/12, 23/10, 23/56
U.S. Cl. 431—7



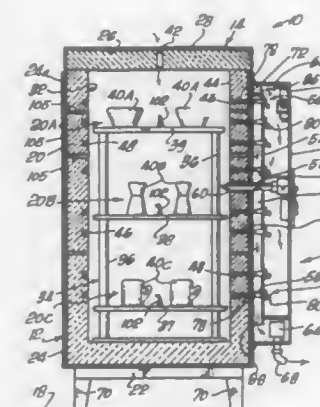
1. A process for the catalytically supported combustion of a gaseous carbonaceous fuel which comprises (a) forming a gaseous combustion mixture comprising the fuel and oxygen, and (b) contacting the combustion mixture in a catalyst zone with a catalyst composition comprising a refractory carrier on which is disposed a catalytic material comprising a mixture of (i) a refractory inorganic binder and (ii) a catalytically effective amount of a powdered binary oxide of palladium and a rare earth metal selected from the group consisting of one or more of Ce, La, Nd and Sm, the contacting being carried out under conditions suitable for catalyzed combustion of the combustion mixture, thereby effecting sustained combustion of at least a portion of the fuel in said combustion mixture without substantial formation of oxides of nitrogen.

5,378,143
SAFETY LIGHTER
Henri Ansquer, Quimper, France, assignor to Sibjet, Paris, France
Continuation of Ser. No. 439,260, Nov. 17, 1989. This application Oct. 20, 1992, Ser. No. 965,152
Claims priority, application France, Jul. 1, 1988, 88 08912; Jul. 11, 1988, 88 09387
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.⁶ F23D 11/36
U.S. Cl. 431—153



1. A child resistant safety lighter comprising:
a main body having a chamber of combustible fluid, said chamber having an opening for release of said combustible fluid;
a burner member having a head portion at one end and a sealing means at the other end for sealing said combustible fluid in said chamber, said burner member being moveable into and out of sealing engagement with said chamber;
a pushbutton member having a pushbutton back end and a pushbutton front end, said pushbutton member being hinged for rotation to said main body intermediate said pushbutton front and back ends, said pushbutton front end being operatively connected to said burner and said pushbutton back end being adapted to rotate toward said main body, said pushbutton back end including a depending backwall having an upwardly extending notch formed therein;
a compression spring positioned to bias said pushbutton back end away from said main body, whereby said pushbutton front end is urged toward said main body to lower said burner into sealing engagement with said chamber;
locking means for preventing rotation of said pushbutton member to unseal said combustible fluid chamber, said locking means comprising a spring-loaded movable safety tab positioned between said main body and said depending backwall, said safety tab projecting outwardly of said main body between said main body and said depending backwall wherein, when said pushbutton is rotated to lower said burner into sealing engagement with said chamber, said pushbutton back end rotates away from said main body sufficiently so that a slot is defined by a clearance between sections of said main body and depending backwall adjacent to said safety tab, said slot opening into said notch and extending transversely with respect to the rotational plane of said pushbutton member, said safety tab defining an unlocked non-interfering position when located in the part of said slot opening into said notch thereby enabling rotation of said pushbutton back end toward said main body so that said notch becomes coextensive with said safety tab enabling said burner member to move out of sealing engagement with said chamber, said safety tab further defining a locked interfering position when located in said slot away from said notch wherein engagement between said safety tab and depending backwall obstructs rotation of said pushbutton back end toward said main body so that said burner remains in sealing engagement with said chamber, said safety tab being movable within said slot between said locked interfering position and said unlocked non-interfering position by opposing collinear forces which are parallel to the periphery of said main body adjacent to said slot and which lie in a plane perpendicular to said rotational plane, said spring of said spring-loaded safety tab resisting movement of said safety tab away from said locked interfering position to said unlocked non-interfering position; said locking means further comprising tab retention means for holding said safety tab in its unlocked non-interfering position against said resistance of said spring of said spring-loaded safety tab and tab release means for automatically disengaging said tab retention means when said pushbutton back end is pivoted toward said upper body end sufficiently to move said burner member out of sealing engagement with said chamber, said safety tab being forced by said spring of said spring-loaded safety tab to automatically return said safety tab to said locked interfering position upon rotation of said pushbutton back end away from said main body sufficient to form said slot.

5,378,144
METHOD AND APPARATUS FOR TEMPERATURE UNIFORMITY AND REPEATABLE TEMPERATURE AND LOCATION SPECIFIC EMISSION CONTROL OF KILNS
Steven B. Cress, P.O. Box 6070, Glenbrook, Nev. 89413
Filed Mar. 2, 1992, Ser. No. 844,468
Int. Cl.⁶ F27B 9/00
U.S. Cl. 432—120

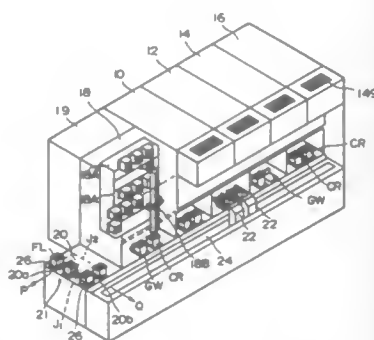


1. A kiln for curing ceramic products in which an opening is provided intercommunicating between the atmosphere exterior of the kiln at the top of the kiln and the interior of the kiln; a kiln setter, which is a device within the kiln having a rod resting on a ceramic cone such that the rod drops when the cone melts controlling the heat being generated within the kiln, intercommunicating between a control panel on the exterior of said kiln to the interior of said kiln; blower means installed within said control panel; air passage means between the atmosphere exterior of the kiln and one side of the interior of the kiln and through the bottom of the kiln to the interior of the kiln; and wherein the kiln setter includes a tubular portion with two holes extending through a wall thereof.
2. The apparatus of claim 1 wherein the air passage means is so oriented as to maintain flow of air within defined zones, within the kiln.

5,378,145
TREATMENT SYSTEM AND TREATMENT APPARATUS
 Yuji Ono, Sagami, and Katsuhiko Mihara, Hachioji, both of Japan, assignors to Tokyo Electron Kabushiki Kaisha and Tokyo Electron Tonoku Kabushiki Kaisha, Japan
 Filed Jul. 12, 1993, Ser. No. 89,827
 Claims priority, application Japan, Jul. 15, 1992, 4-210978
 Int. Cl.⁶ F27B 9/04

U.S. Cl. 432—152

8 Claims



1. A treatment apparatus for performing a predetermined treatment on a planar workpiece contained in a carrier, said apparatus comprising:

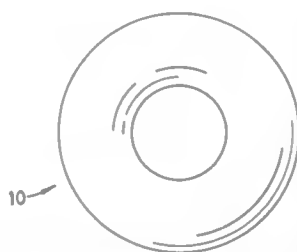
a first air-tight carrier storage chamber for storing a carrier; gas supply means for supplying an inert gas to said first carrier storage chamber, said gas supply means including a gas supply source, an inert gas supply pipe for connecting said gas supply source and said first carrier storage chamber, and a gas supply valve device; gas exhaust means for exhausting a gas from said first carrier storage chamber, said gas exhaust means including an exhaust pipe having a first end and a second end, said first end being connected to said first carrier storage chamber, said second end being open and a gas exhaust valve device; an oxygen concentration detector connected to said first carrier storage chamber; and a control device connected to said oxygen concentration detector, said control device being adapted for adjusting said gas supply valve device and said gas exhaust valve device.

5,378,146
POLYURETHANE BIOMEDICAL DEVICES & METHOD OF MAKING SAME

Terry L. Sterrett, Long Beach, Calif., assignor to Ormco Corporation, Glendora, Calif.
 Continuation of Ser. No. 781,677, Oct. 24, 1991, abandoned, which is a continuation of Ser. No. 476,599, Feb. 7, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 984,284
 Int. Cl.⁶ A61C 3/00

U.S. Cl. 433—11

6 Claims



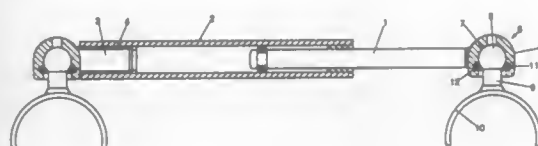
1. An orthodontic tensioning device which is subject to substantial elongation during use, said device made of an elastomeric thermoplastic polyurethane material, the outer surface of said orthodontic tensioning device having been subjected to ion implantation such that said device possesses properties of

reduced protein adsorption and improved stain resistance, wherein said implanted ions are selected from the group consisting of fluoride and argon, and wherein said device retains its reduced protein adsorption and improved stain resistance properties during elongation.

5,378,147
VENTRAL TELESCOPE
 Franz-Josef Mihailowitsch, Bochum, Germany, assignor to H. Michael Hartmann, River Forest, Ill.
 PCT No. PCT/EP92/00563, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/19174, PCT Pub. Date Nov. 12, 1992
 PCT Filed Mar. 13, 1992, Ser. No. 962,199
 Claims priority, application Germany, May 2, 1991, 4114285; Jul. 25, 1991, 4124597
 Int. Cl.⁶ A61C 3/00

U.S. Cl. 433—19

5 Claims



1. Apparatus for the forward displacement of the lower jaw, said apparatus comprising a telescoping sliding device comprising a first telescoping member having a first ball-and-socket joint means for attaching said first telescoping member to a first anchoring means to be anchored to one or more teeth of a jaw, and a second telescoping sleeve member having a second ball-and-socket joint means for attaching said second member to a second anchoring means to be anchored to one or more teeth of the counterjaw, said socket portion of each of said first and said second ball-and-socket joint means having a ball insertion opening aligned substantially perpendicular to the longitudinal extension of said telescoping members, and said ball portion of each of said first and said second ball-and-socket joint means having a head which is snappable into the respective socket portion of each of said first and said second ball-and-socket joint means under elastic deformation of a safety means, said safety means comprising a spring ring inserted in a groove in the interior of the socket portion of each of said first and said second ball-and-socket joint means.

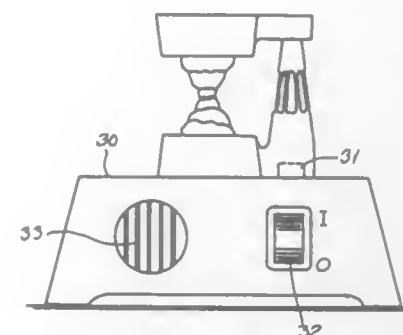
5,378,148
MODEL HOLDING MEANS AND ARTICULATOR FOR USE WITH DENTAL MODELS AND APPARATUS FOR ADJUSTMENT OF THE ARTICULATOR
 Bent Mogensen, 22, 3tv Sokkelundsvej, DK-2400 København NV, Denmark
 PCT No. PCT/DK91/00258, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO92/03986, PCT Pub. Date Mar. 19, 1992
 PCT Filed Sep. 9, 1991, Ser. No. 982,742
 Claims priority, application Denmark, Sep. 10, 1990, 2162/90
 Int. Cl.⁶ A61C 11/00, 19/00

U.S. Cl. 433—64

6 Claims

1. Articulator for dental modelling, such as restoration of single teeth and the manufacture of bridges or the like, and comprising an upper part (20) and a lower part (1) mutually connected by a hinge (4), which makes it possible to simulate a movement approximately corresponding to a chewing movement, between the upper part (20) and the lower part (1) as well as means for adjusting the upper part in relation to the lower part in order to establish a correct mutual engagement between models mounted on the two parts and a subsequent fixation thereof, wherein the lower part (1) comprises a form part (2), on the upper surface of which a mould is arranged,

said form part having side faces and a stanchion (3) upstanding at one of the side faces of the form part (2), which stanchion is made from thermoplastics and carries one part of the hinge (4); said stanchion (3) being provided with a cavity extending from an inlet in the bottom surface of the lower part to a plurality



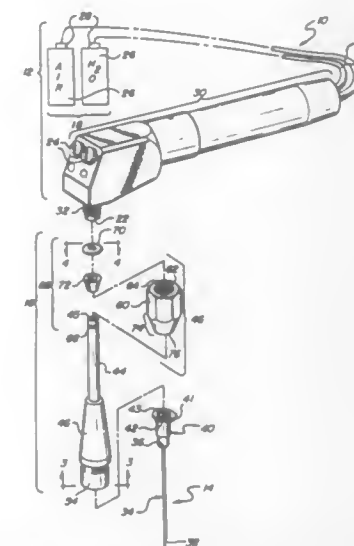
openings (5) positioned approximately at half of the height of the stanchion; said upper part (20) comprising a form part (21), having a lower surface, said lower surface comprising a second mould (22), the internal walls (6) of said moulds having a toothing (7); and wherein said hinge is a ball-and-socket joint (4).

5,378,149
FLUID DISPENSING ASSEMBLY AND ADAPTER MEANS THEREFOR

John J. Stropko, 301 Parker Rd., Prescott, Ariz. 86303
 Filed Aug. 30, 1993, Ser. No. 114,321
 Int. Cl.⁶ A61G 17/02

U.S. Cl. 433—80

2 Claims



1. A fluid dispensing assembly (10) of the type for dispensing a precise stream of fluid, said assembly (10) comprising:

- (a) fluid source means (12) for supplying the fluid, said fluid source means (12) comprising:
 - (i) fluid pressurizing means (18) for maintaining the fluid under continuous pressure;
 - (ii) a fluid supply line (20) having an outlet (22) for discharging the fluid from said pressurizing means (18), said outlet (22) having a plurality of exterior outlet threads (32); and
 - (iii) a valve (24) disposed in said fluid supply line (20) for terminating the flow of the fluid from said outlet (22);
- (b) a needle apparatus (14) comprising:
 - (i) a hollow needle (34) for receiving the fluid at an inlet

end (36) thereof and discharging a precise stream of the fluid at a discharge end (38) thereof;

(ii) a hollow hub (40) providing fluid communication to said inlet end (36) of said hollow needle (34), said hollow hub (40) having a first flange (42); and

(c) an adapter (16) for establishing fluid communication between said inlet end (36) of said needle apparatus (14) and said outlet (22) of said fluid source means (12), said adapter (16) comprising:

(i) a conduit (44) extending between a first end (50) and a second end (52) for providing fluid communication between said ends (50, 52) thereof;

(ii) a first connector (46) positioned at said first end (50) of said conduit (44) and comprising a cylindrical inner surface (56) having two identical spiral locking threads (58) with starting ends (60) spaced 180 degrees apart for surrounding and holding said first flange (42) of said hollow hub (40) to hold said first end (50) of said conduit (44) in said hollow hub (40) to establish fluid communication between said first end (50) of said conduit (44) and said inlet end (36) of said hollow needle (34);

(iii) a second connector (48) rotatably and slidably coupled about said second end (52) of said conduit (44) and comprising a cylindrically shaped inner wall portion (62) having at least one thread (64) for engaging said outlet threads (32) to connect said outlet (22) of said fluid source means (12) to said second connector (48) and to hold said second end (52) in said outlet (22) of said fluid source means (12) to establish fluid communication therebetween; and

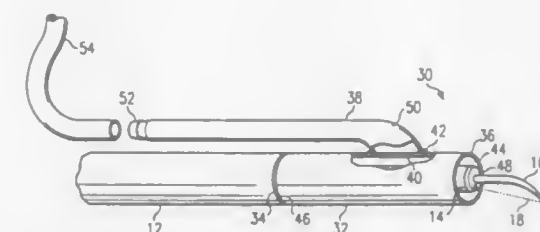
(iv) a washer assembly (66) for rotatably and slidably coupling said second connector (48) to said second end (52) of said conduit (44), said washer assembly (66) comprising a groove (68) about said conduit (44), a rubber ring (70) surrounding said conduit (44) and disposed in said groove (68), and a conical plastic spacer (72) surrounding said conduit (44) and adjacent said rubber ring (70).

5,378,150
METHODS AND APPARATUS FOR CONTROLLING THE AEROSOL ENVELOPE GENERATED BY ULTRASONIC DEVICES

Stephen K. Harrel, 4510 Ridge Rd., Dallas, Tex. 75229
 Filed Jun. 18, 1992, Ser. No. 900,617
 Int. Cl.⁶ A61C 17/06

U.S. Cl. 433—91

32 Claims



1. An aerosol recovery assembly for use with an ultrasonic device of the type having an elongate handpiece, a tip, and an orifice through which water spray is jetted toward the tip and generates an aerosol, the combination of said aerosol recovery assembly and a portion of said ultrasonic device comprising:

- a source of suction;
- an insert of said ultrasonic device;
- a rigid cylinder body insertable on at least a portion of the handpiece, said cylinder body having opposing first and second open ends, said first end being radially spaced from the insert to define an annulus, one end of which is open, said second end fitting securely to the handpiece for sup-

porting and sealing the cylinder body to the ultrasonic device;
 a suction tube attached to a sidewall of the cylinder body and sealed around an opening in the sidewall so that when the source of suction is connected to the suction tube, at least a portion of the aerosol is drawn in via the annulus between the ultrasonic insert and the cylinder body and extracted via the suction tube; and
 the annulus and a suction path between the open end of the annulus and the suction source being of sufficient area to transfer a volume of air to the suction source such that an envelope of the aerosol surrounding the tip of the ultrasonic device can be controlled and reduced down to a diameter of at least about 2.54 cm, as a function of the amount of suction applied to the suction tube.

5,378,151

DENTAL PROSTHETIC EXTRACTING TOOL

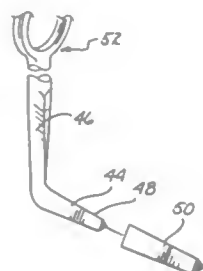
Stephen P. Lukase, Sun City West, Ariz., and Thomas A. Lukase, 267 Greentree La., La Jolla, Calif. 92037, assignors to Thomas A. Lukase, La Jolla, Calif.

Continuation of Ser. No. 786,296, Nov. 1, 1991, Pat. No. 5,217,371. This application Jan. 7, 1993, Ser. No. 1,320. The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.⁶ A61C 3/08, 3/00

U.S. Cl. 433—150

13 Claims



1. A tool for engaging and applying a force to remove a dental prosthetic device, said tool comprising in combination:
 - a) a body having a longitudinal axis;
 - b) a linear split foot having a longitudinal axis and extending essentially perpendicularly from said body, said split foot including a pair of free ends for engaging the dental prosthetic device, said split foot including a pair of prongs defining said pair of free ends, each of said prongs having a lateral cross-section transverse to the longitudinal axis of said split foot and defining essentially a truncated right triangle; and
 - c) said body including means for applying the force to said body along its longitudinal axis to remove the dental prosthetic device.

5,378,152

METHOD AND APPARATUS FOR INSTALLATION OF DENTAL IMPLANT

James P. Elia, Scottsdale, Ariz., assignor to Dental Marketing Specialists, Inc., Scottsdale, Ariz. and Jerry W. Bains and Salee C. Bains, Carefree, Ariz., a part interest

Filed May 1, 1992, Ser. No. 877,132

Int. Cl.⁶ A61C 8/00, 5/00

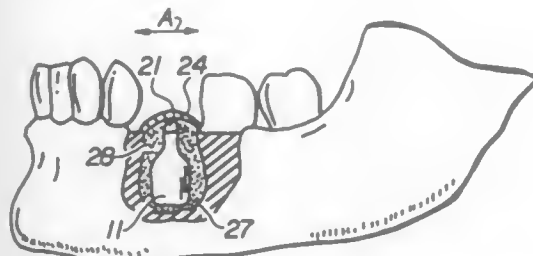
U.S. Cl. 433—173

6 Claims

1. A method of anchoring a dental implant in the alveolar bone of a patient, comprising the steps of
 - (a) forming an opening in the alveolar bone, said opening including a peripheral wall circumscribing and enclosing an open space;
 - (b) inserting a dental implant in said opening, said dental implant comprising a body and a head supported on said body and adapted to support an artificial tooth, said dental implant only partially occupying said open space and

being freely movable from side-to-side in said open space to contact and move away from said peripheral wall, a portion of said open space being unoccupied by said implant;

- (c) filling said portion of said open space with a bone inducing composition to fix said implant in a selected position in said opening, said composition hardening to form a structure which fixes said implant in position in said opening, said composition



- (i) extending from at least a portion of said wall to said implant and contacting said wall and said implant to fix said implant in position in said opening,
- (ii) extending from said bottom of said body upwardly over said body and said head of said implant, and
- (iii) facilitating the formation of new bone in said space an said opening which is filled with said composition;
- (d) waiting for said composition to harden; and,
- (e) waiting for bone to form in said space in said opening which is filled with said composition.

5,378,153

HIGH PERFORMANCE ACOUSTICAL CLEANING APPARATUS FOR TEETH

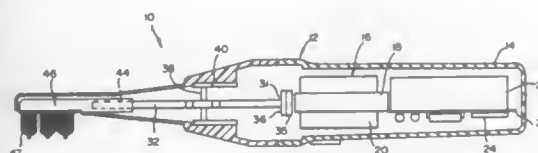
David Giuliani, Mercer Island, and Roy W. Martin, Redmond, both of Wash., assignors to GEMTech, Inc., Bellevue, Wash.

Filed Feb. 7, 1992, Ser. No. 832,422

Int. Cl.⁶ A61C 15/00; A46B 9/04, 13/00

U.S. Cl. 433—216

35 Claims



1. A dental hygiene device for cleaning teeth and interdental and gingival areas, comprising:
 - a body member which includes an arm mounted for movement;
 - a set of bristles having free end tips, the set of bristles being located in the vicinity of one end of the arm; and
 - means in the body member for moving the arm and hence the set of bristles such that the tips of the bristles move at a velocity greater than approximately 1.5 meters per second, which is sufficient to produce a cleansing action with a dentifrice fluid beyond the tips of the bristles.

5,378,154

DENTAL PROSTHESIS AND METHOD FOR MANUFACTURING A DENTAL PROSTHESIS

Joseph M. Van Der Zel, Zwaag, Netherlands, assignor to Elephant Holding B.V., Netherlands

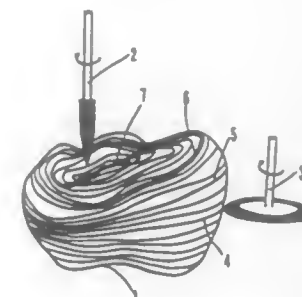
Filed Mar. 31, 1993, Ser. No. 40,896

Claims priority, application Netherlands, Apr. 6, 1992, 92.00643; Apr. 6, 1992, 92.00644

Int. Cl.⁶ A61C 5/10, 5/08

U.S. Cl. 433—223

9 Claims



1. A method for manufacturing a dental prosthesis, such as a dental crown, comprising the step of subjecting the outside visible part of the prosthesis to a material removing operation by means of a numerically controlled micro machine tool which follows machining paths along said prosthesis, wherein the machining paths follow three-dimensional irregularly spaced curved lines.

5,378,155

COMBAT TRAINING SYSTEM AND METHOD INCLUDING JAMMING

Morton T. Eldridge, Madison, Ala., assignor to Teledyne, Inc., Los Angeles, Calif.

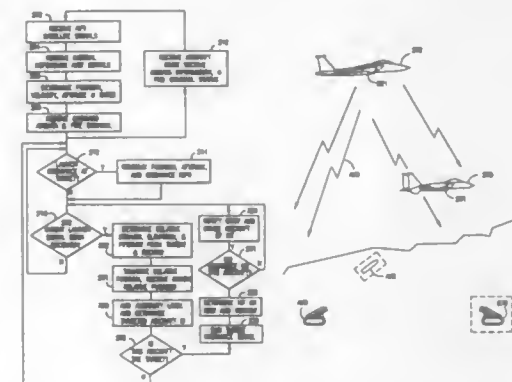
Continuation-in-part of Ser. No. 915,616, Jul. 21, 1992, Pat. No. 5,288,854. This application Dec. 21, 1992, Ser. No. 993,707

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.⁶ F41A 33/00

U.S. Cl. 434—11

27 Claims



15. A combat training system for use with a plurality of weapons platforms, comprising at least one jamming means for generating a jamming indicator and a plurality of processing means associated with respective ones of said plurality of weapons platforms, each of said processing means including:
 - model memory means for storing a trajectory model for at least one type of ordnance;
 - path status means for determining a path position and path status of said respective weapons platform;
 - path recording means for recording said path position and said path status of said respective weapons platform;
 - launch means for determining when an ordnance is launched from said respective weapons platform, launch ordnance

information regarding said launched ordnance, a launch position, and a launch status of said respective weapons platform;

launch recording means for recording said launch position, said launch status, and said launch ordnance information; transmission means for transmitting said launch position, said launch status and said launch ordnance information; attack reception means for receiving an attack position, an attack status and attack ordnance information transmitted by a processing means associated with another weapons platform;

flight path means for calculating a flight path for an attack ordnance launched by another weapons platform based upon said attack position, said attack status, said attack ordnance information, and said stored trajectory model; and

hit determining means for determining whether said attack ordnance would hit said respective weapons platform; wherein at least one of said processing means includes jamming reception means for receiving said jamming indicator and wherein said launch means of said at least one processing means is associated with said jamming reception means such that said launch ordnance information is based on said received jamming indicator.

22. A processing means for use in association with a first weapons platform in a combat training system, wherein said combat training system includes a jamming means for generating a jamming indicator, said processing means comprising: jamming reception means for receiving said jamming indicator;

model memory means for storing a trajectory model for at least one type of ordnance;

path status means for determining a path position and a path status of said first weapons platform;

attack reception means for receiving an attack position, an attack status, and attack ordnance information, wherein said attack ordnance information is based on said jamming indicator;

flight path means for calculating a flight path for an attack ordnance based upon said attack position, said attack status, said attack ordnance information, and said stored trajectory model; and

hit determining means for determining whether said attack ordnance would hit said first weapons platform.

24. A method for operating a processing means for use in association with a first weapons platform in a combat training system, said combat training system including a jamming means for generating a jamming indicator, said method comprising the steps of:

receiving said jamming indicator;

storing a trajectory model for at least one type of ordnance; determining a path position and a path status of said first weapons platform;

determining when an ordnance is launched from said first weapons platform, determining a launch position and a launch status of said first weapons platform and determining launch ordnance information, wherein said launch ordnance information is determined based upon said jamming indicator;

transmitting said launch position, said launch status, and said launch ordnance information;

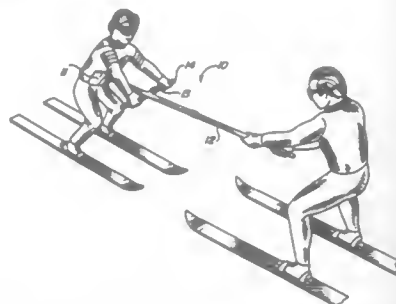
receiving an attack position and an attack status of a second weapons platform and receiving attack ordnance information;

calculating a flight path for an attack ordnance based upon said attack position, said attack status, said attack ordnance information, and said stored trajectory model; and determining whether said ordnance would hit said first weapons platform.

5,378,156
TEACHING AID FOR ALPINE SKIING AND METHOD
OF TEACHING SKIING
John F. Rohe, 438 E. Lake St., Petoskey, Mich. 49770
Filed Aug. 30, 1993, Ser. No. 113,186
Int. Cl.⁶ A63B 69/18

U.S. Cl. 434—253

6 Claims



2. A method by which an instructor teaches skiing to a pupil, the method comprising the steps of:
- a the instructor skiing backwards down a hill while confronting a downhill-facing pupil;
 - the pupil resting his or her midsection against a cradle which is affixed to a beam, the beam being controlled by the instructor; and
 - c the instructor manipulating the beam to influence the weigh distribution of the pupil, the orientation of the pupil to the hill, and the posture of the pupil.

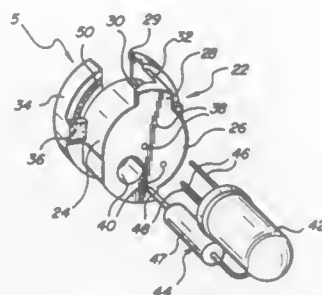
5,378,158
LIGHT EMITTING DIODE AND SOCKET ASSEMBLY
Marvin L. Owen, and Mark J. Miller, both of Grand Blanc, Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 21, 1994, Ser. No. 183,705

Int. Cl.⁶ H01R 13/66

U.S. Cl. 439—57

4 Claims



1. A socket assembly for coupling a light emitting diode to a printed circuit assembly having conductive paths and an aperture adjacent conductive paths for receiving the socket comprising:

a molded socket for insertion into the printed circuit aperture and locking to the circuit assembly in contact with the conductive paths;
means for mounting a light emitting diode on the socket;
conductive traces on the surface of the socket for connection to conductive paths on the printed circuit assembly and to the light emitting diode;
a resistor mounted on the socket and connected in series with the LED by the conductive traces.

5,378,159
ELECTRONIC APPARATUS INCLUDING A PAIR OF
ASSEMBLIES HAVING A ZERO INSERTION FORCE
THEREBETWEEN

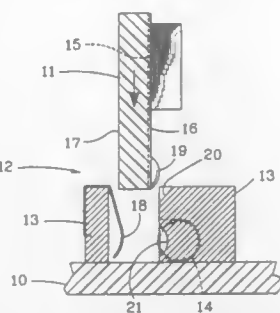
Robert M. Renn, Pfafftown, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1992, Ser. No. 995,474

Int. Cl.⁵ H01R 9/09

U.S. Cl. 439—59

17 Claims



1. In an electronic apparatus, the combination of a pair of assemblies and means for bringing the assemblies into engagement with each other, where a first of said assemblies is mounted to a mother board, said first assembly including at least one flexible electrical connector for electrically interconnecting a circuit element on the other of said assemblies to said mother board, a protrusion means on one of the assemblies and engaging a camming means on the other assembly, thereby deflecting the assemblies away from each other laterally of the direction in which the assemblies are brought together, such that the circuit element does not wipe against the flexible electrical connector as the assemblies are brought together, and such that the assemblies are brought together with a sub-

5,378,157
DEVICE FOR SIMULATING ELECTRICAL
CHARACTERISTICS OF COMPONENTS
Stephen R. Russell, Leicestershire, England, assignor to The Automobile Association Limited, Great Britain

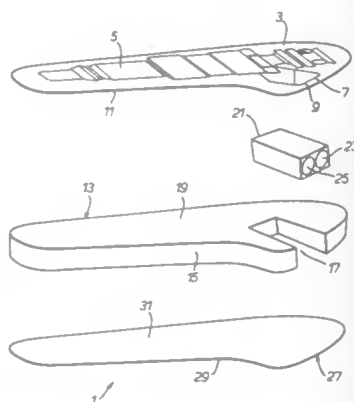
Filed Nov. 24, 1992, Ser. No. 980,669

Claims priority, application United Kingdom, Nov. 27, 1991, 9125201; Mar. 25, 1992, 9206719

Int. Cl.⁶ G09B 25/00

U.S. Cl. 434—379

17 Claims



1. A device for simulating the electrical characteristics of an electric component, comprising means adapted to reproduce electrical characteristics which are produced by, or may be sensed in, the component, the device being sized and shaped so as substantially to resemble the component.

stantially zero insertion force, the first assembly having a recess means for receiving the protrusion means on the other assembly when the assemblies are fully engaged, and resilient means constantly biasing the protrusion in the recess.

5,378,160
COMPLIANT STACKING CONNECTOR FOR PRINTED
CIRCUIT BOARDS

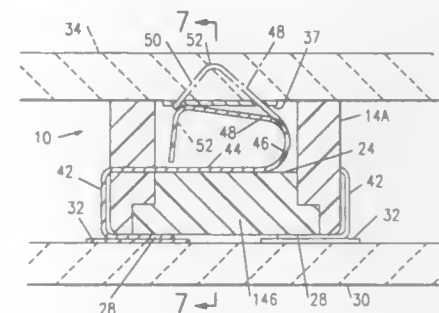
George Yumibe, Huntington Beach; Paul Gratzinger, Moreno Valley; Thanh Nguyen, Pomona, and Duane Wisner, Riverside, all of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Oct. 1, 1993, Ser. No. 131,257

Int. Cl.⁶ H05K 1/00

U.S. Cl. 439—66

29 Claims



1. A device for electrically connecting a first plurality of conductors on a first printed circuit board to a second plurality of conductors on a second printed circuit board, comprising:
- a housing having a mounting surface configured to be mounted on the first printed circuit board, an exposed surface opposite the mounting surface, and at least one opposed pair of side walls extending between the mounting surface and the exposed surface, the side walls each having an interior wall surface;
 - a plurality of channels opening through the exposed surface, each of the channels having an interior defined between the interior wall surfaces of the side walls; and
 - a plurality of compliant contact elements mounted in the housing, each of the contact elements formed as an integral conductive element, comprising:
 - a first end portion disposed adjacent to the mounting surface so as to establish electrical contact with one of the first plurality of conductors when the housing is mounted on the first printed circuit board;
 - a lead portion extending from the first end portion along an adjacent one of the side walls toward the exposed surface and then through the adjacent side wall and the interior wall surface of the adjacent side wall into the interior of an adjacent one of the channels;
 - a supporting portion extending within the interior of the adjacent one of the channels; and
 - an electrical contact portion flexibly joined to the supporting portion and extending outwardly from the adjacent one of the channels beyond the exposed surface so as to establish electrical contact with a corresponding one of the second plurality of conductors when the second printed circuit board is located adjacent to the first printed circuit board.

5,378,161
TAPERED ELECTRICAL CONNECTOR
Harry A. Loder, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 4, 1993, Ser. No. 102,151

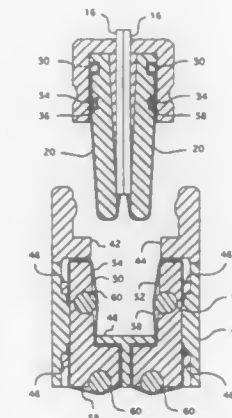
Int. Cl.⁶ H05K 1/00

U.S. Cl. 439—77

8 Claims

1. An electrical connector comprising:
a male connector half terminating in a plug end having a vertical axis and two major surfaces wherein at least one

of said major surfaces is a tapered surface disposed at an acute angle to said vertical axis;
a female connector half having walls defining a receptacle for said male connector half and a vertical axis parallel to said male connector half vertical axis wherein one of said walls is a tapered wall disposed at an angle to said female connector half vertical axis corresponding to said acute angle of said male connector half tapered surface;
at least said male tapered surface and at least said female tapered wall each including corresponding individual electrical contact traces lying in planes parallel to said



male tapered surface and said female tapered side wall, respectively, for making electrical contact between said male connector half and said female connector half when said connector halves are mated so as to force said male tapered surface and said female tapered wall together; and wherein said male connector half terminates an electrical cable comprising a series of parallel conductors encapsulated in an electrically insulating sheath, said tapered surface includes a series of parallel grooves, and said electrical contact traces are exposed conductors of said cable disposed one each in a said groove.

5,378,162
ELECTRICAL PLUG BRIDGE FOR AN APPLIANCE
PLUG

Thomas Waible, Waldbronn, Germany, assignor to Teller GmbH, Waldbronn, Germany

Continuation of Ser. No. 981,332, Nov. 24, 1992, abandoned.

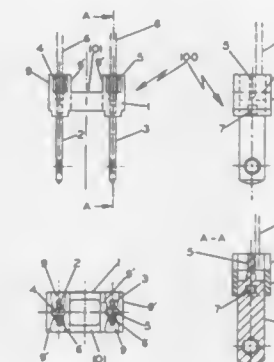
This application Mar. 25, 1994, Ser. No. 217,990

Claims priority, application Germany, Apr. 3, 1992, 4211739

Int. Cl.⁶ H01R 19/08

U.S. Cl. 439—106

20 Claims



1. A plug bridge for an electrical appliance plug for connection to an AC outlet, said plug bridge comprising:

a plurality of conductor pins;
 a dimensionally stable insulating element having a top plane, said insulating element including cutouts corresponding to the cross section of each said conductor pins, said conductor pins disposed in said cutouts, said pins protruding relative to said insulating element sufficiently far for insertion into the outlet;
 a power cord including leads each having a stripped portion, said leads joined to a section of said conductor pins within the contours of the appliance plug that protrude relative to said top plane of said insulating element, said leads joined to said conductor pins by means of thermal joining; and
 said insulating element including sideways-opening insertion channels for sideways insertion of respective said power cord leads to be joined, each said insertion channel extending conically toward a center line of said insulating element and protruding above said top plane of said insulating element.

5,378,163

POWER TOOL PLUG SAFETY COVER

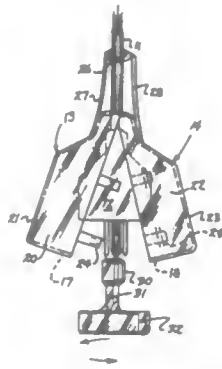
Joseph Gladura, and Jean T. Gladura, both of 2015 Cross Creek Dr., South Bend, Ind. 46628

Filed Jul. 30, 1993, Ser. No. 99,516

Int. Cl.⁶ H01R 13/44

U.S. Cl. 439—134

4 Claims



1. A power tool plug safety cover, comprising in combination with an electrical cord, the electrical cord including an electrical cord plug, and
 a first cover housing and a second cover housing, the first cover housing including a first cover housing floor, the second cover housing including a second cover housing floor, the first cover housing including a first cover housing top wall, the second cover housing including a second cover housing top wall, and
 the first cover housing including first side walls, the second cover housing having second side walls, the first housing including a first housing end wall, and the second housing including a second housing end wall, and
 a power cord directed through an intersection of said first housing top wall and said second housing top wall, with the first housing floor spaced from the first housing top wall and the second housing floor spaced from the second housing top wall, with the first cover housing and the second cover housing arranged in contiguous communication relative to one another in a first position and arranged in a separated orientation relative to one another in a second position, and
 lock means mounted within the first cover housing, and
 a plurality of ribs mounted within the second cover housing,

wherein the lock means are arranged for securement to the ribs,
 an anchor loop, the anchor loop receiving the electrical cord therethrough, and the anchor loop spaced from the first cover housing top wall and the second cover housing top wall, and a first flexible anchor strap extending from said anchor loop to said first cover housing end wall, and a second flexible anchor strap diametrically displaced relative to said first anchor strap, with the second anchor strap extending from the anchor loop to the second housing end wall.

5,378,164

TIP FOR FORCING CONTACTS TO WIPE AGAINST EACH OTHER

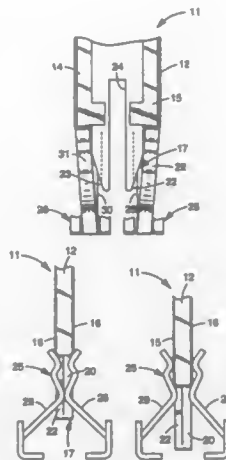
Kenneth J. Vidacovich; Philip M. Smith; Richard J. Scherer, and William D. McKittrick, all of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 23, 1993, Ser. No. 110,314

Int. Cl.⁶ H01R 13/703

U.S. Cl. 439—188

12 Claims



1. A probe affording the breaking and making of electrical contacts, comprising:
 a body, said body having a terminal end adapted to engage two contact elements formed of electrically conductive material, which contact elements extend longitudinally from a base and have generally parallel edges and are spring loaded into electrical contact with each other along a surface between said edges, to afford sliding movement between the contact elements at their surface of contact and to afford separation of said contact elements, said terminal end being adapted to be inserted into a connector along a pair of contact elements, said terminal end having a free end and means defining an oblique surface extending along said terminal end toward said free end and adapted for engagement with one edge of one of said contact elements during insertion of a said terminal end for forcing a said contact element laterally of the other contact element.

5,378,165

PLUG DETECTION ELECTRICAL RECEPTACLE

Joseph D. Comer, Elmhurst; Mark M. Data, Bollingbrook, and Robert DeRoss, Naperville, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Nov. 12, 1993, Ser. No. 151,708

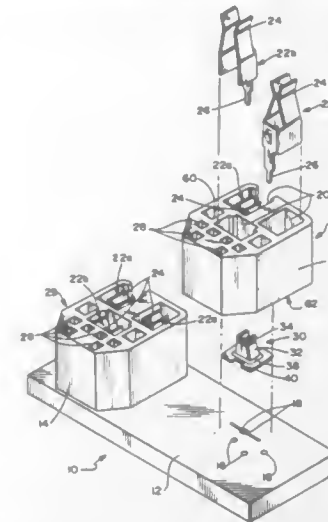
Int. Cl.⁶ H01R 29/00

U.S. Cl. 439—188

9 Claims

1. In a plug detection electrical receptacle which includes: a dielectric housing having at least one passage with an open

mating end for receiving a male terminal of a complementary mating electrical plug and an opposite end communicating with a switch means on a printed circuit board, a female terminal disposed in the passage for engagement by the male terminal, and a detect switch located in proximity to the passage for actuation by the male terminal when the male terminal is inserted into the passage and engages the female terminal, wherein the improvement in said detect switch comprises: an actuator at said opposite end of the passage in the dielectric housing and including a male terminal engaging portion and a switch means engaging portion, said actuator being mounted for reciprocal movement on said printed circuit board over said switch means between a normal position wherein the switch engaging portion is spaced from said switch means and a detect position wherein the



switch engaging portion engages the switch means in response to the engagement of the actuator by the male terminal;
 a flexible skirt about the actuator and extending therefrom into sealing engagement with the printed circuit board about the switch means, the flexible skirt supporting the actuator with the switch means engaging portion out of engagement with the switch means on the printed circuit board, and whereby the skirt flexes in response to engagement of the actuator by the male terminal to move the switch means engaging portion into engagement with the switch means, and
 resilient means comprising a second flexible skirt depending from the actuator mounting the switch means engaging portion on the actuator to allow for overtravel of the actuator after the switch means engaging portion has engaged the switch means on the printed circuit board.

5,378,166

CASE AND CABLE ASSEMBLY

Robert E. Gallagher, Sr., Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 13, 1993, Ser. No. 120,997

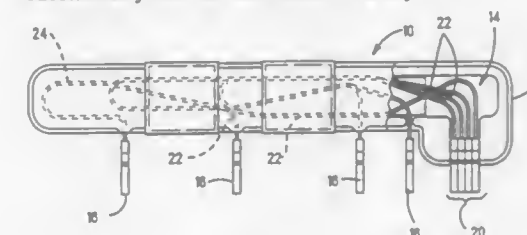
Int. Cl.⁶ H01R 13/518

U.S. Cl. 439—214

18 Claims

1. A case in combination with a cable assembly of the type having a plurality of individual cables each of which is a precise desired length, wherein the ends of each said cable are positioned by said case for interconnection with other electrical components outside of said case, said case comprising:
 (a) a body of elongated shape having a floor substantially surrounded by a sidewall thereby defining an interior cavity, said sidewall having openings for receiving respective said ends of each said cable and positioning said ends on a desired spacing; and

(b) a removable cover arranged to engage said body and substantially enclose said interior cavity,



wherein said ends of said cable extend through their respective openings and the remainder of said cable is disposed within said interior cavity.

5,378,167

Patent Not Issued For This Number

5,378,168

CONNECTOR

Tatsuya Sumida, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Mie, Japan

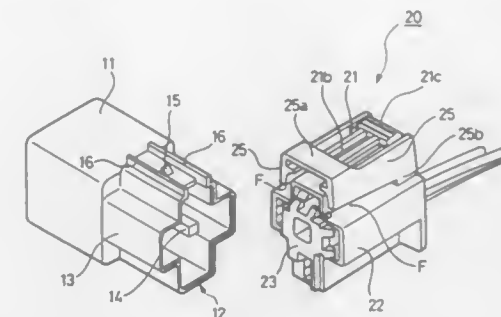
Filed Sep. 2, 1993, Ser. No. 114,305

Claims priority, application Japan, Oct. 6, 1992, 4-075882[U]

Int. Cl.⁶ H01R 13/627

U.S. Cl. 439—358

12 Claims



1. A connector comprising:
 a first connector housing insertable into a hood portion of a second connector housing, said first connector housing having a lock arm formed on an outer surface thereof and spaced therefrom to form a lock arm gap, said lock arm engageable with a lock portion formed on said second connector housing, thereby holding said connector housings in a connected condition; and
 protective walls formed on said first connector housing, and disposed respectively on opposite sides of said lock arm and spaced from said outer surface to form an entrance-allowing gap, said protective walls being disposed at a region corresponding to said lock arm gap between said lock arm and the outer surface of said first connector housing, said entrance-allowing gap receiving said hood portion when said first connector housing is inserted into said hood portion of said second connector housing.

5,378,169

PIVOTAL CONNECTOR FOR PLANAR ELECTRONIC DEVICES

Keith L. Volz, Jamestown; Robert D. Irlbeck, Greensboro; Robert M. Renn, Pfafftown; David C. Johnson, Winston-Salem, and Frederick R. Deak, Kernersville, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 24, 1993, Ser. No. 126,848

Int. Cl.⁶ H01R 23/68

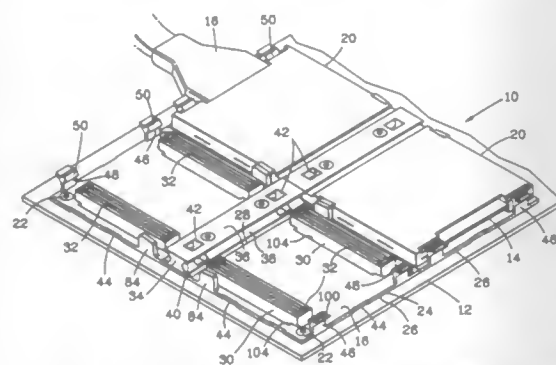
U.S. Cl. 439—376

12 Claims

1. An electrical connector for sequentially connecting plural

contacts provided along the respective mating surfaces of a pair of planar electronic devices, said connector comprising

- a first housing mounted to one of said planar devices, where said first housing includes an open end and a closed end, and
- a second housing mounting said other planar electronic device, where said second housing includes an open end, and
- a closed end, and that said respective closed ends include



cooperative means for hingedly engaging each other, said cooperative means including a common pivot line parallel to each said planar electronic device and extending along said closed ends,

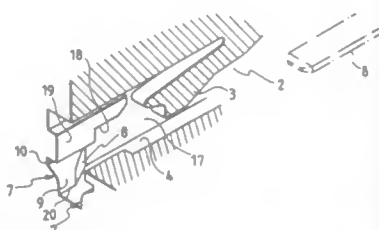
whereby, as said planar electronic devices are pivotally moved about said cooperative means from a nonparallel position to a parallel position of electrical engagement, the respective plural contacts between said planar electronic devices enter into engagement in a sequentially predetermined order.

5,378,170
TERMINAL INSERTING STRUCTURE OF CONNECTOR
 Kimihiro Abe, and Seiji Koumatsu, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
 Filed Jul. 28, 1993, Ser. No. 97,895

Claims priority, application Japan, Jul. 28, 1992, 4-201147
 Int. Cl.⁶ H01R 13/40

U.S. Cl. 439—595

8 Claims



1. A connector comprising:

- a connector housing (1) having a terminal accommodating chamber (2) with a flexible terminal locking arm (3) extended therein, said terminal accommodating chamber being adapted to receive a terminal (5) inserted into said terminal accommodating chamber (2) to a first end from a second end of said terminal accommodating chamber (2), said terminal (5) having a male tab (6) at the end thereof, said male tab (6) protruding through an opening (15) of said terminal accommodating chamber (2) when disposed therein;

- a pair of swing preventing protrusions, for preventing lateral rotation of the terminals (7) respectively formed on opposite inner lateral side walls of said terminal accommodating chamber (2) at said first end, which walls are confronted with the terminal locking arm (3), in such a manner that a male tab insertion hole (20) for insertion of the

male tab (6) is partially defined by said pair of swing preventing protrusions (7), wherein

each of said swing preventing protrusions (7) has a first sloped guide surface (8) on the second end, and a second sloped guide surface (9) on the first end in opposition to said terminal locking arm (3), said first sloped guide surfaces being sloped in a terminal insertion direction to facilitate insertion of said terminal and said second sloped guide surfaces being sloped in a downward direction to facilitate downward centering movement of the male tab upon insertion thereof, and

a male tab receivable space (10) having a width wider than said male tab (6) in a cross section is formed in opposition to said second sloped surfaces of said swing preventing protrusions.

5,378,171

ELECTRICAL CABLE CONNECTOR

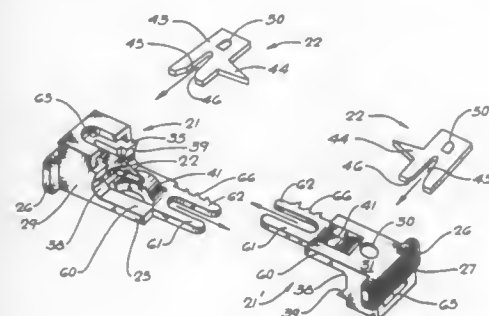
John A. Czerlanis, Solon Mills, Ill., assignor to Intermatic, Inc., Spring Grove, Ill.

Continuation of Ser. No. 89,303, Jul. 9, 1993, abandoned. This application Apr. 15, 1994, Ser. No. 227,894

Int. Cl.⁶ H01R 4/24

U.S. Cl. 439—425

8 Claims



1. A connector assembly for electrically connecting insulated dual conductor cables of various outside dimensions with two insulated single electrical conductors, comprising:

- two identical unitary, generally elongated dielectric housing members, each comprising a cube-like base having a pair of laterally spaced co-planar arms extending at right angles from one side thereof;

- said base having an internal chamber extending inwardly of said one side at a level parallel to said arms,

- an electrically conductive terminal member having a planar body formed with a sharp prong projecting outwardly of one side thereof and an elongated slot opening inwardly of one end thereof;

- said base having means for slidably receiving said terminal member so that said prong thereof extends outwardly of said one side parallel to said arms and chamber;

- said housing members being coaxially interfitted in assembly, with said arms of one housing member insertable into said chamber of the other housing member and vice versa, whereby to provide a central opening between said members for the introduction and passage of insulated dual conductor cable; the assembled connector lying transverse to the longitudinal axis of said cable whereby movement of said interfitted housing members toward one another causes each of the prongs carried thereby to laterally penetrate the cable's insulation and contact an individual conductor therewithin.

5,378,172

LOW PROFILE SHIELDED JACK

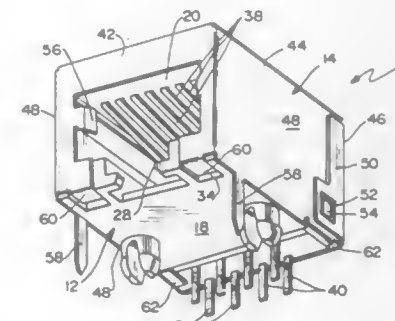
James T. Roberts, Oak Park, Ill., assignor to Moler Incorporated, Lisle, Ill.

Filed Mar. 10, 1994, Ser. No. 209,184

Int. Cl.⁵ H01R 13/648

U.S. Cl. 439—607

4 Claims



1. In a low profile shielded jack for mounting to a circuit board and for receiving a mating plug, the jack including a substantially rectangular dielectric housing having a front face, a bottom board mounting wall, and a top, rear and a pair of side walls substantially surrounding a plug-receiving cavity extending rearwardly from the front face for receiving a mating plug connector, where both a bottom portion of said front face and a front portion of said bottom board mounting wall being open to define an opening communicating with the cavity for accommodating a depending latch arm of a plug connector,

- a plurality of terminals mounted in the housing for making electrical contact with corresponding terminals on the plug connector when inserted into the plug-receiving cavity,

- a one-piece, substantially rectangular shield stamped and formed of conductive material and having front, top, rear and side wall portions substantially surrounding and shielding the front face and the top, rear and side walls, respectively, of the dielectric housing,

wherein the improvement comprises at least two recesses in the bottom board mounting wall of the housing at the juncture thereof with the front face of the housing, one of said recesses provided at opposite sides of said opening,

supporting tabs at a bottom edge of the front wall portion of the shield and extending rearwardly into said recesses, and the depth of said recess being at least equal to the thickness of said supporting tab so that the tab does not project downwardly beyond the bottom board mounting wall of the housing.

5,378,173

CONNECTOR ASSEMBLY

Shigemi Hashizawa, Shizuoka, Japan, assignor to Amada Manufacturing America, Inc., Japan

Filed Aug. 4, 1993, Ser. No. 101,744

Claims priority, application Japan, Aug. 5, 1992, 4-208955

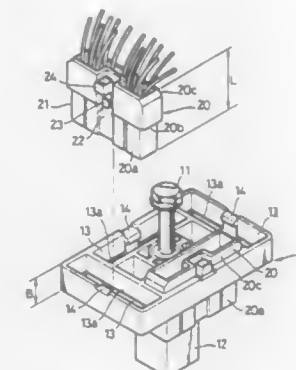
Int. Cl.⁶ H01R 13/502

U.S. Cl. 439—701

14 Claims

1. A connector assembly for joining branch connectors to a main connector comprising a frame capable of being affixed to the main connector and having one or more branch connectors being detachably mounted in said frame and capable of connecting with the main connector, wherein said frame includes cavities extending from a front face to a rear face of said frame and receiving each of said branch connectors from said rear face, and at least one first engaging portion for holding each respective branch connector, each of said branch connectors further including a housing having therein terminals and a flexible locking arm provided for on said housing, said flexible locking arm having a second engaging portion for engagement

with said first engaging portion in said frame, and wherein one end of said flexible locking arm is fixed to said housing and a free end of said flexible locking arm second engaging portion is



adapted to detachably engage said first engaging portion of said frame, said free end of said flexible locking arm being provided with an operation portion extending operably from said frame.

5,378,174

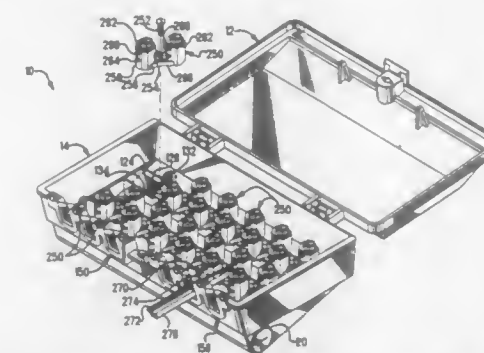
ENCLOSURE FOR VARIETY OF TERMINAL BLOCKS
 Alan W. Brownlie, Skaneateles, N.Y.; Scott S. Dueterhoeft, Etters, Pa.; James W. Robertson, Oberlin, Pa., and Francis J. Shay, Palmyra, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 18, 1993, Ser. No. 35,129

Int. Cl.⁶ H01R 21/22

U.S. Cl. 439—709

15 Claims



1. An enclosure for terminal blocks for connecting to and splicing a pair of electrical wires, comprising:

- a box section having a bottom wall, front wall, rear wall and opposing side walls and adapted to contain in an interior region thereof terminal blocks for interconnecting pairs of said electrical wires, and including at least two cable exits each having means sealing about a cable extending there-through; and

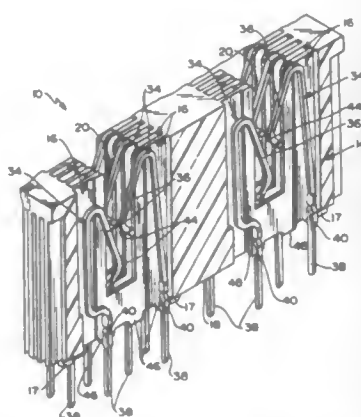
- a lid pivotally movable from an open position to a closed position spanning the top of said box section and engaging top edges of said front and rear and opposing side walls of said box section,

said box section including at least two ribs traversing said bottom wall between said opposing side walls and extending upwardly to top edges, said top edge being coplanar and being recessed substantially below top edges of said opposing side walls, and further including an array of first projections extending upwardly from said bottom wall coextending along and beside said ribs to projection top edges that are substantially coplanar with said rib top edges and having apertures extending downwardly there-

into for receipt of fasteners thereinto, thereby enabling mounting of terminal blocks of a first type in said box section no respective ones of said first projections.

5,378,175
ELECTRICAL CONNECTOR FOR MOUNTING ON A PRINTED CIRCUIT BOARD
Kent E. Regnier, Lombard, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Dec. 22, 1993, Ser. No. 173,584
Int. Cl.⁶ H01R 13/41
U.S. Cl. 439—733 13 Claims



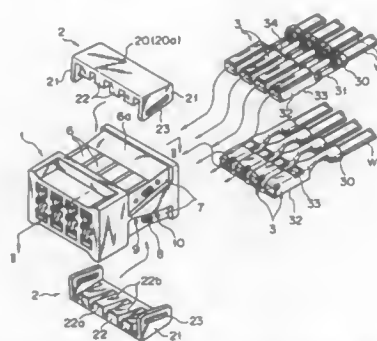
1. In an edge card connector for mounting on a printed circuit board, the connector including
a dielectric housing having a board mounting face adapted to be positioned adjacent said printed circuit board, a card receiving face having a card slot extending along a longitudinal axis of said housing and a plurality of terminal-receiving passages adjacent said slot, the housing being unitarily molded of plastic material,
a plurality of standoffs projecting from the board mounting face of the housing a first predetermined distance away from said board mounting face to space the housing from the board upon placement thereon, and
a plurality of terminals received in said passages, each terminal including a contact beam section in the housing, a tail section projecting from the housing and a retention section therebetween for engaging a portion of said housing to retain said terminal therein,
wherein the improvement comprises:
a plurality of retention bosses molded integrally with said housing in alignment with the passages and with the passages extending through the bosses, the retention bosses projecting from the board mounting face of the housing a second predetermined distance away from said board mounting face, said second predetermined distance being less than said first predetermined distance, and
said terminals being stamped and formed of sheet metal material with at least portions of the retention sections of the terminals being located in the passages within the bosses.

5,378,176
CONNECTOR
Osamu Sasai, Mie, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Nov. 5, 1993, Ser. No. 148,899
Claims priority, application Japan, Nov. 6, 1992, 4-322372
Int. Cl.⁶ H01R 13/436 5 Claims

U.S. Cl. 439—752
1. A connector including a housing having a terminal-accommodating hole into which a terminal element is inserted from a rear side of the housing, and a retainer having terminal-

locking means which engage with said terminal element in said terminal accommodating hole, wherein said retainer can be displaced between a temporary mounting position for allowing said terminal member to be inserted into said terminal-accommodating hole and a permanent mounting position forwardly from said temporary mounting position for securing said terminal element in said housing;

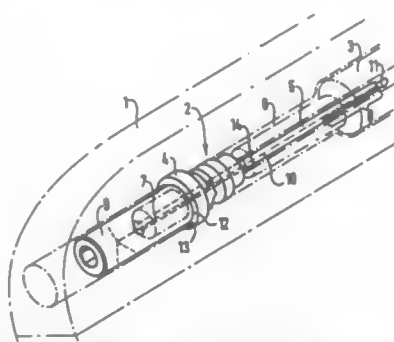
said connector being characterized in that:
said housing is provided with an opening in a side wall of said terminal-accommodating hole;



said terminal-locking means are arranged in said temporary mounting position on a stand-by position outside said hole and in said opening;
said housing is provided with guide means on the exterior thereof which are formed on an arcuate line which tilts said retainer inwardly in the forward direction; and
said retainer is provided with a guide follower which guides said retainer from said opening to said hole by moving across said guide means when said retainer is moved from said temporary mounting position to said permanent mounting position.

5,378,177
DEVICE FOR AFFIXING AN ELECTRODE CABLE TO AN APPARATUS
Paul Froberg, Bromma, and Goeran Johannsson, Sollentuna, both of Sweden, assignors to Siemens-Elema AB, Solna, Sweden

Filed Dec. 3, 1993, Ser. No. 161,266
Claims priority, application Sweden, Jan. 12, 1993, 9300059-4
Int. Cl.⁶ H01R 4/52 10 Claims



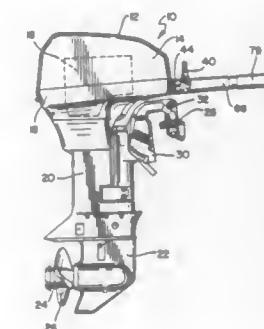
1. A device for affixing an electrode cable to an apparatus for emitting electrical pulses, the apparatus having a connector part and the electrode cable having a proximal end with a center channel, said device comprising:

an elongated body disposed in said connector part onto which said proximal end of said electrode cable can be mounted with said elongated body extending into said channel of said proximal end of said electrode cable; and means for radially expanding at least a portion of said elongated body for affixing said elongated body by pressure to a channel wall of said channel.

gated body for affixing said elongated body by pressure to a channel wall of said channel.

5,378,178
TILLER ARM AND STEERING BRACKET ASSEMBLY
David F. Haman, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

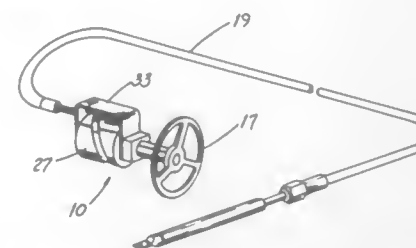
Filed Jun. 15, 1993, Ser. No. 78,137
Int. Cl.⁶ B63H 25/00
U.S. Cl. 440—53 19 Claims



1. A tiller arm and steering bracket assembly for an outboard motor having an engine, said assembly comprising:
a steering bracket having a head portion with an outwardly projecting tongue portion;
remote steering attachment means on said tongue portion for selectively attaching thereto a remote steering mechanism;
a tiller arm having a first end configured with means for pivotally coupling said tiller arm to said head portion of said steering bracket, said tiller arm being positionable in one of an operative position, with said tiller arm pivoted downwards to rest upon said tongue portion in a generally horizontal position providing for manual steering of the outboard motor, and an inoperative position, with said tiller arm pivoted upwards in a generally vertical position providing for said remote steering attachment means to be utilized; and
retaining means for retaining said tiller arm in said inoperative position.

5,378,179
STEERING APPARATUS AND METHOD FOR MAKING SAME
Russell K. Riggle, Nocomerstown, Ohio, assignor to IMO Industries, Inc., Hudson, Ohio

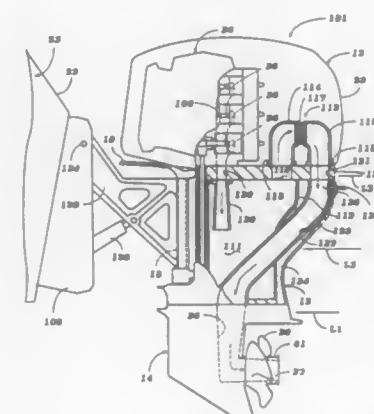
Filed Feb. 7, 1994, Ser. No. 192,445
Int. Cl.⁶ B63H 5/12 10 Claims



1. In an apparatus having an input device rotating about an input axis and an output device providing a force along a force axis, the improvement wherein:
the apparatus includes a drum having a spiral-shaped cam portion formed thereon, such cam portion extending not more than 720° around the drum;

input force is applied by the input device concentric with the input axis;
the devices are coupled together by a cam follower mechanism having a guide and a follower member mounted on the guide for coincident movement therewith;
the guide has a width spanning a relatively small portion of the circumference of the drum;
the guide has a pair of spaced, generally parallel rails extending therethrough and is coupled to a rigid, elongate control rod aligned with the rails; and
the control rod moves along the force axis and is attached end-to-end to an elongate flexible control cable co-extensive with the force axis, the control cable operating in tension or compression depending upon the direction of rotation of the input device.

5,378,180
EXHAUST SYSTEM FOR OUTBOARD MOTOR
Manabu Nakayama; Kouji Abe; Masafumi Sohga, and Atsushi Isogawa, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 24, 1993, Ser. No. 157,706
Claims priority, application Japan, Nov. 26, 1992, 4-339869
Int. Cl.⁶ F01N 3/28 20 Claims



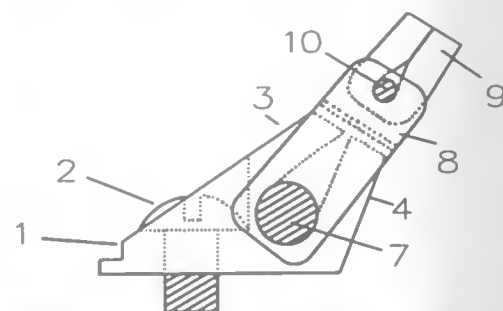
1. An outboard motor comprise of a power head having an internal combustion engine with at least exhaust port and a surrounding protective cowling, a drive shaft housing and lower unit depending from said power head and having a propulsion device driven by said engine for propelling an associated watercraft, means for attaching said outboard motor to an associated watercraft, an underwater exhaust gas discharge for discharging exhaust gases to the atmosphere through the body of water in which the watercraft is operating, and conduit means for conveying exhaust gases from said exhaust port to said underwater exhaust gas discharge, said exhaust conduit means comprising an exhaust pipe extending from said exhaust port, an expansion chamber into which said exhaust pipe terminates, and a catalyst bed disposed in a portion of said exhaust conduit means in said power head surrounded by said protective housing and downstream of the position where said exhaust pipe terminates in said expansion chamber.

5,378,181
RELEASE FOOTSTRAP FOR WINDSURFING BOARD
Andrew W. Sewell, 3000 Huntington Rd., Sacramento, Calif. 95864
Continuation-in-part of Ser. No. 27,460, Mar. 8, 1993, abandoned. This application Jan. 3, 1994, Ser. No. 177,604
Int. Cl.⁶ B63B 35/79 2 Claims

U.S. Cl. 441—75
1. A safety release footstrap attachable to a windsurfing board and which requires a greater force to release a user's foot

from the footstrap in response to upward pulling forces resulting from the user and the board bouncing over water and jumping off waves, and a lesser force to release a user's foot from the footstrap resulting from a forward fall from the board by the user, said safety release footstrap comprising:

- a footstrap webbing usable to keep the user's foot from sliding off the board;
- a connecting piece having first and second ends, a webbing pin having a longitudinal axis extending transversely across the first end of said connecting piece and attaching said footstrap webbing thereto, and a release pin having a longitudinal axis extending transversely across said second end of said connecting piece;
- a base secured to said board and having a top jaw and a bottom jaw, said top jaw and said bottom jaw forming therebetween a teardrop-shaped exit ramp having an upper inclined plane, a lower inclined plane, a bottom surface at a lower end thereof and an opening at an upper end thereof, said teardrop-shaped exit ramp receiving said



release pin such that the longitudinal axis of said release pin extends transversely across said exit ramp with said release pin being in contact with the bottom surface of said exit ramp so that said footstrap webbing is positioned to keep the user's foot from sliding off said board, said exit ramp being constructed such that a first force which is normal to the longitudinal axis of said release pin will pull said release pin up said upper and lower inclined planes of said teardrop-shaped exit ramp toward said opening while spreading said first force along the full length of said release pin and the opening of said exit ramp so as to pull said release pin out of said teardrop-shaped exit ramp, and such that a second force exerting a rotational force on said release pin will rotate said release pin about one end which remains in contact with said bottom surface while another end of said release pin contacts said opening of the exit ramp and passes therealong and therethrough so as to twist said release pin out of said teardrop-shaped exit ramp, said first force being said greater force, and said second force being said lesser force.

5,378,182 SELF-ALIGNED PROCESS FOR GATED FIELD EMITTERS

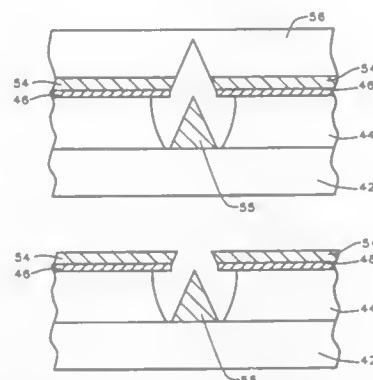
David Nan-Chon Liu, Fong-Yuan, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Hsinchu, Filed Jul. 22, 1993, Ser. No. 94,691
Int. Cl.⁶ H01J 1/30, 9/02

U.S. Cl. 445-24 12 Claims

1. The method of forming a self-aligned gated field emitter comprising:
 - providing a substrate having at its surface a conductive or resistive layer;
 - depositing a first dielectric layer over said substrate;
 - depositing a conducting layer over the said dielectric layer;
 - performing lithography and etching to form an opening through said conducting layer and said dielectric layer down to the surface of said substrate wherein there is formed an overhang of said conducting layer over the etched said dielectric layer in said opening;
 - vertically depositing material through said opening and over

said conducting layer until said field emitter is formed and said opening is closed by build up of said depositing material over said conducting layer;

oxidizing at least a portion of said build up of said depositing material over said conducting layer down to the desired



opening size to form an oxide layer of the said material; and

removing said oxide layer by etching to expose said desired opening thereby completing formation of said self-aligned gated field emitter.

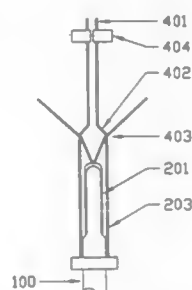
5,378,183 METHOD OF MANUFACTURING ELECTRODES

Daniel Preston, 1065 Jackson Ave., Long Island City, N.Y. 11101-5718

Filed Apr. 12, 1993, Ser. No. 46,411
Int. Cl.⁶ H01J 9/26

U.S. Cl. 445-26

13 Claims



1. A method of manufacturing an electrode comprising the steps of:
 - placing an electrode shell within an outer tube and on an electrode shell holder such that conductors connected to said electrode shell emanate freely from an end of said outer tube
 - placing a tubulation against an end of said outer tube thereby sandwiching said conductors between said outer tube and said tubulation; and
 - fusing said tubulation to said outer tube.

5,378,184 TOY FIGURE HAVING DISASSEMBLEABLE APPENDAGES

Jay M. Bro, and Phillip M. Baerenwald, both of Plano, Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 5, 1993, Ser. No. 14,130

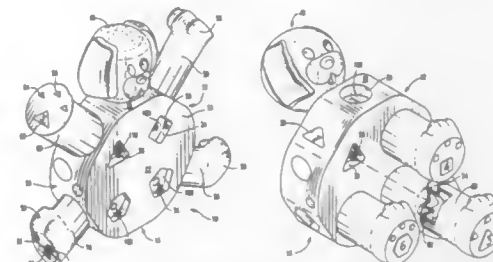
Int. Cl.⁶ A63H 3/16, 3/12; A63F 9/10; G09B 19/00
U.S. Cl. 446-99 32 Claims

1. A toy comprising: a body member having a shape gener-

ally simulating an animate figure and a plurality of surfaces which are nonplanar with respect to each other;

- a plurality of appendages removably connectable to said body member, with at least one said appendage being connectable to at least two said body member surfaces; and

means for connecting each of said appendages to said body member, said connecting means comprising an extended member attached to each of said appendages, each said extended member having a cross-sectional shape that is



smaller than and of a different cross-sectional shape from the corresponding attached appendage with at least one said extended member having a shape that differs from the shape of at least one other said extended member and a plurality of receptacles in said body member surfaces with at least one receptacle corresponding to each said extended member so that said corresponding extended member may be inserted therein and at least two said receptacles corresponding to at least one said extended member so that the appendage attached thereto can be removably connectable to at least two said body member surfaces.

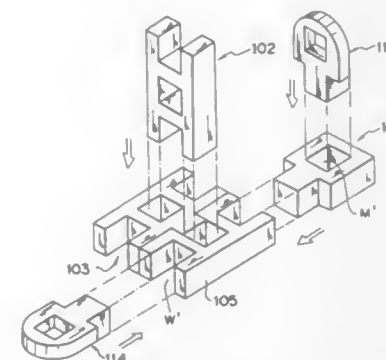
5,378,185 BUILDING BLOCKS

Shichiro Ban, Tsuzuki, Japan, assignor to Book Loan Publishing Co., Ltd., Hyogo, Japan

Filed Nov. 15, 1993, Ser. No. 151,985
Int. Cl.⁶ A63H 33/08, 33/06

U.S. Cl. 446-124

21 Claims



1. A block toy comprising:
 - a combination of different types of desired blocks selected from blocks belonging to six different types of blocks, namely a first to a sixth block each of which is symmetrical with respect to a line, each of which is formed by connecting at least one desired unit block selected from a 11th through a 15th unit block (K-O) to essential unit blocks including a second, fourth, seventh, eighth, ninth, 17th, 18th, 19th, 22nd and 24th unit block (B, D, G, H, I, Q, R, S, V and X), at least one of said desired blocks including at least a 11th (K) or a 15th (O) unit block, wherein the twenty-five unit blocks from a first to a 25th unit block (A-Y) are formed from a rectangular base block 8×a in vertical length, 6×a in horizontal length and 2×a in thickness by dividing the base block by four vertical

cutting planes from a first to a fourth plane arranged from left to right in parallel with each other and by four horizontal cutting planes from a first to a fourth plane arranged from top to bottom in parallel with each other, designating a unit block at a left upper corner of the base block the first unit block (A), a unit block at a right lower corner thereof the 25th unit block (Y), and each of the other unit blocks the second to the 24th unit block (B-X), respectively, arranged from an upper first to a lower fifth row and from a left first to a right fifth column, that a vertical length of each unit block (A-E, K-O and U-Y) on the first, third and fifth row is 2×a whereas a vertical length of each unit block (F-J and P-T) on the second and fourth row is "a", and that a horizontal length of each unit block (A, B, D, E, F, G, I, J, K, L, N, O, P, Q, S, T, U, V, X and Y) on the first, second, fourth and fifth column is "a" whereas a horizontal length of each unit block (C, H, M, R and W) on the third column is 2×a.

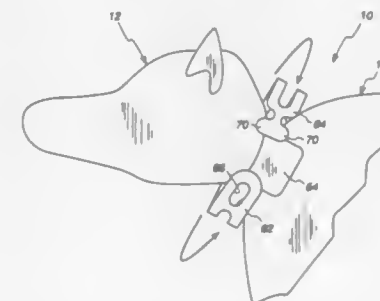
5,378,186 BALLOON ASSEMBLY CONNECTED BY TAB AND ENCIRCLING COLLAR

Charles R. Becker, Chicago, Ill., assignor to M & D Balloons, Inc., Manteno, Ill.

Filed Jan. 10, 1994, Ser. No. 179,114
Int. Cl.⁶ A63H 3/06

U.S. Cl. 446-220

18 Claims



1. A balloon assembly comprising:
 - a first balloon having a body portion and a connecting tab extending outwardly therefrom;
 - a second balloon having a body portion with a collar member extending outwardly therefrom;
 - joining means carried on at least one of the first or the second balloons for joining the connecting tab to a medial portion of the collar member; and
 - the collar member having a T-shape with a head part and a stem part which extends outwardly from the second balloon;
 - the head part having the medial portion between first and second opposed end portions each carrying coupling means for coupling the end portions together to form a closed loop, the head part configured so as to wrap over the connecting tab, forming a closed loop surrounding the connecting tab.

5,378,187 DOLL STAND

John R. H. Forbes, Philadelphia; Peter A. Maryanski, West Chester, and Barry Matus, Springfield, all of Pa., assignors to Franklin Mint Company, Franklin Center, Pa.

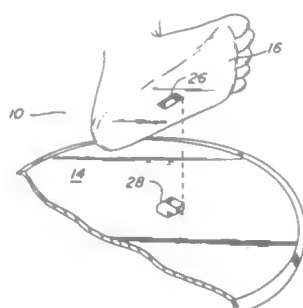
Filed Jul. 24, 1992, Ser. No. 919,661
Int. Cl.⁶ A63H 3/00, 33/06; B25G 3/00; A47B 97/00

U.S. Cl. 446-268

13 Claims

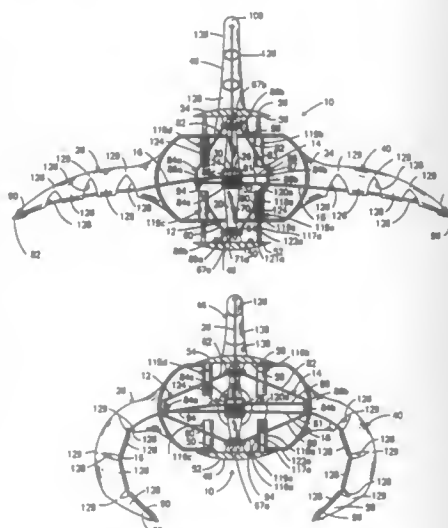
1. A doll and doll stand combination adapted for removable attachment of a doll to a stand, comprising:
 - (a) the doll having at least one foot adapted to rest on the stand;
 - (b) said foot having a hollow sector wherein a portion of the

- foot defines a bottom wall having an inner face and an outer face;
(c) a slot extending through the bottom wall into the hollow sector;



- (d) the stand having a plug which is adapted to be inserted through said slot; and
(e) said plug having a resilient, compressible flange means adapted to extend over the inner face of the bottom wall when the plug is inserted into the slot.

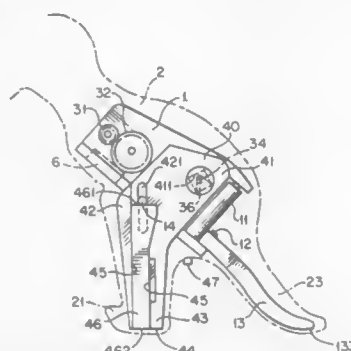
5,378,188
TENDON AND SPRING FOR TOY ACTUATION
Dolores H. Clark, P.O. Box 145, Crystal River, Fla. 34423
Filed Oct. 8, 1993, Ser. No. 133,572
Int. Cl.⁶ A63H 3/20, 19/00
U.S. Cl. 446—330 16 Claims



1. An actuating mechanism for a toy comprising:
at least a first and a second resiliently deflectable element, each said element having a first end and a second end, with both said first ends being connected together and both said second ends being connected together, such that opposing forces, one applied proximal said first ends and another applied proximal said second ends, urge said first ends toward said second ends serving to deflect said first and second deflectable elements such that the portions of said first and second deflectable elements intermediate said first ends and said second ends are deflected away from one another; and
at least a first and a second tendon, each having a first end and a second end with said first end of said second tendon being connected to said first deflectable element intermediate said first end and said second end of said first deflectable element with a portion of said second tendon including said second tendon second end, extending past said second deflectable element, and the first end of said first

tendon being connected to said second deflectable element intermediate said first end and said second end of said second deflectable element with a portion of said first tendon, including said first tendon second end, extending past said first deflectable element, whereby such deflection of the deflectable elements will serve to pull first and second tendons past one another in generally opposite directions, urging the second ends of the first and second tendons toward the first and second deflectable elements.

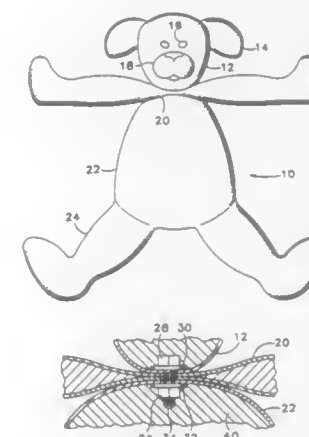
5,378,189
WALKING TOY ANIMAL WITH EXTENDING LEG MEMBERS AND OSCILLATING TAIL
Chien-Chieh Chia, P.O. Box 10780, Taipei, Taiwan, Prov. of China
Filed Jan. 7, 1994, Ser. No. 179,361
Int. Cl.⁶ A63H 11/00, 7/00, 33/00
U.S. Cl. 446—353 8 Claims



1. A toy animal with a flexible housing accommodating therein a driving device, said driving device comprising:
a body; and
a plurality of elements supported by said body, said elements comprising:
a motor for driving a driving gear;
a retarding device having a driven gear engaging with said driving gear to receive power;
a retarding element; and a main shaft for outputting power retarded by said retarding element;
a battery set having a switch for controlling and supplying electric current to said motor;
a tail shaft fixed at a rear end of said body;
a tail rod with its girth pivotally disposed on said tail shaft;
a cam fixed in the middle region of said main shaft;
a left eccentric wheel and a right eccentric wheel respectively fixed at opposite ends of said main shaft, the degree of eccentricity being 180 degrees;
a pair of side shafts respectively fixed at the right side and left side of said body;
a left foot support having a driving element, a support element, and a driven element, wherein said driving element has a hole fitted on said left eccentric wheel; said support element has a slot fitted on said side shaft at the left side of said body; and
said left foot support further has a guide rail and a slide plate fitted therein to move between said support element and said driven element, a bottom end of said slide plate projecting from a bottom of said driven element; and
a right foot support having a driving element, a support element, and a driven element, wherein said driving element of said right foot support has a hole fitted on said right eccentric wheel; said support element of said right foot support has a slot fitted on said side shaft at the right side of said body; and
said right foot support further has a guide rail and a slide plate fitted therein to move between said support ele-

ment of said right foot support, a bottom end of said driven element of said right foot support, a bottom end of said slide plate of said tight foot support projecting from a bottom of said driven element of said right foot support.

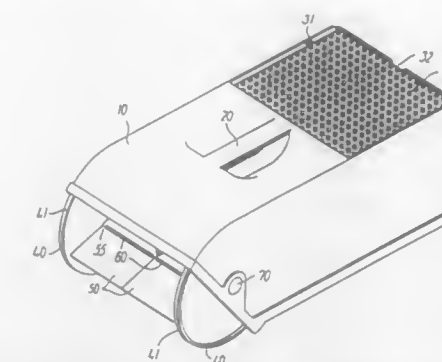
5,378,190
ARTICULATED SOFT SCULPTURE AND METHOD OF MANUFACTURE
Pamela L. Young, 13319 NE. 39th, Vancouver, Wash. 98682
Filed May 17, 1993, Ser. No. 61,995
Int. Cl.⁶ A63H 3/02, 3/46
U.S. Cl. 446—371 3 Claims



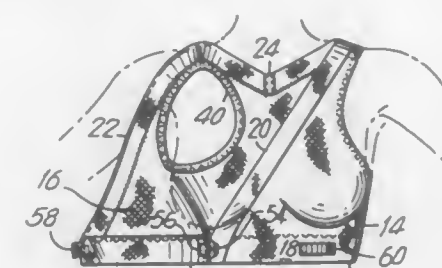
1. A method of manufacturing an articulated soft sculpture having a head, body, and limbs, said method comprising:
(a) forming a first aperture in a first piece of fabric;
(b) forming a second aperture in a second piece of fabric;
(c) forming a third aperture in a third piece of fabric;
(d) inserting a fastener through said first aperture, second aperture and third aperture;
(e) sewing and stuffing said first piece of fabric to form a head;
(f) sewing and stuffing said second piece of fabric to form a limb member having at least two limbs; and
(g) sewing and stuffing said third piece of fabric to form a body, wherein said head, said limb member and said body may be rotated independently of each other.
2. The method of claim 1 wherein said fastener is a nut and bolt and said inserting step comprises inserting said bolt through said first aperture, second aperture and third aperture and then threading said nut on said bolt.

5,378,191
TOY DEVICE FOR PICKING UP OBJECTS FROM A PLANE FACE
Jan Ryaa, Billund, Denmark, assignor to Interlego AG, Baar, Switzerland
PCT No. PCT/DK91/00372, § 371 Date Jun. 29, 1993, § 102(e) Date Jun. 29, 1993, PCT Pub. No. WO92/10255, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 3, 1991, Ser. No. 70,437
Claims priority, application Denmark, Dec. 4, 1990, 2874/90
Int. Cl.⁶ A63H 33/30, 17/14
U.S. Cl. 446—424 10 Claims

1. A toy device for picking up objects from a plane face, said device comprising a housing; a set of wheels (40) mounted for rotation to said housing blades (50) mounted for rotation to said housing to rotate with said wheels and extending partially into said housing, a magazine disposed within said housing in a position whereby rotation of said blades (50) guides the objects



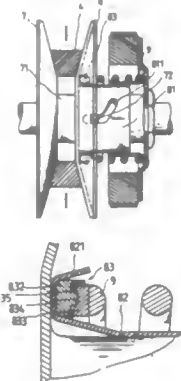
5,378,192
CUSTOM-FIT FRONT-OPENING BRASSIERE
Dale T. Darmante, 2 Horizon Rd., Fort Lee, N.J. 07024
Filed Oct. 4, 1993, Ser. No. 130,866
Int. Cl.⁶ A41C 3/02
U.S. Cl. 156—58 8 Claims



1. A brassiere, comprising:
(a) a one-piece, front-opening garment including a back panel and a pair of breast-conforming, front panels, said back panel and the front panels having a common, linear, lower border region, and a pair of arcuate, upper border regions joined together on the back panel and extending to the lower border region to meet at respective corner regions on said front panels, said front panels being movable, when worn, into at least a partial overlap at the front of the garment to cover a wearer's breasts to variable extents;
(b) an elastomeric band extending along and secured to the lower border region;
(c) pair of elastomeric straps each extending along and secured to a respective upper border region;
(d) said front panels having inclined side regions each extending at an arcuate angle relative to the lower border region, and wherein the straps extend individually along the side regions to join the band at said respective corner regions of the front panel;
(e) first adjustable support means situated below both front panels and accessible solely at the front of the garment, for adjusting the extent by which one of the front panels covers one of the wearer's breasts by stretching the band and one of the straps; and
(f) second adjustable support means situated below both front panels and also accessible solely at the front of the garment, for adjusting, independently of the first adjustable support means, the overlap of the front panels and the extent by which the other of the front panels covers the other of the wearer's breasts by stretching the band and

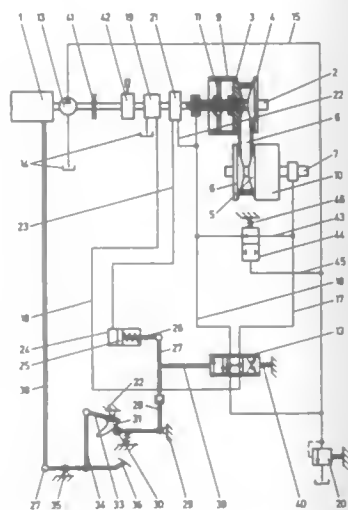
03. Cl. 7/47—An automatic retrieving structure of a sliding transmission disk of a motorcycle automatic transmission comprising a transmission disk having a transmission wheel nave, and a sliding transmission disk having a shaft sleeve fitted over said transmission wheel nave which is provided with a protruded

pin member opposite in location to and engageable with a pin slot disposed in said shaft sleeve of said sliding transmission disk for enabling an interval between said sliding transmission disk and said transmission disk to be changed in accordance with a constant rotational potential so as to facilitate the change in the driving position of a drive belt, said shaft sleeve of said sliding transmission disk further provided with a spring



seat gaving at the bottom thereof a receiving frame in which a compression spring is disposed; wherein said receiving frame comprises a turning and sliding member capable of preventing said compression spring from being acted on by a twisting force of said sliding transmission disk at the time when said interval between said sliding transmission disk and said transmission disk is changed.

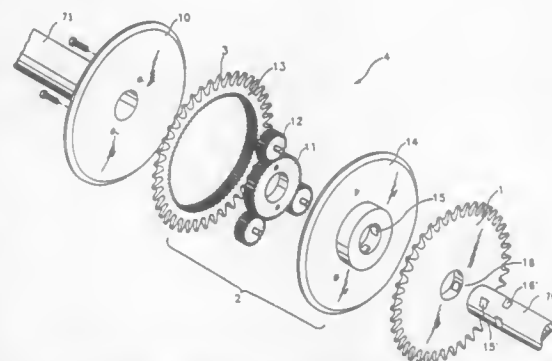
5,378,200
CONE DISK TRANSMISSION
Gert Schoenenbeck, Bad Homburg, Germany, assignor to Reimers Getriebe AG, Zug, Switzerland
Filed Oct. 28, 1993, Ser. No. 141,926
Claims priority, application Germany, Oct. 28, 1992, 4236301
Int. Cl.⁶ F16H 59/00
U.S. Cl. 474—18 4 Claims



1. In an infinitely adjustable cone disc transmission having a drive shaft, said transmission including the production of axial pressure forces of the cone discs on pulling means rotating between them via hydraulic tensioning means, which are arranged on the transmission shafts and each axially influence one of the displaceable cone disks arranged on the respective transmission shaft, the tensioning means having pressure medium conduits connected thereto and wherein, by way of a control valve, the tensioning means and the pressure medium

conduits are charged with a pressure medium, which is supplied by a pump, and wherein, in the reflux of the control valve, a torque sensor is arranged on the drive shaft of the transmission, said transmission including two valve members disposed such that said sensor throttles the reflux of the pressure medium as a result of the torque-dependent movement of said two valve members relative to one another and as a function of the load, thereby determining the basic pressure of the transmission, and wherein an revolution sensor is provided on the drive shaft, which, as a function of the number of revolutions, provides pressure medium to a control element which, in connection with an adjustment member for drive power, acts upon the transmission ratio by way of the control valve, the improvement that pressure medium conduits leading from the control valve to the tensioning means are connected to one another by means of a short-circuit conduit and that the short-circuit conduit is open only if the pump is at rest.

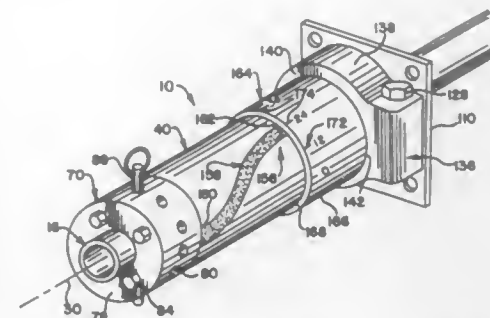
5,378,201
MULTI-GEARED BICYCLE TRANSMISSION ASSEMBLY COMPRISING INTERNAL GEAR SETS
Myunwoo Lee, 103-220, Sungsan-dong, Mapo-ku, Seoul, 121-250; Wooll Lee, 14-1008, Chungsil Apt., Daechee-dong, Kangnam-ku, Seoul, and Minsu Kim, 91 Bungee, 1 ka Sin-hung-dong, Jung-ku, Incheon, 400-101, all of Rep. of Korea
Filed Apr. 5, 1993, Ser. No. 41,600
Claims priority, application Rep. of Korea, Apr. 4, 1992, 92-24870
Int. Cl.⁶ F16H 9/00, 61/00
U.S. Cl. 474—77 5 Claims



1. A transmission assembly for a bicycle comprising: front transmission means including:
a first sprocket assembly having at least one sprocket for mounting on a crank shaft, the crank shaft being insertable in a seat tube wherein the at least one sprocket rotates with rotation of the crank shaft;
at least one front planetary gear set defining multiple second sprockets positioned aside the first sprocket assembly, said front planetary gear sets rotating with rotation of the crank shaft;
a front sprocket selector which is attached to the seat tube and is used for shifting chain from one sprocket to another sprocket in said first sprocket assembly and said front planetary gear sets;
a flange formed at a side of the seat tube to provide additional guidance for the chain; and
rear transmission means including:
a second sprocket assembly having at least one second sprocket for mounting on a hub extension, wherein the at least one second sprocket rotates with rotation of the chain;
at least one rear planetary gear set defining multiple third sprockets positioned aside the second sprocket assembly, said rear planetary gear sets rotate with rotation of the chain;
a rear sprocket selector for shifting the chain from one

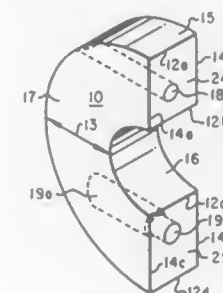
sprocket to another sprocket in said second sprocket assembly and said rear planetary gear sets.

5,378,202
TENSIONING DEVICE
R. Todd Swinderman, Kewanee, Ill., assignor to Martin Engineering Company, Neponset, Ill.
Filed Nov. 15, 1993, Ser. No. 152,416
Int. Cl.⁶ F16H 57/00
U.S. Cl. 474—92 28 Claims



1. A tensioning device for imparting torsional bias to a shaft including a resilient torsion coupling member having a first end and a second end; connector means adapted to connect said first end of said coupling member to the shaft for rotation therewith; a driven member connected to said second end of said coupling member, said driven member being relatively rotatable with respect to the shaft about a first axis; a drive member associated with said driven member for selectively rotating said driven member to any of a number of positions, said drive member being rotatable about a second axis distinct from said first axis; whereby rotation of said drive member rotates said driven member and thereby rotates the shaft to a desired position and whereby further rotation of said drive member operates to store a torsional biasing force in said coupling member when said second end of said coupling member is rotated with respect to said first end of said coupling member.

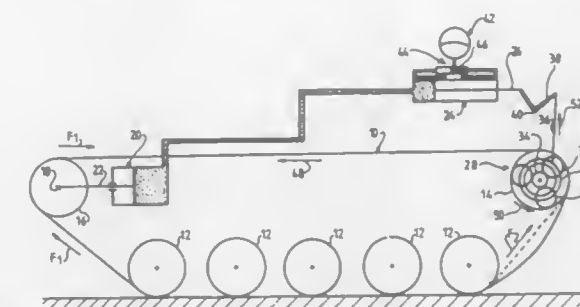
5,378,203
MECHANICAL DONUT AND ASSEMBLY
Ronald G. Baebel, Dallas, Tex., assignor to Ultra Polymer Sciences, Inc., Dallas, Tex.
Filed Apr. 2, 1991, Ser. No. 680,243
Int. Cl.⁶ F16H 55/12
U.S. Cl. 474—96 9 Claims



1. A mechanical donut having a plurality of segments forming said donut, each of said segments being made of a material selected from the class consisting of urethanes and polyurethanes, two of said segments including recesses therein adapted for receiving a threaded nylon fastening member, and in which two of said recesses extend to external working surfaces of said

mechanical donut in different segments when said segments are assembled together.

5,378,204
HYDROSTATIC APPARATUS FOR TENSIONING A TRACK ON A VEHICLE
Emile Urvoy, Limours, France, assignor to Giat Industries, Versailles, France
Filed Apr. 7, 1994, Ser. No. 224,248
Claims priority, application France, Apr. 16, 1993, 93 04511
Int. Cl.⁶ F16H 7/08
U.S. Cl. 474—110 9 Claims

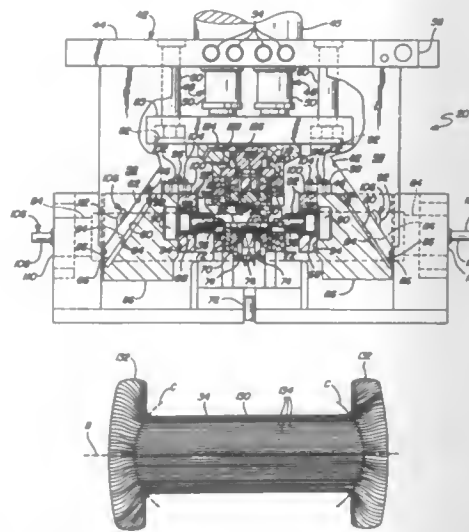


1. Hydrostatic apparatus for tensioning a track on a vehicle, in particular an armored vehicle such as a tank, on which the track is guided over ground wheels, over a drive member such as a sprocket wheel, and over a return pulley whose spindle is associated with a pulley-displacing hydraulic actuator enabling the tension of the track to be adjusted, said apparatus including feed means for feeding the actuator of the return pulley with hydraulic liquid at a pressure which corresponds to a minimum desired value for the tension of the track when the sprocket wheel transmits acceleration torque to the track, and which is increased by an amount that is a function of the torque transmitted by the sprocket wheel to the track when the torque is braking torque, the feed means comprising firstly static pressure-maintaining means for maintaining a minimum pressure in the actuator of the return pulley, and secondly a second hydraulic actuator controlled by mechanical means for transmitting the torque applied by the sprocket wheel to the track.

5,378,205
EXTRUDED METAL CHAIN PIN
Allen P. Gohl, 4501 Singh, Sterling Heights, Mich. 48310, and Edmund W. Gohl, 304 Coldiron, Rochester Hills, Mich. 48063-5873
Division of Ser. No. 925,508, Aug. 5, 1992. This application Oct. 5, 1993, Ser. No. 132,114
Int. Cl.⁶ F16G 15/00
U.S. Cl. 474—206 3 Claims

1. An extruded metal chain pin (34) for connecting center and side links of a chain together, said chain pin (34) comprising:
an extruded solid cylindrical body (130) having a predetermined diameter and defining a longitudinal axis (B), said cylindrical body (130) including two ends (132) and having an extruded grain structure (134) extending parallel to said longitudinal axis (B) from one of said ends (132) through said cylindrical body (130) to the other of said ends (132);
each of said two ends (132) including flattened transverse ends (132) having a length greater than said predetermined diameter, said extruded grain structure (134) defining flare-out points such that said extruded grain structure (134) flares out throughout said flattened transverse ends (132) at said flare-out points, said extruded metal chain pin

(34) characterized by all of said extruded grain structure (134) extending parallel to said longitudinal axis (B) and

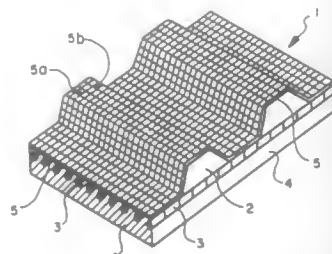


into said flattened transverse ends (132) before reaching said flare-out points.

5,378,206

TOOTHED BELT HAVING TWISTED CORE WIRE
Takahide Mizuno; Nobutaka Osako; Takeshi Murakami, all of Kobe, and Satoshi Murakami, Kakagawa, all of Japan, assignors to Mitsubishi Belting Ltd., Kobe, Japan
Continuation of Ser. No. 736,224, Jul. 26, 1991, abandoned. This application Nov. 20, 1992, Ser. No. 979,558
Claims priority, application Japan, Apr. 27, 1990, 2-112247
Int. Cl.⁶ F16G 5/08, 5/20
U.S. Cl. 474-263

15 Claims



1. A rubber toothed belt comprising rubber teeth, a rubber back and at least one core wire imbedded in the rubber back, the core wire having lower twists of about 11 to about 13.5 times/10 cm and upper twists of about 6.5 to about 9.5 times/10 cm.

5,378,207

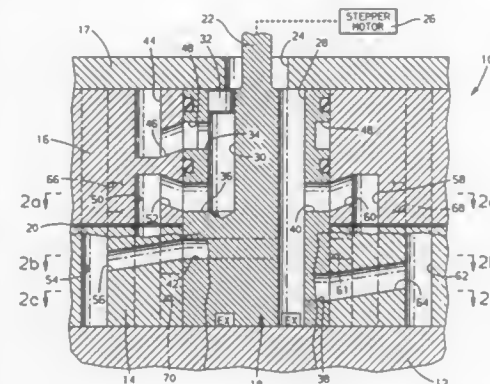
TRANSMISSION CONTROL VALVE SYSTEM
Paul D. Stevenson, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 26, 1993, Ser. No. 37,214
Int. Cl.⁶ F16H 59/02
U.S. Cl. 475-135

6 Claims

1. A transmission control comprising:
a rotary selector valve means having an elongated spool valve rotatably supported in a housing for selective rotary positioning therein;
a pressure passage extending longitudinally in said spool;
an exhaust passage extending longitudinally in said spool parallel with said pressure passage;
said housing having formed therein a forward drive passage,

a reverse drive passage, an intermediate drive passage and another drive passage;

first valve means connected between said forward drive passage and said intermediate drive passage for permitting free fluid flow from said intermediate drive passage to said forward drive passage and preventing reverse fluid flow;
second valve means for permitting free fluid flow from said



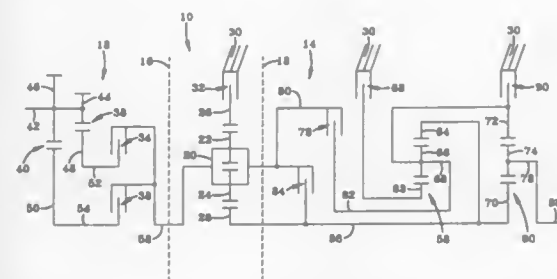
reverse drive passage to said other drive passage and for preventing reverse flow therebetween;
and transverse passage means for selectively connecting said pressure passage with each of said drive passages in said housing dependent upon the selective rotary positioning of the spool valve and for simultaneously connecting said exhaust passage to selective ones of the drive passages in said housing not connected with the pressure passage.

5,378,208

REVERSING ASSEMBLY FOR MULTI-SPEED TRANSMISSION

Arthur Hall, III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 7, 1993, Ser. No. 73,236
Int. Cl.⁶ F16H 57/10, 3/66
U.S. Cl. 475-276

9 Claims

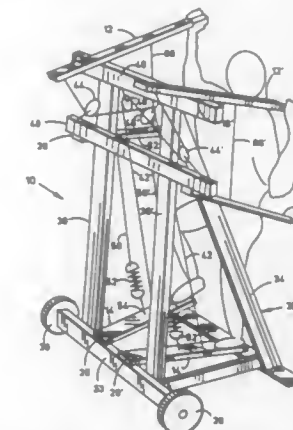


1. A reversing assembly for a power transmission, the reversing assembly comprising:
input means for delivering power to the reversing assembly;
a carrier connected to said input means;
compounded planet gear means having first planet gear meshingly engaging second planet means, said compounded planet gear means supported on said carrier;
a ring gear in the reversing assembly;
said first planet gear means meshingly engaging said ring gear; a sun gear
in the reversing assembly for delivering output therefrom;
said second planet gear means meshingly engaging said sun gear; and,
a selectively engageable brake means cooperating with said ring gear such that when said brake means is engaged said sun gear rotates in a direction opposite to the rotation of said input means.

5,378,209
APPARATUS FOR EXERCISING ARMS AND LEGS VERTICALLY

Robert J. Kendrew, 2089 Ventana Way, El Cajon, Calif. 92020
Filed Jul. 15, 1993, Ser. No. 91,427
Int. Cl.⁶ A63B 23/04, 21/00
U.S. Cl. 482-52

16 Claims



1. An apparatus for exercising the arms and legs in a generally upward and downward direction with the user in a balanced, upright orientation, comprising:

a frame;
two sets of levers horizontally spaced, one set on each side of the frame, each set including a foot lever and at least one hand lever to comply with the two sets of levers, the levers in each set pivotally mounted to the frame in vertically spaced relationship;
means connecting said foot and hand levers so that a downward movement of a foot lever will cause an upward movement of a hand lever, and a downward movement of a hand lever will cause an upward movement of a foot lever;
said levers extending generally horizontally so that when actuated above and below the horizontal, the respective arms and legs of a user move generally upwardly and downwardly whereby the arms and legs can be exercised in opposition to each other with the downward force exerted on a foot lever being opposed by an upward force exerted on the hand lever to which it is connected, whereby the user's weight is continuously supported by both the arms and legs, and the user's body is maintained in a balanced upright position throughout the exercise.

5,378,210

GEAR TRANSMISSION APPARATUS

Masao Teraoka, Tochigi, Japan, assignor to Tochigi Fuji Sangyo Kabushiki Kaisha, Japan

Filed Dec. 23, 1992, Ser. No. 995,804

Claims priority, application Japan, Dec. 27, 1991, 3-107630[U]; Dec. 27, 1991, 3-347498

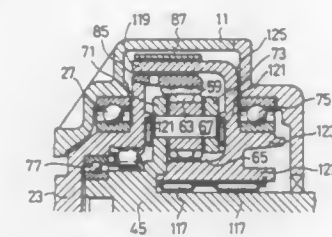
Int. Cl.⁶ F16H 3/44

U.S. Cl. 475-312

9 Claims

4. A gear transmission apparatus comprising:
a planetary gear mechanism having an internal gear, a plurality of pinion gears, a pinion carrier, and a sun gear, said sun gear having an overhang portion rotatably supported through a bush or a bearing by said internal gear, the overhang portion extending along an outer periphery of said internal gear;
a rotation input shaft coupled with said internal gear;
a rotation output shaft coupled with said pinion carrier;
a band brake for braking rotation of said sun gear when

brought into frictional contact with said overhang portion; and



a one-way clutch interposed between said rotation input shaft and said rotation output shaft so as to allow rotation of said rotation output shaft in a speed-increase direction.

5,378,211

CLUTCH MODE CONTROL LOGIC

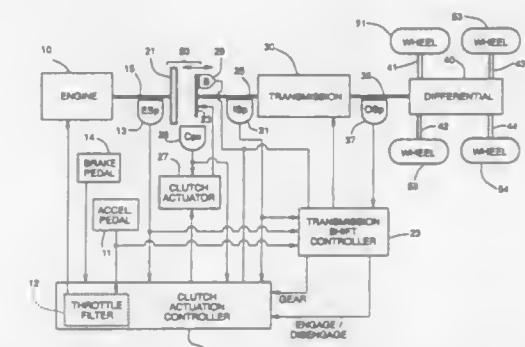
James Slicker, West Bloomfield; Joseph S. Mazur, Livonia, and Michael T. Breen, Garden City, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 987,772, Dec. 9, 1992, Pat. No. 5,314,050. This application Jan. 18, 1994, Ser. No. 181,790

Int. Cl.⁶ B60K 41/02

U.S. Cl. 477-175

3 Claims



1. In a vehicle having a gear transmission including an input shaft driven through a friction clutch by an engine that is controlled by an accelerator pedal, and having a clutch actuation controller for actuating the friction clutch, wherein the friction clutch has engageable parts which initially touch and then progressively increase in torque transfer during actuation, the clutch actuation controller having automatic modes including touch point approach mode, creep mode, startup mode and lockup mode, and an auto mode off state; the method of controlling the engine speed during clutch closing comprising the steps of:

measuring engine speed, transmission input speed, and pedal position and producing corresponding signals;
initiating operation in the auto mode off state, wherein the clutch is disengaged;
changing from the auto mode off state to the touch point approach mode when the pedal position is above a minimum;
in touch point approach mode controlling the clutch to a touch point;
determining the touch point when the engageable parts of the clutch initially touch;
entering a creep mode when the touch point is attained and the pedal position signal is below a threshold;
when in creep mode, generating a control signal equal to the pedal position signal;
entering the startup mode when the clutch touch point is attained and the pedal position signal exceeds the threshold value;

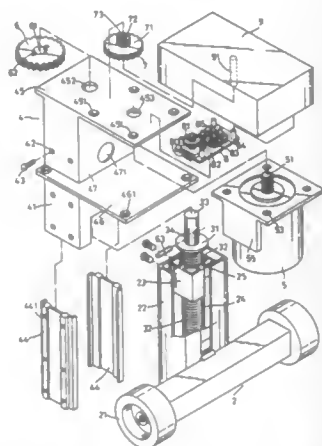
when in startup mode generating a control signal comprising a fixed percentage of pedal position signal; and controlling the engine speed in accordance with the control signal.

5,378,212
ELEVATING STRUCTURE FOR A MOTOR DRIVEN TREADMILL

Hai Pin-Kuo, P.O. Box 82-144, Taipei, Taiwan
Filed Sep. 24, 1992, Ser. No. 950,025
Int. Cl.⁶ A63B 22/02

U.S. Cl. 482—54

1 Claim



1. An elevating structure for a motor-driven treadmill comprising:

- a base on which are mounted an endless belt and a hand rail, said base being provided with a front wheel support and a rear wheel support, said front wheel support having a wheel at both ends and a horizontal box channel in which there is a block with a threaded hole;
- a shaft having a smooth portion and a threaded portion separated by a flange, the threaded portion of said shaft being engaged with the block of said box channel;
- a frame mounted on said box channel, having a lower portion connected with two guiding racks, and provided with an upper plate, a lower plate and a vertical portion between said upper plate and said lower plate, said frame being designed so that when said frame is put onto said box channel, the smooth portion of said shaft will extend upwardly through the first opening of the upper plate of said frame;
- a motor installed between the upper plate and the lower plate of said frame and having a splined axle;
- a driving gear mounted on the upper plate of said frame and having a center hole sleeved on the smooth portion of said shaft;
- a medium gear composed of a large gear and a small gear being mounted on the upper plate of said frame, with the large gear meshed with the splined axle of said motor and the small gear with said driving gear;
- a gear train engaged with the splined axle of said motor and with a variable resistor; and
- a cover adapted to enclose the upper plate of said frame.

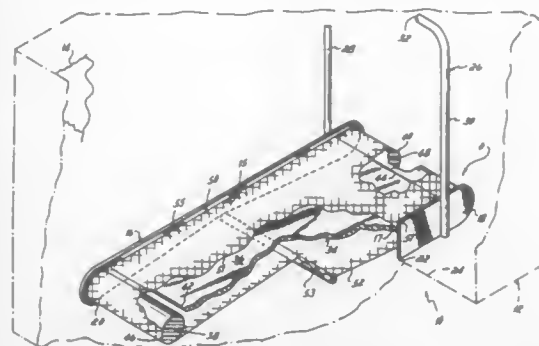
5,378,213
AQUATIC TREADMILL WITH MESH BELT
Jeffrey T. Quint, 6641 Smith Rd., Cincinnati, Ohio 45140
Filed Jan. 28, 1994, Ser. No. 189,072
Int. Cl.⁶ A63B 22/02

U.S. Cl. 482—54

21 Claims

1. An aquatic treadmill comprising:
- a tank combining a liquid;
 - a weight bearing member supported within the tank, the

weight bearing member having an upper surface in the liquid; and
belt means mounted on the weight bearing member for moving in sliding contact with the upper surface of the weight bearing member in the liquid in response to forces

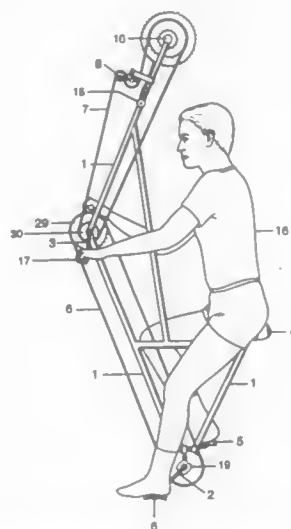


generated by a user in the liquid, the belt means comprising an endless, looped belt having a mesh construction for reducing friction between the belt means and the upper surface of the weight bearing member, thereby permitting the user to move the belt means with less effort.

5,378,214
SELF-POWERED HUMAN CENTRIFUGE
Arthur Kreitenberg, 12216 Shetland La., Los Angeles, Calif. 90049
Filed Jun. 15, 1992, Ser. No. 898,416
Int. Cl.⁶ A63B 21/00; A63G 1/12

U.S. Cl. 482—57

9 Claims



1. A self propelled human centrifuge for use in spaceflight comprising:

- (a) a stationary shaft connected to a main support,
- (b) a frame having a user support rotatably coupled to said shaft, such that when a user is positioned on the user support, the user's head always remains proximal to the shaft while the user's feet remain distal to said shaft, said shaft located superior to the user's head,
- (c) human powered driving means comprising user input means and transmission means for rotating said frame and user 360 degrees around said shaft.

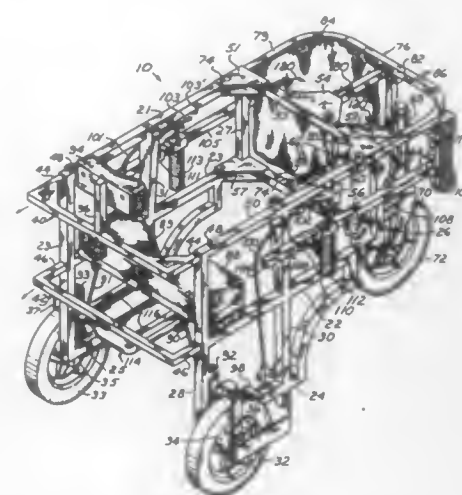
5,378,215
REHABILITATION APPARATUS FOR AMBULATORY PATIENTS

Robert L. Harkins, 7112 S. Indiana, Oklahoma City, Okla. 73159

Filed May 14, 1993, Ser. No. 63,273
Int. Cl.⁶ A61H 3/00

U.S. Cl. 482—67

1 Claim U.S. Cl. 482—94



1. A mobile rehabilitation apparatus, comprising:
frame means including

- a pair of vertically spaced upper and lower tubular side rails which are interconnected by standards at each end of the rails, each said pair of side rails is laterally spaced and interconnected at their respective forward ends by pairs of upper and lower front cross members, each pair of said pairs of front cross members being pivotally connected together in longitudinal alignment during normal usage by a center hinge, said side rails being separably interconnected at their respective rearward ends by upper and lower U-shaped cross members having parallel legs removably received telescopically by the respective upper and lower frame side rail, said standards are connected in a manner to form a pair of forward standards and a pair of rearward standards, and said frame means forms a vertically open frame for surrounding a user;

basket means including a horizontal forward u-shaped basket rail having parallel legs removably supported telescopically by the forward end portions of said upper side rails for precluding pivoting movement of said upper and lower pairs of front cross members during normal usage;

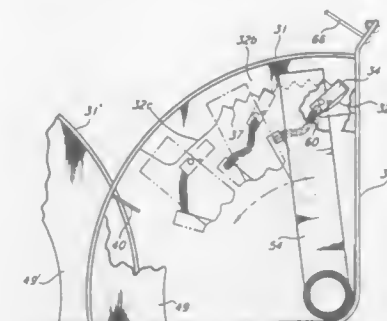
wheel means including a pair of rear wheels mounted on a fixed axis extending transversely of said frame means adjacent the depending end portions of said rearward standards and a forward caster wheel means secured to said forward frame cross members center hinges; and,
seat means including a pair of cushion seats hingedly connected respectively with said lower side rails and normally extending transversely of said frame means adjacent the lower rearward frame cross member above the rear wheels fixed axis for forming a low center of gravity for said frame means when occupied by a user,

whereby the frame means may be laterally collapsed without extending its overall longitudinal length by removing the basket means rail and the rearward U-shaped cross members and manually juxtaposing the upper and lower side rails by the center hinge connected end portion of the respective pair of upper and lower front cross members center hinges pivoting rearwardly.

5,378,216
ADJUSTMENT SYSTEM FOR EXERCISE MACHINES
A. Buell Ish, III, Renton, and John M. Youngsman, Redmond, both of Wash., assignors to Vectra Fitness, Inc., Redmond, Wash.

Filed Jul. 28, 1993, Ser. No. 98,573
Int. Cl.⁶ A63B 21/06

11 Claims



1. An exercise machine comprising:
a load;

a member arranged to be loaded by said load and providing an activating entry section, a load transfer section with multiple load transfer elements, and an inactivating discharge section, said load transfer section being located between said entry and discharge sections, and said entry and discharge sections being devoid of load transfer elements;

an exercise device;

an adjustment mechanism connected to said exercise device and having an active position and an inactive position, said mechanism being arranged when activated to be moved along a travel range in an adjustment direction from said entry section to said discharge section and successively engage said elements, engagement of said adjustment mechanism with a selected one of said elements resisting movement of said adjustment mechanism responsive to movement of said exercise device in an exercising direction opposite to said adjustment direction unless said adjustment mechanism is in its inactive position, engagement of said mechanism with said discharge section while moving in said adjustment direction causing said mechanism to move from its active position to its inactive position, and engagement of said mechanism with said entry section while moving in said exercising direction causing said mechanism to move from its inactive position to its active position whereat exercising movement of said exercise device is resisted by said load via said adjustment mechanism after said mechanism has then been moved to a selected one of said elements.

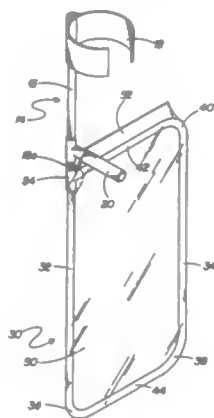
5,378,217
HAND HELD EXERCISE DEVICE PROVIDING DESIRABLE AIR RESISTANCE
Frank A. D'Orta, 5602 R.D. Ave., Orlando, Fla. 32822
Filed Aug. 17, 1993, Ser. No. 107,372
Int. Cl.⁶ A63B 21/00

U.S. Cl. 482—111

20 Claims

1. An air resistance device to be held in the hand of a user while undertaking exercise, said air resistance device having a grasping portion and a lightweight frame portion, said grasping portion comprising an arm clamping member as well as an adjacent handle to be grasped by the hand of the user, said lightweight frame portion being rigidly attached adjacent said grasping portion, and being of generally rectangular configuration, said lightweight frame portion being relatively rigid and constructed utilizing longitudinally disposed tubular members,

which frame is configured to receive a membrane thereon, through which air will not easily pass, a membrane attached to



said frame portion thus providing air resistance, so that a user can derive exercise by attempting to move said device rapidly against the resistance of the ambient air.

5,378,218

NC-MACHINING CONTROLLER

Koji Daimaru, Koichi Takata, Kenichi Yoshizawa, and Masahiro Shoji, all of Ishikawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/00896, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/00830, PCT Pub. Date Jan. 23, 1992

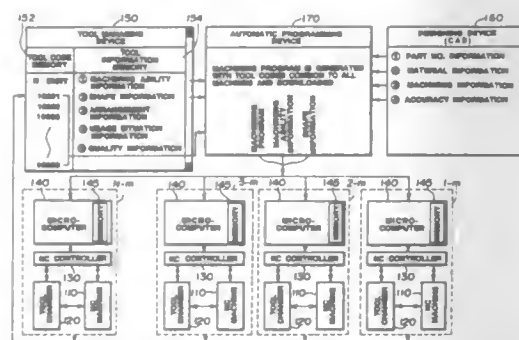
PCT Filed Jul. 3, 1991, Ser. No. 966,039

Claims priority, application Japan, Jul. 3, 1990, 2-175600

Int. Cl.⁶ B23Q 3/157

U.S. Cl. 483—9

7 Claims



1. An NC machining controller for an NC machining system including a plurality of NC machining apparatuses each having a tool changer for allowing automatic selection of a desired tool from a plurality of magazine pots, the NC machining controller comprising:

a first computer for performing general control over the plurality of NC machining apparatuses, the first computer having:

a tool code memory for storing data on correspondence between tools and tool codes;

a tool information memory for storing tool shape information and machining ability information for each of the tool codes; and

automatic programming means for generating an NC machining program including a T code command to which a specified tool code is added and for outputting the NC machining program to the NC machining apparatuses together with the tool shape information and

machining ability information corresponding to the specified tool, and

a second computer connected to the first computer and provided in each of the NC machining apparatuses, the second computer having:

a magazine address memory for storing data on correspondence between the tool code and a magazine address of the associated tool changer;

T code command generation means for converting the tool code added to the T code command in the NC machining program into a magazine address of the tool changer corresponding to the tool code on the basis of contents stored in the magazine address memory and for generating a T code command for specifying the converted magazine address;

tool correction command generation means for generating a tool correction command on the basis of the tool shape information received from the computer; and machining condition command generation means for generating a machining condition command on the basis of the machining ability information received from the computer,

wherein each of the NC machining apparatuses and associated one of the tool changers are driven according to the NC machining program including the generated T code command, tool correction command and machining condition command.

5,378,219

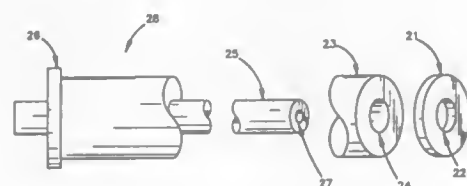
INSULATING ROLL COVER

Charles M. Hart, Streetsboro; James D. Rogers, Mantua; Harry L. King, Hudson, and John J. Bartholomew, Mentor, all of Ohio, assignors to Global Consulting, Inc., Painesville, Ohio Division of Ser. No. 719,252, Jun. 27, 1991, Pat. No. 5,205,398, which is a continuation-in-part of Ser. No. 559,736, Jul. 27, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 986,212

Int. Cl.⁶ F27D 23/00

U.S. Cl. 492—48

16 Claims



1. A roller cover which comprises at least one dense and refractory, elevated temperature resistant annular insulating cover member of a highly compressed at least substantially ceramic fiber, said fibers being compressed from their original volume in an amount within the range of from about 50 percent to about 80 percent to a fiber density, basis dry fiber, within the range of from about 16 to about 50 pounds per cubic foot.

5,378,220

METHOD OF CONSTRUCTING REUSABLE YARD WASTE CONTAINER

Robert W. Bunn, 10075 Fox Farm Rd., Dundee, Ore. 97115

Filed Oct. 26, 1993, Ser. No. 143,184

Int. Cl.⁶ B31B 29/86, 29/90

U.S. Cl. 493—226

2 Claims

1. A method for making a reusable fabric container for storing yard waste and the like for collection, said method comprising:

(a) providing a unitary elongate hollow cylindrical shell which is open at each end;

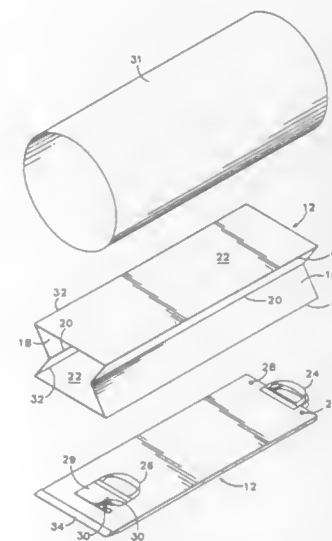
(b) creating inwardly facing folds in said shell at four spaced-apart locations parallel with the longitudinal axis of said

shell so as to create a rectangular cross-section with first and second pairs of opposed planar sides;

(c) creating outwardly facing folds in said shell parallel with the longitudinal axis thereof midway in said first pair of opposed sides;

(d) thereafter collapsing said shell along said outwardly facing folds so as to bring said second pair of sides into adjacency with one another with said first pair of sides folded therebetween;

(e) interconnecting said adjacent second pair of sides and said folded first pair of sides along one end of said shell;



(f) placing lower handles in each of said second pair of sides; (g) placing upper handles in each of said second pair of sides; and

(h) thereafter reopening said shell along said outwardly facing fold line back to said rectangular cross-section as so to create a planar multi-layer bottom from the lower margins of said sides which is generally perpendicular with the remainder of said sides and which comprises two layers from said first pair of sides and one layer from said second pair of sides.

5,378,221

ASSEMBLY AND METHOD FOR AXIALLY ALIGNING SLOTTING, TRIMMING, SCORING OR LIKE HEADS

David Lauderbaugh, Roswell, and Gene A. Jenkins, Woodstock, both of Ga., assignors to Corrugated Gear & Sprocket, Inc., Alpharetta, Ga.

Filed Oct. 23, 1992, Ser. No. 965,799

Int. Cl.⁶ B21B 1/14

U.S. Cl. 493—367

24 Claims

1. A rotary head assembly comprising:

a rotary head mounted on a rotatable shaft at a predetermined location; and

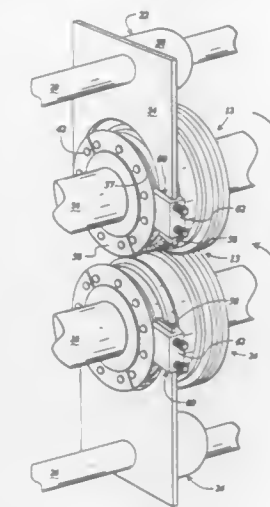
an axial alignment assembly comprising:

a pair of spaced apart guide plates, each guide plate having a surface in opposing face to face relation with the other guide plate, the guide plates being mounted on the shaft fixed to the rotary head, the opposing surfaces of the guide plates extending radially from the shaft;

carrier means with yoke attached thereto, which carrier means locates the yoke in a predetermined axial position; and

alignment element spring-loaded to the yoke, the alignment element having a pair of opposing wear surfaces for contact with the opposing surfaces of the guide plates, the surfaces of wear surfaces and guide plates having mating profiles, and the alignment element having axial pressure means for exerting continuous axial

pressure on each wear surface in a direction toward the corresponding guide plate surface, so that there is



contact between the opposing surface of the guide plate and the corresponding wear surface.

5,378,222

APPARATUS FOR FOLDING SHEETS FOR INSERTION INTO AN ENVELOPE

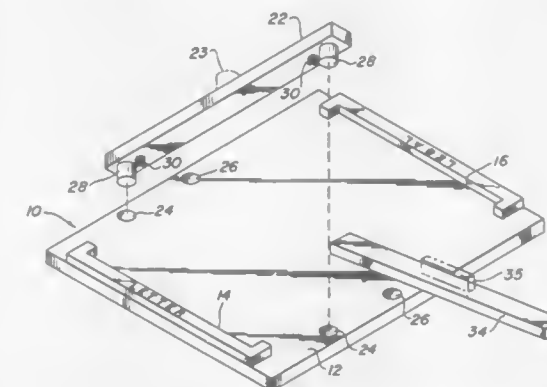
William G. Weber, 344 Woodland Dr., Downingtown, Pa. 19335

Filed May 24, 1993, Ser. No. 65,715

Int. Cl.⁶ B65H 45/12, 45/30

U.S. Cl. 493—405

18 Claims



1. An apparatus for folding sheets for insertion into an envelope, comprising:

a planar base;

a fixed structure against which a sheet of predetermined size to be folded may be placed for positioning of the sheet;

a removable folding bar mountable at preselected position spaced from said structure on said base determined by a detent located at a preselected position on said base such that the sheet to be folded passes between said folding bar and said base;

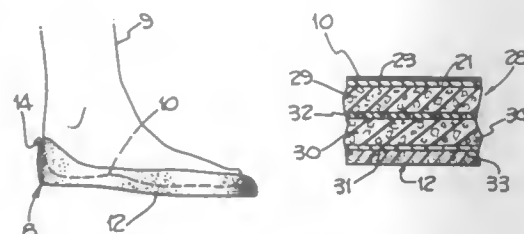
indicia on said apparatus identifying with respect to the fixed structure the size of sheet to be folded for placing in an envelope; and

means for applying pressure to a surface of said sheet to be folded causing said sheet to be pressed tightly against said folding bar such that a crease is formed across said sheet at a predetermined location.

5,378,223
ORTHOPEDIC SUPPORT PAD AND METHOD FOR PROVIDING SEMI-PERMANENT RELIEF ZONES
 Tracy E. Grim, Broken Arrow, Okla., and Joseph M. Iglesias, Agoura, Calif., assignors to Royce Medical Company, Camarillo, Calif.

Filed Oct. 23, 1992, Ser. No. 965,750
 Int. Cl.⁶ A43B 5/04, 7/06, 13/40
 U.S. Cl. 602—6

6 Claims



1. A conformable foot pad comprising: an airtight compliant bladder having a configuration to underlie the sole of the foot of a user; said airtight bladder containing means for retaining a predetermined configuration following partial evacuation; one-way valve means coupled to said bladder to facilitate withdrawing air from said bladder so that the bladder will retain its shape, including the upper surface configuration thereof for facing the sole of the foot of the user; and means for selectively permitting the inflow of air into said bladder to facilitate reconfiguration thereof; wherein: said bladder contains resilient particulate material; and said bladder includes an apertured separating layer of sheet plastic with fine particulate material on one side of said sheet and coarser particulate material on the other side thereof.

2. A method for conforming an orthopedic support pad to provide semi-permanent areas of pressure relief to afflicted areas of an appendage, the method comprising the steps of: preparing a support pad including a fluid and an airtight bladder containing semi-flexible particles which are freely formable under atmospheric pressure conditions but which retain a conformed configuration when the bladder is evacuated; applying a temporary padding of material to the afflicted areas of said appendage; evacuating the fluidic contents of said support pad to alter the shape of the pad to a conformed shape, wherein said shape conforms to that of said appendage as modified by said temporary padding; maintaining said conformed shape with semi-flexible particles inside said pad; sealing said support pad to prevent further modification of the fluidic contents of the support pad; removing said temporary padding from said appendage; and securing said conformed support pad to said appendage.

5,378,224
METHOD FOR SUPPORTING BODY JOINTS AND BRACE THEREFOR
 Joseph D. Billotti, 18 Powder Hill, Saddle River, N.J. 07458
 Continuation-in-part of Ser. No. 73,722, Jan. 9, 1993. This application Oct. 15, 1993, Ser. No. 137,830
 Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—13

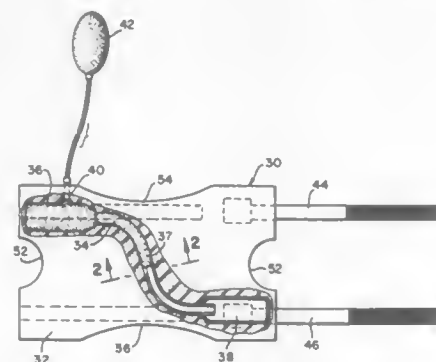
13 Claims

1. A brace for supporting a weakened joint of the body, the weakened joint being a knee joint in which the anterior cruciate ligament is absent or has been repaired, so as to permit anterior translation of the knee joint while restraining movement of the knee joint in directions which would tend to strain the anterior cruciate ligament to thereby support the weakened knee joint against movement of the knee joint in said directions

and concomitant further injury to the knee joint, the brace comprising:

a flexible sheet adapted to be applied to the knee joint and positioned at the weakened knee joint so as to protect the weakened knee joint from abrasion while permitting anterior translation of the knee joint;
 an inflatable chamber contained within the flexible sheet and including a medial section having a generally sinuous shape for juxtaposition with the weakened knee joint along a corresponding generally helical path around the knee joint when the brace is applied to the weakened knee joint, the generally helical path around the knee joint being determined by the sinuous shape of the inflatable chamber;

said inflatable chamber being flexible when deflated, for conforming to said generally helical path around the knee joint, and being relatively stiff when inflated for contacting and supporting the weakened knee joint along said



generally helical path around the knee joint such that anterior translation of the knee joint is permitted and motion of the knee joint in said directions which would place strain on the anterior cruciate ligament is restrained; means for holding the brace firmly in place when applied to the knee joint, with the inflatable chamber following the generally helical path around the weakened knee joint; and means for selectively inflating the inflatable chamber subsequent to applying the brace to the knee joint such that upon application of the brace to the knee joint and subsequent inflation of the inflatable chamber the weakened knee joint is supported, with anterior translation of the knee permitted by virtue of the flexibility of the flexible sheet, while movement in said directions which would tend to strain the anterior cruciate ligament is restrained by virtue of the stiffness and shape of the inflated chamber.

5,378,225
HEATED BACK SUPPORT
 Jules Chatman, Jr., and Cynthia A. Chatman, both of 877 Stanford Ave., Oakland, Calif. 94608
 Filed Nov. 9, 1993, Ser. No. 149,518
 Int. Cl.⁶ A61F 5/02

U.S. Cl. 602—19

2 Claims

1. A heated back support comprising: an elongated strap having a pile type fastener at one end and a complementary pile type fastener at the other end, the strap adapted to be worn around the midriff of a user's body;
 an upper heating element and a lower heating element coupled to the strap such that the upper heating element is positionable near a user's upper back region and the lower heating element is positionable near a user's lower back region;
 a pad coupled around the strap and heating elements, the pad adapted to radiate heat when the heating elements are

energized and adapted to be positioned adjacent to a user's back;
 a power source coupled to the strap for energizing the heating elements;
 a power cable coupled between the heating element and the power source; and
 a switch coupled to the power source and positionable in a

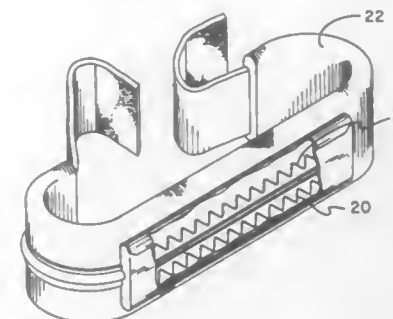
of an impregnated swab from said bag while excess liquid remains within said bag.

5,378,227
BIOLOGICAL/PHARMACEUTICAL METHOD AND APPARATUS FOR COLLECTING AND MIXING FLUIDS
 John F. O'Riordan, Arvada, and Glen D. Antwiler, Lakewood, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Aug. 11, 1992, Ser. No. 928,040
 Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—4

30 Claims

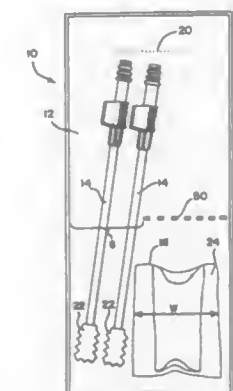


first orientation to energize the upper heating element but not the lower heating element to heat a user's upper back region, positionable in a second orientation to energize the lower heating element but not the upper heating element to heat a user's lower back region, and positionable in a third orientation to energize both the upper and lower heating elements to heat a user's upper and lower back regions.

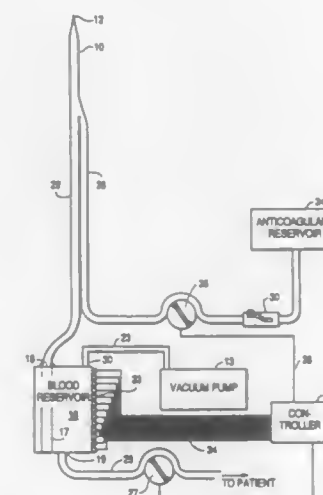
5,378,226
SWAB IMPREGNATING AND DISPENSING SYSTEM
 Paul H. Hanft, Barrington Hills; Lawrence G. Ponsi, Wheeling, and John Posey, McHenry, all of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.
 Continuation-in-part of Ser. No. 821,010, Jan. 15, 1992, abandoned. This application May 19, 1993, Ser. No. 64,590
 Int. Cl.⁶ A61M 35/00

U.S. Cl. 604—3

22 Claims



1. A system for impregnating and dispensing a swab, comprising
 a. an outer, sealed bag having at least one swab located therein, said bag comprising opposite, generally flat, flexible sides sealed along side edges and end edges thereof,
 b. a frangible pouch disposed within said sealed bag, said pouch containing a liquid and including means for opening said pouch while sealed within said bag for releasing said liquid within said sealed bag to impregnate said swab so that said swab becomes an impregnated swab, and
 c. access means on one side of said bag extending laterally across a portion of said one side and being spaced from the side edges and end edges of said bag for allowing removal



1. A blood collection apparatus, comprising: means for receiving blood from a patient; a reservoir for collecting received blood; means for transporting received blood from the receiving means to the reservoir; and means for preventing blood coagulation in reservoir, the preventing means including: means for introducing anticoagulant into the received blood at a predetermined infusion rate before the blood leaves the reservoir; means for sensing liquid volume in the reservoir and for transmitting a volume signal corresponding thereto; and control means for varying the predetermined infusion rate of the anticoagulant introducing means in accordance with a predetermined program and as a function of the volume signal.

5,378,228
METHOD AND APPARATUS FOR JOINT FLUID DECOMPRESSION AND FILTRATION WITH PARTICULATE DEBRIS COLLECTION
 Thomas P. Schmalzried, 30428 Calle de Suenos, Rancho Palos Verdes, Calif. 90274, and Murali Jasty, 752 Wellesley St., Weston, Mass. 02193

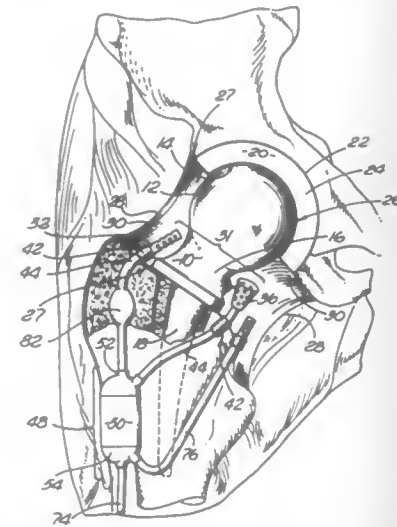
Filed Dec. 16, 1991, Ser. No. 809,197
 Int. Cl.⁶ A61M 27/00

U.S. Cl. 604—8

30 Claims

1. An apparatus for fluid decompression and solid and solute species collection from mammalian joints, comprising: inflow means in communication with said joint for receiving fluid and solid and solute species from said joint; a low pressure reservoir in communication with said inflow means for receiving said fluid and said solid and solute species; filter means internal to the reservoir for separating said solid and solute species from said fluid; said filter means including a semipermeable membrane and a core filtration means spaced from said membrane;

outflow means in communication with said reservoir for releasing said fluid from said reservoir,

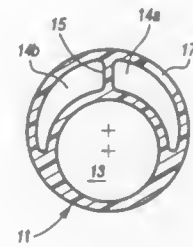


5,378,230
TRIPLE-LUMEN CRITICAL CARE CATHETER
Sakharam D. Mahurkar, 6171 N. Sheridan Rd., #1112, Chicago, Ill. 60660

Filed Nov. 1, 1993, Ser. No. 146,478
Int. Cl.⁵ A61M 3/00

U.S. Cl. 604—43

13 Claims

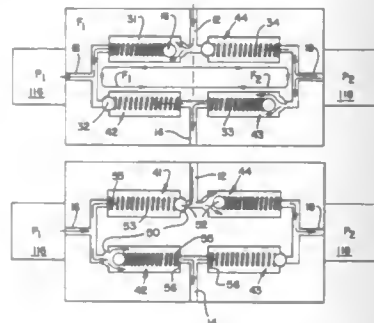


1. A multiple-lumen intravenous catheter for critical-care applications, said catheter comprising an elongated cylindrical tube having a first septum dividing the interior of the catheter into a large lumen having an elliptical cross section, and a smaller lumen having a crescent-shaped cross section, the smallest diameter of said elliptical cross section being larger than the radius of the interior of the catheter, and a second septum dividing the crescent-shaped lumen into two small lumens.

5,378,229
CHECK VALVE MANIFOLD ASSEMBLY FOR USE IN ANGIOPLASTY
James Layer, Cooper City, Fla., and Andrea Slater, Somerville, N.J., assignors to Cordis Corporation, Miami Lakes, Fla.
Filed Jan. 25, 1994, Ser. No. 186,666
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—31

22 Claims

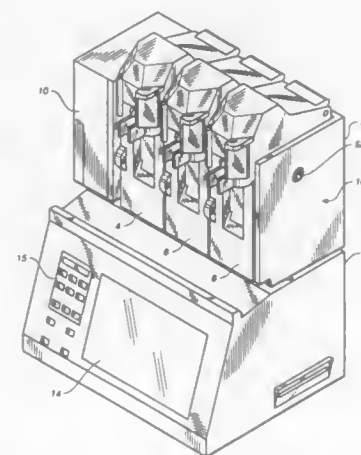


1. An extracorporeal valve manifold assembly for use in association with a perfusion pump in percutaneous transluminal angioplasty procedures, the manifold assembly comprising: a housing, a fluid passageway defined within the housing; a plurality of openings disposed in said housing, each of the openings communicating with the fluid passageway and said fluid passageway extending within said housing in a loop to interconnect all of said openings together, one of said openings constituting an inlet to said manifold assembly and another, opposite one of said openings constituting an outlet from said manifold assembly; said manifold assembly further containing a plurality of discrete valve assemblies, said valve assemblies being disposed in said housing along said fluid passageway such that each said valve assembly is disposed generally between adjoining openings of said housing; each of said valve assemblies forming an individual check valve to define a plurality of discrete fluid pathways, whereby flow of fluid directed into said manifold assembly via said inlet is directed through said fluid passageway to a fluid receiving component, and flow of fluid from a fluid providing component

5,378,231
AUTOMATED DRUG INFUSION SYSTEM
Noel L. Johnson, San Jose; Jyh-Yi T. Huang, Sunnyvale, and Robert R. Burnside, Mountain View, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Nov. 25, 1992, Ser. No. 981,673
Int. Cl.⁶ A61M 31/00

U.S. Cl. 604—67

22 Claims



1. A control system for use with an automated intravenous drug and fluid infusion system, said control system comprising: plural pumping channels that operate independently for intravenously infusing drugs and fluid, each of said pumping channels having a pumping channel controller for independent delivery in multiple infusion modes; a host controller that monitors and controls each of the pumping channels concurrently; and a bar code system for reading a bar code from a supply

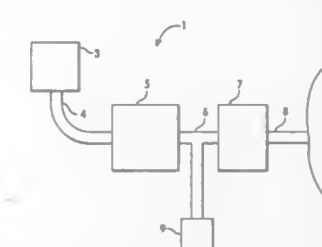
container to be used in a pumping channel, said supply container holding a drug, a fluid or a combination of a drug and a fluid.

5,378,232
INJECTION/ACTIVATION APPARATUS
Thomas G. Easton, Coram, and Edward Reich, Setauket, both of N.Y., assignors to Orion Therapeutic Systems, Inc., New York, N.Y.

Filed Aug. 28, 1991, Ser. No. 750,920
Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—82

26 Claims



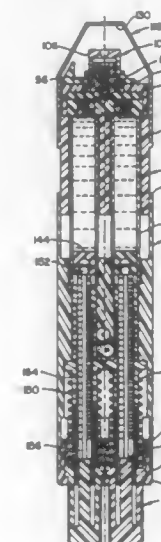
1. Apparatus for administration of a drug to a patient in active form, said apparatus comprising: means defining a prodrug reaction zone comprising an immobilized biological macromolecule operative to modify chemically a stored prodrug to a physiologically compatible, physiologically active drug form; means in communication with said reaction zone for establishing parenteral access to the body of a patient; and means for transporting a prodrug through said reaction zone at a rate sufficient to contact said prodrug with said biological macromolecule to convert said prodrug to said active drug form and then into the body of a patient.

5,378,233
SELECTED DOSE PHARMACEUTICAL DISPENSER
Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Hills, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Nov. 18, 1992, Ser. No. 977,754
Int. Cl.⁶ A61M 37/00, 5/20, 5/315

U.S. Cl. 604—83

37 Claims



1. A liquid pharmaceutical dispenser comprising: a body;

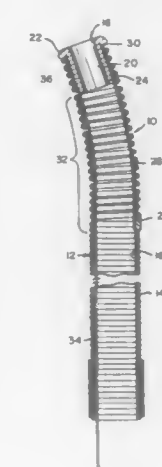
a needle assembly mountable to the body; a hollow cylinder and an axially moveable piston within the cylinder, the piston and hollow cylinder defining a pharmaceutical chamber; user actuated means for fluidly coupling a liquid pharmaceutical within the pharmaceutical chamber to the needle assembly when in an open position and for fluidly sealing the liquid pharmaceutical within the pharmaceutical chamber when in a closed position; means for selecting a dose of the liquid pharmaceutical to be delivered through the fluidly coupling means and the needle assembly; and means for automatically driving the piston against the liquid pharmaceutical, thereby driving the piston a distance corresponding to the selected dose, when the user actuated means has been switched from the closed position to the open position, whereby the dose is delivered through the needle assembly.

5,378,234
COIL POLYMER COMPOSITE
Gary R. Hammerslag, Dana Point; John Merritt, San Clemente, and Mark Nielsen, San Juan Capistrano, all of Calif., assignors to Pilot Cardiovascular Systems, Inc., San Clemente, Calif.

Continuation-in-part of Ser. No. 31,810, Mar. 15, 1993. This application May 14, 1993, Ser. No. 62,961
Int. Cl.⁶ A61M 37/00

U.S. Cl. 604—95

17 Claims



1. A steerable sheath, comprising: an elongate flexible tubular housing, having proximal and distal ends and at least one central passageway extending axially therethrough; a deflection element secured to the housing at a first point, and extending axially along the housing;

a pull element secured to the housing at a second point and extending axially along the housing, said second point rotationally displaced from said first point;
a spring coil in the wall of at least a portion of the housing; and
an elastomeric coil interfit within at least a portion of said spring coil;
wherein axial proximal displacement of the pull element causes a lateral displacement of a portion of the tubular housing.

5,378,235

Patent Not Issued For This Number

5,378,236 BALLOON DILATATION CATHETER WITH INTEGRAL DETACHABLE GUIDEWIRE

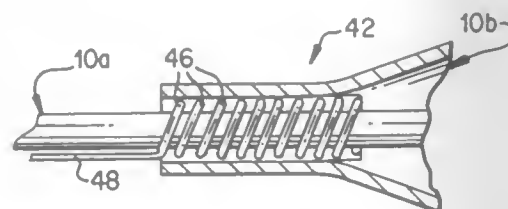
C. Vaughn Seifert, Boxborough, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 15, 1992, Ser. No. 883,350

Int. Cl.⁶ A61M 29/02

U.S. Cl. 604—96

24 Claims



1. A balloon angioplasty catheter comprising:
an elongate flexible shaft having proximal and distal ends, lumen means extending through the shaft for communicating fluid and receiving a guidewire;
a balloon mounted to the distal end of the shaft, and wherein the interior of the balloon is in communication with said lumen means;
at least a portion of said lumen means being adapted to receive fluid for inflating and deflating the balloon;
a guidewire extending through said lumen means, a portion of the guidewire extending distally beyond the distal end of the catheter shaft; and
means for sealing the inflation fluid within the catheter and including a sealed connection of a portion of the shaft in the distal end to the guidewire, and means for selectively rupturing said sealed connection so as to detach the guidewire and said catheter to replace said catheter.

5,378,237

DILATATION CATHETER FOR PERFUSION

Georges Boussignac, Antony, and Jean-Claude Labrune, Boulogne, both of France, assignors to Laboratoire Nycomed Ingenop SA, Paris Cedex, France

Filed Feb. 27, 1992, Ser. No. 842,550

Claims priority, application France, Jan. 17, 1992, 92 00499

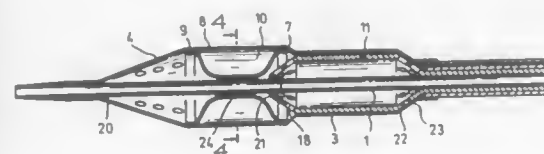
U.S. Cl. 604—96

11 Claims

1. A dilatation catheter, designed to be introduced into a canal of the body, notably a blood vessel, comprising:

an outer tubular element having a distal part and a proximal part, said outer tubular element being provided at the distal part with a radially deformable portion having a balloon and, on either side of said balloon, at least one orifice is formed in fluid communication with said body canal so as to allow the fluid flowing in the body canal to flow through said outer tubular element, said balloon having an outer wall designed to press against the inner wall of said body canal, while in position of use, and an inner wall fixed in tight manner to said outer wall to define therewith, while in position of use, an inner annular cavity;

an inner tubular element, situated inside said outer tubular element, so as to allow the passage of a guide through said catheter;



a micro-tube, connected to said balloon at one end and connectable to a fluid supply source at an other end so that said balloon is in fluid communication with said fluid supply source in order to enable the inflating and deflating of said balloon; and
a sleeve positioned between said inner tubular element and outer tubular element, having a generally cylindrical shape, said sleeve having a distal part and a proximal part and being movable longitudinally between a rest position, in which it is situated upstream of the balloon, and a work position, in which it supports and holds the inner wall of the balloon while moving it apart from the inner tubular element to create an elongated hole for the passage of the body fluid inside the sleeve.

5,378,238

INNERLESS DILATATION CATHETER WITH BALLOON STRETCH OR MANUAL VALVE

Jeffrey J. Peters, Golden Valley; Robert M. Vidlund, Eden Prairie, both of Minn., and Michelle Arney, Menlo Park, Calif., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 776,559, Oct. 15, 1991, Pat. No. 5,217,434. This application Jun. 8, 1993, Ser. No. 73,326

Int. Cl.⁶ A61M 29/00, 5/00

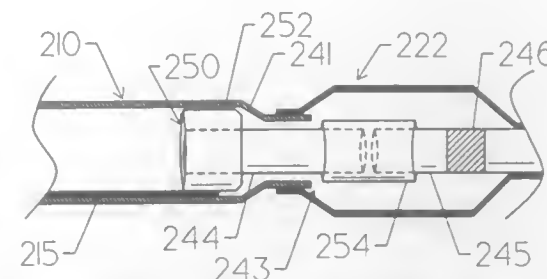
U.S. Cl. 604—99

16 Claims

10. In a catheter having a proximal end and a distal end and having a central lumen adapted to receive a concentric guide element, the improvement comprising:

(a) a valve near said distal end of said catheter for sealing

said central lumen against said concentric guide element; and



(b) a mechanical actuator located near said proximal end of said catheter and coupled to said valve such that actuation of said actuator causes opening and closing of said valve.

5,378,239

RADIALLY EXPANDABLE FIXATION MEMBER CONSTRUCTED OF RECOVERY METAL

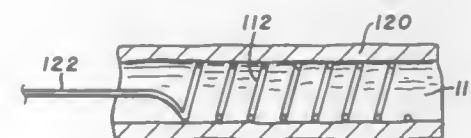
Paul L. Termin, St. Paul, Minn., and Christopher H. Porter, Woodenville, Wash., assignors to Schneider (USA) Inc., Plymouth, Minn.

Division of Ser. No. 927,771, Aug. 10, 1992, Pat. No. 5,221,261, which is a continuation of Ser. No. 767,418, Sep. 30, 1991, abandoned, which is a division of Ser. No. 508,854, Apr. 12, 1990, Pat. No. 5,071,407. This application Jun. 22, 1993, Ser. No. 80,749

Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—104

18 Claims



1. An apparatus for fixation in a body cavity, including:
an elongate bodily insertable device having a proximal end region and a distal end region;
a fixation element at the distal end region of the device, said fixation element being constructed of a recovery metal initially set in a radially expanded configuration in which the fixation element has a fixation diameter, and then plastically deformed into a delivery configuration in which the fixation element has a delivery diameter substantially less than the fixation diameter;
wherein said device is bodily insertable to selectively position the fixation element at a predetermined location within a body cavity with the fixation element in the delivery configuration; and said fixation element, responsive to being heated, reverts to the fixation configuration thereby radially expanding into a surface engagement with a tissue wall segment defining said cavity at a predetermined location, to secure the fixation element to the wall segment and thus substantially fix the distal region of the device within the body cavity; and
wherein said device comprises a retrieval filament constructed of the recovery metal.

5,378,240

SYRINGE WITH RETRACTABLE NEEDLE MOUNT

Napoleon Curie, 32 Cliff Road, Frankston, Victoria, 3199, and David N. Mason, 323 South Gippsland Highway, Cranbourne, Victoria, 3977, both of Australia

PCT No. PCT/AU90/00537, § 371 Date May 8, 1992, § 102(e) Date May 8, 1992, PCT Pub. No. WO91/07198, PCT Pub. Date May 30, 1991

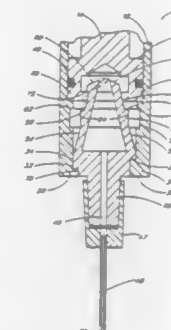
PCT Filed Nov. 8, 1990, Ser. No. 856,065

Claims priority, application Australia, Nov. 8, 1989, PJ7281/89

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—110

11 Claims



1. A syringe comprising:
a barrel;
a plunger operable within the barrel;
a needle mount having a deformable securing portion to disengageably retain the needle mount within one end of the barrel, the securing portion comprising a first element of snap lock engaging means defined by a plurality of resilient angularly spaced arms projecting into the barrel from said one end, each arm having a respective first snap lock element on a radially outward surface thereof which snap lock element engageably cooperates with a second element of the snap lock engaging means on an interior wall of the barrel to provide said disengageable retention; means on the plunger to deform the resilient angularly spaced arms as the plunger approaches the needle mount thereby to disengage the snap lock engaging means from the barrel; and
cooperable means on the plunger and on the needle mount whereby the plunger is capable of engaging the disengaged needle mount for withdrawal of the needle mount into the barrel when the plunger or a portion thereof engaged with the needle mount is displaced away from said one end of the barrel.

5,378,241

ANESTHESIA INSTRUMENT

Hans Haindl, Hauptstr. 39, 3015 Wennigsen 1, Germany

Filed Jun. 23, 1993, Ser. No. 81,791

Claims priority, application Germany, Jun. 24, 1992, 9208414 [U]

Int. Cl.⁶ A61M 5/178

U.S. Cl. 604—164

8 Claims



1. An anesthesia instrument comprising
a single lumen epidural cannula terminating in a beveled aperture,
an epidural catheter adapted for insertion within said lumen, a spinal cannula having a sharp tip, adapted for insertion within said lumen adjacent said epidural catheter, said spinal cannula being slightly pre-bent to definitively position said tip within said lumen to prevent the tip from cutting into said epidural cannula when said spinal cannula is inserted in said lumen after said epidural catheter is positioned therein.

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CHEMICAL

5,378,242

LIQUID ALKALI FOR SOAPING OFF REACTIVE DYES
 Nick J. Christie, Burlington, N.C., and Samuel G. Jones, Blairs, Va., assignors to Apollo Chemical Company, Burlington, N.C.
 Filed Dec. 22, 1992, Ser. No. 994,718
 Int. Cl.⁶ D06B 1/00

U.S. Cl. 8—137 2 Claims

1. A process for soaping off excessive reactive dyes from cotton and cotton blended fabrics subsequent to dyeing, said process including sequentially a rinse step, a soap step, and a rinse step, said process comprising the step of introducing a mixture of an alkali metal hydroxide, an alkali metal silicate and a borate selected from the group consisting of sodium metaborate, sodium perborate, and borax, during the soap step, wherein said mixture includes: (a) about 5 to 35 wt % of an alkali metal hydroxide; (b) about 10 to 40 wt % of an alkali metal silicate at 50° Baumé; (c) about 5 wt % of a borate; and (d) the balance water.

5,378,243

FLAME RETARDANT AND WATER-RESISTANT TREATMENT OF FABRICS

Xiao P. Lei, Selly Oak; David W. Speake, Halesowen, and Mohsen Zakikhani, Kidderminster, all of England, assignors to Albright & Wilson Limited, Warley, England
 Filed Oct. 13, 1993, Ser. No. 135,884
 Claims priority, application United Kingdom, Oct. 22, 1992, 9222190

Int. Cl.⁶ D06M 13/322; C09K 21/00

U.S. Cl. 8—196 19 Claims

1. A method of treating a fabric to impart flame-retardant and water-resistant properties thereto, wherein said method comprises impregnating said fabric with an aqueous solution consisting of:

- (a) poly (hydroxyalkyl) phosphonium compound; and
- (b) at least one protonated and neutralized aliphatic amine selected from the group consisting of primary amines, secondary amines and tertiary amines, said at least one amine having from 12 to 20 carbon atoms, said at least one amine moreover having been protonated and neutralised prior to said impregnation.

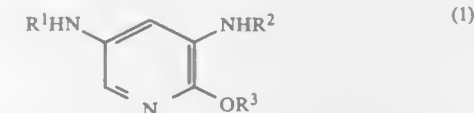
5,378,244

2-ALKOXY-3,5-DIAMINOPYRIDINE DERIVATIVES AND THEIR SALTS, AND DYE COMPOSITIONS FOR KERATINOUS FIBERS CONTAINING THE DERIVATIVES OR SALTS

Tadashi Tamura, Oyama; Akira Kiyomine, Ichikai; Osamu Morita, Kaminokawa; Michio Tanaka, Takanezawa; Masahiko Ogawa, Omiya; Hidetoshi Tagami, Chiba, and Toru Yoshihara, Ichikawa, all of Japan, assignors to KAO Corporation, Tokyo, Japan
 Filed Mar. 4, 1993, Ser. No. 26,284
 Claims priority, application Japan, Mar. 6, 1992, 4-049575

Int. Cl.⁶ A61K 7/13; C07D 213/63
 U.S. Cl. 8—409 11 Claims

1. A 2-alkoxy-3,5-diaminopyridine derivative of the formula (1):



wherein R¹ and R² independently represent a hydrogen atom, a lower alkanoyl group or a lower alkyl group which is substituted by at least one hydroxyl group, and R³ is a lower alkyl group which may be substituted by at least one hydroxyl group, or a salt thereof; provided that both R¹ and R² are not simultaneously a hydrogen atom or an acetyl group.

5,378,245

PROCESS OF DYEING USING REACTIVE DYES WITH PRELIMINARY BLEACHING

Jean Bolland, Chateaufort, France, assignor to Manufacture de Produits Chimiques Protex, Paris, France
 Filed Jul. 29, 1993, Ser. No. 99,141

Claims priority, application France, Jul. 29, 1992, 92 09373
 Int. Cl.⁶ C09B 62/00; D06L 3/02

U.S. Cl. 8—543 12 Claims

1. A process for dyeing cellulose fibres selected from the group consisting of cotton, linen and rayon comprising successively the stages of (a) bleaching the cellulose fibres with an alkaline bleaching bath containing aqueous hydrogen peroxide; (b) neutralizing the residual hydrogen peroxide with a reducing agent selected from the group consisting of thiourea, thio-sulfate, hydrosulfite and bisulfite; and (c) dyeing, in the presence of an alkaline agent, the cellulose fibres with a dye bath containing a reactive dye sensitive to said reducing agent, in which, after stage (b) and at the latest at the beginning of stage (c), any residual reducing agent is neutralized with an alkali or alkaline-earth metal halogenite.

5,378,246

INDIGO DYE PROCESS

Sally Gurley, Boulder, Colo., assignor to Allegro Natural Dyes, Inc., Longmont, Colo.
 Filed May 10, 1993, Ser. No. 59,545

Int. Cl.⁶ C09B 67/00, 61/00, 7/00; D06P 1/34

U.S. Cl. 8—625 16 Claims

1. A method of dyeing fibers with indigo dye comprising the following steps:

- wetting the fibers to be treated with an aqueous solution and then removing excess water; subsequently
- treating the wetted fibers with inert gas in an enclosed contained atmosphere, displacing oxygen from said fibers and said enclosed contained atmosphere;
- introducing an indigo dye liquor containing indigo in its reduced leuco state into said contained atmosphere and agitating said fibers in contact with said indigo dye; and
- draining said indigo dye liquor from said enclosed contained atmosphere and flooding said fibers with cold water, thereby oxidizing said indigo dye on said fibers.

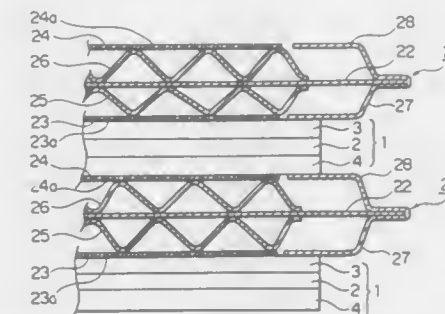
5,378,247

SEPARATORS AND METHOD OF MANUFACTURING THE SAME

Masakuni Sasaki, Tokyo; Yasushi Shimizu, Kanagawa; Teruo Yamaguchi, Kanagawa, and Kiyotaka Tanaka, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
 Filed Feb. 5, 1992, Ser. No. 828,939

Claims priority, application Japan, Jul. 24, 1990, 2-198241
 Int. Cl.⁶ H01M 6/00

U.S. Cl. 29—623.1 5 Claims



1. A method of manufacturing a separator disposed between laminates of single cells having a fuel electrode, an electrolyte layer, and an air electrode for leading a fuel gas and an oxidant

therethrough, wherein the air treatment system further comprises;

- an air processing element;
 - a seat for receiving and holding the air processing element in an operating position;
 - a switch located adjacent the seat, the switch being operable in response to the positioning of the air processing element in the seat; and
 - an electronic control that is electrically connected to the switch to signal proper installation of the air processing element in the seat;
- wherein the seat is formed by two spaced apart side walls and two spaced apart end walls in a space between the side walls, one of the side walls including means in contact with the switch;
- wherein the air processing element includes a frame with at least one projection for moving the means in contact with the switch to operate the switch when the air processing element is positioned in the seat; and
- wherein the projection is located on one face of the frame to assure proper front-and-back orientation of the air processing element relative to a direction of air flow through the air processing element.

5,378,255
METHOD FOR MOLDING A GLASS OPTICAL ELEMENT WITH A TRANSPORTING SUPPORTING MEMBER

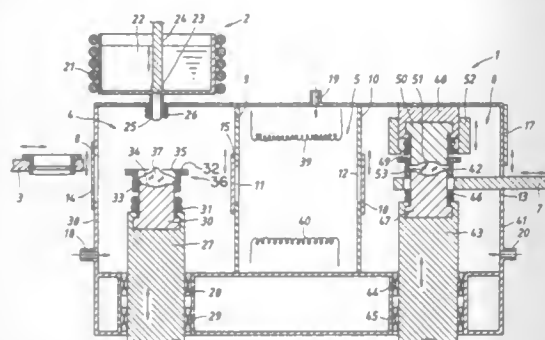
Hiroshi Ito, Hachiorji, Japan, assignor to Olympus Optical Company Limited, Japan

Filed Feb. 22, 1993, Ser. No. 20,649

Claims priority, application Japan, Feb. 21, 1992, 4-072434
Int. Cl.⁶ C03B 35/04, 11/05

U.S. Cl. 65—64

19 Claims



10. A method of molding a glass optical element, comprising the steps of: disposing a supporting member in contact with a receiving mold part, the receiving mold part having an end surface; placing a gob of molten glass on the end surface of the receiving mold part; pre-molding the gob of molten glass by allowing the gob of molten glass to spread out in contact with the end surface separating the receiving mold part from the supporting member to form a glass preform supported by the supporting member; heating the glass preform while supported on the supporting member; transporting the heated glass preform supported on the supporting member to a position between a pair of mold parts; and press-molding the heated glass preform supported on the supporting member by the pair of mold parts to form a molded optical element.

5,378,256
METHOD OF MANUFACTURING SILICA WAVEGUIDE OPTICAL COMPONENTS

Mino Green; R. R. A. Syms; Andrew S. Holmes, all of London, United Kingdom; Ken Ueki, and Hisaharu Yanagawa, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 78,424

Claims priority, application Japan, Jun. 16, 1992, 4-156598
Int. Cl.⁶ C03C 25/02; C03B 37/023

U.S. Cl. 65—395

6 Claims

1. A method of manufacturing silica waveguide optical components in which silica glass films are laminated on a substrate by repeating a unit operation in which a sol material, a precursor of glass particles, is coated and then the coated layer is heated in an oxygen atmosphere, wherein the heating temperature is controlled in such a manner that the radius of curvature of warping of said substrate is 2 m or more after said coated layer is heated.

5,378,257
FERTILIZER PRODUCTION

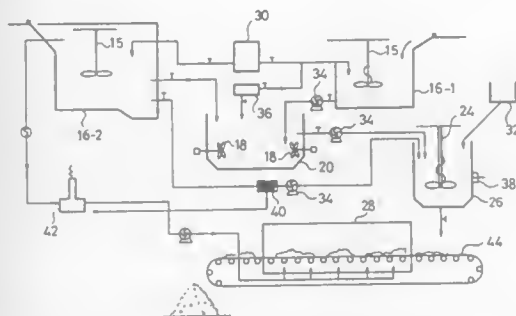
Shouji Higashida, 979 Fussa, Fussa-Shi, Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 47,404

Int. Cl.⁶ C05F 7/00, 9/02

U.S. Cl. 71—12

4 Claims



1. A system for organic fertilizer production, consisting essentially:

- a source of waste matter selected from at least one of classified garbage and sewage,
- a source of nitric acid,
- a source of quicklime,
- a first treatment tank for stirring a batch of waste matter selected from at least one of classified garbage and sewage with nitric acid by means of a stirrer,
- a second treatment tank for crushing the waste matter mixed with nitric acid in the first treatment tank by means of a crusher to make sludge,
- a third treatment tank for adding quicklime to the waste matter mixed with nitric acid and crushed in the second treatment tank to neutralize the waste matter while it is stirred by a stirrer, and
- a drying unit for drying the waste matter neutralized in the third treatment tank.

5,378,258
METHOD AND AN INSTALLATION FOR PRODUCING GRANULATED TRIPLE SUPERPHOSPHATE (TSP)

El Hadi Kendill, Safi, Morocco, assignor to Maroc-Chimie, Casablanca, Morocco

Filed Jul. 9, 1992, Ser. No. 911,193

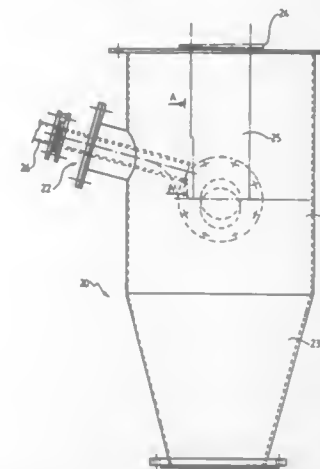
Claims priority, application France, Jul. 11, 1991, 91 08732
Int. Cl.⁶ C05B 1/02; C01B 15/16, 25/26

U.S. Cl. 71—41

2 Claims

1. A method of producing granulated triple superphosphate, comprising the following steps:
i preparing a slurry of previously ground phosphate and a solution of phosphoric acid;

- ii granulating the slurry;
 - iii drying the granulated product;
 - iv separating the granulated product by grain size;
 - v disposing of and scrubbing waste gases; and
 - vi recycling rejected finished product after grain size separation;
- the improvement comprising:
preparing the slurry of step i via a premixing operation using a premixer for the phosphate and the acid with said premixer being situated upstream from a reactor having a reaction tank in which the acid solution attacks the granulated phosphate, with said premixing operation accom-



plished by guided insertion of the previously ground and measured-out phosphate into the premixer through a flexible tube having a free end defining a confined area and with said flexible tube being deformable along an axial path and by spraying the phosphoric acid solution into the premixer under pressure through the confined area of said tube for contacting the phosphate at the end of the guided axial insertion path at an oblique angle relative to the direction of said phosphate whereby the free end of said flexible tube is set in motion to randomly move about said premixer by the pressure from said acid for ensuring thorough premixing of the phosphate within said premixer without clogging.

5,378,259
PROCESS FOR GRANULATING AMMONIUM NITRATE FERTILIZER

Martino Bassetti, Forlì, and Vito De Lucia, Lodi, both of Italy, assignors to Enichem Agricoltura S.p.A., Palermo, Italy

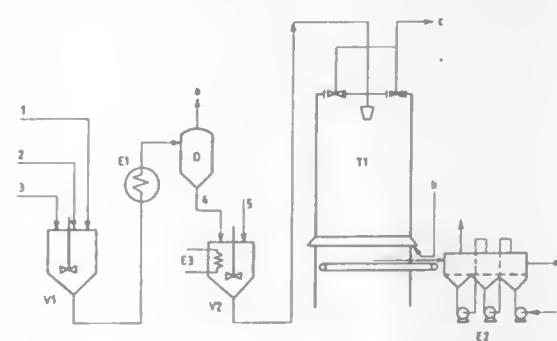
Filed Dec. 22, 1992, Ser. No. 994,902

Claims priority, application Italy, Dec. 23, 1991, MI91 A 003472

Int. Cl.⁶ C05C 1/02

U.S. Cl. 71—59

5 Claims



1. A process for granulating ammonium nitrate fertilizer

with a nitrogen content of between 25 and 34% by weight comprising blending a concentrated aqueous ammonium nitrate solution with an effective amount of ammonium phosphate and ammonium sulphate in a first mixing vessel, further concentrating the blended ammonium compounds in a first evaporator and separating steam therefrom so as to form a molten salt mixture, admixing said molten salt mixture with a member selected from the group consisting of ground anhydrous limestone, dolomite and mixtures thereof in a second mixing vessel, the resultant blended molten salt mixture having a free water content of 1-1.5% and a temperature of 150°-165° C. when fed to granulation, granulating said blended molten salt and cooling the granules, said process characterized in that said blended molten salt mixture contains $MgSO_4 \cdot xH_2O$ in a concentration of between 0.5 and 5% where x is between 0 and 7.

5,378,260
TWO-ZONE COUNTERCURRENT SMELTER SYSTEM AND PROCESS

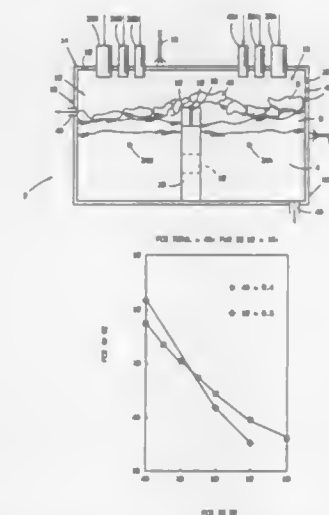
James H. Cox, Toronto, Canada; Richard J. Fruehan, Murrysville, Pa., and John F. Elliott, deceased, late of Winchester, Mass. by Frances P. Elliott, executrix, assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 26, 1991, Ser. No. 736,626

Int. Cl.⁶ C21B 13/10

U.S. Cl. 75—500

15 Claims



1. A process for continuously smelting iron or by use of coal to yield molten iron containing from about 0.5 to about 5 weight percent carbon, said process comprising the following steps:

- a) in a horizontal two-zone smelter having two ends each of said two ends corresponding with a zone, establishing an iron melt covered by slag;
- b) inducing the slag and the molten iron to flow counter-currently to one another by using gravity to induce the molten iron flow and the slag toward opposite ends of the smelter;
- c) in a reducing zone of the smelter that contains the end toward which the slag flows and maintaining conditions more conducive to the reduction of iron oxide than are present elsewhere in the smelter;
- d) in an oxidizing zone of the smelter that contains the end toward which the molten iron flows and maintaining conditions more conducive to the oxidation of carbon than are present in the reducing zone;
- e) substantially continuously or semi-continuously tapping the slag from the reducing zone end of the two-zone smelter;

- f) substantially continuously or semi-continuously tapping the molten iron from the oxidizing zone end of the two-zone smelter; and
- g) substantially continuously or semi-continuously adding to both the reducing and the oxidizing zone in the two-zone smelter iron ore, coal, oxygen, and flux at addition rates sufficient to (i) keep the molten iron in the reducing zone substantially saturated with carbon, (ii) maintain in the slag being tapped an FeO content of about 5 weight percent or less, (iii) maintain in the molten iron being tapped a carbon content of about 0.5 to 5 weight percent, and (iv) induce a concurrent flow of said molten iron to said slag.

5,378,261

METHOD FOR PRODUCING STEEL

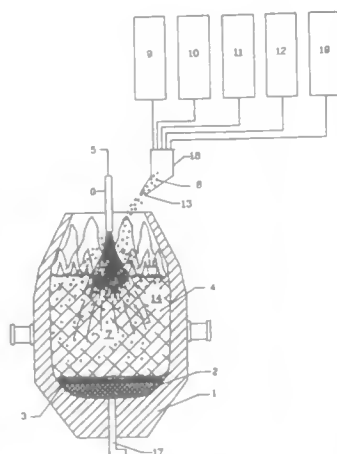
Rafik Aizatulov, Boris Kustov, Grigori Galperin, all of Novokuznetsk; Iakov Grenader, Moscow, all of Russian Federation, and Gregory Gitman, Atlanta, Ga., assignors to Zaptech Corporation, Norcross, Ga.

Continuation-in-part of Ser. No. 889,018, May 26, 1992. This application May 26, 1993, Ser. No. 67,859

Int. Cl.⁶ C21C 5/28

U.S. Cl. 75—528

17 Claims



1. A method of preheating a solid ferrous metallic material wherein the solid ferrous metallic material may be more efficiently used in steelmaking, the method comprising the steps of:

- tapping an initial molten ferrous metallic product out of a steelmaking furnace into a ladle;
- adding additional solid materials to the tapped product to deoxidize the tapped product and to increase the content of at least one oxidizable non-ferrous component, thereby converting the tapped product into an intermediate liquid ferrous metallic semi-product;
- introducing the solid ferrous metallic material into the steelmaking furnace;
- introducing the liquid ferrous metallic semi-product into the steelmaking furnace to partially preheat the solid ferrous metallic material; and
- introducing into the steelmaking furnace and combusting a fuel material with the oxidizing gas to add additional heat to preheat the solid ferrous metallic material.

5,378,262

PROCESS FOR THE EXTRACTION AND SEPARATION OF NICKEL AND/OR COBALT

Indje O. Mihaylov, Mississauga; Eberhard Krause, Oakville; Steve W. Laundry, Burlington, and Cuong V. Luong, Mississauga, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Mar. 22, 1994, Ser. No. 216,258
Int. Cl.⁶ C01G 51/00

U.S. Cl. 75—722

49 Claims

1. A hydrometallurgical process for the recovery of metals comprising the steps of:

- providing an aqueous feed solution, said aqueous feed solution being originating from acid leaching and said aqueous feed solution having at least one metal selected from the group consisting of nickel and cobalt ions,
- maintaining pH of said aqueous solution at a level between about 2 and 6,
- contacting said aqueous feed solution with a water-immiscible organic phase containing an extractant to load metal of said aqueous feed solution onto said extractant and to form a metal-bearing organic phase, said extractant having at least one organic soluble dithiophosphinic acid or alkali or alkaline earth metal or ammonium salt thereof and said aqueous feed solution having sufficiently low levels of chromium (VI) and copper ions to allow repeated use of said extractant,
- separating said metal-bearing organic phase from said metal-containing aqueous feed solution, and
- contacting said metal-bearing organic phase with an aqueous strip solution to recover said loaded metal from said metal-bearing organic phase.

5,378,263

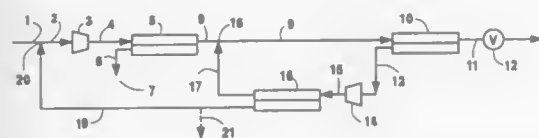
HIGH PURITY MEMBRANE NITROGEN

Ravi Prasad, East Amherst, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 21, 1992, Ser. No. 996,981
Int. Cl.⁶ B01D 53/22

U.S. Cl. 95—54

20 Claims



1. An improved membrane process for the production at high or very high purity, of a less selectively permeable component of a feed gas containing said component and a more selectively permeable component, comprising:

- introducing the feed gas at a feed pressure to a first stage membrane module of a membrane system containing a total of at least three membrane module stages, said system being capable of selectively permeating the more selectively permeable component thereof;
- separately removing the less selectively permeable component from the first stage essentially at the feed pressure as retentate, and the more selectively permeable component therefrom at a pressure lower than the feed pressure as permeate;
- passing the retentate from the first stage to succeeding stages in series, essentially at the feed pressure, as feed gas thereto;
- separately removing the retentate from each said stage in series essentially at the feed pressure, and the permeate therefrom at a pressure lower than the feed pressure, the retentate from the last stage in series being recovered as high or very high purity gas, without non-membrane treatment for the removal of residual amounts of permeate therein;

- compressing the permeate from the last stage in series and passing said permeate to an additional membrane module stage as feed gas therefor; and
 - recycling retentate from said additional membrane module stage for blending with the retentate from the next-to-last stage in series and for passage to the last stage in series, the stage cut of the additional membrane module stage being such that the retentate therefrom has essentially the same composition as the retentate from the next-to-last stage,
- whereby the less selectively permeable component is advantageously recovered as a high or very high purity product at advantageously low membrane surface area and power requirements.

5,378,264

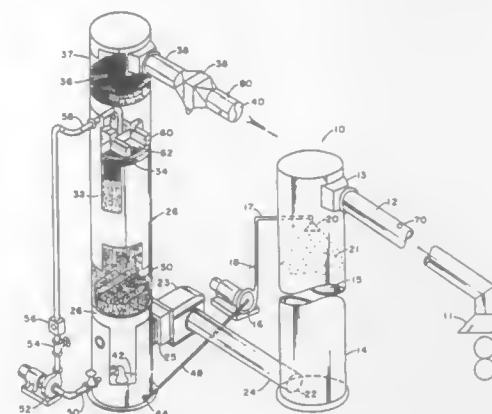
MICROEMULSION FORMATION IN OFFGAS SCRUBBING

Maurice W. Wei, Sewickley, and Girma Biresaw, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 2, 1992, Ser. No. 984,900
Int. Cl.⁶ B01D 47/06

U.S. Cl. 95—154

10 Claims



1. A process for scrubbing a gas containing an organic compound, said process comprising:

- providing a spray of a scrubbing fluid containing water, about 1–30 wt % of a water-soluble anionic or nonionic surfactant, and about 1–20 wt % of an organic cosurfactant consisting of 1,2-octanediol;
- mixing said spray with a gas containing a volatile organic compound, under conditions effective for spray droplets to form an oil-in-water microemulsion combined with a scrubbed gas; and
- separating said scrubbed gas from the microemulsion, said scrubbed gas having a reduced content of the organic compound.

5,378,265

APPARATUS FOR REMOVING FOREIGN PARTICLES FOR AIR

Robert L. Pearl, 27 July Ave., Bayville, N.Y. 11709
Filed Aug. 31, 1993, Ser. No. 115,542

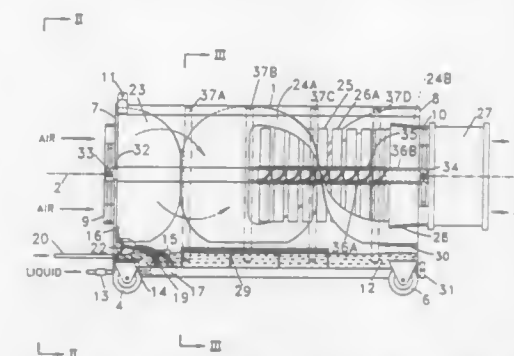
Int. Cl.⁶ B01D 47/06, 47/18

U.S. Cl. 95—219

17 Claims

1. A method for removing foreign particles from air, said method comprising the steps of spraying liquid into air having foreign particles, whereby the foreign particles are coated with the liquid; throwing the liquid-coated particles onto stationary helical surfaces; thereafter throwing the liquid-coated particles off said helical surfaces;

collecting and coalescing liquid mists including said liquid-coated foreign particles on rotary surfaces; and



rotating said rotary surfaces, whereby said foreign particles are flung off onto a plurality of surfaces.

5,378,266

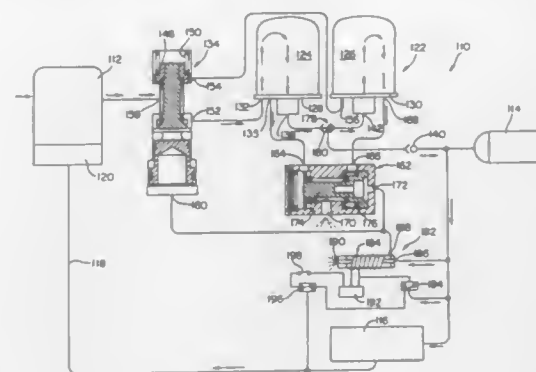
AIR DRYER SYSTEM

Naman A. Elamin, Avon Lake, Ohio, assignor to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 2, 1993, Ser. No. 100,884
Int. Cl.⁶ B01D 41/00

U.S. Cl. 96—114

5 Claims



1. Compressed air apparatus comprising a compressor, a reservoir for storing compressed air generated by said compressor, disabling means for disabling said compressor, a governor responsive to a pressure level in the reservoir for generating a governor pressure signal causing said disabling means to disable said compressor when the pressure level in the reservoir attains a predetermined level, and a drying subsystem for drying the air communicated to said reservoir, said drying subsystem including a pair of housings having inlet ports for receiving compressed air from said compressor and having delivery ports communicated to said reservoir, each of said housings containing a desiccant material, each of said inlet ports being connected to said compressor through a shuttle valve having a shuttle movable from a first position closing off one of said inlet ports and communicating the other inlet port to the compressor to a second position closing off the other inlet port and communicating the one inlet port to the compressor, said shuttle being responsive to a pressure signal to move between said first and second positions, timing means for generating said pressure signal moving said shuttle on a periodic timed basis, first check valve means connected between the delivery ports of said housings, an orifice around said first check valve means, and second check valve means permitting communication into said reservoir from the drying subsystem but preventing communication from said reservoir into said drying subsystem.

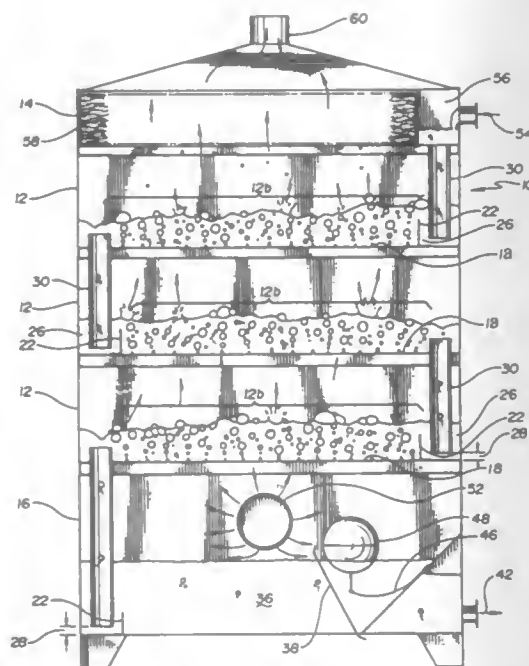
5,378,267
APPARATUS FOR AIR STRIPPING CONTAMINANTS
FROM WATER

David E. Bros, Edina, and Sawang Notthakun, Maple Grove, both of Minn., assignors to Carbonair Environmental Services, Inc., Maple Grove, Minn.

Filed Apr. 6, 1993, Ser. No. 43,264
Int. Cl.⁶ B01D 19/00

U.S. Cl. 96—168

19 Claims



1. Apparatus for decontaminating by air stripping water containing VOC's, comprising a plurality of stacked stripping chambers, including a top chamber into which water to be treated is first admitted to the apparatus, a bottom chamber from which treated water is discharged and at least one intermediate chamber, the top chamber having a closed top and the bottom chamber having a closed bottom; the top and intermediate chambers having floors containing a plurality of apertures therein allowing air to flow up from the chamber below and spaced means defining in each chamber water inlet and outlet areas for admitting water to be treated to the chamber and establishing cross-flow of water therebetween across the chamber floors, the spaced means being constructed and arranged so as to direct the cross-flow in opposite directions with respect to adjacent chambers; all of the chambers, except for the bottom one, including a pair oppositely disposed spaced weirs positioned on the chamber floor between the inlet and outlet areas to define a treatment area at the apertured chamber floor whereby the cross-flow is from one weir (inlet) to the other weir in each chamber in passing from the inlet area to the outlet area, the weirs extending vertically a predetermined height which is less than the height of the chamber and the inlet weir extending lengthwise over the floor a predetermined distance which is short of contacting the sides of the chamber thereby establishing a gap at each end of each inlet weir between the weir and the side of the chamber; means for admitting pressurized air to the lower chamber; the bottom chamber being constructed and arranged to collect a predetermined amount of treated water and including valving means and an outlet for releasing treated water after a predetermined amount has been collected, and the top chamber further including means for capturing water droplets entrained in the air stream and allowing the air to exit the apparatus.

5,378,268
PRIMER FOR THE METALLISATION OF SUBSTRATE
SURFACES

Gerhard D. Wolf, Dormagen; Kirkor Sirinyan, Bergisch Gladbach; Wolfgang Henning, Kuerten; Rudolf Merten; Ulrich V. Gizycki, both of Leverkusen, and Bruce Benda, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 7, 1991, Ser. No. 788,957

Claims priority, application Germany, Nov. 16, 1990, 4036591
Int. Cl.⁶ C23C 18/18, 18/28

U.S. Cl. 106—1.11

4 Claims

1. A primer for the chemical metallization of glass, metal, or plastic surfaces, consisting essentially of
- 3–30 percent by weight of a film former or matrix former selected from the group consisting of
 - polyurethane resins, and
 - polymers or copolymers based on styrene, acrylic acid, acrylonitrile or acrylic esters;
 - 0.1–15 percent by weight of an additive having a molecular weight of 500–20,000 and an overall surface tension in the range of 45–65 mN/m, selected from the group consisting of a polyester based on adipic acid or phthalic acid and butanediol or trimethylolpropane, a polyamide, polyethyl oxazoline, polymethyl oxazoline, polypropyl oxazoline, polybutyl oxazoline and mixtures thereof;
 - 0.05–2.5 percent by weight of an ionic or colloidal noble metal or mixture thereof or a covalent compound or complex compound thereof with organic ligands;
 - 0.5–35 percent by weight of an organic or inorganic filler or a mixture thereof; and
 - 50–90 percent by weight of an organic solvent.

5,378,269
RECORDING LIQUIDS FOR INK-JET RECORDING
Louis J. Rossi, Rochester, N.Y., and Sunita P. Chavan, Beaver Creek, Ohio, assignors to Scitex Digital Printing, Inc., Dayton, Ohio

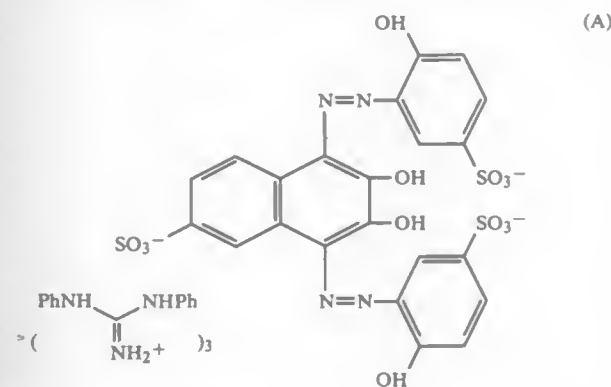
Filed Dec. 29, 1993, Ser. No. 176,025

Int. Cl.⁶ C09D 11/02

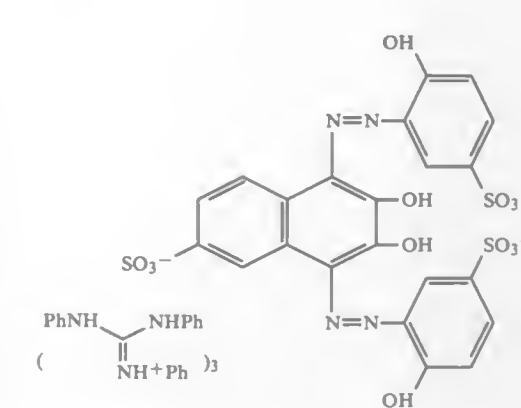
U.S. Cl. 106—22 K

4 Claims

3. A recording liquid for ink-jet recording comprising coloring matter, which is an image forming component, and a liquid medium for dissolving the coloring matter, said liquid medium comprising ethanol and characterized by containing at least one of the dyes represented by the general formula (A):



or the general formula (B):



as an image-forming component.

5,378,270
MOLD RELEASE MATERIAL FOR DIE CASTINGS
Masaru Takashima, Tokyo, Japan, assignor to Aikoh Co., Ltd., Japan

PCT No. PCT/JP90/01385, § 371 Date Sep. 16, 1993, § 102(e)
Date Sep. 16, 1993, PCT Pub. No. WO92/07673, PCT Pub.
Date May 14, 1992

PCT Filed Oct. 26, 1990, Ser. No. 989,014

Int. Cl.⁶ B28B 7/38, 7/36

U.S. Cl. 106—38.22

2 Claims

1. A mold release material for die castings comprising an emulsion of at least one of selected from the group consisting of mineral oil and fatty acid and esters thereof having added thereto from 10 to 10,000 ppm of an alkali metal or alkaline earth metal salt of ethylenediaminetetraacetic acid.

5,378,271
TIRE POLISHING AND PROTECTIVE COMPOSITION
Kunio Arimoto, Takasago; Nobuo Yoshida, Kobe; Haruo Oh-tani, Hyogo, and Yasuhiko Ikkaku, Kobe, all of Japan, assignors to Ishihara Chemical Co., Ltd. and Ikkaku Industry Co., Ltd., both of Kobe, Japan

Filed Aug. 27, 1993, Ser. No. 112,460

Claims priority, application Japan, Sep. 16, 1992, 4-273579

Int. Cl.⁶ C09D 193/04, 183/06

U.S. Cl. 106—236

6 Claims

1. A tire polishing and protective composition which is a solution or dispersion comprising:
- 2 to 25% by weight, based on the total weight of the composition, of a silicone varnish comprising (a) an organopolysiloxane compound having at least one group selected from methyl, ethyl and phenyl and containing at least 3 functional groups selected from hydroxy, methoxy and ethoxy per molecule, and (b) an organic solvent, said organopolysiloxane being dissolved in an organic solvent to a concentration of 40–60 percent by weight,
 - 0.1 to 4% by weight, based on the total weight of the composition, of a rubber polymer selected from the group consisting of natural rubber, butadiene rubber, styrene-butadiene rubber, hydrogenated styrene-butadiene rubber, isoprene rubber, styrene-isoprene rubber, hydrogenated styrene-isoprene rubber, chloroprene rubber, nitrile rubber, ethylene-propylene copolymer, butyl rubber, urethane rubber, silicone rubber and rubber polymers prepared by graft polymerizing said rubber polymers with a vinyl monomer,
 - 0.1 to 10% by weight, based on the total weight of the composition, of a tackifier selected from the group consisting of rosin resins, petroleum resins and terpene resins, and
 - an organic solvent in an amount of the balance.

5,378,272
UINTAITE-DERIVED TONERS AND PRINTING INKS
Enrique E. Romagosa, Sandy, Utah; John F. Cooper, Hndson, N.H.; Michael Nuzzolo, and Michael Lane, both of Bountiful, Utah, assignors to American Gilsonite Company, Salt Lake City, Utah

Division of Ser. No. 960,760, Oct. 13, 1992, Pat. No. 5,270,359, which is a division of Ser. No. 516,012, Apr. 27, 1990, Pat. No. 5,229,441, which is a continuation-in-part of Ser. No. 246,467, Sep. 19, 1988, abandoned. This application Aug. 26, 1993, Ser. No. 112,399

Int. Cl.⁶ C09D 11/02

U.S. Cl. 106—273.1

13 Claims

1. A composition useful in imaging processes, comprising:
- 0.5 to about 75 weight percent of purified fraction of uintaite enriched in maltenes relative to natural uintaite; and
 - a colorant; wherein said fraction of uintaite has a weight ratio of maltenes to asphaltenes of greater than about 6.

5,378,273
BASE PLATE CONVEYOR
Hiroshi Taguchi; Yoji Washizaki; Akira Igarashi, all of Tokyo, and Hiroyoshi Nakano, Saitama, all of Japan, assignors to Somar Corporation, Tokyo, Japan

Continuation of Ser. No. 690,185, Apr. 19, 1991, abandoned.

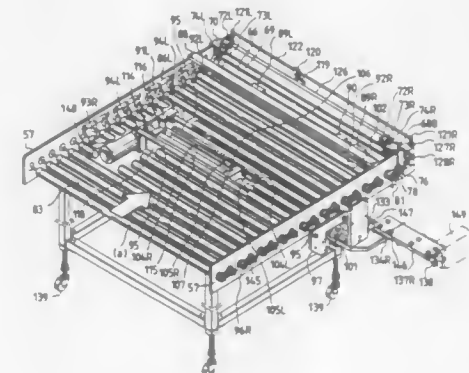
This application Jul. 26, 1993, Ser. No. 96,830

Claims priority, application Japan, Jun. 1, 1990, 2-143522

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—362

16 Claims



1. A base plate conveyor comprising conveyance rollers for conveying a base plate to a first position; a base plate centering mechanism having a right and left centerer for centering said base plate on said base plate conveyor; a base plate center moving means for moving at least one of said right and left centerers of said centering mechanism at a prescribed speed in a direction transverse to that of the conveyance of said base plate, said base plate center moving means moving at least one of said right and left centerers at said prescribed speed to a second position such that the distance between said right and left centerers is slightly larger than a width of said base plate, wherein said base plate center moving means thereafter moves at least one of said right and left centerers toward said base plate at a speed lower than said prescribed speed, such that said base plate is centered; and a guide member for restricting the warpage of the base plate during centering thereof.

5,378,274

COLOR FILTER, METHOD FOR MANUFACTURE THEREOF AND LIQUID CRYSTAL PROJECTOR USING SAID COLOR FILTER

Selichiro Yokoyama; Motoharu Ishikawa; Yoshio Hiroi, and Nobuaki Watanabe, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00196, § 371 Date Oct. 19, 1993, § 102(e) Date Oct. 19, 1993, PCT Pub. No. WO93/17357, PCT Pub. Date Sep. 2, 1993

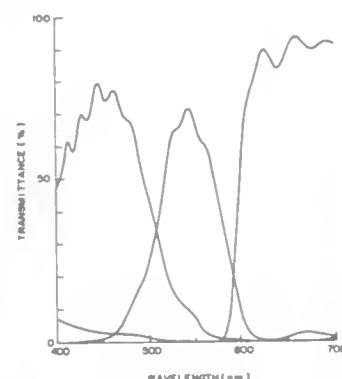
PCT Filed Feb. 18, 1993, Ser. No. 133,114

Claims priority, application Japan, Feb. 19, 1992, 4-031905

Int. Cl.⁶ C09B 67/50

U.S. Cl. 106—410

5 Claims



1. A color filter having a film of coloring matter in the three primary colors of red, green and blue which comprises organic pigments to form the film of coloring matter in each of red, green and blue which pigments are comprised of primary particles having an average particle size of 20 to 200 nm and a particle size distribution within ± 35 nm, and have a color difference of 5 or less when said organic pigments as contained in said color filter are subjected to exposure for 100 hours or more at an illuminance of 100,000 lux or more by the use of a highly bright light source for projection under the condition of a surface temperature at 50° C. or higher.

5,378,275

MICA-CONTAINING PIGMENT COMPOSITION AND A WATER BASE PAINT COMPOSITION CONTAINING A MICA-CONTAINING PIGMENT(S), AS WELL AS A METHOD OF MANUFACTURING THE SAME

Ryuichi Shiraga, Neyagawa, and Teruaki Kuwajima, Higashi-Osaka, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 15, 1993, Ser. No. 151,816

Claims priority, application Japan, Nov. 24, 1992, 4-353460

Int. Cl.⁶ C04B 14/20

U.S. Cl. 106—417

6 Claims

1. A water base paint composition having a mica-containing pigment(s) comprising a water base paint having a water soluble or water dispersion film-forming polymer selected from among acrylic resin, polyester resin, alkyd resin and polyurethane resin, a cross-linking agent and optional additives including pigments, thickeners, or fillers, wherein a mica-containing pigment(s) comprised of mica flakes or metal-oxide-coated mica flakes with a surface acid content of 0–10 micromol/g, a surface base content of 0–30 micromol/g and a heat of water wetting of 0–1.5 J/g, the surface of which pigment is uniformly coated with a melamine resin which has at least one triazine ring per molecule, is uniformly dispersed in said water base paint.

DIKETOPYRROLOPYRROLES CONTAINING NITROXYL GROUPS

Laurent Chassot, Praroman, and Gary Wooden, Oberschrot, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 17, 1994, Ser. No. 198,016

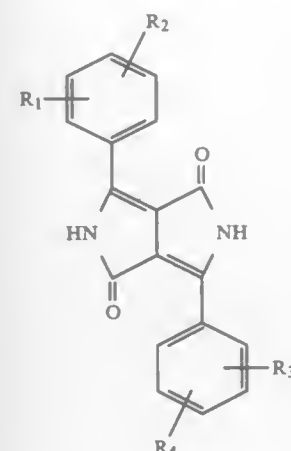
Claims priority, application Switzerland, Feb. 23, 1993, 552/93

Int. Cl.⁶ C08K 5/34, 5/32

U.S. Cl. 106—493

11 Claims

1. A diketopyrrolopyrrole of formula

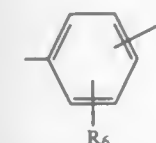


wherein

R₁, R₂, R₃ and R₄ are each independently of one another hydrogen, chloro, C₁–C₄alkyl, methoxy, phenyl, cyano or a group

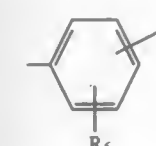


in which at least one of R₁, R₂, R₃ or R₄ contains said group, X₁ and X₂ are each independently of the other —O—, —S—, —N(R₅)—, —CO— or —SO₂— or a direct bond, V is a group —(CH₂)_m—,



—(CH₂CH₂O)_m—CH₂CH₂— or a direct bond and m is 1 or 2, with the proviso that, if V is a direct bond, X₁ is also a direct bond,

T is a group



or —(CH₂)_m— and, if not linked to a nitrogen atom, may also be a direct bond,

R₅ is hydrogen or C₁–C₄alkyl, and R₆ is hydrogen, halogen or C₁–C₄alkyl, A is a group of formula

5,378,277

INJECTION PRODUCT FOR FINE SANDS AND OTHER POROUS MATTER

Claude Caron, Aix en Provence, France, assignor to GEATEC, Venelles, France

(II) Continuation of Ser. No. 796,260, Nov. 19, 1991, abandoned.

This application Feb. 1, 1993, Ser. No. 13,216

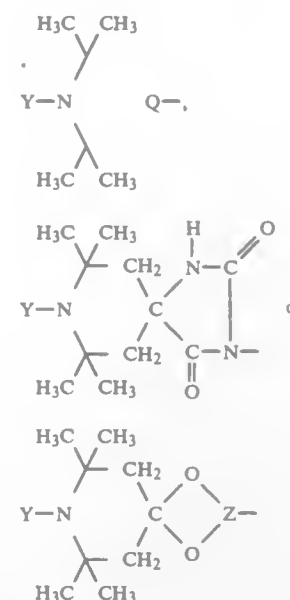
Claims priority, application France, Nov. 20, 1990, 90 14435

Int. Cl.⁶ C04B 12/04

U.S. Cl. 106—606

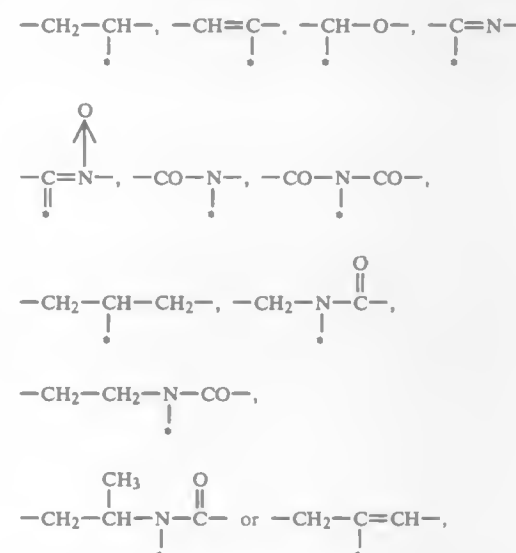
3 Claims

1. A batch injection product adapted to be directly injected into sands; and other porous matter, the product consisting essentially of a mixture of cement, an alkaline silicate, water and an agent inhibiting the reaction of the cement and the alkaline silicate with each other, the agent forming a compound with lime (CaO) which is less soluble than lime itself, and comprising an acid or alkaline salt of one of the following mineral or organic acids selected from the group consisting of carbonic, boric, phosphoric, tartaric, citric, malonic, malic, succinic, oxalic acids, wherein the weight ratio of silicate to cement is greater than 1 and wherein the product comprises (IV) from 20 to 200 kg inhibiting agent per m³ product.

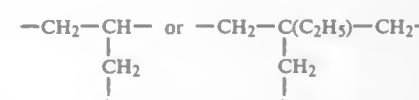


wherein

Y is O, OH or OR, and R is C₁–C₁₂alkyl or C₅–C₁₂cycloalkyl, Q is a group of formula



wherein the starred bond is the bond attached to T, and Z is a group of formula



wherein the starred bond is the bond attached to T.

5,378,278

CEMENT COMPOSITIONS FOR TEMPORARY STRUCTURES

Howard E. Colburn, 14572 Guama, Irvine, Calif. 92714

Filed Jul. 23, 1993, Ser. No. 96,607

Int. Cl.⁶ C04B 7/13

U.S. Cl. 106—709

12 Claims

1. A non-structural cement composition for temporary, environmentally sound structures consisting essentially of portland cement, flyash, sodium silicate, water and aggregate of 100 percent minus $\frac{1}{8}$ inch particle size, the water to portland cement weight ratio in the cement composition being between about 1.42 and about 1.92, and the cement to aggregate weight ratio being between about 0.02 and about 0.03, the ratio by weight percent of the portland cement, flyash and sodium silicate being about 30 to less than 50 weight percent portland cement, more than 50 to about 70 weight percent flyash and about $\frac{1}{4}$ to about 4 weight percent sodium silicate, the cement composition having less than 2 inches of slump and a 28 day compressive strength of between about 100 and about 400 psi.

5,378,279

ENHANCED CEMENT MIXED WITH SELECTED AGGREGATES

Michel Conroy, 8B, rue de Franche-Comte, 39100 Dole, France

PCT No. PCT/FR91/00663, § 371 Date Feb. 8, 1993, § 102(e)

Date Feb. 8, 1993, PCT Pub. No. WO92/02469, PCT Pub.

Date Feb. 20, 1992

PCT Filed Aug. 12, 1991, Ser. No. 965,296

Claims priority, application France, Aug. 10, 1990, 90 10267

Int. Cl.⁶ C04B 24/00

U.S. Cl. 106—719

22 Claims

1. A cement for making a ready-to-use, self-smoothing, self-leveling and non-shrinking mortar or concrete, comprising:

a hydraulic binder, a plasticizing agent present in an amount of between 0.5 and 4% by weight of the hydraulic binder, and an expanding agent present in an amount of between 0.000001 and 0.00099% by weight of the hydraulic binder.

5,378,280

COMPOSITION COMPRISING LEONARDITE, CLAY AND LIME AND PROCESS THEREWITH

John A. Cruze, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1993, Ser. No. 72,025

Int. Cl.⁶ C04B 22/00

U.S. Cl. 106—793

27 Claims

1. A composition comprising leonardite, clay, lime, and an

a vacuum chamber for providing a substrate therein;
an ionized particle generator, provided in the vacuum chamber, for supplying ionized particles of a gas including a hydrocarbon gas; and
an acceleration means for accelerating ionized particles generated by the ionized particle generator;
the ionized particle generator comprising:
an ionization chamber having an opening;
a gas supplier, connected to the ionization chamber, for supplying the gas to the ionization chamber;
a thermoelectron generator for generating thermoelectrons, which thermoelectron generator having a filament arranged in the ionization chamber; and
an acceleration electrode for accelerating the thermoelectrons to generate ionized particles of the gas in the ionization chamber, which acceleration electrode being arranged at the opening of the ionization chamber opposite to the thermoelectron generator;

wherein the ionization chamber is isolated electrically from the thermoelectron generator, the acceleration electrode and the ground potential of an electric system of the apparatus.

5,378,286

METHOD OF PREPARING REDUCED FAT FOODS

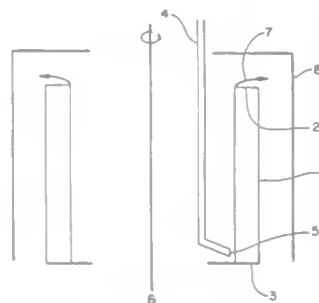
Ruth G. Chion; Cheryl C. Brown; Jeanette A. Little; Austin H. Young; Robert V. Schanefelt; Donald W. Harris; Keith D. Stanley; Helen D. Coontz; Carolyn J. Hamdan, all of Decatur; Jody A. Wolf-Rueff, Clinton, all of Ill.; Lori A. Slowinski, Madison, Wis.; Kent R. Anderson, Warrensburg, Ill.; William F. Lehnhardt, Decatur, Ill., and Zbigniew J. Wlczak, Decatur, Ill., assignors to A. E. Staley Manufacturing Co., Decatur, Ill.

Division of Ser. No. 578,994, Sep. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,208, Feb. 20, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 857,532

Int. Cl.⁶ C13K 1/06; C08B 30/00

U.S. Cl. 127—36

27 Claims



1. A method of preparing a starch hydrolysate comprising maintaining, for a period greater than 4.5 hours, a strongly acidic aqueous slurry comprised of a granular starch at a temperature greater than 55.5° C. and below both (i) the gelatinization temperature of said granular starch in said slurry and (ii) the atmospheric boiling point of said slurry, to hydrolyze a portion of said granular starch and retain a starch hydrolysate residue insoluble in said strongly acidic aqueous slurry and reducing the particle size of said starch hydrolysate residue by mechanical disintegration sufficient to reduce the particle size of substantially all of the particles of said starch hydrolysate residue to less than 15 microns.

5,378,287

COMPACT ULTRASONIC CLEANING AND DRYING MACHINE AND METHOD

Edward A. Pedziwiatr, Cresskill, N.J., assignor to Zenith Mfg. & Chemical Corporation, Closter, N.J.

Filed Aug. 17, 1993, Ser. No. 108,127

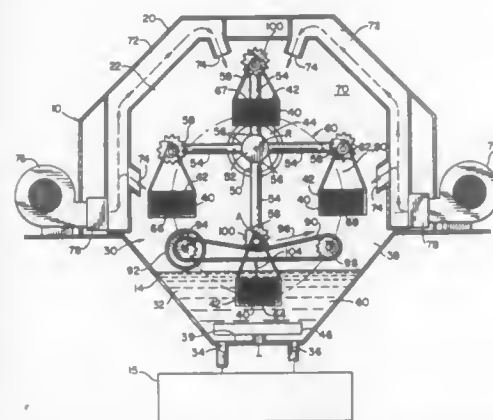
Int. Cl.⁶ B08B 3/12

U.S. Cl. 134—1

11 Claims

1. A compact ultrasonic cleaning and drying machine in which articles to be cleaned are presented to a cleaning station where the articles are ultrasonically cleaned and rinsed, the ultrasonic cleaning and drying machine comprising: ultrasonic cleaning and rinsing means at the cleaning station for subjecting the articles to ultrasonic cleaning and rinsing over a first time interval; drying means at a drying station closely juxtaposed with the cleaning station for subjecting the articles to drying over a second time interval subsequent to the first time interval; a loading station and an unloading station; and indexing means for advancing a plurality of the articles serially along a path of travel extending between the loading station and the unloading station, from one location to another location of a plurality of locations placed along the path of travel, the plurality of locations includ-

ing a first location at the cleaning station and a number of further locations within the drying station; the second time interval being a multiple of the first time interval, and the number of further locations within the drying station being equal to said multiple such that each article is cleaned and rinsed at the first location, and then



is subjected to drying at each further location along the path of travel between the loading station and the unloading station, the path of travel being a compact loop, whereby the ultrasonic cleaning and drying machine is rendered relatively compact and cleaned and dried articles are delivered at the unloading station upon the expiration of each first time interval.

5,378,288

METHOD FOR THE DISPOSAL OF FOAM, IN PARTICULAR OF FIRE EXTINGUISHING FOAM

Rainer Roy, Leichlingen, Germany, assignor to Total Walthers Feuerschutz GmbH, Köln, Germany

Continuation-in-part of Ser. No. 585,244, Sep. 19, 1990, Pat. No. 5,127,959. This application Mar. 3, 1992, Ser. No. 845,175

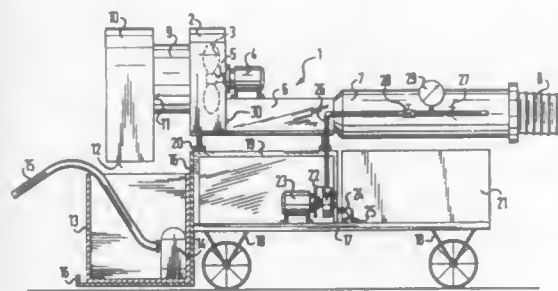
Claims priority, application Germany, Sep. 20, 1989, 3931311; Mar. 4, 1991, 4106798

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.⁶ B08B 5/04

U.S. Cl. 134—21

12 Claims



1. A method for the disposal of a foam comprising sucking up the foam with a fan blower; feeding an antifoaming agent water mixture to the foam in a suction intake region, wherein the mixture comprises 2.0 to 8.0 weight-percent of antifoaming agent and 92 to 98 weight-percent of water, and wherein between 1.0 and 6.0 weight-percent of the mixture relative to the weight of the volume of the foam is fed to the foam; passing the foam through the fan blower and thereby disintegrating the foam; feeding the disintegrated foam to a separator; feeding a phase containing a liquid to a collection container; and

transporting the disintegrated foam from the collection container with a first pump.

5,378,289

METHOD OF FORMING CRYSTALLINE SILICON FILM AND SOLAR CELL OBTAINED THEREBY

Shigeru Noguchi, Hirakata; Keiichi Sano, Moriguchi, and Hiroshi Iwata, Neyagawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

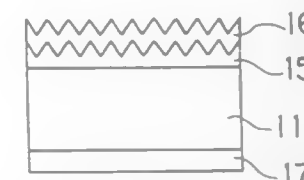
Filed Nov. 12, 1993, Ser. No. 151,271

Claims priority, application Japan, Nov. 20, 1992, 4-312151

Int. Cl.⁶ H01L 31/0236, 31/18, 31/0368

U.S. Cl. 136—258

12 Claims



1. A method of forming a crystalline silicon film by crystallizing an amorphous silicon film through solid phase epitaxy, said method comprising the steps of:

preparing a mold of crystalline silicon having a textured surface;

placing said textured surface: of said mold on said amorphous silicon film for bringing projecting portions of said textured surface of said mold into contact under pressure with a surface of said amorphous silicon film; and

heating said amorphous silicon film, having said surface in contact with said projecting portions of said textured surface of said mold, for crystallizing the same by solid phase epitaxy, thereby forming a crystalline silicon film having a textured surface corresponding to said textured surface of said mold.

12. A photovoltaic device having a photoelectric conversion layer provided with a crystalline silicon film formed by a method in accordance with claim 1.

5,378,290

FLUX

Mohammed Tazi, Marietta, and David W. Hilbig, Powder Springs, both of Ga., assignors to Morgan Crucible Company plc, Windsor, England

Filed Aug. 20, 1993, Ser. No. 110,112

Int. Cl.⁶ B23K 35/34

U.S. Cl. 148—23

20 Claims

1. A composition of matter in the form of a subliming mixture consisting essentially of, by weight, ϵ % naturally-occurring rosin, δ % subliming organic solid acid, and volatile materials, where $1.16 < \epsilon < \text{approximately } 20$ and $\delta > 0$.

5,378,291

COATING COMPOSITION FOR METAL

Masayasu Ara, and Akira Katoh, both of Tokyo, Japan, assignors to Nihon Parkerizing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 643,962, Jan. 22, 1991, abandoned. This application May 17, 1993, Ser. No. 61,341

Claims priority, application Japan, Jan. 23, 1990, 2-11747

Int. Cl.⁶ C23C 22/30

U.S. Cl. 148—251

4 Claims

1. A surface-treating composition for metallic surfaces which contains hexavalent chromium ions or hexavalent and trivalent chromium ions as an inorganic compound, and a mixture of acryl-series polymer emulsion set forth below and one or more lubricants dispersed by an emulsifying agent set forth below, wherein from 1 to 50% by weight (in terms of nonvolatile matters) of one or more lubricants as a lubricating

component are dispersed by a first nonionic emulsifying agent which has been added for preventing coagulation of the lubricating component in the surface-treating composition wherein said emulsifying agent is added to the lubricating component and the emulsifying agent and the lubricating component are melted together, the surface-treating composition having a pH of 5 or less, wherein said acryl-series polymer emulsion is obtained by emulsion-polymerizing, by means of a second nonionic emulsifying agent which is essentially free of anionic emulsifying agent and cationic emulsifying agent and which contains a polyoxyethylene-polyoxypropylene block copolymer, monomers of 1), 2) and 3):

1) one or more monomer of ethylene-series, unsaturated carboxylic acid

2) one or more monomers selected from a), b), and c):

a) alkoxyethylene (metha)acrylamide and its derivatives(s) expressed by the following general formula



X is $\text{C}_n\text{H}_{2n+1}$ ($n=0$ or 1)

Y is $\text{C}_m\text{H}_{2m+1}$ ($m=0-4$)

b) acid phospho-oxyalkyl(metha)acrylate, and

c) alkoxy-alkyl(metha)acrylate

3) one or more acryl-series monomers (a part of which may consist of 2) c)).

5,378,292

PHOSPHATE CONVERSION COATING AND COMPOSITIONS AND CONCENTRATES THEREFOR WITH STABLE INTERNAL ACCELERATOR

Robert W. Miller, Clarkston, and Michael Petschel, Rochester, both of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Dec. 15, 1993, Ser. No. 167,755

Int. Cl.⁶ C23C 22/07

U.S. Cl. 148—259

20 Claims

1. An aqueous liquid make-up concentrate composition suitable for dilution with water to form a working phosphate conversion coating composition, said concentrate composition consisting essentially of water and the following dissolved components wherein amounts are based on the total composition:

(A) from about 150 to about 825 g/kg of phosphate ions;

(B) zinc cations in such an amount that the ratio of phosphate ions to zinc ions is within the range from about 3:1 to about 100:1;

(C) at least one of:

(C.1) from about 0.10 to about 300 g/kg of internal accelerator selected from the group consisting of reducing sugars, starch, and urea;

(C.2) from about 0.0005 to about 1.0 g/kg of acrylate or methacrylate polymers; and

(D) an amount of acid such that a solution of 6.0% of the concentrate in deionized water will have from about 1.0 to about 40 points of free acid and from about 3.5 to 70 points of total acid; and, optionally,

(E) an amount of manganese (II) cations such that the ratio of the manganese cations to the zinc cations is within the range from about 1:10 to 5:1; and, optionally,

(F) at least one of:

(F.1) an amount of divalent cations selected from the group consisting of nickel, cobalt, and magnesium cations such that the ratio of the total of these divalent cations to the zinc cations is within the range from about 1:5 to 5:1;

(F.2) an amount of divalent copper cations such that the ratio of the copper cations to the zinc cations is within

- the range from about 0.0025:5 to about 0.5:1; and, optionally,
- (G) from about 1.0 to about 50 g/kg of complex fluoride ions; and, optionally,
- (H) from about 0.4 to about 20 g/kg of fluoride ions derived from the group consisting of hydrofluoric acid and alkali metal and ammonium fluorides and bifluorides; and, optionally,
- (J) not more than 200 g/kg of nitrate ions.

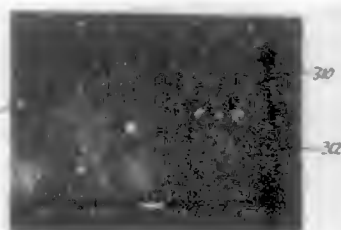
5,378,293
NON-CHROMATED OXIDE COATING FOR ALUMINUM SUBSTRATES

Matthias P. Schriever, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.
Continuation of Ser. No. 732,568, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 525,800, May 17, 1990, Pat. No. 5,298,092, and a continuation-in-part of Ser. No. 621,132, Nov. 30, 1990. This application May 6, 1993, Ser. No. 58,655

Int. Cl.⁶ C23C 22/56

U.S. Cl. 148—275

61 Claims



45. A process for forming an oxide film cobalt conversion coating exhibiting corrosion resistance and paint adhesion properties on a substrate, where said substrate is aluminum or aluminum alloy, said process comprising the steps of:

- (a) providing an oxide film forming cobalt conversion said aqueous reaction solution comprising an aqueous reaction said aqueous reaction solution comprising a soluble cobalt-III hexamine complex and acetic acid, where said cobalt-III hexamine complex is present in the form of $(\text{CO}(\text{NH}_3)_6)_3\text{X}_3$, where X is one or more selected from the group consisting of Cl, Br, NO_3 , CN, SCN, $\frac{1}{2}\text{PO}_4$, $\frac{1}{2}\text{SO}_4$, $\text{C}_2\text{H}_3\text{O}_2$, and $\frac{1}{2}\text{CO}_3$, and where said cobalt-III hexamine complex is made by reacting
- (1) a cobalt-II salt CoX_2 ,
 - (2) an ammonium salt NH_4X , and
 - (3) ammonium acetate $\text{CH}_3\text{COONH}_4$,
- such that the concentration of said cobalt-III hexamine complex is from about 0.01 mole per liter of said aqueous reaction solution up to the saturation limit of said cobalt-III hexamine complex; and
- (b) contacting said substrate with said aqueous reaction solution for a sufficient amount of time to oxidize the surface of said substrate, whereby said oxide film cobalt conversion coating is formed, thereby imparting corrosion resistance and paint adhesion properties to said substrate.

5,378,294
COPPER ALLOYS TO BE USED AS BRAZING FILLER METALS

Petri T. Rissanen, Pori, Finland, assignor to Outokumpu Oy, Espoo, Finland
Continuation-in-part of Ser. No. 959,368, Oct. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 819,077, Jan. 10, 1992, Pat. No. 5,178,827, which is a division of Ser. No. 614,254, Nov. 15, 1990, Pat. No. 5,130,090. This application Jul. 1, 1993, Ser. No. 84,582
Claims priority, application Finland, Nov. 17, 1989, 895483
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.⁶ C22C 9/02, 9/06

U.S. Cl. 148—433

5 Claims

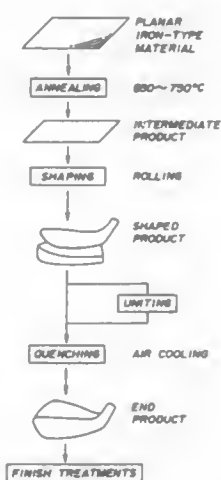
1. A brazing filler alloy powder having medium grain size of from 10 to 200 μm produced by means of an atomization method and to be used in brazing copper and copper alloys, said brazing filler alloy powder consisting essentially of about 1.0–4.9 atom percent Ni, 0–15 atom percent Sn, and 5–20 atom percent P, the balance being copper and incidental impurities, said alloy powder having a liquidus temperature not higher than about 629° C.

5,378,295
GOLF CLUB HEAD AND A METHOD FOR PRODUCING THE SAME

Hiroyuki Yamashita; Toshiharu Hoshi; Yuma Horio; Kazuhiro Tsuchiya; Takashi Iijima, all of Shizuoka, and Kikuo Nishida, Shizuoka, all of Japan, assignors to Yamaha Corporation, Japan
Filed Mar. 9, 1993, Ser. No. 28,274
Claims priority, application Japan, Mar. 9, 1992, 4-85943; May 15, 1992, 4-148851; May 21, 1992, 4-154344
Int. Cl.⁶ C21D 9/00; A63B 53/04

U.S. Cl. 148—654

8 Claims



1. A method for producing a golf club head having a plurality of pieces including a face piece, a rear piece and a hosel for holding a shaft; said face piece including a face section and a rear section extending from the face section and coupled to the rear piece; said rear piece including a sole section and a crown section; said hosel extending sideways from both the face and the rear sections, the method comprising the steps of preparing an iron-type material of a chemical composition containing 0.05 to 0.35% by weight of C, 0.40% by weight or less of Si, 2.20% by weight or less of Mn, 4.00% by weight or less of Ni, 3.0% by weight or less of Cr, 1.00% by weight or less of Mo, 0.10% by weight or less of Nb, 0.10% by weight or less of Al, 0.02% by weight or less of P, 0.01% by weight or less of S, 1.50% by weight or less

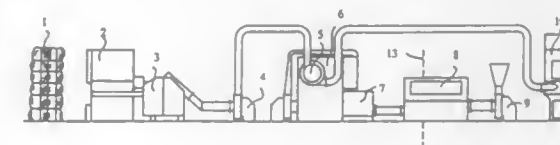
of Cu, 0.001% by weight or less of B, 0.01% by weight or less of N and Fe with indispensable impurities in balance, annealing said iron-type material at a temperature from 650° to 750° C. to form an intermediate product of said golf club head, shaping said intermediate product into a prescribed configuration to form a shaped product resembling at least one of the plurality of pieces of said golf club head, and quenching said shaped product to form an end product of said golf club head.

5,378,296
APPARATUS AND PROCESS FOR THE PRODUCTION OF SEAT PAD PARTS FROM LOOSE PADDING RAW MATERIAL

Juha Vesa, Palokärjenskatu 14 D, SF-20610 Turku, Finland
PCT No. PCT/FI91/00178, § 371 Date Dec. 17, 1992, § 102(e)
Date Dec. 17, 1992, PCT Pub. No. WO91/18828, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 6, 1991, Ser. No. 965,365
Claims priority, application Finland, Jun. 8, 1990, FI 902887
Int. Cl.⁶ B68G 11/03

U.S. Cl. 156—62.6

20 Claims



1. A method for producing seat pad parts utilizing a porous mold and loose padding raw material, comprising the steps of sequentially:

- introducing a single batch of loose padding material, formed at least in part of meltable binding fibers, into the mold, the batch of sufficient volume to substantially fill the mold;
 - introducing hot air through the mold and the batch of padding material contained therein to raise the padding material temperature to above the melting temperature of the binding fibers to effect at least partial melting of the binding fibers in the mold;
 - passing cooling air through the mold so as to solidify the batch of padding material into a part useful as a seat pad; and
 - removing the solidified part from the mold.
9. Apparatus for the production of seat pads for use in seats, comprising:

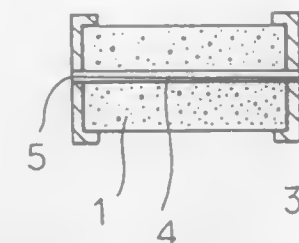
a supply of padding material, including binder fibers;
a weighing device;
means for transporting padding material from said supply to said weighing device;
a stationary porous mold having a surface area, said mold disposed within a filling chamber and said mold porous over substantially the entire surface area thereof;
means for applying a vacuum to said filling chamber over substantially the entire surface area of the mold;
means for transporting weighed padding material from said weighing device to said mold for filling said mold;
means for blowing hot air through said mold to melt the binder fiber component of the padding material in said mold; and
means for blowing cooling air through said mold.

5,378,297
FERRITE CHIP BEAD AND METHOD FOR MAKING SAME

Dong S. Chang, Kyonggi-Do, and Sang S. Lee, Seoul, both of Rep. of Korea, assignors to Boam R&D Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 11, 1993, Ser. No. 16,599
Int. Cl.⁶ C03B 29/00

U.S. Cl. 156—89

12 Claims



1. A ferrite chip bead comprising:

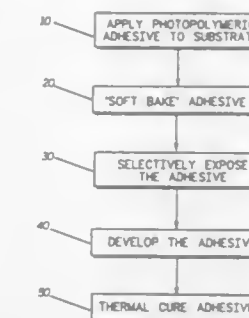
- a ferrite substrate;
- a plurality of outer electrodes formed at opposite sides of the ferrite substrate; and
- a plurality of conductive leads each extending transversely through the ferrite substrate and having opposite ends protruding outwardly of opposite side surfaces of the ferrite substrate and connected to corresponding outer electrodes.

5,378,298
RADIATION SENSITIVE ADHESIVE COMPOSITION AND METHOD OF PHOTOIMAGING SAME

Melanie Williams, Deerfield Beach, and Thomas J. Swirbel, Davie, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 1, 1993, Ser. No. 69,798
Int. Cl.⁶ B03C 1/94

U.S. Cl. 156—275.5

11 Claims



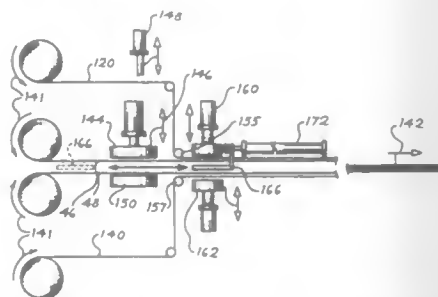
1. A method of photodelineating an adhesive, comprising the steps of:
coating a substrate with a layer of photopolymeric adhesive;
soft baking the photopolymeric adhesive;
selectively exposing only portions of the adhesive to actinic radiation to partially cure said portions;
developing the adhesive to selectively remove those portions that were not exposed, thereby creating a pattern in the adhesive; and
heating the developed adhesive to completely cure it.

5,378,299
METHOD OF MAKING A BALLOON WITH FLAT FILM VALVE

John McGrath; Dennis Cope, both of Castro Valley; Scott Harris, Mill Valley, and Charles Becker, San Francisco, all of Calif., assignors to M & D Balloons, Inc., Brisband, Calif.
Division of Ser. No. 702,790, May 20, 1991, Pat. No. 5,248,275.
This application Apr. 5, 1993, Ser. No. 43,441
Int. Cl.⁶ B32B 31/10, 31/20

U.S. Cl. 156—290

29 Claims



1. A method of making a balloon comprising the steps of: providing two balloon film portions, one overlying the other; spacing the balloon film portions apart, one on top of the other; providing two elongated valve film portions, one overlying the other; inserting the valve film portions between the balloon film portions; a tack sealing step comprising sealing a first part of each balloon film portion to a first part of a respective valve film portion immediately adjacent thereto; performing a valve sealing step comprising sealing other parts of the valve film portions together to form an internal valve having a passageway with an opening; and a balloon sealing step comprising sealing the balloon film portions together at the perimeters thereof to form a pressure vessel with the internal valve therein.

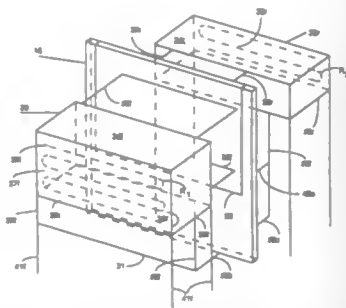
5,378,300
METHOD FOR REMOVING LABELS ADHERED TO A DISKETTE AND DE-LABELING MEANS FOR DOING SO

Gary S. Huvard, 7819 Tochester Dr., Chesterfield, Va. 23832, and Alfred D. Lobo, 2655 Euclid Heights Blvd., Cleveland Heights, Ohio 44106

Filed Mar. 30, 1993, Ser. No. 39,895
Int. Cl.⁶ B32B 35/00

U.S. Cl. 156—344

9 Claims



1. A method of manually delaminating an indicia-bearing laminar substrate or identification label secured with a thin layer of adhesive, from an exterior surface of a standard diskette having a magnetic recording storage medium rotatably disposed within a relatively rigid synthetic resinous casing having an upper portion and a lower label portion, said upper

portion having a slidable gate, said lower label portion having asymmetric front and rear label portions upon which said label is adhesively non-removably secured, each of said label portions being inwardly off-set from the remaining uncovered portion of the exterior surface of the casing, said method comprising,

- (a) depositing said diskette into a receptacle and locating means in a heating zone of a de-labeling means;
- (b) heating said asymmetric front and rear label portions to a desired delamination temperature within a desired interval of time, said interval being less than 30 sec, said temperature being in a delamination range from above 32° C. (90° F.) but below that at which thermal damage to said casing or to said storage medium occurs;
- (c) causing viscous thermal deformation of said adhesive to weaken bonding of said label to said surface sufficiently to allow said label to be parted from said surface with a force less than that required to tear the label;
- (c) removing said diskette from said receptacle and locating means after said interval elapses; and,
- (d) manually peeling away said label from said surface while maintaining said adhesive at a temperature within said delamination range.

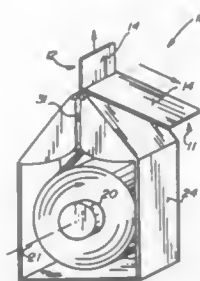
5,378,301
LINERLESS LABEL DISPENSING

Jeffrey J. Boreali, North Tonawanda, and John C. Bane, Grand Island, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jan. 18, 1994, Ser. No. 181,920
Int. Cl.⁶ B32B 35/00

U.S. Cl. 156—344

21 Claims



1. A dispenser for a web of labels in a roll configuration having a core, comprising: a housing having a hollow interior; a shaft for receipt of a roll of labels for mounting the roll of labels for rotation about an axis of rotation, said shaft connected to said housing; first and second substantially planar guide surfaces disposed in said housing for guiding movement of labels away from said shaft, said guide surfaces disposed in planes substantially parallel to a plane containing said axis of rotation; and first and second arcuate surfaces adjacent said first and second guide surfaces at a portion of said housing substantially on the opposite side of said guide surfaces from said shaft, and cooperating with labels from the roll so that each label being dispensed is stripped from the following label.

5,378,302
TRAVELING LARGE-AREA WELDING MACHINE FOR WELDING PLASTIC SHEETS

Anton Meister, Sarnen, Switzerland, assignor to Meistermatic AG, Sarnen, Switzerland

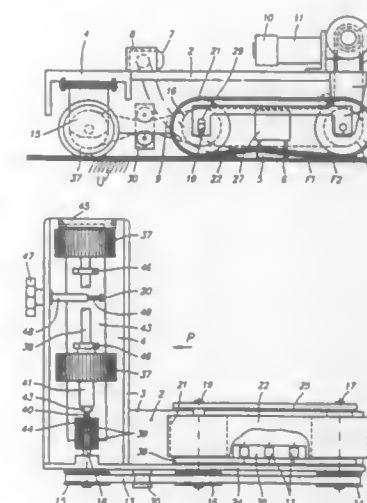
Filed Mar. 1, 1993, Ser. No. 24,411

Claims priority, application Switzerland, Mar. 6, 1992, 00720/92

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—497

3 Claims



1. In a traveling large-area welding machine for welding plastic sheets overlapping over the width of a zone having a frame formed by a first leg extending in the traveling direction of the machine and a second leg arranged transversely to the latter, wherein the first leg has means for welding the sheets in said zone as well as press-on means running on this zone for loading the welded sheets, and the second leg is provided with traveling rollers arranged on a common axle, and wherein the press-on means include a press-on roller which is connected via a common drive with the traveling rollers which are so arranged as to be offset to the latter in the direction of travel as well as transversely thereto, the improvement comprising that said press-on roller is supported at the first leg on an axle, said press-on roller being supplemented by additional press-on means to form a press-on and advancing movement device; said additional press-on means being freely movable vertically relative to the press-on roller and being driven by said common drive via an additional axle; and, said common axle carrying said traveling rollers being driven by a separate drive axle via a resilient slip clutch and wherein said press-on roller is a first such roller and the press-on and advancing movement device has a second press-on roller which runs in advance of said first press-on roller, a circumferentially extending press-on belt being looped around said second press-on roller along with said first press-on roller, said axle of the first press-on roller being driven by the common drive and supported in two holders which are swivelable in vertical planes and wherein an annular roll is arranged next to said first press-on roller so as to be axially parallel, but fitting loosely on its axle with radial play, said press-on belt likewise being looped around the annular roll so as to drive it.

3. In a traveling large-area welding machine for welding plastic sheets overlapping over the width of a zone having a frame formed by a first leg extending in the traveling direction of the machine and a second leg arranged transversely to the latter, wherein the first leg has means for welding the sheets in said zone as well as press-on means running on this zone for loading the welded sheets, and the second leg is provided with traveling rollers arranged on a common axle, and wherein the press-on means include a press-on roller which is connected via a common drive with the traveling rollers which are so arranged as to be offset to the latter in the direction of travel as

well as transversely thereto, the improvement comprising that said press-on roller is supported at the first leg on an axle, said press-on roller being supplemented additional press-on means to form a press-on and advancing movement device; said additional press-on means being freely movable vertically relative to the press-on roller and being driven by said common drive via an additional axle; and, said common axle carrying said traveling rollers being driven by a separate drive axle via a resilient slip clutch and wherein the common axle carrying the traveling rollers is adjustable by means for adjusting the roller traveling track with respect to the frame and wherein, in said means for adjusting the roller traveling track, the common axle is supported at a swivel plate which is articulated at the aforementioned second leg via a swivel axle and is connected with the leg at a location at a distance from the swivel axle via an adjusting device.

5,378,303
SINGLE PASS PRESSURE SEALER FOR PLANAR OR NESTED MEDIA

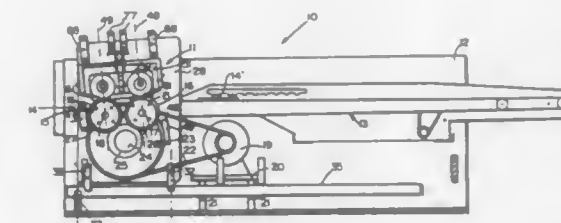
John E. Traise, Palm Bay, Fla., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 15, 1992, Ser. No. 913,528

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—555

28 Claims

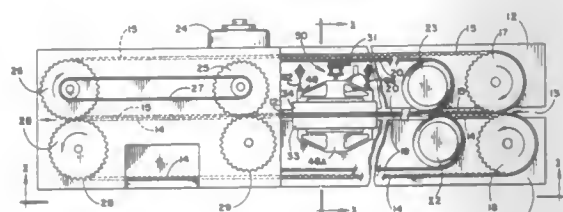


1. Apparatus for sealing pressure sensitive adhesive patterns on business forms, comprising: first and second rollers mounted for rotation about substantially parallel first and second stationary axes, respectively, said rollers each having an axial length of at least about five inches; means for rotating said first and second rollers about said first and second axes; main frame means for mounting a plurality of idler rollers in association with said first and second rollers so that said idler rollers cooperate with said first and second rollers to apply a compressive pressure to business forms passing between them of at least about 100 pounds per lineal inch; a first idler roller assembly for cooperation with said main frame means, comprising: third and fourth rollers mounted for rotation about substantially parallel third and fourth axes, which are parallel to first and second axes, each of said third and fourth rollers having an axial length of at least about five inches; and spring means for applying spring pressure to said third and fourth rollers which provides said compressive pressure business forms; a second idler roller assembly for cooperation with said main frame means, said second idler roller assembly comprising: at least three narrow width roller couples, the rollers of said narrow width roller couples being mounted on common fifth and sixth axes, parallel to said first and second axes, said roller couples being spaced along said fifth and sixth axes; spring means for applying spring pressure to each of said roller couples which provides said compressive pressure to business forms; and means for mounting said roller couples so that a roller from each of said plurality of couples cooperates with each of said first and second rollers, and so that business forms with inserts,

labels, windows, or other surface interruptions are sealed without damage to the business forms; means for mounting either of said first idler roller assembly or said second idler roller assembly, and said main frame means, in cooperation with said first and second rollers; and

wherein said second idler roller assembly narrow width roller couples each comprises: a center body defining a pair of ball bearing races; a pair of side plates; and a pair of narrow width ball bearing rollers mounted within said races and mounted for rotation about said fifth and sixth axes by arbors mounted to said side plates.

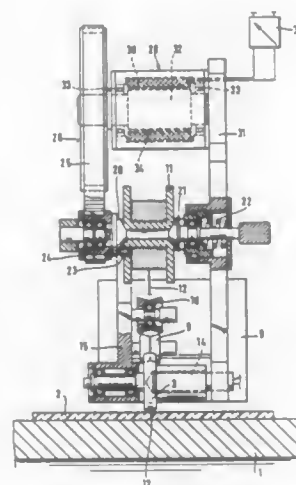
5,378,304
SEALING MACHINE HAVING GAP CONTROL BETWEEN HEAT SEAL COMPONENTS
Stanley D. Denker, New Richmond, Wis., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.
Filed Dec. 9, 1993, Ser. No. 163,513
Int. Cl.⁶ B30B 5/06, 15/34
U.S. Cl. 156—555 5 Claims



1. A heat sealing machine for sealing layers of a heat-sealable plastic film to each other, the machine comprising:

- a pair of flexible, endless opposed heat transfer bands each fronting each other and having a gap therebetween with a longitudinal mid-line, said bands traveling together to transport layers of film through the gap for sealing therein;
- at least one pair of elongate oppositely disposed heat transfer components disposed such that the components of each such pair face each other separated by confronting portions of the bands and co-extend therealong, each component of each pair having an elongate front face having a heat transfer surface positioned in a substantially vertical plane confronting a respective heat transfer band, wherein each such pair comprises a stationary heat transfer component and an adjustable heat transfer component and wherein the adjustable heat transfer component has the ability to move inwardly and outwardly laterally and pivotally in a substantially horizontal plane with respect to the corresponding stationary heat transfer component in response to forces therebetween while maintaining the angular disposition of the heat transfer surface to thereby control the pressure of sealing and thickness accommodation of layers to be sealed;
- constraint means for limiting the inwardly-lateral movement of the adjustable heat transfer component such that said heat transfer component does not travel beyond the longitudinal mid-line of the gap;
- means for applying a controllable force to urge each adjustable heat transfer component toward and in alignment with the matching stationary heat transfer component; and
- means for adjustably positively positioning each of the adjustable heat transfer components to position and align with the corresponding stationary matching heat transfer surface of each in the desired vertical disposition.

5,378,305
DEVICE FOR LAYING A THIN METAL WIRE IN A STRAIGHT LINE ON THE SURFACE OF THE THERMOPLASTIC FILM OF A LAMINATED GLASS PANE
Manfred Gillner, Aachen; Siegfried Pikhart, Roetgen; Emilio Sancho; Karl-Heinz Muller, both of Aachen; Luc Vanaschen, Eupen, all of Germany, and Matilde H. Sanchez legal representative of said Emilio Sancho, deceased, assignors to Saint-Gobain Vitrage International, Courbevoie, France
Filed Jan. 14, 1993, Ser. No. 4,542
Claims priority, application Germany, Jan. 22, 1992, 4201620
Int. Cl.⁶ B32B 31/00 6 Claims

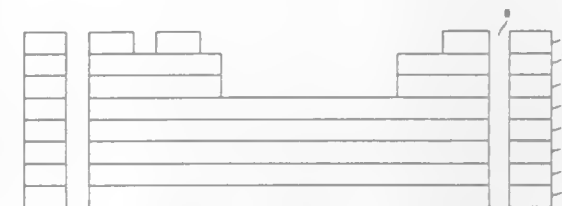


- Device for laying a thin metal wire from a wire supply reel in a straight line on the surface of a thermoplastic film of a laminated glass pane, comprising:
 - a rotatable mounting for a wire supply reel;
 - a heated pressing roller having a convex pressing surface for pressing wire from the supply reel into the thermoplastic film;
 - a guide device for guiding the wire between the supply reel and the pressing roller; and
 - an electromagnetic brake having an adjustable braking torque operatively connected to the supply reel so as to brake the rotation thereof,
 wherein said guide device comprises two rollers, each of said rollers constructed in the form of a double cone.

5,378,306
COMPOSITE FOR PROVIDING A RIGID-FLEXIBLE CIRCUIT BOARD CONSTRUCTION AND METHOD FOR FABRICATION THEREOF
Michael J. Cibulsky, Binghamton; Konstantinos I. Papathomas, Endicott; William J. Summa, Endwell; David W. Wang, Vestal, and Patrick R. Zippitelli, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 913,101, Jul. 14, 1992, Pat. No. 5,288,542.
This application Feb. 7, 1994, Ser. No. 192,736
Int. Cl.⁶ B44C 1/22; C23F 1/00 13 Claims

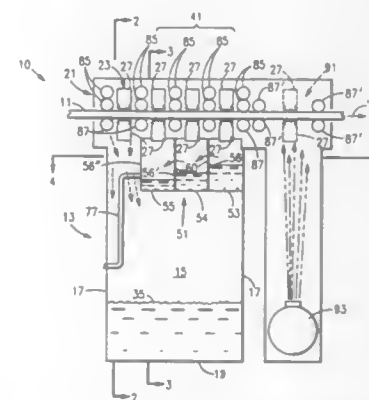
- A process for fabricating a rigid-flexible circuit board comprising:
 - providing at least one core which comprises a dielectric substrate and at least one conductive layer located on said dielectric substrate;
 - providing at least one sub-composite which comprises a polyimide and a rigid dielectric substrate adjacent said at least one conductive layer and in both the rigid and flexible segments of said circuit board;

- providing a release layer adjacent said at least one sub-composite in a location to correspond to the desired flexible segment of said circuit board;
- providing at least one rigid bonding layer located adjacent said at least one sub-composite and at the rigid segments of said board but not at the flexible segments of said board;



- providing a second conductive layer adjacent said at least one rigid bonding layer to thereby form a composite;
- laminating said composite;
- removing portions of said second conductive layer that correspond to the flexible segment of said circuit board; and,
- then removing said release layer to thereby provide said rigid-flexible circuit board.

5,378,307
FLUID TREATMENT APPARATUS
Steven L. Bard, Endwell; Gerald A. Bendz, Vestal; Michael J. Canestaro; John R. Chapura, both of Endicott; Edward J. Frankoski, Newark Valley; Michael S. Horan, Maine; Jeffrey D. Jones, Newark Valley; James S. Kamperman, Endicott; John R. Kjelgaard, Jr., Whitney Point, and Jack M. McCreary, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 28, 1993, Ser. No. 54,108
Int. Cl.⁶ B08B 3/02 35 Claims



- A method of treating an article with fluids, said method comprising:
 - transporting said article through a housing defining a chamber therein;
 - impinging a first fluid onto a surface of said article within said chamber;
 - collecting a major amount of said impinged first fluid within said chamber with a first collection means, a minor amount of said first fluid not being collected by said first collection means, said collected major amount occupying a first position within said chamber;
 - circulating said collected major amount of said first fluid to the means for impinging said first fluid onto said surface of

said article and thereafter impinging said collected major amount of said first fluid onto said article;

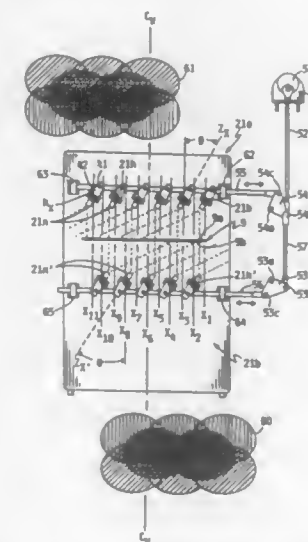
impinging a second fluid onto said surface of said article at a location substantially adjacent said location of impingement of said first fluid using first and second fluid application members;

collecting said impinged second fluid and said minor amount of said first fluid within said chamber of said housing using a cascading sump means having first and second collecting chambers such that said collected second fluid and said minor amount of said first fluid will be positioned substantially vertically above said first position of said major amount of said first fluid and that the concentration of second fluid within said second collecting chamber will exceed the concentration of second fluid in said first collecting chamber will

overflowing said fluid in said second collecting chamber into said first collecting chamber; and

providing fresh amounts of said second fluid to the means for impinging said second fluid onto said surface of said article and thereafter impinging said fresh amounts of said second fluid onto said article.

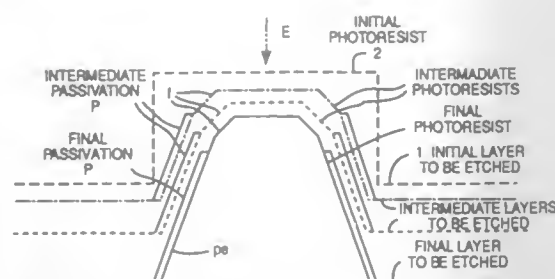
5,378,308
ETCHANT DISTRIBUTION APPARATUS
Roland H. Thoms, Cortland, N.Y., assignor to BMC Industries, Inc., Cortland, N.Y.
Filed Nov. 9, 1992, Ser. No. 973,679
Int. Cl.⁶ C23F 1/00 11 Claims



- The method of spray etching a metal web to more uniformly distribute etchant on the metal web and more uniformly etch the depth of holes in the metal web comprising:
 - establishing a first grid pattern of oscillateable nozzles for etching the metal web from one side of a metal web,
 - establishing a second grid pattern of oscillateable nozzles for etching the metal web from the one side of the metal web, said second grid pattern offset from said first grid pattern;
 - establishing a third grid pattern of oscillateable nozzles for etching the metal web from the one side of the metal web with said third grid pattern offset from said second grid pattern with each of said nozzles of the first grid pattern, the second grid pattern and the third grid pattern having an axis of oscillation located at an acute angle from a plane extending substantially perpendicular to the one side of the metal web; and
 - oscillating each of nozzles of the first grid pattern, the second grid pattern and third grid pattern about their respective said axis of oscillation at a cone angle that provides an

elliptical shaped etchant spray pattern on the one side of the metal web which is offset from a plane extending perpendicular through the nozzle spraying the elliptical shaped etchant pattern on the one side of the metal web and the metal web to maintain a substantially uniform etching rate across the one side of the metal web as holes are etched in the one side of the metal web.

5,378,309
METHOD FOR CONTROLLING THE ETCHING PROFILE OF A LAYER OF AN INTEGRATED CIRCUIT
 Patrick D. Rabinzohn, Pont-Saint-Martin, France, assignor to Matra MHS, Nantes, France
 Filed Aug. 5, 1992, Ser. No. 924,943
 Claims priority, application France, Aug. 5, 1991, 91 09951
 Int. Cl.⁶ H01L 21/306
 U.S. Cl. 156—643 7 Claims



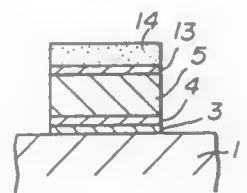
1. Method for slope etching of a layer of an integrated circuit, said layer being coated with a masking photoresist layer and having an etching flank during etching operation, wherein said method comprises the steps of:
 passivating said etching flank of said layer to be etched;
 nonisotropic eroding, simultaneously with said passivating, said masking photoresist layer, making it possible to control the slope of the etching flank of said layer to be etched, said nonisotropic eroding comprising,
 performing a profiling said photoresist layer at the foot of the flank of said photoresist layer, and
 transferring, simultaneously with said performing, said profiling of said photoresist layer into the region of said layer to be etched by anisotropic etching of said photoresist layer, said profiled photoresist layer thus being subjected to said nonisotropic eroding;
 wherein the ratio of the tangent of an instantaneous angle α of the foot of said masking photoresist layer and the tangent of an instantaneous angle θ of said etching flank of said layer to be etched is proportional to the ratio of an apparent rate v_{cg} of etching of said layer to be etched and a rate v_{cr} of etching of said masking photoresist decreased by a term which is the product of a rate D of isotropic deposition of said passivation layer multiplied by the tangent of said instantaneous angle α , represented by

$$\tan \theta = \frac{v_{cg} \times \tan \alpha}{v_{cr} - D \times \tan \alpha}$$

5,378,310
METHOD OF PRODUCING CONDUCTIVE PATTERN LAYER STRUCTURE
 Kazuaki Satoh, and Kenji Iida, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
 Division of Ser. No. 971,226, Nov. 4, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 143,642
 Int. Cl.⁶ B44C 1/22; C23F 1/00
 U.S. Cl. 156—643 10 Claims

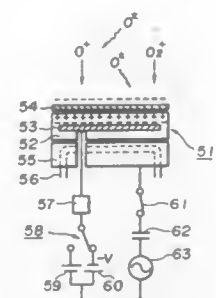
1. A method of producing a conductive pattern layer structure comprising the steps of:

- forming a thin film on an insulating member comprising polyimide;
- forming a patterned resist layer having an opening on the thin film;
- forming a patterned conductive layer comprising copper on the thin film through the opening of the resist layer;
- forming gaps between sidewalls of the patterned conductive layer and sidewalls of the patterned resist layer, the thin film being exposed through the gaps;
- forming a Cr barrier layer on the thin film, the patterned conductive layer and the patterned resist layer, the Cr barrier layer preventing diffusion of copper contained in the patterned conductive layer;
- forming a protection layer on the Cr barrier layer;



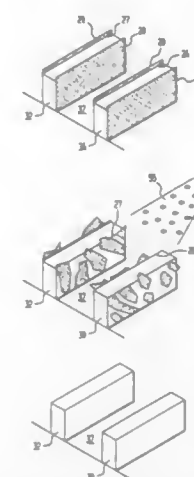
- removing the patterned resist layer, and portions of the Cr barrier layer and the protection layer formed on the patterned resist layer by a lift-off process, so that a patterned Cr barrier layer is formed;
- patterning the thin film by an etching, so that a patterned thin film is formed;
- removing a remaining portion of the protection layer from the Cr barrier layer, so that an upper surface and sidewalls of the patterned conductive layer are covered by the patterned barrier layer; and
- forming an insulating layer to cover said patterned Cr barrier on the upper surface and sidewalls of the patterned conductive layer.

5,378,311
METHOD OF PRODUCING SEMICONDUCTOR DEVICE
 Tetsuji Nagayama, and Tetsuya Tatsumi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
 Filed Nov. 24, 1993, Ser. No. 156,902
 Claims priority, application Japan, Dec. 4, 1992, 4-325749
 Int. Cl.⁶ H01L 21/306; B44C 1/22
 U.S. Cl. 156—643 29 Claims



1. A method of producing a semiconductor device by first conducting plasma processing of a wafer held in a processing chamber of a plasma device by using a plasma formed on dissociation due to electric discharge of a processing gas within the processing chamber, and then conducting a next processing with changed discharging conditions within the same processing chamber, said method comprising the further step of:
 evacuating said processing gas after said said plasma processing step and before said next processing step.

5,378,312
PROCESS FOR FABRICATING A SEMICONDUCTOR STRUCTURE HAVING SIDEWALLS
 George G. Gifford, Poughkeepsie; Yeong-Jyh T. Lii, Peekskill, and Jin J. Wu, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Dec. 7, 1993, Ser. No. 164,223
 Int. Cl.⁶ H01L 21/00
 U.S. Cl. 156—643 17 Claims

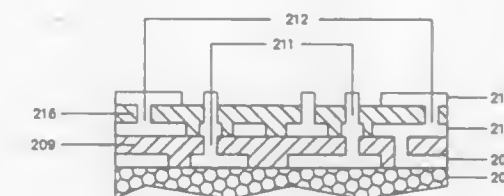


1. A method of fabricating a semiconductor structure, comprising the steps of:
 providing a semiconductor substrate having a material disposed thereon;
 masking said material with a mask having an appropriate pattern for forming a semiconductor structure;
 etching unmasked portions of said material so as to form said semiconductor structure, wherein said etching produces a film which attaches onto said semiconductor structure and/or on said semiconductor substrate; and
 removing said film from said semiconductor structure according to the steps of
 producing a cryogenic jet stream having cryogenic particles therein; and
 directing said cryogenic jet stream at said film such that said cryogenic jet stream impinges on and causes said film to decrease in temperature so that a high temperature gradient develops between said film and said semiconductor structure, said film detaching from said semiconductor structure and fracturing due to contraction caused by the decrease in temperature and high temperature gradient.

5,378,313
HYBRID CIRCUITS AND A METHOD OF MANUFACTURE
 Benedict G. Pace, 2200 Smithtown Ave., Ronkonkoma, N.Y. 11779
 Filed Dec. 22, 1993, Ser. No. 171,696
 Int. Cl.⁶ B44C 1/22; C23F 1/00
 U.S. Cl. 156—643 20 Claims

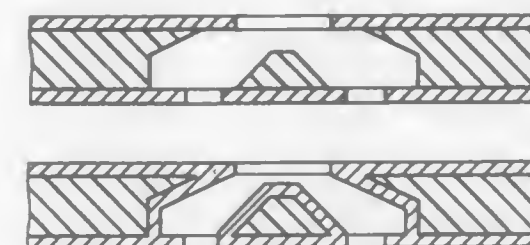
1. A method of forming a conductive pattern on a fired, non-conductive substrate, the conductive pattern having at least two conductive pattern layers, the method comprising the steps of:
 a) providing a fired, non-conductive substrate;
 b) forming a first, metallic, conductive pattern layer on the substrate;
 c) covering at least a portion of the conductive pattern layer with a fired, inorganic, insulating layer;
 d) removing selected areas of the insulating layer with a laser, forming at least one opening through the insulating layer to selected areas of the conductive pattern layer, the

openings not penetrating through the conductive pattern layer, and



e) forming a second, metallic, conductive pattern layer on the fired, inorganic, insulating layer making at least one electrical connection to the first, conductive pattern through the opening.

5,378,314
METHOD FOR PRODUCING SUBSTRATES WITH PASSAGES
 Walter Schmidt, Zürich, and Marco Martinelli, Neftenbach, both of Switzerland, assignors to Dyconex Patente AG, Zug, Switzerland
 Filed Jun. 15, 1993, Ser. No. 77,298
 Claims priority, application Switzerland, Jun. 15, 1992, 01874/92; United Kingdom, Jun. 15, 1992, 9212648; Switzerland, May 17, 1993, 01501/93
 Int. Cl.⁶ B44C 1/22; B29C 37/00; C23F 1/00
 U.S. Cl. 156—644 7 Claims



1. A method for producing substrates comprising the steps of providing a foil substrate of non-metallic material with metal layers covering opposite surfaces of said foil substrate, forming openings through said metal layers at selected locations on opposite sides of said substrate, at least some of said openings being offset from each other with respect to lines perpendicular to the surfaces of said substrate, etching passages through said substrate between selected sets of said openings so that the passages interconnect desired openings, the passages interconnecting openings offset from each other following oblique lines forming a plurality of angles relative to the surfaces of the substrate, and wherein the step of etching passages includes controlling the etching of the material of the substrate at the locations of the openings in the metal layers until an amount of substrate material under the metal layers is etched away sufficient to form a passage between two openings having a maximum offset.

5,378,315

REMOVING IMAGING MEMBER LAYERS FROM A SUBSTRATE

Loren E. Hendrix, Webster, William G. Herbert, Williamson, and Gary J. Maier, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 9, 1993, Ser. No. 163,776

Int. Cl.⁶ B44C 1/22; C09K 13/00

U.S. Cl. 156—655

27 Claims

4. A method for removing a coating layer from at least part of an electrostatographic imaging member substrate, comprising contacting a solution comprising at least one member selected from the group consisting of acetic acid, dimethyl malonate and diethyl malonate, on at least part of a substrate containing a coating layer until the coating layer is removed from said at least part of the substrate.

5,378,316

HIGH DURABILITY MASK FOR DRY ETCH PROCESSING OF GAAS

Hans-George Franke, Hilton, and Eric T. Prince, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 679,843, Apr. 3, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 1,432

Int. Cl.⁶ H01L 21/00

U.S. Cl. 156—659.1

3 Claims



1. A method of forming a highly durable mask and using such mask in the dry etch processing of GaAs, comprising the steps of:

- providing a layer of amorphous carbon over the GaAs which is resistant to attack by chlorine on GaAs;
- forming openings in the amorphous carbon layer to expose the GaAs layer by dry processing to form an amorphous mask;
- dry etch processing of the GaAs in chlorine containing ambients through the opening in the mask; and
- removing the mask.

5,378,317

METHOD FOR REMOVING ORGANIC FILM

Masaharu Kashiwase, and Terumi Matsuoka, both of Okayama, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01374, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/06489, PCT Pub. Date Apr. 16, 1992

Continuation-in-part of Ser. No. 853,702, Jun. 8, 1992, abandoned. This PCT application Oct. 9, 1991, Ser. No. 110,646 Claims priority, application Japan, Oct. 9, 1990, 2-270898

Int. Cl.⁶ H01L 21/312

U.S. Cl. 156—659.1

4 Claims

1. A method for removing an organic film from a substrate, the method comprising removing the organic film by subjecting the film to a gas containing oxygen plasma or ozone in a dry method or to a solution containing an oxidizing agent in a wet method, and thereafter immersing said substrate in an ozone processing tank containing a solution of ozone in ultra pure water, wherein said solution of ozone in ultra pure water is prepared by blowing ozone-containing gas having an ozone content of at least 10,000 ppm through ultra pure water and said ozone-containing gas contacts the organic film on the substrate in the form of gas bubbles.

5,378,318

PLANARIZATION

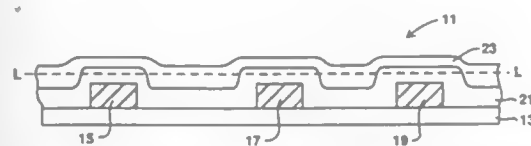
Milind Weling, San Jose, and Vivek Jain, Milpitas, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 5, 1992, Ser. No. 893,616

Int. Cl.⁶ H01L 21/00

U.S. Cl. 156—662

50 Claims



1. A method for improved planarization comprising the steps of:

- providing a patterned structure of material containing at least one exposed surface of non-stoichiometric, silicon-rich-oxide (SRO) and at least one exposed surface of a spin-on-material; and
- etching said patterned structure with a fluorine-containing process gas; whereby the etch rates of the exposed surfaces of said silicon-rich-oxide and said spin-on-material are about the same.

5,378,319

LIME MUD CALCINING USING DIELECTRIC HYSTERESIS HEATING

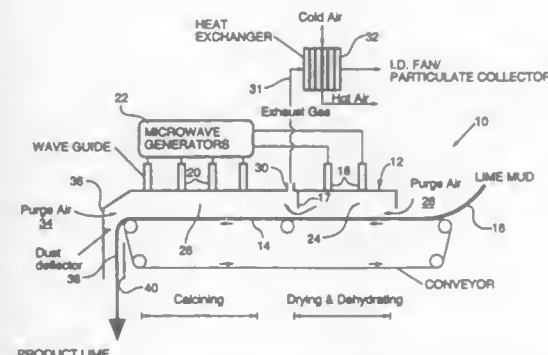
Hoc N. Tran, Toronto, and Javad Mostaghimi, Brampton, both of Canada, assignors to Tran Industrial Research Inc., Toronto, Canada

Filed May 7, 1993, Ser. No. 57,814

Int. Cl.⁶ D21C 11/04

U.S. Cl. 162—30.11

14 Claims



1. A method of processing lime mud from a kraft mill recovery operation, which comprises:

- effecting drying of said lime mud in a first heating zone to form essentially moisture free dried lime mud while generating steam;
- effecting a dielectric hysteresis heating of said dried lime mud in a second heating zone at a radiation intensity level sufficient to effect decomposition of calcium carbonate in said dried lime mud to form lime and carbon dioxide;
- removing steam from said first heating zone and removing carbon dioxide from said second heating zone while substantially avoiding mixing of steam and carbon dioxide in said first heating zone.

5,378,320

CONTROL OF RECAUSTICIZING SYSTEM OPERATION BY IR SPECTROSCOPY

Denys F. Leclerc, Surrey, and Robert M. Hogikyan, Burnaby, both of Canada, assignors to Pulp & Paper Research Institute of Canada, Quebec, Canada

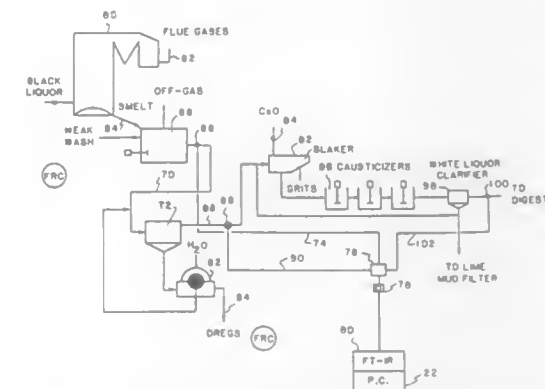
Division of Ser. No. 910,379, Jul. 8, 1992, Pat. No. 5,282,931.

This application Sep. 17, 1993, Ser. No. 124,052

Int. Cl.⁶ D21C 11/00

U.S. Cl. 162—49

6 Claims



1. A method for controlling the operation of a recausticizing system in the preparation of kraft pulp, wherein green liquor is formed in a smelt dissolving tank and passed through a green liquor clarifier to enter a slaker, calcium oxide is added to the green liquor in the slaker to form a suspension which proceeds through a causticizer to a white liquor clarifier and subsequently to a digester, which comprises the steps of:

- withdrawing samples of green liquor leaving the green liquor clarifier, and white liquor leaving the white liquor clarifier;
- subjecting the samples of the green liquor and the white liquor to infrared spectrophotometry at a wave number of about 1882 cm⁻¹ to produce peak-absorbance effective alkali measurements relative to a background spectrum of water;
- subjecting samples of sodium hydroxide and sodium carbonate solutions of different known concentrations to infrared spectrophotometry at the same wave number in order to establish sodium hydroxide and sodium carbonate calibration curves;
- correlating relationships between the peak-absorbance measurements of the samples with the peak absorbances of the samples of sodium hydroxide and sodium carbonate solutions to determine optimum sodium hydroxide and sodium carbonate concentrations in the samples; and
- controlling the calcium oxide added to the green liquor in the slaker to obtain optimum effective alkali for the white liquor.

5,378,321

VARYING ANNULAR FLUIDIZATION ZONE FOR INCREASED MIXING EFFICIENCY IN A MEDIUM CONSISTENCY MIXER

Thomas R. Delcourt, Glens Falls, N.Y., assignor to Kamy, Inc., Glens Falls, N.Y.

Division of Ser. No. 845,713, Mar. 4, 1992, Pat. No. 5,263,774.

This application Sep. 1, 1993, Ser. No. 115,133

Int. Cl.⁶ D21C 3/22; B01F 5/04

U.S. Cl. 162—57

7 Claims

1. A method of mixing a fluid with cellulosic pulp having a consistency of about 5–18% throughout mixing, comprising the steps of:

- passing the fluid and pulp at a consistency of about 5–18% into a first fluidization zone in which the pulp is fluidized while subjecting the pulp and fluid to a con-

stantly changing shear field developed substantially only in a radial plane;

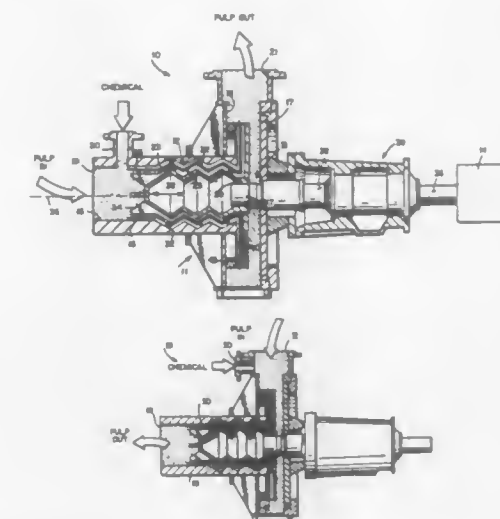
(b) introducing the fluid and the pulp having a consistency of about 5–18% into a second fluidization annulus in a second fluidization zone;

(c) in the second fluidization annulus in the second fluidization zone, fluidizing the pulp while subjecting the pulp and fluid to a constantly changing shear field simultaneously developed in both radial and axial planes; and

(d) discharging the pulp, with mixed in fluid, from the second fluidization zone.

7. A mixer comprising:

a housing having a first interior portion encompassing an axial plane, a second interior portion, first and second inlets, and an outlet;



a rotor having a varying cross-section along its length and shaped to simulate a plurality of alternately oriented cone frustums and having an external surface with a contour, and a plurality of vanes connected thereto including portions thereof generally following the contour of the external surface, the rotor mounted for rotation about a first axis within at least said housing first interior portion, said first axis disposed in said axial plane, and said housing interior portion has a plurality of ribs cooperating with said vanes; and

wherein said rotor includes a disk at a first axial end thereof, and wherein said second interior housing portion has a surface defining a fluidization zone with said disk.

5,378,322

CARBON DIOXIDE IN NEUTRAL AND ALKALINE SIZING PROCESSES

Derek Hornsey, Beaconsfield, Canada, assignor to Canadian Liquid Air Ltd./Air Liquide Canada LTEE., Montreal, Canada

Filed May 21, 1993, Ser. No. 64,374

Claims priority, application Canada, May 27, 1992, 2069713-0

Int. Cl.⁶ D21H 21/16

U.S. Cl. 162—158

5 Claims

- A process for sizing paper, comprising:
 - forming an aqueous pulp of cellulosic paper-forming fibers and an aqueous vehicle containing an alkaline material selected from the group consisting of caustic soda and calcium carbonate;
 - contacting the fibers in said aqueous pulp with an alkylketene dimer sizing agent at a non-acidic pH; and
 - dissolving carbon dioxide gas in the aqueous vehicle and allowing said carbon dioxide to react with said alkaline material to provide an amount of bicarbonate ions in an amount sufficient to catalyze reaction between the al-

kylketene dimer sizing agent and the cellulose of the fibers.

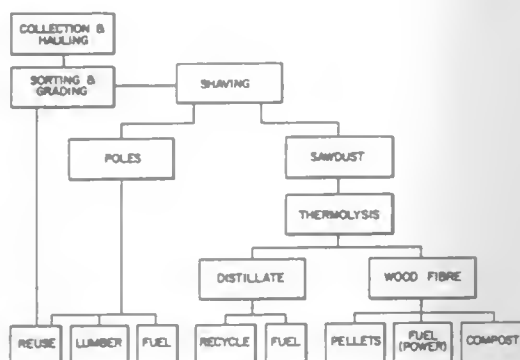
5,378,323 THERMOLYSIS OF PENTACHLOROPHENOL TREATED POLES

Peter Fransham; John Rasmussen, and Stan Ainslie, all of Calgary, Canada, assignors to Worthing Industries, Inc., Alberta, Canada

Filed Jul. 22, 1993, Ser. No. 94,862
Int. Cl.⁶ C10B 53/02

U.S. Cl. 201—8

6 Claims



1. A method of removing pentachlorophenol and creosote from utility poles comprising the steps of:

- (1) removing an outer wood preservative impregnated surface of said poles by chipping or shaving particles of wood;
- (2) reducing the size of said wood preservative impregnated particles;
- (3) conveying the particles into a thermolysis reactor;
- (4) subjecting the particles to hot oxygen-free gases in said reactor until said wood preservative vaporizes;
- (5) subjecting said vaporized mixture to a cyclone at a temperature sufficiently high to keep said wood preservative in a vapour state;
- (6) removing solids from said cyclone for storage;
- (7) quenching said vaporized wood preservative and gases to a lower temperature and passing said wood preservative and gases through a venturi scrubber;
- (8) passing a resultant wood preservative condensate through a knockout drum and storing the same for recycling;
- (9) passing the remainder of said gases through a heat exchanger and removing any condensed water in a knockout drum; and
- (10) reheating and returning the remainder of said gases to said reactor.

5,378,324 PROCESS AND AN ELECTROLYTIC CELL FOR THE PRODUCTION OF FLUORINE

Graham Hodgson, Lancashire, England, assignor to British Nuclear Fuels Plc, Cheshire, United Kingdom
Filed Apr. 2, 1993, Ser. No. 42,263

Claims priority, application United Kingdom, Apr. 4, 1992, 9207424

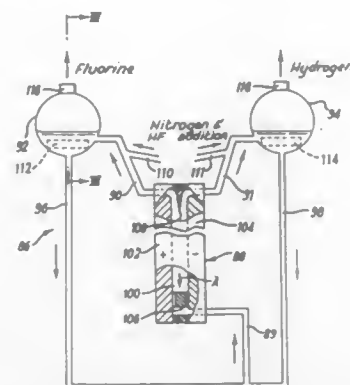
Int. Cl.⁶ C25B 1/24, 11/00

U.S. Cl. 204—60

17 Claims

1. A process for the production of fluorine, the process comprising the steps of:
- passing a single stream of a fluorine-containing electrolyte in non-turbulent flow between an anode and a cathode of an electrolytic cell without a separator extending the length of the cell between the anode and cathode,
- dividing the single stream of electrolyte emerging from between the anode and the cathode into two streams, one

of said streams emerging adjacent to the anode having fluorine entrained therein, and the other of said streams emerging adjacent to the cathode having hydrogen entrained therein, and



subsequently separating the fluorine and the hydrogen from the respective said streams.

5,378,325 PROCESS FOR LOW TEMPERATURE ELECTROLYSIS OF METALS IN A CHLORIDE SALT BATH

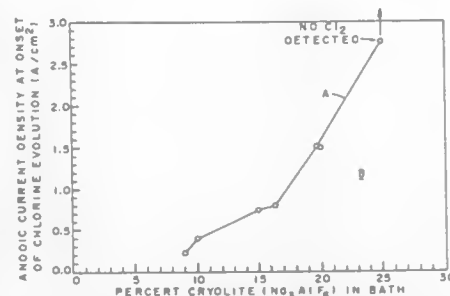
Leroy E. Dastolfo, Jr., Lower Burrell, and Alfred F. LaCamera, Trafford, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 761,414, Sep. 17, 1991, Pat. No. 5,279,715. This application Jun. 30, 1993, Ser. No. 85,191

Int. Cl.⁶ C25C 3/00

U.S. Cl. 204—66

23 Claims



1. A process for electrowinning metal in a low temperature melt having a temperature at least about 20° C. above the melting point of said metal and less than about 900° C. comprising passing a current between an anode and a cathode in a molten salt bath containing an oxide of a metal selected from the group consisting of aluminum, magnesium, zinc, lithium and lead, said molten salt bath comprising a first salt and a second salt, said second salt being miscible with said first salt, said first salt comprising about 30–50 wt. % cryolite for increasing the solubility of said oxide in said molten salt bath, said second salt comprising about 15–35 wt. % NaCl and about 25–45 wt. % KCl for reducing the bath liquidus temperature of said molten salt bath, said anode consisting essentially of carbonaceous material.

5,378,326 FEEDING METHOD AND DEVICE FOR ALUMINUM ELECTROLYSIS

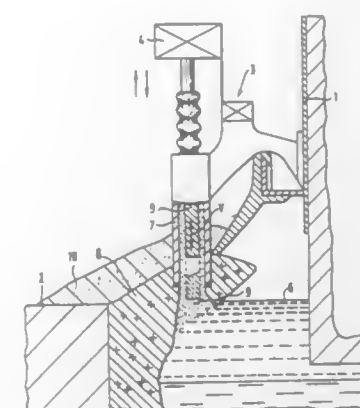
Vesa Kumpulainen, Espoo, Finland, assignor to Kumera Oy, Riihimäki, Finland

Filed Jun. 11, 1993, Ser. No. 75,024

Int. Cl.⁶ C25C 3/06, 3/14

U.S. Cl. 204—67

20 Claims



1. A method for feeding raw material into an aluminum electrolysis reaction, comprising the steps of:
- arranging a controlling box in proximity to a crust of an electrolyte melt in which electrolysis occurs,
- feeding a raw material through feeding means arranged within said controlling box into a space defined between said feeding means and the crust of the electrolyte melt, and
- directing mechanical vibration forces at said feeding means, such that upon sufficient accumulation of raw material in said space supported on the crust of the electrolyte melt, said feeding means are vibrated into contact with the accumulated raw material in said space to urge the raw material to penetrate the crust of the electrolyte melt and form an opening therein through which the raw material passes into the electrolyte melt, said vibration forces having a vertical amplitude in a range of about 0.5 cm to about 1.5 cm and a vibration frequency in a range of about 11 Hz to about 40 Hz.

5,378,327 TREATED CARBON CATHODES FOR ALUMINUM PRODUCTION, THE PROCESS OF MAKING THEREOF AND THE PROCESS OF USING THEREOF

J. A. Sekhar, Cincinnati, Ohio; T. Zheng, deceased, late of Cincinnati, Ohio by Liming Cai, legal representative, and J. J. Duruz, Geneva, Switzerland, assignors to Moltech Invent S.A., Luxembourg

Continuation of Ser. No. 28,384, Mar. 9, 1993, abandoned. This application May 2, 1994, Ser. No. 236,232

Int. Cl.⁶ C25C 3/06, 3/08

U.S. Cl. 204—67

29 Claims

26. In a method of producing aluminum by electrolysis alumina dissolved in a cryolite-based molten electrolyte using an electrolytic cell having an anode and a carbon cathode, the improvement comprising the steps of:
- treating the carbon cathode to absorb at least one compound of lithium by contacting said carbon cathode with a solution, suspension or melt which contains said lithium compounds, prior to, during or after forming the carbon cathode, but before the carbon cathode is used for the production of aluminum;
- forming Li-C compounds in the carbon cathode by firing the carbon cathode with the lithium compounds therein; and
- improving thereby the resistance of said carbon cathode to penetration by sodium and molten electrolyte components including cryolite, during the use of said carbon cathode

in electrolyzing alumina dissolved in a cryolite-based molten electrolyte to produce alumina.

5,378,328 PROCESS FOR THE ELECTROCHEMICAL RECOVERY OF BISMUTH FROM AN ION EXCHANGE ELUENT

Varujan Baltazar, Montreal, and John L. Cromwell, Pincourt, both of Canada, assignors to Noranda Inc., Toronto, Canada

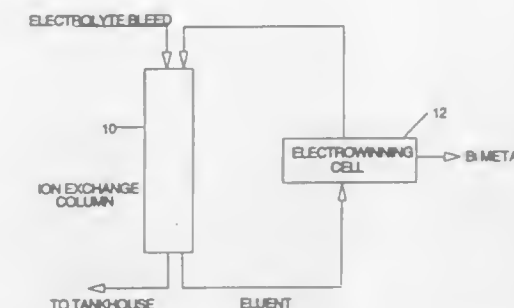
Filed Aug. 4, 1993, Ser. No. 102,173

Claims priority, application Canada, Dec. 16, 1992, 2081292

Int. Cl.⁶ C25C 1/22

U.S. Cl. 204—105 R

7 Claims



1. A process for the recovery of bismuth from an ion exchange eluent solution consisting of at least 50% sulfuric acid maintained at a temperature of 95°–100° C., comprising the step of electrowinning bismuth from the sulfuric acid solution in an electrochemical cell at a current density up to 30 A/m² using an insoluble anode and a cathode that is impervious to the highly corrosive environment of hot sulfuric acid, for a time, interval such as to reduce the bismuth content of the solution down to about 3–5 g/l.

5,378,329 PROCESS FOR THE PREPARATION OF AN ALKALINE-ZINC SLURRY FOR USE IN BATTERIES

Jonathan R. Goldstein; Inna Gektin, both of Jerusalem, and Menachem Givon, HaNegev, all of Israel, assignors to Electric Fuel (E.F.L.) Ltd., Jerusalem, Israel

Continuation-in-part of Ser. No. 636,411, Dec. 31, 1990, Pat. No. 5,228,958. This application Jul. 6, 1993, Ser. No. 88,543

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.⁶ C25C 1/16

U.S. Cl. 204—115

16 Claims

1. A process for the preparation of an alkaline-zinc slurry for use in batteries, said slurry comprising an admixture of:
- (a) zinc which has been at least partly oxidized to an oxidation product selected from the group consisting of zinc oxide, zinc hydroxide and zincates;
- (b) an aqueous solution of at least one Group Ia metal comprising anions selected from the group consisting of hydroxide and zincate; and
- (c) an inorganic or organic inhibitor, effective to inhibit the interaction of zinc and at least one Group Ia metal hydroxide in aqueous solution, which would otherwise result in the evolution of hydrogen gas;
- said process comprising the steps of:
- electrolyzing said admixture in a cell with a corrosion-resistant anode and a non-zinc-adherent cathode such that the zinc which deposits on said cathode self-detaches or is removable by a method selected from the group consisting of brushing, scraping, vibrating and the use of liquid jets, until no more than a preselected amount of zinc remains in the solution, provided that the current density at the cathode is preselected so that in conjunction with the non-zinc-adherent characteristic of the cathode, the electrowon zinc will have, after

homogenizing into particles, a density within the range 0.2–2.0 g/cc and a surface area within the range 0.5–6.0 m²/g;
removing zinc from the cathode and homogenizing it into particles;
combining said homogenized zinc particles with additional aqueous Group Ia metal hydroxide and optionally with other makeup components selected from the group consisting of water and inhibitor to form a charged slurry;
optionally analyzing said charged slurry in order to ascertain whether at least the values of zinc, the Group Ia metal hydroxide and the inhibitor lie within preset limits; and
optionally adjusting the values of at least one of said aforementioned zinc, Group Ia metal hydroxide or inhibitor to within preset limits for said charged slurry.

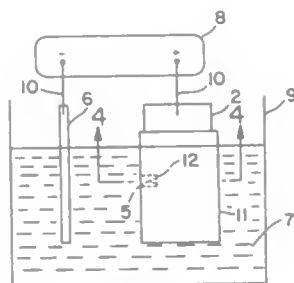
5,378,330
METHOD FOR POLISHING MICRO-SIZED STRUCTURES

Hong Li, Cambridge; Stephen D. Senturia, Brookline, and David Volfson, Boston, all of Mass., assignors to Panasonic Technologies, Inc., Cambridge, Mass.

Filed May 7, 1993, Ser. No. 59,466
Int. Cl.⁶ C25F 3/16

U.S. Cl. 204—129.1

20 Claims



1. A method for polishing a substrate having at least one micro-sized structure, comprising the steps of:

- identifying a first region of the substrate on which a micro-sized structure is to be located, and on which first region polishing is desired, and a second region of the substrate, such that polishing is not desired in the second region, said second region having features which would interfere with the micropolishing of the first region if the first and second regions were micropolished together;
- coating the substrate with a selected coating material that does not degrade substantially when exposed to a selected electrolyte;
- selectively removing the coating from the first region, to expose the micro-sized structure without removing the coating from the second region;
- exposing the first region of the substrate to the electrolyte; and
- electropolishing the first region of the substrate.

5,378,331
APPARATUS AND METHOD FOR ELECTROPOLISHING METAL WORKPIECES
Willard E. Kemp, Houston, Tex., assignor to Kemp Development Corporation, Houston, Tex.

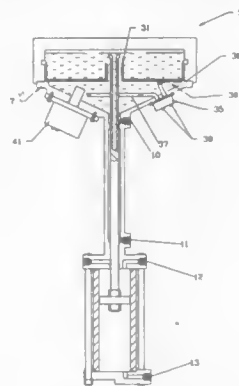
Filed May 4, 1993, Ser. No. 56,754
Int. Cl.⁶ C25F 3/16, 7/00

U.S. Cl. 204—129.7

8 Claims

8. A method for electropolishing a metal workpiece comprising:
placing said workpiece in a chamber sealed from atmosphere and capable of withstanding pressure or vacuum;

contacting said workpieces with one electrode of a current source to form an electrode of said workpiece;
providing a second electrode attached to a second lead of the current source;
pumping rinse fluid into said chamber to a level at least partially above the level of said workpiece therein and circulating said rinse fluid through said chamber;
withdrawing said rinse fluid from said chamber and then creating a negative pressure in said chamber to withdraw said rinse fluid and to assist in drying of said workpiece;
introducing an electrolyte fluid into said chamber;
activating said electrodes through said current source to



facilitate electrochemical smoothing of the surface of said workpiece;
ultrasonically stirring said electrolyte fluid while said electrodes are activated by said current;
withdrawing said electrolyte fluid from said chamber and subjecting said chamber to negative pressure to assist in evacuation of said electrolyte fluid;
introducing said rinse fluid into said chamber and maintaining circulation of said rinse fluid therein for a period of time; and
withdrawing said rinse fluid from said chamber and subjecting said chamber to a partial vacuum to assist in evaporation of said rinse fluids.

5,378,332
AMPEROMETRIC FLOW INJECTION ANALYSIS BIOSENSOR FOR GLUCOSE BASED ON GRAPHITE PASTE MODIFIED WITH TETRACYANOQUINODIMETHANE
Prem C. Pandey, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Apr. 14, 1993, Ser. No. 46,187
Int. Cl.⁶ G01N 27/26

U.S. Cl. 204—153.12

19 Claims

1. An electrode for a biosensor which comprises a homogeneous composition of between about 8 to 15 weight percent of a redox enzyme, between about 28 to 35 weight percent of an electron-transfer mediator, between about 28 to 35 weight percent graphite powder, and between about 23 to 30 weight percent of a mineral oil.

5,378,333
HALOGENATED POLYCARBOXYCUBANES
Abdollah Bashir-Hashemi, Bridgewater, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 5, 1993, Ser. No. 28,709
Int. Cl.⁶ C07C 23/00

U.S. Cl. 204—157.65

3 Claims

1. 6-Chloro-1,2,4,7-tetracarboxymethoxycubane.
3. A method for the photochemical halogenation of a cubane skeleton comprising the steps, a) selecting a cubane selected

from the group consisting of 1,4 dicarbomethoxycubane 1 and monocarbomethoxycubane 3, b) adding the cubane to oxalyl chloride to form a mixture, c) subjecting the mixture to ultra violet irradiation for sufficient period of time to complete the halogenation, and d) recovering the halogenated cubane.

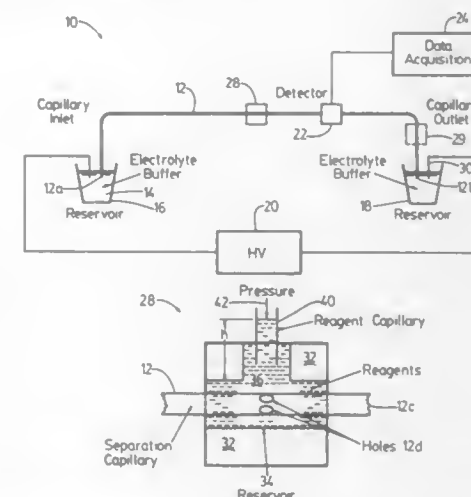
5,378,334
SYSTEM FOR MEASURING AND CONTROLLING ELECTROOSMOSIS IN SEPARATION TECHNIQUES
Rajeev Dadoo, Stanford; Thomas T. Lee, Palo Alto, and Richard N. Zare, Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 9,306, Jan. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 902,915, Jun. 23, 1992, abandoned, which is a division of Ser. No. 235,953, Aug. 19, 1988, abandoned, said Ser. No. 9,306, is a continuation-in-part of Ser. No. 975,850, Nov. 13, 1992, Pat. No. 5,310,463. This application Nov. 24, 1993, Ser. No. 158,807

Int. Cl.⁶ G01N 27/26, 27/447

U.S. Cl. 204—180.1

28 Claims



5. A method for electrokinetic separation of a sample in a separation column containing the sample and an electrolyte, said column having an inlet and an outlet and a passage between the inlet and the outlet, said method comprising:
applying an electric field in the column to cause electroosmotic flow of the electrolyte and the sample to migrate and separate in a section of the column into its components; and
introducing a substance into the column through said passage to alter the electroosmotic flow rate of the sample in the column.

5,378,335
PROCESS FOR COATING ELECTRICALLY CONDUCTIVE SUBSTRATES, AND AN AQUEOUS, CATHODICALLY DEPOSITABLE ELECTRODEPOSITION PAINT
Monika Hoppe-Höfller, W-Bloomfield, Mich.; Udo Strauss, and Bernd-Rüdiger Volkmann, both of Münster, Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Münster, Germany

Continuation of Ser. No. 859,309, Jul. 7, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 216,790
Claims priority, application Germany, Nov. 24, 1989, 3938883
Int. Cl.⁶ C25D 13/10

U.S. Cl. 204—181.7

6 Claims

1. A process for coating electrically conductive substrates, comprising the steps of
A. immersing an electrically conductive substrate in an aqueous electrodeposition paint,

B. connecting the substrate as a cathode,
C. depositing a film on the substrate by direct current,
D. removing the coated substrate from the electrodeposition paint, and
E. baking the deposited paint film,
wherein the aqueous electrodeposition paint includes a binder, 1 to 15 percent by weight of an electrically conductive material selected from the group consisting of carbon black, graphite and mixtures thereof, having a primary particle diameter of less than 10 μm, and zinc, with the proviso that zinc is present in an amount not greater than 12 percent by weight, wherein the zinc is in a form selected from the group consisting of zinc powder and zinc flakes, with the percentages by weight relating to the total amount of the binder contained in the electrodeposition paint.

5,378,336
INERT ANODE FOR DISSIPATION OF CONTINUOUS CURRENT
Luigi Bagnolo, Milan, Italy, assignor to Ecoline Anticorrosion S.R.L., Muggio, Italy

Filed Jun. 25, 1992, Ser. No. 904,438
Claims priority, application Italy, Jun. 25, 1991, MI 91A00173
Int. Cl.⁶ C23F 13/00

U.S. Cl. 204—196

42 Claims

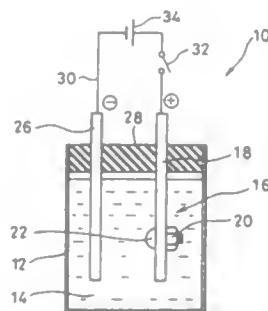


1. An indissoluble anode for the dissipation of continuous current for electrochemical plants and especially so for cathodic protection plants, the anode comprising a rigid core having a high resistance to radial crushing and bending; an inner electroconductive layer of copper applied on said core; an outer layer composed of titanium and applied over said inner copper layer so as to be electrically connected with the latter, said layer of titanium having a free surface; a film of an indissoluble and current-dissipating metal applied on said free surface of said titanium layer, said core being formed as an element having two ends, said copper layer extending beyond said titanium layer; a copper clamp which grips said copper layer at a location beyond said titanium layer; stoppers provided with filling gaskets and closing said ends of said element, each of said stoppers having a central through hole; and a small diameter member passing through said hole.

5,378,337
ELECTRICAL NUCLEATION DEVICE FOR SUPERCOOLED HEAT STORAGE MEDIUM
 Masahiro Kiyomura, Fujisawa, Japan, assignor to Nok Corporation, Tokyo and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan, a part interest

Filed May 5, 1993, Ser. No. 56,869
 Claims priority, application Japan, May 12, 1992, 4-031034[U]

Int. Cl.⁶ C25B 9/00, 15/00; C25C 7/00
 U.S. Cl. 204—228 7 Claims



7. An electric nucleation device for inducing formation of crystal nuclei in a supercooled liquid of hydrate of salt serving as a heat storage medium, said device comprising:

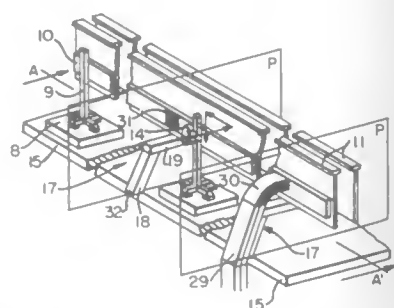
- a first electrode;
- a plurality of spaced metallic second electrodes each having a roughened surface;
- a plurality of rigid members affixed one to each of said second electrodes in tight mechanical contact therewith for closely covering at least in part the surface of each of said second electrodes;
- a trace of said hydrate of salt in the form of molecular clusters or crystalline particles thereof retained between each of said second electrodes and each of associated rigid members; and,
- means for applying electric voltage selectively between said first electrode and selected one of said second electrodes.

5,378,338
SUPERSTRUCTURE FOR A VERY HIGH POWER ELECTROLYSIS CELL FOR THE PRODUCTION OF ALUMINUM

Bernard Langon, Rives sur Fore; Christian Duval, La Fleche, and Alain Vanacker, Benvy la Foret, all of France, assignors to Aluminium Pechiney, Courbevoie, France

Filed Aug. 16, 1993, Ser. No. 106,711
 Claims priority, application France, Aug. 20, 1992, 92 10272
 Int. Cl.⁶ C25C 3/10

U.S. Cl. 204—243 R 18 Claims



1. Superstructure for a very high power electrolysis cell for the production of aluminum using the Hall-Heroult process, the cell being formed of a metallic casing (1) which is heat-insulated and of elongated parallelepipedic shape, said superstructure comprising at least one rigid beam (11) disposed along the long length of the casing, resting on supports, and

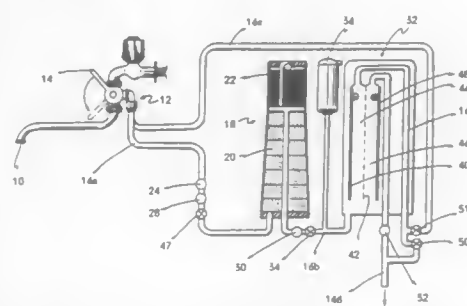
supporting in particular the anodic frame structure (10) to which are connected on the one hand the current risers (29) coming from the preceding cell in the series and on the other hand the anode rods (9), characterised in that each rigid beam (11) rests solely upon supports placed between its ends, termed intermediate gantries (17), and in that each anodic frame structure (10) associated with each rigid beam comprises means for electrical and mechanical connection or connectors (14) to the anode completely fixed to said anodic frame structure and ensuring the contact and the clamping of each anode rod against it following lateral engagement and positioning of each rod in the corresponding connector, and legs (18) of each intermediate gantry rest on the rim of the casing by means permitting relative displacement of the support in relation to the casing.

5,378,339
WATER ELECTROLYZER
 Kazuaki Aoki; Tomio Tadokoro, and Shozo Miyazawa, all of Suzaka, Japan, assignors to Techno Excel Kabushiki Kaisha, Nagano, Japan

PCT No. PCT/JP93/00084, § 371 Date Aug. 2, 1993, § 102(e)
 Date Aug. 2, 1993, PCT Pub. No. WO93/15022, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 21, 1993, Ser. No. 94,044
 Claims priority, application Japan, Jan. 30, 1992, 4-040183;
 Feb. 12, 1992, 4-058916

Int. Cl.⁶ C25B 9/00, 15/08, 11/10
 U.S. Cl. 204—260 8 Claims



1. In a water electrolyzer comprising an electrolyzing tank, electrodes, which are mutually faced in said electrolyzing tank, and a porous partition provided between said electrodes, whereby alkali water is introduced from a cathode of said electrodes,

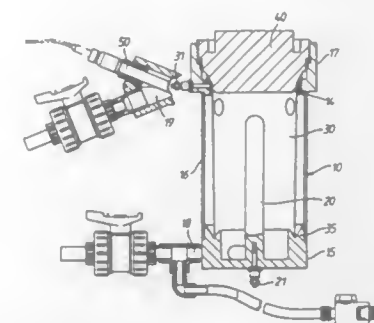
characterized in that:
 said electrodes are a first cylindrical electrode, a second cylindrical electrode which is concentrically arranged outside of said first cylindrical electrode, and a third cylindrical electrode which is concentrically arranged outside of said second cylindrical electrode; one of said adjacent cylindrical electrodes is a cathode and the other is an anode; and the surface area of said second cylindrical electrode is equal to the sum of the surface area of an outer face of said first cylindrical electrode and surface area of an inner face of said third cylindrical electrode; wherein said anode electrode is made of titanium (Ti) and coated with platinum (Pt).

5,378,340
APPARATUS FOR THE ELECTROLYTIC RECOVERY OF SILVER

Werner Van de Wyckel, Mortsel; Dirk de Ruijter, Deurne; Benny Jansen, Geel, and Frank Michiels, Arendonk, all of Belgium, assignors to AGVA-Gevaert N. V., Mortsel, Belgium
 Filed Feb. 9, 1994, Ser. No. 194,014

Claims priority, application European Pat. Off., Feb. 16, 1993, 93200427.8

Int. Cl.⁶ C25C 7/00
 U.S. Cl. 204—272 7 Claims



1. An apparatus for the electrolytic recovery of silver from solutions containing silver, the apparatus comprising an electrolytic cell (10), an anode (20) and a removable cathode (30) positioned within the cell (10) and encircling the anode (20) and electrical connectors (21, 31) outside the cell (10) for the cathode (30) and the anode (20), the cell (10) including an electrically conductive contact surface (11), clamping means being provided to clamp a deformable portion (32) of the cathode (30) against the contact surface (11) to complete an electrical connection from the cathode connector (31) to the cathode (30), characterised in that the electrically conductive contact surface (11) is positioned to define an upper circular opening (12) of the electrolytic cell (10) through which the cathode (30) may be removed, and that the clamping means comprises a removable lid (40) for closing said circular upper opening (12) of the electrolytic cell (10), the lid having a frustoconical lower end (42) engaging the upper edge of the cathode for clamping it against the electrically conductive contact surface.

5,378,341
CONICAL MAGNETRON SPUTTER SOURCE
 Alvin J. Drehman, Chelmsford, and William M. Hale, N. Scituate, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 13, 1993, Ser. No. 135,827
 Int. Cl.⁶ C23C 14/35; H01L 39/24
 U.S. Cl. 204—298.18 6 Claims

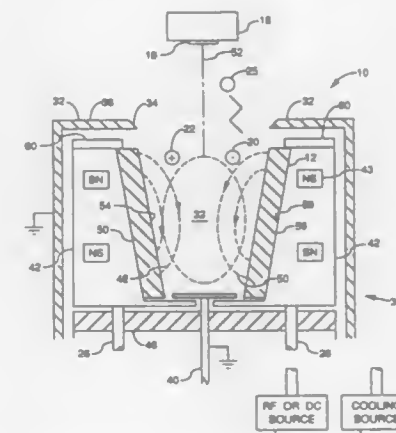
1. A magnetron sputter source, said magnetron sputter source for use in a thin film deposition apparatus, said source trapping substantially negative ions within said source, said magnetron sputter source comprising:

- means for applying DC or RF power for creating a plasma and for applying a net negative potential;
- means for applying cooling;
- a conical target electrode, said conical target electrode being made of a selected target material, said target material to be deposited on a substrate outside of said magnetron sputter source, said conical target electrode having a shape of a truncated cone, said conical target electrode having a top opening and a bottom opening, said top opening being larger than said bottom opening, said conical target electrode having a centerline therethrough, said conical target electrode having an inner surface and an outer surface, said inner surface being inclined at an angle of about 1 to 20 degrees to said centerline, said means for applying a net negative potential connected to said conical

electrode, said means for applying power creating a plasma in the proximity of said conical target electrode, said means for applying cooling maintaining said conical target electrode in a desired temperature range;

means for holding said conical target electrode, said means for holding having an inner surface therein, said inner surface being substantially conformal to said outer surface of said conical target electrode;

means for generating a magnetic field, said means for generating a magnetic field having a north pole located near said top opening of said conical target electrode and a south pole located near said bottom opening of said conical target electrode, said means for holding having said means for generating a magnetic field mounted therein whereby said field points to said bottom opening;



means for clamping said conical target electrode within said means for holding;

an anode, said anode being positioned on said centerline of said conical target electrode, said anode being located at said bottom opening of said conical target electrode, said anode adapted to have a ground voltage applied thereto; and

a shield, said shield being positioned about said means for holding, said shield means for clamping, and said target conical electrode, said shield having a center opening therein for the passage of target material, means for mounting a substrate for receiving said target material located substantially outside of said opening, said shield adapted to being biased to a ground voltage.

5,378,342
NEURAL MODELING DEVICE
 Mineo Ikematsu, Tsuchiura; Yukihiro Sugiyama, and Masahiro Iseki, both of Tsukuba, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

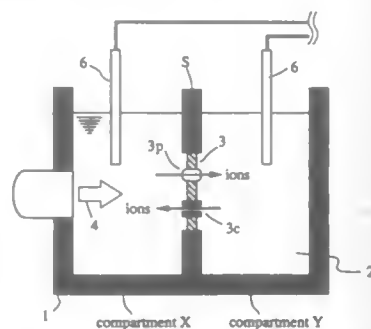
Filed Mar. 25, 1993, Ser. No. 37,030
 Claims priority, application Japan, Mar. 26, 1992, 4-068367
 Int. Cl.⁶ G01N 27/26

U.S. Cl. 204—403 10 Claims

1. A neural modeling device for generating an oscillating electrical signal, comprising:

- (a) a container;
- (b) a lipid membrane situated so as to divide said container into two compartments;
- (c) an electrolyte in each compartment, the electrolyte in each compartment being at a potential;
- (d) electrodes contacting the electrolyte in each compartment for transmitting the potentials of the electrolyte as an electrical signal;
- (e) an ion pump buried in said lipid membrane being capable of active-transport of ions in said electrolyte through said

lipid membrane from one side to the other side in response to an external stimulus; and



(f) an ion channel buried in said electrolyte being capable of passive-transport of ions of the same sign as that of the ions actively transported by said ion pump.

5,378,343

ELECTRODE ASSEMBLY INCLUDING IRIIDIUM BASED MERCURY ULTRAMICROELECTRODE ARRAY

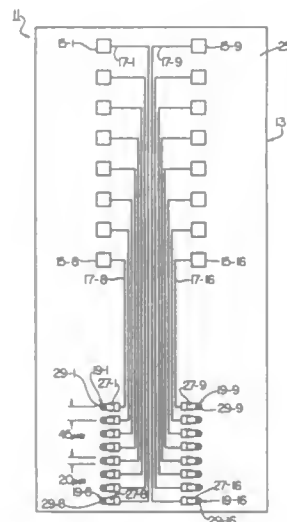
Samuel P. Kounaves, Winchester, Mass.; Gregory T. A. Kovacs, Stanford, and Christopher W. Stormont, Cupertino, both of Calif., assignors to Tufts University, Medford, Mass. and Leland Standard Univ., Stamford, Calif., a part interest

Filed Jan. 11, 1993, Ser. No. 3,229

Int. Cl.⁶ G01N 27/26

U.S. Cl. 204—413

24 Claims



1. An electrode assembly for use in quantifying the levels of various metals in an aqueous solution, said electrode assembly comprising:

- a) a substrate; and
- b) an array of ultramicroelectrodes arranged on said substrate, each of said ultramicroelectrodes comprising a layer of iridium and a layer of mercury, said mercury layer being disposed on said iridium layer.

5,378,344

ION SENSOR

Tohru Nakagawa, Kusatsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 7, 1993, Ser. No. 43,550

Claims priority, application Japan, May 18, 1992, 4-124574

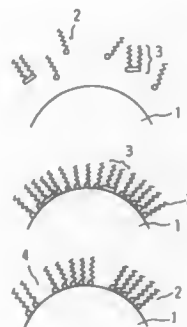
Int. Cl.⁶ G01N 27/26

U.S. Cl. 204—418

10 Claims

1. An ion sensor, comprising a thin film formed by fixing

water-repelling chemical admolecules to the surface of an electrode via covalent bonding, wherein at least one hole



having an area of 0.5–50 nm² is formed in said chemically adsorbed thin film, thereby permitting the passage of ions and preventing the passage of biopolymers.

5,378,345 CERAMIC SOLID ELECTROLYTE-BASED ELECTROCHEMICAL OXYGEN CONCENTRATOR CELL

Dale M. Taylor, and Ashok V. Joshi, both of Salt Lake City, Utah, assignors to Ceramtec, Inc., Salt Lake City, Utah
Continuation-in-part of Ser. No. 432,919, Nov. 6, 1989, Pat. No. 5,021,137, which is a continuation-in-part of Ser. No. 156,549, Feb. 16, 1988, Pat. No. 4,879,016, which is a continuation-in-part of Ser. No. 889,214, Jul. 25, 1986, Pat. No. 4,725,346. This application Jun. 4, 1991, Ser. No. 710,128

The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.

Int. Cl.⁶ G01N 27/417

U.S. Cl. 204—421

8 Claims



1. An electrode/electrolyte combination for an oxygen delivery system for delivering oxygen ions through said electrolyte to produce essentially pure O₂ from an O₂-containing gas mixture, the improvement comprising:

- a thin walled electrolyte having a pair of opposed surfaces consisting essentially of ceria, calcia and yttria;
- a three-layer electrode system, consisting essentially of a first thin, substantially continuous layer of LSCo adherent to each surface of said electrolyte,
- a second thin, substantially continuous layer of a composite mixture of LSCo and an alloy of Pd and Ag adherent to said first layer, and
- a third thin, substantially continuous layer of silver adherent to said second layer.

5,378,346

ELECTROPLATING

Oluwatoyin A. Ashiru, c/o International Tin Research Institute, Kingston Lane, Uxbridge, Middlesex UB8 3PJ, England, and Stephen J. Blunden, 109 Twyford Road, West Harrow, Middlesex HA2 0SJ, England

PCT No. PCT/GB91/01473, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO92/04485, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 30, 1991, Ser. No. 969,183

Claims priority, application United Kingdom, Aug. 31, 1990, 9018984.6; Jun. 7, 1991, 9112289.5

Int. Cl.⁶ C25D 3/56

U.S. Cl. 205—244

6 Claims

1. A plating bath for the electrodeposition of tin-zinc alloys comprising an alkaline aqueous solution of (i) an alkali metal zincate, (ii) an alkali metal stannate and (iii) an alkali metal tartrate.

5,378,347

REDUCING TIN SLUDGE IN ACID TIN PLATING

Donald Thomson, Northport, N.Y.; David A. Luke, Macleesfield, United Kingdom, and Claudia Mosher, Amityville, N.Y., assignors to LeaRon, Inc., Freeport, N.Y.

Filed May 19, 1993, Ser. No. 65,104

Int. Cl.⁶ C25D 3/32

U.S. Cl. 205—254

19 Claims

11. A method for preventing, reducing or minimizing the oxidation of tin ions in an acid electroplating solution which comprises adding an antioxidant compound which includes a transition metal selected from the elements of Group IV B, V B or VI B of the Periodic Table to an acid electroplating solution which contains one of fluoboric acid, an organic acid or one of their salts and divalent tin ions, said antioxidant compound being added in an amount effective to assist in maintaining the tin ions in the divalent state but less than 5 g/l.

5,378,348

DISTILLATE FUEL PRODUCTION FROM FISCHER-TROPSCH WAX

Stephen M. Davis, and Daniel F. Ryan, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 22, 1993, Ser. No. 96,129

Int. Cl.⁶ C10G 25/00, 35/04, 7/00

U.S. Cl. 208—27

11 Claims

1. A process for producing middle distillate transportation fuel components from the waxy product of a hydrocarbon synthesis process which comprises:

- (a) separating the waxy product into a heavier fraction and at least one lighter fraction;
- (b) catalytically isomerizing the heavier fraction in the presence of hydrogen and recovering products with improved cold flow properties;
- (c) catalytically hydrotreating the lighter fraction and removing hetero atom compounds therefrom;
- (d) catalytically isomerizing the product of step (c) to produce jet fuel component having a freeze point of -30° F. or lower.

5,378,349

PASSIVATED CATALYSTS FOR CRACKING PROCESS

Dwayne R. Senn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 26, 1993, Ser. No. 67,754

Int. Cl.⁶ C10G 11/18

U.S. Cl. 208—121

34 Claims

1. In a process for catalytically cracking a hydrocarbon-containing oil feed which contains metal impurities in the substantial absence of added hydrogen gas and in the presence of a zeolite-containing catalytic cracking catalyst in a catalytic cracking zone, wherein said zeolite-containing catalytic cracking catalyst has been contacted with at least one antimony

compound at such conditions as to incorporate at least about 0.01 weight percent antimony into said cracking catalyst, the improvement which comprises additionally contacting said cracking catalyst with at least one zirconium compound as such conditions as to incorporate additionally at least 0.01 weight percent zirconium into said cracking catalyst, thereby causing a decrease of the amount of hydrogen gas generated in said process.

5,378,350

PROCESS AND CATALYST FOR DEHYDROGENATION OR DEHYDROCYCLIZATION OF HYDROCARBONS

Heinz Zimmermann, Munich, Germany, and Frederik Versluis, Amersfoort, Netherlands, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

PCT No. PCT/EP89/01517, § 371 Date Aug. 9, 1991, § 102(e) Date Aug. 9, 1991, PCT Pub. No. WO90/06907, PCT Pub. Date Jun. 28, 1990

PCT Filed Dec. 12, 1989, Ser. No. 741,446

Claims priority, application Germany, Dec. 12, 1988, 3841800

Int. Cl.⁶ C10G 35/06; B01J 23/00; C07C 5/333, 5/41

U.S. Cl. 208—136

18 Claims

5. A process for the dehydrogenation or dehydrocyclization of hydrocarbons on a regenerable catalyst comprising: contacting said hydrocarbons with said regenerable catalyst under sufficient dehydrogenation or dehydrocyclization conditions, wherein said regenerable catalyst comprises a chromium oxide and an aluminum oxide with at least one catalyst promoting cesium metal compound in an amount of 0.1 to 10% by weight of the catalyst, calculated as Cs₂O, and at least one additional promoter comprising at least one zirconium metal compound in an amount of 0.1 to 15% by weight of the catalyst, calculated as ZrO₂.

5,378,351

PROCESS FOR THE PREPARATION OF LUBRICATING BASE OILS

Philippe Guichard; Pierre Grandvallet; Guy Barre, all of Grand Couronne, France; Arend Hoek, and Andries Q. M. Boon, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 27, 1993, Ser. No. 143,810

Claims priority, application European Pat. Off., Oct. 28, 1992, 92402938.2

Int. Cl.⁶ C10G 45/00, 47/04, 47/06, 47/16

U.S. Cl. 208—143

15 Claims

1. A process for the preparation of an extra high viscosity index lubricating base oil, said viscosity index being greater than 135, which process comprises contacting in a contacting zone a hydrocarbon feed with a catalyst in the presence of hydrogen, which catalyst consists essentially of a hydrogenation component selected from the group consisting of cobalt, iron, and nickel or their oxides and/or sulfides, in combination with chromium, molybdenum, and tungsten, or their oxides or their sulfides, supported on an amorphous silica-alumina carrier having a macroporosity of at least 20% vol and wherein said catalyst has a side crushing strength greater than 75 N/cm and wherein said catalyst is substantially halogen-free.

5,378,352

HYDROCARBON UPGRADING PROCESS

Thomas F. Degnan, Morrestown, and Stuart S. Shih, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 794,273, Nov. 19, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,276

Int. Cl.⁶ C10G 45/60

U.S. Cl. 208—217

17 Claims

1. A process of upgrading a sulfur and olefin containing feed fraction containing at least 100 ppm S, and boiling in the gasoline boiling range which comprises:

contacting such sulfur and olefin containing gasoline boiling range feed fraction with a hydrotreating catalyst at temperatures of at least about 650° F., which comprises a) a substantially acidic porous refractory solid having an intermediate effective pore size and the topology of a zeolitic behaving material corresponding to at least one member of the group consisting of ZSM-5, ZSM-11, ZSM-22, ZSM-23, ZSM-35, ZSM-50, MCM-22, and mordenite, b) a Group VI metal, c) a Group VIII metal, and d) a suitable refractory support, under hydrotreating conditions comprising a temperature of about 650° to 900° F., a pressure of about 50 to 1500 psig, a space velocity of about 50 to 1500 psig, a space velocity of about 0.5 to 10 LHSV, and a hydrogen to hydrocarbon ratio of about 500 to 5000 standard cubic feet of hydrogen per barrel of feed, which are sufficient to separate at least some of the sulfur from the feed molecules and convert such to hydrogen sulfide, to produce a product comprising a normally liquid fraction boiling in substantially the same boiling range as the feed, but which has a lower sulfur content than the feed and which has a research octane number (RON) substantially no less than the feed; and recovering at least the gasoline boiling range fractions so produced.

5,378,353

ARRANGEMENT FOR THE SEPARATION OF FLOATING OIL FROM OIL/WATER MIXTURES

Berthold Koch, Pützstrasse 4, D-4040, Neuss 1, Germany
Continuation of Ser. No. 855,304, Mar. 23, 1992, abandoned.

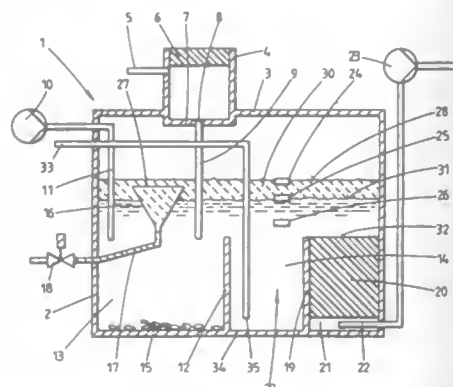
This application Jan. 8, 1993, Ser. No. 2,686

Claims priority, application Germany, Apr. 3, 1991, 4110726

Int. Cl.⁶ B01D 17/12

U.S. Cl. 210—86

8 Claims



1. An arrangement for the separation of floating oil from an oil/water mixture, which arrangement comprises a tank which contains the mixture and has at least one inlet for the mixture and separate outlets for the floating oil and the remaining liquid mixture, said tank having an uppermost, a middle and a lowermost sensor arranged in or on the tank so as to be vertically displaced relative to each other, the uppermost sensor operable upon detecting the presence of an adjacent mixture level for providing a control signal to activate an oil discharge means for discharging floating oil through the oil outlet, the middle sensor operable upon detecting the presence of an adjacent water level for providing a control signal to activate a mixture discharge means for discharging remaining liquid mixture through the mixture outlet, the lowermost sensor operable upon detecting the absence of an adjacent water level for providing a control signal to deactivate said mixture discharge means, whereby the uppermost and middle sensors control the operation of the oil discharge means for the floating oil, and the middle and lowermost sensors control the operation of said mixture discharge means for discharging the remaining liquid mixture, said oil discharge means for the floating oil comprising a downwardly directed funnel having

an upper inlet edge which is disposed below the uppermost sensor and above the lowermost sensor.

5,378,354

ARTICLE/LIQUID SEPARATOR

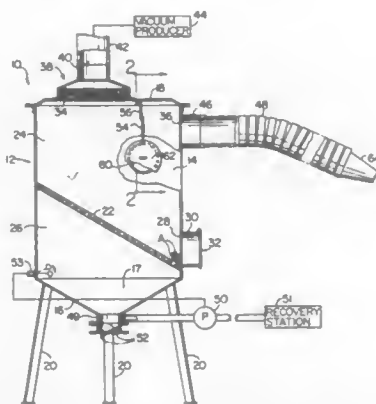
James C. Poor, East Granby, Conn., assignor to The Spencer Turbine Company, Windsor, Conn.

Filed Nov. 9, 1993, Ser. No. 150,387

Int. Cl.⁶ B01D 29/01; A47L 7/00

U.S. Cl. 210—188

11 Claims



1. Apparatus for separating liquid from liquid coated article and comprising a housing having an upper chamber and a lower chamber defining a sump, said housing having a side wall, a top wall, and a bottom wall downwardly inclined from said side wall, article supporting means disposed within said housing and partially defining said upper chamber and said lower chamber for permitting the passage of liquid from said upper chamber to said lower chamber and preventing passage of the articles from said upper chamber into said lower chamber and including a downwardly inclined perforated plate extending across said housing and separating said upper chamber from said lower chamber, said perforated plate having a lower portion disposed proximate said side wall, an outlet opening communicating with said upper chamber, vacuum producing means for withdrawing air from said housing through said outlet opening and including a vacuum conduit for connection to a vacuum source through which air withdrawn from said housing is constrained to pass, demisting means for removing liquid from air withdrawn from said housing through said outlet opening, an inlet opening defined by said housing and opening into an upper portion of said upper chamber, suction conduit means connected to said housing at said inlet opening for the passage of liquid contaminated articles into said upper chamber through said inlet opening and including a flexible vacuum hose, a first access opening defined by said side wall and opening into said upper chamber proximate the lower portion of said perforated wall for the removal of articles from said housing, a drain conduit connected to said housing in communication with said sump for removal of liquid from said sump, a pump connected to said drain conduit, sensing means mounted on said housing for operating said pump to discharge liquid from said sump when the liquid within said sump attains a predetermined level, and cleanout means for removing contaminate from said sump.

5,378,355

DIRECT DELIVERY IN-SITU DIFFUSER CLEANING

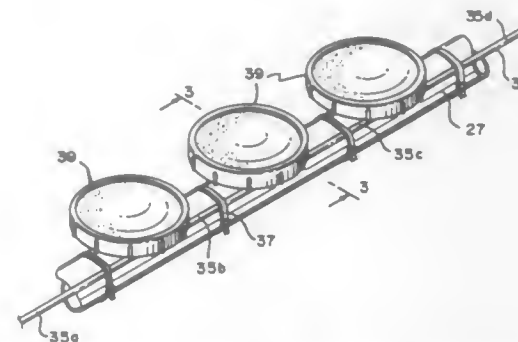
William W. Winkler, Delafield, Wis., assignor to Water Pollution Control Corporation, Brown Deer, Wis.

Filed Dec. 4, 1992, Ser. No. 984,122

Int. Cl.⁶ C02F 3/20

U.S. Cl. 210—136

37 Claims



1. Apparatus for aeration of wastewater with an aeration gas, comprising:

- A. a tank having wall means including a floor for holding wastewater which is to be aerated by said aeration gas;
- B. a multiplicity of fine pore diffusers respectively comprising plenums and diffusion elements which are mounted in a portion of said tank and which will be submerged in said wastewater when said diffusers are in normal operation;
- C. cleaning fluid conduits defining one or more cleaning fluid channels

- 1. running from a source of cleaning fluid to the multiplicity of plenums, and
- 2. connected with said plenums for simultaneously
 - a. feeding cleaning fluid from said source to said plenums and to the diffusion elements mounted thereon and
 - b. cleaning the diffusion elements; and
- D. aeration gas conduits defining one or more aeration gas channels separate from said cleaning fluid channel(s), running from a source of aeration gas to said plenums and connected with said plenums for supplying aeration gas thereto separately from said cleaning fluid.

28. A method of assembling apparatus for aeration of water with an aeration gas, comprising fabricating aeration gas distributor assemblies by:

- A. securing to an aeration gas distribution conduit that is useful for defining at least a portion of an aeration gas channel, a plurality of plenums that are disposed at intervals of distance longitudinally along said conduit and are configured to receive diffusion elements useful for aerating water, and
- B. securing to said plurality of plenums one or more cleaning fluid distribution conduits respectively defining a cleaning fluid channel that is substantially separate from said aeration gas channel for supplying cleaning fluid to said plenums substantially separately from said aeration gas.

5,378,356

ROOF DRAIN STRUCTURE

Duane D. Logsdon, Fullerton, Calif., assignor to LSP Specialty Products Company, Irving, Tex.

Filed Oct. 1, 1993, Ser. No. 131,080

Int. Cl.⁶ E04D 13/04

U.S. Cl. 210—163

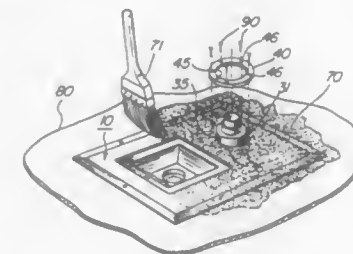
25 Claims

1. A drain structure for removing water from a substantially flat roof comprising:

- a drain plate having a substantially flat body sized to cover an aperture cut in the substantially flat roof;
- an overflow port comprised of a hollow boss extending upwardly from the flat body of said drain plate;

a plurality of first screw apertures formed in the flat body of said drain plate around said overflow port;

a clamp ring sized to fit around the hollow boss of said overflow port so that an edge portion of a roof membrane which surrounds the hollow boss may be securely clamped to the flat body of said drain plate to help prevent water from leaking under the edge portion of the roof membrane;



a plurality of second screw apertures formed about a periphery of said clamp ring, said second screw apertures spatially corresponding to said first screw apertures when said clamp ring is oriented in a particular position relative to the flat body of said drain plate; and

means for orienting said clamp ring in the particular position where said second screw apertures of said clamp ring align with said first screw apertures of said base plate.

5,378,357

LIGHT-WEIGHT DRAINAGE LINE UNIT EMPLOYING END-TO-END CONNECTORS

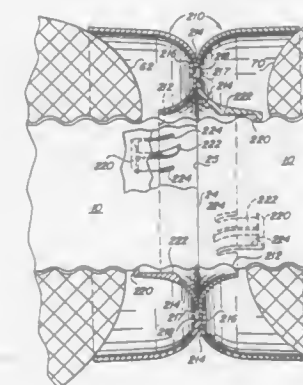
Randall J. Houck, 6 Junco Ln., Michael H. Houck, Rosman Hwy., both of Brevard, N.C. 28712, and Harold J. Houck, Pisgah Forest, N.C., assignors to Randall J. Houck and Michael H. Houck, both of Pisgah Forest, N.C., a part interest to each

Continuation-in-part of Ser. No. 783,814, Aug. 12, 1991, Pat. No. 5,154,543, which is a division of Ser. No. 667,460, Mar. 11, 1991, Pat. No. 5,051,028, which is a division of Ser. No. 164,255, Mar. 4, 1988, Pat. No. 5,015,123. This application Oct. 13, 1992, Ser. No. 960,096

Int. Cl.⁶ E02B 11/00

U.S. Cl. 210—170

6 Claims



1. A preassembled drainage line unit for use in a drainage field employed in a sewage treatment and disposal system for delivering fluid from a source of sewage effluent for absorption into the ground, the drainage line unit comprising:

- a predetermined length of perforated conduit including means for connecting the source and to another predetermined length of perforated conduit of adjacent drainage line units;
- an aggregation of discrete elements surrounding each predetermined length of conduit;
- a perforated sleeve member enveloping the aggregation of

each unit and bounding the same relative to the length of predetermined conduit, to define an aggregate filled drain cavity with a portion of each conduit extending beyond the opposing ends of the perforated sleeve member, the drainage cavity having predetermined minimum dimensions in directions outwardly of the conduit for providing drainage characteristics similar to those of a cavity constituted by an aggregation of rock or crushed stone;

connecting means mounted over the extending end of each predetermined length of conduit, the connecting means being interconnected at each end of each unit so as mate in conduit interconnecting relationship with an end of another unit brought into end-to-end alignment therewith; and wherein

the connecting means comprises a universal end cap at each end of each unit, each end cap having both a male interconnecting configuration and a female interconnecting configuration and further including a recess, said recess defining means for receiving a portion of said perforated sleeve member and of said aggregation of discrete elements, whereby each end of each unit is interconnectable with either end of each other unit irrespective of orientation.

5,378,358

FUEL PROCESSING UNIT

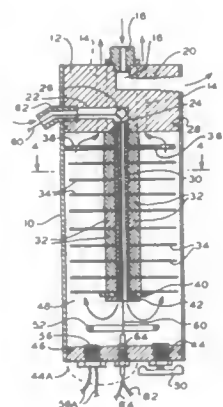
Robert Park, 1 Mohican Pl., Lake Hiawatha, N.J. 07034

Filed May 10, 1993, Ser. No. 58,263

Int. Cl.⁶ B01D 17/028

U.S. Cl. 210—187

16 Claims



1. A fuel processing unit for dewatering and heating fuel before delivery to a filter, comprising:

a housing having a settling chamber and an inlet communicating with said chamber, said housing having a filter connection means adapted to connect said filter in series with said chamber;

a heater cable having a predetermined length and extending from said chamber through said inlet and outside said housing; and

a diffuser baffle mounted in said chamber for diverting fuel flow and enhancing dewatering, said chamber having a top and an upper portion, said diffuser baffle being mounted in said upper portion of said chamber.

5,378,359

PUSH COLUMN AND CHROMATOGRAPHY METHOD

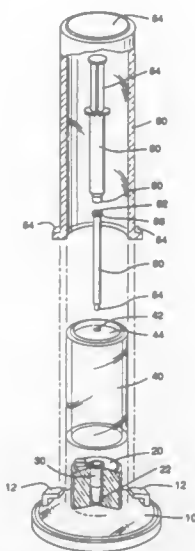
William D. Huse, Del Mar; Anthony M. Sorge, La Jolla, and Keith V. Sylvester, San Diego, all of Calif., assignors to Strategene, La Jolla, Calif.

Continuation of Ser. No. 292,808, Jan. 3, 1989, abandoned. This application Jan. 30, 1992, Ser. No. 827,995

Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—198.2

11 Claims



1. A push column comprising:

a column adapted to hold a chromatography material and a sample, said column being substantially tubular and having lower and upper openings therein;

a gel chromatography material residing in the column;

a syringe attached to said upper opening of said column and having a plunger movable within the syringe for applying pressure to the chromatography material when the plunger is displaced;

a collection vial positioned below the lower opening of said column; and

a support structure having

a base;

a collection vial support coupled to the base and having a central chamber therein to support said vial;

a column support adapted to slideably engage said vial support, said column support comprising an upper surface having an aperture therein adapted to support said column; and

a syringe support adapted to slideably engage said column support, said syringe support comprising an upper surface adapted to engage said syringe.

5,378,360

PUSH COLUMN AND CHROMATOGRAPHY APPARATUS

William D. Huse, Del Mar; Anthony M. Sorge, La Jolla, and Keith V. Sylvester, San Diego, all of Calif., assignors to Strategene, La Jolla, Calif.

Division of Ser. No. 827,995, Jan. 30, 1992, which is a continuation of Ser. No. 292,808, Jan. 3, 1989, abandoned. This application Jun. 28, 1993, Ser. No. 84,533

Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—198.2

5 Claims

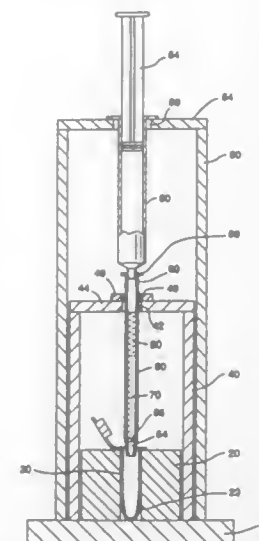
1. A chromatography apparatus comprising:

a tubular chromatography column including a tube containing a gel chromatography material and a sample, wherein the column has first and second openings therein;

a sample of DNA or RNA fragments and unincorporated nucleotides, wherein the DNA or RNA fragments are

larger in molecular size than the unincorporated nucleotides;

a gel chromatography material having an internal porosity selected intermediate between the molecular size of the DNA or RNA fragments and the molecular size of the unincorporated nucleotides;



a syringe attached to the first opening of the column and having a plunger moveable within the syringe that applies pressure sufficient to cause the sample to pass through the gel chromatography material; and

a collection vial coupled to the second opening of the column for collecting eluent from the column, wherein the eluent contains said DNA or RNA fragments substantially free of unincorporated nucleotides.

5,378,361

AXIALLY ADJUSTABLE CHROMATOGRAPHY COLUMN

Peter Baekström, Larsbergsvägen 24, S-181 39 Lidingö, Sweden

PCT No. PCT/SE92/00295, § 371 Date Dec. 28, 1993, § 102(e) Date Dec. 28, 1993, PCT Pub. No. WO92/19346, PCT Pub. Date Nov. 12, 1992

PCT Filed May 6, 1992, Ser. No. 140,208

Claims priority, application Sweden, May 8, 1991, 9101396-1 Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—198.2

4 Claims



1. A column for separation of substance mixtures with a liquid medium, comprising a cylindrical tube (1) with a separa-

tion space (6) therein having a closure at each end, whereby the separation space has an inlet and an outlet, respectively, through a channel (7,9) in each end thereof, whereby at least one of the closures is a movable piston (5) through which one of said channels runs and together with a channel in a piston shaft (10) connected to the piston makes up the inlet or the outlet, whereby said piston has a socket which is radially expandable by axial pressing of two interacting conical parts, for sealing of the piston against the inner wall of the column, wherein the piston (5) comprises an expandable socket (12) abutting, in its resting position, against the inner cylindrical surface of the column, and having a conical opening, widening towards the separation space with a certain cone angle, that the piston further comprises an inner part (16) having an outer surface conically tapering in the direction away from the separation space and abutting with its periphery against the periphery of the conical opening, that said inner part has a cone angle greater than the cone angle of the expandable socket, which inner part (16) can be pressed against the expandable collar, by tightening means operable from the outside of the column, to cause a first expansion thereof, and that the channelled piston shaft (10), arranged to the piston, is lockable against the column by a locking means (18) having a certain resilience in the longitudinal direction of the column, and that said resilience is arranged thus that it allows for pressing said inner part (16) back under the action of the pressure of a liquid in the separation space, to achieve a further expansion of the expandable socket (12), to sealing against the column wall.

5,378,362

APPARATUS FOR MAGNETICALLY TREATING WATER

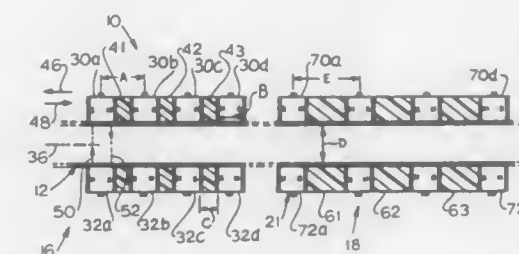
Adolf Schoepe, Fullerton, Calif., assignor to Fluidmaster, Inc., Anaheim, Calif.

Filed Sep. 30, 1992, Ser. No. 954,390

Int. Cl.⁶ C02F 1/48

U.S. Cl. 210—222

1 Claim



1. Apparatus for magnetically treating water passing through an elongated pipe to enhance properties of the water comprising:

a pipe that has an axis;

a group of magnets lying substantially against said pipe to apply a magnetic field to water flowing through the pipe, said group including at least three pairs of magnets uniformly spaced apart along the length of the pipe;

the magnets of each pair lying on opposite sides of said pipe with each magnet having North and South pole faces that each face in opposite directions each said pole face being generally planar and extending in a direction generally perpendicular to said axis, and with the magnetic polarity of each said pair arranged so that the North and South pole faces of a first magnet of a pair are generally coplanar with the South and North pole faces, respectively, of the second magnet of the pair, so an imaginary first line connecting said North pole face of said first magnet to said South pole face of said second magnet, does not cross an imaginary second line connecting said South pole face of said first magnet to said North pole face of said second magnet, all as seen in a view taken perpendicular to said axis.

5,378,363

FLUID FILTER

Théophile Christophe, 9, rue Mozart, 78330 Fontenay le Fleury, and Jean-Claude Moatti, 25-27, rue des Fleurs, 92150 Suresnes, both of France

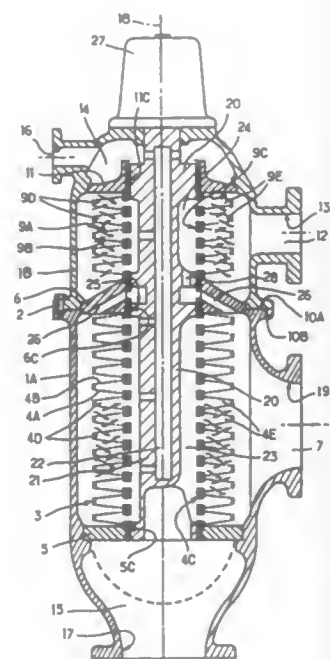
Filed Jun. 19, 1992, Ser. No. 901,245

Claims priority, application France, Jun. 20, 1991, 91 07599

Int. Cl.⁶ B01D 29/56

U.S. Cl. 210—314

6 Claims



1. A fluid filter comprising:

- a filter body having an opening connected to a filter body enclosure for admission of a first fluid to be filtered, the first fluid to be filtered containing a fluid and residues;
 - a first filtration assembly contained within the filter body having a first filtering element, the first filtering element separating the first fluid to be filtered into a stream of a first filtered fluid and first residues, the first filtering element having a first passage dimension of a predetermined calibration, the first filtration assembly further having a first receiving enclosure for receiving the first filtered fluid, the first receiving enclosure being separated from the rest of the first filtration assembly by the first filtering element;
 - a second filtration assembly contained within the filter body having a second filtering element, the second filtering element separating either the first fluid to be filtered or the first filtered fluid into a stream of a second filtered fluid and second residues, the second filtering element having a second passage dimension of a predetermined calibration, the second filtration assembly further having a second receiving enclosure for receiving the second filtered fluid, the second receiving enclosure being separated from the rest of the second filtration assembly by the second filtering element; and
 - a cleaning element contained within the filter body, the cleaning element having a cleaning element enclosure for receiving the first and second residues from the first and second filtering elements, the cleaning element enclosure being separated from the first and second receiving enclosures and having a permanent opening for evacuating the first and second residues,
- wherein the first and second passage dimensions of the first and second filtering elements are significantly different.

5,378,364

CONICAL SCREEN BASKET CENTRIFUGE

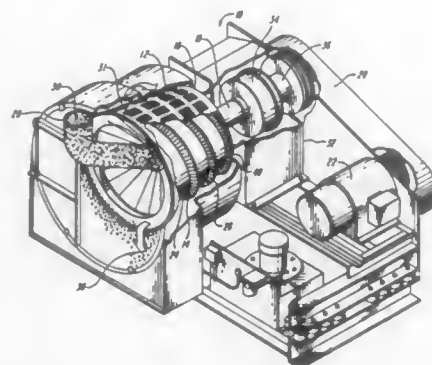
Bruce L. Welling, Scott Depot, W. Va., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 14, 1992, Ser. No. 944,520

Int. Cl.⁶ B04B 3/00

U.S. Cl. 210—512.1

13 Claims



1. A conical screen basket centrifuge having a rotary conical basket/cage combination with apertures and including a conical screen portion, a rotary, helically-bladed scroll mounted coaxially therein, means for rotating said basket/cage combination and scroll about their common axis in the same direction at a differential speed, means for feeding a solids-liquid slurry into said basket/cage combination and means defining an outlet from said basket/cage combination for solids moved through said screen section by said scroll, wherein said screen portion comprises,

slotted screen means comprising a plurality of abrasion resistant ligaments bridging the apertures of said basket/cage combination and laterally spaced to form slots, the slots whereof communicate the interior of said screen portion with the exterior of said basket/cage combination and lie substantially along paths parallel to the common axis.

5,378,365

PROCESS FOR THE ISOLATION OF HIGHLY PURIFIED FACTORS IX, X AND II FROM PROTHROMBIN COMPLEX OR HUMAN PLASMA

Silvana Arrighi, Casciano di Murlo; Francesco Norelli; Maria G. Borri, both of Siena, and Enzo Bucci, Cittaducale, all of Italy, assignors to Sclavo S.p.A., Siena and Alma-Derivati S.p.A., Prov. of Lucca, both of Italy

Filed Mar. 26, 1993, Ser. No. 38,942

Claims priority, application Italy, Mar. 27, 1992, FI92 A 000078

Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—635

6 Claims

1. Process for the purification of factor IX, factor II and factor X from human plasma by two successive ion exchange chromatographic separations followed by adsorption chromatography on a metal ions derivatized matrix.

5,378,366

HOT LIME PRECIPITATION OF ARSENIC FROM WASTEWATER OR GROUNDWATER

Jeffrey H.-G. Yen, Woolwich, N.J., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Apr. 22, 1993, Ser. No. 52,025

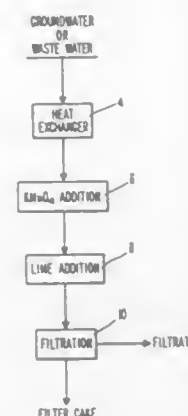
Int. Cl.⁶ C02F 9/00

U.S. Cl. 210—667

16 Claims

1. A process for the removal of dissolved arsenic from wastewater or groundwater contaminated therewith comprising precipitating said arsenic as calcium arsenate by reaction of said arsenic with lime or hydrated lime fed to the contaminated water in an amount sufficient to raise the pH of said water to

at least 11, continuing said reaction for a time sufficient to precipitate at least a major proportion of said calcium arsenate



and at a temperature within the range of 35° to less than 100° C., and separating the purified water from the precipitate.

5,378,367

METHOD FOR REMOVING COLOR-IMPARTING CONTAMINANTS FROM PULP AND PAPER WASTE STREAMS USING A COMBINATION OF ADSORBENTS

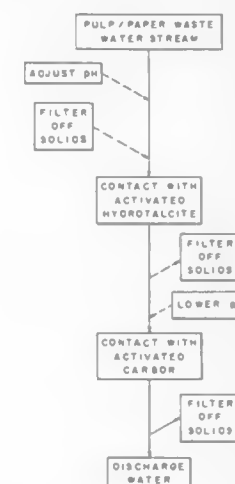
Gary A. O'Neill, Tyngsborough, Mass., and George M. Goyak, Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 25, 1992, Ser. No. 981,601

Int. Cl.⁶ C02F 1/28

U.S. Cl. 210—669

4 Claims



1. A method for removing color-imparting dioxins from a waste water stream, said method comprising:

- (a) adjusting the pH of the stream to at least about 5;
- (b) contacting said stream with a first adsorbent including a thermally activated form of a compound selected from: hydrotalcite, pyroaurite, takovite and mixtures thereof;
- (c) separating said contacted first adsorbent from the stream; and
- (d) contacting said stream with a second adsorbent including activated carbon.

5,378,368

CONTROLLING SILICA/SILICATE DEPOSITION USING POLYETHER POLYAMINO METHYLENE PHOSPHONATES

Jasbir S. Gill, McKees Rocks, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Aug. 5, 1992, Ser. No. 926,535

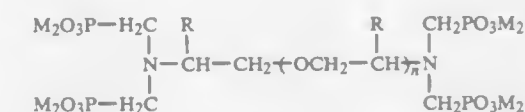
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.

Int. Cl.⁶ C02F 5/14

U.S. Cl. 210—639

8 Claims

1. A method of inhibiting deposition of salt scale including mixed calcium carbonate, silica and/or silicate in an aqueous system selected from the group consisting of recirculating cooling water systems, boiler water systems, reverse osmosis systems, gas scrubbers and evaporators having a pH of at least 8.5 and a calcium saturation level of at least 150 times the solubility limit of calcium as calcite, comprising the step of treating said system with an effective scale-inhibiting amount of a polyether polyamino methylene phosphonate of the following formula:



and optionally the N-oxides thereof; where n is an integer or fractional integer which is, or on average is, from about 2 to about 12, inclusive; M is hydrogen or a suitable cation; and each R may be the same or different and is independently selected from hydrogen and methyl.

5,378,369

SOLVENT EXTRACTION

Peter D. Rose; Trevor D. Phillips, both of Grahamstown, and Ronald D. Sanderson, Stellenbosch, all of South Africa, assignors to Sasol Chemical Industries (Proprietary) Limited, Johannesburg, South Africa

Filed Feb. 2, 1994, Ser. No. 191,323

Claims priority, application South Africa, Feb. 11, 1993, 93/0953

Int. Cl.⁶ B01D 61/16

U.S. Cl. 210—637

7 Claims

1. In the solvent-extraction of β -carotene from an aqueous algal biomass suspension whereby an organic phase in the form of a vegetable oil which is immiscible with water is mixed with a suspension in an aqueous phase of an algal biomass, the biomass containing the β -carotene, to form a mixture of the organic phase and the aqueous phase, whereby the β -carotene is caused to dissolve in the organic phase, followed by separation of the organic phase from the aqueous phase, the method whereby the separation is effected by passing the organic phase containing the dissolved β -carotene through a semi-permeable membrane to effect microfiltration or ultrafiltration of the organic phase, the membrane being of a material which is hydrophobic and the organic phase being passed through the membrane with a pressure drop across the membrane which is lower than that which causes the aqueous phase to pass through the membrane.

5,378,370

WATER TREATMENT TANK

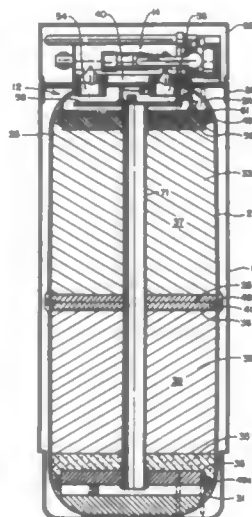
Earl P. Brane, Londonderry, and Boyd J. Cornell, Pickerington, both of Ohio, assignors to Wm. R. Hagne, Inc., Groveport, Ohio

Continuation-in-part of Ser. No. 8,791, Jan. 4, 1993, Pat. No. 5,300,230, which is a continuation of Ser. No. 782,338, Oct. 24, 1991, abandoned, which is a division of Ser. No. 493,896, Mar. 13, 1990, Pat. No. 5,089,140. This application Mar. 9, 1994, Ser. No. 212,583

Int. Cl.⁶ C02F 1/42

U.S. Cl. 210—678

20 Claims



11. A water filtering and softening method comprising the steps of:

- (a) providing a water treatment tank operative in a treatment mode to receive untreated water through an inlet port means and to pass treated water through an outlet port means, and operative in a backwash mode to receive wash water through said outlet port means and to pass waste water through said inlet port means, said treatment tank comprising:
 - a vessel having upstanding side walls extending between a top end wall and a bottom end wall to define an interior cavity, said top end wall having a pair of openings therethrough in fluid communication with said interior cavity to define an inlet port means and an outlet port means;
 - a first distributor filter mounted within said interior cavity to extend between said side walls and spaced-apart from said top end wall to define a top headspace portion therebetween;
 - a second distributor filter mounted within said interior cavity to extend between said side walls intermediate said first distributor filter and said bottom end wall, said second distributor filter spaced-apart from said bottom end wall to define a bottom headspace portion therebetween and from said first distributor filter to define a treatment bed space portion therebetween;
 - a standpipe extending between and in fluid communication with said outlet port means and said bottom headspace portion, said stand pipe defining means for conveying treated water from said bottom headspace portion to said outlet port means when said treatment tank is operated in said treatment mode, and for conveying wash water from said outlet port means to said bottom headspace portion when said treatment tank is operated in said backwash mode;
 - a particulate ion-exchange resin filling said treatment bed space portion between said first and said second distributor filter; and
 - a particulate filter medium supported by said first distributor filter and filling a portion of said top headspace

portion, the unfilled portion of said top headspace portion defining a freeboard space, said free board space providing means for accommodating the expansion of said filter medium when said treatment tank is operated in said backwash mode;

- (b) operating said treatment tank in said treatment mode to pass untreated water through said filter medium and said ion-exchange resin and out through said standpipe until said resin is in need of regeneration; and
- (c) operating said treatment tank in said backwash mode to wash said filter medium.

5,378,371

METHOD OF REMOVING OIL FROM WATER AND APPARATUS THEREFOR

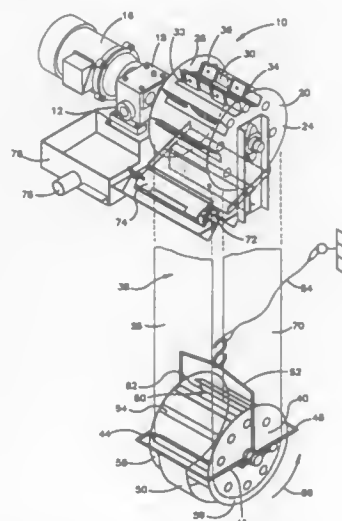
Mark T. Hobson, Chagrin Falls, Ohio, assignor to Abanaki Corporation, Anburn, Ohio

Filed Jan. 25, 1993, Ser. No. 8,511

Int. Cl.⁶ C02F 1/40

U.S. Cl. 210—691

18 Claims



16. A method of removing oil from a body of fluid comprising:

- a) utilizing a flexible tether to lower a tail pulley assembly into the body of water until it is supported by an endless belt passed around a supporting and driving head pulley, the tail pulley having an axis of rotation and an axial length
- b) rotating the head pulley to cause the belt to collect oil from the surface of the body of water;
- c) wiping oil from the belt at a location near the head pulley whereby to clean the belt for further oil pick-up and removal as the head pulley is rotated to move the belt;
- d) upon completion of removal of a desired quantity of oil or upon breakage of the belt, removing the tail pulley assembly and belt from the body of fluid by lifting them with the tether; and
- e) maintaining the pulley assembly and the belt in a desired spacial relationship during such lowering and removing steps and oil-removing steps by surrounding the belt with a retainer frame, forming a portion of the tail pulley assembly and, during such lowering and removing steps, supporting the belt with a catch pad supported by the retainer frame and extending generally coaxially about half the circumference of the tail pulley and under the tail pulley when the tail pulley is in use, the catch pad having a transverse width dimension extending in a direction parallel to the shaft of said tail pulley that is less than the axial length of said tail pulley.

5,378,372

CONTROL OF SCALE FORMATION IN AQUEOUS SYSTEMS

William S. Carey, Ridley Park; Andrew Solov, Holland; Donald T. Freese, Glenside, and Libardo A. Perez, Morrisville, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

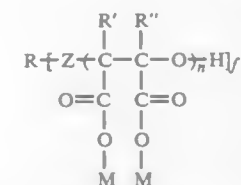
Filed Jun. 9, 1993, Ser. No. 74,254

Int. Cl.⁶ C02F 5/14

U.S. Cl. 210—697

15 Claims

1. A method for controlling the formation and deposition of scale forming salts including calcium scale in an aqueous system comprising introducing into said aqueous system a sufficient amount for the purpose of a treatment comprising a modified polyepoxysuccinic acid of the general formula:



wherein R is alkyl, C₄-C₉ aryl, substituted alkyl or C₄-C₉ substituted aryl; R' and R'' are each independently hydrogen, C₁₋₄ alkyl or C₁₋₄ substituted alkyl; Z is NH, NR, O or S; n is a positive integer greater than 1; f is a positive integer; and M is H, a water soluble cation or a C₁₋₃ alkyl group.

5,378,373

TRANSPORT AND DEPOSIT INHIBITION OF COPPER IN BOILER SYSTEMS

Orin Hollander, Warwick, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 17, 1994, Ser. No. 198,171

Int. Cl.⁶ C02F 5/12

U.S. Cl. 210—698

12 Claims

1. A method of transporting and inhibiting the deposition of copper and copper-containing metals on metal surfaces in contact with an aqueous medium in steam generating systems comprising adding to said aqueous system from 0.1 part to about 100 parts per million parts of a sulfono benzotriazole compound of salt thereof.

5,378,374

LIME ADDITION SYSTEM FOR WATER TREATMENT

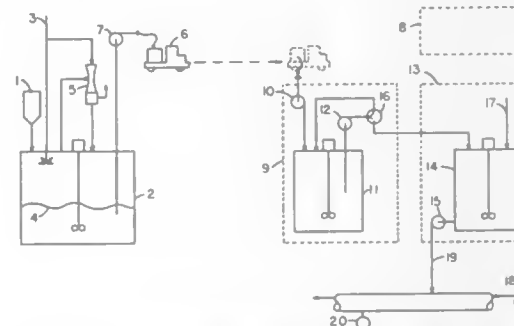
John N. Andersen, 55 Captain Carleton Rd., Cotuit, Mass. 02635

Filed Oct. 15, 1993, Ser. No. 136,235

Int. Cl.⁶ C02F 1/66

U.S. Cl. 210—743

12 Claims



1. A process for the control of the acidity of municipal water supplies which comprises:

- (a) introducing into a first agitated vessel, which contains a lime slurry heel, a mixture of hydrated lime and water in

- an amount sufficient to obtain a slurry having a lime concentration from about 12 to about 24% by weight;
- (b) transferring the slurry from the first vessel into a second agitated holding vessel containing a lime slurry heel and circulating the slurry in the second vessel;
- (c) providing a third agitated vessel containing a dilute lime slurry having a concentration from about 1 to 4% by weight;
- (d) continuously feeding the dilute slurry to the municipal water supply at a rate sufficient to obtain a substantially neutral pH while periodically restoring the dilute lime slurry level in the third agitated vessel by addition of a controlled quantity of slurry from the second agitated vessel and water to maintain the desired slurry concentration and also a slurry level which is not less than about 75% of the vessel capacity.

5,378,375

APPARATUS AND METHOD OF WASHING SCREENINGS

John C. Bache, Stourbridge, United Kingdom, assignor to Jones & Attwood Limited, Stourbridge, England

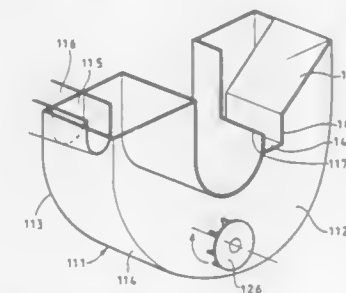
Filed Feb. 16, 1993, Ser. No. 18,186

Claims priority, application United Kingdom, Feb. 15, 1992, 9203269; Nov. 6, 1992, 9223358

Int. Cl.⁶ B01D 24/46

U.S. Cl. 210—772

20 Claims



19. A method of washing screenings derived from a sewage treatment plant and contaminated with fecal material comprising:

- providing a tank having an inlet, an outlet, and an interior;
- providing a weir-type separating means in said outlet of said tank;
- feeding aqueous liquid and screenings contaminated by fecal material to said interior of said tank;
- producing turbulence to said liquid in said interior of said tank to subject said liquid containing said contaminated screenings to said turbulence to break-down said fecal material;
- adding at least one of further liquid and further liquid containing said screenings to said interior of said tank so that said screenings and aqueous liquid subjected to said turbulence and containing finely divided fecal material flow out of said tank over said weir separating means;
- de-watering said effluent from said tank; and
- compacting said screenings in said effluent.

5,378,376

SLUDGE COLLECTOR EMPLOYING FLOATING WEIR

John E. Zenner, East Troy, Wis., assignor to Wisconsin Oven Corporation, East Troy, Wis.

Filed Jul. 6, 1993, Ser. No. 85,734

Int. Cl.⁶ B01D 21/24

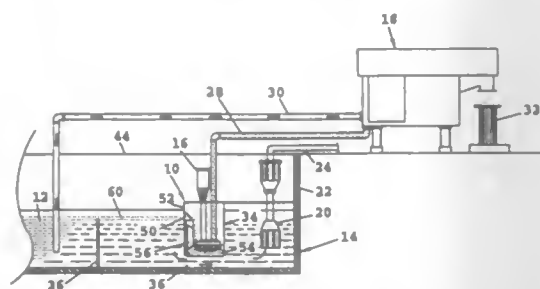
U.S. Cl. 210—776

16 Claims

13. A method of removing floating sludge from a sludge tank, comprising:

- A. drawing said sludge into a collection box having an inlet and a reservoir;

- B. removing said sludge from said collection box via operation of a pump which is located in said reservoir and which has an impeller formed from a single spiral vane; and
- C. controlling the flow of sludge into said collection box by vertically moving a weir crest to adjust the depth of a



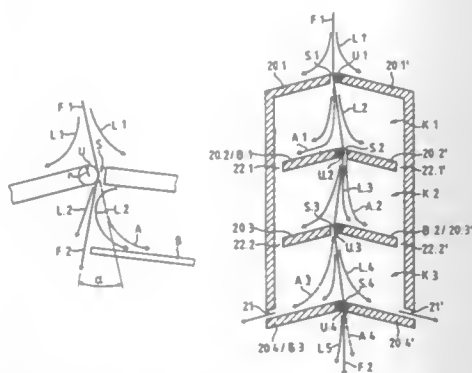
stream of sludge flowing into said collection box, said controlling step including adjusting the height of said weir crest based upon the depth of sludge in said reservoir as determined by

- (1) the flow rate of sludge out of said reservoir, and
- (2) the flow rate of sludge into said reservoir.

5,378,377
PROCESS AND APPARATUS FOR REMOVING LIQUID FROM FAST MOVING THREADS
 Felix Graf, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
 Continuation of Ser. No. 702,821, May 20, 1991, abandoned.
 This application Jul. 23, 1993, Ser. No. 97,309
 Claims priority, application Switzerland, May 18, 1990, 01689/90-1

Int. Cl.⁶ B01D 17/038; D01H 13/30
 U.S. Cl. 210—787

35 Claims



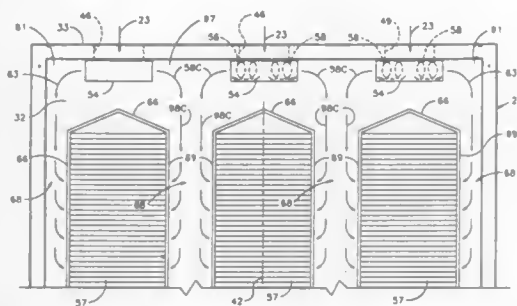
1. A process for removing excess liquid from a fast-moving thread comprising the steps of
- passing a thread having entrained liquid therein through a fixed path in a thread guide with a linear movement and at a high linear speed;
- deflecting the thread at at least one predetermined point in said fixed path within the thread guide over a predetermined angle whereby said high linear speed of the thread is sufficient to effect hurling of liquid from the thread under centrifugal force at said at least one point;
- removing the liquid hurled off the thread from the thread guide; and
- deflecting a part of an air flow flowing with the thread at said at least one predetermined point from the thread in a direction away from the thread.

5,378,378
METHOD OF AND APPARATUS FOR HELICAL INLET FLOW

Charles L. Meurer, 2389 Bitterroot La., Golden, Colo. 80401
 Filed Aug. 23, 1993, Ser. No. 109,140
 Int. Cl.⁶ B01D 21/24

U.S. Cl. 210—788

22 Claims



19. A method of controlling the flow of liquid into a container, said container having a top, a front wall, a bottom, a rear wall and opposite side walls extending between said top and said bottom for containing the liquid, comprising the steps of:

providing an inlet through said front wall adjacent to said top for receiving said liquid flowing in a first direction;

splitting said flowing liquid into two flow paths, each of said flow paths being centered on an axis transverse to said first direction and being helical; and

discharging said liquid in each of said helically transversely flowing paths into said container adjacent the top thereof.

5,378,379
AQUEOUS LUBRICANT AND SURFACE CONDITIONER, WITH IMPROVED STORAGE STABILITY AND HEAT RESISTANCE, FOR METAL SURFACES

James P. Bershas, West Bloomfield, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.
 Filed Jul. 13, 1993, Ser. No. 90,724
 Int. Cl.⁶ C10M 173/02, 137/08

U.S. Cl. 252—49.3

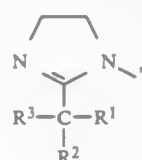
20 Claims

1. A liquid composition of matter consisting essentially of water and:

(A) a dissolved phosphorus containing surfactant component that is a mixture of molecules conforming to the general formula I:



where M is selected from the group consisting of H, alkali metal cations, monovalent fractions of alkaline earth metal cations, and monovalent fractions of ammonium and substituted ammonium cations; x=1 or 2 and y=3-x; Y is an alkylene or alkylene other group, which may be branched or unbranched, with its open valences on carbon atoms and with from 2 to 12 carbon atoms and up to 3 oxygen atoms; and R is an imidazoline moiety conforming to generally formula H:



where each of R¹ and R² is independently selected, except that R¹ and R² may not both be hydrogen, from the group consisting of hydrogen, a moiety derived from propionitrile by removing a hydrogen atom from the —CH₃ group thereof, and moieties of the general formula III:



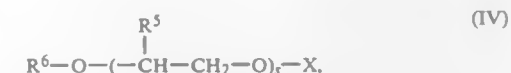
where Q is selected from the group consisting of —OM, —NH₂, and —OR⁴, where M has the same meaning as defined above and R⁴ represents a C₂₋₁₂ alkyl, alkylaryl, or alkylcycloaliphatic moiety; and R³ is selected from the group consisting of unsubstituted and hydroxy substituted aliphatic and cycloaliphatic and alkylaryl moieties having from 2 to 22 carbon atoms;

(B) a component selected from the group of water soluble salts containing ions that comprise atoms selected from the group consisting of Zr, Ti, Sn, Al, and Fe;

(C) a metal etching component; and

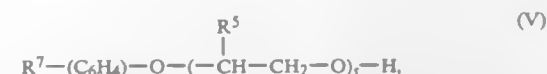
(D) "free fluoride ions"; and, optionally, any one or more of the following:

(E) a component selected from molecules conforming to general formula IV:



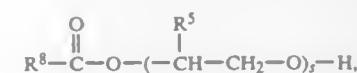
wherein R⁶ is a linear, cyclic, or branched saturated monovalent aliphatic hydrocarbon moiety containing from 1 to 25 carbon atoms; X is selected from the group consisting of hydrogen, halogen, phenyl, and R⁵; s is an integer from 1 to 50; and R⁵ is selected from the group consisting of hydrogen and alkyl groups containing 1-4 carbon atoms;

(F) a component selected from molecules conforming to general formula V:



wherein R⁷ is a linear, cyclic, or branched saturated monovalent aliphatic hydrocarbon moiety containing from 4 to 25 carbon atoms; (C₆H₄) is an ortho-, meta-, or para-phenylene nucleus; and R⁵ and s have the same meaning as for formula IV;

(G) a component selected from molecules conforming to general formula VI:



wherein R⁸ is a linear or branched, saturated or unsaturated monovalent aliphatic hydrocarbon moiety containing from 1 to 25 carbon atoms; and R⁵ and s have the same meaning as in formula IV;

(H) a component selected from chelating agents for the metal containing ions of component (B); and

(J) an antimicrobial agent.

5,378,380
PROCESS FOR PRODUCING ACICULAR GEOTHITE PARTICLES AND ACICULAR MAGNETIC IRON OXIDE PARTICLES

Masaru Isoai, Toshiharu Harada, Tokihiro Kurata, Kazuhiro Fujita, Kazushi Takama, and Shigekazu Jikuhara, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Division of Ser. No. 733,726, Jul. 22, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 22,847

Claims priority, application Japan, May 31, 1991, 3-157829; May 31, 1991, 3-157830

Int. Cl.⁶ C01G 49/06, 49/08

U.S. Cl. 252—62.56

12 Claims

1. A process for producing acicular goethite particles having an aspect ratio of not less than 20 comprising the step of blowing an oxygen-containing gas into a ferrous salt reaction solution containing either colloidal ferrous hydroxide which is obtained by reacting an aqueous ferrous salt solution with less than one equivalent of an aqueous hydroxide solution based on Fe²⁺ in said aqueous ferrous salt solution or iron-containing colloidal precipitates which are obtained by reacting an aqueous ferrous salt solution with less than one equivalent of an aqueous alkali carbonate solution or an aqueous hydroxide and carbonate solution based on Fe²⁺ in said aqueous ferrous salt solution, at a temperature not higher than 80° C. so as to oxidize said colloidal ferrous hydroxide or iron-containing colloidal precipitates and to produce acicular goethite particles through green rust which is produced at a pH of 5 to 7, wherein from 0.01 to 5.0 mol % ascorbic acid or a salt thereof calculated as ascorbic acid based on Fe in the ferrous salt reaction solution is present before said acicular goethite particles are produced.

5,378,381
POLYMER SOLID ELECTROLYTE COMPOSITION

Kenichi Takahashi, and Kazuhiro Noda, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

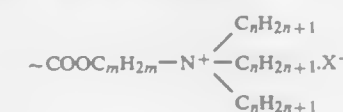
Filed Aug. 12, 1993, Ser. No. 104,911

Claims priority, application Japan, Aug. 14, 1992, 4-239040
 Int. Cl.⁶ H01M 6/18, 10/40

U.S. Cl. 252—62.2

16 Claims

1. A polymer solid electrolyte comprising a metal salt and an organic polymer having monomer units with said chains comprising alkyl quaternary ammonium groups, each of said groups having the following formula:



wherein m is an integer of from 1 to 3, n is an integer of from 1 to 4, and X[−] is a counter anion.

5,378,382
PIEZOELECTRIC CERAMIC COMPOSITION FOR ACTUATOR

Tetsuhiko Nishimura, Zama; Yukio Chida, Tokyo, and Takahiro Choda, Sagami, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

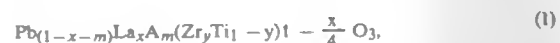
Filed Dec. 9, 1993, Ser. No. 163,537

Int. Cl.⁶ C04B 35/48

U.S. Cl. 252—62.9

9 Claims

1. A piezoelectric ceramic composition for an actuator, said composition comprising a basic composition containing lead, lanthanum, alkaline earth metals, zirconium, titanium and oxygen in the formulation represented by the following general formula (I):



where A represents one or more elements selected from the group consisting of Ba, Ca and Sr; $0 < x \leq 0.07$; $0.40 \leq y \leq 0.65$; and $0 < m \leq 0.15$; and wherein

the ceramic composition contains, relative to the basic composition, one or more elements selected from the group consisting of iron, aluminum, manganese, indium and tellurium in an amount of 0.02 to 0.3% by weight in terms of Fe_2O_3 or Al_2O_3 , 0.02 to 0.2% by weight in terms of MnO_2 and 0.02 to 0.5% by weight in terms of In_2O_3 or TeO_2 .

5,378,383 PROCESS FOR PREPARING MODIFIED CHROMIUM DIOXIDE

Harald Jachow, Worms; Ekkehard Schwab, Neustadt; Reinhard Koerner, Frankenthal; Norbert Mueller, Friedelsheim; Rudi Lehnert, Ludwigshafen; Manfred Ohlinger, Frankenthal; Helmut Auweter, Limburgerhof; Helmut Jakusch, Frankenthal; Ronald J. Veitch, Maxdorf; and Michael Bobrich, Boehl-Iggelheim, all of Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

Division of Ser. No. 992,927, Dec. 18, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,425

Claims priority, application Germany, Dec. 20, 1991, 4142166 Int. Cl. C01G 37/027

U.S. Cl. 252—62.56 1 Claim

1. A process for the preparation of a chromium dioxide which is modified with iron and tellurium or antimony and has a coercive force greater than 60 kA/m, a saturation magnetization greater than 85 nTm³/g and a narrow particle size distribution in conjunction with a mean particle length of less than 300 nm, by reacting an aqueous CrO_3 suspension, to which from 0.05 to 10% by weight, based on chromium dioxide, of iron oxide and tellurium oxide or an antimony compound have been added, and organic reducing agents for establishing a Cr(VI):Cr(III) ratio of from 4:2 to 1:1, from 1.54 to 2.32 parts by weight of CrO_3 being used per part of water, taking into account the amount of water formed during the oxidation of the organic reducing agents, wherein the organic reducing agents used are glycerol and octanol, the amount of glycerol being from 25 to 70% based on the total reduction equivalent, whereafter the reaction mixture is heated to a temperature of from 250° to 400° C. under at least 70 bar.

5,378,384 PROCESS OF MAKING HEXAGONAL MAGNETIC FERRITE PIGMENT FOR HIGH DENSITY MAGNETIC RECORDING APPLICATIONS

David M. Hopstock, Roseville; John S. Roden; Gunther H. Dierssen, both of White Bear Lake, and Ronald S. Sapieszko, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 19, 1991, Ser. No. 762,596

Int. Cl. C04B 35/26

U.S. Cl. 252—62.62 16 Claims

1. A process of making magnetic ferrite particles, comprising the steps of:

(a) combining an aqueous, acidic solution of metal ions with a stoichiometric excess of aqueous base to provide a reaction mixture comprising precipitated precursor particles in admixture with a liquid portion, wherein the metal ions comprise

(i) B(II) ions, wherein B(II) is at least one metal ion selected from the group consisting of Ba, Sr, Pb, and Ca; (ii) u moles of M(II) ions per mole of B(II) ions, wherein M(II) is at least one divalent ion selected from Co, Zn, Ni, Cu, Mn, and Mg, and u satisfies the relationships

$$0.5 + x + 2y + 3z \leq u \leq 2 + x + 2y + 3z \quad \text{and} \\ u > 0.5v + 2x + 3.5y + 5z;$$

(iii) v moles of M(III) ions per mole of B(II) ions, wherein M(III) is at least one trivalent ion selected from Cr, Al, Ga, As, Bi, In, and Sb, and v is 0 to 0.1;

(iv) x moles of M(IV) ions per mole of B(II) ions, wherein M(IV) is at least one tetravalent ion selected from Ti, Sn, Zr, Hf, and Ge, and x is 0 to 0.7;

(v) y moles of M(V) ions per mole of B(II) ions, wherein M(V) is at least one pentavalent ion selected from V, Nb, Ta, and Sb, and y is 0 to 0.7;

(vi) z moles of M(VI) ions per mole of B(II) ions wherein M(VI) is at least one hexavalent ion selected from Mo and W, and z is 0 to 0.7; and

(vii) w moles of Fe(III) ions per mole of B(II) ions, wherein w is greater than 12 and is 90% to 115% of the value given by $12 + 2u - v - 4x - 7y - 10z$; and wherein $0 \leq x + y + z \leq 0.7$.

(b) conditioning the reaction mixture at a temperature in the range from 60° C. to the boiling point of the reaction mixture for at least 5 minutes;

(c) lowering the pH of the reaction mixture to a value within the range of from about 4 to 11;

(d) separating the precursor particles from the liquid portion of the reaction mixture to provide dried precursor particles; and

(e) calcining the dried precursor particles in air at a temperature in the range from 600° C. to 850° C., whereby hexagonal, platelet-shaped magnetic ferrite particles of the following formula are formed:



wherein u, v, x, y, z, and w are as defined above and p is $19 + 4u - 4x - 8y - 12z$.

5,378,385 PARTIALLY FLUORINATED SILICONE REFRIGERATION LUBRICANTS

Raymond H. P. Thomas, Amherst; David P. Wilson, Williams-ville; Hang Pham, North Tonawanda, and John W. Pelava, Buffalo, all of N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 21, 1989, Ser. No. 455,691

Int. Cl. C09K 5/04; C10M 105/76, 105/50

U.S. Cl. 252—68 33 Claims

1. A composition for use in compression refrigeration and air-conditioning comprising:

(a) a refrigerant selected from the group consisting of hydrofluorocarbon and hydrochlorofluorocarbon; and

(b) a sufficient amount to provide lubrication of at least one fluorinated silicone of the formula



wherein R_1 is a partially or fully fluorinated alkyl group having 1 to 3 carbon atoms; each of R_2 is the same or different and is hydrogen, methyl, ethyl or propyl; each of R_3 is the same or different and is methyl, ethyl, vinyl, phenyl, or $\text{CH}_2\text{CH}_2\text{R}$ wherein R is a partially or fully fluorinated alkyl group having 1 to 3 carbon atoms; m is about 2 to about 40; and being miscible in combination with said refrigerant in the range between -40° C. and at least +20° C.

5,378,386 CLEANING SOLUTIONS FOR REMOVING UNCURED POLYESTER RESIN SYSTEMS FROM THE SURFACES OF PROCESSING EQUIPMENT

Sidney M. Short, Fredonia, and Jeffrey J. Laven, Sheboygan, both of Wis., assignors to Cook Composites and Polymers Co., Port Washington, Wis.

Filed Aug. 12, 1993, Ser. No. 106,038

Int. Cl. C11D 7/50; C09D 9/00; B08B 7/00

U.S. Cl. 252—162 13 Claims

1. A nonaqueous cleaning solution for removing from a surface an uncured polyester resin system comprising a polyester prepolymer, a reactive diluent and a metal-ion promoted free radical polymerization catalyst system, the solution comprising based on the weight of the solution:

A. At least about 50 percent of at least one dibasic acid ester;

B. A sufficient amount of at least one free radical polymerization inhibitor to inhibit the cure of the polyester resin system; and

C. A sufficient amount of at least one chelating agent to inhibit the promotional effects of the metal-ion promoter of the free radical polymerization catalyst system.

5,378,387 NON-AQUEOUS LIQUID CLEANING PRODUCTS COMPRISING POLYALKOXYLATED DERIVATIVES OF CASTOR OIL RICINOLEIC ACID AND ANALOGOUS FATTY ALCOHOLS

Mark P. Houghton, Rotterdam, and Charles C. Verburg, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jun. 1, 1993, Ser. No. 71,436

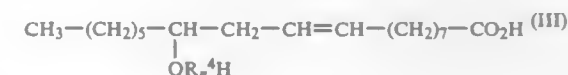
Claims priority, application European Pat. Off., Jun. 2, 1992, 92201565

Int. Cl. C11D 1/72, 1/825, 17/00

U.S. Cl. 252—174.21 5 Claims

1. A heterogeneous, two-phase, substantially non-aqueous liquid cleaning composition having no more than 5% by wt. water, comprising a non-aqueous liquid phase and a particulate solid phase dispersed in the non-aqueous liquid phase selected from the group consisting of bleaches, bleach activators, builders and solid surfactants which liquid phase comprises from 10–90% by wt. of the liquid phase of a polyalkoxylated castor oil derivative.

4. A substantially non-aqueous liquid cleaning product composition comprising a non-aqueous liquid phase and a particulate solid phase dispersed in the non-aqueous liquid phase, which liquid phase comprises from 10–90% by wt. of the liquid phase of a compound of formula (III)



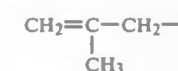
or a salt thereof, wherein R_n^4 is independently selected from C_{2-4} alkyleneoxy groups and n is from 2 to 16 or a compound of formula (IV)



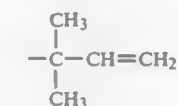
wherein R^6 is a group of formula



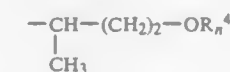
or a group of formula



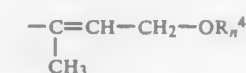
and R^7 is a group of formula



a group of formula



or a group of formula



wherein R_n^4 is independently selected from C_{2-4} alkyleneoxy groups and n is from 2 to 16.

5,378,388 GRANULAR DETERGENT COMPOSITIONS CONTAINING SELECTED BUILDERS IN OPTIMUM RATIOS

Eugene J. Pancheri, Montgomery, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 25, 1993, Ser. No. 82,628

Int. Cl. C11D 3/12, 1/08, 3/08

U.S. Cl. 252—174.25 9 Claims

1. A granular detergent composition comprising:

(a) from about 5% to about 95% by weight of a detergent surfactant selected from the group consisting of anionics, nonionics, and mixtures thereof;

(b) from about 5% to about 95% by weight of a mixture of non-phosphate detergent builders, wherein said mixture comprises an aluminosilicate ion exchange material, crystalline layered sodium silicate and citrate/citric acid in a ratio of from about 3.5:1:1 to about 6:1:1; and

(c) an adjunct material selected from the group consisting of bleaches, bleach activators, suds boosters, suds suppressors, anti-tarnish and anticorrosion agents, soil suspending agents, soil release agents, germicides, pH adjusting agents, non-builder alkalinity sources, chelating agents, smectite clays, enzymes, enzyme-stabilizing agents, perfumes and mixtures thereof.

5,378,389 WET PAINT SPRAY BOOTH TREATING AGENT AND METHOD FOR THE TREATMENT THEREWITH

Keisuke Mizuno, and Masahiro Horiuchi, both of Tokyo, Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 768,536, filed as PCT/JP90/01320, Oct. 12, 1990, published as WO91/12311, Aug. 22, 1991, abandoned.

This application Jul. 15, 1993, Ser. No. 91,727

Claims priority, application Japan, Feb. 16, 1990, 2-35338 Int. Cl. C02F 1/56

U.S. Cl. 252—180 12 Claims

1. A wet spray booth treating agent for removing paint suspended in washing water comprising 40 to 99.8% by weight of a melamine—aldehyde acid colloid solution, 0.1 to 30% by weight of a nitrogen atom-containing organic compound and 0.1 to 30% by weight of an anionic water soluble high molecular weight dispersant having molecular weight from 300 to 500,000, said nitrogen atom-containing organic compound being ethylenediamine tetraacetic acid, nitrilotriacetic acid or a salt thereof.

5,378,390
COMPOSITION FOR CONTROLLING SCALE
FORMATION IN AQUEOUS SYSTEMS

Llbarido A. Perez, Morrisville; Donald T. Freese, Glenside; Judith B. Rockett, Perkasi, and William S. Carey, Ridley Park, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 99,674, Jul. 29, 1993, Pat. No. 5,326,478.
This application Mar. 11, 1994, Ser. No. 209,806

Int. Cl.⁶ C02F 5/10

U.S. Cl. 252—180

3 Claims

1. A composition for inhibiting the deposition of scale in circulating aqueous systems comprising an aqueous solution of polyepoxysuccinic acid and agaric acid in a ratio of from about 100 to 1 to about 1 to 1.

5,378,391
LIQUID CRYSTAL FILM

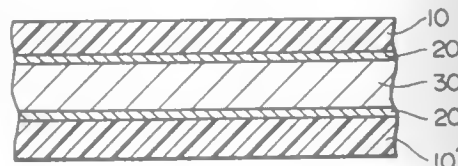
Kenji Nakatani; Satoshi Igarashi, both of Hino; Hiroo Inata, Iwakuni, and Horinori Matsuda, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 9, 1992, Ser. No. 848,362

Claims priority, application Japan, Nov. 7, 1991, 3-318577
Int. Cl.⁶ C09K 19/52, 19/54, 19/00

U.S. Cl. 252—299.01

19 Claims



1. In a liquid crystal film comprising a light-transmitting resin matrix and liquid crystal droplets dispersed therein, the improvement wherein

- the average droplet diameter R (micrometers) of the liquid crystal droplets is 0.8 to 5 micrometers, and at least 80% of the liquid crystal droplets have a droplet diameter of 0.7 to 1.3 micrometers, the content of the liquid crystal droplets being 40 to 80% by weight of the film,
- the thickness d (micrometer) of the liquid crystal film is 5 to 50 micrometers,
- the applied voltage $V_{0.7}$ (V) is less than 1.0 d when light transmittance is 70%,
- the driving voltage V_{90} (V) in $d = 10$ micrometers and the average droplet diameter R (micrometers) of the liquid crystal droplets meet the following relationship

$$V_{90} > 1 (R-1.8)^2 + 4,$$

- saturated light transmittance (T_{100}) in $d = 10$ micrometers is at least 80% and light transmittance (T_{7V}) in applying a voltage of 7 V is at least 80% of T_{100}
- said light-transmitting resin matrix having a refractive index within ± 0.05 of the ordinary light refractive index of the liquid crystal droplets and containing 1 to 20% by weight of a fluorine atom.

5,378,392
ANTIFERROELECTRIC LIQUID CRYSTAL
COMPOSITION

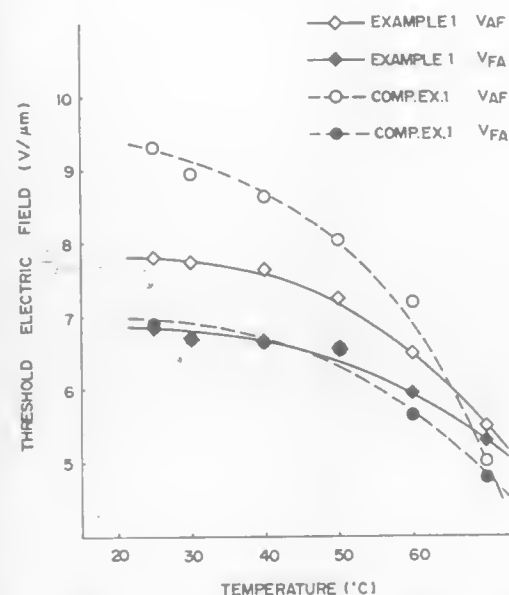
Katsuyuki Murashiro, Ichiharashi; Kikuchi Makoto, Kisarazu-ahi, and Terashima Kanetsugu, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 23, 1992, Ser. No. 917,346

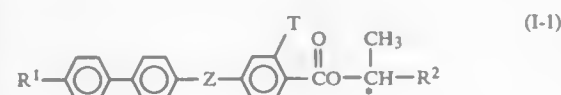
Claims priority, application Japan, Jul. 29, 1991, 3-211661
Int. Cl.⁶ C09K 19/52, 19/12, 19/20; G02F 1/13

U.S. Cl. 252—299.01

6 Claims



1. An antiferroelectric liquid crystal composition comprising first and second components, the first component thereof being at least one compound expressed by the formula:



wherein R^1 represents a linear alkyl group or alkoxy group of 6 to 14 carbon atoms, R^2 represents a linear alkyl group of 2 to 8 carbon atoms, T represents a hydrogen atom, F or Cl and Z represents $-\text{COO}-$, $-\text{CH}_2\text{O}-$ or $-\text{OCH}_2-$, and having an antiferroelectric chiral smectic C phase, and the second component thereof being at least one compound expressed by the formula:



wherein R^3 represents an alkyl group or an alkoxy group of 3 to 10 carbon atoms, R^4 represents an alkyl group of 2 to 8 carbon atoms, six-membered ring C represents 1,4-phenylene or 1,4-cyclohexylene, six-membered rings D and E each independently represent 1,4-phenylene, pyridin-2,5-diyl or pyrimidin-2,5-diyl, and * indicates a chiral carbon atom, the content of said first component and that of said second component, each in said composition being 60 to 97% by weight and 3 to 40% by weight, based upon the total quantity of the first component and the second component, respectively.

5,378,393
GLASSY CHIRAL NEMATIC LIQUID CRYSTALLINE
COMPOSITIONS OF LOW MOLAR MASS AND OPTICAL
DEVICES FORMED FROM SAME

Shaw H. Chen, Penfield, and Hongqin Shi, Rochester, both of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Nov. 16, 1993, Ser. No. 153,570

Int. Cl.⁶ C09K 19/52, 19/34, 19/32; G02F 1/13
U.S. Cl. 252—299.01

32 Claims

1. A glassy thermotropic chiral nematic liquid crystalline composition comprising a glassy chiral nematic compound of low molar mass having the formula:



or a mixture of a nematic liquid crystalline compound of low molar mass having the formula:



and a chiral compound of low molar mass having the formula:



where



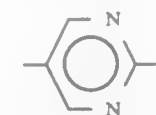
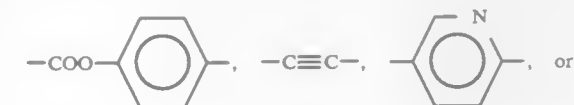
each independently represents a cycloaliphatic radical containing about 4 to 18 carbon atoms;



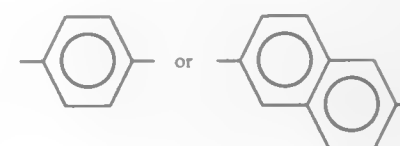
represents a nematogenic moiety having the formula:



where $-\text{Q}-$ is an alkylene radical containing 1 to about 8 carbon atoms, $-\text{X}-$ is $-\text{O}-$, $-\text{S}-$, or $-\text{CH}_2-$, $-\text{Y}-$ is



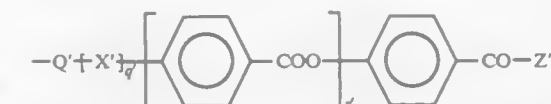
$-\text{D}-$ and $-\text{E}-$ are each independently



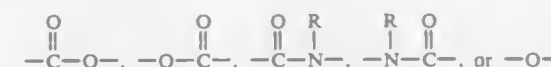
$-\text{Z}$ is $-\text{CN}$, $-\text{NO}_2$, $-\text{N}=\text{C}=\text{S}$, or an alkoxy radical containing up to about 4 carbon atoms, and q and r are each independently 0 or 1;



represents a chiral moiety having the formula:



where Q' is an alkylene radical containing 1 to about 8 carbon atoms, $-\text{X}'$ is $-\text{O}-$, $-\text{S}-$, or $-\text{CH}_2-$, Z' is an alkoxy, aralkoxy, alkylamino, or aralkylamino radical containing about 4 to 12 carbon atoms and containing at least one asymmetric carbon atom, and q' and r' are each independently 0 or 1; $-\text{L}_N-$ and $-\text{L}_C-$ each individually represents a connecting group having the formula:



where R is hydrogen or alkyl containing up to 4 carbon atoms, or forms a portion of a cycloaliphatic radical containing about 4 to 18 carbon atoms; and x is 1 to 6, and y is at least 1, with the proviso that when



is chiral, y can be zero.

5,378,394

FERROELECTRIC LIQUID-CRYSTALLINE MIXTURES
Hans-Rolf Dübel, Königstein; Claus Escher, Mühlthal, both of Germany; Takamasa Harada, Inzai, Japan; Wolfgang Hemmerling, Sulzbach, Germany; Gerhard Illian, Frankfurt am Main, Germany; Ingrid Müller, Niedernhausen, Germany; Mikio Murakami, Kakegawa, Japan; Dieter Ohlendorf, Liederbach, Germany, and Rainer Wingen, Hattersheim am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP90/00457, § 371 Date Oct. 28, 1991, § 102(e) Date Oct. 28, 1991, PCT Pub. No. WO90/11335, PCT Pub. Date Oct. 4, 1990

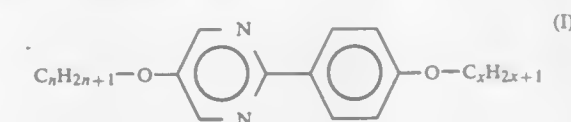
PCT Filed Mar. 21, 1990, Ser. No. 761,813

Claims priority, application Germany, Mar. 22, 1989, 3909355
Int. Cl.⁶ C09K 19/34; C07D 239/02

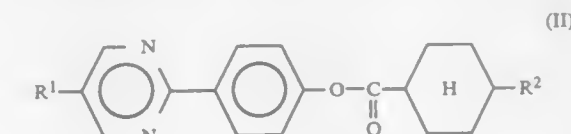
U.S. Cl. 252—299.61

9 Claims

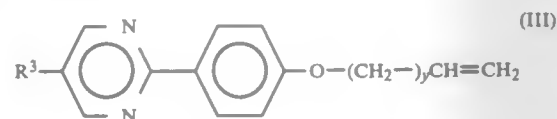
1. A ferroelectric liquid-crystalline mixture containing, as component A, at least two 5-alkoxy-2-(alkoxyphenyl)pyrimidines of the general formula (I)



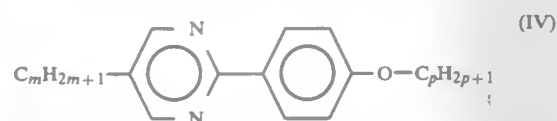
in which the alkyl radicals are straight-chain alkyl radicals in which n is an integer from 6 to 14 and x is an integer from 2 to 14, and, optionally, one or more cyclohexanecarboxylates of the general formula (II)



in which R¹ is an alkyl radical having 10 to 16 carbon atoms or an alkoxy radical having 8 to 14 carbon atoms, and R² is an alkyl radical having 2 to 9 carbon atoms, and, optionally, one or more alkenyloxyphenylpyrimidine derivatives of the general formula (III)

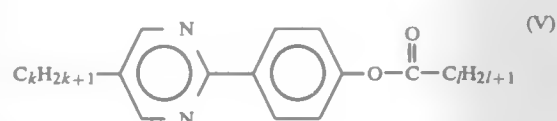


in which R³ is an alkyl chain having 7 to 16 carbon atoms or an alkoxy chain having 6 to 14 carbon atoms, and y is an integer from 4 to 14, and, optionally, one or more alkylpyrimidinealkoxyphenyl derivatives of the general formula (IV)



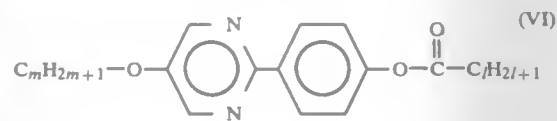
in which m and p, independently of one another, are integers from 6 to 14, and as component B, an optically active compound from the group

- optically active esters of 1,3-dioxolane-4-carboxylic acids, and
- optically active esters of oxirane-2-carboxylic acids, and optionally containing, as component C, one or more carboxylates of the general formula: (V), (VI), (VII), (VIII) or (IX):



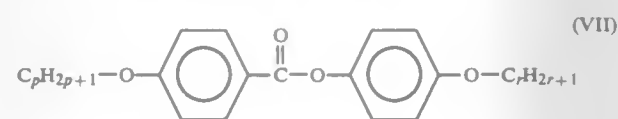
where

k may be an integer from 6 to 14, and
l may be an integer from 2 to 14,



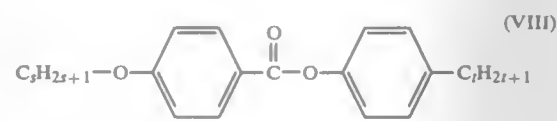
where

m may be an integer from 5 to 14, and
l may be an integer from 2 to 14,



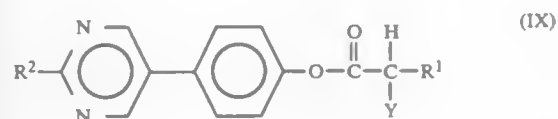
where

p may be an integer from 7 to 14, and
r may be an integer from 4 to 14,



where

s may be an integer from 6 to 14, and
t may be an integer from 6 to 14,



where

R² is straight-chain or branched (C₁-C₁₂)alkyl or alkenyl, it being possible for one or two non-adjacent CH₂ groups to be replaced by O and/or S atoms,

y is F, Cl, Br, CN or CF₃ and

R¹ is branched (C₃-C₉) alkyl, benzyl or phenyl, and an optically active component D which comprises one or more compounds from the following groups (X) and/or (XI) and/or (XII),

Group (X): optically active esters of tetrahydrofuran-2-carboxylic acid with mesogenic phenols

Group (XI): optically active aryl 2,3-epoxyalkyl ethers of mesogenic phenols

Group (XII): optically active 1,3-dioxolan-4-yl ethers of mesogenic phenols, and in which the pitch of the helix (induced in the nematic phase) is greater than 10 μm or infinite.

5,378,395

MATRIX LIQUID CRYSTAL DISPLAY

Georg Weber, Erzhausen; Ludwig Pohl, Darmstadt; Reinhard Hittich, Modautal; Herbert Plach, Darmstadt, all of Germany; Bernhard Scheuble, Yokohama; Takamasa Oyama, Fukami-nishi, both of Japan; Bernhard Rieger, Münster-Altheim, Germany; Hans A. Kurmeyer, Seeheim-Jugenheim, Germany, and Ekkehard Bartmann, Erzhausen, Germany, assigns to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Germany

Division of Ser. No. 458,695, Jan. 5, 1990, Pat. No. 5,122,295.

This application Apr. 10, 1992, Ser. No. 866,398

Claims priority, application Germany, Mar. 15, 1989, 3908403; Jul. 13, 1989, 3923044

Int. Cl.⁶ C09K 19/30, 19/12, 19/06; G02F 1/13

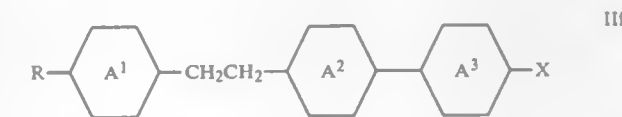
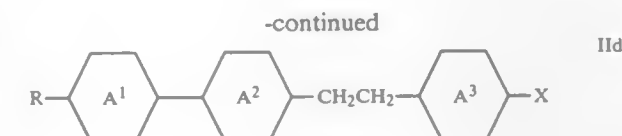
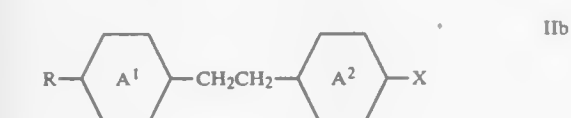
U.S. Cl. 252-299.63

15 Claims

1. Matrix liquid crystal display containing two plane parallel support plates which together with a frame form a cell, integrated non-linear elements for switching individual picture elements on the support plates and a nematic liquid crystal mixture which is present in the cell and has a positive dielectric anisotropy and high resistivity,

characterized in that the liquid crystal mixture is based on the following components:

- at least 10% by weight of a liquid-crystalline component B comprising one or more compounds having a dielectric anisotropy of more than +1.5,

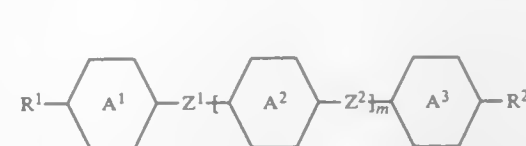


in which

R is n-alkyl or n-alkenyl of up to 9 carbon atoms, X is F, Cl, -CF₃, -CHF₂, -OCF₃, -OCHF₂, -OCF₂CF₂H or -OC₂F₅, and

the rings A¹, A² and A³ are each, independently of one another, 1,4-phenylene, 2- or 3-fluoro-1,4-phenylene, 2,3-difluoro-1,4-phenylene, trans-1,4-cyclohexylene or 1,4-cyclohexenylene.

- up to 90% by weight of a liquid-crystalline component A comprising one or more compounds having a dielectric anisotropy of -1.5 to +1.5 of the general formula I



in which R¹ and R² are each, independently of one another, n-alkyl, ω-fluoroalkyl or n-alkenyl having up to 9 carbon atoms,

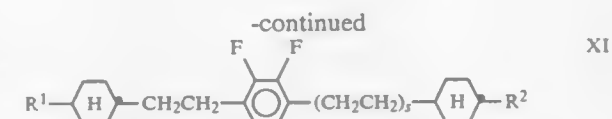
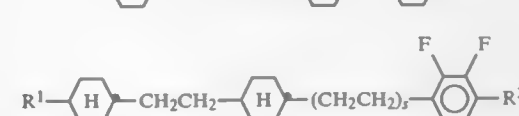
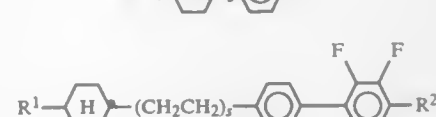
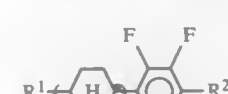
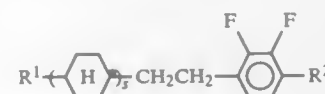
the rings A¹, A² and A³ are each, independently of one another, 1,4-phenylene, 2- or 3-fluoro-1,4-phenylene, trans-1,4-cyclohexylene or 1,4-cyclohexenylene,

Z¹ and Z² are each, independently of one another, -CH₂-H₂- or a single bond,

and

m is 0, 1 or 2, and

- 0 to 20% by weight of a liquid-crystalline component C comprising one or more compounds having a dielectric anisotropy of less than -1.5 selected from the compounds of the formulae VII to XI,



in which

R¹ and R² have the meaning given above

and

s is 0 or 1,

and the nematic liquid crystal mixture has a nematic phase range of at least 60° C., a maximum viscosity at 20° C. of 30 mPA.s and a mean dielectricity constant of ε ≤ 8.

5,378,396

LIQUID CRYSTAL COMPOUND AND LIQUID CRYSTAL DISPLAY DEVICE

Tomoyuki Yui, Nagareyama; Toshio Watanabe, Tsukuba; Yoshihisa Arai, Tsukuba, and Masahiro Johno, Tsukuba, all of Japan, assigns to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 795,733, Nov. 21, 1991, abandoned.

This application Apr. 22, 1994, Ser. No. 235,418

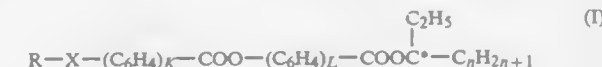
Claims priority, application Japan, Nov. 20, 1990, 2-314306

Int. Cl.⁶ C09K 19/12, 19/20; G02F 1/13; C07C 69/76

U.S. Cl. 252-299.65

2 Claims

1. An antiferroelectric liquid crystal compound represented by formula (I)



wherein

R denotes C₉H₁₉, C₁₀H₂₁, C₁₁H₂₃ or C₁₂H₂₅ and when R denotes C₁₀H₂₁, X denotes a single bond or an oxygen atom, and

when X denotes an oxygen atom, (i) K=1, L=2 and n is 6 or (ii) K=2, L=1 and n is 4, 6 or 8, and when

X denotes a single bond, K=2, L=1 and n=6, and when R denotes C₉H₁₉, C₁₁H₂₃ or C₁₂H₂₅, X denotes an oxygen atom, K=2, L=1 and n=6, and

C* denotes an asymmetric carbon atom.

5,378,397

BAFBR:EU PHOSPHORS

August Ferretti, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 814,266, Dec. 24, 1991, Pat. No. 5,279,765.

This application Oct. 13, 1993, Ser. No. 135,837

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.⁶ C09K 11/61

U.S. Cl. 252-301.4 H

1 Claim

1. A BaFBr:Eu phosphor compound produced by a process which comprises:

- preparing a slurry containing BaF₂, BaBr₂ and a europium halide, wherein the amount of BaBr₂ present is at least 1.4 times that required stoichiometrically to form BaFBr;
- agitating said slurry for a time sufficient to permit substantially all of said BaF₂ to react with said BaBr₂ to form BaFBr;
- spray drying the resulting slurry of step (b) under conditions that produce porous spheroidal agglomerates having an average diameter larger than that of the preselected diameter;
- firing said spheroidal agglomerates in an inert atmosphere for from about 10 to about 120 minutes at a temperature of from about 650° C. to about 800° C.;

- (e) cooling the fired material of step (d) to ambient temperature in an inert atmosphere;
- (f) washing the cooled material of step (e) with methanol or a 90:10 by volume mixture of water and citric acid to selectively remove excess BaBr₂; and
- (g) drying the washed material of step (f) to produce a free flowing powder of the Ba_{1-y}Eu_yFBr phosphor compound where y is a number from 0.001 to 0.2 and having high speeds and afterglow (lag) value of 1.29 or less in response to x-ray radiation.

5,378,398

METHOD OF TREATING EUROPIUM ACTIVATED STRONTIUM TETRABORATE PHOSPHOR

Anthony F. Kasenga; Joseph J. Lenox, both of Towanda, Pa., and John S. Tulk, Peabody, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Jul. 15, 1991, Ser. No. 731,179

Int. Cl.⁶ C09K 11/63

U.S. Cl. 252—301.40 R

6 Claims

1. The method of treating europium activated strontium tetraborate phosphor comprising the steps of blending the phosphor with strontium carbonate or strontium fluoride or ammonium fluoride, and then firing the blend at an elevated temperature in a reducing atmosphere.

5,378,399

FUNCTIONAL COMPLEX MICROGELS WITH RAPID FORMATION KINETICS

Adam F. Kaliski, East Windsor, N.J., assignor to Industrial Progress, Inc., East Windsor, N.J.

Continuation-in-part of Ser. No. 775,025, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 472,763, Jan. 31, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 919,831

Int. Cl.⁶ B01J 13/00

U.S. Cl. 252—313.1

10 Claims

1. A process for synthesizing complex functional microgels with rapid formation kinetics in an aqueous medium, comprising the steps of

- (a) preparing a transient, chemically reactive subcolloidal hydrosol having particle size larger than 10 Å and smaller than 50 Å by blending
- (i) an aqueous solution of at least one reagent selected from the group consisting of alkali-metal silicates and quaternary ammonium silicates with
- (ii) an aqueous solution of at least one reagent selected from the group consisting of alkali-metal aluminates and alkali-metal zincates, wherein the ratio of the reagents of (i), present in said aqueous medium at a concentration of from 0.05% to 2.5%, by weight, to the reagents of (ii), present in the aqueous medium at a concentration of from 0.05% to 2.5%, by weight, is from 1:10 to 10:1, by weight; and
- (b) blending an aqueous solution of at least one cross-linking agent selected from the group consisting of bivalent and multivalent inorganic salts and organic, cationically active chemical compounds with at least two reactive groups in each molecule, present in said aqueous medium at a combined concentration of up to 5.0%, by weight, with said resultant transient, chemically reactive subcolloidal hydrosol from step (a) to cross-link said chemically reactive subcolloidal hydrosol and synthesize said complex functional microgels, wherein the ratio of said said cross-linking agents from (b) to said chemically reactive subcolloidal hydrosol from (a) is from 1:10 to 10:1, by weight.

5,378,400

PREPARATION OF METAL OXIDE SOLS BY ELECTROLYSIS

Manfred Parusel, Munster; Klaus Ambrosius, Dieter; Klaus-Dieter Franz, Kelkheim; Wolfgang Hechler, Lautertal/Relchenbach, and Matthias Schraml-Marth, Zwingenberg, all of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

Filed Nov. 30, 1992, Ser. No. 983,358

Claims priority, application Germany, Nov. 30, 1991, 4139579

Int. Cl.⁶ C25B 1/00

U.S. Cl. 252—315.01

8 Claims

1. A process for the preparation of single- or multi-component metal oxide sols, comprising hydrolyzing an aqueous metal salt solution or a solution of a metal salt mixture by direct electrolysis at 0° to 15° C., wherein the metal salt solution is without stabilizing additive and is continuously recirculated through an electrolytic cell.

2. A process according to claim 1, wherein air is passed through the solution.

6. A single- or multi-component metal oxide sol prepared by the process according to claim 2, having a particle size of 5–1,000 nm.

5,378,401

PREPARATION OF ZINC POLYPHOSPHATE IN HIGH PH SOLUTION

James J. Derham, Ft. Washington, Pa.; Joseph E. Lubitsky, Cinaminson, N.J., and William C. Flanagan, Exton, Pa., assignors to Klenzoid, Inc., Conshohocken, Pa.

Filed Jan. 31, 1992, Ser. No. 828,749

Int. Cl.⁶ C23F 11/167

U.S. Cl. 252—387

21 Claims

1. A stable, alkaline solution of zinc polyphosphate having a pH of above 7 prepared by a process comprising the steps of: while continuously stirring a starting aqueous solution containing 35–60% by weight tetrapotassium pyrophosphate (TKPP);

introducing a predetermined amount of a soluble zinc salt into said starting solution at a gradual rate, the amount of zinc introduced thereby being from about 12.5% to about 20% by weight of the TKPP in said starting solution; and mixing the resulting solution for an extended time until said resulting solution is clear and colorless.

5,378,402

POLYMER COMPOSITIONS

Malcolm G. Cross, and Robert Lines, both of Swindon, England, assignors to Raychem Limited, London, United Kingdom

Filed Jul. 21, 1983, Ser. No. 516,176

Claims priority, application United Kingdom, Aug. 2, 1982, 8222303; Oct. 18, 1982, 8229726

Int. Cl.⁶ H01B 1/00

U.S. Cl. 252—500

24 Claims

1. A polymer composition comprising

- (1) a polymer which is intrinsically or inherently electrically conductive, and
- (2) a polymeric dopant which
 - (a) is associated with the electrically conductive polymer and
 - (b) includes electrically charged groups which stabilize the electrically conductive polymer when the polymer is in an electrically conductive state, said electrically charged groups being present as part of the polymeric backbone of the dopant or as side chains pendant from the polymeric backbone of the dopant, or both.

5,378,403

HIGH ELECTRICALLY CONDUCTIVE POLYANILINE COMPLEXES HAVING POLAR SUBSTITUTENTS

Lawrence W. Shacklette, Maplewood, N.J., assignor to Allied-Signal Inc., Morristownship, Morris County, N.J.

Continuation-in-part of Ser. No. 317,367, Mar. 1, 1989, Pat. No. 5,160,457, which is a continuation-in-part of Ser. No. 82,886, Aug. 7, 1987, Pat. No. 5,069,820. This application Sep. 28, 1992, Ser. No. 952,371

Int. Cl.⁶ H01B 1/00, 1/06

U.S. Cl. 252—500

41 Claims

1. An electrically conductive substituted or unsubstituted conjugated homopolymer or copolymer complex comprising a substituted or unsubstituted positively charged conjugated homopolymer or copolymer cation doped with a negatively charge dopant anion, said dopant anion having at least one anionic functionality and having at least one functionality selected from the group consisting of non-ionic polar groups having an electronegativity or electropositivity such that said group or groups have a net polar group molar contribution greater than zero.

5,378,404

PROCESS FOR FORMING DISPERSIONS OR SOLUTIONS OF ELECTRICALLY CONDUCTIVE CONJUGATED POLYMERS IN A POLYMERIC OR LIQUID PHASE

Chien-Chung Han, Madison, and Lawrence W. Shacklette, Maplewood, both of N.J., assignors to AlliedSignal Inc., Morristownship, Murros County, N.J.

Continuation-in-part of Ser. No. 689,382, Apr. 22, 1991, abandoned, and a continuation-in-part of Ser. No. 751,915, Aug. 29, 1991, abandoned. This application May 20, 1993, Ser. No. 63,814

Int. Cl.⁶ H01B 1/00

U.S. Cl. 252—500

13 Claims

1. A process of forming an electrically conductive blend, solution or dispersion comprising an electrically substituted or unsubstituted conductive conjugated polymer dissolved or dispersed in a liquid matrix or polymeric matrix, said process comprises the steps of:

- selecting a matrix liquid or a matrix polymer for the blend, solution, or dispersion, said matrix liquid or matrix polymer having a first solubility parameter;
- doping a substituted or unsubstituted conjugated polymer having a second solubility parameter, which is incompatible with said selected matrix liquid or matrix polymer, with at least one dopant solute to modify the solubility parameter of said conjugated polymer such that the said second solubility parameter of said conjugated polymer is closer to said first solubility parameter of said selected matrix liquid or matrix polymer and said doped conjugated polymers are compatible; and
- dissolving or dispersing said doped conjugated polymer in said liquid or polymer matrix to form said electrically conductive blend, solution or dispersion.

5,378,405

CONDUCTIVE MICROPARTICLES AND PRESSURE-SENSITIVE ADHESIVE TAPES MADE THEREFROM

Gustav Gutman, Austin, Tex., and Richard J. Goetz, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 28, 1993, Ser. No. 98,166

Int. Cl.⁶ H01B 1/12; B32B 7/12

U.S. Cl. 252—62

20 Claims

1. Conductive, polymeric, inherently tacky, solvent insoluble, solvent-dispersible, elastomeric, pressure-sensitive adhesive microparticles having an average diameter of at least about 1 micrometer, wherein said microparticles have a surface further comprising an ionic conductive material, said material having been formed from a polymer electrolyte base

polymer, and at least one ionic salt selected from the group consisting of salts of alkali metals and salts of alkaline earth metals.

5,378,406

FUNGIRESISTANT POLYORGANOSILOXANE COMPOSITION

Hisayuki Nagaoka, Tokyo, Japan, assignor to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1993, Ser. No. 89,552

Claims priority, application Japan, Jul. 24, 1992, 4-197927

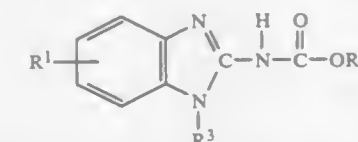
Int. Cl.⁶ C08L 83/04, 83/05; H01B 1/12

U.S. Cl. 252—511

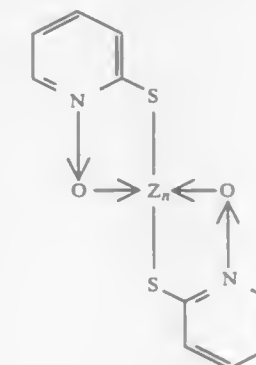
11 Claims

1. A fungiresistant polyorganosiloxane composition comprising

- (A) 100 parts by weight of a polyorganosiloxane having a viscosity at 25° C. of from 100 to 500,000 whereby, each of both of its terminals are blocked with a silanol group or an alkoxy group,
- (B) from 0.1 to 20 parts by weight of an organosilicon compound having on the average more than 2 hydrolyzable groups each bonded to a silicon atom in the molecule,
- (C) from 0.001 to 25 parts by weight of a benzimidazolylcarbamate compound represented by the formula



wherein R¹ represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a halogen atom, or a nitro group; R² represents an alkyl group having from 1 to 4 carbon atoms or an alkoxyalkyl group having from 2 to 4 carbon atoms; and R³ represents a hydrogen atom, an N-substituted or unsubstituted carbamoyl group or an N-substituted or unsubstituted carbamoyloxy group, and (D) from 0.001 to 25 parts by weight of bis(2-pyridylthio-1-oxide) zinc salt shown by the formula



5,378,407

CONDUCTIVE POLYMER COMPOSITION

Daniel Chandler, Menlo Park; Nelson H. Thein, Union City, and Edward F. Chu, Sunnyvale, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 5, 1992, Ser. No. 894,119

Int. Cl.⁶ H01B 1/00, 1/14, 1/16

U.S. Cl. 252—513

14 Claims

1. A conductive polymer composition which comprises (1) 40 to 70% by volume crystalline organic polymer which comprises a polyolefin, a copolymer of at least one olefin

- and at least one monomer copolymerisable therewith, or a fluoropolymer;
- (2) 25 to 40% by volume conductive particulate filler which is dispersed in the organic polymer and which comprises particles which
- (a) comprise nickel,



- (b) have a shape such that particles having the same shape and consisting of the same metal have a bulk density DB as measured by ASTM B329 which is (i) less than 1.3 g/cm³ and (ii) q times the true density DT of the metal, where q is less than 0.15,
- (c) have a filamentary structure; and
- (3) a nonconductive filler which is obtained substantially complete dehydration of a hydrate of a metal oxide.

5,378,408

LEAD-FREE THICK FILM PASTE COMPOSITION
 Alan F. Carroll, Raleigh, N.C., and Kenneth W. Hang, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 29, 1993, Ser. No. 99,027

Int. Cl.⁶ C03C 14/00; H01B 1/16

U.S. Cl. 252—514

9 Claims

1. A screen-printable thick film paste composition suitable for forming conductive patterns on a rigid substrate comprising:

- (a) finely divided particles of a lead-free glass composition having a softening point log (eta)=7.6 poise from 400° C.-650° C., a log (eta) specific viscosity in a range from 2 at 500° C. to 5 at 700° C. and consisting essentially of, by weight 65-95% Bi₂O₃, 2-15% SiO₂, 0.1-9% B₂O₃, 0-5% Al₂O₃, 0-5% CaO, and 0-20% ZnO;
- (b) electrically conductive particles; and
- all of (a) and (b) being dispersed in (c) an organic medium.

5,378,409

LIGHT DUTY DISHWASHING DETERGENT COMPOSITION CONTAINING AN ALKYL ETHOXY CARBOXYLATE SURFACTANT AND IONS
 Kofi Ofosu-Asante, Cincinnati, Ohio, assignor to The Procter & Gamble Co., Cincinnati, Ohio

Continuation of Ser. No. 819,556, Jan. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 614,531, Nov. 16, 1990, abandoned. This application Jun. 22, 1993, Ser. No. 80,736

Int. Cl.⁶ C11D 1/06, 3/30, 3/33

U.S. Cl. 252—548

30 Claims

1. A light-duty liquid or gel dishwashing detergent composition comprising, by weight:

- (a.) from about 5% to 70% of a surfactant mixture consisting essentially of, by weight:
- (i) from about 80% to 100% of alkyl ethoxy carboxylates of the formula:



wherein R is a C₁₂ to C₁₆ alkyl group, x ranges from 0 to about 10 and the ethoxylate distribution is such that, on a weight basis, the amount of material where x is 0 is less than about 20% and the amount of material where x is greater than 7 is less than about 25%, the average x is from about 2 to 4 when the average R is C₁₃ or less, and the average x is from about 3 to 6 when the average

R is greater than C₁₃, and M is a cation which is not calcium;

(ii) from 0% to about 10% of alcohol ethoxylates of the formula:



wherein R is a C₁₂ to C₁₆ alkyl group and x ranges from 0 to about 10 and the average x is less than about 6; and

(iii) from 0% to about 10% of soaps of the formula:



wherein R is a C₁₁ to C₁₅ alkyl group and M is a cation;

(b.) from about 0.1% to 4% of the calcium ions, said calcium ions added as salt selected from the group consisting of chloride, acetate, nitrate and mixtures thereof; and

(c.) from about 0.5% to about 3% of a calcium chelating agent which forms a soluble calcium complex, having a log of formation constant, log K_f, between about 1.0 and about 3.5, the agent being selected from the group consisting of bicine (bis(2-ethanol)glycine), N-(2-hydroxyethyl)-iminodiacetic acid (HIDA), N-(2,3-dihydroxypropyl)-iminodiacetic acid (GIDA), their alkali metal salts and mixtures thereof in an amount sufficient to prevent the formation of calcium carbonate precipitates in the composition; wherein a 10% by weight aqueous solution of said composition has a pH from about 7 to 11.

5,378,410

PROCESS AND FILLING ADAPTER FOR THE IN-DRUM DRYING OF LIQUID RADIOACTIVE WASTE

Dietmar Erbe, Rodenbach; Reinhard Thiele, Frankfurt, and Helmut Walter, Offenbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

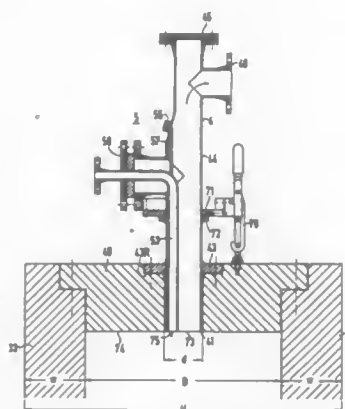
Filed Jan. 21, 1993, Ser. No. 7,055

Claims priority, application Germany, Jul. 20, 1990, 4023162

Int. Cl.⁶ G21F 9/08, 9/22

U.S. Cl. 588—16

4 Claims



1. A process for in-drum drying of liquid radioactive waste, which comprises:

- removing a plug from a central opening formed in a lid of a container having been sealed with the plug;
- inserting a filling adapter having an outside diameter that fits the opening into the opening;
- inserting a fall level sensor protruding from a free end of the filling adapter into the interior of the container;
- pouring liquid radioactive waste into the sealed container and venting vapors from the container, through the filling adapter;
- heating the liquid radioactive waste in the container with a heater; and
- sealing the shielded container by placing the plug in the central opening in the lid of the container.

5,378,411

AUTOMATIC CHOKE SYSTEM FOR CARBURETOR
 Takahiro Iwaki, and Michihiro Suda, both of Tokyo, Japan, assignors to Nippon Thermostat Co., Ltd., Tokyo, Japan

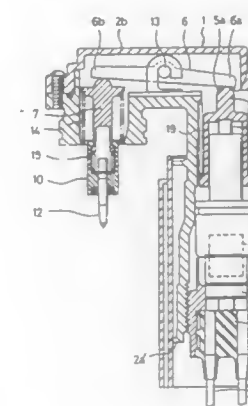
Filed Dec. 9, 1993, Ser. No. 163,795

Claims priority, application Japan, Oct. 8, 1993, 5-253360

Int. Cl.⁶ F02M 1/06

U.S. Cl. 261—39.2

8 Claims



1. An automatic choking system for a carburetor comprising:

- a case body having a generally inverted L-shape;
- a thermo-element housed in an elongated vertical portion of the case body, the vertical portion having a first end and a second end opposite the first end;
- a thermistor proximate to thermally expanding wax provided in the first end of the thermo-element, wherein the thermistor is heated by electric current which increases electric resistance of the thermistor which shuts off the electric current;
- a piston projected from the second end of the thermo-element by thermal expansion of the wax;
- a link housed in a horizontal portion of the case body and pivotally supported so that one terminus of the link is pushed down by the piston pushing up on a second terminus of the link;
- a moving part pushed downward by the second terminus of the link;
- a starter valve extending downward into a by-pass passageway to shut off the by-pass passageway as a consequence of the moving part being moved downward by the link, the by-pass passageway by-passes a main air passageway of the carburetor; and
- a needle to shut off an auxiliary fuel passageway.

5,378,412

METHOD OF EDGING A CONTACT LENS OR LENS BLANK

David L. Smith, Rochester; Alan C. Wilson, Webster, and Russell W. Harring, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 2, 1992, Ser. No. 983,948

Int. Cl.⁶ B29C 37/02; B29D 11/00

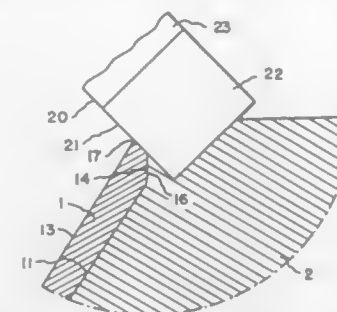
U.S. Cl. 264—2.1

20 Claims

1. A method of edging a contact lens or lens blank secured in a mold member, said method comprising:

- (a) providing an assembly which comprises:
- (i) an anterior mold member comprising a concave molding cavity and a generally cylindrical wall at the periphery of the molding cavity; and
- (ii) a contact lens or lens blank cast in said mold which comprises an anterior surface in contact with the molding cavity of the mold member, a posterior exposed surface, and an edge surface in contact with the generally cylindrical wall of the mold member; and

(b) removing a peripheral edge section of said contact lens or lens blank by circumferentially cutting the edge thereof at



a rotational angle less than 90° of a central axis of the mold member.

5,378,413

PROCESS FOR PREPARING MICROCAPSULES HAVING GELATIN WALLS CROSSLINKED WITH QUINONE

James W. Mihm, Annapolis; George I. Loeb, Bethesda, and Elizabeth G. Haslbeck, Annapolis, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1993, Ser. No. 6,595

Int. Cl.⁶ A01N 25/28; B01J 13/10, 13/20

U.S. Cl. 264—4.3

10 Claims

1. A process for preparing a microcapsule comprising the steps of:

- a) emulsifying a core material in an aqueous solution of gelatin at a temperature of about 40° C. to about 50° C. so as to produce particles having a diameter of about 30 to about 100 microns, said aqueous solution of gelatin comprising an acid precursor gelatin having a bloom strength between about 160 and about 280 and distilled water;
- b) adding an aqueous polyanion solution comprising distilled water and a polyanion to the emulsion;
- c) adding a pH adjusting agent selected from the group consisting of acetic acid, sodium hydroxide and a mixture of the two so as to adjust the pH of the emulsion to between about 4 and about 5 so as to allow coacervation;
- d) cooling the coacervate to room temperature at a rate of about 1° C. every 10 minutes so as to allow the coacervate to gel around the core material forming microcapsules with a wall comprising gelatin;
- e) rinsing said microcapsules with distilled water to remove excess coacervate;
- f) cooling said microcapsules for at least about 30 minutes at about 5° C. to about 10° C.;
- g) allowing said microcapsules to come to room temperature; and
- h) crosslinking said wall with a saturated quinone solution for about 18 to about 36 hours at room temperature.

5,378,414

METHOD OF FORMING PACKAGING COMPOSITIONS
 William J. Derkach, Lewisville, Tex., assignor to Recot, Inc., Wilmington, Del.

Filed Jul. 29, 1993, Ser. No. 98,794

Int. Cl.⁶ B29C 47/06; B32B 9/04

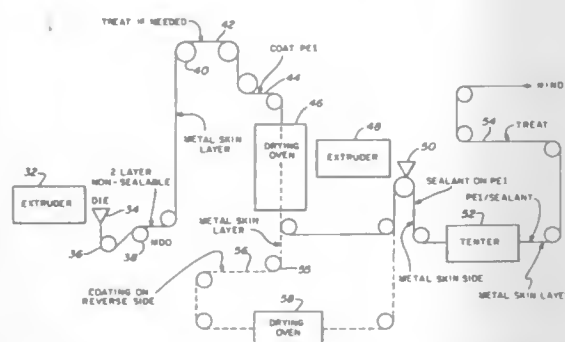
U.S. Cl. 264—22

12 Claims

1. A continuous in-line process of forming a multilayer packaging film for creating a package to contain a product that degrades and generates unwanted degradation compositions, the process comprising the steps of:

- extruding a base layer for supporting the packaging film;
- orienting the base layer longitudinally in the machine direction of orientation;

coating one side of the extruded oriented base layer with a film layer in liquid form that acts to reduce the adverse effects of said unwanted degradation compositions caused by said product degradation; drying the coated film layer;

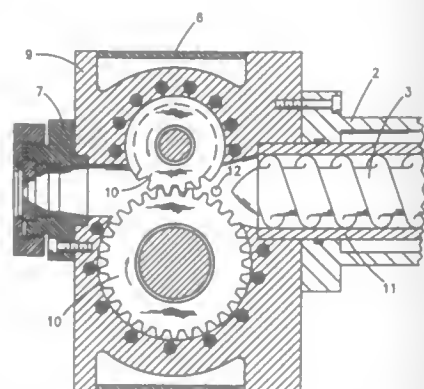


extruding a sealant coating layer on the dried film layer coating to separate said product in said package from said film layer; and
subjecting the sealant-coated dried packaging film to a tenter process for obtaining full orientation of the packaging film thereby reducing the thickness of the coating layer to increase its permeability to said degradation compositions.

5,378,415 PROCESS FOR THE PRODUCTION OF HOMOGENEOUS RUBBER BLANKS

Hans J. Gohlisch, Hanover, and Wilfried Baumgarten, Patenssen, both of Germany, assignors to Paul Troester Maschinenfabrik, Hanover, Germany

Continuation-in-part of Ser. No. 863,941, Apr. 6, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 139,342
Claims priority, application Germany, Apr. 7, 1991, 4111219
Int. Cl.⁶ B29C 47/50, 47/56, 47/76, 47/92
U.S. Cl. 264—40.1 3 Claims



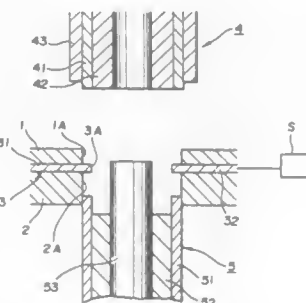
1. A process for the precision production of homogenous rubber blanks with apparatus comprising:
 - a screw extruder comprising an extruder cylinder having an inlet end portion and an outlet end, feed means in said inlet end portion of said extruder cylinder for feeding a rubber mixture into said cylinder, an extruder screw rotatable in said extruder cylinder, motor means for driving said extruder screw rotationally to propel said rubber mixture from said inlet end portion of said extruder cylinder to said outlet end and means for controlling the rate of rotation of said screw,
 - a gear pump comprising a housing having an inlet communicating with said outlet end of said extruder cylinder and an outlet, two intermeshing gears rotatably driven in said housing and means for driving said gears rotationally to

force said rubber mixture from said inlet to and out of said outlet of said housing,
said gear pump having an inlet bight facing said inlet of said gear pump housing and a tip end portion of said extruder screw extruding into said inlet bight of said gears to deliver said rubber mixture into said inlet bight of said gears in a plasticized state without destroying linkages between molecules of said rubber mixture,
an extrusion head disposed at said outlet of said gear pump housing for extruding said rubber mixture into a homogeneous strand of uniform cross sectional shape, and cut off means disposed downstream of said extrusion head for cutting said strand into blanks of uniform length and means for driving said cut off means,
said process comprising feeding a rubber mixture into said feed means of said extruder,
driving said extruder screw of said extruder in rotation at a speed and torque sufficient only to plasticize said rubber mixture and to transport said rubber mixture from said feed means to said outlet end of said extruder cylinder and into said inlet of said gear pump,
driving said gears of said gear pump with digital control at a precisely uniform speed to force said plasticized rubber mixture through said extrusion head in the form of a strand of uniform cross sectional shape, and
driving said cut off means to cut said strand into high precision homogenous rubber blanks.

5,378,416 METHOD OF AND SYSTEM FOR MANUFACTURING POWDER MOLDINGS

Yuji Kishi, Kanagawa, and Takeshi Katagiri, Machida, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Yoshizuka Seiki Co., Ltd., Kawasaki, both of Japan

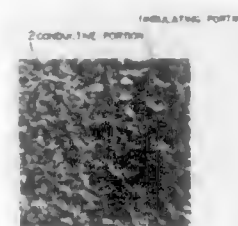
Filed Jul. 27, 1993, Ser. No. 97,005
Claims priority, application Japan, Jul. 28, 1992, 4-219550; Dec. 28, 1992, 4-358509; May 28, 1993, 5-148342
Int. Cl.⁶ B29C 43/02
U.S. Cl. 264—40.5 14 Claims



1. A method of manufacturing a powder molding having a predetermined portion, the method relying upon at least one die formed with a space having an opening on both ends thereof, first and second punches and a means for shaping the predetermined portion of the powder molding, the method comprising the steps of:
 - filling the space of the at least one die with a powder;
 - pressing said powder in the space of the at least one die by the first and second punches inserted therein through the opening of the at least one die; and
 - withdrawing the shaping means from the space of at least one die for extracting the powder molding.
8. An apparatus for manufacturing a powder molding having a predetermined portion, comprising:
 - at least one die formed with a space to be filled with a powder, said space having an opening on both ends thereof;
 - first and second punches arranged to be inserted into said space of said at least one die through said opening, said

first and second punches pressing said powder in said space of said at least one die; and
a means, movably arranged relative to said space of said at least one die, for shaping the predetermined portion of the powder molding, said shaping means having a shape corresponding to a shape of the predetermined portion of the powder molding.

5,378,417
PROCESS FOR PRODUCING CERAMIC
COMPOSITIONS
Yoshiyuki Yasutomi, Katsuta; Kousuke Nakamura; Hideki Kita, both of Hitachi, and Masahisa Sobue, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 179,984, Apr. 11, 1988, abandoned. This application Sep. 22, 1989, Ser. No. 411,330
Claims priority, application Japan, Apr. 10, 1987, 62-86871; May 8, 1987, 62-110556; Aug. 20, 1987, 62-206698
Int. Cl.⁶ C04B 35/58
U.S. Cl. 264—61 13 Claims



1. A method for producing a ceramic composite, comprising the steps of:
 - preparing a first mixture including a first powder of an electrically conductive ceramic material, Si powder and a binder;
 - kneading the first mixture to form a first kneaded product;
 - preparing a second mixture including a second powder of an electrically insulating ceramic material selected from the group consisting of Al₂O₃, Si₃N₄, SiO₂, and ZrO₂; Si powder and a binder;
 - kneading the second mixture to form a second kneaded product;
 - combining the first and second kneaded products to form a composite body by direct bonding;
 - removing the binder from the composite body; and
 - sintering the composite body in a nitrogen atmosphere to effect a reaction between the Si powder and nitrogen so as to form particles and whiskers of silicon nitride in the sintered composite body.

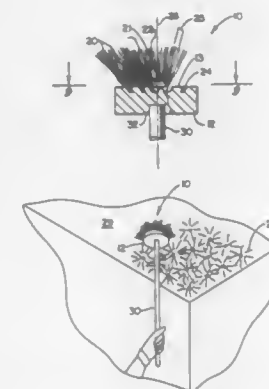
5,378,418
METHOD OF MAKING ARTICLES OF EDIBLE OR
EASILY BIODEGRADABLE MATERIAL
Erhard Berger, Sudstrasse 8, 3110 Munsingen, Switzerland, and Ernst Haussener, Dorfstrasse 35, 3073 Gumligen, Switzerland
Filed Sep. 21, 1992, Ser. No. 947,528
Claims priority, application European Pat. Off., Sep. 24, 1991, 91810746.7
Int. Cl.⁶ A23J 1/02; B29C 45/00
U.S. Cl. 264—83 27 Claims

1. A method of making articles of edible or easily biodegradable material without using either a plasticizer or a lubricant, comprising:
 - a) producing an animal connective tissue protein product by removing fat from animal connective tissue using carbon dioxide in a liquid or over critical state,
 - b) mixing the animal connective tissue protein product with a starchy grain or vegetable material to form a mixture having a semifluid to pasty consistency,
 - c) extruding the mixture with the addition of water to form a plastic reworkable material, and

d) molding the extruded material by injection molding to form said articles.

5,378,419 METHOD FOR TRANSFERRING PATTERNS TO A STIPPLABLE TOPPING COMPOUND USING A STIPPLE BRUSH

John S. Capoccia, 6124 Cheshire Rd., Galena, Ohio 43021
Division of Ser. No. 73,776, Jun. 5, 1993, which is a continuation-in-part of Ser. No. 773,020, Oct. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 597,885, Oct. 15, 1990, abandoned. This application Apr. 26, 1994, Ser. No. 233,355
Int. Cl.⁶ B28B 17/00; B05D 3/12; A46B 9/02
U.S. Cl. 264—162 19 Claims



1. A method for transferring patterns to a stipplable topping compound on a surface, comprising the steps of:
 - (a) providing a stipple brush comprising:
 - a base plate having an outer edge, a first side, a second oppositely disposed side, and a central axis extending perpendicularly through said base plate, said first side having a predetermined pattern of brush receptacles disposed therein such that all said brush receptacles are acutely angled at about the same angle with respect to the central axis and radiate from said central axis outwardly toward said outer edge of said base plate; and
 - a plurality of brush elements having predetermined lengthwise extents disposed in said brush receptacles in orientations defining substantially the same acute angle with respect to said central axis, said brush elements extending radially outwardly toward said outer edge of said base plate to expose their lengthwise extents;
 - (b) moving said stipple brush first side into substantially parallel adjacency with said surface;
 - (c) contacting said surface with the lengthwise extents of said brush elements; and
 - (d) withdrawing the lengthwise extents of said brush elements from contact with said surface to transfer a generally radial, consistently repeatable predetermined pattern to the topping compound.

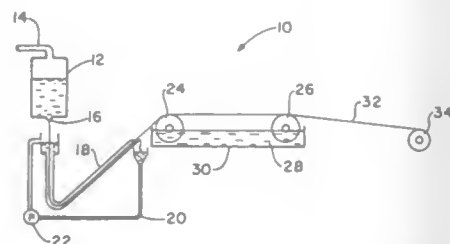
5,378,420 PROCESS FOR PREPARING AROMATIC POLYIMIDE FIBERS

Frank W. Harris, and Stephen Z. D. Cheng, both of Akron, Ohio, assignors to Edison Polymer Innovation Corporation, Brecksville, Ohio

Filed Jun. 16, 1993, Ser. No. 78,516
Int. Cl.⁶ D01D 5/16; D01F 6/74; D02J 1/22
U.S. Cl. 264—184 4 Claims
1. A process for preparing a segmented rigid-rod polymer fiber comprising:

- combining reactants which include 2,2'-dimethyl-4,4'-diaminobiphenyl and a tetracarboxylic dianhydride in p-chlorophenol to form a liquid reaction mixture,

heating said reaction mixture until said reactants have polymerized to form a segmented rigid rod polymer, forming a fiber from said polymer,



and drawing said fiber from about 800 to about 1,000 percent of its initial length at a temperature from about 400° to about 450° C. following its fabrication.

5,378,421

PROCESS FOR PREPARING THERMOPLASTIC CONTAINERS

Morris Salame, Windsor, Conn., assignor to PepsiCo, Inc., Purchase, N.Y.

Filed Mar. 22, 1993, Ser. No. 35,219

Int. Cl. B29C 35/02, 49/18

U.S. Cl. 264—230

6 Claims

1. Process for preparing a crystallized thermoplastic container which comprises:

crystallizing at least a portion of a molecularly oriented body of a thermoplastic container by heat treating said portion(s) at temperatures suitable to crystallize said portion(s), including the steps of heating said portion(s) of said body at a first temperature for at least 5 seconds below a final crystallization temperature, followed by heating said portion(s) of said body at a second temperature for at least 5 seconds at a final temperature to obtain crystallinity above 4% in said portions), wherein the first heating step is operative to stress relieve the container to increase resistance of the container in the higher temperature second heating step, wherein each of said heating steps is accompanied by shrinkage and distortion of the container; and

sizing said heat treated container to a final shape thereby forming said crystallized thermoplastic container.

5,378,422

MOLDING MECHANISM FOR THE IN-MOLD FORMATION AND ASSEMBLY OF AN ACTUATOR-OVERCAP AND AN INSERT NOZZLE AND METHOD FOR USING SUCH MECHANISM

D. James Musiel, Racine, Wis.; William C. Hadsell, Phoenix, and Craig R. Oestreich, Scottsdale, both of Ariz., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 820,841, Jan. 15, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 202,667

Int. Cl. B29C 45/03

U.S. Cl. 264—238

20 Claims

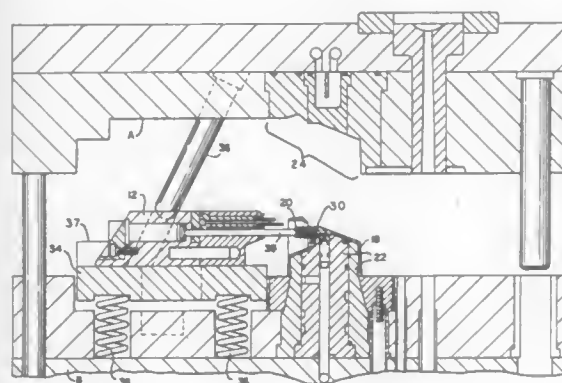
1. A molding mechanism which simultaneously forms, from injected thermoplastic material, a first molded part and a second molded part, the first and the second molded parts being configured to fit together to form a single component assembly, the second molded part being intended to be joined to the first molded part, and wherein in a single sequence of operations, the molding mechanism detaches the second molded part from its molding position, and repositions and inserts the second molded part into an opening in the first molded part while the first molded part is still located within its mold cavity, the molding mechanism comprising:

an A mold component having formed therein a primary mold cavity for forming the first molded part, a B mold component having protruding therefrom a mold

core, the mold core having formed therein a secondary mold cavity for forming the second molded part, access means for allowing injected thermoplastic material to reach the primary and secondary mold cavities to form the first and second molded parts, respectively, moveably connected to the B mold component, means for repositioning and inserting the second molded part into an opening in the first molded part,

the A and B mold components, when fitted together, being configured to form the first molded part within a molding gap between the mold core and the primary mold cavity, and to form the second molded part between the secondary mold cavity and a part engaging pin which is movably attached to the means for repositioning and inserting the second molded part,

the A and B mold components being designed to be separated after the simultaneous formation of the first molded part and the second molded part, during which separation the means for repositioning and inserting the second molded part causes the second molded part to be removed out of its formation position within the secondary cavity, moved at least axially away from its formation position within the secondary cavity so as to be repositioned to an insertion position located axially in line with the opening in the first molded part and then axially inserted into the opening in the first molded part to form the single component assembly, and



movably located upon the B mold component, means for stripping the single component assembly from the molding mechanism after the second molded part has been inserted into the first molded part, and after separation of the A and B mold components.

11. A method of simultaneously forming, in the same mold, two parts intended to be joined, the parts being a first molded part having an opening and a second molded part, and then joining the two parts by inserting the second molded part into the opening in the first molded part while the first molded part is still located within its mold cavity, the method comprising the steps of:

providing a molding mechanism having (i) an A mold component which has formed therein a primary mold cavity for forming the first molded part, (ii) a B mold component having protruding therefrom a mold core, the mold core having formed therein a secondary mold cavity for forming the second molded part, (iii) access means for allowing injected thermoplastic material to reach the primary and secondary mold cavities to form the first and second molded parts, respectively and, (iv) moveably connected to the B mold component, means for repositioning and inserting the second molded part into the opening in the first molded part while the first molded part is still located within the primary mold cavity,

wherein the A and B mold components, when fitted together, are configured to form the first molded part within a molding gap between the mold core and the primary

cavity and to form the second molded part between the secondary cavity and a part engaging pin which is movably attached to the means for repositioning and inserting the second molded part, and

wherein the A and B mold components are designed to be separated after the simultaneous formation of the first molded part and the second molded part, during which separation the means for repositioning and inserting the second molded part causes the second molded part to be removed out of its formation position within the secondary cavity, moved at least axially away from its formation position within the secondary cavity to be repositioned to an insertion position located axially in line with the opening in the first molded part and then axially inserted into the opening in the first molded part to form a single component assembly, and thereafter, the formed single component assembly, after further separation of the A and B mold components, being stripped from the molding mechanism,

forcing the provided B mold component against the A mold component,

injecting, through the access means, a thermoplastic material into the molding gap between the mold core and the primary cavity as well as into a molding gap between the secondary cavity and the part engaging pin to simultaneously form the first molded part and second molded part,

moving the B mold component away from the A mold component, causing the second molded part to be removed out of its formation position by the part engaging pin, moved at least axially away from its formation position within the secondary cavity so as to be repositioned to an insertion position located axially in line with the opening in the formed first molded part, and causing the part engaging pin to then move axially forward, inserting the second molded part into the opening of the formed first molded part to form a single component assembly, and then causing the part engaging pin to retract, and stripping the formed single component assembly from its formation position.

5,378,423

METHOD AND APPARATUS FOR NOTCHING AND CUTTING A CLAY COLUMN SLUG INTO BRICKS

Hans Grimme, Falkenstrasse, Germany, assignor to Hans Lingl GmbH & Co. KG, Neu Elm, Germany

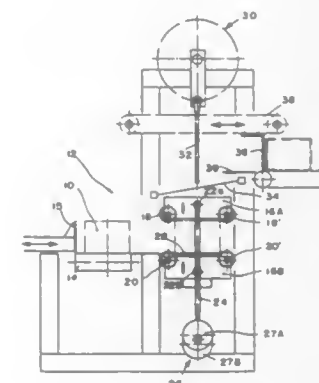
Filed Apr. 16, 1992, Ser. No. 869,503

Claims priority, application European Pat. Off., Apr. 26, 1991, 91106773

Int. Cl. B28B 11/08, 11/16

U.S. Cl. 264—293

13 Claims



8. A method for processing a clay column slug having elongated first and second opposing vertical surfaces and elongated first and second opposing horizontal surfaces about a cross-sectional circumference defined by the vertical and horizontal surfaces, comprising:

(a) moving said slug in a horizontal direction into a roller assembly having upper first and second and lower first and second rows of rollers, each row of rollers extending in a direction in which the slug is elongated, said upper and lower first rows of rollers being vertically aligned and separated by about a height defined between the horizontal surfaces of the slug, said upper and lower second rows of rollers being vertically aligned and separated by about the height, to form upper and lower notches across upper and lower horizontal surfaces of said slug, respectively, wherein said upper rows of rollers are horizontally aligned and spaced apart by about a width between said vertical surfaces and said lower rows of rollers are horizontally aligned and spaced apart by about said width;

(b) moving said upper and lower rows of rollers toward one another to form partial notches in said vertical surfaces of said slug; and

(c) moving said slug vertically out of said roller assembly to complete said partial notches along said vertical surfaces wherein said slug is uniformly notched about its entire circumference.

5,378,424

PROCESS FOR CURING PIPE INSULATION

Osmo Solkkeli, Lappeenranta, Finland, assignor to Oy Partek Ab, Parainen, Finland

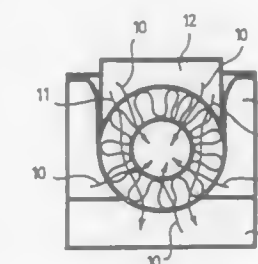
Continuation-in-part of Ser. No. 871,562, Apr. 17, 1992, which is a continuation of Ser. No. 555,428, Sep. 11, 1990, abandoned.

This application Sep. 30, 1993, Ser. No. 130,004

Claims priority, application Finland, Feb. 12, 1988, 880667 Int. Cl. B29C 35/04; F16L 59/02

U.S. Cl. 264—313

5 Claims



1. A process for curing a pipe insulation comprising a thermal wool material in a two-part mold of an air-permeable apertured construction and wherein a pipe insulation preform constituted of said thermal wool material is arranged around a core disposed in said mold, said mold including a male mold part having a generally semi-cylindrical apertured inner surface terminating on both longitudinal sides in a leading edge, each said leading edge of the male mold part terminating in a sharp flexible pointed end portion; comprising:

(a) positioning said pipe insulation preform in a female mold part of said mold;

(b) inserting said male mold part into said female mold part, said female mold part having an inner surface comprising a generally semi-cylindrical apertured portion which on both longitudinal sides thereof continues in a guide surface for surface contact with at least the flexible end portions of the leading edges of surface of the male mold part prior to the semi-cylindrical inner surface of the male mold part coming into contact with the pipe insulation preform to inhibit the formation of burrs from said thermal wool material;

(c) and concurrently passing curing air through said apertured mold surfaces and through said pipe insulation preform to effectuate the curing of said pipe insulation preform.

5,378,425

METHOD FOR VULCANIZING TIRE AND APPARATUS THEREFOR

Akinori Kubota, Kobe; Yoshiya Kubota; Shoji Okamoto, both of Toyota; Masaaki Ijiri, Aichi, and Koji Soeda, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 791,059, Nov. 12, 1991, abandoned.

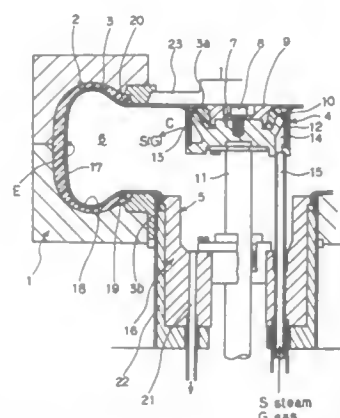
This application Oct. 16, 1992, Ser. No. 962,054

Claims priority, application Japan, Nov. 30, 1990, 2-339594

Int. Cl.⁶ B29C 35/04

U.S. Cl. 264—315

20 Claims



1. A method for vulcanizing a tire comprising the steps of: placing a tire to be vulcanized in a mold, the tire having a tire equator;

supplying a heating medium to an inner surface of the tire from at least one supply opening positioned above the tire equator, the at least one supply opening being pointed downwardly so that the heating medium is directed downwardly toward a portion of the tire below the tire equator upon release from the at least one supply opening;

supplying a pressurizing medium through the at least one supply opening to the inner surface of the tire after the step of supplying the heating medium, the heating medium being directed downwardly from the at least one supply opening, the heating medium and pressurizing medium only being supplied through the at least one supply opening positioned above the tire equator such that all of the heating medium and the pressurizing medium are supplied from a position above the tire equator and are directed downwardly toward the portion of the tire below the tire equator; and

removing drain accumulated in a lower portion of the inner surface of the tire through a discharge passage by introduction of the heating medium during the step of supplying the heating medium to thereby reduce temperature differences between an upper portion of the tire and the lower portion of the tire.

8. An apparatus for vulcanizing a tire comprising: means for holding the tire, the tire having a tire equator; a discharge opening provided adjacent a lower portion of the tire; and

means for supplying both heating medium and pressurizing medium to an inner side of the tire, the means for supplying having at least one supply opening positioned above the equator of the tire, the at least one supply opening being directed downwardly toward a portion of the tire below the tire equator, the means for supplying further forcing drain in the lower portion of the tire to the discharge opening whereat the drain is removed, heating medium and pressurizing medium being supplied to the inner side of the tire only through the at least one supply opening positioned above the equator of the tire such that all of the heating medium and pressurizing medium are supplied from a position above the tire equator and are

directed downwardly upon release from the at least one supply opening.

5,378,426

OXIDATION RESISTANT METAL PARTICULATES AND MEDIA AND METHODS OF FORMING THE SAME WITH LOW CARBON CONTENT

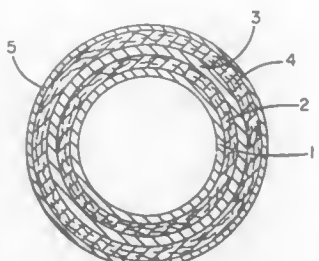
Stephen A. Geibel; John L. Hurley, and Sandra L. Brosious, all of Cortland, N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Oct. 21, 1992, Ser. No. 964,266

Int. Cl.⁶ B22F 1/00; C22C 29/00

U.S. Cl. 419—2

29 Claims



1. A porous metal medium comprising sintered metal particulates each having a core, a surface and a diameter in the range of 0.25 to 50 micrometers, the particulates comprising (a) at least about 60 wt. % of a base metal including at least one of iron and nickel, (b) at least about 11 wt. % chromium and (c) no more than about 0.03 wt. % carbon, wherein the surfaces of the particulates are enriched with at least one treatment element in an amount and depth sufficient to enhance the resistance of the sintered metal particulates to undesirable oxidation.

5,378,427

CORROSION-RESISTANT ALLOY HEAT TRANSFER TUBES FOR HEAT-RECOVERY BOILERS

Nohuo Otsuka, Nishinomiya, and Takeo Kodo, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 850,528, Mar. 13, 1992, abandoned.

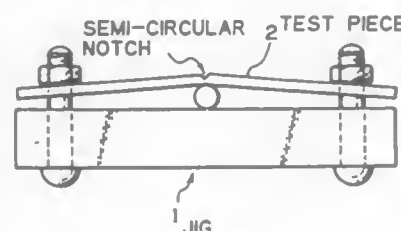
This application Nov. 5, 1993, Ser. No. 147,441

Claims priority, application Japan, Mar. 13, 1991, 3-048133; Jul. 29, 1991, 3-188567; Nov. 26, 1991, 3-310384; Jan. 22, 1992, 4-008941; Jan. 22, 1992, 4-009052

Int. Cl.⁶ C22C 30/00

U.S. Cl. 420—586.1

27 Claims



1. A corrosion-resistant heat transfer tube of a heat-recovery boiler which is made of an alloy consisting essentially, on a weight basis, of

C:	not more than 0.05%,	Si:	not more than 4%,
Mn:	not more than 7.5%,	Ni:	35 < Ni ≤ 55%,
Cr:	25 < Cr ≤ 35%,		

—continued—

Mo: an amount of at least 0.3% and satisfying the following inequality (1) when Mn(%) ≤ 2.5 or inequality (2) when 2.5 < Mn(%) ≤ 7.5,

Mo(%) ≤ 5.8—[Ni(%) / 10] (1)

Mo(%) ≤ 7.5—[Ni(%) / 10] (2)

one or more of Nb, Ti, Zr, and V: 0–3% in total,
one or more of Cu, Co, and W: 0–5% in total,

N: 0–0.3%, Al: 0–0.5%,

at least one rare earth metal: 0–0.1% in total, and
a balance of Fe and incidental impurities in which the content of P is not more than 0.030% and that of S is not more than 0.010%.

5,378,428

METHOD OF PRESERVING ARTICLE WITH AN OXYGEN ABSORBENT COMPOSITION

Yoshiaki Inoue; Shigeru Murabayashi; Kazuo Fujinami; Isamu Yoshino, all of Tokyo; Takamasa Kawakami; Satoru Maki-nose, both of Tsukuba, and Akira Naito, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 690,486, Apr. 24, 1991, Pat. No. 5,286,407.

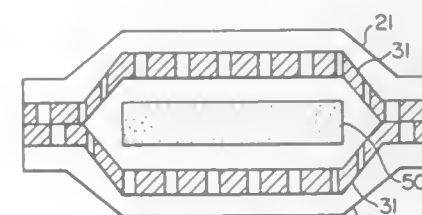
This application Nov. 19, 1993, Ser. No. 154,447

Claims priority, application Japan, Apr. 25, 1990, 2-107358; May 25, 1990, 2-134111; Jul. 30, 1990, 2-199209; Aug. 14, 1990, 2-213677; Aug. 14, 1990, 2-213678; Jan. 10, 1991, 3-012368; Feb. 22, 1991, 3-048611; Mar. 27, 1991, 3-085933

Int. Cl.⁶ C23F 11/02; C09K 15/02, 15/04

U.S. Cl. 422—9

28 Claims



SINGLE-PACKED PARCEL

1. A method of preserving an article, which comprises enclosing the article and an oxygen absorbent parcel in a container having gas-barrier properties and sealing said container, said parcel being formed by packing an oxygen absorbent composition, in an amount sufficient to preserve the article while sealed in the container, with a gas-permeable packing material, the oxygen absorbent composition comprising:

a polymer selected from the group consisting of polymers of isoprene, butadiene, 1,3-pentadiene and squalene, or a mixture of said polymer with an unsaturated fatty acid compound;

0.1 to 75 parts by weight per 100 parts by weight of the polymer or the mixture of the polymer with the unsaturated fatty acid compound, of an oxidation promoter selected from the group consisting of transition metals and transition metal compounds;

0.1 to 1,000 parts by weight, per 100 parts by weight of the polymer or the mixture of the polymer with the unsaturated fatty acid compound, of a basic substance selected from the group consisting of oxides, hydroxides, carbon-

ates, organic acid salts of alkali metals and alkaline earth metals and amine compounds; and

50 to 1,000 parts by weight, per 100 parts by weight of the polymer or the mixture of the polymer with the unsaturated fatty acid compound, of an adsorption substance selected from the group consisting of silica gel, activated clay, diatomaceous earth, zeolite, activated carbon and perlite.

5,378,429

CORROSIVE ENVIRONMENT SENSOR, CORROSIVE ENVIRONMENT MEASURING APPARATUS AND CORROSIVE ENVIRONMENT CONTROL SYSTEM

Makoto Hayashi; Satoshi Kanno, both of Hitachi, and Naoto Saito, Niihari, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

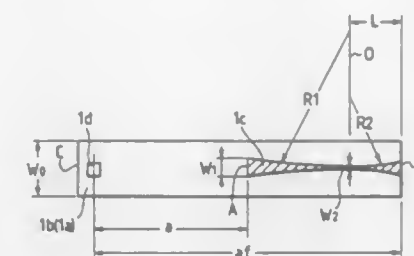
Filed Jun. 9, 1993, Ser. No. 74,320

Claims priority, application Japan, Jun. 10, 1992, 4-150892

Int. Cl.⁶ G01N 17/00, 19/08

U.S. Cl. 422—53

34 Claims



1. A double cantilever type sensor comprising: an elongate metal member having a crack growth portion, formed therein, extending in a length direction of said member from a crack starting end to crack terminating end, and having a pair of opposite sides defining a width of said crack growth portion, said pair of opposite sides each extending in the length direction of said member to form a first circular arc with a first radius from said crack starting end to an intermediate location of said crack growth portion and a second circular arc with a second radius less than said first radius from said intermediate location toward said crack terminating end, the width of said crack growth portion decreasing from said crack starting end to said intermediate location and increasing from said intermediate location toward said crack terminating end such that a crack growth portion has a substantially constant stress intensity factor at the crack growth portion; and a wedge for applying a load to said crack growth portion.

5,378,430

STEAM STERILIZATION PROCESS MONITOR

Judith Nieves, Newark, and Raymond P. Larsson, Denville, both of N.J., assignors to Pymah Corporation, Flemington, N.J.

Filed Oct. 7, 1993, Ser. No. 133,508

Int. Cl.⁶ G01N 31/22; G01K 11/06, 11/12

U.S. Cl. 422—57

17 Claims

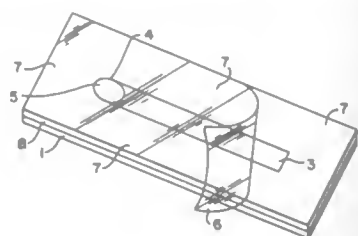
1. A sterility indicator device for use in a steam autoclave to determine the degree of completion of a steam sterilization process at or about a predetermined control temperature, the process being intended to result in 100% spore kill of any pathogenic spores, the control temperature being about 250° F. to about 270° F., comprising:

(a) a backing strip consisting essentially of an aluminum foil having adhesively laminated thereto a polymeric film, said backing strip having a pocket or depression embossed therein;

(b) an organic compound having a normal melting point which is about 5° to about 50° F. above the predetermined

control temperature, said normal melting point being depressed below said control temperature by the absorption of water into the organic compound when said organic compound is exposed to saturated steam at about the control temperature, said normal melting point of the organic compound being above the control temperature, said organic compound containing at least one functional group selected from the group consisting of ether, amide and hydroxy, the organic compound being mounted on the backing strip in the pocket or depression at a first end of said backing strip;

(c) a wicking means having a first end of said wicking means in intimate contact with said compound, said wicking means extending away from said compound to a second distal end of said backing strip; said organic compound and wicking means defining a land area comprising the



portion of the backing strip not covered by the organic compound and wicking means; and

(d) a water vapor transmission rate controlling cover strip covering said compound and wicking means, said cover strip being permeable to water vapor and having a water permeability coefficient at the control temperature such that sufficient water vapor will permeate the cover strip to reduce the melting point of the organic compound from its normal melting point to at least the control temperature, the cover strip comprising polypropylene film of about 0.75 to about 3 mils in thickness;

said device being unresponsive to heat at the control temperature in the absence of steam, and displaying a visual response of the integrated time/temperature exposure of an article to be sterilized to moist heat; the cover strip covering the backing strip, wicking means and organic compound, and being bonded only to the land area of the backing strip by heat sealing.

5,378,431

DUAL PATHWAY CLOTTING ENHANCER FOR BLOOD COLLECTION TUBE

Erwin A. Vogler, Newhill, and Jane C. Graper, Durham, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

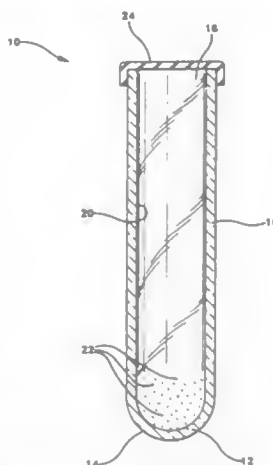
Filed Jun. 14, 1993, Ser. No. 76,521
Int. Cl.⁶ G01N 33/00

U.S. Cl. 422-73

10 Claims

1. A coagulation enhancing additive in a blood collection container comprising a plurality of glass particles, a first of said

particles being unmodified so that the native glass surface activates the intrinsic coagulation pathway and a second of



said particles being modified to have an activator of the extrinsic coagulation pathway immobilized on its surface.

5,378,432

OPTICAL FIBER PH MICROSENSOR AND METHOD OF MANUFACTURE

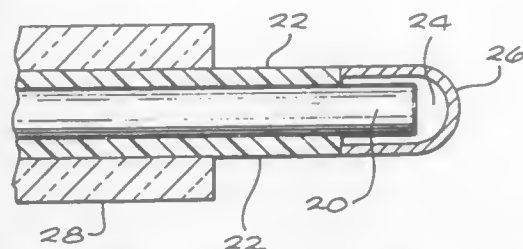
Charles S. Bankert, Oceanside; Soonkap Hahn, Poway, and Henry K. Hui, Laguna Niguel, all of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation of Ser. No. 902,402, Jun. 19, 1992, Pat. No. 5,277,872, which is a continuation of Ser. No. 598,137, Oct. 16, 1990, abandoned. This application Oct. 7, 1993, Ser. No. 132,794. The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.⁶ G01N 21/00; C09B 69/10

U.S. Cl. 422-82.07

11 Claims



5. A microsensor for measuring pH in a fluid, comprising: a sensor means including a light transmitting optical fiber having a bonding surface;

a pH sensing matrix crosslinked in situ on the bonding surface of the light transmitting optical fiber for receiving an excitation light signal transmitted by said light transmitting optical fiber, the pH sensing matrix including a fluorescent dye indicator material for emitting an output light signal carried by said light transmitting optical fiber, said fluorescent dye indicator material being covalently bonded to a polyether polymaine and a polyether polyisocyanate crosslinked to said polyether polyamine, said polyether being polyamine covalently bonded to said bonding surface of said light transmitting optical fiber; and a coating of reflective material applied over the pH sensing matrix.

5,378,433

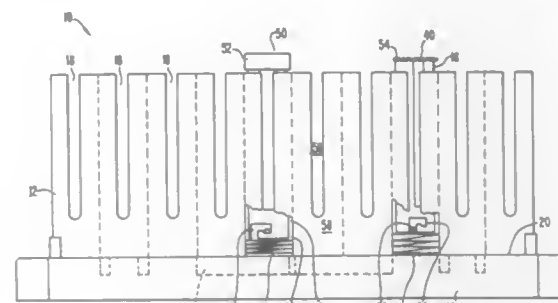
SAMPLE TUBE RACK AND ADAPTER

G. Scott Duckett, Raleigh, and Michael L. Bishop, Chapel Hill, both of N.C., assignors to Akzo N.V., Arnhem, Netherlands
Filed Nov. 15, 1993, Ser. No. 152,011

Int. Cl.⁶ B01L 3/02; A47F 7/00

U.S. Cl. 422-100

20 Claims



1. A sample rack assembly for holding, transporting and positioning sample tubes comprising:

a sample rack having a plurality of receptacles for receiving respective sample tubes;
individual adapter sleeves removably insertable into a respective one of said receptacles, each said adapter sleeve for receiving one corresponding sample tube; and
locking means for releasably locking each said adapter sleeve in said receptacle.

5,378,434

FLUIDIZED MULTISTAGED REACTION SYSTEM FOR POLYMERIZATION

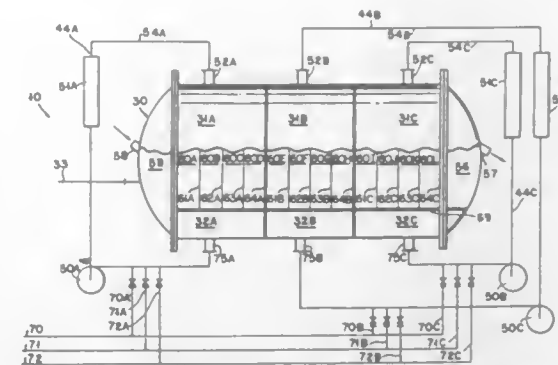
Kenneth H. Staffin, New Brunswick, N.J., and David S. Bruce, LaGuna Beach, Calif., assignors to Procede Corp., New Brunswick, N.J. and David Bruce, Laguna Beach, Calif., a part interest

Continuation of Ser. No. 946,912, Oct. 15, 1992, abandoned, which is a division of Ser. No. 708,747, May 31, 1991, Pat. No. 5,169,913. This application Dec. 9, 1993, Ser. No. 164,635

Int. Cl.⁶ B01J 8/08

U.S. Cl. 422-141

12 Claims



1. A fluidized bed apparatus suitable for use in polymerization reactions comprised of:

a) a single horizontal fluid bed reactor vessel;
b) a gas distributor plate extending horizontally within the vessel and being constructed and arranged for passage of gas therethrough for fluidizing particulate material;
c) an inlet means permitting the introduction into the vessel of solid particulate materials utilized in the polymerization reactors;
d) zone dividing walls which divide the vessel into a plural-

ity of zones and which extend substantially perpendicular to and above and below the distributor plate;

e) baffles within each zone which divide the zones into a plurality of stages;
f) the baffles having apertures for permitting polymerized material to flow and be introduced into the next downstream stage by fluidized horizontal flow;
g) at least one zone dividing wall having an aperture permitting a polymerized material to be introduced into the next downstream zone by fluidized horizontal flow;
h) inlet means associated with each zone for permitting entry of a gaseous component capable of being polymerized into each stage and in such a manner through the distributor plate to maintain fluidization integrity of the particulate material and particles as they are transported between stages and between zones;
i) gas outlet means associated with each zone for removing the gaseous component from each zone;
j) outlet means permitting the removal of polymerized material from the vessel; and
k) recycling means for recycling the gaseous monomer exiting through the gas outlet means, said means being in communication with the inlet means for introducing gaseous monomer to each stage, said recycling means being individual for each of the inlet means;
l) gaseous supply means separate and independent for each zone;
m) said inlet means being further in communication with the gaseous supply means.

5,378,435

SILENCER COMBINED WITH CATALYTIC CONVERTER FOR INTERNAL COMBUSTION ENGINES AND MODULAR DIAPHRAGM ELEMENTS FOR SAID SILENCER

Albino Gavoni, Milan, Italy, assignor to Gavoni B. G. M. Silenziatori Di Albino Gavoni & C. S.a.s., Milan, Italy

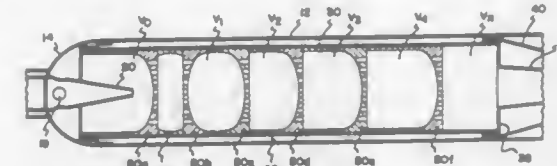
Continuation of Ser. No. 922,048, Jul. 29, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,495

Claims priority, application Italy, Sep. 4, 1991, MI 91A 002347; Mar. 5, 1992, MI 92U 000206

Int. Cl.⁵ F01N 1/08; B01D 53/34

U.S. Cl. 422-177

10 Claims



surface of the wall being plane and an inner surface being concave, the wall of said porous ceramic modular diaphragm elements being provided with a plurality of through-holes so as to prevent unwanted harmful back pressure phenomena, said through-holes diverging in a direction of the exhaust gas flow;

the porous ceramic modular diaphragm elements having different lengths, a chamber being defined between each two successive porous ceramic modular diaphragm elements so that a plurality of chambers are formed in a direction from the open end to the closed end of the tubular element; and

a volume of each of the chambers being different from each other and the volume of the chambers being increased in the direction from the open end to the closed end of the tubular element.

5,378,436

METHOD AND APPARATUS FOR PRODUCING HYDROGEN PEROXIDE

Shinji Endoh, Keisuke Namba, Shigenori Yagi, and Kazuhiko Maeda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

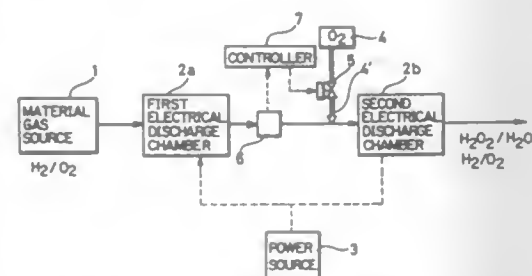
Filed Feb. 22, 1991, Ser. No. 658,030

Claims priority, application Japan, Mar. 6, 1990, 2-55619; May 10, 1990, 2-121556; May 10, 1990, 2-121557; May 11, 1990, 2-122464; May 14, 1990, 2-125148; May 15, 1990, 2-126034; May 15, 1990, 2-126035; May 15, 1990, 2-126036; Jun. 5, 1990, 2-148199; Nov. 20, 1990, 2-314516

Int. Cl.⁶ B01J 19/08; B01D 5/00; C01B 15/01

U.S. Cl. 422—186

19 Claims



1. An apparatus for producing hydrogen peroxide from a material gas containing hydrogen and oxygen, comprising:
 - a) an electrical discharge chamber provided with said material gas for producing hydrogen peroxide from said material gas by electrical discharge;
 - b) a separator for separating hydrogen peroxide and water from gas exhausted from said electrical discharge chamber;
 - c) recycling means for returning gas exhausted from said separator to said electrical discharge chamber;
 - d) hydrogen supplying means for supplying hydrogen to the recycled gas recycled from said separator to said electrical discharge chamber by said recycling means;
 - e) oxygen supplying means for supplying oxygen to the recycled gas recycled from said separator to said electrical discharge chamber by said recycling means;
 - f) detecting means for at least measuring a quantity of oxygen consumed by the production of hydrogen peroxide; and
 - g) control means for controlling a quantity of hydrogen supply from said hydrogen supplying means and a quantity of oxygen supply from said oxygen supplying means in accordance with information from said detecting means.

5,378,437

PROCESSES TO RECOVER AND RECONCENTRATE GOLD FROM ITS ORES

Dennis G. Kleid, Foster City; William J. Kohr, San Mateo, and Francis R. Thibodeau, San Francisco, all of Calif., assignors to Geobiotics, Inc., Hayward, Calif.

Continuation of Ser. No. 617,978, Nov. 26, 1990, Pat. No. 5,162,105, which is a continuation-in-part of Ser. No. 441,836, Nov. 27, 1989, abandoned. This application Jul. 23, 1992, Ser. No. 920,187

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.⁶ C22B 11/00

U.S. Cl. 423—27

33 Claims

1. A process for recovering gold from gold ore bodies comprising the steps of:
 - a) culturing at least one microorganism species capable of producing cyanide ion under conditions wherein said microorganism produces cyanide ion, thus forming a cyanide ion containing culture;
 - b) contacting said cyanide ion containing culture with gold ore, thereby causing production of gold ion-cyanide ion complexes and dissolution of gold from the gold ore;
 - c) removing, by biosorption, gold ion-cyanide ion complexes from solution to said culture thereby driving the gold dissolution reaction forward;
 - d) reclaiming biosorbed gold from said culture by further refining.

5,378,438

BENEFICATION OF TITANIFEROUS ORES

Kevin J. Leary, Waverly, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1992, Ser. No. 983,486

Int. Cl.⁶ C01G 23/00, 23/04

U.S. Cl. 423—80

5 Claims

1. A process for separating a titanium-rich component from a mineral containing titanium and iron values which consists essentially of the separate steps of:
 - (a) heating an intimate mixture of the mineral with an alkali metal hydroxide or compound which decomposes on heating to form an alkali metal hydroxide to form a melt of alkali metal hydroxide containing the iron and titanium values;
 - (b) precipitating iron values from the melt by contacting the melt with a reducing atmosphere thereby causing conversion of iron values to magnetite;
 - (c) cooling the mixture to a temperature at which the magnetite can be easily removed from the melt;
 - (d) separating the magnetite from the melt; and
 - (e) recovering the titanium values and alkali metal hydroxide and recycling the alkali metal hydroxide to step (a).

5,378,439

PROCESS FOR REMOVING GASEOUS HYDRIDES FROM A SOLID SUPPORT COMPRISING METALLIC OXIDES

Olivier Delobel, Paris; Jean Louise, Villejuif, and Philippe Cornat, Echirolles, all of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procédés Georges Claude, Paris, France

Continuation of Ser. No. 583,432, Sep. 17, 1990, abandoned. This application Jul. 16, 1992, Ser. No. 914,215

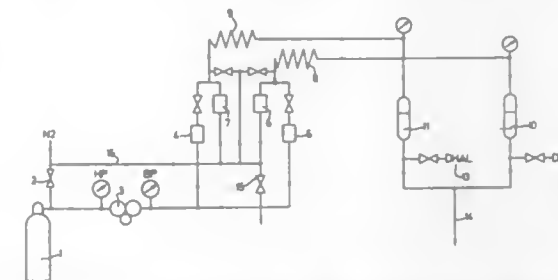
Claims priority, application France, Sep. 22, 1989, 89 12448
Int. Cl.⁶ B01D 53/34

U.S. Cl. 423—210

21 Claims

16. Process for removing gaseous inorganic hydrides from a gas stream, comprising circulating a gas flow containing from 1 to 10 volume % of the hydrides diluted in an inert gas, on a solid support consisting essentially of metallic oxides of copper, chromium, barium and manganese said manganese being present in an amount from 2.5 to 5 weight %, and having a

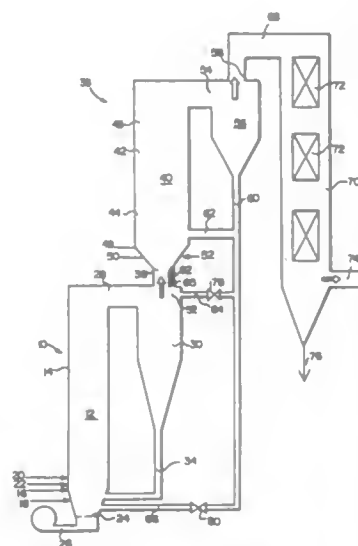
specific area lower than or equal to 100 m²/g, said hydrides being selected from the group consisting of silanes, phosphine,



5,378,443
METHOD FOR REDUCING EMISSIONS WHEN BURNING NITROGEN CONTAINING FUELS
 Folke Engström, Kotka; Mikko Hupa, Turku, both of Finland; Ragnar G. Lundqvist, and Yam Y. Lee, both of San Diego, Calif., assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Jan. 3, 1992, Ser. No. 808,461
 Int. Cl.⁶ B01J 8/00
 U.S. Cl. 423—239.1

30 Claims



1. A method for reducing the emissions of N_2O in flue gases from the combustion of nitrogen containing fuel in a fluidized bed combustor, which has a combustion stage with a fluidized bed of particles, comprising the steps of continuously:

- supplying nitrogen containing fuel and an oxygen containing gas for combustion of the fuel into the combustion stage of the combustor;
- maintaining a temperature of about 700° to 900° C. in the combustion stage in which N_2O is formed;
- supplying a Ca-based sulfur absorbing sorbent to the combustor for reducing sulfur emissions in flue gases;
- discharging flue gases from the combustor;
- passing the flue gases to a reactor stage;
- in the reactor stage, introducing an N_2O decomposing catalyst into the flue gases without significantly raising the temperature of the flue gases; and
- discharging the flue gases with the N_2O therein decomposed from the reactor stage.

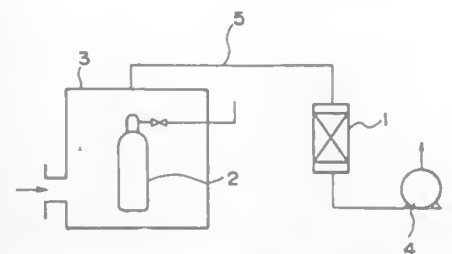
5,378,444
PROCESS FOR CLEANING HARMFUL GAS
 Noboru Akita; Toshiya Hatakeyama; Takashi Shimada, and Keiichi Iwata, all of Hiratsuka, Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan
 Filed Nov. 13, 1992, Ser. No. 975,698
 Claims priority, application Japan, Dec. 11, 1991, 3-327576; Jan. 26, 1992, 4-169104
 Int. Cl.⁶ C01B 7/07

U.S. Cl. 423—240 S

8 Claims

1. A process for cleaning a harmful gas which comprises a step of: contacting a harmful gas containing a gaseous halogenide as a harmful component with a cleaning agent comprising (i) zinc oxide, (ii) aluminum oxide and (iii) at least one compound selected from the group consisting of potassium carbonate, potassium hydrogencarbonate, potassium hydroxide, sodium carbonate, sodium hydrogencarbonate, sodium hydroxide and ammonium hydroxide, to remove said harmful gas; the gaseous halogenide being at least one member selected from the group consisting of chlorine, hydrogen chloride, dichlorosilane, silicon tetrachloride, phosphorus trichloride,

chlorine trifluoride, boron trichloride, boron trifluoride, tungsten hexafluoride, silicon tetrafluoride, fluorine, hydrogen fluoride and hydrogen bromide; a ratio of the aluminum oxide to the zinc oxide being 0.05 to 0.60 expressed in terms of a number of aluminum atoms per one zinc atom and a ratio of the



compound (iii) to the zinc oxide being 0.05 to 0.50 expressed in terms of a number of potassium atoms, or sodium atoms or ammonium groups per one zinc oxide; the gaseous halogenide having a concentration of 50 to 1,000 ppm by volume; and the aluminum oxide being hydrated alumina.

5,378,445
PREPARATION OF LITHIUM HEXAFLUOROPHOSPHATE SOLUTIONS
 Dennis J. Salmon, Gastonia; D. Wayne Barnette, Bessemer City, and Rebecca A. Barnett, Maiden, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.
 Filed Dec. 23, 1993, Ser. No. 172,690
 Int. Cl.⁶ C01B 25/10; H01M 6/14, 6/16

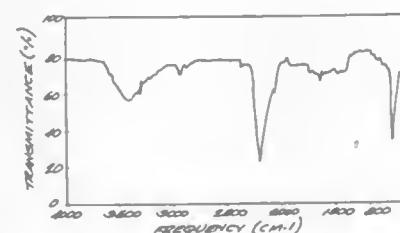
U.S. Cl. 423—301

7 Claims

1. A process for preparing solutions of lithium hexafluorophosphate comprising reacting, under basic conditions, a lithium salt with a salt selected from the group consisting of sodium, potassium, ammonium, and organo ammonium hexafluorophosphate in a low boiling, non-protic organic solvent in a reaction zone that is continuously saturated with a compound selected from the group consisting of anhydrous ammonia, methyl amine and ethyl amine to produce a solution of lithium hexafluorophosphate and a precipitated sodium, potassium, ammonium, or organo ammonium salt containing the anion of the reactant lithium salt.

5,378,446
CORROSION PREVENTIVE ZINC CYANAMIDE AND METHOD
 John Sinko, Glendale, Wis., assignor to Wayne Pigment Corporation, Milwaukee, Wis.
 Continuation-in-part of Ser. No. 994,768, Dec. 22, 1992, abandoned, and a continuation-in-part of Ser. No. 802,855, Dec. 6, 1991, Pat. No. 5,176,894. This application Feb. 14, 1994, Ser. No. 195,783
 Int. Cl.⁶ C01C 3/16

U.S. Cl. 423—368
 11 Claims



1. A pigment grade zinc cyanamide having enhanced corrosion preventive activity formed by a process comprising

providing a hydrated slurry of finely divided, dispersed basic zinc carbonate, mixing with said slurry a stabilized aqueous solution of hydrogen cyanamide, said zinc cyanamide having a crystalline structure characterized by the presence of an intense IR absorption spectral band at 2200 cm^{-1} and the substantial absence of component bands at 2050 cm^{-1} and 700 cm^{-1} .

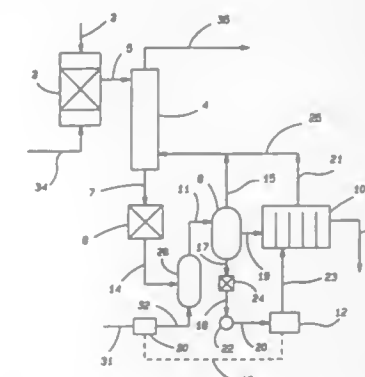
6. A pigment grade open textured, porous zinc cyanamide having enhanced corrosion preventive activity substantially free of soluble inorganic salts having a crystalline structure characterized by the presence of an intense IR absorption spectral band at approximately 2200 cm^{-1} and the substantial absence of spectral bands at approximately 2050 cm^{-1} and approximately 700 cm^{-1} .

7. A method of producing pigment grade zinc cyanamide having enhanced corrosion preventive activity comprising providing a hydrated slurry of finely divided, dispersed basic zinc carbonate, mixing with said slurry a stabilized soluble aqueous solution of hydrogen cyanamide and reacting said ingredients to form zinc cyanamide having a crystalline structure characterized by the presence of an intense IR absorption spectral band at 2200 cm^{-1} and the substantial absence of approximately component bands at approximately 2050 cm^{-1} and 700 cm^{-1} .

5,378,447
METHOD FOR THE PREPARATION OF CHLORATES FROM WASTE GAS STREAMS OBTAINED FROM THE PRODUCTION OF CHLORINE DIOXIDE
 John R. Jackson; Charles L. Pitzer, both of Wilmington, N.C., and Charles O. Buckingham, Storrington Township, Canada, assignors to Huron Tech Corp., Delco, N.C.
 Continuation of Ser. No. 924,546, Jul. 31, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,356
 Int. Cl.⁶ C01B 11/14

U.S. Cl. 423—475

14 Claims



1. A process for producing a dilute, aqueous solution of an alkali metal or alkaline earth metal chlorate from a gaseous waste stream comprising chlorine and carbon dioxide, said process comprising:

- contacting in a first scrubbing zone, said gaseous waste stream with an alkali metal or alkaline earth metal hydroxide to produce a first aqueous mixture comprising an alkali metal or alkaline earth metal hypochlorite, carbonate, and chloride, thereafter
- converting in a second scrubbing zone said first aqueous mixture by passing said first aqueous mixture counter-currently to effluent gases comprising an acid gas generated in step C to obtain a second aqueous mixture comprising an alkali metal or alkaline earth metal hypochlorite and bicarbonate, thereafter
- reacting said second aqueous mixture comprising an alkali metal or alkaline earth metal hypochlorite and bicarbonate at about 60° C. to about 105° C. together with an

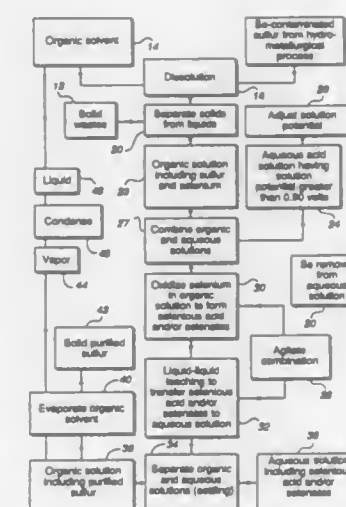
acid or an acid gas selected from the group consisting of hydrochloric acid, sulfuric acid, and chlorine in a reaction zone and successively completing said reacting at said temperature to produce a chlorate and effluent gases while supplying said effluent gases to step B and, thereafter

D) recovering from step C a dilute, aqueous solution comprising an alkali metal or alkaline earth metal chlorate.

5,378,448
PROCESS FOR REMOVING SELENIUM FROM SULFUR
 Hsing K. Lin, 2143 Bridgewater Dr., Fairbanks, Ak. 99709-4104, and Pemmasani D. Rao, 1005 N. Copet St., Fairbanks, Ala. 99709-4178
 Filed Jun. 7, 1994, Ser. No. 255,170
 Int. Cl.⁶ C01B 17/02, 19/00

U.S. Cl. 423—508

19 Claims



1. A process for removing selenium from selenium-contaminated sulfur, the process comprising the steps of:

- dissolving the selenium-contaminated sulfur in an organic solvent to form a first organic solution including sulfur and selenium;
- oxidizing selenium in said first organic solution to form a reaction product therein said reaction product including at least one hydrophilic compound of selenium;
- transferring said reaction product into a first aqueous solution by liquid-liquid leaching, thereby forming a second organic solution including said organic solvent and purified sulfur, and a second aqueous solution including said reaction product; and
- separating said second organic solution from said second aqueous solution for recovering said purified sulfur.

5,378,449
FORMATION OF BASIC HYDROGEN PEROXIDE
 Warren L. Dinges, Norman, Okla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
 Filed Aug. 31, 1993, Ser. No. 115,364
 Int. Cl.⁶ C01B 13/00, 15/01; H01S 3/095

U.S. Cl. 423—579

10 Claims

1. A method for generating basic hydrogen peroxide (BHP) by reacting potassium superoxide with an acid selected from the group consisting of hydrogen peroxide and a protic acid.

5,378,450
PROCESS FOR PRODUCING HYDROGEN PEROXIDE
 Takeshi Tomita, Yukio Ishiuchi, Michiya Kawakami, and Hiromitsu Nagashima, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
 Filed Apr. 12, 1994, Ser. No. 229,429
 Claims priority, application Japan, Apr. 19, 1993, 5-091504
 Int. Cl.⁶ C01B 15/01

U.S. Cl. 423—584

11 Claims

1. A process for producing hydrogen peroxide by reacting oxygen and hydrogen catalytically in a reaction medium, wherein a tin-modified platinum group metal is used as a catalyst.

5,378,451
TOPICAL MEDICINAL PRESSURIZED AEROSOL COMPOSITIONS AND METHOD OF PREPARATION, METHOD OF USE AND ARTICLE OF MANUFACTURE THEREOF
 William G. Gorman, East Greenbush, and Fred A. Carroll, III, Sand Lake, both of N.Y., assignors to Dow B. Hickam, Inc., Sugarland, Tex.
 Continuation of Ser. No. 424,047, Oct. 19, 1989, abandoned.
 This application Sep. 27, 1993, Ser. No. 126,747
 Int. Cl.⁶ A61K 7/00

U.S. Cl. 424—47

26 Claims

1. A topical medicinal pressurized aerosol composition consisting essentially of by weight/weight from about 0.1% to about 15% of a topical medicament or a mixture of two or more topical medicaments, wherein the topical medicament is selected from the group consisting of antimicrobials, antivirals, antiinflammatories, anesthetics and astringents, from about 3% to about 20% of a liquefied propellant or a mixture of two or more liquefied propellants, wherein the liquid propellant has a vapor pressure alone or in mixture from about 20 p.s.i.g. to about 130 p.s.i.g., from about 20% to about 80% of an aqueous vehicle, wherein the aqueous vehicle contains from about 1% to about 20% of a humectant or a mixture of two or more humectants selected from the group consisting of the polyhydric alcohols and polyvinylpyrrolidone, and from about 0.1% to about 10% of a nonionic polyoxyethylene surfactant or a mixture of two or more nonionic polyoxyethylene surfactants each having at least 80% by molecular weight of oxyethylene units, said composition being dischargeable from an aerosol dispenser as a spray that forms a stable foam on the application site.

5,378,452
PROCESS FOR MANUFACTURE OF ANTIPERSPIRANT COSMETIC STICK PRODUCTS
 Wendy R. Greczyn, Randolph, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.
 Filed Dec. 8, 1992, Ser. No. 986,917
 Int. Cl.⁶ A61K 7/32

U.S. Cl. 424—65

22 Claims

1. A process for preparing an antiperspirant-deodorant cosmetic stick product which comprises (1) heating between about 10–50 parts by weight of a volatile silicone oil ingredient to a temperature of about 120°–220° F.; (2) adding to the heated silicone oil ingredient between about 1–30 parts by weight of a liquid emollient ingredient, between about 12–24 parts by weight of a low melting point wax ingredient, between about 0.5–15 parts by weight of a compatibility enhancing ingredient, and between about 0.5–5 parts by weight of a surfactant ingredient to form a homogeneous fluid medium; (3) adding between about 18–30 parts by weight of an antiperspirant ingredient to the heated fluid medium; (4) adding between about 0.05–30 parts by weight of a particulate alkali metal bicarbonate deodorant ingredient to about 10–30 parts by weight of volatile silicone oil ingredient to form a separate homogeneous fluid suspension medium; (5) passing individual streams of heated fluid medium and bicarbonate suspension medium through an integrated mixing valve nozzle device to

form a heated fluid blend, and to dispense the fluid blend into cosmetic stick containers; and (6) cooling the container contents to form solid sticks at room temperature.

5,378,453
COMPOSITION FOR PREVENTING GRAYING OF THE HAIR AND RESTORING GRAYED HAIR TO ITS NATURAL COLOR
 Keikichi Sugiyama, Kanagawa; Koji Takada, Fujisawa, and Ikuro Yamamoto, Odawara, all of Japan, assignors to Lion Corporation, Tokyo, Japan
 Division of Ser. No. 53,325, Apr. 27, 1993, Pat. No. 5,318,776, which is a continuation of Ser. No. 307,549, Feb. 8, 1989, abandoned. This application Mar. 7, 1994, Ser. No. 206,675
 Claims priority, application Japan, Mar. 16, 1988, 63-62821
 Int. Cl.⁶ A61K 7/06

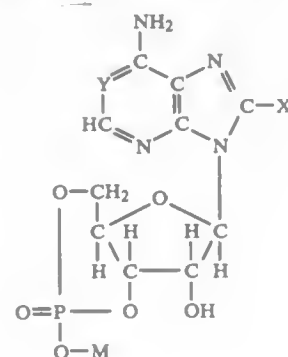
U.S. Cl. 424—70.1

5 Claims

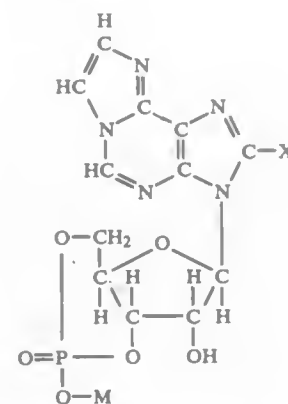
1. A method for restoring grayed human hair to its natural color, comprising applying to the scalp an effective amount of a solution comprising:

(i) a compound selected from the group consisting of adenosine 3', 5'-cyclicphosphoric acid compounds having the following formula (I) or (II):

(I)



(II)



wherein X in formula (I) represents a hydroxyl group, an O-alkyl group having 1 to 8 carbon atoms; an O-phenyl group or phenylalkyleneoxy group whose alkylene group has 1 to 6 carbon atoms; X in formula (II) represents a hydrogen atom, a halogen atom, an alkylthio group having 1 to 8 carbon atoms, a benzylthio group, a hydroxyl group, an O-alkyl group having 1 to 8 carbon atoms and an alkylamino group having 1 to 12 carbon atoms, Y represents a nitrogen atom or N-alkyl group having 1 to 12 carbon atoms in which counter ion thereof is a halogen ion, and M represents a hydrogen atom or a salt-forming cation, and

(ii) water,

said compound being present in an amount effective to restore grayed hair to its natural color upon application to the scalp.

5,378,454
COMPOSITION AND PROCESS FOR PERMANENT WAVING
 Frederick H. Burmeister, Rumson, N.J., assignor to John Paul Mitchell Systems, Santa Clarita, Calif.
 Filed Jan. 9, 1992, Ser. No. 819,085
 Int. Cl.⁶ A61K 7/06, 7/09

U.S. Cl. 924—70.5

2 Claims

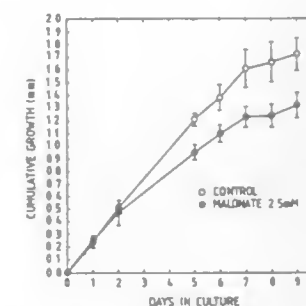
1. A waving lotion for use in exothermic permanent waving comprising an activator in an amount sufficient to provide an exothermic reaction with an effective perming amount of a reducing agent, and said reducing agent, wherein said reducing agent contains a combination of a more active reducing agent in a reducing lotion and a less active reducing agent in a ratio necessary to effect a reduction in hair damage, wherein the more active reducing agent is more active in reducing keratin protein than the less active reducing agent, wherein the activator is hydrogen peroxide and is prepared in an aqueous solution to deliver in the range of about 0.01 mole to 0.02 mole in 80 g of waving lotion, the more active reducing agent is ammonium thioglycolate and the concentration of the ammonium thioglycolate present in the reducing lotion is in range of about 0.03 to about 0.16 molar, and the less active reducing agent is glycyl thioglycolate and is present in the waving lotion in a molar ratio with the more active reducing agent in the range of about 1.5:1.0 to 2.5:1.0.

5,378,455
COSMETIC COMPOSITION FOR INHIBITING HAIR GROWTH
 George T. E. Kealey, Cambridge; Gillian E. Westgate, Irthlingborough, and Rebecca Williams, Cambridge, all of England, assignors to Chesebrough-Ponds USA Co., Division of Conopco, Inc., Greenwich, Conn.
 Continuation of Ser. No. 937,795, Aug. 28, 1992, abandoned.
 This application Dec. 27, 1993, Ser. No. 173,261
 Claims priority, application United Kingdom, Sep. 4, 1991, 918866

Int. Cl.⁶ A61K 7/06

U.S. Cl. 424—73

16 Claims



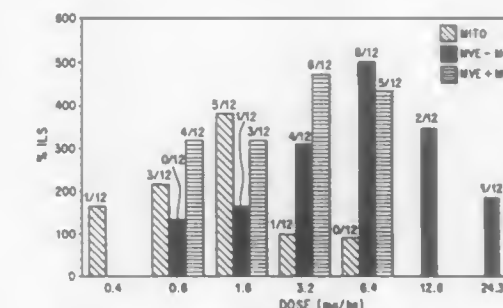
1. A composition suitable for topical application to mammalian skin for reducing, retarding or eliminating hair growth, which comprises:

i) an effective amount of an inhibitor of glutamine metabolism which inhibitor is an agent for inhibiting at least one enzyme involved in the conversion of glutamine to lactate in mammalian skin or hair the enzyme selected from the group consisting of glutaminase which converts glutamine to glutamate; glutamate dehydrogenase which converts glutamate to α -ketoglutarate; α -ketoglutarate decarboxylase which converts α -ketoglutarate to succinyl CoA; succinyl CoA synthetase which converts succinyl CoA to succinate; succinate dehydrogenase which converts succinate to fumarate; and fumarase which converts fumarate to malate;

malate dehydrogenase which converts malate to oxaloacetate;
 malic enzyme which converts oxaloacetate to pyruvate; and mixtures thereof, and
 ii) a cosmetically acceptable vehicle for the inhibitor.

5,378,456
ANTITUMOR MITOXANTHRENE POLYMERIC COMPOSITIONS
 Hwei-Ra Tsou, New City, N.Y., assignor to American Cyanamid Company, Wayne, N.J.
 Filed Mar. 25, 1993, Ser. No. 37,149
 Int. Cl.⁶ A61K 31/74, 47/48
 U.S. Cl. 424—78.3

4 Claims



1. A pharmaceutical composition comprising a covalent conjugate of mitoxanthrene with a copolymeric moiety of divinyl ether and maleic anhydride in association with a pharmaceutically acceptable carrier, said conjugate being a reaction product prepared by reacting a divinyl ether/maleic anhydride copolymer (MVE) with mitoxanthrene in a suitable organic solvent in the presence of a tertiary amine, said reaction product showing a blue spot at the origin of the plate on thin layer chromatographic analysis and exhibiting an average of 18 molecules of mitoxanthrene per molecule of MVE copolymer on UV analysis.

5,378,457
INTERFERON SENSITIVE RECOMBINANT POXVIRUS VACCINE
 Enzo Paoletti, Delmar, and James Tartaglia, Schenectady, both of N.Y., assignors to Virogenetics Corporation, Troy, N.Y.
 Continuation-in-part of Ser. No. 638,080, Jan. 7, 1991, abandoned, and Ser. No. 537,882, Jun. 14, 1990, Pat. No. 5,110,587, and Ser. No. 537,890, Jun. 14, 1990, Pat. No. 5,174,993, which is a continuation of Ser. No. 234,390, Aug. 23, 1988, abandoned, said Ser. No. 537,882, is a continuation of Ser. No. 90,209, Aug. 27, 1987, abandoned, which is a division of Ser. No. 622,135, Jan. 19, 1984, Pat. No. 4,722,848, which is a continuation-in-part of Ser. No. 446,824, Dec. 19, 1982, Pat. No. 4,603,112, which is a continuation-in-part of Ser. No. 334,456, Dec. 24, 1981, Pat. No. 4,764,330. This application Dec. 16, 1991, Ser. No. 805,567
 Int. Cl.⁶ A61K 39/275, 39/285; C12N 7/01
 U.S. Cl. 424—205.1

16 Claims

1. A recombinant poxvirus modified to have an open reading frame conferring interferon disrupted or deleted therefrom, said open reading frame having homology to eIF-2 α or K3L open reading frame of vaccinia.

5,378,458

LACTOBACILLUS CASEI SSP. RHAMOSUS, BACTERIAL PREPARATIONS COMPRISING SAID STRAIN, AND USE OF SAID STRAIN AND PREPARATIONS FOR THE CONTROLLING OF YEAST AND MOULDS

Annika Mäyrä-Mäkinen, and Tarja Suomalainen, both of Helsinki, Finland, assignors to Valio Meijerlen Keskusosuusliike, Valio Ltd., Helsinki, Finland

Continuation of Ser. No. 608, Jan. 5, 1993, abandoned. This application Sep. 30, 1993, Ser. No. 129,378

Claims priority, application Finland, Jun. 10, 1992, 922699 Int. Cl.⁶ A01N 63/00; C12N 1/20

U.S. Cl. 424—93.3

22 Claims

1. A method of inhibiting the growth of yeasts and moulds comprising contacting a material with an effective amount of a bacterial preparation comprising *Lactobacillus casei* ssp. *rhamnosus* LC-705 strain, DSM 7061.

7. A biologically pure culture of *Lactobacillus casei* ssp. *rhamnosus* LC-705, DSM 7061 having yeast and mold inhibiting properties.

5,378,459

PHARMACEUTICAL PREPARATION IN THE TREATMENT OF TONSILLITIS

Eva E. Grahm, Bondegatan 32, S-902 54, and Stig E. F. Holm, Gimonäsvägen 25, S-902 40, both of Umeå, Sweden

Continuation of Ser. No. 478,683, Feb. 12, 1990, abandoned.

This application Feb. 10, 1994, Ser. No. 194,753

Claims priority, application Sweden, Feb. 15, 1989, 8900510 Int. Cl.⁶ A61K 35/74; C12N 1/20

U.S. Cl. 424—93.44

7 Claims

1. A pharmaceutical preparation useful in the prevention or treatment of β -streptococcal tonsillitis, comprising at least one viable microorganism strain selected from the group consisting of *Streptococcus sanguis* II strains with the deposit numbers NCIB 40104, NCIB 40105 and NCIB 40106, and the *Streptococcus mitis* strain with the deposit number NCIB 40107, in a pharmaceutically acceptable medium wherein the microorganisms retain their viability.

5,378,460

NEMATOCIDAL BACILLUS THURINGIENSIS BIOPESTICIDE

Bert M. Zuckerman, Amherst; M. Bess Dicklow, South Deerfield, both of Mass., and Nahum Marban-Mendoza, Turrialba, Costa Rica, assignors to Research Corporation Technologies, Tucson, Ariz.

Continuation of Ser. No. 862,915, Apr. 3, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 214,057

Int. Cl.⁶ A01N 63/00, 25/00, 1/20; C12P 1/04

U.S. Cl. 424—93.461

17 Claims

1. A method for controlling or preventing plant diseases caused by nematodes which comprises contacting soil, a plant, or a seed with a nematocidal-effective amount of a biologically pure culture of *B. thuringiensis* strain ATCC 55273 or mutants thereof, wherein said mutants exhibit nematocidal activity.

5,378,461

COMPOSITION FOR THE TOPICAL TREATMENT OF SKIN DAMAGE

Stanley J. Neigt, 10 Red Rowan La., Plymouth Meeting, Pa. 19462

Continuation-in-part of Ser. No. 730,276, Jul. 12, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 47,236

Int. Cl.⁶ A61K 35/36

U.S. Cl. 424—94.1

7 Claims

1. A balm for the topical treatment of skin damage comprising a mixture of:

a carrier solution chosen from the group consisting of squal-

ene and squalane, said carrier solution comprising at least 40 weight percent of the balm;

50,000 to 750,000 iu of vitamin A for every 100 ml of carrier solution;

1,200 to 18,000 iu of vitamin E for every 100 ml of carrier solution;

250 mg to 3,000 mg of a benzoquinone having a structure of Q₁₀; and

1,000 to 12,000 iu of vitamin D for every 100 ml of carrier solution.

5,378,462

PANCREATIN MICROPELLETS PREPARED WITH POLYETHYLENE GLYCOL 4000, PARAFFIN AND A LOWER ALCOHOL BY EXTRUSION AND ROUNDING

Bernd Boedecker, Hannover; Friederike Henningsen, Brunswick; Klaus-Juergen Koelln; Guenther Kuhnaw, both of Neustadt a. Rbge; Guenter-Josef Peschke, Hanover; Manfred Rehburg, Wagenfeld; Alwin Sobe, Sarstedt, and Berthold Stemmler, Burgdorf, all of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Germany

Filed Aug. 19, 1993, Ser. No. 109,051

Claims priority, application Germany, Aug. 19, 1992, 4227385 Int. Cl.⁶ A61K 37/62; A01N 25/34; C12N 11/08, 11/18

U.S. Cl. 424—94.29

16 Claims

1. A pancreatin micropellet core which can be coated with a gastric juice-resistant film, said micropellet core having a pancreatin content of 65–85 wt-% and a bulk density of 0.6 g/ml to 0.85 g/ml; obtained by extruding a mixture consisting essentially of 100 parts by weight pancreatin, from 15 to 50 parts by weight polyethylene glycol 4000 and sufficient lower alcohol to achieve an extrudable consistency through a die having a hole diameter of 0.8 to 1.2 mm to yield extrudates which break by themselves into extrudate fragments of a length suitable for transfer to a rounding apparatus; thereafter rounding the extrudate fragments with the addition of from 1.5 to 5 parts by weight of highly liquid paraffin, the resulting rounded fragments having a spherical to ellipsoidal shape with a minimum diameter in the range from 0.7–1.4 mm, and a particle size distribution in which at least 80% of the pancreatin micropellet cores have a minor axis to major axis ratio in the range from 1:1 to 1:2, and drying the rounded fragments to remove the alcohol.

5,378,463

ANTITUMOR ANTIBIOTIC

Daniel R. Schroeder, Higganum; Kin S. Lam, North Haven, and Jacqueline M. Velch, East Haven, all of Conn., assignors to Bristol Myers Squibb Co., New York, N.Y.

Division of Ser. No. 17,223, Feb. 12, 1993, Pat. No. 5,281,417, which is a division of Ser. No. 780,516, Oct. 22, 1991, Pat. No. 5,304,373. This application Oct. 25, 1993, Ser. No. 142,559

Int. Cl.⁶ C12P 1/06; A61K 35/00

U.S. Cl. 424—121

3 Claims

1. A biologically pure culture of *Antinomadura* Q473-8 which produces the compound BMY-46164, which compound has an empirical formula of C₄₀H₄₃N₂O₂Cl and a molecular weight of 778, and the following spectral properties:

(a) Mass Spectrum: FABMS: 778.2527, with prominent fragment ions at 294.1339 and 149.0603;

(b) Ultraviolet Spectrum: A neutral 1.0 mg/100 ml methanol solution had absorption maximum $\lambda_{max}^{nm}(E^{1\%}_{1cm})$: 278 (635)

(c) Infrared Spectrum: KBr pellet, cm⁻¹: 3424, 3076, 2934, 2838, 2170, 1640, 1578, 1520, 1490, 1462, 1424, 1376, 1292, 1248, 1184, 1156, 1112, 1072, 1046, 952, 900, 880, 832, 810, 754, 682, 666, 648, 576, 524;

(d) 125 MHz ¹³C NMR: Bruker Model AM-500 Spectrometer. Proton decoupled spectrum. Dual carbon-proton probe, 5 mm. Solvent d₆DMSO. Observed chemical shifts (ppm): 168.4, 168.1, 153.3, 152.8, 139.3, 138.5, 133.0, 131.4, 131.3, 131.0, 130.8, 126.8, 124.7, 124.3, 122.5, 122.1, 121.0,

5,378,466

THERAPEUTIC AGENT FOR ALLERGIC DISEASES

Koichi Endo, Tokushima, Japan, assignor to Bio Cell Matella Co., Ltd., Sapporo, Japan

Filed Aug. 4, 1992, Ser. No. 925,466

Claims priority, application Japan, Aug. 6, 1991, 3-222041

Int. Cl.⁶ A61K 35/78

U.S. Cl. 424—195.1

4 Claims

109.2, 97.5, 95.7, 94.3, 94.2, 93.3, 90.1, 74.0, 73.2, 70.9, 69.8, 69.6, 66.3, 62.5, 55.4, 54.4, 52.3, 43.2, 37.5, 33.6, 22.7, 19.5, 16.1; and

(e) 500 MHz ¹H-NMR: Bruker Model AM-500 Spectrometer. Dual carbon-proton probe, 5 mm. Solvent d₆-DMSO. Observed chemical shifts (ppm): 9.18 (br. s, 1H), 8.09 (dd, 1H), 7.40 (d, 1H), 7.25 (s, 1H), 6.97 (d, 1H), 6.81 (d, 1H), 6.58 (d, 1H), 6.37 (t, 1H), 5.41 (s, 1H), 5.37 (dd, 1H), 5.27 (m, 1H), 5.13 (br.s, 1H), 4.91 (s, 1H), 4.89 (m, 1H), 4.65 (d, 1H), 4.22 (br.d, 1H), 4.13 (ddd, 1H), 3.94 (m, 1H), 3.80 (dd, 1H), 3.54 (s, 3H), 3.46 (dd, 1H), 3.21 (d, 1H), 3.12 (s, 3H), 2.94 (ddd, 1H), 2.73 (m, 1H), 2.71 (dd, 1H), 2.58 (dd, 1H), 2.31 (dd, 1H), 2.19 (s, 3H), 2.10 (s, 3H), 1.26 (s, 3H).

5,378,464

MODULATION OF INFLAMMATORY RESPONSES BY ADMINISTRATION OF GMP-140 OR ANTIBODY TO GMP-140

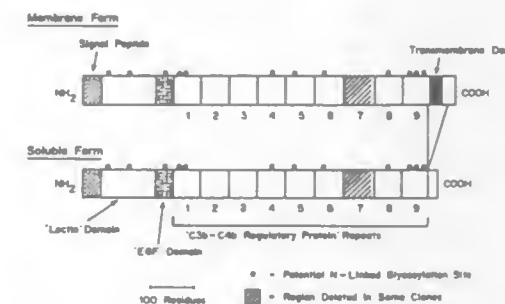
Rodger P. McEver, Oklahoma City, Okla., assignor to Board of Regents of the University of Oklahoma, Norman, Okla.

Filed Mar. 8, 1989, Ser. No. 320,408

Int. Cl.⁶ A61K 39/395, 37/02

U.S. Cl. 424—143.1

9 Claims



1. A method for modulating an inflammatory response comprising administering to a patient or patient tissues an effective amount to interfere with GMP-140 mediated inflammation of a compound selected from the group consisting of soluble GMP-140, antibody to GMP-140, and fragments of the soluble GMP-140 or antibody to GMP-140 inhibiting binding of cell-surface-bound GMP-140 to GMP-140 receptor on the surface of leukocytes.

5,378,465

SOLUTION FOR APPLICATION TO AN ORAL CAVITY

Victor Zeines, P.O. Box 195 - Rt. 28, Shokan, N.Y. 12481

Filed May 24, 1993, Ser. No. 66,784

Int. Cl.⁶ A61K 35/78, 7/16, 7/42

U.S. Cl. 424—195.1

4 Claims

1. An aqueous solution for application to an oral cavity comprising an effective amount of the following ingredients combined in the ratio set forth:

- approximately 8 oz. alcoholic echinacea tincture;
- approximately 4 oz. alcoholic hydrastis canadensis tincture;
- approximately 4 oz. alcoholic sanguinaria canadensis tincture;
- approximately 4 oz. alcoholic quercus alba tincture;
- approximately 1/2 oz. grapefruit seed extract;
- approximately 16 oz. aloe vera juice;
- approximately 1/2 oz. alcoholic calendula tincture; and
- water in an amount to make approximately one gallon of solution.

CELL-FREE MAREK'S DISEASE VIRUS VACCINE

William Bexendale, Huntingdon, United Kingdom, assignor to Akzo N.V., Arnhem

Continuation of Ser. No. 812,907, Dec. 20, 1991, abandoned.

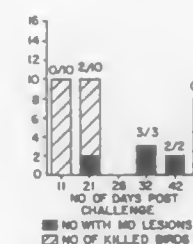
This application Nov. 23, 1993, Ser. No. 156,967

Claims priority, application European Pat. Off., Dec. 24, 1990, 90314297

Int. Cl.⁶ A61K 39/12; C12N 7/08

U.S. Cl. 424—202.1

14 Claims



1. A vaccine for the protection of poultry against Marek's Disease, comprising cell-free Marek's Disease serotype 2 virus, and a pharmaceutically acceptable carrier.

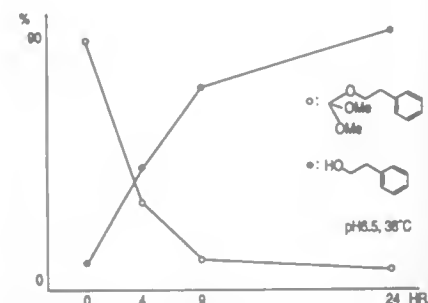
5,378,468
COMPOSITION CONTAINING BODY ACTIVATED
FRAGRANCE FOR CONTACTING THE SKIN AND
METHOD OF USE

Robert Suffis, Morristown; Morton L. Barr, Rockaway, both of N.J.; Kenya Ishida, Yokohama; Kiyohito Sawano, Hiratsuka; Toshiya Sato, Kawasaki, all of Japan, and Augustinus G. van Loveren, Bedford, N.Y., assignors to The Mennen Company, Morristown, N.J. and Takasago International Corporation, Tokyo, Japan

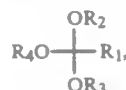
Filed Sep. 22, 1992, Ser. No. 948,510
Int. Cl.⁶ A61K 7/00, 7/32

U.S. Cl. 424—401

33 Claims



1. A composition for application to skin, including:
(1) a vehicle such that when the composition is in contact with water, the composition is at an alkaline pH, and
(2) at least one potential fragrance, said at least one potential fragrance including at least one orthoester, having the general formula:



wherein at least one of R_1 , R_2 , R_3 and R_4 is a radical that, up hydrolysis of said at least one orthoester, forms a material having a fragrance, whereby the material having the fragrance is formed from the at least one orthoester, and wherein R_1 is selected from the group consisting of H, CH_3 , phenethyl, phenylpropyl, benzyl, santalyl, cis-3-hexenyl and phenyl, and R_2 , R_3 and R_4 are the same or different, and are selected from the group consisting of CH_3 , phenethyl, cinnamyl, phenylpropyl, benzyl, geranyl, citronellyl, cis-3-hexenyl and santalyl, provided that if R_1 is H or CH_3 , then R_2 , R_3 and R_4 cannot all be CH_3 .

5,378,469
COLLAGEN THREADS

Paul D. Kemp, Winchester; Robert M. Carr, Jr., Boston; John G. Maresh, Somerville; John Cavallaro, Gloucester, and Jerome Gross, Waban, all of Mass., assignors to Organogenesis, Inc., Canton, Mass.

Continuation-in-part of Ser. No. 505,678, Apr. 6, 1990, Pat. No. 5,256,418. This application Oct. 7, 1991, Ser. No. 772,529

Int. Cl.⁶ A61F 2/28; A61K 9/14, 37/12; C07K 15/20

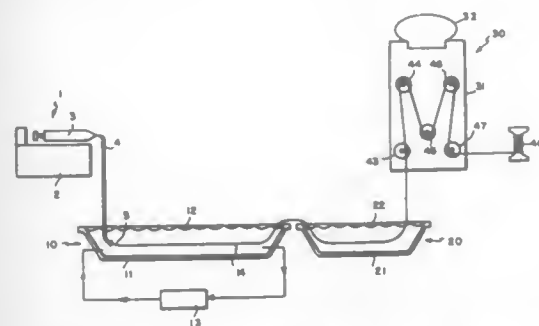
U.S. Cl. 424—423

12 Claims

1. A method of making thread comprising collagen, the method comprising:

- (a) extruding a solution comprising collagen into a dehydrating agent, the dehydrating agent having a higher osmotic

pressure than that of the collagen solution and a pH from about 5 to 9;



- (b) maintaining the dehydrating agent under conditions to enable the extruded collagen to form a thread.

5,378,470
RECTALLY ADMINISTERED PHARMACEUTICAL
PREPARATION

Wolfgang Lahr, Berlin, Germany, assignor to Henning Berlin GmbH, Berlin, Germany

Continuation of Ser. No. 663,833, Mar. 22, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 173,697

Claims priority, application Germany, Jul. 25, 1989, 3924570
Int. Cl.⁶ A61K 9/02

U.S. Cl. 424—436

9 Claims

1. A method of rectally administering a pharmaceutical preparation to a patient, comprising the steps of:
preparing a solid composition containing 0.01-95% by weight of an active substance or a mixture of active substances, 99.99 to 5% by weight of adjuvants which includes 2.5 to 50% by weight of a hydrophilic gelatinizing agent and 0.1 to 10% by weight of a waterfree antifoam agent, and a moisture content of less than 15% by weight; and
reconstituting the solid composition into an aqueous solution, emulsion or suspension before rectal administration to the patient by adding water at room temperature or body temperature.

5,378,471
NUTRITIVE FEED BINDER

David Morgan Smith, Kearneysville, W. Va., assignor to Martin Marietta Magnesia Specialties Inc., Raleigh, N.C.

Continuation of Ser. No. 926,080, Aug. 5, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 161,989

Int. Cl.⁶ A23K 1/165

U.S. Cl. 424—442

10 Claims

5. An aquatic animal feed composition comprising ingredients selected from the group consisting of: ground dry food meals, minerals, vitamins, drug additives or mixtures thereof and a binder comprising:

- 10-17%, by weight a feed grade reactive metal source;
25-35%, by weight, a feed grade reactive metal oxide or hydroxide;
18-28%, by weight, sugar and
28-42%, by weight, corn syrup solids

wherein the binder composition includes calcium in an amount such that the calcium contribution to the aquatic animal feed attributable to the binder is not greater than 0.066%, by weight, per 0.5% by weight of the binder incorporated into the aquatic animal feed.

5,378,472
METHYL PYRROLIDINONE CHITOSAN, PRODUCTION
PROCESS AND USES THEREOF

Ricardo Muzzarelli, Ancona, Italy, assignor to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Germany
PCT No. PCT/EP91/02168, § 371 Date Jul. 27, 1992, § 102(e)
Date Jul. 27, 1992, PCT Pub. No. WO92/09635, PCT Pub. Date Jun. 11, 1992

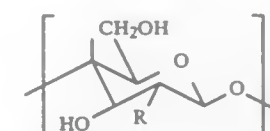
PCT Filed Nov. 18, 1991, Ser. No. 910,159

Claims priority, application Italy, Nov. 26, 1990, 642-A/90
Int. Cl.⁶ A61K 9/70; L08B 37/08

U.S. Cl. 424—445

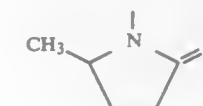
4 Claims

1. A modified chitin and/or chitosan polymer consisting essentially of monomeric units of formula I



wherein

R is $-\text{NH}_2$, $-\text{NHCOCH}_3$ or R' , wherein
 R' is an open chain N-carboxybutyl group or the isomeric cyclic 5-methylpyrrolidinone group of formula II



wherein 90% of R' is present as the 5-methylpyrrolidinone of formula II; and wherein said monomeric units of formula I wherein R is R' comprise at least 30% of the total monomeric units in the modified chitin and/or chitosan polymer.

5,378,473
TRANSDERMAL ADMINISTRATION OF SHORT OR
INTERMEDIATE HALF-LIFE BENZODIAZEPINES

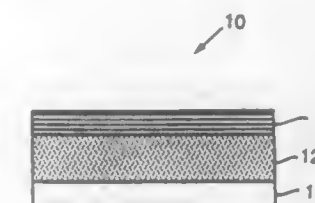
Kuldeepak Sharma, Mountain View, and Darth M. Dunbar, San Mateo, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.

Continuation-in-part of Ser. No. 750,571, Aug. 27, 1991, Pat. No. 5,225,198. This application Jun. 28, 1993, Ser. No. 83,676
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.

Int. Cl.⁶ A61F 13/00

U.S. Cl. 424—449

6 Claims



1. A method for providing short or intermediate half-life benzodiazepine therapy to a human patient in need of such therapy comprising applying a transdermal drug delivery device for administering a therapeutically effective amount of the benzodiazepine to the patient through a predetermined area of intact skin over a sustained time period at a controlled rate in combination with a sufficient amount of a permeation enhancer to enable the benzodiazepine to permeate the area of skin at a rate in excess of about one $\mu\text{g}/\text{cm}^2/\text{hr}$, wherein the

benzodiazepine has an elimination half-life of less than about 24 hours and wherein the permeation enhancer is selected from the group consisting of an ester of the formula $[\text{CH}_3(\text{CH}_2)_m\text{COO}]_n\text{R}$ in which m is an integer from 8 to 16, n is 1 or 2 and R is a lower alkyl (C_1-C_3) residue; a fatty alcohol; a fatty acid; a mixed vegetable oil; or mixtures thereof.

5,378,474
SUSTAINED RELEASE PHARMACEUTICAL
COMPOSITION

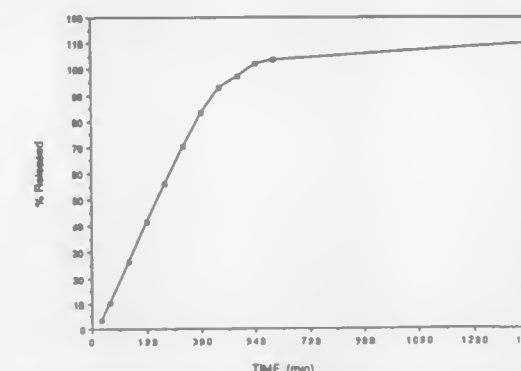
- (I) Angelo M. Morella, Campbelltown, and Mark C. Fisher, Birkenhead, both of Australia, assignors to F.H. Faulding & Co. Limited, Parkside, Australia
Continuation of Ser. No. 574,551, Aug. 24, 1990, Pat. No. 5,202,128, which is a continuation-in-part of Ser. No. 461,370, Jan. 5, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 21,276

Claims priority, application Australia, Jan. 6, 1989, PJ2192
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.⁶ A61K 9/24, 9/58

U.S. Cl. 424—469

21 Claims

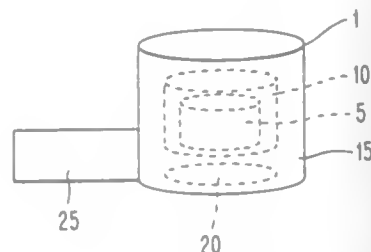


1. A sustained release pharmaceutical pellet composition for administration to a patient at a predetermined dosage and interval which comprises: a core element containing a therapeutically effective amount of at least one active ingredient having an aqueous solubility of at least 1 in 30 and a coating on said core element which comprises the following components:

- (a) from 1 to 85% by weight of a matrix polymer which is insoluble at a pH of from 1 to 7.5 and contributes to the control of the rate of release of the active ingredient in the stomach and intestines;
(b) from 1 to 30% of an enteric polymer which is substantially insoluble at a pH of from 1 to 4, sufficient to delay the release of the active ingredient in the stomach, but which is soluble at a pH of from 6 to 7.5 so as not to substantially delay release in the intestines;
(c) from 1 to 60% of a compound soluble at a pH of from 1 to 4, sufficient to enable initiation of release of the active ingredient in the stomach; said percentages being by weight based on the total weight of components (a), (b), and (c); the ratio of the components (a), (b), and (c) in said coating being such that a dose of the pellet composition delivers to the patient a therapeutically effective amount of said active ingredient over the course of said predetermined interval, so as to maintain an active ingredient blood level at steady state of at least 75% of maximum blood level for more than approximately 4 hours and so that the time at which the active ingredient reaches its maximum concentration is between about 4 and about 30 hours.

5,378,475
SUSTAINED RELEASE DRUG DELIVERY DEVICES
 Thomas J. Smith, Boston, Mass.; Paul Ashton, and Paul A. Pearson, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.
 Filed Feb. 21, 1991, Ser. No. 658,695
 Int. Cl.⁶ A61K 9/22, 9/32
 U.S. Cl. 424—473

35 Claims



1. A method for treating a mammalian organism to obtain a desired local or systemic physiological or pharmacological effect comprising:
 administering a sustained release drug delivery system to a mammalian organism in need of such treatment, said drug delivery system comprising:
 (1) an inner core or reservoir comprising an effective amount of an agent to obtain a desired local or systemic physiological or pharmacological effect,
 (2) a first polymer coating layer, said first coating layer essentially impermeable to the passage of said agent, and said first polymer coating layer covering at least a portion of the inner core, wherein at least a small portion of the inner core is not coated with said first coating layer, and
 (3) a second polymer coating layer permeable to the passage of said agent, wherein said second polymer coating layer essentially completely covers said first polymer coating layer and the uncoated portion of the inner core, whereby said agent is able to pass through said second polymer coating layer in a controlled manner wherein said first polymer coating layer and said second polymer coating layer are essentially insoluble and inert in body fluids.
 polymers able to form strong membrane coacervates, of the microcapsule membrane.

5,378,476

Patent Not Issued For This Number

5,378,477
METHOD OF FEEDING A CONSUMPTION MODIFYING SUPPLEMENT TO RUMINANTS
 Danny L. Williams, Manchester; Dean E. Hodge, St. Louis, both of Mo., and Ted C. Jackson, Jr., Lubbock, Tex., assignors to Purina Mills, Inc., St. Louis, Mo.
 Continuation-in-part of Ser. No. 740,337, Aug. 5, 1991, Pat. No. 5,169,656. This application Dec. 2, 1992, Ser. No. 984,883
 The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
 Int. Cl.⁶ A23K 1/18

U.S. Cl. 426—2

8 Claims

1. A method of feeding protein-based, grain-based, carbohydrate-based and fat-based diets which are devoid of roughage,

to a self fed ruminant animal without adverse effects which result from roughage-free diets comprising administering to the animal a roughage-devoid diet to which has been added a consumption pattern modifying supplement selected from the group consisting of coconut oil, palm kernel oil and mixtures thereof, in an amount effective to modify consumption patterns of the animal to overcome problems associated with the elimination of roughage from ruminant diets.

5,378,478
MANUFACTURE OF CHEESE PRODUCTS WITH POLYOL POLYESTER FAT SUBSTITUTES
 Mark S. Miller, Arlington Heights, and Kevin J. Surber, Lombard, both of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
 Filed Dec. 30, 1993, Ser. No. 175,612
 Int. Cl.⁶ A23C 20/00

U.S. Cl. 426—40

19 Claims

1. A method for the manufacture of a natural cheese comprising:
 (a) removing moisture, salts and lactose from skim milk by ultrafiltration and diafiltration to provide a retentate;
 (b) adding a lactic acid producing cheese culture to the retentate and fermenting the retentate to a pH of between about 4.8 and about 5.6 without coagulating said retentate;
 (c) homogenizing a mixture of an aqueous material selected from the group consisting of skim milk, whey, buttermilk, skim milk retentate, fermented skim milk retentate and water and a fat to provide an emulsion containing from about 10% to about 70% fat, said fat comprising from about 25% to about 100% of a polyol fatty acid polyester with the balance being a triglyceride fat;
 (d) blending said fermented retentate and said emulsion to provide a concentrate;
 (e) adding a milk clotting enzyme to said concentrate prior to evaporating said concentrate;
 (f) evaporating moisture from said concentrate to provide a pre-cheese having from about 30% to about 40% moisture; and
 (g) curing said pre-cheese to provide a natural cheese.

5,378,479
METHOD FOR MANUFACTURE OF SKIM MILK CHEESE

Gary W. Trecker, Lake Zurich; James W. Moran, Antioch, and Walter Ley, Prospect Heights, all of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
 Continuation of Ser. No. 951,230, Sep. 25, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 171,191
 Int. Cl.⁶ A23C 19/072

U.S. Cl. 426—42

4 Claims

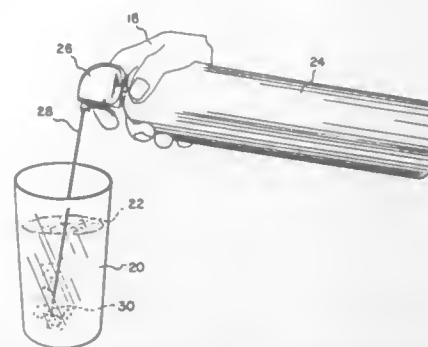
1. A method for making a high moisture, natural skim milk cheese for manufacturing having a moisture content of less than about 60% and a fat content of less than about 1% comprising:

(a) providing curd particles by a process wherein skim milk is fermented with a dairy starter culture, formed into a coagulum by addition of a milk coagulating enzyme, said coagulum is cut to provide curd particles in whey, said curd particles are stirred at an elevated temperature to develop acidity in the curd and the whey is drained from the curd particles to provide said curd particles;
 (b) washing said curd particles as said curd particles are being stirred while said curd particles are at a pH of from about 5.30 to about 6.10 with sufficient water and for a sufficient time to provide a moisture in said curd of from about 60% to about 68%;
 (c) salting said curd after draining said wash water when the pH of said curd is from about 5.20 to about 6.0;
 (d) loading said curd into containers;
 (e) pressing said curd in cheddar cheese type processing apparatus four a period of from about 10 minutes to about 30 minutes to remove additional whey;
 (f) affixing a foraminous plate to said container opening;
 (g) inverting said container and draining syneresed whey from said curd for a period of from about 10 to about 20 hours until said curd has attained a pH of from about 4.90 to about 5.35 and a moisture content of from about 54% to about 58%; and
 (h) curing said curd to provide a skim milk cheese under conditions whereby the proteolysis of α -casein is controlled so that the degraded amount of alpha casein is no less than about 47.5% and no more than about 72.5% of the original alpha casein level of the cheese at the beginning of the cure being controlled through the selection of said milk coagulating enzyme, the amount of said milk coagulating enzyme and the duration and temperature of curing, wherein said milk coagulating enzyme is added to said fermented skim milk at a level of from about 2 fluid ounces to about 4 fluid ounces per 1000 lb. of milk of single strength rennet equivalent to calf rennet having a chymosin level of at least 95% and the temperature of curing is about 33° F. to about 48° F.

5,378,480
METHOD OF PREPARING AN OXYGENATED COCKTAIL FOR INGESTING BY A HUMAN
 Richard A. Carieri, 10928 Remmet Ave., Chatsworth, Calif. 91311
 Filed Aug. 31, 1992, Ser. No. 937,176
 Int. Cl.⁶ A23L 2/00

U.S. Cl. 426—67

9 Claims



1. The method of preparing an oxygenated nutritional beverage for individual consumption by a human comprising the steps of:
 utilizing an individual beverage container adapted to contain a single serving of a beverage for a human;
 depositing a precise amount of a nutritional powder within said container wherein said powder includes a foam generating substance capable of trapping and temporarily holding oxygen gas;
 adding a preselected quantity of a liquid to said powder within said container;
 evenly mixing said powder and said liquid for a sufficient

period of time to create as much foam as possible within said beverage;
 utilizing a hand-holdable oxygen canister which has an elongated dispensing tube with an oxygen outlet and a manually operated oxygen dispensing valve;
 locating said dispensing tube within said container and submerging said outlet to be located directly adjacent the lowest level of said beverage;
 activating said valve for an approximate preselected period of time permitting oxygen to be dispensed within said beverage;
 deactivating said valve terminating dispensing of the oxygen and removing said tube from said container; and
 immediately ingesting said beverage by the human which will cause the contained oxygen gas in said beverage to be made available to enter the blood stream of the human improving the performing capability of the human within the next several hours.

5,378,481
PROCESS FOR PRODUCING FOOD USING CHOCOLATE

Yoriko Minamikawa, Kaizuka, and Hideki Baba, Sennan, both of Japan, assignors to Fujii Oil Company, Limited, Osaka, Japan
 PCT No. PCT/JP90/00897, § 371 Date Mar. 6, 1991, § 102(e) Date Mar. 6, 1991, PCT Pub. No. WO91/00690, PCT Pub. Date Jan. 24, 1991
 PCT Filed Jul. 12, 1990, Ser. No. 655,375
 Claims priority, application Japan, Jul. 13, 1989, 1-181901
 Int. Cl.⁶ A23P 1/08

U.S. Cl. 426—99

5 Claims

1. A process for producing a chocolate-containing cake, confectionery, pastry, cookie, or bread, which comprises contacting a cake confectionery, pastry, cookie or bread having a water content of not less than 15% by weight with a chocolate and sugar-containing mixture in which a sugar having a solubility of not more than 80 grams, dissolved in 100 g of water at 20° C., is used in an amount of not less than 40% by weight, based on the total weight of the sugar material in the mixture, whereby the sweating phenomenon of the chocolate due to the aforementioned water content in the confectionery, pastry, cookie or bread is prevented, and wherein the chocolate-containing cake bread, confectionery, pastry or cookie is distributed and stored in piles or in a packed state.

5,378,482
METHOD OF CONTROLLING THE BOILING POWER FOR A WATER-CONTAINING VESSEL
 Reinhard Kersten, and Klaus Klinkenberg, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

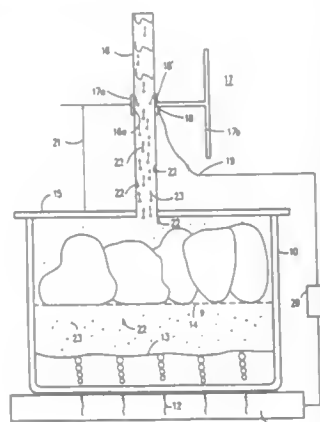
Filed Jun. 11, 1992, Ser. No. 896,949
 Claims priority, application Germany, Jun. 26, 1991, 4121038; Jul. 6, 1991, 4122430
 Int. Cl.⁶ A23L 1/00; G05D 23/00

U.S. Cl. 426—231

13 Claims

1. A method of determining and reliably controlling the boiling power for a water-containing vessel (10) heated by an element having a heating power (12), said method comprising the steps of placing food inside the vessel and subjecting the vessel to the action of steam or water vapor generated during heating of the water-containing vessel, controlling the heating power (12) using a heat extraction device with heat flux measurement comprising a measurement tube (16), a cooler (17) coupled to the measurement tube at a coupling location, and a temperature sensor (18) arranged at the coupling location and connected to a control device (20), which measurement tube, cooler, temperature sensor and control device cooperate to automatically control the heating power (12), and expelling residual air from the vessel by heating with such automatically controlled supply of heating power (12), the amount of water

evaporating at atmospheric pressure being that amount that is sufficient to maintain a steam-air interface such that residual air



is expelled from the vessel (10) and, after such residual air is expelled, no substantial amounts of water and/or condensate are discharged during subsequent heating of the vessel.

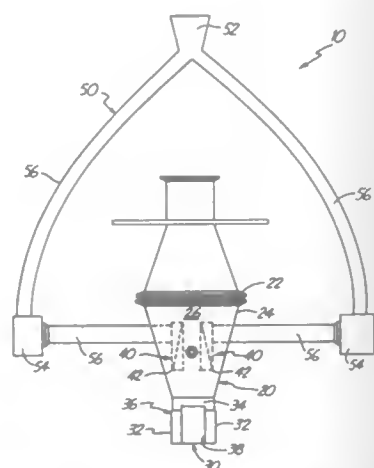
5,378,483

METHOD FOR PRODUCING A FROZEN NOVELTY
Paul L. Fazio, La Grange, Ill., and Bernard W. Pajak, Princeton, N.J., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Aug. 19, 1993, Ser. No. 109,276
Int. Cl.⁶ A23G 9/00; A23P 1/00

U.S. Cl. 426—282

8 Claims



1. A method of producing a composite edible novelty having a discrete doughy addition in an ice cream-like dessert composition comprising the steps of:

- providing an extrusion apparatus including a main die having an entrance and an exit disposed downstream of the entrance, and at least one intermediate die, the intermediate die being positioned within the main die at a location upstream of the exit of the main die;
- introducing the dessert composition to the entrance of the main die in at least a semi-frozen state;
- extruding a flowable discrete doughy addition through the intermediate die at an elevated temperature of at least about 50° F.; and
- extruding the dessert composition and the discrete doughy addition through the exit of the main die to form an extrudate.

5,378,484

PROCESS FOR MAKING AN ANTI-FOAMING AGENT-CONTAINING BEVERAGE

Nobuyuki Suwa, Kanagawa; Akio Nishimura, Tokyo; Susumu Miyama, and Shinji Katoh, both of Shizuoka, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 869,952

Claims priority, application Japan, Apr. 19, 1991, 3-088671; Apr. 19, 1991, 3-088672; Apr. 19, 1991, 3-088673; Oct. 14, 1991, 3-265015

Int. Cl.⁶ A23L 2/38

U.S. Cl. 426—329

6 Claims

1. A method for preparing a positively-pressurized canned beverage comprising adding a sucrose fatty acid ester as an anti-foaming agent in an emulsified state in water with a hydrophilic emulsifying agent, wherein the constituting fatty acid of the sucrose fatty acid ester is selected from the group consisting of a saturated fatty acid having from 12 to 22 carbon atoms, and an unsaturated fatty acid having from 12 to 22 carbon atoms, and the average substitution degree is from 4 to 7, to the beverage in an amount sufficient to reduce foaming, and filling the resulting sucrose fatty acid ester-containing beverage into a can.

5,378,485

METHOD OF CONTROLLING FOAM WITH CARBONIC ACID ESTER AGENTS

Ulrike Mahler, Suhr, Switzerland; Alfred Westfechtel, Hilden, Germany; Hans-Juergen Sladek, Krefeld, Germany, and Sylke Kielmann, Erkrath, Germany, assignors to Henkel Kommanditgesellschaft Auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/02341, § 371 Date Aug. 17, 1993, § 102(e) Date Aug. 17, 1993, PCT Pub. No. WO92/11073, PCT Pub. Date Jul. 9, 1992

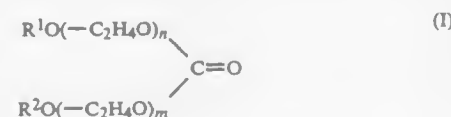
PCT Filed Dec. 6, 1991, Ser. No. 78,330

Claims priority, application Germany, Dec. 24, 1990, 4041754
Int. Cl.⁶ A23L 1/212, 3/3517

U.S. Cl. 426—329

10 Claims

1. In a method of suppressing foaming in the processing of sugar beets or potatoes or in fermentation processes in the processes or production of foods, the improvement comprising using a carbonic acid ester corresponding to general formula I:



wherein:

- R¹ is an alkyl radical derived from an aliphatic saturated primary alcohol containing 1 to 22 carbon atoms;
R² is an alkyl radical derived from an aliphatic, saturated primary alcohol containing 1 to 8 carbon atoms and/or has the same meaning as R¹;
n is a number from 2 to 20; and
m is 0 or has the same meaning as n, in a material to be defoamed and in an amount effective to suppress foaming in said material.

5,378,486

SHORTBREAD HAVING A PERCEPTIBLE COOLING SENSATION

Joanne Sullivan, Wyckoff, N.J., assignor to Nabisco, Inc., Parsippany, N.J.

Filed Dec. 3, 1992, Ser. No. 985,070

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.⁶ A23L 1/10

U.S. Cl. 426—549

20 Claims

1. A shortbread composition comprising

- a starch component;
- a sweetener comprising confectioners' sugar; and
- a fat component comprising triglycerides bearing both long C₁₆ to C₂₂ saturated fatty acid residues and a mixture of C₂ to C₃ short acid residues, a portion of which are propionic acid residues, added in amounts sufficient to impart a cooling sensation upon consumption.

5,378,487

OIL EXTRACTION OF CHOLESTEROL FROM MILK PRODUCTS

Zohar M. Merchant, Wilmette; Paul W. Wrezel, Chicago; Lori L. Spurlock, Libertyville, and Donald E. Carpenter, Glenview, Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Mar. 17, 1993, Ser. No. 32,148

Int. Cl.⁶ A23C 9/00

U.S. Cl. 426—580

3 Claims

1. A method of extracting cholesterol from a milk product where the method comprises: forming a mixture comprising milk, oil and vitamin D, the mixture containing a ratio of oil to milk product of between about 1:99 to about 1:4, wherein the mixture contains the vitamin D such that the ratio of oil: vitamin D is between about 0.05% to about 1.0%, shearing the mixture, and separating the oil and milk phases by centrifugation.

5,378,488

ASEPTIC PROCESSING OF INFANT FORMULA

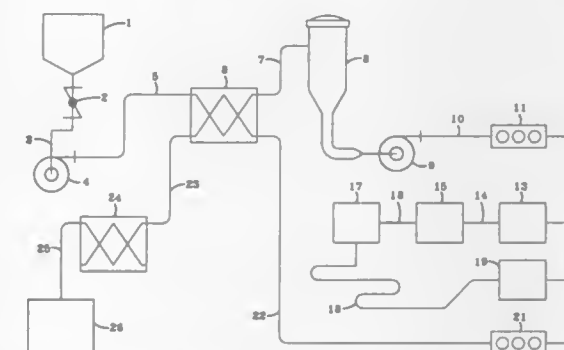
Steven R. Dimler, Bexley; David V. Diodato, Waverly; Terrence B. Mazer, Reynoldsburg; Daniel L. McKamy, Gahanna, and James M. Simpson, Whitehall, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 10, 1993, Ser. No. 75,191

Int. Cl.⁶ A23C 3/00

U.S. Cl. 426—580

8 Claims



1. A process for aseptically processing a milk based infant formula comprising the steps of:

- providing a milk based infant formula and a sterilized container;
- adding citrate ions to the infant formula at a concentration of at least 128 ppm and thereafter adjusting the pH of the infant formula to be at least 6.8;
- heating the infant formula to a temperature of at least 132° C. and holding the infant formula at said temperature for a time sufficient to commercially sterilize the infant formula while the infant formula is passing through a tube; and
- placing said sterilized formula in said sterilized container and sealing said container.

5,378,489

EMULSIFIED TASTE-MODIFIER COMPOSITION

Yoshie Kurihara, 7-4-7, Okuzawa, Setagaya-ku; Hiroshige Kohno; Hiromu Sugiyama; Telyu Shimada; Masako Salto, and Takeaki Akabane, all of Tokyo, Japan, assignors to Yoshie Kurihara and Asahi Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 916,593, Jul. 20, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,204

Claims priority, application Japan, Aug. 2, 1991, 3-194515

Int. Cl.⁶ A23L 1/221

U.S. Cl. 426—602

1 Claim

1. An emulsified taste-modifier composition comprising *Curculigo latifolia* fruits, processed *Curculigo latifolia* fruits or a component containing curcumin obtained therefrom in an amount of 5 to 10,000 ppm based on curcumin content, an emulsifier, an aqueous phase and a fat component, wherein the content of said emulsifier ranges from 0.5 to 5% by weight based on said emulsified taste-modifier composition; the weight ratio of the aqueous phase to the fat component ranges from 5/95 to 95/5 and the emulsifier is polyglycerol polyricinoleate.

5,378,490

REDUCED CALORIE TRIGLYCERIDE MIXTURES

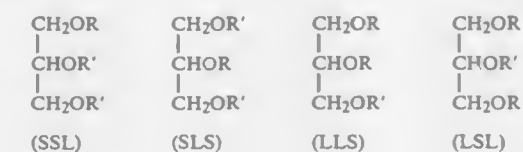
Edward L. Wheeler, Fairfield, N.J.; Ronald P. D'Amelia, Hicksville, N.Y.; Gilbert A. Leveille, Denville; Michael S. Otterburn, Randolph, both of N.J.; Lawrence P. Klemann, Somerville; John W. Finley, Whippany, both of N.J.; Allan D. Roden, Nobelsville, Ind.; Michael M. Chrysam, Blairtown, N.J.; Turiddu A. Pelloso, Carmel, Ind., and Peter S. Given, Jr., Glencoe, Ill., assignors to Nabisco, Inc., Parsippany, N.J. Division of Ser. No. 804,140, Dec. 6, 1991, Pat. No. 5,258,197, and a continuation-in-part of Ser. No. 624,056, Dec. 7, 1990, abandoned, and a continuation-in-part of Ser. No. 665,629, Mar. 6, 1991, abandoned, and a continuation-in-part of Ser. No. 732,518, Jul. 19, 1991, abandoned, said Ser. No. 624,056, is a continuation-in-part of Ser. No. 410,161, Sep. 20, 1989, abandoned. This application Jun. 28, 1993, Ser. No. 83,795

Int. Cl.⁶ A23D 9/00

U.S. Cl. 426—606

12 Claims

1. A shortening fat composition comprising at least about 25% of a mixture of at least two triglycerides of the following formulae



wherein

each R, independently, is a long chain saturated fatty acid residue having between 16 and 22 carbons, wherein at least 85% of the R groups are derived from stearic acid and each R', independently, is a short chain acid residue derived from a mixture of acetic acid and propionic acid, wherein the ratio of short to long residues varies between 0.5 and 2.0, and the mixture comprises diacetyl stearin and dipropionyl stearin, provided that the composition exhibits a solid fat index suitable for a shortening of at least about 25% at 50° F., at least about 20% at 70° F., between about 10% to about 50% at 80° F., between about 5% to about 30% at 92° F., and about 0% to 15% at 100° F.

5,378,491
METHOD OF PREPARING A STARCH HYDROLYSATE, AN AQUEOUS STARCH HYDROLYSATE DISPERSION, METHOD OF PREPARING A FOOD CONTAINING A STARCH HYDROLYSATE, AND A FOOD FORMULATION CONTAINING A STARCH HYDROLYSATE

Keith D. Stanley, and Donald W. Harris, both of Decatur, Ill., assigns to A.E. Staley Manufacturing Co., Decatur, Ill.
 Continuation-in-part of Ser. No. 746,432, Aug. 16, 1991, abandoned, and a continuation-in-part of Ser. No. 908,728, Jul. 6, 1992, which is a continuation of Ser. No. 578,994, Sep. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,208, Feb. 20, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 918,952

Int. Cl.⁶ A23L 1/05

U.S. Cl. 426—661

18 Claims

1. A method of preparing a starch hydrolysate comprising (a) maintaining a strongly acidic aqueous slurry comprised of a granular amylose starch at a temperature greater than 70° C. and below both (i) the gelatinization temperature of said granular starch in said slurry and (ii) the atmospheric boiling point of said slurry, to hydrolyze a substantial portion of said granular starch and retain a starch hydrolysate residue insoluble in said strongly acidic aqueous slurry, and (b) fragmenting the starch hydrolysate residue by mechanical disintegration at a temperature below the gelatinization temperature of the starch hydrolysate residue, thereby producing a nongelatinized, fragmented starch hydrolysate;

wherein at least about 95% of the fragmented hydrolysate has a particle size of less than 45 microns.

5,378,492
LATENT FINGERPRINT DETECTION METHOD
 Kenzo Mashiko, 1097-17, Horicho, Mito-shi, Ibaraki-ken, Japan
 Filed Oct. 6, 1993, Ser. No. 132,354
 Claims priority, application Japan, Oct. 12, 1992, 4-299198
 Int. Cl.⁶ A61B 5/117

U.S. Cl. 427—1

18 Claims

1. A latent fingerprint detection method comprising:
 A. dipping latent fingerprints in a solution, said solution comprising a ruthenium tetroxide and a solvent comprising a halogen-containing hydrocarbon having 1-8 carbons, the ratio of halogen atoms to hydrogen atoms in said halogen-containing hydrocarbon being 5:5 or more, said solution being prepared by dissolving said ruthenium tetroxide in said solvent; or
 B. exposing latent fingerprints to a vapor generated from a solution, said solution comprising a ruthenium tetroxide and a solvent comprising a halogen-containing hydrocarbon having 1-8 carbons, the ratio of halogen atoms to hydrogen atoms in said halogen-containing hydrocarbon being 5:5 or more, said solution being prepared by dissolving said ruthenium tetroxide in said solvent.

5,378,493
CERAMIC WELDING METHOD WITH MONITORED WORKING DISTANCE
 Alexandre Zivkovic, Brussels, Belgium, assignor to Glaverbel, Brussels, Belgium
 Filed Sep. 30, 1992, Ser. No. 953,870
 Claims priority, application United Kingdom, Oct. 15, 1991, 9121880

Int. Cl.⁶ B05D 1/08

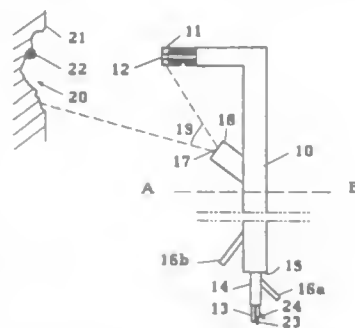
U.S. Cl. 427—8

7 Claims

1. In a ceramic welding process in which a mixture of refractory and fuel particles is projected in a gas stream from a lance through a lance outlet against a target surface where the fuel particles combust in a reaction zone at the target surface to produce heat which at least softens or melts the projected refractory particles and thereby form a coherent refractory weld mass on the target surface, the improvement comprising: measuring an actual working distance between the lance

outlet and the reaction zone during projecting of the refractory and fuel particles in a gas stream from the lance by:

(a) positioning a camera, which is a charged-coupled device ("CCD") camera, to monitor the reaction zone and at least a part of the actual working distance between the lance outlet and the reaction zone, and to produce a first elec-



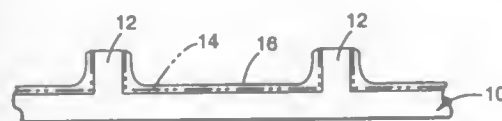
tronic signal which corresponds to images recorded by the camera and which is indicative of at least part of the actual working distance between the lance outlet and the reaction zone; and

(b) adjusting the first electronic signal to produce a second electronic signal which is indicative of the actual working distance.

5,378,494
METHOD OF APPLYING A THIN COATING ON THE LOWER SURFACE OF A BILEVEL SUBSTRATE
 Patrick A. Thomas, Maplewood, and Robert P. Wenz, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
 Filed Feb. 18, 1994, Ser. No. 198,895
 Int. Cl.⁶ B05D 5/12

U.S. Cl. 427—58

14 Claims



1. A method of applying a coating to the lower surface of a bilevel substrate, comprising the steps of:
 applying a liquid coating over a liquid crystal display panel comprised of a bilevel substrate having a lower surface and an upper surface comprised of a plurality of protrusions, the tops of which are coplanar;
 moving a leveling device across the upper surface of the bilevel substrate, whereby the liquid coating on the upper surface of the bilevel substrate is removed while the liquid coating on the lower surface is not; and
 hardening and shrinking the remaining coating by drying or curing it, thereby obtaining a hardened coating on the lower surface of the bilevel substrate.

5,378,495
METHOD OF COATING A FLUORESCENT LAMP
 Arunava Dutta, Winchester, Mass., assignor to Osram Sylvania Inc., Danvers, Mass.
 Filed Feb. 1, 1994, Ser. No. 189,853
 Int. Cl.⁶ B05D 5/06, 5/12

U.S. Cl. 427—67

10 Claims

1. A method of coating a fluorescent lamp with a coating comprising a first phosphor having a first isoelectric point at a first pH value and a second phosphor having a second isoelec-

tric point at a second pH value, said second pH value being separated from said first pH value by at least two pH units, comprising the steps of:

forming a first aqueous suspension of said first phosphor; altering said first isoelectric point of said first phosphor to obtain a modified isoelectric point at a modified pH value, said modified pH value being within about two pH units of said second pH value, said modified pH value and said second pH value defining a pH range;

filtering said first phosphor from said first aqueous suspension;

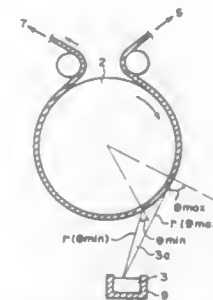
adding said first phosphor to a second aqueous suspension containing said second phosphor, said second aqueous suspension having a pH value outside of said pH range to inhibit flocculation; and

coating said fluorescent lamp with said second aqueous suspension to form a coated fluorescent lamp.

5,378,496
METHOD OF MANUFACTURING MAGNETIC RECORDING MEDIUM
 Makoto Kashiwaya, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Dec. 3, 1993, Ser. No. 161,265
 Claims priority, application Japan, Dec. 3, 1992, 4-324092
 Int. Cl.⁶ B05D 5/12

U.S. Cl. 427—128

2 Claims



1. A method of manufacturing a magnetic recording medium in which depositing material in a crucible is heated to evaporate, and the vapor particles of the deposition material is continuously deposited on a continuous substrate material running along the peripheral surface of a cylindrical cooling can between a position where the vapor particles impinge upon the substrate material at a large angle and a position where the vapor particles impinge upon the substrate material at a small angle, the method characterized in that the distance $r(\theta_{min})$ between the substrate material and the depositing material in the crucible when the vapor particles impinge upon the substrate material at a minimum incidence angle and the distance $r(\theta_{max})$ between the substrate material and the depositing material in the crucible when the vapor particles impinge upon the substrate material at a maximum incidence angle satisfy the formula $0.25 \leq \{r(\theta_{min})/r(\theta_{max})\}^2$.

5,378,497
METHOD FOR PROVIDING IRREVERSIBLE SMOOTHNESS IN A PAPER RAWSTOCK
 Dean R. Johnson, Columbia, and Hans W. Maurer, Highland, both of Md., assignors to Westvaco Corporation, New York, N.Y.
 Filed Feb. 10, 1993, Ser. No. 16,077
 Int. Cl.⁶ B05D 1/00, 5/00

U.S. Cl. 427—211

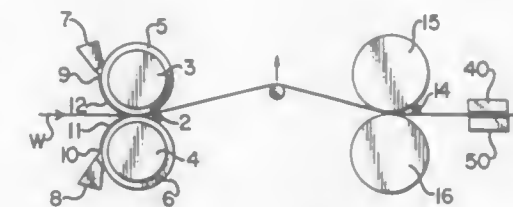
14 Claims

1. The method of achieving a smooth finish on at least one surface of a web of paper rawstock which is substantially resistant to loss of smoothness in any subsequent papermaking process involving the application of water, comprising:

(a) providing a web of paper rawstock having two surfaces

and a uniform moisture content of up to about 20% throughout its thickness;

(b) applying a uniform film of a moisturizing liquid of controlled thickness to at least one surface of the web of step (a) in a pressure nip to plasticize the surface fibers of the web and to achieve a moisture gradient of moisturizing



liquid within the web to a depth of at least but not more than about one-half of the web thickness;

(c) pressing the moistened web within about 0.2-2.0 seconds after step (b) in a pressure nip formed between at least two nipped rolls of a calender device; and

(d) drying the paper rawstock.

5,378,498
ANTISTATIC SOLUTION FOR MICROLITHIC MEASUREMENT
 Jing S. Shu, Austin; Chien S. Liang; Grover W. Trytten, both of Plano, and Yvonne D. Satterfield, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
 Continuation of Ser. No. 722,806, Jun. 28, 1991, abandoned.
 This application Feb. 18, 1994, Ser. No. 198,684
 Int. Cl.⁶ B05D 1/00

U.S. Cl. 427—240

10 Claims

1. A method for forming a charge-dissipating coating over a patterned resist formed on a substrate comprising the steps of: dissociating a quaternary ammonium salt with a solvent; and forming a thin coating over the patterned resist with the dissociated salt.

5,378,499
METHOD OF APPLYING ABRASIVES TO BULLETS FOR USE IN PRESSURE (FIRE) LAPPING OF GUN BARRELS
 Merrill D. Martin, Oakland; Roger B. Johnston, Lafayette, and Howard E. Harrison, San Francisco, all of Calif., assignors to Neco/Nostalgia Enterprises Co., Emeryville, Calif.
 Filed Dec. 11, 1992, Ser. No. 989,234
 Int. Cl.⁶ B05D 3/12

U.S. Cl. 427—242

10 Claims



1. A method of coating bullets capable of pressure fire lapping gun barrels by forming substantially uniform coatings of abrasives on surfaces of said bullets, said method comprising introducing said bullets to a drum capable of rotating and causing said bullets to cascade therein, providing to said drum tumbling media and abrasives followed by rotating said drum to cause said bullets, tumbling media and abrasives to cascade within said drum for a sufficient period of time to create said uniform coating of said abrasives on said surfaces of said bullets wherein said abrasives comprise a member selected from the group consisting of diamond powder, cubic boron nitride, boron carbide, silicon carbide, aluminum oxide, corundum and garnet.

5,378,500
METHOD OF MAKING PRECURSORS AND ARTICLES
OF CERAMIC-REINFORCED METAL MATRIX
COMPOSITES

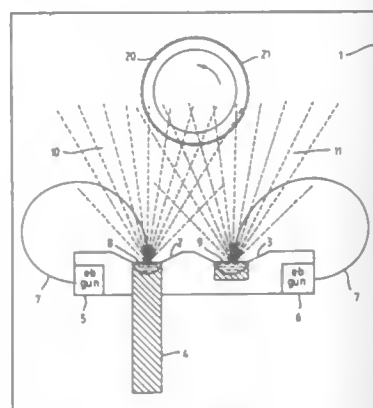
Charles M. Ward-Close, Hampshire, and Peter G. Partridge, Bristol, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

Filed Mar. 2, 1993, Ser. No. 25,382

Int. Cl.⁶ C23C 16/00

U.S. Cl. 427—250

14 Claims



1. A method of precoating ceramic fibers with matrix material, as a precursor for subsequent consolidation to yield a structural composite, the method comprising:

- depositing upon the ceramic fiber a first layer comprising a first matrix material;
- depositing upon the first layer coated fiber at least a second layer comprising a second matrix material;
- depositing upon the second layer coated fiber a third layer comprising said first matrix material, and
- optionally depositing further layers comprising said second matrix material and said first matrix materials in alternating sequence; wherein:
 - said first matrix material is one of a metal, an alloy and an intermetallic material;
 - one of said first and second matrix materials is substantially more ductile than the other of said first and second matrix materials;
 - the layers of said first matrix material are deposited upon the fiber from the vapour phase by one of condensation, sputtering and by chemical vapour reaction;
 - the at least one layer of said second matrix material is deposited upon the fiber from the vapour phase by one of condensation, sputtering and chemical vapour reaction, and
 - the aforementioned layers aggregate to a total coating thickness of at least 5% of fiber radius and are sufficient to yield a composite material of a matrix volume fraction without further addition of matrix material upon consolidation together of a plurality of like precoated fibers.

5,378,501
METHOD FOR CHEMICAL VAPOR DEPOSITION OF
TITANIUM NITRIDE FILMS AT LOW TEMPERATURES
 Robert F. Foster, 5002-3 E. Silesta Dr., Phoenix, Ariz. 85044, and Joseph T. Hillman, 8025 E. McClellan Blvd., Scottsdale, Ariz. 07410

Filed Oct. 5, 1993, Ser. No. 131,900

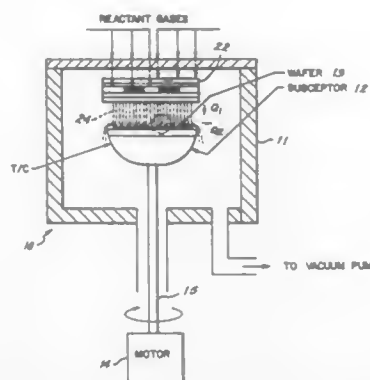
Int. Cl.⁶ C23C 16/00

U.S. Cl. 427—255.2

9 Claims

1. A method of chemical vapor deposition of titanium nitride onto a semiconductor substrate surface comprising the steps of:

passing a gaseous reaction mixture of titanium tetrachloride, ammonia and a diluent over said substrate surface; maintaining said substrate surface at a temperature of 200° C. to 500° C.; and



establishing and maintaining a boundary layer of less than or equal to 4 cm over said substrate surface, thereby forming a layer of titanium nitride on said substrate surface.

5,378,502
METHOD OF CHEMICALLY MODIFYING A SURFACE
IN ACCORDANCE WITH A PATTERN

Nicolaas P. Willard, and Ivo G. J. Camps, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,542

Claims priority, application Hague Agreement, Sep. 9, 1992, 92202730

Int. Cl.⁶ B05D 3/10

U.S. Cl. 427—305

14 Claims

1. A method of chemically modifying an oxidic substrate surface according to a desired pattern, in which method the substrate surface is brought into contact with a photosensitive alkoxysilane which comprises quinone-diazide groups, thereby forming a silane layer on the substrate surface, after which the substrate surface provided with the silane layer is exposed to light in accordance to said pattern thereby causing said quinone-diazide groups be converted into carboxylic acid groups in exposed areas of said pattern, characterized in that after said exposure to light said silane layer is brought into contact with an alcohol comprising at least one fluorine atom, thereby converting said carboxylic acid groups in said exposed areas into hydrophobic acid groups, after which quinone-diazide groups, present in unexposed areas of said pattern are exposed to light, thereby forming carboxylic acid groups.

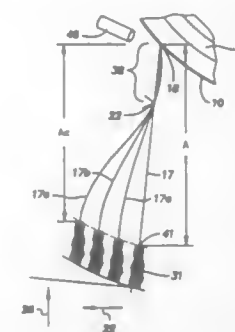
5,378,503
ADJUSTABLE BLADE COATER
 Herbert B. Kohler, Uniontown, and Michael L. Schmidt, North Canton, both of Ohio, assignors to The Kohler Coating Machinery Corporation, Greentown, Ohio
 Division of Ser. No. 924,838, Aug. 4, 1992, Pat. No. 5,242,498.
 This application May 24, 1993, Ser. No. 66,523
 Int. Cl.⁶ B05D 3/12

U.S. Cl. 427—356

8 Claims

1. A method of adjusting a beveled edge coating blade in a web coating machine comprising positioning the active edge of said blade in a selected position for controlling application of a coating to a web, positioning a fulcrum against said blade at a location spaced from said active edge, clamping the other edge of said blade in jaws, moving said jaws with independent linear translating movement in two directions at angles relative to each other to cause a "S" shaped deflection in said blade while moving said jaws along an empirically established curve based on blade characteristics which maintains said active edge in

said selected position, and coordinating the movement of said jaws in said two directions so that said jaws move along said



curve and adjust a pressure of said active edge on said web while maintaining said active edge in said selected position.

5,378,504
METHOD FOR MODIFYING PHASE CHANGE INK JET
PRINTING HEADS TO PREVENT DEGRADATION OF
INK CONTACT ANGLES

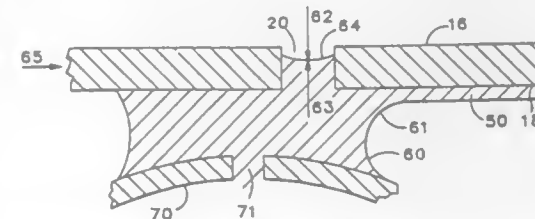
Michel L. Bayard, 1088 SW. Westwood Dr., Portland, Ore. 97201, and Donald P. Chitwood, 4220 SW. Freeman St., Portland, Ore. 97219

Filed Aug. 12, 1993, Ser. No. 105,267

Int. Cl.⁶ B05D 3/02

U.S. Cl. 427—377

41 Claims



13. A method for decreasing wetting by an ink composition of a discharge surface of an ink jet head having an ink jet nozzle comprising the steps of:
 exposing the ink jet head to a hydrogen environment;
 applying a layer of a coating material to an area on the discharge surface surrounding the nozzle while the discharge surface is still reactive with the coating material due to exposure to the hydrogen environment; and
 curing the layer of coating material by heating to a temperature which promotes decomposition of the coating material for increasing adherence of the coating material to the surrounding area, and for eliminating the coating material in the ink jet nozzle.

5,378,505
METHOD OF AND APPARATUS FOR
ELECTROSTATICALLY SPRAY-COATING WORK WITH
PAINT

Toshio Kubota, Niichi Toyama, Hiroshi Arai, Ichiron Ishibashi, and Yukihito Ono, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 833,667, Feb. 11, 1992, abandoned.
 This application Aug. 26, 1993, Ser. No. 112,059

Claims priority, application Japan, Feb. 27, 1991, 3-009829[U]; Feb. 27, 1991, 3-033049

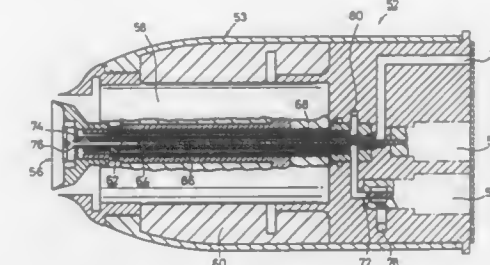
Int. Cl.⁶ B05D 1/04, 5/02, 15/02

U.S. Cl. 427—484

1 Claim

1. A method of electrostatically spray-coating a workpiece with electrically-conductive paint subjected to a voltage using a spray gun,
 said spray gun having a rotatable atomizing head attached to

a rotator for rotating said atomizing head, a paint supply line for supplying said paint to said atomizing head, and a cleaning line for supplying cleaning liquid and air, where the air is under a pressure, to said atomizing head, said rotator having a path for accommodating said paint supply line and said cleaning line therein, said path being formed in a cylindrical shape along a rotative axis of said rotator,
 said cleaning line being disposed coaxially in said path, with an end opening thereof disposed in said atomizing head, said paint supply line being disposed coaxially within said cleaning line and having a nozzle tip thereof projecting forward from said end opening of said cleaning line into the center of said atomizing head, preventing liquid communication between said cleaning line,



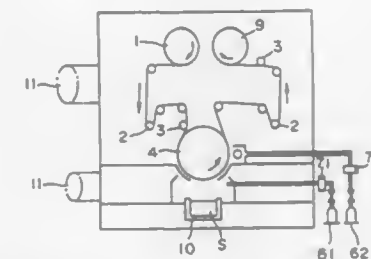
the method comprising the steps of:
 electrostatically spray-coating the workpiece with said paint;
 supplying said cleaning liquid to said atomizing head via said cleaning line to wash said atomizing head after said spray-coating;
 supplying the air to said cleaning line after washing said atomizing head, to discharge said cleaning liquid remaining in said cleaning line through said atomizing head, at a delivery rate within a rate of spraying said paint during said spray-coating; and
 drying said cleaning line before spray-coating a next workpiece, to prevent voltage leakage, with air under pressure higher than an air pressure used for discharging the remaining cleaning liquid.

5,378,506
EVAPORATION METHOD OF FORMING
TRANSPARENT BARRIER FILM
 Nobuhiko Imai, Sugito; Mamoru Sekiguchi, Higashikawaguchi; Mitsuru Kano, Kagurazaka, all of Japan; Thomas Krug, Rodenbach, Germany; Gerhard Steiniger, Ronneburg, Germany, and Andreas Meier, Pfullingen, Germany, assignors to Toppan Printing Co., Ltd., Tokyo, Japan and Leybold Aktiengesellschaft, Hanau, Germany

Filed May 10, 1993, Ser. No. 58,132
 Claims priority, application Japan, May 11, 1992, 4-117717
 Int. Cl.⁶ C23C 16/00

U.S. Cl. 427—529

8 Claims



1. A method of forming a transparent barrier film, comprising the steps of feeding a transparent base film in a vacuum

chamber, and heating an evaporation source material composed of magnesium oxide having a bulk density of 2.5 g/ml or more to evaporate the same to thereby deposit a transparent barrier film composed of magnesium oxide on the transparent base film.

5,378,507

DRY COATING METHOD

Kazuo Ohba, 2-3, Matsubacho 4-chome, Higashimatsuyama-shi, Saitama; Yoshinori Shima, 768-15, Ohzenji, Asao-ku, Kawasaki-shi, Kanagawa, and Akira Ohba, 12-89, Miyado 3-chome, Asaka-shi, Saitama, all of Japan, assignors to Sakae Electronics Industrial Co., Ltd.; Kazuo Ohba, both of Saitama; Yoshinori Shima, Kanagawa and Akira Ohba, Saitama, all of Japan

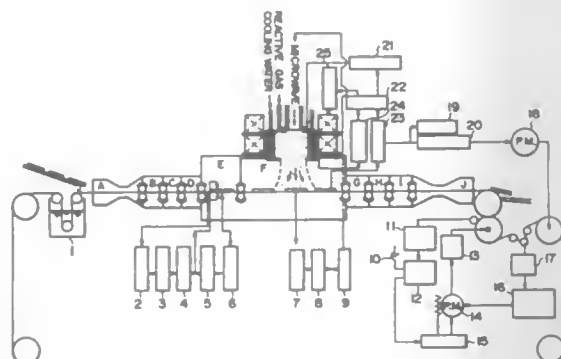
Filed Jun. 4, 1993, Ser. No. 71,487

Claims priority, application Japan, Jun. 11, 1992, 4-152035

Int. Cl.⁶ B05D 3/06

U.S. Cl. 427—534

3 Claims



1. A continuous dry coating method comprising the steps of: arranging electrodes on both sides of a substrate material; performing a plasma discharge to surface-treat small holes made in the substrate material; and performing an electron cyclotron resonance plasma coating on the surfaces of these holes, wherein the plasma discharge is performed under the conditions of an atmospheric pressure of 10 to 2×10^3 Torr and a τ_{on} of voltage waveform of 5 μ s to 20 s, and the ECR plasma coating is performed by supplying a pulse current of 0.01–500 ms in pulse width to an electromagnet in a direction perpendicular to and parallel to the propagation direction of a microwave to generate a pulse magnetic field of 0.08 T or higher.

5,378,508

LASER DIRECT WRITING

Anthony J. Castro, San Francisco, Calif.; Richard P. Van Duyne, Wilmette, Ill.; King C. Sheng, Troy, N.Y.; Robert J. Bianchini, Lakeland, Fla.; William J. Parr, Hopewell Junction, N.Y.; Ralph Franklin, Danbury, Conn., and Michael J. Natan, State College, Pa., assignors to Akzo Nobel n.v., Arnhem, Netherlands and Northwestern University, Evanston, Ill.

Filed Apr. 1, 1992, Ser. No. 861,697

Int. Cl.⁶ B05D 3/06, 5/12

U.S. Cl. 427—556

14 Claims

1. A method for providing a conductive metal deposit on a substrate having a surface, the method comprising the steps of:

- applying a composition to said surface of said substrate as a film or paste wherein said composition comprises
 - a compound consisting essentially of a copper or nickel compound and,
 - an amine or amide compound having a nitrogen atom and at least one functional substituent group capable of coordination to and reduction of metal ions, said nitrogen atom and said functional substituent being separated by from two to six other atoms, or

- (iii) an intermediate reaction product of (i) and (ii); and
- subjecting that part of the applied composition where the deposit on the surface of the substrate is desired to a continuous wavelength laser beam of a wavelength from about 200 to about 1,000 nanometers and power of from about 5 to about 150 milliwatts at ambient conditions not employing an inert or reducing atmosphere and for a sufficient time to effect reductive deposition of copper or nickel, said film being thin enough or said paste being dispersed finely enough to allow unobstructed passage of said laser beam for absorption by the composition.

5,378,509

METHOD FOR ETCHING ROUND TEMPLATES

Jakob Achreiner, Hopfgarten, Austria, assignor to Schablouentechnik Kufstein Ges. m.b.H., Kufstein, Austria

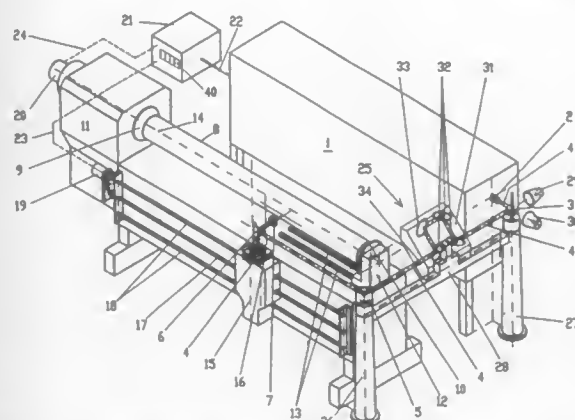
Filed Sep. 22, 1993, Ser. No. 124,455

Claims priority, application European Pat. Off., Sep. 28, 1992, 92116579.1

Int. Cl.⁶ B05D 3/00

U.S. Cl. 427—556

5 Claims



1. A method for etching a round template in the form of a hollow cylinder rotating metal screen having a thin lacquer layer on the outer surface thereof, comprising the steps of:

- directing a continuously energized laser beam against the metal screen to erode a pattern region of the lacquer layer;
- deenergizing the laser beam at the end of each pattern region within a time interval of 12 μ s to 30 μ s; and
- decoupling from the laser beam path radiation reflected from the metal screen.

5,378,510

METHODS AND APPARATUS FOR DEPOSITING BARRIER COATINGS

H. Ronald Thomas, Easton; Robert J. Babacz, Bethlehem, and Robert R. Newton, Nazareth, all of Pa., assignors to Polar Materials Inc., Martins Creek, Pa.

Continuation of Ser. No. 889,637, May 28, 1992, abandoned.

This application Feb. 15, 1994, Ser. No. 196,896

Int. Cl.⁶ B05D 3/06, 7/22; B65D 23/02; B29D 22/00

U.S. Cl. 427—563

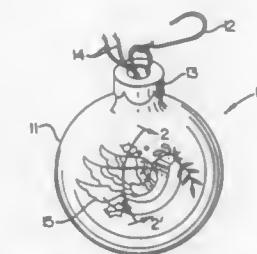
21 Claims

1. A method of forming a barrier coating on a polymeric article comprising the steps of:

- passing an oxidizing gas in a downstream direction through a plasma zone remote from said article and converting said oxidizing gas to a plasma in said plasma zone so that said plasma forms activated oxidizing gas species as it passes downstream from said plasma zone;
- delivering said activated species to the vicinity of said article;
- delivering an organosilicon vapor to the vicinity of said article separately from said activated species;
- mixing said organosilicon vapor with said activated species in proximity to said article so that said organosili-

con vapor reacts with said activated species while maintaining said mixed activates species and organosilicon vapor under subatmospheric pressure; and

- applying an alternating electrical potential of about 10 v to about 5 Kv at a frequency between about 1 KHz and about 100 MHz, and at a power input of between about 0.05 watts/cm² and about 10.0 watts/cm² of article surface area to said mixed activated species and organosilicon vapor in proximity to said article so that reaction products formed from said mixed activated species and organosilicon vapor are deposited on said article under the influence of said alternating electrical potential and so that said deposited reaction products form a barrier coating on said polymeric article while maintaining said polymeric article at a temperature below the heat distortion temperature of the polymeric article, said barrier coating having at least one of i) permeance of oxygen of less than about 0.20 cc O₂/100 in²-day-atm, ii) permeance of carbon dioxide of less than 1.0 cc CO₂/100 in²-day-atm, or iii) permeance of water of less than 0.4 gm H₂O/100 in²-day-atm.



a pattern in said inner coating layer, said pattern forming an ornamental indicia for said ornament.

5,378,513

CLEPSYDRA DECORATION SET

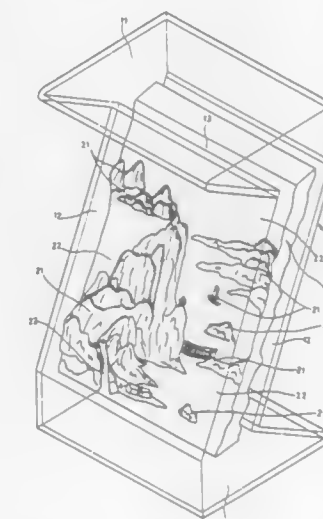
Vincent K. W. Lee, No. 44, Lane 458, Sheh Chung St., Taipei, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 929,135, Aug. 13, 1992, Pat. No. 5,255,460. This application Apr. 12, 1993, Ser. No. 45,115

Int. Cl.⁶ G09F 19/00

U.S. Cl. 428—13

2 Claims



5,378,511

MATERIAL-SAVING RESIST SPINNER AND PROCESS

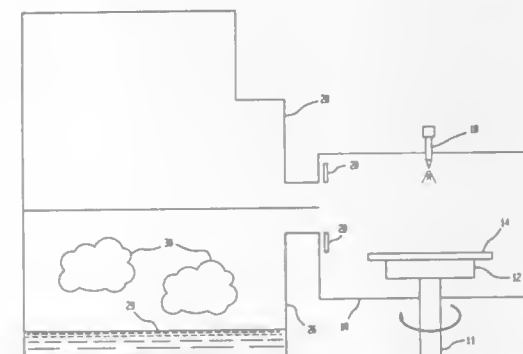
Thomas J. Cardinali, Burlington, Vt., and Burr J. Lin, Scarsdale, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 34,974, Mar. 22, 1993. This application Jan. 25, 1994, Ser. No. 186,401

Int. Cl.⁶ B05D 3/12

U.S. Cl. 427—600

9 Claims



1. A process of spin coating a soluble coating material upon a substrate comprising:

- applying a solvent enriching vapor upon a substrate,
- subsequently spraying said coating material upon said substrate,
- vibrating said substrate for a period of time sufficient to allow said material to spread out, and
- spinning said substrate, whereby thickness and uniformity are controlled.

5,378,512

ORNAMENT HAVING PATTERNED ORNAMENTAL INDICIA THEREON

Robert A. Van Wyk, North Palm Beach, Fla., assignor to AMF Irrevocable Trust, Grand Rapids, Mich. and KMA Irrevocable Trust, Palm Beach Gardens, Fla.

Division of Ser. No. 802,521, Dec. 5, 1991, Pat. No. 5,266,771.

This application Aug. 31, 1993, Ser. No. 114,748

Int. Cl.⁶ A47G 33/08; F21V 3/02

U.S. Cl. 428—11

14 Claims

1. An ornament comprising:

- a hollow spheroidal ornament body having a neck protruding therefrom said neck being narrow relative to said spheroidal ornament body;

an inner coating layer on the inner surface of said hollow ornament body; and

ond reservoir, within the second channel and over the second side surface, toward said first reservoir while forming a decorative pattern as the sandy medium passes over the ripples of said second side surface.

5,378,514
FRAME-SUPPORTED PELLICLE FOR
PHOTOLITHOGRAPHY

Yuichi Hamada; Yoshihiko Nagata; Meguru Kashida, and Yoshihiro Kubota, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 103,925

Claims priority, application Japan, Aug. 21, 1992, 4-245827
Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—14

4 Claims

1. A frame-supported pellicle for dust-proof protection of a photomask which is an integral body consisting of:

- (a) a rigid pellicle frame;
- (b) a layer of a hot-melt adhesive; and
- (c) a pellicle membrane made from a first amorphous fluorocarbon-containing polymer having a cyclic structure in the molecule, the adhesive layer intervening between a surface of the pellicle frame and the pellicle membrane so as to support the pellicle membrane by adhesively bonding the membrane to the pellicle frame and the adhesive being made from a second amorphous fluorocarbon-containing polymer of a hot-melt type having a cyclic structure in the molecule.

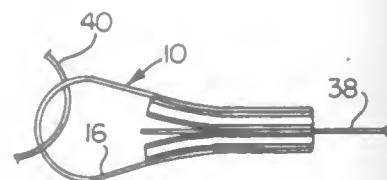
5,378,515
CORNER TAB AND METHOD OF MAKING SAME
Richard J. Hatton, Wellington, Ohio, assignor to E L Hatton Sales, Co., Westlake, Ohio

Filed Oct. 1, 1993, Ser. No. 131,197

Int. Cl.⁶ B32B 31/00

U.S. Cl. 428—40

4 Claims



1. A corner tab for hanging or suspending an article, comprising:

- an elongated flexible strip having sufficient tensile strength article;
- with a pressure sensitive adhesive laminate; and
- a protective release sheet overlying said adhesive laminate; said corner tab provided with straight lines and sharp corners and having a narrow middle neck portion and opposed wide end portions, said end portions being aligned along the center axis of said middle neck portion and being connected to said middle neck portion by tapered intermediate portions, each of said tapered intermediate portions having narrow ends adjacent said narrow middle neck portion and wide ends adjacent said wide end portions, the angles formed at the intersections of each of said intermediate portions with said narrow middle neck portion being about 135°, the angles formed at the intersections of each of said intermediate portions with said wide end portions being about 135°, the width of each of said end portions being about twice the width of said middle neck portion, the length of said middle neck portion being about equal to the combined lengths of said end portions; said adhesive laminate and said protective release sheet overlying each of said end portions, said intermediate tapered portions and part of said neck portion; said adhesive laminate comprising a first pressure sensitive

adhesive layer overlying and adhered to said flexible strip, a plastic foam layer overlying and adhered to said first adhesive layer, and a second pressure sensitive adhesive layer overlying and adhered to said plastic foam layer, said protective release sheet overlying and adhered to said second adhesive layer.

5,378,516
THIN TYPE OPTICAL MEMORY MEDIUM AND
METHOD FOR PREPARING THE SAME

Kohzoh Arahara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 473,106, Feb. 2, 1990, Pat. No. 5,160,462, which is a continuation of Ser. No. 14,785, Feb. 13, 1987, abandoned. This application Aug. 12, 1992, Ser. No. 928,322

Claims priority, application Japan, Feb. 14, 1986, 61-028903; Feb. 14, 1986, 61-028904; Feb. 14, 1986, 61-028905; Feb. 15, 1986, 61-029884; Feb. 15, 1986, 61-029885; Feb. 15, 1986, 61-029886

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—64

9 Claims



1. An optical memory medium comprising:

- (i) a heat-resistant sheet comprising a thermosetting resin at least one surface of which has thereon a readily deformable resin layer comprising a thermoplastic resin, wherein said readily deformable resin layer has an uneven guide groove on its surface; and
- (ii) an optical recording layer formed over said at least one surface of said heat-resistant sheet, wherein the thickness of said heat-resistant sheet is equal to the thickness of said readily deformable resin layer, or the thickness of said heat-resistant sheet is smaller than the thickness of said readily deformable resin layer.

5,378,517
OPTICAL DISC HAVING SIGNAL RECORDING LAYER
ON EACH SIDE AND METHOD FOR PRODUCING
SAME

Akira Suzuki, and Daiki Kobayashi, both of Miyagi, Japan, assignors to Sony Corporation, Japan

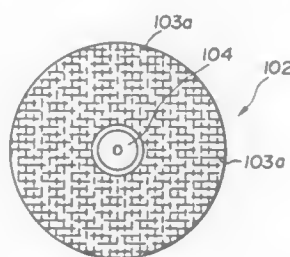
Continuation of Ser. No. 973,418, Nov. 9, 1992, abandoned, which is a division of Ser. No. 659,517, Feb. 21, 1991, Pat. No. 5,284,538. This application Jul. 23, 1993, Ser. No. 96,645

Claims priority, application Japan, Feb. 22, 1990, 2-41707

Int. Cl.⁶ G11B 23/00

U.S. Cl. 428—64

2 Claims



1. A double-sided optical disc comprising:

- a first optical disc having a first side and a second side, the first optical disc including a first signal recording layer;
- a second optical disc having a first side and a second side, the

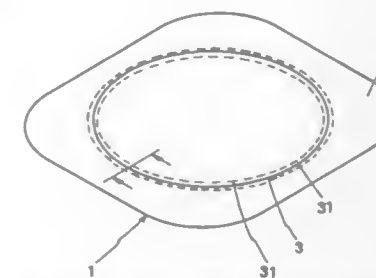
second optical disc including a second signal recording layer;

- a first adhesive layer affixed to the second side of the first optical disc, the first adhesive layer including a plurality of parallel alternating projections and recesses; and
- a second adhesive layer affixed to the second side of the second optical disc, the second adhesive layer including a plurality of parallel alternating projections and recesses, the projections of the first adhesive layer bonded to and intersecting the projections of the second adhesive layer, wherein the angle between the projections of the first adhesive layer and the projections of the second adhesive layer is substantially equal to 90 degrees.

5,378,518
AUTOMOBILE SUN-PROOF SHADE
Kaei-Ling Wang, No. 174, Lane 131, Sec. 2, True Hsing Rd., Panchiao, Taipei, Taiwan, Prov. of China
Filed Oct. 14, 1993, Ser. No. 136,774
Int. Cl.⁶ B60J 3/00

U.S. Cl. 428—65

1 Claim



1. An automobile sun-proof shade comprising:

- a bottom layer made of a piece of polyester cloth having an outer surface coated with a layer of aluminum reflector film formed through a steam plating process;
- a top layer made of a piece of polyester cloth having an outer surface coated with a layer of aluminum reflector film formed through a steam plating process, said top layer being covered on said bottom layer and peripherally sealed through a high frequency heat sealing process; and
- a metal ring made of resilient metal and sealed between said bottom layer and said top layer by two endless seams being formed between said bottom layer and said top layer around said metal ring on the inside and the outside respectively through a high frequency heat sealing process.

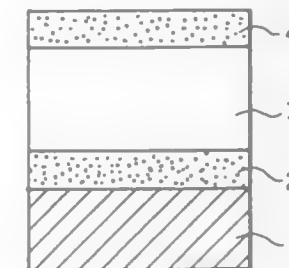
5,378,519
ELECTROLUMINESCENT DEVICE
Toshihiro Kikuchi; Hajime Miyazaki, both of Yokohama, and Takashi Nakano, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 26, 1993, Ser. No. 52,460

Claims priority, application Japan, Apr. 28, 1992, 4-134526; Apr. 28, 1992, 4-134527

Int. Cl.⁶ B32B 9/04

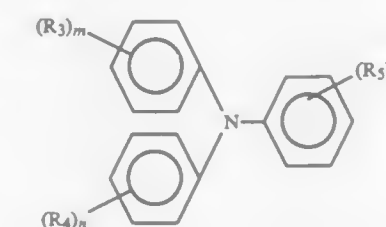
U.S. Cl. 428—690

9 Claims



1. An electroluminescent device, comprising: a pair of elec-

trodes, and an organic compound layer disposed between the electrodes and comprising a compound having a skeleton of the following formula (II) and having a carbonyl group:



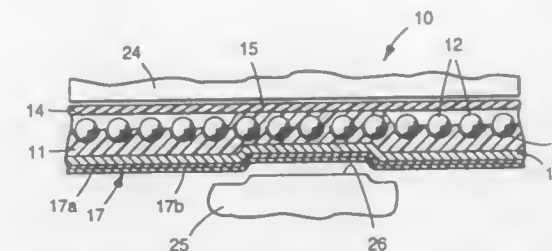
Formula (II)

wherein R₃, R₄ and R₅ independently denote an alkyl group, an aromatic ring group, a heterocyclic group, an alkoxy group, an aryloxy group, a halogen atom, a nitro group, a cyano group, a hydroxy group, or an amino group, and m, n and p independently denote 0 or an integer of up to 5.

5,378,520
SUPPORTED ENCAPSULATED-LENS
RETROREFLECTIVE SHEETING
Yoshiyuki Nagaoka, Yamagata, Japan, and Vera L. Lightle, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 16, 1992, Ser. No. 991,097
Int. Cl.⁶ G02B 5/128

U.S. Cl. 428—72

14 Claims



1. Supported retroreflective sheeting comprising (1) a layer of binder material having a layer of retroreflective elements disposed over and partially embedded in its top surface; (2) a transparent cover sheet disposed in spaced relation from the layer of retroreflective elements; (3) a network of narrow intersecting bonds comprising binder material embossed from the layer of binder material into contact with the cover sheet so as to adhere the layer of binder material and cover sheet together and form a plurality of cells within which retroreflective elements are hermetically sealed; the embossing of the layer of binder material leaving the bottom surface of the layer of binder material with an embossed configuration; and (4) a support fabric lastingly and directly adhered to said bottom surface of the layer of binder material and embossed with the layer of binder material so as to follow the embossed configuration of said bottom surface, binder material from the layer of binder material penetrating into interstices of the fabric.

5,378,521
WATER-AND OIL-REPELLING MEMBERS AND
METHOD OF MANUFACTURING THE SAME
Kazufumi Ogawa, Nara; Mamoru Soga, Osaka, and Shigeo Ikuta, Tondabayashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 20, 1993, Ser. No. 110,705

Claims priority, application Japan, Sep. 12, 1992, 4-244532
Int. Cl.⁶ B32B 3/02

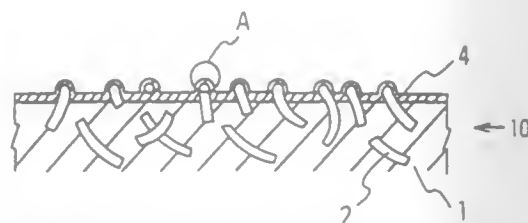
U.S. Cl. 428—85

9 Claims

1. Water- and oil-repelling members, wherein at least one

filler protruding from the surface of a reinforced material comprising fillers is covered with a chemically adsorbed film

radially symmetrical cavities having a diameter, the cavities being dispersed over the first and over the second portions



having water- and oil-repelling properties, and wherein said chemically adsorbed film is covalently bonded to said filler.

5,378,522

READY WRAP

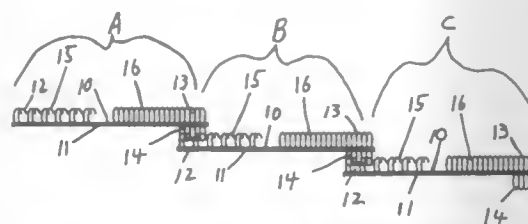
Rich Lagomarsino, 5444 N. Del Mar, Fresno, Calif. 93704

Filed Jul. 6, 1992, Ser. No. 909,562

Int. Cl.⁶ A44B 1/04, 11/25; B32B 3/06, 5/00

U.S. Cl. 428—100

10 Claims



1. A protective covering for an item comprising a plurality of fabric pieces, each such piece further comprising a cross-section of material having an upper and lower surface a first-hook and loop attachment means provided in parallel along two opposite edges of the upper surface of each such piece, and a second hook and loop attachment means along one edge of said lower surface, said attachment means allowing for the releasable attachment of each such piece to another such piece in order to surround the item being covered by the engagement of cooperating hooks and loops, wherein such pieces may be attached to one another.

5,378,523

Patent Not Issued For This Number

5,378,524

FRICTION REDUCING SURFACE AND DEVICES EMPLOYING SUCH SURFACES

Charles L. Blood, No. 1 Farview Ave., Atlantic Highlands, N.J. 07716

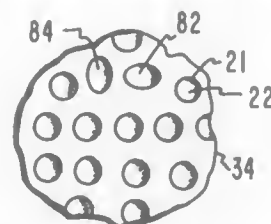
Continuation-in-part of Ser. No. 706,387, May 28, 1991, Pat. No. 5,200,573. This application Mar. 1, 1993, Ser. No. 24,421

Int. Cl.⁶ B32B 3/00; B63B 1/34; B64C 1/38

U.S. Cl. 428—141

4 Claims

1. In a vehicle selected from the group consisting of airplane, automobile and boat, the vehicle intended to move through a fluid, the vehicle having an outer surface, a first portion of such outer surface having a first minimum radius of curvature (MRC), a second portion of such outer surface having a second smaller minimum radius of curvature (MRC), and a third portion, the improvement comprising, a matrix of substantially



only, the diameter of the cavities dispersed over the second portion being smaller than the matrix of cavities dispersed over the first portion.

5,378,525

CROWNED RESILIENT ROLL WITH COATING LAYER AND METHOD OF PRODUCING THE SAME

Takafumi Yamamoto, Kasugai; Masaaki Inubushi, Inuyama; Sumio Oinuma, Tajimi; Saburo Hayashi; Shigeru Nishijima, both of Kasugai, and Masaharu Ishikawa, Komaki, all of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

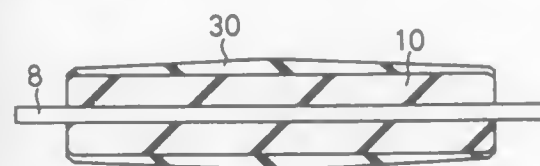
Filed Jul. 9, 1993, Ser. No. 88,524

Claims priority, application Japan, Jul. 23, 1992, 4-217262; Jul. 23, 1992, 4-217263

Int. Cl.⁶ B32B 23/02

U.S. Cl. 428—192

12 Claims



1. A crowned resilient roll whose diameter is continuously increased from axially opposite ends of the roll toward an axially middle point thereof, comprising:

a columnar roll body formed of a resilient material; and a coating layer formed on an outer circumferential surface of said roll body, said coating layer having a thickness which is varied in an axial direction of the roll body, such that the coating layer has the largest thickness at an axially middle point of the roll body, and such that the thickness is gradually reduced from said axially middle point toward axially opposite ends of the roll body.

5,378,526

ELASTIC MEMBER FOR ELECTROPHOTOGRAPHY Jun Murata, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 530,187, May 25, 1990, abandoned.

This application Apr. 6, 1994, Ser. No. 224,130

Claims priority, application Japan, May 26, 1989, 1-133800

Int. Cl.⁶ B32B 7/02; G03G 15/16

U.S. Cl. 128—214

12 Claims

1. An elastic member for electrophotography comprising: an electroconductive substrate, and a semiconducting elastic layer bonded to the electroconductive substrate by a rubber-type electroconductive adhesive layer, said semiconducting elastic layer comprising a vulcanized rubber having an electroconductive filler dispersed therein, and said rubber-type adhesive layer comprising an unvulcanizable rubber having an electroconductive filler dispersed therein.

5,378,527

CARBON FILM COATED GLASS

Masatsugu Nakanishi; Misao Tsutsuki, and Shouji Yokoishi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

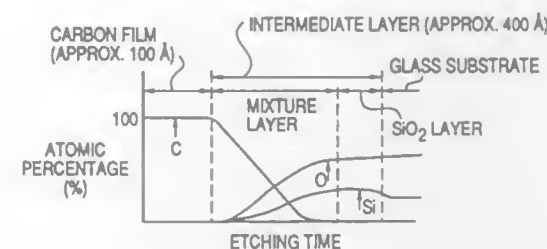
Filed Feb. 14, 1992, Ser. No. 836,022

Claims priority, application Japan, Feb. 15, 1991, 3-022387; Jul. 12, 1991, 3-172212

Int. Cl.⁶ C03C 17/34

U.S. Cl. 428—216

27 Claims



1. Carbon film coated glass, comprising: a glass substrate; an intermediate layer formed on a surface of said glass substrate by physical vacuum deposition, said intermediate layer having a thickness of 50 angstroms or more and comprising carbon and 5 mole % or more of one or more metallic oxides, wherein said deposition is carried out by a process comprising applying to a carbon target a first electric power input which increases to a predetermined value over a period of time and applying to a metallic oxide target a second electric power input which decreases to a predetermined value over a period of time, the intermediate layer being formed predominantly of said one or more metallic oxides adjacent said glass substrate and having a metallic oxides content which decreases as the distance away from said glass substrate increases; and a carbon film formed by physical vacuum deposition on said intermediate layer and having a thickness of 10 angstroms or more.

5,378,528

ABSORBENT STRUCTURE CONTAINING SUPERABSORBENT PARTICLES AND HAVING A LATEX BINDER COATING ON AT LEAST ONE SURFACE OF THE ABSORBENT STRUCTURE

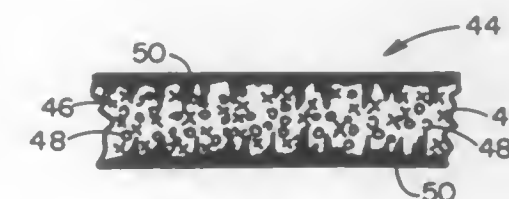
Kambiz B. Makoui, 333 Winnebago Ave., Menasha, Wis. 54952 Division of Ser. No. 511,452, Apr. 20, 1990, Pat. No. 5,128,082.

This application Oct. 15, 1991, Ser. No. 776,557

Int. Cl.⁶ A61F 13/15, 13/20

U.S. Cl. 428—219

18 Claims



3. A dry laid, liquid absorbent structure comprising a dry laid fibrous web, a porous reinforcing member disposed substantially interjacent the surfaces of said fibrous web, solid particulate of a superabsorbent material randomly incorporated into said fibrous web to one side of said reinforcing web, and a latex coating on at least one surface of said fibrous web, said structure having (i) a basis weight of about 20 to 500 grams per square meter, (ii) an absorptive capacity of not less than about 6 grams of a one percent saline solution per gram of

structure and (iii) a retention capability of not less than about 5 grams of a one percent saline solution per gram of structure.

5,378,529

MATERIAL ALLOWING THE ABSORPTION AND DRAINAGE OF MOISTURE AND ARTICLE OF CLOTHING FITTED WITH A MATERIAL OF THIS KIND J  el Bourdeau, Saint Jorioz, France, assignor to Salomon S.A., Chavanod, France

PCT No. PCT/FR91/00021,   371 Date Sep. 24, 1991,   102(e)

Date Sep. 24, 1991, PCT Pub. No. WO91/11122, PCT Pub.

Date Aug. 8, 1991

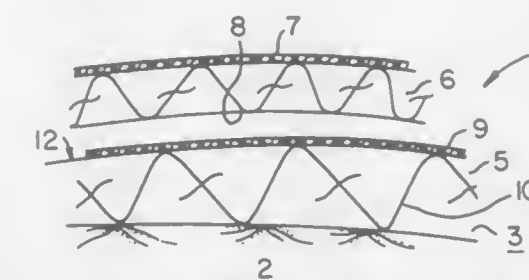
PCT Filed Jan. 14, 1991, Ser. No. 761,778

Claims priority, application France, Jan. 24, 1990, 90 00784

Int. Cl.⁶ D03D 3/00, 15/00; B32B 5/06

U.S. Cl. 428—224

21 Claims



1. Clothing made of a multilayered moisture transfer material comprising:

(a) a top layer of waterproof material forming a waterproof outer covering (7) turned toward an outside of said clothing and defining an outer surface (4); (b) a bottom layer forming a lining (5) turned toward an inner side of said clothing and defining an inner surface (3); (c) said lining comprising a plurality of moisture collectors (10) extending substantially radially of said top and bottom layers, said moisture collectors (10) extending through said lining (5) from said inner surface (3), so as to contact with the moisture, to longitudinal moisture transfer means (9) arranged between said lining (5) and said outer covering (7); (d) said moisture collectors being disposed substantially longitudinally of said top and bottom layers in order to transfer said moisture parallel to said layers of material wherein the moisture collectors are formed by threads comprising a water-repellent material and extending at least partially in a radial direction within said lining, beginning at the surface in contact with the moisture.

5,378,530

DEVICE FOR PROTECTION AGAINST FIRE, MADE OF ENDOTHERMIC FLEXIBLE MATERIAL

Guy Metivand, Talence; Jean-Claude Decidour, Castellan De Medoc, and Michel Vignollet, Le Haillan, all of France, assignors to Soci  te Anonyme dite: Aerospatiale Soci  te Nationale Industrielle, Paris, France

Filed Jun. 16, 1993, Ser. No. 79,080

Claims priority, application France, Jun. 24, 1992, 92 07745

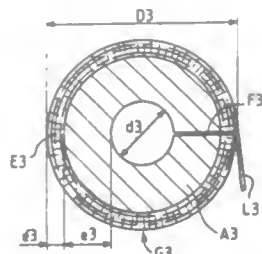
Int. Cl.⁶ B32B 7/00

U.S. Cl. 428—246

10 Claims

1. A device for protection against fire comprising a flexible body made of a silicone material including an endothermic filler releasing which generates vapor under the effect of heat, said device comprising, on at least that face of said body which is intended to be directed towards the fire, at least one layer of a fabric consisting of fire-resistant fibers and

impregnated with an intumescent agent and in which said impregnated fabric, when subjected to the effect of fire,



exhibits a sufficient porosity to allow the vapor generated by said endothermic filler to pass through.

5,378,531

GAMMA RADIATION TREATED SHEET MATERIAL FOR USE AS ORTHOPEDIC SPLINTS AND CASTS AND THE LIKE

Peter M. Larson, 2395 Charles St., Bexley, Ohio 43209, and Lester M. Larson, 14110 White Rock Dr., Sun City West, Ariz. 85375

Filed Jul. 9, 1993, Ser. No. 89,729

Int. Cl.⁶ A61F 5/04; A61L 15/12, 15/14; C08J 5/24

U.S. Cl. 428—255

12 Claims

1. A method of radiating sheets or numbers of preformed items of poly (epsilon-caprolactone) with gamma radiation, by packaging the sheets or numbers of preformed items in bulk to form packages, and subjecting the packages to gamma radiation until the radiation dosage reaches a range of from about 0.5 to about 20 megarads as measured by strategically placed dosimeters.

12. A sheet of material provided by the process of claim 1.

5,378,532

EPOXY RESIN/AMINOFUNCTIONAL POLYSILOXANE FIBER-REINFORCED COMPOSITE

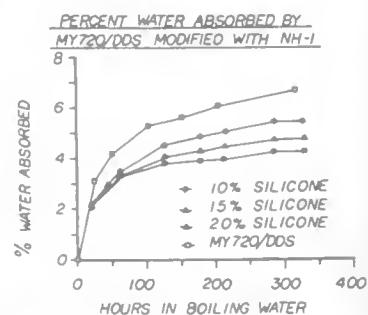
Gary T. Decker, Gerald A. Gornowicz, both of Midland County, Mich., and Kunitaki Tobakuro, Otsu, Japan, assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 92,105, Jul. 16, 1993, which is a division of Ser. No. 811,276, Dec. 20, 1991, Pat. No. 5,262,507, which is a division of Ser. No. 580,741, Sep. 11, 1990, Pat. No. 5,135,993.

This application Apr. 13, 1994, Ser. No. 226,908

Int. Cl.⁶ B32B 17/04, 27/04

U.S. Cl. 428—272



1. A composite comprising:

(I) a cured epoxy resin or a mixture of cured epoxy resins, containing therein an amino functional silicone resin comprising the units

(i) $\text{PhSiO}_3/2$,

(ii) R_2SiO and,

(iii) aminofunctional siloxy units selected from the group consisting of
a. $\text{H}_2\text{NR}^i\text{SiO}_3/2$,

b. $\text{R}^i\text{HNR}^{ii}\text{SiO}_3/2$,

c. $(\text{R}^i\text{HNR}^{ii})_{3-y}(\text{R}^j)_y\text{SiO}_3$,

d. $(\text{H}_2\text{NR}^i)_{3-x}(\text{R}^j)_x\text{SiO}_3$ and, e. mixtures of a, b, c, and d,

wherein Ph is the phenyl radical; each R is independently selected from phenyl and alkyl groups of 1 to 3 carbon atoms with the proviso that when R in (ii) is an alkyl radical in each case, there can be no more than 10 weight percent of (ii) in the silicone resin and with the further proviso that when one R in (ii) is an alkyl radical and one R in (ii) is a phenyl radical on the same silicon atom, there can be no more than 15 weight percent of (ii) present in the silicone resin; R^i is a divalent hydrocarbon radical selected from alkylene, arylene, alkarylene, or aralkylene having 1 to 10 carbon atoms, and $-\text{R}^i\text{HNR}^{ii}-$, wherein R^i and R^{ii} are each independently selected from alkylene, arylene, alkarylene or aralkylene of 1 to 10 carbon atoms: each of x and y have a value of 0, 1, or 2; R^j is selected from methyl, ethyl, propyl or phenyl; R^j is selected from methyl and phenyl, or the aminofunctional silicone resin has an $-\text{NH}-$ equivalent in the range of 350 to 1000, said composite having,

(II) reinforcing fibers embedded therein prior to cure.

5,378,533

ELECTRICALLY CONDUCTIVE EXOTHERMIC COMPOSITION COMPRISING NON-MAGNETIC HOLLOW PARTICLES AND HEATING UNIT MADE THEREOF

Takashi Ota, Takarazuka, Japan, assignor to Fujii Kinzoku Kako Co., Ltd., Osaka, Japan, a part interest

Continuation-in-part of Ser. No. 551,161, Jul. 11, 1990,

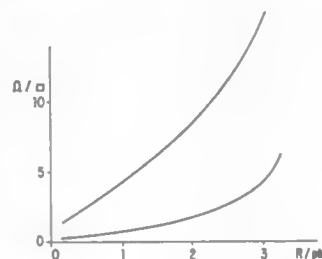
abandoned. This application Sep. 8, 1992, Ser. No. 941,687

Claims priority, application Japan, Jul. 17, 1989, 1-182419

Int. Cl.⁶ B32B 5/16

U.S. Cl. 428—304.4

3 Claims



1 Claim

1. An electrically conductive exothermic coating or paste comprising an electrically conductive particle powder and a synthetic resin binder in a ratio of about 25 to about 360 parts by weight of resin binder to 100 parts by weight of particle powder, said powder having a bulk density of 0.2 to below 0.9 g/cm³ and comprising non-magnetic hollow spherical particles of glass or of a heat-resistant resin, said particles being between 4 to 350 μm in size and plated with a metallic material to a thickness of at least 0.03 μm , said metallic material being stable against oxidization during use, said coating or paste producing heat upon application of an electric voltage.

5,378,534

RECORDING SHEETS

Norio Kuroanagi, Tokyo, and Mamoru Sakai, Urawa, both of Japan, assignors to Sansui Co., Ltd., Saitama, Japan

PCT No. PCT/JP91/00079, § 371 Date Jun. 22, 1992, § 102(e)

Date Jun. 22, 1992, PCT Pub. No. WO91/11686, PCT Pub.

Date Aug. 8, 1991

PCT Filed Jan. 25, 1991, Ser. No. 915,828

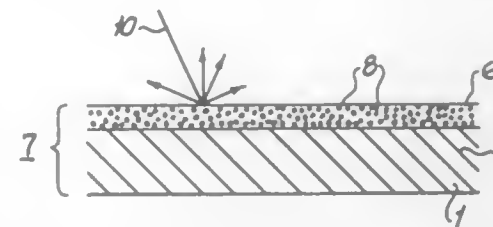
Int. Cl.⁶ B32B 5/16

U.S. Cl. 428—327

9 Claims

1. Recording paper comprising a colored substrate coated on at least on surface with an opaque layer comprising a mixture

in a ratio of between 1:9 and 9:1, respectively, of an aqueous suspension opacifying polymer particles having voids therein



and a polymeric film forming vehicle, said mixture being uniformly applied to said substrate and thereafter dried.

5,378,535

PRIMER SYSTEM FOR SILICONE ELASTOMERS

Marlowe V. Moncur, Irvine; Janet A. Andrechak, Cypress, and Clifford D. Jeungst, Aliso Viejo, all of Calif., assignors to Pilkington Aerospace, Inc., Garden Grove, Calif.

Filed Jul. 29, 1992, Ser. No. 922,173

Int. Cl.⁶ B32B 17/06, 25/20

U.S. Cl. 428—335

32 Claims

1. A primer system for adhering a silicone elastomer to a substrate, comprising

(a) a first layer of a silica-based adhesion promoter which is applied to at least one surface of the substrate, the silica-based adhesion promoter layer having a thickness from about 0.001 to about 0.5 microns; and

(b) a second layer of an organosilane primer which is applied over the silica-based adhesion promoter layer, wherein the organosilane includes silanol groups or functional groups that can be hydrolyzed to silanol, and polymerizable alkene and silicon hydride functional groups, and the organosilane primer layer has a thickness from about 0.01 to about 50 microns.

5,378,536

REPOSITIONABLE ADHESIVE TAPE

John A. Miller, Woodbury, and George J. Clements, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

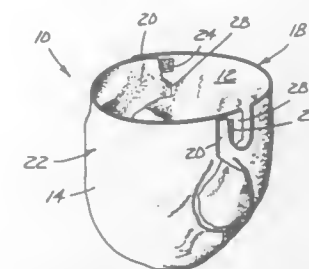
Division of Ser. No. 681,655, Apr. 8, 1991. This application Apr.

27, 1992, Ser. No. 874,717

Int. Cl.⁶ C09J 7/02

U.S. Cl. 428—355

5 Claims



1. An resealable cohesive adhesive closure system comprising;
an article having at least one resealable cohesive adhesive closure,
the at least one adhesive closure comprising two opposing closure elements at separate locations on said article, said opposing closure elements capable of overlapping to form said at least one resealable article adhesive closure,

self-adhering adhesive on each of said at least two closure elements comprising by weight:

from 20 to 80 parts of at least one elastomeric block copolymer selected from the group consisting of styrene/butadiene, styrene/isoprene, and styrene/ethylene-butylene block copolymers, and

correspondingly from 80 to 20 parts of tackifying material selected from tackifier resin and a blend of tackifier resin and liquid plasticizer oil; which self-adhering adhesive has a composite midblock glass transition temperature (CMTg) from 225 Kelvin to 240 Kelvin when the adhesive is based on styrene/isoprene or styrene/ethylene-butylene block copolymers and a CMTg from 215 Kelvin to 235 Kelvin when the adhesive is based on styrene/butadiene block copolymer.

5,378,537

POLYESTER MONOFILAMENT

Toyohiko Masuda, Shizuoka; Takehiko Miyoshi, Mishima, and Yoshinori Horii, Shizuoka, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP91/01405, § 371 Date Jun. 17, 1992, § 102(e)

Date Jun. 17, 1992, PCT Pub. No. WO92/07162, PCT Pub.

Date Apr. 30, 1992

PCT Filed Oct. 15, 1991, Ser. No. 861,821

Claims priority, application Japan, Oct. 19, 1990, 2-282819

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—364

10 Claims



1. A polyester monofilament having a terminal carboxyl group concentration of not more than 10 equivalent weights/10⁶ g of polyester and comprising a carbodiimide compound blended in an unreacted state in an amount of not less than 0.005% by weight and not more than 1.5% by weight and a random copolymer having tetrafluoroethylene and ethylene as main components in an amount of not less than 0.01% by weight and not more than 30% by weight.

5,378,538

AROMATIC POLYAMIDE FLAT YARN

Osamu Makino, Matsuyama, and Michikage Matsui, Katano, both of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP92/01649, § 371 Date Aug. 12, 1993, § 102(e)

Date Aug. 12, 1993, PCT Pub. No. WO93/12274, PCT Pub.

Date Jun. 24, 1993

PCT Filed Dec. 18, 1992, Ser. No. 104,105

Claims priority, application Japan, Dec. 18, 1991, 3-353177

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—364

2 Claims

1. An aromatic polyamide filament having a cross-sectional profile wherein the ratio of the major axis to the minor axis is 1.5 to 5, thereby providing a flattened configuration, and having an individual filament thickness of 1 denier or more but less than 50 deniers, a tensile strength of 18 g/denier or more, an ultimate elongation of 3.5% or more and a Young's modulus of 400 g/denier or more.

5,378,539
CROSS-LINKED MELT PROCESSIBLE
FIRE-RETARDANT ETHYLENE POLYMER
COMPOSITIONS

Mark C. Chen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 17, 1992, Ser. No. 853,088

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—378

15 Claims

1. A thermoplastic ethylene polymer composition comprising:

- (a) 50–95 parts of an ethylene copolymer of ethylene and at least one other monomer selected from vinyl acetate and esters of acrylic or methacrylic acid and optionally up to 2 weight percent of acrylic or methacrylic acid;
- (b) 5–45 parts of polyethylene, provided that when the polyethylene is high density polyethylene or medium density polyethylene it does not exceed 40 weight percent of the combined weight of (a) and (b); and
- (c) the following per 100 parts of (a) plus (b):
 - (i) 100–140 parts of an inorganic fire retardant;
 - (ii) 0.05–0.6 parts of a cross-linking initiator;
 - (iii) 0.1–1.0 parts of a cross-linking coagent;
 - (iv) 0–10 parts of a coupling agent;
 - (v) 0–10 parts of a compatibilizing agent; and
 - (vi) 0 to 40 parts of calcium carbonate, zinc carbonate or zinc borate hydrate.

5,378,540
ABSORBABLE COATING AND BLEND AND SUTURE
COATED THEREWITH

James R. Olson, Norwich, Conn., assignor to Deknatel Technology Corporation, Inc., Fall River, Mass.

Continuation of Ser. No. 793,766, Nov. 18, 1991, abandoned, which is a division of Ser. No. 291,486, Dec. 29, 1988, abandoned. This application Aug. 24, 1993, Ser. No. 111,030

Int. Cl.⁶ B32B 27/00; A61L 17/00

U.S. Cl. 428—394

2 Claims

1. An absorbable surgical suture comprising at least one filament of poly(glycolic acid) coated with an absorbable coating which comprises a blend of about 95 to about 5% by weight a homopolymer of ϵ -caprolactone and about 5 to about 95% by weight of a crystallization modifier selected from the group consisting of crystalline fatty acids and crystalline esters of fatty acids which are saturated C_{12} – C_{18} fatty acid esters of polyhydric alcohols.

5,378,541
SILICON THIN FILM MEMBER
Hisanori Ihara, and Hidetoshi Nozaki, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 17, 1992, Ser. No. 899,916
Claims priority, application Japan, Jun. 20, 1991, 3-148852; Nov. 29, 1991, 3-317084

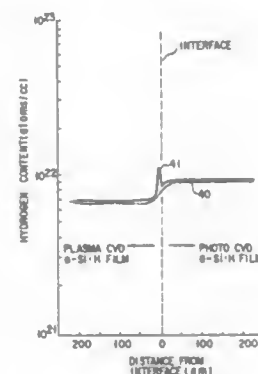
Int. Cl.⁶ B32B 17/06

U.S. Cl. 428—428

12 Claims

1. A silicon thin film member comprising a supporting substrate containing hydrogen, and a CVD film containing silicon and hydrogen supported on said supporting substrate wherein said CVD film has a distribution of hydrogen density in which the hydrogen content of said CVD film has a maximum value in a position 20 nm or less away from the interface between said CVD film and said supporting

substrate and the maximum value is larger than the hydrogen content of said supporting substrate,



and where said maximum value of said hydrogen content in said CVD film is at least 1×10^{22} atoms/cm³.

5,378,542
PROCESS FOR SIMULTANEOUSLY COATING
MULTIPLE LAYERS OF THERMOREVERSIBLE
ORGANOGELES AND COATED ARTICLES PRODUCED
THEREBY

Kenneth L. Hanzalik, Arden Hills; George H. Crawford, Jr., White Bear Lake; Sharon M. Rozzi, Stillwater, all of Minn., and David J. Scanlan, Fairport, N.Y., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 30,780, Mar. 12, 1993, Pat. No. 5,340,613. This application Jun. 6, 1994, Ser. No. 254,531

Int. Cl.⁶ B32B 27/06, 27/36

U.S. Cl. 428—483

5 Claims

1. A coated article prepared by the process comprising the steps of:

- (a) simultaneously applying at least two molten thermoreversible organogel layers to a substrate, said organogel layers consisting essentially of a polymer; an organic solvent or blend of organic solvents; and one or more non-gelling additive ingredients dispersed therein and which remain confined within each of said organogel layers; and
- (b) chilling the molten, thermoreversible organogel layers, thereby causing them to gel.

5,378,543
THERMOPLASTIC ELASTOMER LAMINATES AND
GLASS RUN CHANNELS MOLDED THEREFROM
Kazuhiko Murata; Norishige Murakami, both of Ichihara; Kyooji Muraoka, Waki, and Noboru Sakamaki, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Division of Ser. No. 872,158, Apr. 22, 1992, Pat. No. 5,302,463. This application Dec. 13, 1993, Ser. No. 165,646
Claims priority, application Japan, Apr. 22, 1991, 3-90666; Apr. 22, 1991, 3-90667; Apr. 22, 1991, 3-90668; Apr. 26, 1991, 3-97636; May 10, 1991, 3-105918; May 10, 1991, 3-105919; May 10, 1991, 3-105920

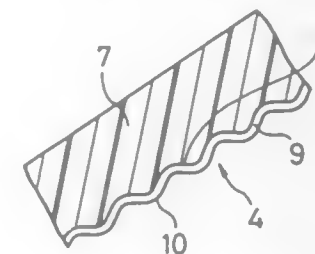
Int. Cl.⁶ B32B 27/08

U.S. Cl. 428—517

8 Claims

1. A thermoplastic elastomer laminate which comprises a layer comprising a graft-modified thermoplastic elastomer (GA) and a layer comprising an ultra-high molecular weight polyolefin (B), said graft-modified thermoplastic elastomer (GA) being obtained by dynamic heat treatment and partial cross-linking of a blend in the presence of an organic peroxide, said blend containing

- (i) 95–10 parts by weight of a peroxide cross-linking olefin copolymer rubber,
- (ii) 5–90 parts by weight of a polyolefin (the sum total of the (i) and (ii) components is 100 parts by weight) and



- (iii) 0.01–10 parts by weight of an α,β -unsaturated carboxylic acid or its derivatives, or an unsaturated epoxy monomer.

5,378,544
WOOD COMPOSITES WITH LIGHT COLORED GLUE
LINES

Marek J. Gnatowski, Coquitlam; Robert L. Pike, Vancouver, and Douglas E. Rogerson, Richmond, all of Canada, assignors to Trus Joist MacMillan, a Limited Partnership, Boise, Id.

Filed May 3, 1993, Ser. No. 56,497

Int. Cl.⁶ B32B 21/08, 27/42, 31/12

U.S. Cl. 428—529

12 Claims

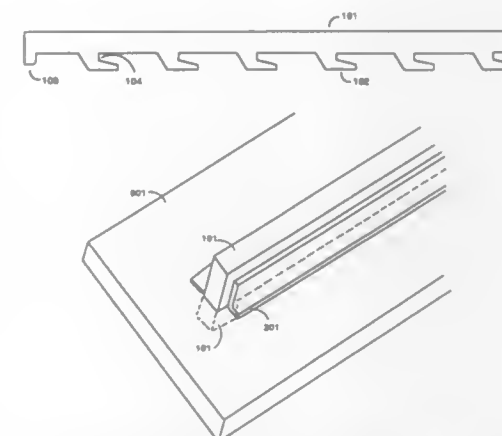
1. A composite wood product comprising a plurality of discrete wood elements secured together by a cured bisphenol A formaldehyde resin cured from a water soluble bisphenol A formaldehyde resin having bisphenol A to formaldehyde molar ratio of 1 mole of A-stage bisphenol A to between 2.5 to 4 moles of formaldehyde and a caustic content measured as sodium hydroxide of 3 to 11% based on the weight of the resin solids, said composite wood product having light colored glue lines substantially corresponding in color with the wood.

5,378,545
REMOVABLE SNAP-ON CARD STIFFENER
Orest B. Akulow, Villa Park, Ill., assignor to AG Communication Systems Corporation, Phoenix, Ariz.
Filed Apr. 2, 1993, Ser. No. 42,485

Int. Cl.⁶ H05K 1/18

U.S. Cl. 428—573

1 Claim



1. A removable stiffener for providing stiffness to a card, said card having a top and a bottom, said card having a plurality of holes extending from said top to said bottom, said removable stiffener comprising:
a center rod having a rectangle cross-section, said center rod having a longitudinal length perpendicular to said rectan-

gle cross-section, said center rod having a bottom, a first side and a second side, and a first end;

a plurality of wedge-shaped feet firmly attached to said bottom of said center rod along said longitudinal length, said plurality of wedge-shaped feet extend through said plurality of holes in said card thereby allowing center rod to provide additional stiffness to said card;

a first flange having a first face and a second face, where said first face is perpendicular to said second face, said first face of said first flange attached to said first side of said center rod, when said plurality of wedge-shaped feet extend through said plurality of holes in said card, said second face of said first flange firmly rests against said card;

a second flange having a first face and a second face, where said first face is perpendicular to said second face, said first face of said second flange attached to said second side of said center rod, when said plurality of wedge-shaped feet extend through said plurality of holes in said card, said second face of said second flange firmly rests against said card, said first flange and said second flange prevent rotational movement about said rectangle cross-section of said center rod; and

a latching pin firmly attached to said bottom on said first end of said center rod, said latching pin holding said plurality of wedge-shaped feet in said plurality of holes in said card.

5,378,546
POLYMERIC VEHICLE FOR COATINGS
Frank N. Jones, Fargo, N. Dak.; Der-Shyang Chen, Winnipeg, Canada; Adel F. Dimian, and Daozhang Wang, both of Fargo, N. Dak., assignors to North Dakota State University, Fargo, N. Dak.

Continuation of Ser. No. 695,421, May 3, 1991, Pat. No. 5,244,699, which is a division of Ser. No. 170,907, Mar. 21, 1988, Pat. No. 5,043,192, which is a continuation-in-part of Ser. No. 168,231, May 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 86,504, Aug. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 31,395, Mar. 27, 1987, abandoned, and a continuation-in-part of Ser. No. 31,397, Mar. 27, 1987, abandoned. This application Mar. 25, 1993, Ser. No. 36,820

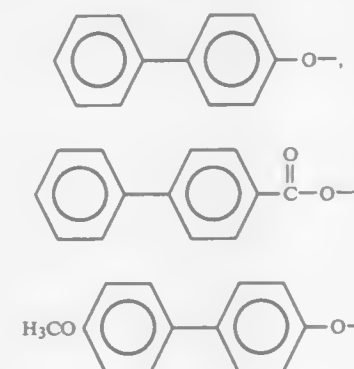
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.⁶ C08F 20/00

U.S. Cl. 428—1

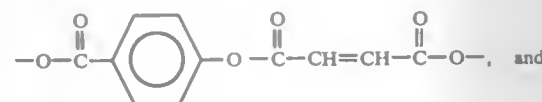
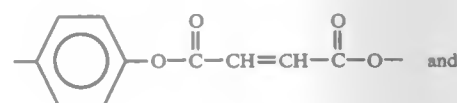
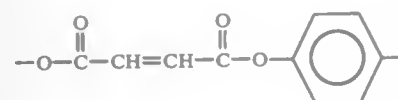
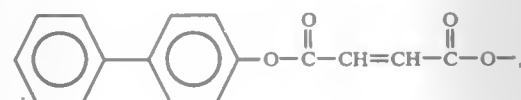
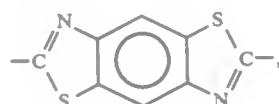
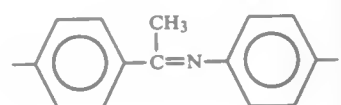
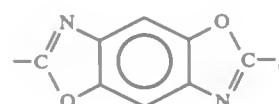
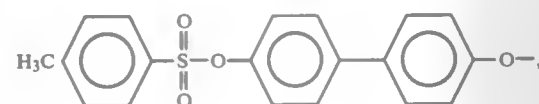
13 Claims

1. A polymeric vehicle which when applied to a substrate provides a coating binder having a T_g not greater than about 60° C., a pencil hardness of at least about H, and a reverse impact resistance of at least about 30 inch-lbs. at a binder thickness of about 1 mil, said polymeric vehicle comprising:

(a) from about 100 to about 35 weight percent, based upon the weight of the polymeric vehicle, of a modified polymer, said modified polymer being a polyester polymer covalently bound to at least one mesogenic group selected from the group consisting of:



-continued



(b) from about 0 to about 65 weight percent, based upon the weight of the polymeric vehicle, of a composition selected from the group consisting of cross-linker resin, unmodified polymer resin, and mixtures thereof and wherein the modified polymer is modified to contain about 5 to about 50 weight percent mesogenic groups.

5,378,547 MAGNETIC POWDER FOR MAGNETIC RECORDING AND MAGNETIC RECORDING MEDIUM CONTAINING THE SAME

Osamu Kubo; Tatsumi Maeda; Tutomu Nomura; Shunji Kurisu, and Etsuji Ogawa, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 16, 1992, Ser. No. 869,298

Claims priority, application Japan, Apr. 18, 1991, 3-86376; Apr. 10, 1992, 4-90644

Int. Cl.⁶ G11B 5/66

U.S. Cl. 428—694 BA 5 Claims

1. A magnetic recording medium comprising:
a non-magnetic base,
a magnetic layer formed on the non-magnetic base, said layer having a resin binder, and
a magnetic powder being dispersed into the resin binder, wherein said magnetic powder comprises a mixture of:
composite magnetic particles (A), each of said particles (A) containing hexagonal ferrite and spinel structure ferrite; and
single phase magnetic particles of hexagonal ferrite (B).

5,378,548 MAGNETIC RECORDING MEDIUM AND ITS MANUFACTURING PROCESS

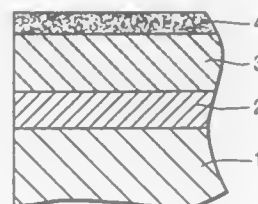
Hideo Torii; Eiji Fujii; Masumi Hattori; Masaki Aoki, all of Osaka, and Kiyoshi Kuribayashi, Yamanashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 11, 1991, Ser. No. 713,285

Claims priority, application Japan, Jun. 11, 1990, 2-151955; Nov. 19, 1990, 2-313519; Nov. 19, 1990, 2-313521

Int. Cl.⁶ G11B 5/66

U.S. Cl. 428—694 TS 2 Claims



1. A magnetic recording medium comprising:
a glass substrate disk;
an under layer formed on at least one surface of the glass substrate disk, said under layer comprising a layer of a spinel crystal structured magnetic iron oxide layer laminated on a layer of a sodium chloride crystal structured oxide layer, said spinel crystal structured magnetic iron oxide having a spinel crystal structure as determined by X-ray diffraction and comprising an iron oxide containing at least one element selected from the group consisting of zinc, manganese and nickel, and said sodium chloride crystal structured oxide having a sodium chloride crystal structure with crystal orientation in a <100> direction perpendicular to the surface of the glass substrate as determined by X-ray diffraction and containing at least one oxide selected from the group consisting of NiO, CoO and MnO;
a layer of a ferromagnetic Co-containing iron oxide formed on a surface of the under layer in the form of columnar grains which are densely arranged perpendicularly to the surface of the under layer, said ferromagnetic Co-containing iron oxide having a spinel crystal structure with crystal orientation in a <100> direction perpendicular to the surface of the under layer as determined by X-ray diffraction; and

a lubricant layer formed on the layer of the ferromagnetic Co-containing iron oxide;
wherein the under layer is different from the layer of the ferromagnetic Co-containing iron oxide.

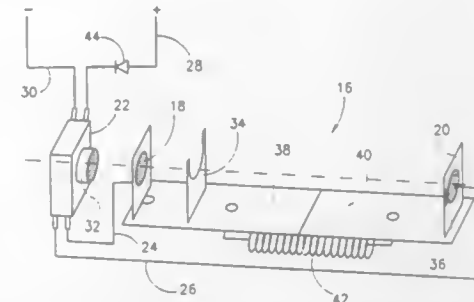
5,378,549 POLARITY ADJUSTING BATTERY RECEPTOR

Dan Eylon, 10 Ben Yosef Ramat Aviv G, 69125 Tel Aviv, Israel

Filed Aug. 2, 1993, Ser. No. 100,852

Int. Cl.⁶ H01M 2/02

U.S. Cl. 429—1 13 Claims



1. A battery receptor with reversible polarity to render operative a battery connected to the receptor regardless of the orientation of the inserted battery, comprising:
(a) a first receptor electrical contact;
(b) a second receptor electrical contact; and
(c) a polarity-reversing assembly electrically connected to said first and second receptor electrical contacts for reversing the polarity of said first and second receptor electrical contacts, said polarity-reversing assembly being in a first polarity condition when the battery is inserted in a first orientation and in a second polarity condition when the battery is inserted in a second orientation.

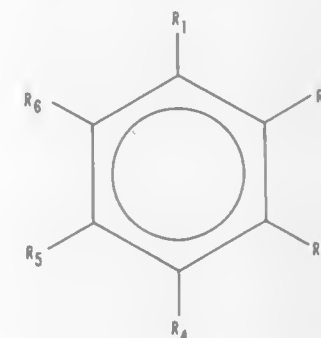
5,378,550 ELECTROLYTES FOR POWER SOURCES

Narayan Doddapaneni, and David Ingersoll, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 15, 1993, Ser. No. 153,416

Int. Cl.⁶ H01M 6/16

U.S. Cl. 429—13 34 Claims



1. A power source comprising an electrolyte comprising a parent benzene ring with bonds outside said parent benzene ring to R₁, R₂, R₃, R₄, R₅, and R₆, where R₁, R₂, R₃, R₄, R₅, and R₆ each comprise a member selected from the group consisting of H, SO₃H, SO₃X, R'H, R'SO₃H, R'SO₃X, PO₃H, PO₃X, R'PO₃H, and R'PO₃X, where X comprises a cation and R' comprises an aliphatic chain, an aromatic ring system, or a combination of an aliphatic chain and an aromatic ring system.

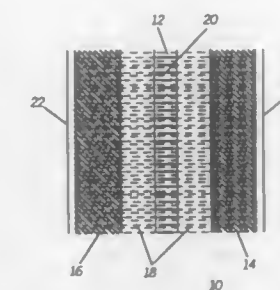
5,378,551 RECHARGEABLE BATTERY CELL HAVING INTEGRAL VIBRATING MEANS

Vernon Meadows, Coral Springs; George Thomas, Plantation, and Anaba A. Anani, Lauderhill, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 19, 1993, Ser. No. 93,570

Int. Cl.⁶ H01H 2/14

U.S. Cl. 429—66 15 Claims



1. A rechargeable battery cell, comprising:
a positive electrode;
a negative electrode; and
an electrolyte disposed between the positive electrode and the negative electrode, the electrolyte comprising a piezoelectric material.

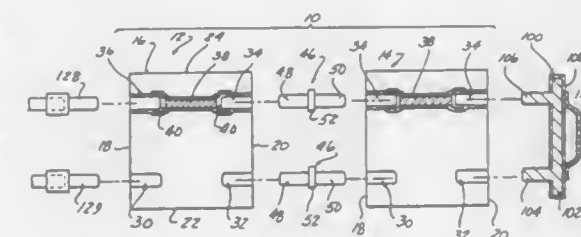
5,378,552 MODULAR BATTERY SYSTEM COMPRISING INDIVIDUAL INTERCONNECTED MODULES

Alfred R. Dixon, Jr., 4023 Far Hill, Bloomfield Hills, Mich. 48304

Filed Mar. 16, 1994, Ser. No. 213,955

Int. Cl.⁶ H01M 2/24

U.S. Cl. 429—91 38 Claims



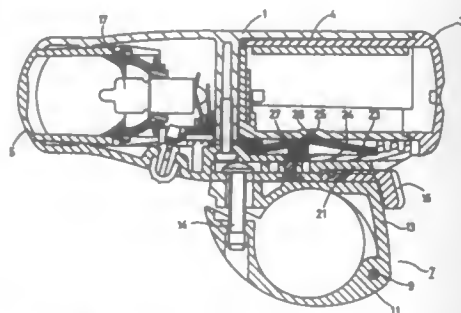
1. A battery comprising:
a case containing electroactive material, the case formed with a plurality of exterior walls;
a first connector mounted in one exterior wall of the case and electrically connected to the electroactive material in the case to form a first positive electrode;
a second connector mounted in an external wall of the case and electrically connected to the electroactive material in the case to form a second negative electrode;
electrical conductor means, mounted in the case, and extending between external walls of the case, for forming a conductive path through the case;
third and fourth connectors, mounted on the case and connected to opposite ends of the electrical conductor means; and
jumper means, insertable into the second and third connectors for electrically connecting the second connector through the electrical conductor means in the case to the fourth connector.

5,378,553
BATTERY CASE ATTACHING UNIT INCLUDING HOUSING AND BATTERY CASE AND STOPPER FOR SECURING BATTERY CASE IN HOUSING
 Masao Shoji, Osaka, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan

Filed Mar. 10, 1993, Ser. No. 29,176
 Claims priority, application Japan, Mar. 13, 1992, 4-012772[U]

Int. Cl.⁶ H01M 2/10
 U.S. Cl. 429—97

6 Claims



1. A battery case attaching unit, comprising:
 an attaching piece adapted to be fixed on a part of a bicycle or a motorcycle;
 a component for the bicycle or the motorcycle detachably fitted with said attaching piece, said component including a housing;
 a battery case accommodating a battery therein, which can be inserted into said housing of said component for the bicycle or the motorcycle; said battery case having a recess portion therein; and a stopper provided in said housing between said housing and said battery case and including a first protrusion fitting into the recess portion provided in said battery case, said stopper including a second protrusion on the stopper facing in an opposite direction and extending through an opening in the housing for engaging a portion of said attaching piece, and, said second protrusion on the stopper moving in a direction toward a portion fitting with said attaching piece when said battery case is gradually inserted into the housing and said first protrusion returning to an original position when accommodation of said battery case is completed, and for preventing slipping of said battery case from said housing; said portion of said attaching piece engaging said second protrusion and preventing movement of said first protrusion of said stopper from said recess in said battery case when said component for the bicycle or the motorcycle is fitted in said attaching piece, with said battery case accommodated in said housing.

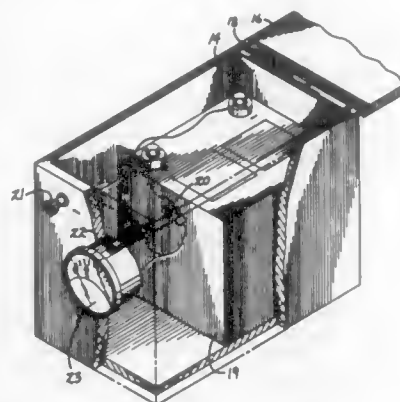
5,378,554
BATTERY CONTROL BOX
 Donald W. Moses, 448 S. Wheeling, Kansas City, Mo. 64123
 Filed May 24, 1993, Ser. No. 65,396
 Int. Cl.⁶ H01M 002/10

U.S. Cl. 429—97

1 Claim

1. A battery control box, comprising,
 a housing, the housing having a floor, spaced side walls, a rear wall, a front wall, and a lid, the lid having a hinge pivotally mounting the lid to the rear wall, with the lid including at least one latch permitting selective fixed engagement of the lid relative to the housing structure, with a battery mounted to the floor, and
 a first terminal and a second terminal directed through the front wall, with the battery having a first battery post and a second battery post, the first battery post in electrical communication with the first terminal, and the second battery post in electrical communication with the second terminal, and
 a volt meter directed through the front wall in operative

communication with the first terminal and the second terminal for indication of electrical voltage availability of the battery, and
 a cigarette lighter member directed through the front wall in electrical communication with the battery, and a multi-position switch, with the multi-position switch permitting selective electrical communication of the battery and volt meter to the first terminal, second terminal, and the cigarette lighter, and



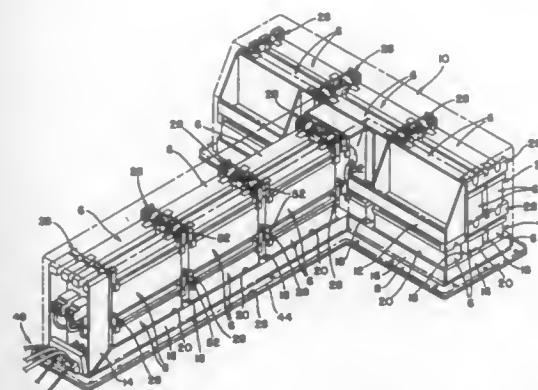
- including a battery charger unit mounted to the floor, having an electrical supply cable in electrical communication with the battery through the battery charger unit, and a plurality of L-shaped flanges mounted to the lid within the housing, with the electrical supply cable wound about the L-shaped flanges during storage of the electrical supply cable, and
 a continuous resilient sealing ring mounted to the side walls, rear wall, and front wall for contiguous communication with the lid, when the lid is in contiguous communication with the front wall.

5,378,555
ELECTRIC VEHICLE BATTERY PACK
 John E. Waters, Fishers; Brent A. Harris, Alexandria; Ross A. Gresley; William E. Boys, both of Anderson, and Daniel R. Brouns, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1993, Ser. No. 172,705
 Int. Cl.⁶ H01M 2/10

U.S. Cl. 429—97

26 Claims



1. A battery pack for an electric vehicle comprising a plurality of individual batteries ganged together and nesting in an underlying supporting tray, and interlock means engaging the ends of said batteries for preventing relative movement between adjacent batteries in the pack, said supporting tray comprising a plurality of intersecting, upstanding walls stiffen-

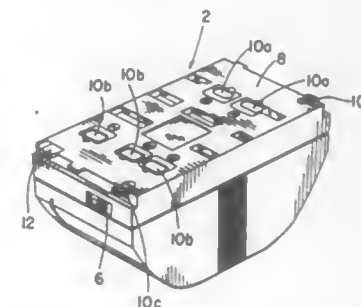
ing said tray and defining a plurality of pockets each receiving a one of said batteries, a perimetrical flange extending outboard said upstanding walls, a housing enclosing said pack, said housing comprising a ceiling wall, a plurality of side walls depending from said ceiling wall, and a peripheral flange extending outwardly from the edges of said sidewalls opposite said ceiling wall and overlying said perimetrical flange, a resilient spacer compressed between said ceiling wall and the tops of the batteries, and fastener means joining said perimetrical and peripheral flanges securely together so as to provide a rigid structure which provides structural strength to said vehicle while substantially immobilizing the batteries against movement.

5,378,556
BATTERY PACK
 Kin H. Yang, Hong Kong, Hong Kong, assignor to Dual Voltage Co. Ltd., Kowloon, Hong Kong
 Continuation of Ser. No. 42,812, Apr. 5, 1993, abandoned. This application Apr. 20, 1994, Ser. No. 231,438

U.S. Cl. 429—99

Int. Cl.⁶ H01M 2/10

2 Claims

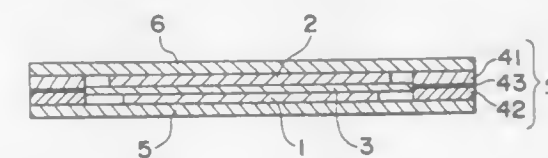


1. A battery pack for powering at least two different types of camcorders and being charged by at least two corresponding different types of chargers, the pack comprising:

- (a) a body having a plurality of walls defining a cavity for receiving one or more batteries;
 (b) a connector plate on the outside of the body for connecting the pack to the at least two camcorders and the at least two chargers, the connector plate including a plurality of locking formations and electrical connection points, the locking formations being releasably engageable with a plurality of complementary locking formations on the at least two camcorders and the at least two chargers to thereby selectively connect the pack with one of said at least two camcorders and said at least two chargers, whereby the electrical connection points are electrically connected to corresponding connection points on the at least two camcorders and the at least two chargers; and
 the pack includes a tab which is movable laterally relative to the connector plate between a first position in which the plate is able to selectively connect with complementary locking formations on one of the at least two camcorders and one of the at least two chargers and second position in which the plate can connect with different complementary locking formations on the other one of at least two camcorders and the other one of at least two chargers, said plate being unable to connect with said different complementary locking formations of said other one of the at least two camcorders and said other one of the at least two chargers when the movable tab is in the first position.

5,378,557
FILM TYPE BATTERY
 Kazuo Murata; Kenichi Takeuchi; Syuichi Izuchi, and Shiro Kato, all of Takatsuki, Japan, assignors to Yusa Corporation, Osaka, Japan
 PCT No. PCT/JP92/01007, § 371 Date Apr. 7, 1993, § 102(e) Date Apr. 7, 1993, PCT Pub. No. WO93/03504, PCT Pub. Date Feb. 18, 1993
 PCT Filed Aug. 6, 1992, Ser. No. 39,158
 Claims priority, application Japan, Aug. 9, 1991, 3-224654; Oct. 16, 1991, 3-298238
 Int. Cl.⁵ H01M 2/08
 U.S. Cl. 429—127

7 Claims



1. A film battery comprising a generating element which is formed by laminating a negative active material layer, an electrolyte layer and a positive active material layer, terminal plates which are installed on and under the generating element and serve also as a current collector and a container, and a frame-shaped sealing material which is installed on peripheral edges of the terminal plates, seals the generating element in between the both terminal plates and insulates one terminal plate from the other; wherein the sealing material is formed into a vertical multi-layer structure in which at least one layer is made of metal and the others are made of an electrical insulator material, and wherein the electric insulator layer of the sealing material consists essentially of a single synthetic resin composition.

5,378,558
COMPOSITE ELECTROLYTES FOR ELECTROCHEMICAL DEVICES
 Stephen F. Hope, 2231 Papermill Rd., Huntingdon Valley, Pa. 19006

Continuation-in-part of Ser. No. 775,100, Oct. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 568,170, Aug. 16, 1990, Pat. No. 5,102,752. This application Jan. 7, 1993, Ser. No. 1,145

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.⁶ H02M 10/40

U.S. Cl. 429—192

4 Claims

1. A solid or semi-solid state electrolyte composite for electrochemical devices wherein the electrolyte composite consists of
 an inert, electrically insulating net of porous fiber material, which has been impregnated with and is embedded in an ionically conductive solid or semi-solid state matrix, said net is of polybenzobisoxazole fibers, and
 said solid or semi-solid state matrix is formed from an ion conductive liquid which has been complexed with an alkali metal, or alkaline earth metal trifluoromethane sulfonate salt and polyethylene oxide.

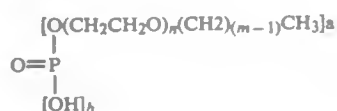
5,378,559
PHOSPHATE ESTER ADDITIVE TO ALKALINE CELLS TO REDUCE GASSING
 Christopher F. Randell, Durham City, and David Kilby, Durham, both of United Kingdom, assignors to Eveready Battery Company, Inc., St. Louis, Mo.
 Filed Nov. 22, 1993, Ser. No. 155,676
 Int. Cl.⁶ H01M 4/36, 10/24

U.S. Cl. 429—206

20 Claims

1. A galvanic cell comprising a conductive container; a cathode electrode in electronic contact with the container and

said container functioning as a first terminal of the cell; a conductive cover for the container functioning as a second terminal of the cell; a separator disposed within said cathode electrode to form a cavity within said cathode electrode, said separator permitting ion transport; a zinc-containing anode electrode disposed within said cavity and electronically insulated from the cathode electrode by said separator; an electrolyte; a brass anode current collector in electronic contact with said anode electrode and in electronic contact to the second terminal of the cell and wherein said cell contains a phosphate ester having the formula:



wherein b is greater than 1.9;

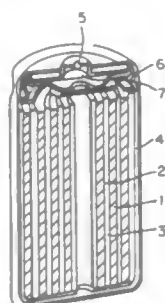
a+b=3;

n is 3;

m is 13;

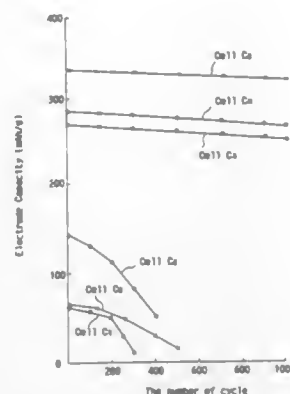
and the ratio of the monoester component of the phosphate ester to the diester component of the phosphate ester is greater than 9.

5,378,560
NONAQUEOUS SECONDARY BATTERY
Hideki Tomiyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jan. 19, 1994, Ser. No. 183,335
Claims priority, application Japan, Jan. 21, 1993, 5-008434; May 11, 1993, 5-109383; Jul. 19, 1993, 5-198826
Int. Cl.⁶ H01M 4/62
U.S. Cl. 429-217 16 Claims



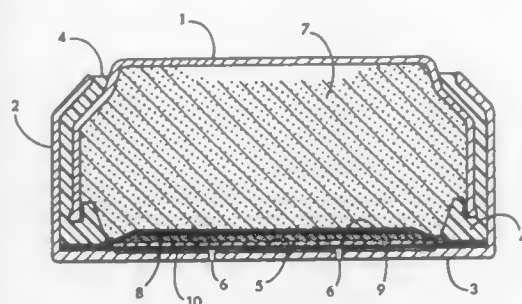
1. A nonaqueous secondary battery comprising a positive electrode active material, a negative electrode active material, and an electrolyte having ionic conductivity, said battery containing, as a binder, a carboxyl-modified styrene-butadiene copolymer in the positive electrode material mixture thereof and/or the negative electrode material mixture thereof and using at least one chalcogen compound of a transition metal as a positive electrode active material and at least one chalcogen compound of a transition metal as a negative electrode active material.

5,378,561
SECONDARY CELL
Nobuhiro Furukawa; Masahisa Fujimoto; Noriyuki Yoshinaga, all of Osaka, and Koji Ueno, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Sep. 1, 1992, Ser. No. 937,728
Claims priority, application Japan, Oct. 8, 1991, 3-260738
Int. Cl.⁶ H01N 10/40; C01B 31/07
U.S. Cl. 429-218 33 Claims



1. A secondary cell comprising an electrode consisting essentially of a carbon material wherein the spacing of (002) planes d₀₀₂ and true density of the carbon material are from 3.39 Å to 3.62 Å and from 1.70 g/cc to 2.20 g/cc, respectively.

5,378,562
METHOD OF MAKING AIR CATHODE MATERIAL HAVING CATALYTICALLY ACTIVE MANGANESE COMPOUNDS OF VALANCE STATE +2
Joseph L. Passaniti, and Robert B. Dopp, both of Madison, Wis., assignors to Rayovac Corporation, Madison, Wis.
Division of Ser. No. 15,641, Feb. 9, 1993, Pat. No. 5,308,711.
This application Feb. 1, 1994, Ser. No. 190,781
Int. Cl.⁶ H01M 4/36, 4/88
U.S. Cl. 429-224 5 Claims



1. A method of making an air cathode material for an electrochemical metal-air cell, comprising the steps of:
(a) combining potassium permanganate and water to form an aqueous potassium permanganate solution;
(b) mixing carbon particles into the aqueous potassium permanganate solution to form a reaction mixture;
(c) reacting the mixture at room temperature for sufficient time to permit the potassium permanganate compounds to react therein with the carbon particles and thereby to form a reaction product of water, carbon particles, and manganese compounds substantially all of valence state +2, and
(d) drying the reaction product to yield the air cathode material.

5,378,563
METHOD FOR CORRECTING IMAGE DENSITY IN THERMO-OPTIC RECORDING
Wataru Ito, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 1, 1993, Ser. No. 130,237
Claims priority, application Japan, Oct. 7, 1992, 4-268516
Int. Cl.⁶ G03C 5/02
U.S. Cl. 430-30 4 Claims

1. In a thermo-optic recording apparatus wherein a laser beam is modulated in accordance with an image signal, a thermosensitive recording material, which is composed of a substrate and a color forming agent, a developing agent, and a light absorbing dye, which are overlaid on the substrate, is scanned with the modulated laser beam, and an image represented by the image signal is thereby recorded on the thermosensitive recording material,

a method for correcting image density in thermo-optic recording, comprising the steps of:

- recording a density pattern, which is constituted of a plurality of sections whose densities vary stepwise, on a portion of the thermosensitive recording material with the laser beam before the image is recorded on the thermosensitive recording material,
- measuring the densities of the respective sections of the density pattern having been recorded on the portion of the thermosensitive recording material,
- creating a conversion table in accordance with the results of measurements of the densities of the respective sections of the density pattern, the conversion table being used during conversion processing carried out on the image signal such that the image may be recorded with an appropriate image density range on the thermosensitive recording material, and
- carrying out conversion processing on the image signal in accordance with the conversion table when the image is recorded on the thermosensitive recording material, on which the density pattern has been recorded; wherein the plurality of sections of the density pattern, whose densities vary stepwise, are located in a random order.

5,378,564
ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR
Takao Nakayama; Shigeyuki Dan, and Hidefumi Sera, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 24, 1993, Ser. No. 21,682
Claims priority, application Japan, Feb. 24, 1992, 4-036460; Feb. 24, 1992, 4-036461
Int. Cl.⁶ G03G 5/14
U.S. Cl. 430-49 15 Claims

1. An electrophotographic lithographic printing plate precursor comprising, at least, a photoconductive layer on one side of a support and an under layer directly under the photoconductive layer, in which the under layer consists of a plurality of layers comprising an outermost layer having a surface resistivity of at most $1 \times 10^{11} \Omega$ and an inner layer having a Cobb's water absorbing capacity of at most 15 g/m² (45 minute value).

5,378,565
FROST IMAGE RECORDING MEDIUM AND METHOD OF AND APPARATUS FOR FORMING AND READING FROST IMAGE
Hiroyuki Obata; Minoru Utsumi; Masayuki Iijima; Masato Okabe, and Hironori Kamiyama, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan
PCT No. PCT/JP90/01550, § 371 Date Jul. 29, 1991, § 102(e) Date Jul. 29, 1991, PCT Pub. No. WO91/08521, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 29, 1990, Ser. No. 741,505
Claims priority, application Japan, Nov. 29, 1989, 1-311489; Nov. 29, 1989, 1-311490; Nov. 30, 1989, 1-312779; Dec. 5, 1989, 1-315957; Dec. 28, 1989, 1-342249; Jun. 14, 1990, 2-156239
Int. Cl.⁶ G03G 5/022
U.S. Cl. 430-50 4 Claims

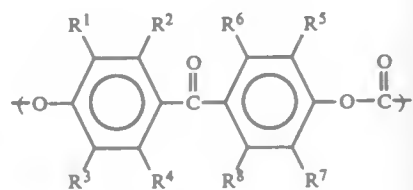
1. An information recording medium comprising a pinene polymer recording insulating layer having a molecular weight of 500 to 10000, which is stacked on an electrode in face-to-face contact therewith, wherein, after an information electric charge distribution of a fine spatial resolution is stored on the surface of said recording layer, said pinene polymer is heated or left in a solvent vapor, thereby forming a frost-shaped visible image corresponding to said information electric charge on the surface of said recording layer.

5,378,566
STRUCTURALLY SIMPLIFIED ELECTROPHOTOGRAPHIC IMAGING MEMBER
Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 2, 1992, Ser. No. 970,459
Int. Cl.⁶ G03G 5/14
U.S. Cl. 430-58 16 Claims

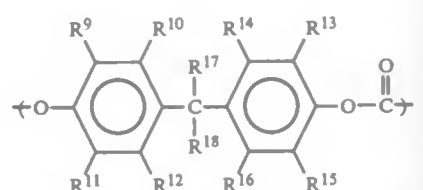
1. An electrophotographic imaging member comprising a substrate, a hole blocking adhesive layer, a charge generating layer and a charge transport layer, said hole blocking adhesive layer comprising a polyester film forming binder matrix having dispersed therein a particulate reaction product of oxide particle reactant and a hydrolyzed reactant, said oxide reactant being selected from the group consisting of metal oxide particles and silicon oxide particles having an average particle size of between about 50 Angstroms and about 300 Angstroms, and said hydrolyzed reactant being selected from the group consisting of a nitrogen containing organo silane, an organotin compound and an organozirconate and mixtures thereof.

5,378,567
POLYCARBONATE BINDER RESIN AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR CONTAINING THE SAME
Mamoru Nozomi; Akiko Miyake, and Michio Kawai, all of Yokohama, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Filed Apr. 15, 1993, Ser. No. 47,433
Claims priority, application Japan, Apr. 16, 1992, 4-096822; Feb. 9, 1993, 5-021478
Int. Cl.⁶ G03G 5/04
U.S. Cl. 430-58 10 Claims

1. An electrophotographic photoconductor comprising:
a conductive substrate;
a charge-generation layer formed on said conductive substrate; and
a charge-transport layer formed on said charge-generation layer, said charge-transport layer comprising a charge-transport material and a binder resin which comprises a polycarbonate composed of at least one structural unit represented by the following formula I:



wherein $R^1, R^2, R^3, R^4, R^5, R^6, R^7$ and R^8 each represent independently a hydrogen atom, a saturated or unsaturated aliphatic hydrocarbon group having 1 to 6 carbon atoms, a halogen atom or a phenyl group, wherein the structural units represented by formula I constitute from 3 to 80 mol % of the total structural units of the polycarbonate; and at least one structural unit represented by the following formula II:



wherein $R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}$ and R^{16} each represent independently a hydrogen atom, a saturated or unsaturated aliphatic hydrocarbon group having 1 to 6 carbon atoms, a halogen atom or a phenyl group, and R^{17} and R^{18} each represent independently a hydrogen atom, an alkyl group having 1 to 6 carbon atoms or a phenyl group, or R^{17} and R^{18} are combined to form a saturated or unsaturated aliphatic hydrocarbon ring or an aliphatic hydrocarbon ring having an aromatic ring.

5,378,568 ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING AN AZO PIGMENT

Makoto Okaji, and Akira Itoh, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 84,987

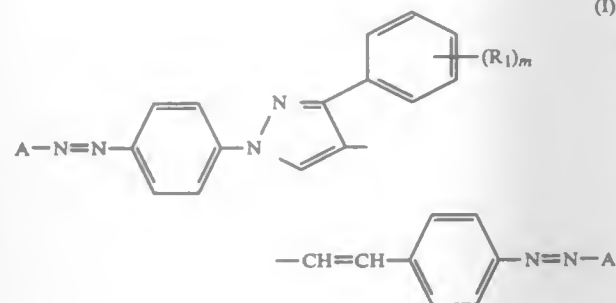
Claims priority, application Japan, Jul. 6, 1992, 4-178553

Int. Cl.⁶ G03G 5/06

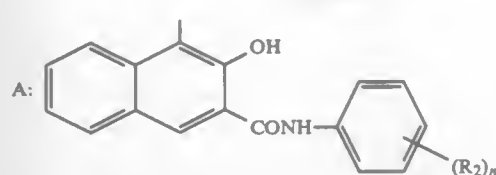
U.S. Cl. 430—58

9 Claims

1. An electrophotographic photoreceptor which comprises an electrically conductive support and a light-sensitive layer which contains at least one azo pigment represented by the following formula (I):



-continued



wherein R_1 represents an unsubstituted or substituted alkyl or alkoxy group having 3 to 8 carbon atoms, R_2 represents a hydrogen atom, a halogen atom or an unsubstituted or substituted alkyl or alkoxy group having 1 to 3 carbon atoms and m and n each represent 1 or 2.

4. An electrophotographic photoreceptor according to claim 1, wherein the light-sensitive layer comprises a carrier generation layer comprising the azo pigment of the formula (I) and a carrier transport layer containing a carrier transport material.

5,378,569 OXYTITANIUMPHthalOCYANINE HYDRATE CRYSTAL AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING SAID CRYSTAL

Katsumi Nukada; Katsumi Daimon; Masakazu Iijima; Yasuo Sakaguchi; Hidemi Nukada, and Akihiko Tokida, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 757,218, Sep. 10, 1991, Pat. No. 5,298,617.

This application Nov. 5, 1993, Ser. No. 147,409

Claims priority, application Japan, Nov. 22, 1990, 2-316072

Int. Cl.⁶ G03G 5/06

U.S. Cl. 430—58

1 Claim

1. An electrophotographic photoreceptor with a photosensitive layer containing the oxytitanium phthalocyanine hydrate crystal having the structural formula $TiOPc(H_2O)_n$, wherein Pc represents a phthalocyanine residual group, n has a value of from 0.15 to 1 and the elemental analysis values of C, H and N are C: 65.0 to 66.3%; H: 2.5 to 3.1 % and N: 18.5 to 19.3 %; wherein said photoreceptor is in the form of a laminate structure or a single layer structure, wherein said laminate structure comprises a charge generating layer containing said oxytitanium phthalocyanine hydrate in a binder and a charge transporting layer and wherein said single layer structure comprises said oxytitanium phthalocyanine hydrate with a binder and a charge transporting material.

5,378,570 ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Tomoo Kobayashi, and Katsuhiko Sato, both of Minami ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1993, Ser. No. 175,224

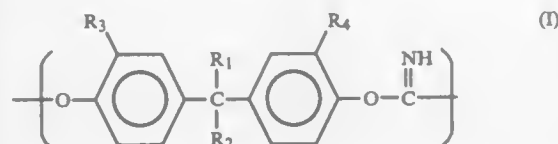
Claims priority, application Japan, Jan. 5, 1993, 5-015920; Jan. 14, 1993, 5-020811

Int. Cl.⁶ G03G 5/05

U.S. Cl. 430—58

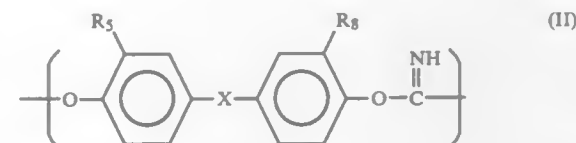
8 Claims

1. An electrophotographic photoreceptor comprising a conductive substrate having formed thereon a photosensitive layer, wherein said photosensitive layer contains, as a binder resin, a polyiminocarbonate resin comprising at least one of a recurring unit represented by formula (I):

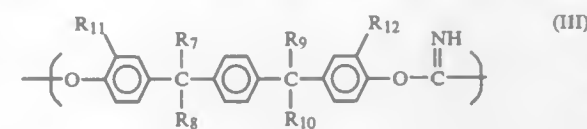


wherein R_1 and R_2 each represent a hydrogen atom, an alkyl

group, an aryl group, an aralkyl group or an alicyclic group, or R_1 and R_2 are taken together to form a carbonaceous ring or a lactone ring; and R_3 and R_4 each represent a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aryl group or a cycloalkyl group, a recurring unit represented by formula (II):



wherein X represents $-S-$, $-O-$, $-SO_2-$ or $-CO-$; and R_5 and R_6 each represent a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group or a cycloalkyl group, and a recurring unit represented by formula (III):



wherein R_7, R_8, R_9 , and R_{10} each represent a hydrogen atom, an alkyl group, a cycloalkyl group, an aryl group or an aralkyl group; and R_{11} and R_{12} each represent a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a cycloalkyl group or an aryl group.

5,378,571
ARYL AND ARALKYL SULFIDE, SULFOXIDE OR
SULFONE COMPOUNDS AS CHARGE REGULATORS
Hans-Tobias Macholdt, Darmstadt, and Gert Nagl, Niederdorfelden, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
PCT No. PCT/EP91/01873, § 371 Date Apr. 2, 1993, § 102(e)
Date Apr. 2, 1993, PCT Pub. No. WO92/06414, PCT Pub. Date Apr. 16, 1992

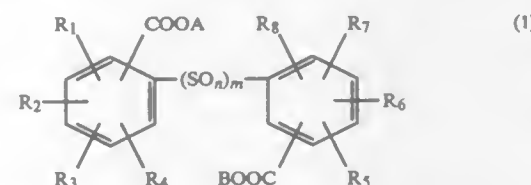
PCT Filed Oct. 1, 1991, Ser. No. 39,021

Claims priority, application Germany, Oct. 6, 1990, 4031705
Int. Cl.⁶ G03G 9/097

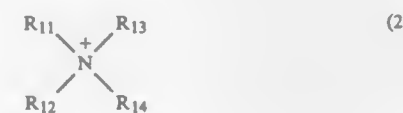
U.S. Cl. 430—110

8 Claims

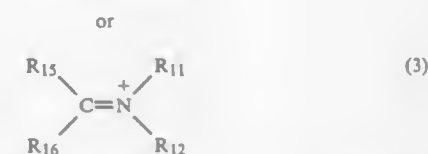
1. A method for regulating or improving the electrostatic charge properties of an electrophotographic toner or developer or a triboelectrically or electrokinetically applied powder or powder coating composition, comprising the step of incorporating into said toner or developer or powder or powder coating an aryl or aralkyl sulfide, sulfoxide or sulfone charge regulator or improver of the general formula (1)



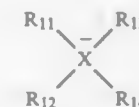
as a single compound of said formula (1) or as a combination of said compounds where, in formula (1), m is 1, 2 or 3, and n is 0, 1 or 2, and where A and B independently of one another are hydrogen atoms, the corresponding equivalents of a metal ion, and also an ammonium or immonium or guanidinium ion of the general formula



-continued



or a phosphonium, arsonium or stibonium ion of the general formula



where X is P, As or Sb, in which R_{11}, R_{12}, R_{13} and R_{14} independently of one another are hydrogen atoms or radicals based on a hydrocarbon which can be interrupted by heteroatoms, and R_{15} and R_{16} independently of one another are hydrogen atoms, a halogen atom, alkoxy, $-NH_2$, primary or secondary amino groups or radicals based on a hydrocarbon, and where R_1 to R_8 , independently of one another are each a hydrogen atom or a radical based on a hydrocarbon, which can be interrupted by heteroatoms, or halogen atoms, or alkoxy, nitro, cyano, sulfone, sulfonic acid ester, carboxylic acid ester, hydroxyl or $NR_{21}R_{22}$ group, in which R_{21} and R_{22} independently of one another are hydrogen atoms or radicals based on a hydrocarbon, it being possible for two of the radicals R_1 to R_4 , or R_5 to R_8 , or R_{11} and R_{13} , or R_{11} and R_{15} independently of one another to join together to form a ring system, and it being possible for the compounds also to be present in the form of mixed crystals based on different anions and/or cations.

5,378,572
ELECTROPHOTOGRAPHIC DRY TONER AND
PROCESS FOR PRODUCING THE SAME
Reiko Akiyama; Chikaki Suzuki; Atuhiko Eguchi, and Takayoshi Aoki, all of Minami-shigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 13, 1992, Ser. No. 959,439
Claims priority, application Japan, Oct. 14, 1991, 3-291968; Feb. 14, 1992, 4-059203
Int. Cl.⁶ G03G 9/08

U.S. Cl. 430—110

7 Claims

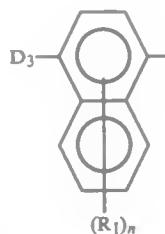
1. An electrophotographic dry toner comprising a binder resin and a colorant, said toner having externally added thereto spherical fine silica particles that have been surface treated with at least one treating agent selected from the group consisting of a polyethylene, a fatty acid metal salt, and an alcohol containing from 20 to 60 carbon atoms which is solid at ordinary temperatures, wherein said spherical fine silica particles have an average particle size before treatment of from 0.05 to 3.0 μm , a bulk density of at least 300 g/l and a density of at least 2.1 mg/mm^3 .

5,378,573
ELECTROPHOTOGRAPHIC TONER
Mitsutoshi Anzai; Yuji Matsuura; Osamu Mukudai; Miki Kanno, and Kayoko Watanabe, all of Tsukuba, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan
Filed Jan. 28, 1993, Ser. No. 10,574
Claims priority, application Japan, Apr. 22, 1992, 4-127953; Sep. 2, 1992, 4-257661
Int. Cl.⁶ G03G 9/08

U.S. Cl. 430—110

10 Claims

1. An electrophotographic toner containing a charge-control agent of the following formula (I):


$$\begin{array}{c}
 R^1 \quad R^2 \quad R^3 \\
 | \quad | \quad | \\
 N - C - C - CO_2H \\
 | \quad | \quad | \\
 CH_2 \quad CH \quad CH \\
 | \quad | \quad | \\
 OH \quad (R^4)_a \quad (O-C(=O)-CH_2)_b \quad CH=CH-R^5
 \end{array}$$

wherein R¹ is a substituted or nonsubstituted phenyl group, R² and R³ are the same or different and indicate a hydrogen atom or a C₁₋₄ alkyl group, R⁴ is an alkylene

group which may have at least one substituent selected from alkyl, hydroxyl and oxo (=O) on a main chain, or which may contain at least one member selected from an oxygen atom and a cycloalkylene group in a main chain, R⁵ is a hydrogen atom or a methyl group, and a and b are independently 0 or 1,

- (C) a light absorbing compound, and
(D) a film-forming polymer having alkaline solubility or alkaline swelling characteristic.

5,378,580
HEAT MODE RECORDING MATERIAL AND METHOD FOR PRODUCING DRIOGRAPHIC PRINTING PLATES
Lac Leenders, Herentals, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed May 11, 1993, Ser. No. 59,283
Claims priority, application Hague Agreement, Jun. 5, 1992, 92201633

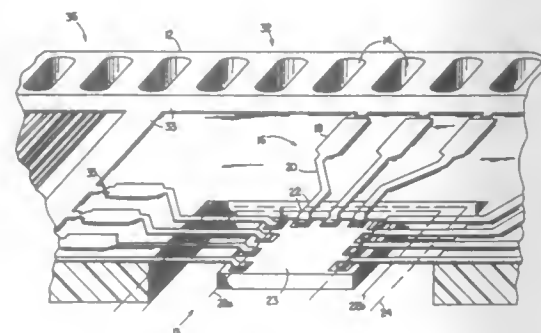
Int. Cl.⁶ G03F 7/30, 7/36
U.S. Cl. 430—303 5 Claims
1. Method for making a lithographic printing plate requiring no dampening liquid comprising the steps of:
image-wise exposing using a laser beam a heat mode recording material comprising on a support having an oleophilic surface (i) a recording layer having a thickness of not more than 3 μm and containing a substance capable of converting the laser beam radiation into heat and (ii) a cured oleophobic surface layer containing a polysiloxane and wherein said recording layer and oleophobic surface layer may be the same layer;
rubbing the exposed heat mode recording material thereby removing said oleophobic surface layer in the exposed areas so that the underlying oleophilic surface is exposed and
avoiding the swelling of said oleophobic surface layer by carrying out said rubbing without the use of a liquid or with the use of isopropanol as a non-solvent for said oleophobic surface layer.

5,378,581
APPLICATION SPECIFIC TAPE AUTOMATED BONDING

Robert D. Vernon, Norfolk, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Continuation of Ser. No. 902,418, Jun. 19, 1992, Pat. No. 5,260,168, which is a continuation of Ser. No. 421,247, Oct. 13, 1989, abandoned. This application Mar. 18, 1993, Ser. No. 33,014

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.⁶ G03C 5/00

U.S. Cl. 430—313 4 Claims



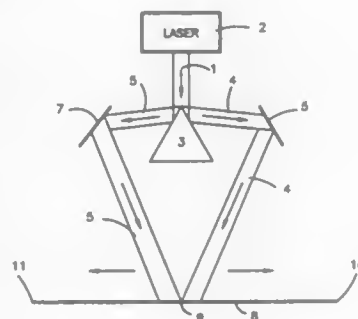
1. A method for producing a TAB tape, comprising:
providing an elongated flexible multilayer strip of tape having a layer of unexposed, undeveloped photographic film sensitive to first directed energy superimposed over a photoprocessable layer, said photoprocessable layer being

superimposed over a conductive layer and said conductive layer being superimposed over a substrate, said layers all being approximately coextensive,
advancing said unexposed tape strip lengthwise through a photoplotter station having a computer-controlled photoplotter emitting first directed energy,
selectively exposing consecutive frames of said film layer via said photoplotter in a corresponding plurality of differing integrated circuit interconnection patterns on the same tape strip,
advancing the exposed tape strip through a photographic developing bath,
developing said film on said tape strip to provide images of said integrated circuit interconnection patterns in said frames,
advancing said tape through a uniform exposure unit which provides a substantially uniformly distributed second directed energy, different from said first directed energy, exposing the photoprocessable layer of said tape strip to said second directed energy through the developed image-bearing film layer as an in situ mask,
advancing said tape strip lengthwise to a photoprocessable layer processing unit,
processing said photoprocessable layer and said conductive layer to provide a plurality of different patterns of conductors on consecutive frames of said tape strip, each frame of said conductors corresponding to a respective one of said integrated circuit interconnection patterns, and
after processing said photoprocessable and conductive layers, bonding integrated circuits to the individual frames of the tape strip which have interconnection patterns corresponding to the lead bond pattern for the integrated circuits.

5,378,582
SYMMETRIC SWEEP SCANNING TECHNIQUE FOR LASER ABLATION
Eric Chan, Austin, Tex., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sep. 29, 1992, Ser. No. 953,408
Int. Cl.⁶ B23K 26/10

U.S. Cl. 430—321 10 Claims



1. In a method for photoablating a target surface the improvement of which comprises reducing the amount of ablation debris redeposited on the target surface by directing at least two beams of pulsed UV radiation at the center of the target surface, and scanning the individual beams in a direction away from each other to the opposing edges of the target surface.

5,378,583
FORMATION OF MICROSTRUCTURES USING A PREFORMED PHOTORESIST SHEET

Henry Guckel; Todd R. Christenson, and Kenneth Skrobis, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 994,952, Dec. 22, 1992, abandoned. This application May 24, 1993, Ser. No. 66,988
Int. Cl.⁶ G03C 5/00

U.S. Cl. 430—325 44 Claims



1. A method of forming microstructures comprising the steps of:
(a) providing a preformed sheet of photoresist material which can be exposed to radiation to affect its susceptibility to a developer;
(b) exposing the photoresist sheet in a pattern to radiation which will change its susceptibility to a developer;
(c) mechanically removing the material of the photoresist sheet to reduce the thickness of the sheet to a desired thickness; and
(d) applying a developer to the exposed photoresist to remove photoresist which is susceptible to the developer.

5,378,584
RADIATION-SENSITIVE RECORDING MATERIAL WITH A POSITIVE-WORKING, RADIATION-SENSITIVE LAYER HAVING A ROUGH SURFACE CONTAINING A SURFACTANT HAVING POLYSILOXANE UNITS

Hans W. Frass; Ernst-August Hackmann, both of Wiesbaden; Klaus Joerg, Ingelheim; Dietmar Koenneke, Taunusstein; Rudolf Neubauer, Oestrich-Winkel, and Andreas Elsaesser, Idstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 4, 1992, Ser. No. 924,750
Claims priority, application Germany, Aug. 14, 1991, 4126836
Int. Cl.⁶ G03F 7/023, 7/30

U.S. Cl. 430—165 20 Claims

1. A radiation-sensitive recording material comprising:
a layer support; and
a positive-working, radiation-sensitive layer coated on said layer support, said radiation-sensitive layer having a layer weight of 3 g/m² or less and a rough surface having a Bekk smoothness in the range from 20 to 100 seconds, determined according to DIN 53 107, Method A, said radiation-sensitive layer comprising:
at least one radiation-sensitive 1,2-quinonediazide, which is a 1,2-naphthoquinone-2-diazide-4- or -5-sulfonyl derivative,
a polycondensate or polymer as a binder insoluble in water and soluble or swellable in aqueous-alkaline solution,
a surfactant having polysiloxane units, wherein the surfactant is present in an amount effective to minimize halo formation and
a silicic acid product having a mean grain size in the range from 3 to 5 microns with an exclusion limit of 15 microns, wherein the silicic acid product is present in an amount effective to give a rough surface having said Bekk smoothness.

5,378,585
RESIST COMPOSITION HAVING A SILOXANE-BOND STRUCTURE

Hisashi Watanabe, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

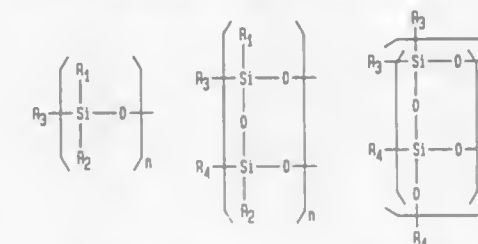
Continuation of Ser. No. 719,188, Jun. 21, 1991, abandoned.

This application Oct. 13, 1993, Ser. No. 135,952
Claims priority, application Japan, Jun. 25, 1990, 2-167173
Int. Cl.⁶ G03C 1/00, 1/72; G03F 7/075

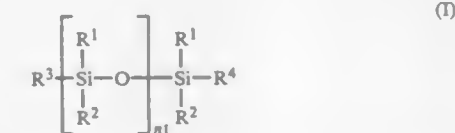
U.S. Cl. 430—176 7 Claims

1. A composition having sensitivity to light or radiation,

consisting essentially of:
a polymer having a siloxane-bond structure and a sensitizing agent,
wherein said polymer having a siloxane-bond structure undergoes a polymerization reaction when irradiated with light or radiation, and has a structure selected from the



group of structures represented by the following general formula I:



wherein R¹, R², R³, and R⁴ are independently a hydrogen atom, a hydroxyl group, a lower alkyl group having 1 to 5 carbon atoms, a lower alkoxy group having 1 to 5 carbon atoms, or a trialkylsilyl group;
at least one group selected from the group consisting of R³ and R⁴ is a lower alkoxy group having 1 to 5 carbon atoms; and
n₁ is an integer of 1 or more.

5,378,586
RESIST COMPOSITION COMPRISING A QUINONE DIAZIDE SULFONIC DIESTER AND A QUINONE DIAZIDE SULFONIC COMPLETE ESTER

Yasunori Uetani, Minoo; Makoto Hanabata, Hyogo; Hirotoashi Nakanishi, Osaka; Koji Kuwana, Fujiidera, and Fumio Oi, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 419,831, Oct. 11, 1989, abandoned.

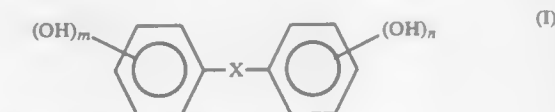
This application Nov. 16, 1993, Ser. No. 152,891
Claims priority, application Japan, Oct. 13, 1988, 63-258937
Int. Cl.⁶ G03F 7/023, 7/30

U.S. Cl. 430—192 14 Claims

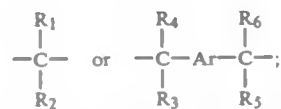
1. A positive resist composition which comprises in admixture an alkali-soluble resin and, as a sensitizer, first and second quinone diazide sulfonic acid esters of a phenol compound, wherein

(a) said first ester is a quinone diazide sulfonic acid diester of a phenol compound having not less than three hydroxyl groups which exhibits a pattern area that is not less than 40% of all pattern areas corresponding to the sensitizer in a high pressure liquid chromatography (HPLC) pattern measured with a primary detector using UV light having a wavelength of 254 nm, and

(b) said second ester is a quinone diazide sulfonic acid ester that is a complete ester of a phenol compound having not less than two hydroxyl groups prepared by reacting the quinone diazide sulfonfyl halogenide with a di- or polyhydric phenol compound of the formula



wherein X is a group of the formula:



in which R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and each a hydrogen atom, an alkyl group, an aryl group, an alkenyl group or cyclohexyl group and Ar is a divalent aromatic group; m and n are the same or different and each zero or a positive number, provided that the sum of m and n is not less than 2, which exhibits a pattern area corresponding to not less than 5% and is less than 60% of all pattern areas corresponding to the sensitizer in the HPLC pattern.

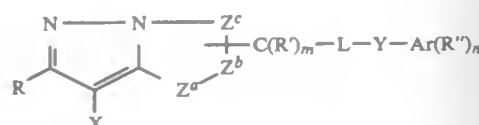
5,378,587
PHOTOGRAPHIC MATERIAL AND PROCESS
COMPRISING A BICYCLIC PYRAZOLO COUPLER
 Sundaram Krishnamurthy, Penfield, and Stanley W. Cowan, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,928
 Int. Cl.⁶ G03C 7/38

U.S. Cl. 430—386

8 Claims

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer having associated therewith a dye-forming bicyclic pyrazolo-based coupler having a fully substituted carbon at the 6-position, wherein the dye-forming coupler is represented by Formula (II):



wherein:

L is a divalent linking group connecting the methylene group to the remainder of the ballast group and containing at least one group selected from the group consisting of $-NR^1CO-$, $-CONR^1-$, $-NR^1SO_2-$ and $-SO_2NR^1-$, wherein R^1 is hydrogen or a substituent;

Y is a divalent linking group connecting L to Ar and containing a member selected from the group consisting of $-O-$, $-S-$, and $-NR^1-$ wherein R^1 is hydrogen or a substituent;

Ar is an aryl group;

each R' is hydrogen or a substituent with at least one R' being other than hydrogen;

each R'' is independently a substituent, provided that at least one R'' is a substituted or unsubstituted alkyl group having at least 10 carbon atoms;

m is 2;

n is at least 1;

R is a fully substituted carbon;

X is hydrogen or a coupling-off group;

Z^a is an $-NH-$ group; and

Z^b and Z^c are independently selected from the group consisting of a substituted or unsubstituted methine group, $=N-$, or $=C-$, provided that one of either the Z^a-Z^b bond or the Z^b-Z^c bond is a double bond and the other is a single bond, and when the Z^b-Z^c bond is a carbon-carbon double bond, it may form part of an aromatic ring, and wherein at least one of Z^b and Z^c represents a methine group connected with the methylene group.

8. A process of forming a dye image in an exposed photographic element as defined in claim 1, said process comprising developing the photographic element in the presence of a color developing agent.

5,378,588
METHOD FOR PROCESSING SILVER HALIDE
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS
WHICH CONSERVES AND REUSES OVERFLOW
PROCESSING SOLUTIONS

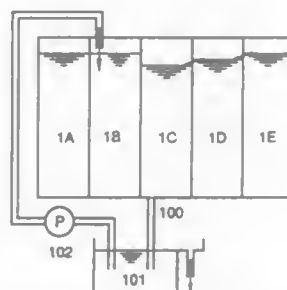
Ichiro Tsuchiya, Hino, Japan, assignor to Konica Corporation, Japan

Filed Jul. 20, 1993, Ser. No. 95,090

Claims priority, application Japan, Jul. 25, 1992, 4-218678
 Int. Cl.⁶ G03C 5/18, 5/26, 5/38, 7/00

U.S. Cl. 430—428

8 Claims



1. A method for processing an imagewise exposed silver halide photographic light sensitive material comprising the steps of

developing the light sensitive material with a developing solution comprising a developing agent, treating the light sensitive material with a fixing capacity-having solution, and then

treating the light sensitive material with a processing solution (S), wherein part of or the whole of overflow from a tank containing the processing solution (S) is allowed to flow into a tank containing the fixing capacity-having solution, and wherein solid processing chemicals are added to the fixing capacity-having solution or the overflow from the tank containing the processing solution (S).

5,378,589
DERIVATIVE OF NAPHTHALOCYANINE CONTAINING
PERFLUOROALKYL GROUP, PROCESS FOR
PREPARING THE SAME AND OPTICAL RECORDING
MEDIUM

Hideo Sawada; Motohiro Mitani, both of Tsukuba; Masaharu Nakayama, Tsuchiura; Yoshii Morishita; Mitsuo Katayose, both of Hitachi; Tadashi Okamoto, Joyo, and Nobuyuki Hayashi, Hitachi, all of Japan, assignors to Nippon Oil and Fats Co., Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 838,781, Mar. 18, 1992, Pat. No. 5,260,435.
 This application Jul. 2, 1993, Ser. No. 87,517

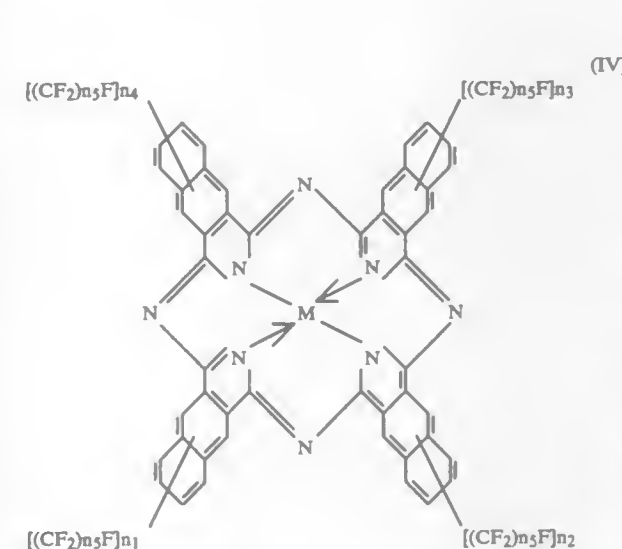
Claims priority, application Japan, Jul. 23, 1990, 2-192870;
 Feb. 21, 1991, 3-027401; Feb. 26, 1992, 031056

Int. Cl.⁶ G11B 7/24; C09B 47/00

U.S. Cl. 430—495

3 Claims

1. An optical recording medium wherein a recording film layer mainly composed of a naphthalocyanine derivative containing a perfluoroalkyl group represented by the following formula (IV) of:



wherein M stands for H_2 , $(R)_3SiO-Si-OSi(R)_3$ or $[F(CF_2)_{n_5}-H(R)_2SiO-Si-OSi(R)_3]$ where R is an alkyl group having 1 to 10 carbon atoms; n_1, n_2, n_3 and n_4 each stand for an integer of from 0 to 2 and n_5 stands for an integer of from 1 to 10; $n_1+n_2+n_3+n_4 \neq 0$ when M is H_2 , or $(R)_3SiO-Si-OSi(R)_3$ is formed on a substrate.

5,378,590
COLOR PHOTOGRAPHIC REVERSAL ELEMENT WITH
IMPROVED COLOR REPRODUCTION

Frederick E. Ford, Victor; Arlyce T. Bowne, Rochester, and Carl Kotlarchik, Jr., Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1993, Ser. No. 5,474
 Int. Cl.⁵ G03C 1/46

U.S. Cl. 430—504

19 Claims

1. A color reversal photographic element comprising: a support bearing a red-sensitive, cyan dye-forming unit, a green-sensitive, magenta dye-forming unit, and a blue-sensitive, yellow dye-forming unit, each unit comprising a photosensitive silver halide layer and an image dye-forming coupler;

wherein a photosensitive silver halide layer in said cyan dye-forming unit contains an average silver iodide concentration that is at least about 1 mole percent greater than the average silver iodide concentration of a photosensitive silver halide layer in said magenta dye-forming unit or said yellow dye-forming unit;

said element containing an interimage effect-controlling means;

said interimage effect-controlling means being characterized as having the capability of simultaneously forming a red image of high relative chroma and yellow-red tint image of substantially lower relative chroma when said element is exposed to a red color standard object and a yellow-red tint color standard object and thereafter developed;

said red color standard object having CIELab values for D_{55} reference white $a^*=30.46$, $b^*=19.16$, $C^*=35.98$, $L^*=40.12$;

said yellow-red tint color standard object having CIELab values for D_{55} reference white $a^*=17.26$, $b^*=18.01$, $C^*=24.95$, $L^*=66.98$;

the resulting said images having a red reproduction coefficient equal to or greater than 0.88 and a ratio of red reproduction coefficient to yellow-red tint reproduction coefficient equal to or greater than 1.15.

5,378,591
REVERSAL COLOR PHOTOGRAPHIC MATERIAL
 Gérard M. Droin, Beaune, and Simone J. Kempen, Calliat, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/01234, § 371 Date Mar. 13, 1993, § 102(e)
 Date Mar. 13, 1993, PCT Pub. No. WO92/01242, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 2, 1991, Ser. No. 962,808
 Claims priority, application France, Jul. 4, 1990, 9008786
 Int. Cl.⁶ G03C 1/46

U.S. Cl. 430—506

13 Claims

1. Reversal color photographic material comprising, on a support, three blue-, green- and red-sensitive silver halide elements, each having associated therewith yellow, magenta and cyan dye-forming compounds respectively, wherein each element contains, in a single or separate layers, at least one slower silver halide emulsion having a lower speed and one faster silver halide emulsion having a higher speed and wherein at least one of the elements contains as the faster silver halide emulsion a polydisperse silver halide emulsion having a variation coefficient higher than 20%, the other emulsions being monodisperse emulsions having a variation coefficient less than 20%, said polydisperse emulsion being chemically and spectrally sensitized such that, by exposure and Kodak Ektachrome R-3 processing of a photosensitive material containing said polydisperse silver halide emulsion alone and the coupler forming the subtractive dye complementary of the color sensitization of said polydisperse silver halide emulsion, a sensitivity, at a 0.8 density, of at least 0.10 log H higher than the sensitivity of an optimally chemically and spectrally sensitized control, and a reciprocity failure equal to or less than $+/-0.20$, are obtained.

5,378,592
PHOTOGRAPHIC MATERIAL
 Ken Nakanishi; Tadashi Takehana; Hiroyuki Tamaki, and Sumio Nishikawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 2, 1994, Ser. No. 190,542
 Claims priority, application Japan, Feb. 2, 1993, 5-015344
 Int. Cl.⁶ G03C 1/76

U.S. Cl. 430—533

4 Claims

1. A photographic material comprising a support of a polyester film, a first subbing layer provided thereon, a second subbing layer provided on the first subbing layer and a photographic layer provided on the second subbing layer, wherein the first subbing layer is a layer of polyurethane latex cured with an epoxy compound or a dichloro-s-triazine derivative, and the second subbing layer is a hydrophilic colloid layer comprising gelatin.

5,378,593
COLOR PHOTOGRAPHIC MATERIALS AND METHODS
CONTAINING DIR OR DIAR COUPLERS AND
CARBONAMIDE COUPLER SOLVENTS

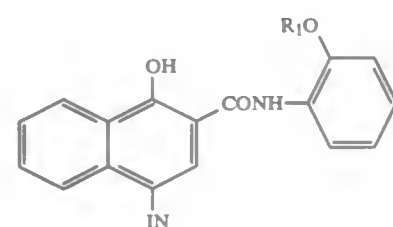
Paul B. Merkel, Rochester; Melvin M. Kestner, Hilton, and Paul L. Zengerle, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1992, Ser. No. 887,719
 Int. Cl.⁶ G03C 7/38, 7/34, 7/305

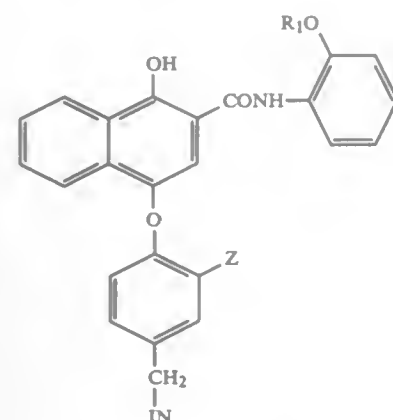
U.S. Cl. 430—544

18 Claims

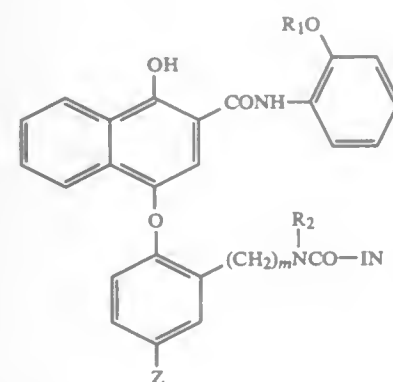
1. A color photographic material, comprising a substrate bearing a red sensitive layer comprising a silver halide emulsion and a coupler composition comprising, in combination, (a) a 2-phenylcarbamoyl-1-naphthol compound selected from the group consisting of development inhibitor releasing couplers of the following formula I and timed development inhibiting releasing couplers of the following formulas II and III:



FORMULA I



FORMULA II



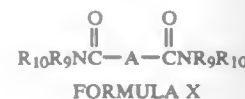
FORMULA III

wherein R_1 is selected from the group consisting of unsubstituted straight chain alkyl groups containing from about 8 to about 20 carbon atoms and substituted alkyl groups containing from about 10 to about 30 carbon atoms, the substituents being selected from the group consisting of phenyl, alkoxy, aryloxy and alkoxy carbonyl groups; R_2 is selected from the group consisting of straight and branched chain alkyl groups containing from 1 to about 8 carbon atoms, unsubstituted phenyl, and phenyl substituted with at least one group selected from the group consisting of alkyl and alkoxy groups; Z is selected from the group consisting of nitro, cyano, alkylsulfonyl, sulfamoyl and sulfonamido groups; IN an inhibitor moiety; and m is 0 or 1, and

(b) a carbonamide coupler solvent of a formula selected from Formulas IX and X:



FORMULA IX



FORMULA X

wherein R_8 , R_9 and R_{10} are individually selected from the group consisting of unsubstituted straight chain alkyl groups, unsubstituted branched alkyl groups, unsubstituted cyclic alkyl groups, unsubstituted straight chain alkenyl groups, unsubstituted branched alkenyl groups, unsubstituted straight chain alkylene groups and unsubstituted branched alkylene groups; substituted straight chain alkyl groups, substituted branched alkyl groups, substituted cyclic alkyl groups, substituted straight chain alkenyl groups, substituted branched alkenyl

groups, substituted straight chain alkylene groups and substituted branched alkylene groups, wherein substituents are selected from the group consisting of aryl, alkoxy, aryloxy, alkoxy carbonyl, aryloxy carbonyl and acyloxy; an unsubstituted phenyl group; and a phenyl group containing one or more substituents selected from the group consisting of alkyl, aryl, alkoxy, aryloxy, alkoxy carbonyl, aryloxy carbonyl and acyloxy; R_8 , R_9 and R_{10} combined contain a total of at least 12 carbon atoms; and A is a phenyl group or an alkylene group of from 2 to about 10 carbon atoms.

5,378,594

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL
Kentaro Okazaki, Naoto Oshima, and Kiyoto Takada, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 17, 1991, Ser. No. 760,978

Claims priority, application Japan, Sep. 18, 1990, 2-247926; Oct. 4, 1990, 2-267039; Oct. 16, 1990, 2-276771

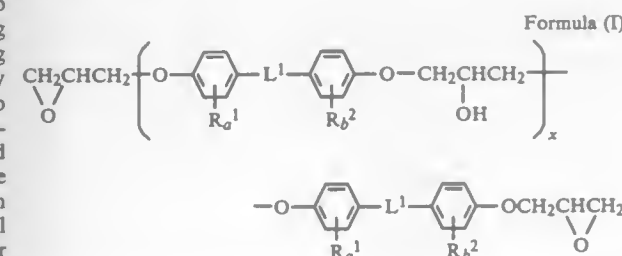
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.⁶ G03C 7/392, 1/04, 1/035, 1/09

U.S. Cl. 430—545

66 Claims

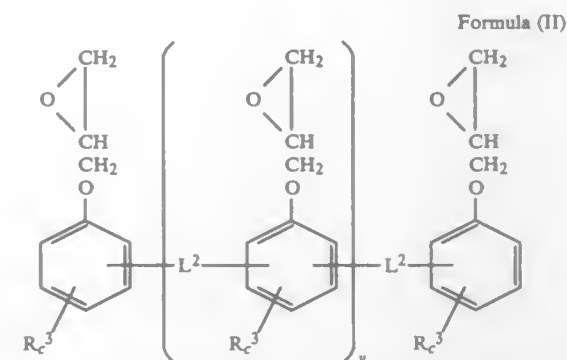
1. A silver halide color photographic material, which comprises at least one sparingly water-soluble epoxy compound represented by the following formula (I) and a silver halide emulsion containing silver chlorobromide grains, silver chlorobromide grains, or silver chloride grains comprising 90 mol % or more of silver chloride, said silver chlorobromide grains, silver chlorobromide grains, or silver chloride grains containing at least one metal ion of Group VIII of the Periodic Table in an amount of 10^{-9} to 10^{-2} mol per mol of the silver halide:



Formula (I)

wherein R^1 and R^2 each represent an alkyl group or a halogen atom; L^1 represents a divalent aliphatic group; a and b each are an integer of 0 to 4; and x is an actual number of 0 to 20; said at least one sparingly water-soluble epoxy compound represented by formula (I) is incorporated into at least one coupler containing layer.

34. A silver halide color photographic material, which comprises at least one sparingly water-soluble epoxy compound represented by the following formula (II), and a silver halide emulsion containing silver chlorobromide grains, silver chlorobromide grains, or silver chloride grains comprising 90 mol % or more of silver chloride, said silver chlorobromide grains, silver chlorobromide grains, or silver chloride grains containing at least one metal ion of Group VIII of the Periodic Table in an amount of 10^{-9} to 10^{-2} mol per mol of the silver halide:



Formula (II)

wherein R^3 represents an alkyl group or a halogen atom; L^2 represents a divalent aliphatic group; c is an integer of 0 to 4; and y is an actual number of 0 to 20; said at least one sparingly water-soluble epoxy compound represented by formula (II) is incorporated into at least one coupler containing layer.

5,378,595

SILVER HALIDE PHOTO-SENSITIVE MATERIAL
Hiroo Takizawa, and Toshiyuki Makuta, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 1, 1994, Ser. No. 203,394

Claims priority, application Japan, Mar. 2, 1993, 5-066077

Int. Cl.⁶ G03C 7/38, 7/388

U.S. Cl. 430—546

18 Claims

1. A silver halide photo-sensitive material comprising a support having thereon photographic structural layers comprising at least one silver halide emulsion layer, wherein at least one of said photographic structural layers contains at least one compound represented by the following general formula (I):



(I)

wherein R^1 represents an aliphatic group, an aryl group, an aliphatic oxy group or an aryloxy group, provided that R^1 does not bond to a carbon atom in the ring of X ; and X represents an alkylene or alkenylene group forming a five- or six-membered ring.

5,378,596

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL
Hideaki Naruse, and Makoto Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,619

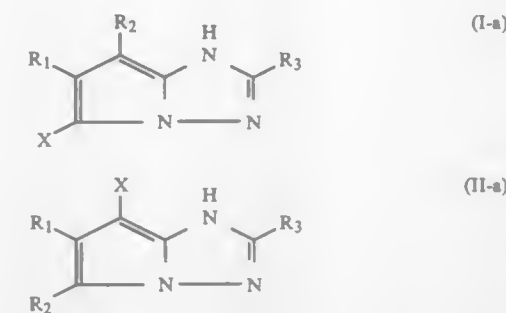
Claims priority, application Japan, Nov. 27, 1991, 3-335841

Int. Cl.⁶ G03C 7/38, 7/34

U.S. Cl. 430—549

17 Claims

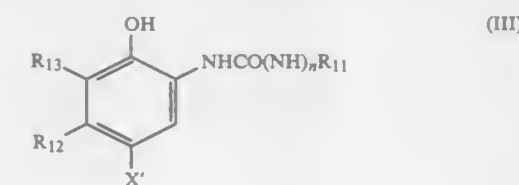
1. A silver halide color photographic material comprising a support having provided thereon at least one silver halide emulsion layer containing at least one pyrrolotriazole cyan coupler represented by the following Formula (I-a) or (II-a) and at least one coupler selected from the phenol or 1-naphthol cyan couplers represented by the following Formulas (III), (IV), (V) and (VI):



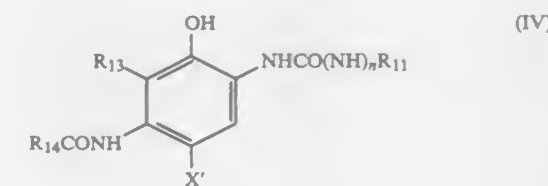
(I-a)

(II-a)

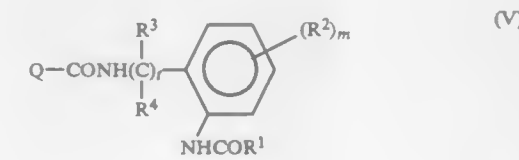
wherein R_1 and R_2 each independently represents an electron attractive group having a Hammett's substituent constant σ_p of 0.2 or more and the sum of the σ_p values of R_1 and R_2 is 0.65 or more; R_3 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; the group represented by R_1 , R_2 , R_3 or X may be a divalent group and combine with a polymer which is higher than a dimer and which has a high molecular chain to form a homopolymer or a copolymer;



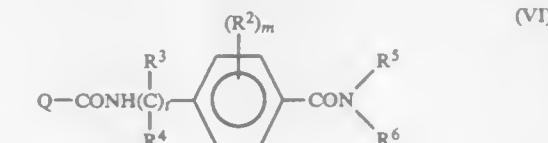
(III)



(IV)



(V)



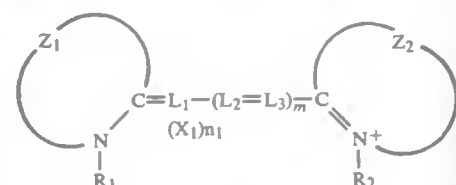
(VI)

in Formulas (III) and (IV), R_{11} represents an alkyl group, an aryl group or a heterocyclic group; R_{12} represents an alkyl group having two or more carbon atoms; R_{13} represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a carbonamido group, or a ureido group; R_{14} represents an alkyl group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, or an amino group; X' represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; n represents 0 or 1; R_{12} and R_{13} in Formula (III) may be combined with each other to form a ring, and R_{13} and R_{14} in Formula (IV) may be combined with each other to form a ring; in Formulas (V) and (VI), Q represents a 1-naphthol coupler group which is bonded at the 2-position; R^1 represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an amino group, or an aryl group; R^2 represents a substituent group; R^3 and R^4 each represents a hydrogen atom, an alkyl

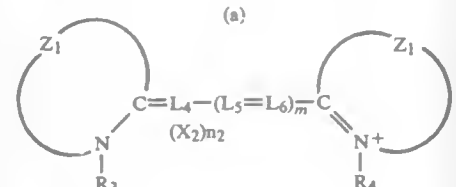
group, an aryl group, a halogen atom, an alkoxy group, or an aryloxy group; R^5 or R^6 each represents a hydrogen atom, an alkyl group, or an aryl group; and t represents an integer of 0 to 4 and m represents an integer of 0 to 4.

5,378,597
SILVER HALIDE PHOTOGRAPHIC EMULSION
 CONTAINING A SPECIFIC DYE-GRAIN COMBINATION
 Satoshi Kawabe, Hiroyuki Hoshino, both of Hino, and Syoji Matsuzaka, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan
 Continuation of Ser. No. 881,814, May 12, 1992, abandoned.
 This application Apr. 29, 1994, Ser. No. 235,245
 Claims priority, application Japan, May 14, 1991, 3-109171
 Int. Cl.⁶ G03C 1/005, 1/494

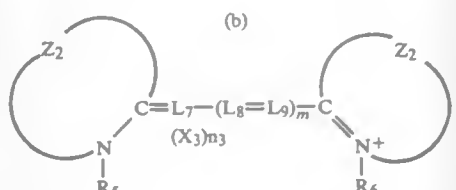
U.S. Cl. 430—567 **14 Claims**
 1. A photographic silver halide emulsion comprising tabular silver halide grains having at least two twin crystal planes, and at least one of an unsymmetrical cyanine represented by Formula I, and at least one of a symmetrical cyanine represented by Formula II-(a), and at least one of a symmetrical cyanine represented by Formula II-(b), wherein said tabular silver halide grains are formed by feeding silver halide fine grains to a silver halide-containing seed emulsion:



Formula I



Formula II



Formula II

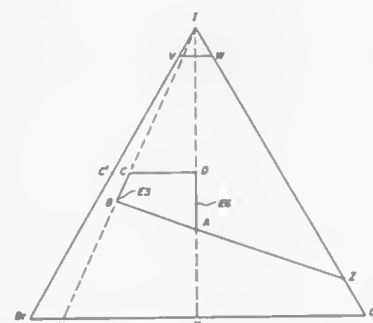
wherein Z_1 and Z_2 each represents a group of atoms which form with other atoms a naphthoxazole ring, a naphthothiazole ring, a naphthioimidazole ring, a naphthoselenazole ring, a benzoxazole ring, a benzothiazole ring, a benzimidazole ring, or a benzselenazole ring; Z_1 and Z_2 are not the same as each other; the heterocyclic rings formed by Z_1 and Z_2 may have a substituent group; R_1 , R_2 , R_3 , R_4 , R_5 and R_6 each represents an unsubstituted alkyl group or a substituted alkyl group; m represents an integer of 0 to 2, L_1 to L_9 each represents a methine group or a substituted methine group; X_1 , X_2 and X_3 each represents a charge-balancing counter ion; n_1 , n_2 and n_3 each represents an integer larger than 0 and necessary to neutralize the charge of the whole molecule.

5,378,598
USE OF ACID PROCESSED OSSEIN GELATIN AND CHAIN-EXTENDED ACID PROCESSED OSSEIN GELATIN AS PEPTIZERS IN THE PREPARATION OF PHOTOGRAPHIC EMULSIONS
 Pranab Bagchi, Webster, Melvin D. Sterman, Pittsford, and Jacob I. Cohen, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Filed Dec. 21, 1992, Ser. No. 992,301
 Int. Cl.⁶ G03C 1/005

U.S. Cl. 430—569 **1 Claim**
 1. A method of forming microcrystalline silver halide particles comprising providing a silver salt solution, providing a halide salt solution and combining said solutions to form silver halide particles, with the proviso that chain extended acid processed ossein gelatin is present during said forming of said silver halide particles, said gelatin has an isoelectric pH between 5.5 and 6.5, and lime processed ossein gelatin is added during the growth of said silver halide particles, with the proviso that said chain extended ossein gelatin is characterized by a viscosity between 7 and 11 cP (mP sec) at 40° C. and at a concentration of 6.16% in distilled water at a shear rate below 100 1/sec, and said chain-extended ossein gelatin has a high molecular weight fraction, having a molecular weight of greater than 285,000, of about 18 to about 60 percent weight fraction gelatin by area.

5,378,599
HIGH BROMIDE CHLORIDE CONTAINING SILVER IODOHALIDE EMULSIONS EXHIBITING AN INCREASED PROPORTION OF IODIDE
 Joe E. Maskasky, Carlos A. Reyes, both of Rochester, and Martin McMillan, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Continuation-in-part of Ser. No. 649,638, Feb. 1, 1991, Pat. No. 5,238,804. This application Jan. 22, 1993, Ser. No. 7,417
 Int. Cl.⁶ G03C 1/005

U.S. Cl. 430—569 **6 Claims**



1. A method of making a photographic emulsion containing silver iodohalide grains having a rock salt phase in which the proportions of halide ions are chosen to lie within the boundary defined by A, B, C, and D in FIG. 1, comprising the steps of: forming the silver iodohalide grains in a reaction vessel, in the presence of a colloidal medium, and in the presence of pressure, the pressure being selected to allow the emulsion to be heated above 130° C. without boiling; and heating the emulsion to a temperature above 130° C.

5,378,600
METHOD OF MANUFACTURING SILVER HALIDE PHOTOGRAPHIC EMULSION
 Kazuyoshi Goan, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan
 Filed Nov. 5, 1993, Ser. No. 148,692
 Claims priority, application Japan, Nov. 10, 1992, 4-299875
 Int. Cl.⁶ G03C 1/015

U.S. Cl. 430—569 **14 Claims**
 1. A method for preparing a silver iodobromide emulsion comprising silver iodobromide grains containing an average silver iodide content of 2 mol % or less comprising silver iodobromide grains containing an average silver iodide content of 2 mol % or less comprising
 (i) preparing a seed emulsion containing silver halide seed grains,
 (ii) introducing the seed emulsion into a reaction vessel having a hydrophilic colloid solution and
 (iii) further incorporating simultaneously a solution of a silver salt and a solution of bromide and iodide salts into the reaction vessel having the hydrophilic colloid solution containing said seed grains to form the silver iodobromide grains, wherein in the step (iii), the total volume of said solutions of the silver salt, and the bromide and iodide salts is within a range of 2 to 10 times the volume of the hydrophilic colloid solution containing said seed grains; and said seed grains have an average size of 0.3 μm or less and are contained in an amount of 0.5 to 5.0% by volume in the hydrophilic colloid solution.

5,378,601
METHOD OF PRESERVING PLATELETS WITH APYRASE AND AN ANTIOXIDANT
 Elena Gepner-Puszkina, New Rochelle, N.Y., assignor to Montefiore Medical Center, Bronx, N.Y.
 Filed Jul. 24, 1992, Ser. No. 920,191
 Int. Cl.⁶ A01N 1/02; C12N 9/48

U.S. Cl. 435—2 **15 Claims**
 1. A method for the preservation of human blood platelets which consists essentially of:
 (a) adding an effective amount of an adenosine-5'-triphosphatase and an adenosine-5'-diphosphatase enzyme or an enzyme having activity of both adenosine-5'-triphosphatase and adenosine-5'-diphosphatase, which does not adversely affect platelets in a diluent, to platelets to form a mixture;
 (b) adding an antioxidant to the mixture of step(a); and
 (c) maintaining the mixture of step (b) at a temperature which does not affect the viability of the platelets.

5,378,602
**HIGHLY INFORMATIVE MICROSATELLITE REPEAT POLYMORPHIC DNA MARKERS TWENTY-SEVEN]
 Michael H. Polymeropoulos, Bethesda, and Carl R. Merrill, Rockville, both of Md., assignors to The Government of the United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.
 Continuation-in-part of Ser. No. 707,501, May 29, 1991, abandoned. This application Nov. 27, 1991, Ser. No. 799,828
 The portion of the term of this patent subsequent to Nov. 29, 2011, has been disclaimed.**

Int. Cl.⁶ C12Q 1/68; C12P 19/34; C07H 21/04
U.S. Cl. 435—6 **4 Claims**
 1. An oligonucleotide primer selected from the group consisting of a sequence according to SEQ ID NO:10 through SEQ ID NO:35 and SEQ ID NO:38 through SEQ ID NO:63.

5,378,603
METHOD AND COMPOSITION FOR IDENTIFYING SUBSTANCES WHICH ACTIVATE TRANSCRIPTION OF THE LDL RECEPTOR GENE
 Michael S. Brown; Joseph L. Goldstein; David W. Russell; Thomas C. Sudhof, all of Dallas, Tex., and David W. Martin, Jr., San Francisco, Calif., assignors to Board of Regents, The University of Texas System, Austin, Tex.
 Filed Mar. 30, 1987, Ser. No. 33,081
 Int. Cl.⁶ C12Q 1/68; C12N 15/09

U.S. Cl. 435—6 **11 Claims**
 1. A method for determining the ability of a candidate substance to stimulate a host cell to produce a detectable signal, which method comprises:
 providing a nucleic acid sequence containing a sterol regulator element (SRE), a promoter, and a reporter gene under the transcriptional control of both the SRE and the promoter, which gene is capable of conferring a detectable signal onto a host cell;
 transfecting said nucleic acid sequence into such a host cell; culturing the cell in the presence of a sterol so as to suppress production of the signal by the host cell;
 contacting the sterol suppressed cell with a candidate substance to determine the ability of the candidate substance to stimulate the host cell to produce the signal in the presence of such a sterol; and
 assaying for the signal to identify such a candidate substance.

5,378,604
OLIGONUCLEOTIDE PROBES FOR DETECTION OF PERIODONTAL PATHOGENS
 Dennis E. Schwartz, Redmond; Roy H. Kanemoto; Susan M. Watanabe, both of Seattle, and Kim Dix, Arlington, all of Wash., assignors to MicroProbe Corporation, Bothell, Wash.
 Continuation of Ser. No. 571,5

5,378,605
METHOD OF DETECTING HEPATITIS B VARIANTS
HAVING DELETIONS WITHIN THE X REGION OF THE
VIRUS GENOME

Mark Feitelson, North Wales; Ling-Xun Duan, and Jianhui Guo, both of Philadelphia, all of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Jun. 8, 1993, Ser. No. 74,346

Int. Cl.⁶ C12Q 1/70; G01N 33/53; C12P 19/34

U.S. Cl. 435—5

2 Claims

1. A method of detecting hepatitis B variants having deletions within the X region of the virus in a patient sample comprising detecting of antibodies which specifically bind to the polymerase of hepatitis B virus and hepatitis B X antigen in said sample by enzyme linked immunosorbent assays combined with detecting deletions within the X region of the viral genome by polymerase chain reaction using hepatitis B X plus core region primers selected from the group of SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6 and SEQ ID NO: 7.

5,378,606
SPECIFIC DETECTION OF *NEISSERIA*
GONORRHOEA

Anne Stern, Penzberg, and Karin Wolff, Germering, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

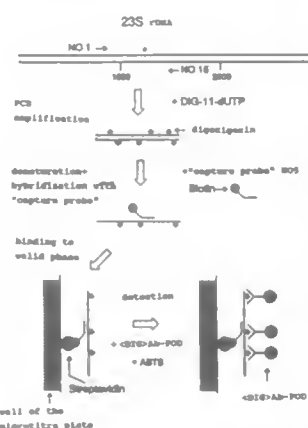
Filed Jun. 15, 1993, Ser. No. 76,891

Claims priority, application Germany, Jun. 17, 1992, 4219821

Int. Cl.⁶ C12Q 1/68; C12N 1/20, 15/00; C07H 17/00

U.S. Cl. 435—6

16 Claims



15. A method for the detection of *Neisseria gonorrhoea*, comprising the steps of:

hybridizing a probe containing a sequence selected from the group consisting of the sequences shown in SEQ ID NOS: 4 to 15 inclusive, wherein any additional nucleotides which are present do not change the specific hybridization of said probe and wherein the total length of said probe is less than 30 nucleotides, with a sample containing DNA or RNA, and

detecting any hybrid formation wherein said detection of hybridization indicates the presence of *Neisseria gonorrhoea*.

5,378,607
METHOD FOR TESTING FOR THE PRESENCE OF
METASTATIC TUMOR CELLS

Mohanathan Chelladurai, Southfield; Kenneth V. Houn, Grosse Pointe Woods, and Daniel A. Walz, Detroit, all of Mich., assignors to Biomed Investment Limited Partnership, Grosse Pointe Farms, Mich.

Filed Jul. 29, 1991, Ser. No. 737,431

Int. Cl.⁶ G01N 33/53, 33/574, 33/86

U.S. Cl. 435—7.23

14 Claims

1. A method for screening cells for human tumor cells which are metastatic which comprises:

- (a) contacting a sample of human cells suspected of containing human tumor cells which are metastatic with a microbial toxin or active subunit of the toxin which selectively binds Human Leukocyte Antigen-DR (HLA-DR);
- (b) incubating the toxin or subunit with the HLA-DR to permit the toxin to bind HLA-DR in the sample;
- (c) detecting the HLA-DR bound to the toxin or subunit; and
- (d) correlating the toxin or subunit bound HLA-DR to cells with normal human cells to determine that the cells are metastatic, wherein the tumor cells which are metastatic exhibit higher HLA-DR as compared to HLA-DR in the normal human cells.

5,378,608
ENZYME IMMUNOASSAY FOR ANTIGEN AND SOLID
PHASE USED THEREFOR

Yoji Marui, Takarazuka; Chozo Hayashi, Nishinomiya; Shigeki Ito, Mishima; Mieko Fujio, Ibaraki; Hiroki Tanaka, Osaka; Toshihide Nagasaki, Takarazuka; Yasuji Soda, Kobe, and Hitoshi Kaneta, Takatsuki, all of Japan, assignors to Nippon Shoji Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1990, Ser. No. 542,038

Claims priority, application Japan, Jun. 29, 1989, 1-167697; Mar. 20, 1990, 2-70341

Int. Cl.⁶ G01N 33/53, 33/577

U.S. Cl. 435—7.5

3 Claims

1. A method for determining the amount of an antigen in a sample, wherein the method comprises:

- (1) contacting the sample with (a) an enzyme-labelled antibody specific for the antigen, and (b) a pre-formed reagent comprising biotinylated Fab' fragments specific for the antigen immobilized on a solid phase through a first substance selected from the group consisting of avidin, streptavidin and derivatives thereof, wherein the Fab' fragments are biotinylated through thiol groups; and
- (2) determining the amount of antigen in the sample by measuring enzyme activity on the solid phase.

5,378,609
LIPASE SINGLE REAGENT SYSTEM

Shing F. Kwan, Ventura, and Rebecca J. Hunt, Carpinteria, both of Calif., assignors to Ivan E. Modrovich, Camarillo, Calif. Continuation-in-part of Ser. No. 375,025, May 25, 1989, Pat. No. 5,248,598. This application Apr. 29, 1991, Ser. No. 693,856

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.⁶ C12Q 1/34

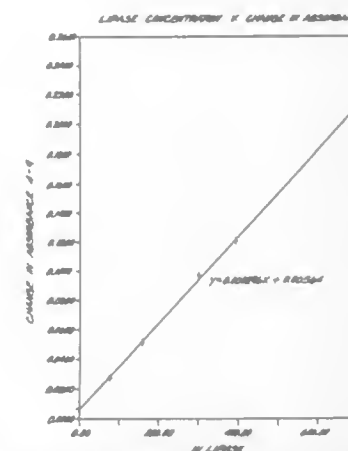
U.S. Cl. 435—18

29 Claims

1. A single emulsion reagent for the determination of lipase comprising:

- a lipase substrate;
- a lipase activator comprising colipase as a first lipase activator comprising colipase provided in an amount sufficient to anchor lipase to liquid globules;
- an activating amount of a second lipase activator selected from the group consisting of alkaline earth chlorides, and mixtures of alkaline earth chlorides and alkali chlorides;
- a lipoprotein lipase inhibitor selected from the group consisting of bile acid and bile acid salts;

a stabilizing amount of an emulsion stabilizer comprising Triton X-100, a polyethylene glycol p-isooctyl-phenyl ether;



a buffer present in an amount sufficient to maintain a pH in the range of from about 8.8 to about 9.6; and an antiprecipitant present in an amount sufficient to prevent precipitation of constituents of human sera.

5,378,610
METHOD FOR ASSAYING ENDOTOXIN IN SERUM OR
PLASMA USING LIMULUS AMOEBOCYTE LYSATE

Shigenori Tanaka, and Hiroshi Tamura, both of Tokyo, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan

PCT No. PCT/JP91/01309, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO92/06382, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 27, 1991, Ser. No. 859,398

Claims priority, application Japan, Sep. 28, 1990, 2-257415

Int. Cl.⁶ C12Q 1/34, 1/00, 1/02

U.S. Cl. 435—18

6 Claims

1. A method of assaying an endotoxin in a sample by using limulus amoebocyte lysate components, which comprises the steps of, adding to a sample selected from the group consisting of plasma and serum, an aqueous reagent solution comprising:

- a) a surfactant selected from the group consisting of polyoxyethylene ethers, polyoxyethylene sorbitans, n-alkyl-glucopyranosides and dodecyl sulfates;
- b) a compound having an imidazolyl or an amino group; and
- c) an alkaline earth metal salt and an alkaline metal hydroxide;

incubating the resulting mixture under conditions such that the endotoxin is liberated into the reagent solution, and assaying for the endotoxin in the reagent solution using limulus amoebocyte lysate,

wherein said polyoxyethylene ethers are selected from the group consisting of polyoxyethylene-p-tert-octyl (or iso-octyl) phenyl ether (degree of polymerization: 8-40), polyoxyethylene-4-tert-octyl (or iso-octyl) cyclohexyl ether (degree of polymerization: 8-40), polyoxyethylene-p-nonyl phenyl ether (degree of polymerization: 9-15), polyoxyethylene heptamethyl hexyl ether (degree of polymerization: 10-20) and polyoxyethylene dodecyl ether (degree of polymerization: 10-29); said n-alkyl-glucopyranosides are selected from the group consisting of n-(heptyl, octyl, nonyl, decyl and dodecyl)-D-glucopyranosides; said polyoxyethylene sorbitans are selected from the group consisting of mono-laurate, monopalmitate, monostearate, monooleate and trioleate of polyoxyethylene sorbitan (degree of polymerization: about 20); said dodecyl sulfates are selected from the group consisting of sodium dodecyl sulfate, lithium

dodecyl sulfate and calcium dodecyl sulfate; and said compound having an imidazolyl group or an amino group is selected from the group consisting of histamine dihydrochloride, L-histidine dihydrochloride, poly-L-histidine hydrochloride, poly-L-lysine hydrochloride, poly-L-arginine hydrochloride, polyethyleneimine, adenine hydrochloride and cytosine hydrochloride; wherein said alkaline earth metal salt is a water soluble salt of an alkaline earth metal with an inorganic or an organic acid; wherein said alkaline earth metal is a metal selected from the group consisting of calcium, magnesium and strontium; and wherein said inorganic acid or organic acid is an acid selected from the group consisting of hydrochloric acid, nitric acid, sulfuric acid, acetic acid and citric acid.

5,378,611
PROCESS FOR PRODUCING
6 β ,14 α -DIHYDROXY-4-ANDROSTENE-3, 17-DIONE
AMID 14 α -HYDROXY-4-ANDROSTENE-3,6,17-TRIONE
FROM 4-ANDROSTENE-3, 17-DIONE USING
MYROTHECIUM SP. FERM BP-4432

Hideki Yoshioka; Hajime Asada, both of Takasaki, and Shinji Fujita, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1993, Ser. No. 154,857

Claims priority, application Japan, Nov. 27, 1992, 4-339578; Oct. 6, 1993, 5-272912

Int. Cl.⁶ C12P 33/06, 33/16, 33/02; C12N 1/14

U.S. Cl. 435—58

3 Claims

1. A process for the production of 6 β ,14 α -dihydroxy-4-androstene-3,17-dione from 4-androstene-3,17-dione, said process comprising:

- culturing Myrothecium sp. FERM BP-4432, or a mutant thereof capable of hydroxylating 4-androstene-3,17-dione to produce 6 β ,14 α -dihydroxy-4-androstene-3,17-dione, in a medium supplemented with 4-androstene-3,17-dione, and
- isolating 6 β ,14 α -dihydroxy-4-androstene-3,17-dione from the culture medium.

5,378,612
CULTURE MEDIUM FOR PRODUCTION OF
RECOMBINANT PROTEIN

Kazuyuki Nakashima; Izumi Mimaki; Takayoshi Hamamoto, all of Kumamoto, and Kenichi Masuda, Tokyo, all of Japan, assignors to Juridical Foundation The Chemo-Sero-Therapeutic Research Institute, Kumamoto and Teijin Limited, Osaka, both of Japan

Continuation of Ser. No. 696,567, May 8, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,670

Claims priority, application Japan, May 11, 1990, 2-121729; Apr. 15, 1991, 3-082269

Int. Cl.⁶ C12P 21/02; C12N 5/02

U.S. Cl. 435—69.6

11 Claims

1. A method for producing coagulation Factor VIII which comprises culturing a Chinese Hamster Ovary cell which produces said coagulation Factor VIII, in a culture medium comprising a nonionic surfactant and a cyclodextrin and collecting the secreted coagulation Factor VIII from the culture medium, wherein the nonionic surfactant is selected from the group consisting of a pluronic surfactant and a sorbitan surfactant.

5,378,613
METHOD FOR INCREASED EXPRESSION OF LOW
MOLECULAR WEIGHT RECOMBINANT
POLYPEPTIDES

Rama M. Belagaje, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 24, 1991, Ser. No. 764,655

Int. Cl.⁶ C12N 15/00, 1/21, 15/17, 15/18

U.S. Cl. 435—69.7

8 Claims

1. A method of recombinantly producing a polypeptide derivative, said method comprising: constructing a recombinant DNA vector; transforming a prokaryotic host cell with said vector; and culturing said transformed host cell under conditions suitable for gene expression; wherein said vector comprises:

- a DNA sequence that provides for autonomous replication or chromosomal integration of said vector in a prokaryotic host cell;
- a promoter and translational activating sequence functional in said host cell;
- an arginine codon inserted immediately 3' to said translational activating sequence; and
- a DNA molecule that is operably linked to vector elements A, B, and C such that the structure of the resulting polypeptide derivative is Methionine-Arginine-R, wherein R is selected from the group consisting of IGF-I, IGF-II, proinsulin, insulin A chain, insulin B chain, GRF, and somatostatin.

5,378,614
VECTOR AND METHOD FOR MAKING TISSUE FACTOR
PATHWAY INHIBITOR (TFPI) ANALOGUES IN YEAST
Jens G. L. Petersen, Valby, and Ole J. Nordfang, Hillerød, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation-in-part of Ser. No. 828,920, Jan. 27, 1992, Pat. No. 5,312,736. This application Mar. 2, 1993, Ser. No. 26,145

Claims priority, application Denmark, Aug. 18, 1989, 4080/89

Int. Cl.⁶ C12N 1/19, 15/81

U.S. Cl. 435—69.8

8 Claims

1. A recombinant vector capable of directing the expression of a polypeptide analog of Tissue Factor Pathway Inhibitor (TFPI) in yeast, said analog having the amino acid sequence of native TFPI from Asp¹ to Thr¹⁶¹;

said vector comprising a promoter, a transcription initiation signal, and a terminator operably associated with a nucleic acid sequence which encodes a translation product consisting of a secretion-directing signal peptide concatenated to said TFPI analog.

5,378,615
PROCESS FOR THE PRODUCTION OF VACCINE FOR
PREVENTION OF PASTEURILLA HAEMOLYTICA
PNEUMONIA IN BOVINE

Patricia E. Shewen, Guelph, and Bruce N. Wilkie, Puslinch, both of Canada, assignors to The University of Guelph, Canada

Continuation of Ser. No. 462,929, Jan. 12, 1990, Pat. No. 5,165,924, which is a continuation of Ser. No. 821,197, Jan. 22, 1986, abandoned. This application Oct. 9, 1992, Ser. No. 958,796

Int. Cl.⁶ A61K 39/00, 39/02; C12P 21/00; C12N 1/20

U.S. Cl. 435—71.3

7 Claims

1. A process for producing a non-toxic inactive cytotoxin specific for ruminant leukocytes comprising the steps of:

- culturing an inoculum of *Pasteurella haemolytica* having an optical density of about 0.18 measured at a wavelength of 525 nm, in a serum-free medium for a period in the range of 1.5 to 3 hrs, so as to produce said cytotoxin;
- periodically measuring the optical density of said serum-free medium;
- upon detecting a value for the optical density of about 0.37, measured at a wavelength of 525 nm, which indicates the phase of logarithmic growth of the cells when an

optimum concentration of cytotoxin is produced in said serum-free medium, separating supernatant liquid containing said cytotoxin from the resulting culture;

- separating solids, including any of said cells, from the resulting supernatant liquid so as to obtain a *Pasteurella haemolytica* serum-free, cell-free solution of said cytotoxin which is essentially endotoxin-free.

5,378,616
MUTANT *ESCHERICHIA COLI* CAPABLE OF
ENHANCED L-GLUTAMIC ACID PRODUCTION BY
FERMENTATION

Nobuharu Tajimoto; Yoshimi Kikuchi; Osamu Kurahashi, and Yoshiko Kawahara, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,651

Claims priority, application Japan, Aug. 7, 1991, 3-197774

Int. Cl.⁶ C12P 13/14; C12N 1/00, 1/20

U.S. Cl. 435—110

2 Claims

1. A process for producing L-glutamic acid by fermentation which comprises:

- culturing in a culture medium, a mutant which is derived from *Escherichia coli* K-12 strain, wherein said mutant (i) is deficient or low in α -KGDH activity, (ii) is low in glutamic acid decomposition activity, (iii) is able to produce L-glutamic acid and (iv) expresses a malate synthase, an isocitrate lyase and an isocitrate dehydrogenase kinase/-phosphatase; and
- isolating L-glutamic acid from the culture medium.

5,378,617
PROCESS FOR THE PRODUCTION OF MACROLIDE
COMPOUNDS

Martin Todd, High Wycombe; Mark A. Haxell, St. Peters, and Gordon C. Lawrence, Burnham, all of England, assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 492,250, Mar. 9, 1990, abandoned, which is a continuation of Ser. No. 24,664, Mar. 11, 1987, abandoned. This application Aug. 24, 1992, Ser. No. 933,578

Claims priority, application United Kingdom, Mar. 12, 1986, 8606120

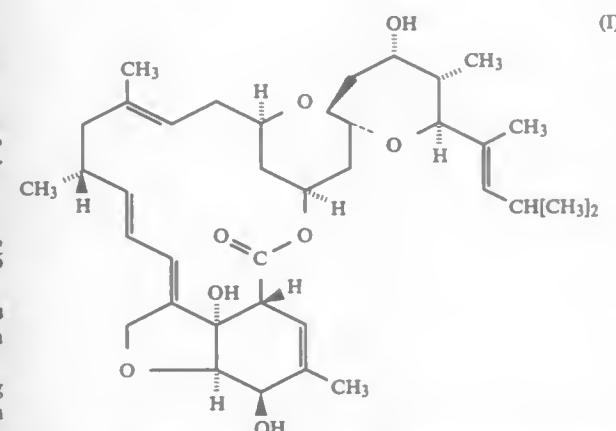
The portion of the term of this patent subsequent to Feb. 6, 2007, has been disclaimed.

Int. Cl.⁶ C12P 17/18; C12N 1/20

U.S. Cl. 435—119

4 Claims

1. A process for the production of a compound of formula (I)



which comprises cultivating a microorganism selected from the group consisting of *Streptomyces thermoarchaensis* NCIB 12015, 12111, 12112, 12113, 12114 and mutants thereof capable of producing the compound of formula (I) in a culture medium containing an additive selected from the group consisting of a fatty acid, an ester of a fatty acid, an amide of a fatty acid and

a salt of a fatty acid whereby the compound of formula (I) is produced; and then recovering the compound of formula I.

5,378,618
VITRO HEADFUL PACKAGING SYSTEM FOR CLONING
DNA FRAGMENTS AS LARGE AS 95KB

Nat L. Sternberg, West Chester, Pa., and Brian L. Sauer, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 397,071, Aug. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 182,112, Apr. 15, 1988, abandoned. This application Sep. 29, 1992, Ser. No. 954,423

Int. Cl.⁶ C12N 15/00, 15/66

U.S. Cl. 435—172.3

30 Claims

1. An in vitro headful packaging system for cloning foreign DNA fragments as large as 95 kb comprising:

- modifying vector DNA by inserting a stuffer fragment into a blunt end producing site wherein the stuffer fragment is oriented such that the blunt end producing site is oriented in a clockwise direction with respect to a pac site;
- digesting the product of step (a) to produce two vector arms each of which contains (i) a blunt end, (ii) another end which is compatible with the foreign DNA fragment which is to be cloned, and (iii) a loxP site;
- ligating the foreign DNA to the product of step (b) without generating concatemers;
- reacting the product of step (c) with pac cleavage proficient extract and head-tail proficient extract wherein the ratio of large heads to small heads in the head-tail extract is at least 5:1;
- infecting a Cre⁺ bacterial strain with the product of step (d); and
- recovering the cloned DNA.

5,378,619
PROMOTER FOR TRANSGENIC PLANTS
Stephen G. Rogers, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 429,917, Oct. 31, 1989, abandoned. This application Dec. 22, 1993, Ser. No. 172,334

Int. Cl.⁶ C12N 15/67, 15/82; C07H 21/04; A01H 5/00

U.S. Cl. 435—172.3

28 Claims

19. A method for providing enhanced gene expression in transgenic plants which comprises:

- transforming plant cells with a DNA molecule which comprises operatively linked in sequence in the 5' to 3' direction:
 - a DNA promoter sequence from figwort mosaic virus that directs transcription of downstream heterologous structural genes in plants, wherein said promoter sequence comprises nucleotides 11 through 573 of SEQ ID NO. 11;
 - a non-translated leader sequence;
 - a structural DNA sequence which is heterologous to said promoter;
 - a non-translated DNA sequence which functions in plant cells to cause the termination of transcription and the addition of polyadenylated ribonucleotides to the 3' end of the RNA sequence;
- selecting said plant cells which have been transformed;
- regenerating said plant cells to provide a differentiated plant; and
- selecting a transformed plant which expresses said structural gene.

5,378,620
STREPTOLYSIN O DERIVATIVES
Craig W. Adams, Corona, and Eva Y. Wang, Tustin, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 30, 1991, Ser. No. 752,429
Int. Cl.⁶ C12N 9/00, 1/20; C12P 21/06; C07H 19/00
U.S. Cl. 435—183

6 Claims

1. A purified and isolated DNA sequence encoding a hemolytically active, soluble derivative of Streptolysin O, wherein said DNA sequence is as set forth in FIG. 1 (SEQ. ID NO: 1).

5,378,621
KILLING CELLS WITHOUT LYSIS IN A METHOD FOR
ENZYME RECOVERY FROM A FERMENTATION
BROTH

Virgil B. Lawlis, Jr., San Mateo; Henry G. Heinsohn, Pacifica, and Enrique F. Balin, San Bruno, all of Calif., assignors to Genencor, Inc., San Francisco, Calif.

Continuation of Ser. No. 799,864, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 365,945, Jun. 13, 1989, abandoned. This application May 7, 1993, Ser. No. 57,851

Int. Cl.⁶ C12N 9/00; C12P 21/00

U.S. Cl. 435—183

4 Claims

1. In a method for recovering an extracellularly produced enzyme from a fungus in a fermentation medium, wherein the improvement comprises killing the fungal cells, without lysing, by a method comprising the following steps in either order:

- adjusting the pH of the medium to a value equal to or less than 2.79 with a mineral acid;
 - adding from about 0.25 to about 10% by weight of acetic acid or a salt thereof to the medium
- to thereby kill the cells in the medium under conditions which are compatible with the extracellularly produced enzyme.

5,378,622
Patent Not Issued For This Number

5,378,623
PHOSPHOLIPASE A1, PROCESS FOR ITS
PREPARATION AND THE USE THEREOF
Atsushi Hattori; Noriyoshi Uchida, and Masahiro Kitaoka, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Jun. 15, 1993, Ser. No. 78,009
Claims priority, application Japan, Jun. 16, 1992, 4-156264; Jan. 29, 1993, 5-013508

Int. Cl.⁶ C12N 9/20; C12P 13/00, 9/00

U.S. Cl. 435—198

18 Claims

1. A phospholipase A1 obtained from species of the fungus *Aspergillus*, having the following characteristics: which hydrolyzes phospholipid between about pH 2.5 and about pH 6.0, having a stability to a temperature of an upper limit of between 45° and 90° C., which is stable at a temperature of less than 90° C., which has a molecular weight of between about 30,000 and

40,000 daltons, as determined by sodium dodecyl sulfate polyacrylamide gel electrophoresis, which has pI under isoelectric point electrophoresis at about pH 2.8 to about pH 4.5, which has an optimum temperature for activity of from pH 3.2 to about pH 5.5, and which has an optimum temperature for activity of from about 30° to 65° C.

5,378,624

METHODS FOR REMOVING LIGANDS FROM A PARTICLE SURFACE

Ronald J. Berenson, Mercer Island, and Dale R. Peterson, Bothell, both of Wash., assignors to CellPro, Incorporated, Bothell, Wash.

Filed Apr. 23, 1990, Ser. No. 513,056

Int. Cl.⁶ C12N 1/02, 5/08, 7/02

U.S. Cl. 435—239

8 Claims

1. A method for removing a second ligand from a particle surface, said particle being selected from the group consisting of viruses and cells, without substantially affecting the particle surface, comprising:

exposing the particle to an anti-immunoglobulin antibody which is immobilized onto a support, wherein said particle is exposed under conditions and for a residence time sufficient to allow an anti-particle surface antibody to desorb from the particle surface, and wherein said anti-immunoglobulin antibody has an affinity for the anti-particle surface antibody that is at least two orders of magnitude greater than the affinity of the anti-particle surface antibody for the particle surface, such that the anti-particle surface antibody is removed.

5,378,625

BACILLUS THURINGIENSIS CRYSTALLIC (B) PROTEIN TOXIC TO COLEOPTERAN INSECTS

William P. Donovan, Levittown, Pa.; Mark J. Ruper, Wilmington, Del., and Annette C. Slaney, Hamilton Square, N.J., assignors to Ecogen, Inc., Langhorne, Pa.

Division of Ser. No. 32,775, Mar. 15, 1993, Pat. No. 5,264,364, which is a continuation of Ser. No. 813,592, Dec. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,562, Jan. 31, 1991. This application Aug. 27, 1993, Ser. No. 113,534 Int. Cl.⁶ A61K 31/00; A01N 63/00; C12N 1/20; C07H 19/00 U.S. Cl. 435—252.5

6 Claims

1. An isolated coleopteran-toxic protein having the amino acid sequence illustrated in FIG. 1 (SEQ ID NO: 2).

5,378,626

MACROCYCLIC LACTONE ANTIBACTERIAL ANTIBIOTIC COMPOUNDS

Ann C. Horan, Summit, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 123,656, Sep. 20, 1993, Pat. No. 5,342,852. This application Apr. 29, 1994, Ser. No. 236,757

Int. Cl.⁶ C12P 1/04, 17/16; C12N 1/20

U.S. Cl. 435—252.1

1 Claim

1. A biologically pure culture containing the microorganism *Saccharothrix Aerocolonensis* sub sp *antibiotica* SCCC 1886, ATCC 55003 said culture being capable of producing the compounds of formula I of claim 1 in recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances.

5,378,627 PROCESS FOR PREPARING (2S,3R)-3-ALKYL-PHENYLGLYCIDIC ACID ESTERS USING LIPASE

Takeji Shibutani; Hiroaki Matsumae, both of Kobe, and Eri Kawai, Kyoto, all of Japan, assignors to Tanabe Selyaku Co., Ltd., Osaka, Japan

Filed Aug. 10, 1992, Ser. No. 926,617

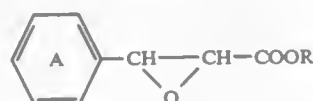
Claims priority, application Japan, Aug. 13, 1991, 3-288245

Int. Cl.⁶ C12P 41/00; C12N 1/00

U.S. Cl. 435—280

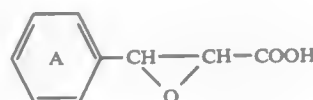
5 Claims

1. A process for preparing an optically active (2S, 3R) 3-phenylglycidic acid ester of the formula:



(I)

wherein the ring A is a phenyl ring which has a lower alkyl group as a substituent and R is an alkyl group, which comprises treating a racemic trans-3-phenylglycidic acid of the formula:



(II)

wherein the ring A is as defined above, and an alkanol in an organic solvent with a hydrolase which preferentially esterifies of the (2S, 3R) isomer of said racemic 3-phenylglycidic acid, said hydrolase being produced by a microorganism of the genus *Candida*, *Mucor*, *Rhizopus*, *Pseudomonas* or *Serratia*, and

isolating and collecting the resulting optically active 3-phenylglycidic acid ester from the reaction mixture.

5,378,628

SENSOR FOR MEASURING THE AMOUNT OF A COMPONENT IN SOLUTION

Michael Grätzel, St-Sulpice; David Fraser, Vevey; Shaik M. Zakeeruddin, Renens; Jean-Paul Randin, Cortaillod, and Erik J. Frenkel, Nenchâtel, all of Switzerland, assignors to Asulab, S.A., Blenne, Switzerland

PCT No. PCT/CH92/00034, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO92/14836, PCT Pub. Date Sep. 3, 1992

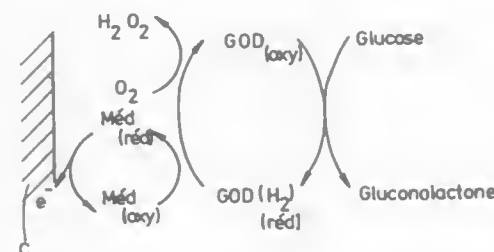
PCT Filed Feb. 19, 1992, Ser. No. 938,219

Claims priority, application France, Feb. 21, 1991, 91 02200

Int. Cl.⁶ G01N 27/26, 27/327

U.S. Cl. 435—288

14 Claims



1. A sensor to be connected to a device for processing an electric signal provided by the sensor and representative of an amount of a component to be measured in a solution, said sensor comprising at least one measuring electrode and one reference electrode insulated from one another, said electrodes defining an area to receive said solution and

comprising respective areas defining electrical contacts to be connected to the device for processing the signal, said measuring electrode comprising at least one current collector electrically connected to one of the electrical contacts and coated with a mixture comprising glucose oxidase as an oxidation-reduction enzyme specific to said component and at least one mediator means for transferring electrons between said enzyme and said current collector,

and said mediator means comprising tris(4,4'-dimethoxy-2,2'-bipyridine) osmium or bis(4,4'-dimethoxy-2,2'-bipyridine)mono(4,4'-dimethyl-2,2'-bipyridine) osmium.

5,378,629

WASH COMPOSITION FOR DETERMINATION OF MICROORGANISMS ASSOCIATED WITH PERIODONTAL DISEASES

Bradley P. Boyer, Paul B. Contestable, and Brian A. Snyder, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 774,019, Oct. 8, 1991, Pat. No. 5,248,595.

This application Jun. 7, 1993, Ser. No. 72,029

Int. Cl.⁶ G01N 33/569

U.S. Cl. 436—17

8 Claims

1. An aqueous wash composition for specific binding assays buffered to a pH of less than or equal to about 6 or greater than or equal to about 9, said composition comprising:

at least about 0.1 weight percent of an anionic surfactant which is represented by the formula:



wherein A is an alkyl or alkyl-substituted phenyl having a molecular weight of from about 180 to about 250, X+m is hydrogen or a monovalent or divalent cation, m is 1 or 2, y is 0 or 1, and n is 1 or 2 provided that m and n are not both 2.

5,378,630

TEST STRIP AUTOMATIC SUPPLY DEVICE AND ANALYTICAL INSTRUMENT USING THE SAME

Susumu Kai; Isao Shindo, both of Katsuta; Shigeo Mutoh, Hitachi, and Kasumi Yoshida, Mito, all of Japan, assignors to Hitachi, Ltd. and Hitachi Instrument Engineering Co., Ltd., both of Japan

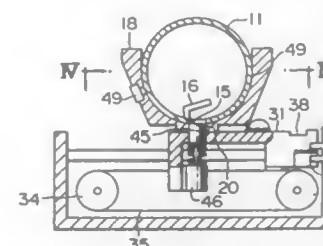
Filed Nov. 10, 1992, Ser. No. 974,273

Claims priority, application Japan, Nov. 14, 1991, 3-298785

Int. Cl.⁶ G01N 35/00; B65H 3/00

U.S. Cl. 436—43

11 Claims



1. A test strip automatic supply method for a test strip analytical instrument, comprising the steps of:

providing a test strip automatic supply device having a cylindrical container containing a plurality of test strips, a wall having a slit therein, an opening adjacent the slit, and an external take-out position; reciprocally rotating the cylindrical container to fit one of the test strips into the slit so that a longitudinal direction of the test strip is parallel to a rotation axis of said container; closing the opening so as to prevent the test strip from entering the opening during rotation of said container; passing the test strip fitted into said slit out of said container

via said slit and through said opening when rotation of the container is stopped; positioning said test strip at an external take-out position of the test strip automatic supply device; and transporting the test strip positioned at the external take-out position to a test strip dipping position for contact with a sample to be analyzed.

5,378,631

SEPARATION OF STRONTIUM FROM FECAL MATTER

Dianne K. Kester, Idaho Falls, Id., assignor to United States Department of Energy, Washington, D.C.

Filed Feb. 14, 1994, Ser. No. 195,248

Int. Cl.⁶ G01N 33/48, 33/50

U.S. Cl. 436—59

18 Claims

1. A method of separating strontium from a sample of biomass potentially contaminated with various radionuclides, said sample having been reduced, dissociated, and carried on a first precipitate of actinides, comprising the steps of:

removing the first precipitate to leave a supernate containing strontium; adding oxalic acid to the supernate to cause a second precipitate of strontium and calcium; separating the second precipitate from the supernate; adding nitric acid to the second precipitate to cause a third precipitate of strontium while leaving the calcium in solution; and separating the third precipitate from the solution.

5,378,632

METHOD OF TESTING OILS

Richard K. Solly, Ascot Vale; Alan J. Power, Kellor; Ludek A. Beranek, Kooyong, all of Australia; Shiela J. Marshman, Woking, United Kingdom; Joanna F. Pedley, Walton on Thames, United Kingdom, and Robin W. Hiley, Sevenoaks, United Kingdom, assignors to The Commonwealth of Australia, Australia and The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

PCT No. PCT/AU90/00467, § 371 Date Apr. 24, 1992, § 102(e) Date Apr. 24, 1992, PCT Pub. No. WO91/05242, PCT Pub. Date Apr. 18, 1991

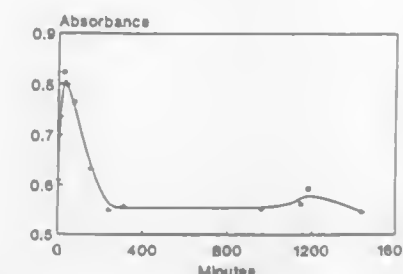
PCT Filed Sep. 26, 1990, Ser. No. 849,058

Claims priority, application Australia, Sep. 27, 1989, PJ6614; United Kingdom, Oct. 25, 1989, 8924017

Int. Cl.⁶ G01N 21/78, 33/28

U.S. Cl. 436—60

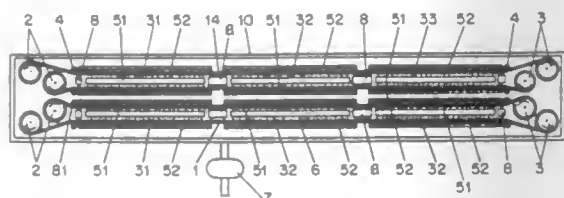
30 Claims



1. A method of testing a fossil-fuel derived hydrocarbon oil containing an indole for the presence of chemically unstable compounds selected from the group consisting of phenalenes, phenalanones and phenalenones, wherein a sample of the oil is contracted with a Lowry-Bronsted acid catalyst to form a colored reaction product between the indole and the unstable compound when present in the sample; and the color of the sample within the region between 600–850 nm is visually observed and the presence of at least one of said unstable compounds in said sample is determined by comparison to a predetermined standard.

which is contained in the liquid sample or in a second set of compartments, said fixed compartments containing the first binding partner being covered by a layer of an inert water soluble protein substance, with compartments of at least one set being elutable compartments containing a labelled second binding partner which is elutable and which is disposed adjacent to a top surface of the layer of inert water soluble protein substance, said labelled second binding partner being capable of binding bioreactively and specifically to a corresponding binding partner contained in the liquid sample or another set of compartments, wherein the layer of inert water soluble protein substance is located between the carrier layer and the elutable compartments containing the labelled second binding partner, and over the fixed compartments, wherein the layer of inert water soluble protein substance forms a continuous layer which spatially separates said fixed compartments and said elutable compartments, wherein said fixed compartments and said elutable compartments are arranged in an alternating horizontal relationship with the layer of inert water soluble protein substance therebetween.

5,378,639
METHOD FOR MANUFACTURING A THIN-FILM PHOTOVOLTAIC CONVERSION DEVICE
 Toshiaki Sasaki, and Hitoshi Shimizu, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
 Division of Ser. No. 95,721, Jul. 21, 1993. This application Apr. 28, 1994, Ser. No. 234,927
 Claims priority, application Japan, Jul. 24, 1992, 4-197321; Oct. 23, 1992, 4-284791; Feb. 4, 1993, 5-017124
 Int. Cl.⁶ H01L 31/18
 U.S. Cl. 437—4 9 Claims



1. A method of manufacturing a thin-film photovoltaic conversion device having thin-film layers formed on a belt-shaped flexible substrate which is adapted to pass through a plurality of film-forming chambers arranged in sequence, each film-forming chamber adapted to contain a reaction gas mixture for deposition of a successive thin-film layer, each film-forming chamber having at least two electrodes operatively associated therewith, and each film-forming chamber having a plurality of sealing means associated therewith for sealing the film-forming chambers airtight, said method comprising:

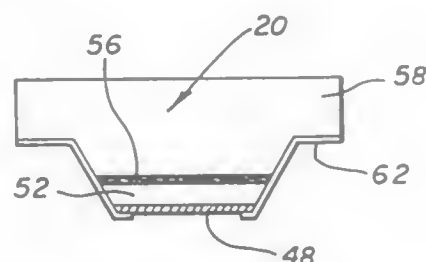
- positioning a first portion of the flexible substrate within a film-forming chamber;
- creating an airtight environment within the film-forming chamber by firmly engaging the sealing means and a first electrode with the substrate;
- while maintaining the airtight environment within the film-forming chamber, depositing a film layer on the first substrate portion under a predetermined pressure in the first film-forming chamber;
- disengaging the sealing means and the first electrode from the substrate;
- moving the first substrate portion out of the film-forming chamber without contacting any portion of the film-forming chamber surfaces and the two electrodes;
- positioning the first substrate portion within a next film-forming chamber; and
- repeating steps (a)–(f), in sequence, as many times as necessary to form the desired number of thin-film layers in the photovoltaic conversion device.

5,378,640
METHOD OF FABRICATING A TRANSMISSION MODE INGAAS PHOTOCATHODE FOR NIGHT VISION SYSTEM

Hyo-Sup Kim, Phoenix, Ariz., assignor to Litton Systems, Inc., Woodland Hills, Calif.
 Division of Ser. No. 811,781, Dec. 20, 1991, Pat. No. 5,268,570.
 This application Jul. 19, 1993, Ser. No. 93,359
 Int. Cl.⁶ H01L 31/18

U.S. Cl. 437—5

17 Claims



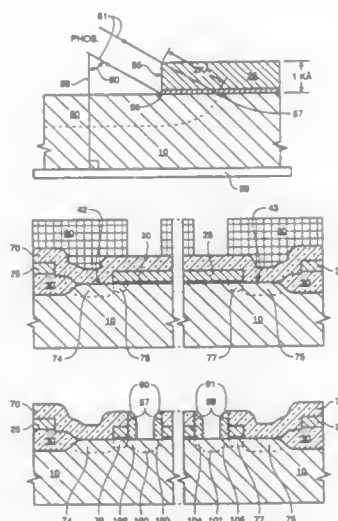
1. A method of making a photocathode for use in an image intensifier tube, said method comprising the steps of: providing a base substrate layer; providing a buffer layer on said substrate layer; providing a stop layer on said buffer layer; providing an active layer of InGaAs on said stop layer; providing a window layer of AlInAs on said active layer; providing a face plate associated with said active layer; removing both said substrate layer and said stop layer; and attaching an electrode to an edge of said active layer and said window layer.

5,378,641
ELECTRICALLY CONDUCTIVE SUBSTRATE INTERCONNECT CONTINUITY REGION AND METHOD OF FORMING SAME WITH AN ANGLED IMPLANT

David F. Cheffings, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
 Filed Feb. 22, 1993, Ser. No. 21,271
 Int. Cl.⁵ H01L 21/265

U.S. Cl. 437—35

2 Claims



1. A method for providing a plurality of low resistance electrical paths in a substrate of a semiconductor device, comprising:
 a) creating a control layer overlying portions of the substrate, said control layer having diametrically opposed

and exposed first and second edges, said first and second edges formed substantially normal to a face plane of the substrate; and

- performing an angled implant comprising,
 - a first bombardment of said control layer with ions to implant ions in the substrate and to alter the conductivity thereof thereby forming a first low resistance electrical interconnect, said bombardment performed at an oblique angle with the first edge, said first low resistance electrical interconnect formed in a region underlying said control layer from a point where ion penetration is prohibited by a thickness of said control layer toward said first edge, and
 - a second bombardment of said control layer with ions to implant ions in the substrate and to alter the conductivity thereof thereby forming a second low resistance electrical interconnect, said bombardment performed at an oblique angle with the second edge, said second low resistance electrical interconnect formed in a region underlying said control layer from a point where ion penetration is prohibited by a thickness of said control layer toward said second edges;
- forming a first conductive region in a first region of the substrate without said control layer, said first conductive region adjacent to a plane in which said first exposed edge lies;
- forming a second conductive region in a second region of the substrate without said control layer, said second conductive region adjacent to a plane in which said second exposed edge lies;
- etching portions of said control layer to form a first and a second opening;
- forming a third conductive region in the substrate defined by said first opening; and
- forming a fourth conductive region in the substrate defined by said second opening, wherein said first, said second, said third, and said fourth conductive regions are distance one from the other, and wherein said first low resistance electrical interconnect is interposed between and provides electrical communication between said first and said third conductive regions, and wherein said second low resistance electrical interconnect is interposed between and provides electrical communication between said second and said fourth conductive regions, said first and said second low resistance electrical interconnects forming the plurality of low resistance electrical paths, wherein said first low resistance electrical interconnect and said first and said third conductive regions have a same conductivity type, and wherein said second low resistance electrical interconnect and said second and said fourth conductive regions have a same conductivity type.

5,378,642
METHOD OF MAKING A SILICON CARBIDE JUNCTION FIELD EFFECT TRANSISTOR DEVICE FOR HIGH TEMPERATURE APPLICATIONS

Dale M. Brown, Schenectady, and Mario Gbezzo, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

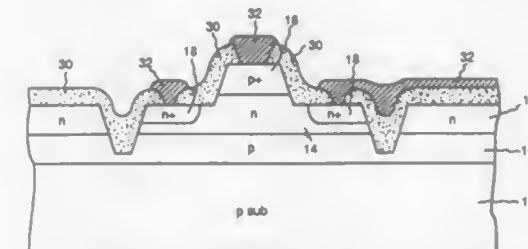
Filed Apr. 19, 1993, Ser. No. 48,448
 Int. Cl.⁶ H01L 21/266

U.S. Cl. 437—40

9 Claims

1. A method for fabricating a silicon carbide (SiC) junction field effect transistor (JFET) device, comprising the steps of: providing a first SiC semiconductor layer of a first conductivity type; providing a second SiC semiconductor layer of a second conductivity type supported by said first layer, the contacting surfaces of said first and second layers forming a junction; providing a gate area of said first conductivity type supported by said second layer by epitaxially depositing, upon said second semiconductor layer, a third SiC semi-

conductor layer of said first conductivity type and patterning said third layer in the shape of an annulus; and implanting ions of said second conductivity type in said second layer in a source area and a drain area such that



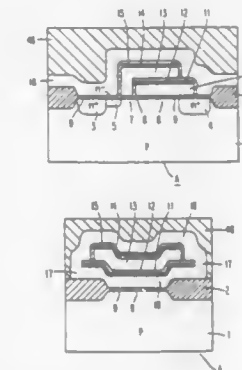
one of said source and drain areas is located in the area inside said gate area and the other one of said source and drain areas is located in the shape of an annulus surrounding said gate area.

5,378,643
ELECTRICALLY PROGRAMMABLE NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND MANUFACTURING METHOD THEREOF

Natsuo Ajika, and Hideaki Arima, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Division of Ser. No. 657,766, Feb. 21, 1991, Pat. No. 5,194,925.
 This application Dec. 31, 1992, Ser. No. 999,341
 Claims priority, application Japan, Feb. 22, 1990, 2-43224
 Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—43

1 Claim



1. A method for manufacturing a semiconductor memory device comprising the steps of:

- forming a source region of second conduction type and a drain region of second conduction type in a semiconductor substrate of first conduction type so that said source region is separated from said drain region by first and second channel regions;
- forming a first portion of a control gate, on a first insulating film, over said first channel region;
- forming a floating gate on a second insulating film over said second channel region and on a first interlayer insulating film over said first portion of said control gate;
- forming a second portion of said control gate over a surface of said floating gate on a second interlayer insulating film; and
- forming a third portion of said control gate, which connects one end of the second portion of said control gate to one end of said first portion of said control gate, orthogonal with one main surface of the semiconductor substrate.

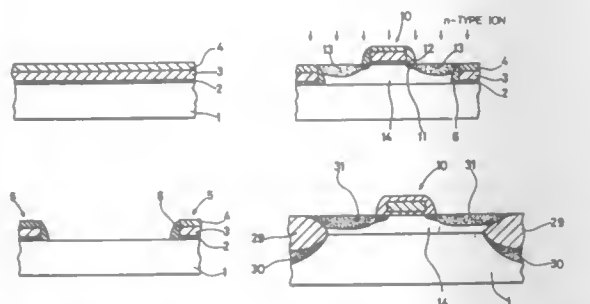
5,378,644

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Toshinori Morihara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 682,517, Apr. 9, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,682
Claims priority, application Japan, Apr. 13, 1990, 2-98949
Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—44

12 Claims



1. A manufacturing method of a semiconductor device comprising the steps of:

selectively forming an element separation insulator layer, which surrounds an active region and insulates said active region from other active regions, at a predetermined position on a main surface of a semiconductor substrate;
forming a semiconductor layer on an entire area of a main surface of said semiconductor substrate after said formation of said element separation insulator layer;
applying a resist film substantially flat on an entire main surface of said semiconductor layer;
etching said semiconductor layer and said resist film at a substantially equal selection ratio so as to expose said element separation insulator layer throughout a periphery thereof and to flatten a main surface of said semiconductor layer at a height by which a stepped portion is not formed relative to said element separation insulator layer; and
forming an element on said flattened main surface of said semiconductor layer;

wherein said step for selectively forming said element separation insulator layer includes the steps of:

- forming a polysilicon layer on said main surface of said semiconductor substrate with a first silicon oxide film therebetween,
 - depositing a second silicon oxide film on said polysilicon layer,
 - sequentially and selectively etching said second silicon oxide film, said polysilicon layer and said first silicon oxide film by means of photolithography to form a field shield part, and
 - forming a sidewall spacer on a side wall of said field shield part by deposition of a third silicon oxide film and anisotropic etching applied thereon; and
- wherein said step of forming said element on said flattened main surface of said semiconductor layer includes the steps of:
- forming a gate part on a portion of said flattened main surface of said semiconductor layer, and
 - forming a source/drain region by injecting an impurity ion of a conductive type opposite to that of said semiconductor layer, wherein said injecting includes ion implantation above an inclined surface of said sidewall spacer such that said source/drain region extends to said inclined surface of said sidewall spacer.

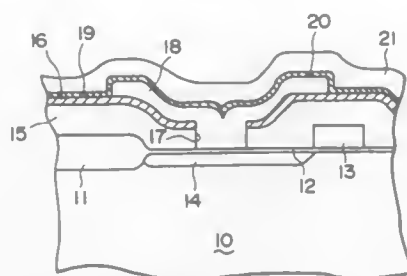
5,378,645

METHOD OF MAKING A SEMICONDUCTOR DEVICE WITH A CAPACITOR

Nobuhiko Inoue, and Masaki Yoshimaru, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed May 18, 1993, Ser. No. 62,752
Claims priority, application Japan, May 21, 1992, 4-129042
Int. Cl.⁶ H01L 21/70

U.S. Cl. 437—47

18 Claims



1. A method of manufacturing a semiconductor device having a capacitor comprising the steps:

- providing a semiconductor substrate;
- forming a silicon oxide layer on the semiconductor substrate;
- forming a first silicon nitride layer on the silicon oxide layer;
- forming a polycrystalline silicon layer as a lower electrode layer of the capacitor on the first silicon nitride layer;
- forming a native oxide layer on the polycrystalline silicon layer;
- without exposing the structure obtained in said step (e) to an oxygen-containing atmosphere,
 - removing the native oxide layer to expose the polycrystalline silicon layer, and
 - forming a second silicon nitride layer on the exposed polycrystalline silicon layer;
- forming a capacitor oxide layer on the second silicon nitride layer in the oxygen-containing atmosphere, the second silicon nitride layer and the capacitor oxide layer working as a dielectric layer of the capacitor; and
- forming an upper electrode layer of the capacitor on the capacitor oxide layer.

5,378,646

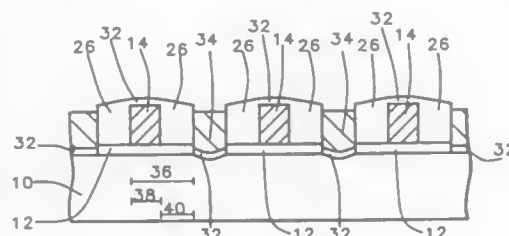
PROCESS FOR PRODUCING CLOSELY SPACED CONDUCTIVE LINES FOR INTEGRATED CIRCUITS

Heng-Sheng Huang, Taipei; Kun-Luh Chen, Chu-Nan, and Wood Wu, Hsin-chu, all of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Jan. 7, 1994, Ser. No. 271,756
Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—47

20 Claims



1. A method of forming a plurality of closely spaced word lines on the top surface of a semiconductor substrate, comprising the steps of:

providing a first thin insulating layer on the surface the semiconductor substrate,
depositing a first conductive polysilicon blanket layer over the first insulating layer,
depositing a photoresist layer over the first conductive polysilicon blanket layer,
exposing, developing and etching the photoresist layer to form a pattern of elongated spaced parallel resist lines,
anisotropically etching the first conductive layer, using the photoresist pattern as a mask, to form first spaced conductive polysilicon lines with substantially vertical sidewalls and exposing portions of the first insulating layer,
removing the photoresist layer,
depositing a thin conformal polysilicon layer over the first conductive lines and over the exposed portions first insulating layer,
completely oxidizing the thin conformal polysilicon layer and portions of the first conductive polysilicon lines to form a conformal silicon oxide layer over the first conductive polysilicon lines,
anisotropically etching the conformal silicon oxide layer exposing the top surfaces of the first conductive lines and forming spacers having vertical sidewalls, on the vertical sidewalls of the first conductive lines and exposing areas of the substrate between the spacers,
oxidizing the exposed top surfaces of the first conductive lines and the exposed areas of the substrate between the spacers to form a second thin insulating layer,
depositing a second conductive polysilicon layer having a substantially planar top surface on the substrate over the first conductive lines having a thickness in excess of the first conductive lines measured from the substrate surface, and
anisotropically etching the second polycrystalline silicon layer to a depth below the top of the second insulating layer thereby forming second conductive lines.

- forming a first dielectric layer on said substrate above said word lines,
- forming a polysilicon layer doped with a P conductivity type on said dielectric layer,
- forming a second dielectric layer on said polysilicon layer,
- forming an ion implant mask over said dielectric layer patterned by a bit line mask and then ion implanting N ions through said ion implant mask to form bit lines with an N conductivity type in said polysilicon layer,
- forming a code mask above said polysilicon layer with openings therethrough, and
- etching through said mask to remove code regions in said polysilicon layer, whereby said ROM is encoded.

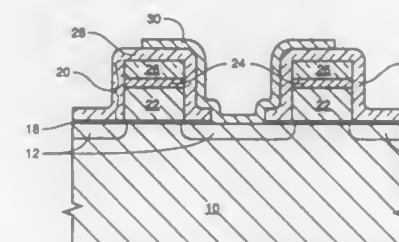
5,378,648

SITU STRINGER REMOVAL DURING POLYSILICON CAPACITOR CELL PLATE DELINEATION

Andrey P. Lin, Meridian, and Guy T. Blalock, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation-in-part of Ser. No. 914,189, Jul. 15, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,506
Int. Cl.⁶ H01L 21/302

U.S. Cl. 437—52

21 Claims



17. A process for etching polycrystalline silicon with an etch in a chamber, said etch comprising the following steps:

- providing a carbon-free etch gas comprising chlorine in a concentration of between 20 standard cubic centimeters and 70 standard cubic centimeters;
- adding a compound selected from the group consisting of SF₆ and NF₃ to said etch gas in a concentration of between 2 standard cubic centimeters and 20 standard cubic centimeters;
- applying a pressure within said chamber of between 10 millitorr and 50 millitorr;
- applying a magnetic force of between 75 gauss and 150 gauss to said etch gas in a direction parallel with said surface.

5,378,649

PROCESS FOR PRODUCING NON-VOLATILE MEMORY DEVICES HAVING CLOSELY SPACED BURIED BIT LINES AND NON-OVERLAPPING CODE IMPLANT AREAS

Heng S. Huang, Taipei, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Apr. 8, 1994, Ser. No. 224,696
Int. Cl.⁶ H01L 27/112

U.S. Cl. 437—52

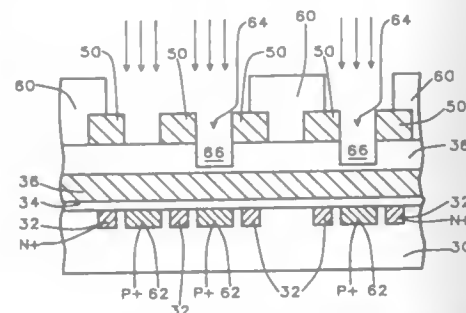
26 Claims

1. A method of manufacturing a ROM semiconductor device, which comprises the steps of

- forming a word line mask with a word line pattern therein on the surface of a work piece comprising a P-semiconductor substrate of a first conductivity type,
- performing an ion implantation into the surface of said substrate through said word line pattern in said mask to form doped word lines in said substrate of N+ ions,

forming a gate oxide layer over the substrate surface, forming a plurality of parallel spaced polycrystalline silicon word lines arranged orthogonally relative to said bit lines,

forming a glass layer having a planar surface over the word lines,
forming a metal layer over the glass layer,
forming, exposing, developing a first photoresist layer on said metal layer surface to form a plurality of first masking resist lines directly over alternating buried bit lines,
forming, exposing, developing a second photoresist layer on said metal layer to form a plurality of second masking resist lines directly over the remaining buried bit lines so that resist lines overlie all bit lines,



etching the exposed portions of the metal layer resulting in a plurality of parallel spaced metal line directly over all bit lines,
removing the first and second masking resist lines,
applying a photoresist masking layer on the substrate,
exposing and developing the photoresist layer to define a pattern of code openings,
ion implanting suitable impurity ions through the code openings in the photoresist mask using the metal lines to further define the implant area to provide code implants in the substrate, and
removing the photoresist layer.

5,378,650

SEMICONDUCTOR DEVICE AND A MANUFACTURING METHOD THEREOF

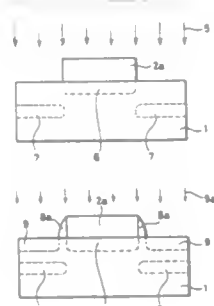
Hiroshi Kimura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 777,711, Oct. 21, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 6,394

Claims priority, application Japan, Oct. 22, 1990, 2-274360 Int. Cl.⁶ H01L 21/76

U.S. Cl. 437—63

20 Claims



1. A manufacturing method of a semiconductor device comprising the steps of:
forming a first insulator film on a main surface of a semiconductor substrate;
patterning said first insulator film to form an isolating insulator film having a substantially vertical side wall;
effecting ion implantation for forming in said substrate a first impurity region to a predetermined depth from an interface between said isolating insulator film and said substrate and for forming second impurity regions located at a predetermined depth from said main surface in a plural-

ity of semiconductor element regions separated from each other by said isolating insulator film and used for forming semiconductor circuit element therein, said second impurity regions being located so as to prevent punch-through of said semiconductor circuit elements;
forming a second insulator film to cover said isolating insulator film and said main surface; and
effecting anisotropic etching on said second insulator film to leave a sidewall insulator film on said vertical side wall of said isolating insulator film.

5,378,651

COMPREHENSIVE PROCESS FOR LOW TEMPERATURE EPITAXIAL GROWTH

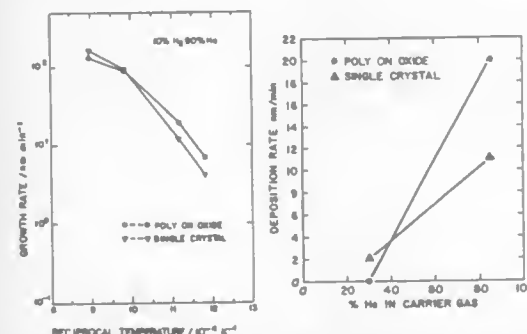
Paul D. Agnello, Hopewell Junction, N.Y.; Detlev A. Gruetzmacher, Klingman, Switzerland; Tung-Sheng Kuan, Chappaqua, and Thomas O. Sedgwick, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 785,731, Oct. 31, 1991, Pat. No. 5,227,330. This application Apr. 30, 1993, Ser. No. 56,697

Int. Cl.⁶ H01L 21/203

U.S. Cl. 437—106

12 Claims



1. A method for minimizing defect density in growing epitaxial films of Si by deposition at low temperatures on a receiving surface at low or atmospheric pressure, comprising the steps of:

providing an ambience of gas for said receiving surface composed of hydrogen, a silane, and an inert gas comprising from about 20% to about 95% of the total gas;
first growing a layer of Si from said silane on said receiving surface, at a temperature in the range from about 550 degrees C. to about 850 degrees C.; and
followed by the growing of the remainder of the Si film from dichlorosilane at a low temperature substantially in the same temperature range.

5,378,652

METHOD OF MAKING A THROUGH HOLE IN MULTI-LAYER INSULATING FILMS

Shinichi Samata, Yokohama; Yumichi Mikata, Kawasaki, and Toshiro Usami, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 509,736, Apr. 17, 1990, abandoned.

This application Apr. 3, 1991, Ser. No. 680,781

Claims priority, application Japan, Apr. 19, 1989, 1-99265

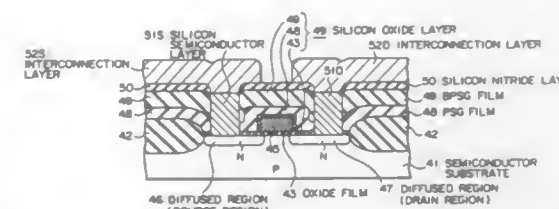
Int. Cl.⁶ H01L 29/54, 21/20

U.S. Cl. 437—189

6 Claims

1. A method of making a semiconductor device comprising the steps of:
selectively introducing an opposite conductivity type impurity into one conductivity type semiconductor substrate to provide at least one opposite conductivity type semiconductor region thereto;
sequentially forming a silicon oxide layer and an intermediate insulating layer on said semiconductor substrate;
depositing a silicon nitride layer on said intermediate insulat-

ing layer to prevent unwanted evaporation of an impurity contained in said intermediate insulating layer;
forming a through-hole in said silicon nitride layer, said intermediate insulating layer and said silicon oxide layer to reach and directly contact said semiconductor region;



filling said through-hole with a doped silicon material; and
forming an interconnection layer on said silicon nitride layer to be electrically connected to said semiconductor region through said doped silicon material.

5,378,653

METHOD OF FORMING ALUMINUM BASED PATTERN

Toshiharu Yanagida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

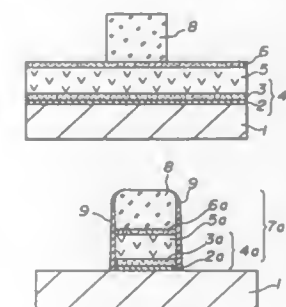
Filed Mar. 24, 1993, Ser. No. 36,287

Claims priority, application Japan, Apr. 8, 1992, 4-087142

Int. Cl.⁶ H01L 21/44, 21/48

U.S. Cl. 437—194

12 Claims



1. A method of forming an aluminum based pattern comprising etching an aluminum based metallization layer on a substrate by using an etching gas containing a halogen compound having at least one functional group selected from the group consisting of thionyl and sulfur, and a halogen atom in a molecule.

5,378,654

SELF-ALIGNED CONTACT PROCESS

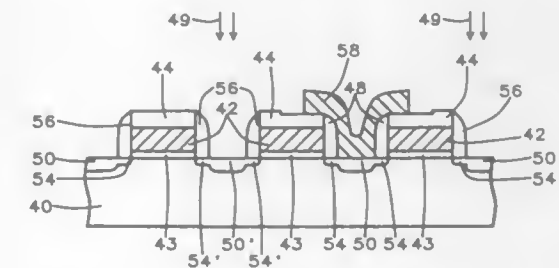
Chen-Chin Hsue, Hsin-Chu, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed May 24, 1994, Ser. No. 249,306

Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—195

19 Claims



1. A method of forming a self-aligned contact on a device

including a semiconductor substrate comprising the steps as follows:

forming a gate oxide layer on said substrate,
forming a gate electrode layer on said gate oxide layer,
forming a stacked dielectric structure stacked on said gate electrode layer, and then patterning said stacked dielectric structure and said gate electrode layer to form a stacked gate electrode,
forming a dielectric layer blanketing said device,
forming a first mask over said dielectric layer, said first mask covering a masked region, and then etching said dielectric layer through said mask to form a self-aligned contact opening into said dielectric layer leaving a first dielectric spacer adjacent to said stacked gate electrode and leaving said masked region covered by the remainder of said dielectric layer,
removing said first mask,
depositing a second electrode layer over said dielectric layer having said contact opening,
then forming a second mask and patterning said second electrode layer by etching through said second mask, thereby forming a self-aligned contact structure in said opening, and
applying an ion implantation process to said self-aligned contact structure in said opening, then the remainder of said dielectric layer is etched away leaving additional spacers adjacent to exposed surfaces of said substrate, and followed by ion implantation of dopant into said substrate through said exposed surfaces.

5,378,655

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING AN INSULATED GATE FIELD EFFECT DEVICE

Keith M. Hutchings, Groombridge, and Kenneth R. Whight, Horsham, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

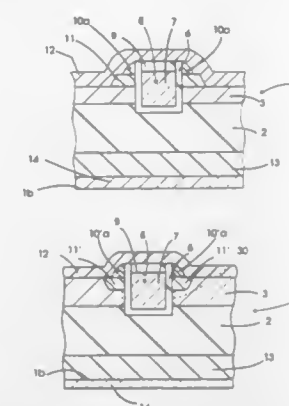
Filed Mar. 31, 1994, Ser. No. 221,293

Claims priority, application United Kingdom, Apr. 1, 1993, 9306895

Int. Cl.⁶ H01L 21/44

U.S. Cl. 437—203

17 Claims



1. A method of manufacturing a semiconductor device comprising an insulated gate field effect device, which method comprises providing a semiconductor body having first and second major surfaces with a first region of one conductivity type separated from the first major surface by a second region of the opposite conductivity type, providing on the one major surface a mask defining at least one window, etching the semiconductor body through the window to define a groove extending through the second region into the first region, providing a layer of gate insulator on the surface of the groove, providing a gate conductive region of an oxidizable conductive material within the groove to define with the gate insula-

tor layer an insulated gate structure bounded by a conduction channel-defining area of the second region, causing the insulated gate structure to extend beyond the surrounding semiconductor surface to define at least one step in the surface structure by oxidizing the exposed conductive material to define an insulating capping region over the exposed surface of the gate conductive region and then providing a layer over the surface structure, etching the layer anisotropically to leave portions of the layer on the sidewall of the steps defined by the insulated gate structure and to define beneath the portions third regions of the one conductivity type within the second region, and depositing an electrically conductive layer to contact both the second and the third regions.

5,378,656

LEADFRAME, SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE USING THE SAME, AND METHOD OF AND PROCESS FOR FABRICATING THE SAME

Yujiro Kajihara, Tachikawa; Kazunari Suzuki, Tokyo; Kunihiro Tsubosaki, Hino; Hiromichi Suzuki, Machida; Yoshinori Miyaki, Kokubunji; Takahiro Naito, Koganei, and Sueo Kawai, Iwama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer System Ltd., Ibaraki, Japan

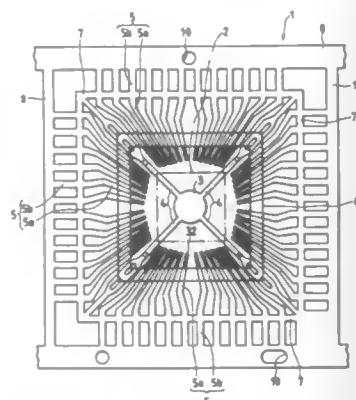
Filed Mar. 29, 1993, Ser. No. 38,684

Claims priority, application Japan, Mar. 27, 1992, 4-071116; Nov. 30, 1992, 4-320098

Int. Cl.⁶ H01L 21/60

U.S. Cl. 437—217

23 Claims



1. A process for fabricating a semiconductor integrated circuit device by using a leadframe capable of mounting a plurality of kinds of semiconductor chips having different sizes thereon, comprising the steps of:

preparing said leadframe having a first face and a second face, said leadframe including a chip mounting portion for mounting any semiconductor chip of said plurality of kinds of semiconductor chips, a plurality of chip suspension leads supporting said chip mounting portion, a plurality of inner lead portions arranged to surround said chip mounting portion and having trimable lead regions capable of being cut according to a size of a semiconductor chip to be mounted, and outer lead portions individually connected with said inner lead portions, and said first face of said chip mounting portion and said chip suspension leads have a different level from said first face of said inner lead portions;

preparing a selected semiconductor chip from said plurality of kinds of semiconductor chips and which has a principal face formed with an integrated circuit and a plurality of bonding pads, wherein a size of said selected semiconductor chip is larger than that of said chip mounting portion of said leadframe;

bonding said selected semiconductor chip to said chip mounting portion;

electrically connecting said bonding pads and said inner lead portions individually; and sealing said selected semiconductor chip, said inner lead portions and said chip mounting portion, wherein end portions of said inner lead portions are cut at said trimable lead regions to substantially correspond to said size of said selected semiconductor chip.

5,378,657 METHOD FOR MAKING AN ALUMINUM CLAD LEADFRAME AND A SEMICONDUCTOR DEVICE EMPLOYING THE SAME

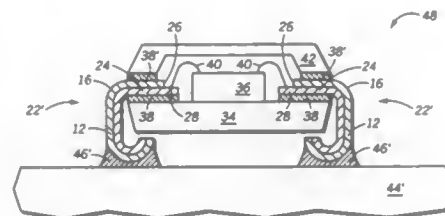
Paul T. Lin, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 100,943, Aug. 3, 1993, Pat. No. 5,329,159. This application Mar. 4, 1994, Ser. No. 205,424

Int. Cl.⁶ H01L 21/60

U.S. Cl. 437—217

16 Claims



1. A method for making a clad leadframe, comprising the steps of:

providing a first metal layer having a first central cavity; cladding a second metal layer to a surface of the first metal layer, wherein the second metal layer covers at least a portion of the first central cavity in the first metal layer; forming a plurality of leads in the first and second metal layers, wherein the plurality of leads have distal and proximal ends to the first central cavity; and forming a plurality of bonding posts from the second metal layer by forming a second central cavity in the second metal layer, the second central cavity being concentric to the first central cavity, such that the plurality of bonding posts extend beyond the proximal ends of the plurality of leads.

5,378,658

PATTERNING PROCESS INCLUDING SIMULTANEOUS DEPOSITION AND ION MILLING

Osamu Toyoda, and Kelichi Betsui, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 28, 1992, Ser. No. 951,801

Claims priority, application Japan, Oct. 1, 1991, 3-253956

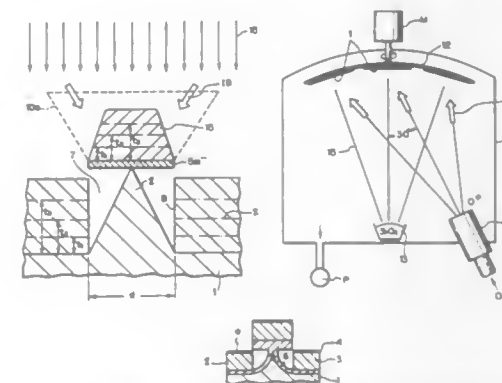
Int. Cl.⁶ H01L 21/31

U.S. Cl. 437—228

5 Claims

1. A process for forming a pattern on a substrate comprising: forming a mask on the substrate; depositing a film-forming material on the mask and the substrate to form a film on the mask and on the substrate in regions not covered by the mask, the depositing of the film-forming material on the mask being effected by a method which causes the lateral surface area of the film formed on the mask to increase during deposition, and

irradiating an ion beam towards the mask so that deposition of the film-forming material on the side surface portion of



the film formed on the mask is inhibited during deposition by ion milling.

5,378,659

METHOD AND STRUCTURE FOR FORMING AN INTEGRATED CIRCUIT PATTERN ON A SEMICONDUCTOR SUBSTRATE

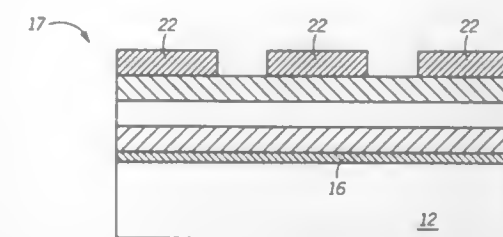
Bernard J. Roman; Bich-Yen Nguyen, and Chandrasekaram Ramiah, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 6, 1993, Ser. No. 86,268

Int. Cl.⁶ H01L 21/31

U.S. Cl. 437—229

34 Claims



1. A method for forming an integrated circuit pattern on a semiconductor substrate comprising the steps of: providing the semiconductor substrate, the semiconductor substrate having a major surface; forming a device layer overlying the major surface of the semiconductor substrate; forming an anti-reflective layer having an absorptive index overlying the device layer, wherein the anti-reflective layer is an inorganic dielectric material containing silicon and nitrogen; forming a photoresist layer overlying the anti-reflective layer; and exposing a portion of the photoresist layer to electromagnetic radiation to form the integrated circuit pattern, wherein the electromagnetic radiation has an exposure wavelength and the absorptive index of the anti-reflective layer is greater than 0.05 at the exposure wavelength.

5,378,660

BARRIER LAYERS AND ALUMINUM CONTACTS

Kenny K. Ngan, Fremont, and Edith Ong, Saratoga, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Feb. 12, 1993, Ser. No. 17,081

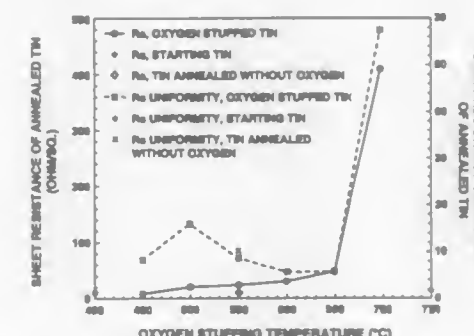
Int. Cl.⁶ H01L 21/324, 21/44; C23C 14/00

U.S. Cl. 437—247

16 Claims

8. A method of forming an aluminum contact on a silicon substrate comprising the following steps in sequence:

- sputter depositing a titanium-containing layer over said silicon under vacuum;
- annealing said titanium-containing layer in nitrogen under vacuum at a temperature of from about 750°–850° C., thereby forming a titanium silicide interface;
- annealing said titanium-containing layer under nitrogen



containing from about 3–15% by volume of oxygen under vacuum at a temperature of from about 500°–550° C., thereby forming an oxygen-containing titanium nitride layer without removing the substrate from vacuum; and d) sputter depositing an aluminum layer over the stuffed titanium nitride layer at a temperature of over about 400° C.

5,378,661

SYNTHETIC PHYLLOSILICATES AND PROCESS FOR THEIR PREPARATION

Patrice Reig, Talence; Gérard Demazeau, Gradignan Cedex, and Roger Naslain, Pessac, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Dec. 13, 1993, Ser. No. 166,227

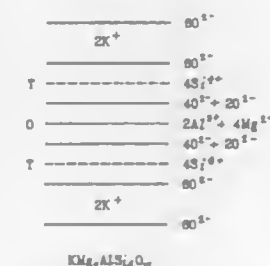
Claims priority, application France, Dec. 21, 1992, 9215321

Int. Cl.³ C03C 10/04

U.S. Cl. 501—2

8 Claims

DIVERSION



1. A synthetic phyllosilicate having a lamellar structure of the type T—O—T (tetrahedron-octahedron-tetrahedron) devoid of OH⁻ and F⁻ ions.

5,378,662

GLASS, DIELECTRIC COMPOSITION, MULTILAYER WIRING SUBSTRATE, AND MULTILAYER CERAMIC CAPACITOR

Hiroshi Tsuyuki, Chiba, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 83,527

Claims priority, application Japan, Jun. 30, 1992, 4-196289

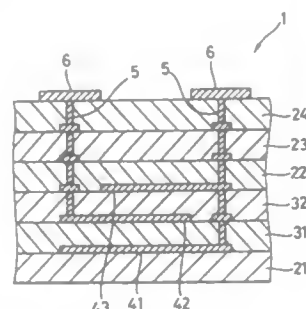
Int. Cl.⁶ C03C 8/14, 14/00, 3/253, 3/15

U.S. Cl. 501—17

10 Claims

1. A dielectric composition comprising a glass comprising 10 to 40 mol % calculated as Ln₂O₃ of a lanthanide oxide wherein Ln is a lanthanide element,

30 to 60 mol % calculated as SiO₂, B₂O₃ and GeO₂ in total of at least one glass-forming oxide selected from the group consisting of silicon dioxide, boron oxide and germanium oxide, and



16 to 40 mol % calculated as Al₂O₃ of aluminum oxide, and a ceramic dielectric material having a higher specific inductive capacity than the glass.

5,378,663

METHOD OF PREPARING A DIELECTRIC CERAMIC COMPOSITION FOR PRODUCING A DIELECTRIC RESONATOR OR FILTER FOR MICROWAVE APPLICATIONS

Masahiro Abe; Tatsumi Sugiura; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 145,082, Nov. 3, 1993, Pat. No. 5,332,984, which is a division of Ser. No. 971,179, Nov. 3, 1992, Pat. No. 5,290,740. This application Mar. 2, 1994, Ser. No. 204,970. Claims priority, application Japan, Nov. 6, 1991, 3-319786; Mar. 18, 1992, 4-92184; Mar. 23, 1992, 4-97184; Oct. 27, 1992, 4-312970

Int. Cl.⁶ C04B 35/46; C03C 14/00

U.S. Cl. 501—32

4 Claims

1. A method of preparing a dielectric ceramic composition used for producing a dielectric resonator or filter for microwave application, comprising the steps of:

calcining, at a temperature of not lower than 900° C., a mixture of starting materials which give a main ceramic composition comprising as major components barium oxide and titanium oxide, or barium oxide, titanium oxide and at least one of strontium oxide, calcium oxide, zirconia and zinc oxide, which composition is represented by (1-a-b)BaO-aSrO-bCaO-x[(1-c)TiO₂-cZrO₂]-yZnO, where 3.1 ≤ x ≤ 5.4, 0 ≤ y ≤ 2.9, 0 ≤ a + b ≤ 0.4, 0 ≤ c ≤ 0.2, to provide a calcined mixture;

finely pulverizing said calcined mixture to provide a calcined ceramic powder; and

adding a secondary component to said calcined ceramic powder, at least a part of said secondary component consisting of a B₂O₃ material or a glass material containing B₂O₃ as one of glass components, said secondary component being added to said main ceramic composition in an amount of 0.1–7.5 parts by weight of B₂O₃ per 100 parts by weight of said main ceramic composition.

5,378,664

OPTICAL FIBER AMPLIFIER AND A GLASS THEREFOR

Philippe C. Becker, New York, N.Y.; Allan J. Bruce, Westfield, N.J.; David J. DiGiovanni, Montclair, N.J., and Vincent G. Lambrecht, Jr., Millington, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 24, 1993, Ser. No. 82,007

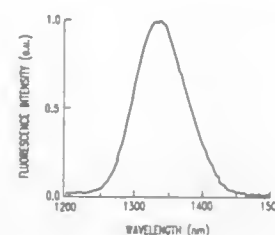
Int. Cl.⁶ C03C 3/32

U.S. Cl. 501—40

9 Claims

1. A chalcogenide glass comprising: about 200 ppm to about 2000 ppm praseodymium, a second rare earth metal wherein the second rare earth metal is not praseodymium, at least one other metal that promotes glass formation and prevents the

rare earth metals from separating from the molten phase during glass formation, and sulfur wherein the total rare metal content



of the chalcogenid glass is at least 10 mole percent of the metals in the glass.

5,378,665

CRYSTALLINE YTTRIUM ALUMINATE AND PROCESS FOR MAKING

Kuo-Chun Chen, Carlsbad, and Khodabakhsh S. Mazdiyassni, Alpine, both of Calif., assignors to General Atomics, San Diego, Calif.

Filed Oct. 30, 1992, Ser. No. 969,428

Int. Cl.⁶ C04B 35/50, 35/10

U.S. Cl. 501—95

19 Claims

1. A process for preparing microcrystalline Y₃Al₅O₁₂ (YAG) fibers, which process comprises the steps of

forming a homogeneous liquid mixture of an organoaluminum compound and an organoyttrium compound wherein said organoyttrium compound is present in at least about the stoichiometric ratio of 3 atoms of yttrium to each 5 atoms of aluminum;

adding to said mixture a minor amount of a precursor of ZrO₂ or HfO₂ or minute solid particles of ZrO₂ or HfO₂ so that zirconia or hafnia is present in an amount in said crystalline YAG fibers of at least about 0.2 weight percent but not more than about 2 weight percent;

adding an appropriate amount of a precursor of MgO so as to provide MgO in an amount between about 0 and 8.5 atom percent of Mg based upon total atoms of Mg plus Zr or Hf;

causing said mixture to undergo hydrolytic condensation and polymerization to form a precursor sol gel, processing said precursor sol gel into pre-ceramic solid-phase YAG fibers; and

heating said pre-ceramic fibers at temperatures sufficient to cure and pyrolyze said pre-ceramic fibers and create YAG microcrystals, which heating results in fibers of crystalline YAG having a submicron average crystallite size wherein coherent solid particles of zirconia or hafnia having a size of about 10 nanometers(nm) or less are present at the grain boundaries and the triple points of said YAG microcrystals, which solid particles are partially stabilized with MgO or with yttria.

5,378,666

PRODUCTION OF WHISKER-FREE Si₃N₄ PARTICULATES BY CARBONITRIDING SiO₂

Roland Bachelard, Lyons, and Jean-Pierre Disson, Voiron, both of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Jul. 2, 1992, Ser. No. 907,546

Claims priority, application France, Jul. 2, 1991, 91/08221

Int. Cl.⁶ C04B 35/58; C01B 21/068

U.S. Cl. 501—97

14 Claims

1. A process for the preparation of whisker-free particulates of silicon nitride, comprising forming a primary reaction mixture including silica and carbon, incorporating said primary mixture into a carbon-based matrix material composite, and thence carbonitriding the composite thus formed to produce said particulates.

5,378,667

INTERCRYSTALLINE SEMICONDUCTIVE CERAMIC CAPACITOR

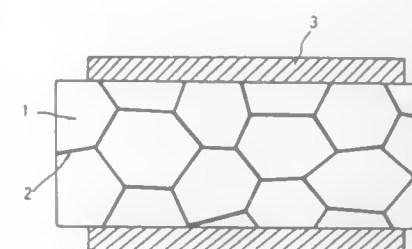
Yoon H. Kim; Tae S. Oh, and Byeong C. Lee, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Dec. 10, 1993, Ser. No. 165,294

Int. Cl.⁶ C04B 35/46

U.S. Cl. 501—136

2 Claims



1. A composition for an intercrystalline semiconductor ceramic capacitor essentially consisting of a major component comprised of 1 mole SrTiO₃ and a minor component comprised of 0.01 to 0.04 mole TiO₂, 0.001 to 0.010 mole Dy₂O₃, 0.001 to 0.007 mole ZnO, 0.002 to 0.012 mole MnO₂ and 0.01 to 0.07 mole Al₂O₃.

5,378,668

PROCESS FOR REACTIVATING AMMOXIDATION CATALYSTS

Brigitte Beuke; Jens Herwig, both of Cologne; Ernst-Friedrich Neeb, and Nikolaus Paris, both of Dormagen, all of Germany, assignors to EC Erdolchemie GmbH, Cologne, Germany

Continuation-in-part of Ser. No. 13,123, Feb. 3, 1993, abandoned, which is a continuation of Ser. No. 725,172, Jul. 3, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,045

Claims priority, application Germany, Jul. 13, 1990, 4022416

Int. Cl.⁶ B01J 23/94, 23/92; C07C 255/08, 253/24

U.S. Cl. 502—20

10 Claims

1. A process for reactivating molybdenum/bismuth-based fluid-bed amnoxidation catalysts, which are used for the amnoxidation of olefins, by addition of a reactivator, wherein the reactivator used is a mixed oxide, applied to SiO₂ as support, of the formula



wherein, besides Mo, one element from component group (P, Cr) and one metal from component group (Bi, Ni, Fe, Co) are present,

x results from the valency requirements, said reactivator has a specific surface area of 5–50 m²/g and is added in an amount of 0.4–2% by weight, relative to the amount of said amnoxidation catalyst to be reactivated, and wherein said amnoxidation catalysts are complex oxide catalysts containing Mo, Bi, Fe, and

a) one or more members of the group consisting of alkali metals, alkaline earth metals and rare earth metals, and b) one or more members of the group consisting of P, As and Sb, and

c) one or more members of the group consisting of Co and Ni, and optionally

d) one or more members of the group consisting of Ta and Nb.

5,378,669

METHOD FOR TREATING A CATALYST

Shun C. Fung, Bridgewater, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 845,578, Mar. 4, 1992, Pat. No. 5,256,612, which is a continuation-in-part of Ser. No. 551,378, Jul. 12, 1990, Pat. No. 5,106,798. This application Sep. 27, 1993, Ser. No. 127,187

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.⁶ B01J 38/44, 29/38, 29/06, 23/38

U.S. Cl. 502—37

14 Claims

9. A method for treating a fresh Group VIII noble metal-containing catalyst comprising a chemical reduction step which is carried out in less than 0.05 kPa partial pressure of carbon monoxide and carbon dioxide.

5,378,670

PHOSPHORUS ZEOLITES/MOLECULAR SIEVES

Ranjit Kumar, Columbia, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Apr. 16, 1993, Ser. No. 48,996

Int. Cl.⁶ B01J 27/14, 29/06

U.S. Cl. 502—60

9 Claims

1. A method for preparing a phosphorus-containing zeolite/molecular sieve comprising:

(a) ion exchanging and washing a sodium zeolite/molecular sieve to obtain a zeolite/molecular sieve having a Na₂O content of 1 to 5 weight percent;

(b) treating the product of step (a) with an aqueous solution of a phosphorus compound to obtain a phosphorus containing zeolite/molecular sieve having a phosphorus content of from about 0.5 to 1.5 weight percent expressed as P₂O₅

(c) heating the product of step (b) with steam; and (d) reacting the product of step (c) with additional phosphorus compound to obtain a product having a P₂O₅ content of 2 to 7 weight percent.

7. A composition prepared by the method of claim 1.

9. A catalyst comprising the composition of claim 7 dispersed in an inorganic oxide matrix.

5,378,671

METHOD FOR PREPARING CATALYSTS COMPRISING ZEOLITES

Kathleen M. Keville, Beaumont, Tex.; Hye K. C. Timken, Woodbury, N.J., and Robert A. Ware, Wyndmoor, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Jun. 3, 1993, Ser. No. 70,822

Int. Cl.⁶ B01J 29/06, 37/00

U.S. Cl. 502—64

16 Claims

1. A method for preparing an alumina bound zeolite catalyst, said method comprising the steps of:

(a) determining the silanol content of a zeolite; (b) mulling together alumina, said zeolite of step (a), and water under conditions sufficient to form an extrudable mass comprising an intimate mixture of alumina and said zeolite;

(c) extruding the extrudable mass of step (b) under conditions sufficient to form a green strength extrudate; and (d) calcining the green strength extrudate of step (c) under conditions sufficient to increase the crush strength of the extrudate,

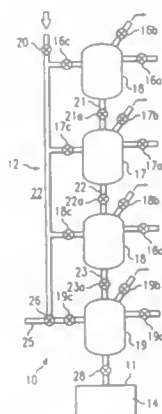
wherein said zeolite, which is introduced into mulling step (b), has a silanol content of less than 10%, expressed in terms of silicons containing silanols vs. total silicons.

9. A method according to claim 1, wherein said zeolite is steamed under conditions sufficient to reduce the silanol content thereof prior to mulling step (b).

5,378,672
METHODS AND SYSTEMS FOR MULTI-COMPONENT CATALYST FORMULATION
 Edwar S. Shamshoum, Houston; David J. Rauscher, Webster, and Shabbir A. Malbari, Pasadena, all of Tex., assignors to Fina Technology, Inc., Dallas, Tex.
 Filed Mar. 4, 1992, Ser. No. 846,689
 Int. Cl.⁶ C08F 4/02

U.S. Cl. 502—108

18 Claims



1. In a method for the formulation of a multi-component catalyst system, the steps comprising,
- providing a plurality of chambers including first and second chambers containing first and second catalyst components, respectively, a third chamber connected to said second chamber by means of a passageway having a closed valve interposed between said second and third chambers, said second chamber being interposed between said first and third chambers in a series relationship, and a fourth chamber connected to said third chamber and containing a third catalyst component;
 - discharging the contents of said first and second chambers into said third chamber by discharging said first component from said first chamber into said second chamber under sufficient pressure to displace said first and second components into said third chamber and opening the valve in said passageway to permit the flow of said components to said third chamber, and maintaining said first and second components in mixture with one another for a desired first contact time;
 - thereafter, discharging the contents from said third chamber into said fourth chamber where they are mixed with said third catalyst component for a desired second contact time; and
 - thereafter, discharging the contents of said fourth chamber into a polymerization reactor where they are contacted with a monomer to effect polymerization of said monomer.

5,378,673
METHOD FOR ATOMICALLY DISPERSING CATALYTIC METALS INTO SUPPORT MATERIALS
 Stephen D. Reynolds, and Claude C. Culross, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
 Filed Dec. 23, 1992, Ser. No. 996,261
 Int. Cl.⁶ B01J 37/02, 37/08, 23/56, 23/74

U.S. Cl. 502—174

8 Claims

1. A method for atomically dispersing catalytically active metals into a support material, which method comprises: treating the support material with an aqueous composition of at least one metal compound selected from metal compounds having at least one anion which is a carbonate or bicarbonate, wherein the metal is selected from the metals consisting of those of Groups VIII, IIB, IB, and VIB of the Periodic Table of the Elements, at a temperature from about 22° C. to about

300° C. and at an effective time to allow complete evolution, by vacuum, of CO₂ by-product, wherein said support material contains a sufficient amount of acid functionality to react with the metal compound, thereby resulting in the atomic dispersion of metal in the support material.

5,378,674
HEAT-SENSITIVE RECORDING MATERIAL
 Norio Kobayashi; Toshiaki Takahashi; Masahiro Makino, all of Sabae, and Masaaki Hosoda, Fukui, all of Japan, assignors to Nicca Chemical Co., Ltd., Fukui, Japan
 Filed Mar. 23, 1994, Ser. No. 216,379
 Claims priority, application Japan, Mar. 24, 1993, 5-089426
 Int. Cl.⁶ B41M 5/28

U.S. Cl. 503—208

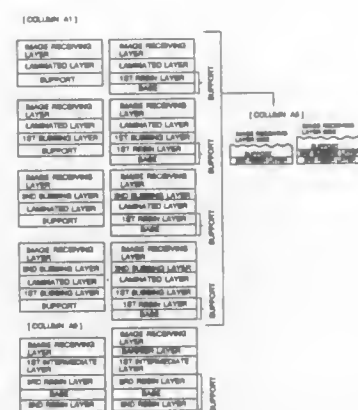
3 Claims

1. A heat-sensitive recording material comprising a heat-sensitive color forming layer which is formed on a supporter and contains a colorless or light color leuco dyestuff as a color forming substance, a developer which develops color of the leuco dyestuff by reaction with it when heated and a sensitizer, the developer being 2,4'-dihydroxydiphenylsulfone having purity of 97 weight % or more prepared by washing and drying crystal which is obtained by dissolving crude 2,4'-dihydroxydiphenylsulfone in an alcohol having 1 to 4 carbon atoms or in a mixture of an alcohol having 1 to 4 carbon atoms and water by heating and then cooling the solution or partially removing the solvent from the solution by distillation.

5,378,675
THERMAL TRANSFER RECORDING IMAGE RECEIVING SHEET
 Toshihisa Takeyama; Shigehiro Kitamura, and Kunihiro Koshizuka, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
 Continuation-in-part of Ser. No. 964,942, Oct. 22, 1992, abandoned. This application Nov. 30, 1992, Ser. No. 982,833
 Claims priority, application Japan, Nov. 5, 1991, 3-288721
 Int. Cl.⁶ B41M 5/035, 5/38

U.S. Cl. 503—227

13 Claims



1. A thermal transfer recording image receiving sheet comprising:
- a resin support laminated with a polypropylene layer having a thickness of 5 to 100 μm, on the resin support via a first subbing layer and
 - an image receiving layer coated on the polypropylene layer directly or via a second subbing layer; and the image receiving layer having a dyability to a thermo-diffusible dye.

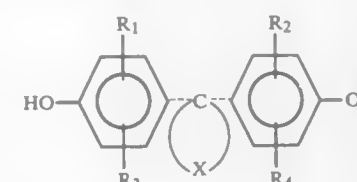
5,378,676
HEAT-RESISTANT LAYER OF DYE-DONOR ELEMENT
 Geert Defieuw, Kessel-Lo; Emiel Verdonck, Berlaar, and Hendrik Sneyers, Nijlen, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium
 Filed Dec. 3, 1993, Ser. No. 160,849
 Claims priority, application European Pat. Off., Dec. 7, 1992, 92203792

U.S. Cl. 503—227

Int. Cl.⁶ B41M 5/035, 5/38

10 Claims

10. Method for forming an image by: image-wise heating a dye-donor element comprising a support having on one side a dye layer and on the other side a heat-resistant layer comprising a binder and inorganic silicate particles, wherein said inorganic silicate particles protrude from the surface of said heat-resistant layer and said binder comprises a polycarbonate derived from a bis-(hydroxyphenyl)-cycloalkane corresponding to the general formula (I):



wherein:

R¹, R², R³, and R⁴ same or different represent hydrogen, halogen, a C₁-C₈ alkyl group, a substituted C₁-C₈ alkyl group, a C₅-C₆ cycloalkyl group, a substituted C₅-C₆ cycloalkyl group, a C₆-C₁₀ aryl group, a substituted C₆-C₁₀ aryl group, a C₇-C₁₂ aralkyl group, or a substituted C₇-C₁₂ aralkyl group, and

X represents the atoms necessary to complete a 5- to 8-membered alicyclic ring, which either carries at least one C₁-C₆ alkyl group or at least one 5- or 6-membered cycloalkyl group, or carries a fused-on 5- or 6-membered cycloalkyl group; and

causing transfer of the image-wise heated dye to a receiver sheet.

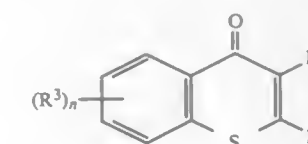
5,378,677
THIOCHROMENONE DERIVATIVES AS ANTIDOTES, AND HERBICIDES CONTAINING THEM
 Helmut Hagen, Frankenthal; Peter Raatz, Ludwigshafen; Helmut Walter, Obrigheim, and Andreas Landes, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
 Filed Jan. 19, 1993, Ser. No. 5,797
 Claims priority, application Germany, Jan. 23, 1992, 4201720

Int. Cl.⁶ A01N 25/32

U.S. Cl. 504—104

13 Claims

1. A herbicide containing at least one thiochromenone of the formula I



where

n is 1, 2, 3 or 4, and the radicals R³ may have different meanings when n is > 1;

R¹ is hydrogen; cyano; halogen; unsubstituted or substituted alkyl, aryl or hetaryl;

XR⁴ or —COYR⁴, in which

X is oxygen, sulfur or NR⁵,

Y is oxygen or NR⁵,

R⁴ is one of the following groups:

hydrogen; formyl; alkyl; cycloalkyl; alkylcarbonyl; cycloalkylcarbonyl; alkylsulfonyl; cycloalkylsulfonyl; unsubstituted or substituted aryl, hetaryl, arylcarbonyl, hetarylcarbonyl, arylsulfonyl or hetarylsulfonyl,

and

R⁵ is hydrogen or unsubstituted or substituted alkyl, aryl or hetaryl;

R² is hydrogen; cyano; nitroso; nitro; halogen; unsubstituted or substituted alkyl, alkoxy, alkylthio, aryl or hetaryl;

—NR⁴R⁵ or —COYR⁴, in which

Y, R⁴ and R⁵ have the abovementioned meanings;

R⁵ is hydrogen; cyano; halogen; unsubstituted or substituted alkyl, aryl or hetaryl;

—YR⁴, —COYR⁴, —COR⁶ or —SO₂R⁷, in which

Y and R⁴ have the abovementioned meanings;

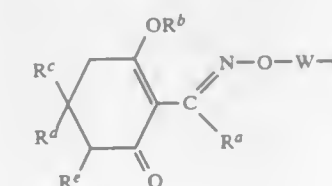
R⁶ is one of the following groups:

hydrogen; alkyl; cycloalkyl; unsubstituted or substituted aryl or hetaryl,

and

R⁷ is hydrogen; alkyl; cycloalkyl; unsubstituted or substituted aryl or hetaryl,

or —NR⁴R⁵ in which R⁴ and R⁵ have the abovementioned meanings, and the plant-tolerated salts of the compounds I in which one or more of the substituents is an acidic or basic group, and at least one herbicidally active ingredient selected from the group consisting of the cyclohexenone derivatives of the formula II



where

R^a is C₁-C₆-alkyl;

R^b is hydrogen or one equivalent of an agriculturally suitable cation;

R^c is C₁-C₆-alkyl, C₁-C₄-alkylthio-C₁-C₆-alkyl, C₃-C₇-cycloalkyl substituted by C₁-C₄-alkylthio, a 6-membered saturated heterocyclic structure which contains one oxygen or sulfur atom as heteroatom, or phenyl which may carry

from one to three C₁-C₄-alkyl radicals;

R^d is hydrogen or when R^c is C₁-C₆-alkyl, R^d is C₁-C₆-alkyl;

R^e is hydrogen or C₁-C₄-alkoxycarbonyl;

W is a C₁-C₆ alkylene or C₃-C₆-alkenylene chain, which may carry one halogen atom;

a C₃-C₆-alkylene chain which may carry one C₁-C₃-alkyl radical and a methylene group of the chains may be substituted by oxygen; and

R^f is hydrogen or halophenyl.

5,378,678
2-ARYL-5,6-RING-FUSED PYRIMIDINES AND HERBICIDAL USE

Colin M. Tice, Melrose Park, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

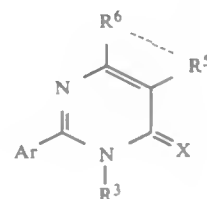
Continuation of Ser. No. 916,780, Jul. 17, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,326

Int. Cl.⁶ A01N 43/54; C07D 239/70

U.S. Cl. 504—242

12 Claims

1. A compound of the formula



wherein

- (a) Ar is a furyl, phenyl, pyridyl, or thienyl group, each of said group is optionally substituted with up to three substituents independently selected from a bromo, chloro, fluoro, (C₁-C₁₂)alkyl, cyclo(C₃-C₈)alkyl, (C₂-C₁₂)alkenyl, cyclo(C₃-C₈)alkenyl, (C₂-C₁₂)alkynyl, halo(C₁-C₁₂)alkyl, polyhalo(C₁-C₁₂)alkyl, halo(C₂-C₁₂)alkenyl, polyhalo(C₂-C₁₂)alkenyl, halo(C₂-C₆)alkynyl, polyhalo(C₂-C₆)alkynyl, (C₁-C₁₂)alkoxy, (C₁-C₁₂)alkylthio, (C₁-C₁₂)alkylsulfonyl, (C₁-C₁₂)alkylsulfinyl, phenyl, phen(C₁-C₁₂)alkyl, phen(C₂-C₁₂)alkenyl, phen(C₂-C₁₂)alkynyl, cyano, halo(C₁-C₁₂)alkoxy, carbo(C₁-C₆)alkoxy, or nitro group; and
- (b) R³ is a (C₃-C₆)alkynyl or (C₁-C₆)alkoxy(C₁-C₆)alkyl, said (C₃-C₆)alkynyl group or (C₁-C₆)alkoxy(C₁-C₆)alkyl group is optionally substituted with up to five halogens; and
- (c) -R⁵- - R⁶- is a saturated link moiety containing two to five atoms in its link, is bonded to the carbon atoms at the 5 and 6 position of the pyrimidine ring, and together with the carbon atoms at the 5 and 6 position forms a fused ring, each of said atoms being a carbon and the link atoms may be unsubstituted or substituted with one or more substituents independently selected from (C₁-C₃)alkyl groups polyhalo (C₁-C₃)alkyl groups and halogen atoms; and
- (d) X is oxygen or sulfur.

5,378,679

HETEROAROMATICALLY CONDENSED HYDROXYPYRIDONECARBOXAMIDES, THEIR PREPARATION AND USE

Christoph Nuebling, Hassloch; Wolfgang von Deyn, Neustadt; Hans Theobald, Limburgerhof; Karl-Otto Westphalen, Speyer; Uwe Kardorff, Mannheim; Helmut Walter, Obrigheim, all of Germany; Thomas Kappe, Graz, Austria, and Matthias Gerber, Limburgerhof, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

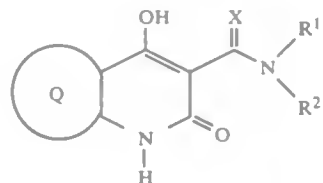
Filed Aug. 17, 1993, Ser. No. 107,303

Claims priority, application Germany, Aug. 21, 1992, 4227747 Int. Cl.⁶ A01N 43/42; C07D 471/02, 401/14

U.S. Cl. 504-246

2 Claims

1. A process for combating the growth of unwanted plants, wherein the unwanted plants and/or their habitat are treated with a herbicidally effective amount of a heteroaromatically condensed hydroxypyridonecarboxamide of the formula I,



where the substituents and the ring Q have the following meanings:

- R¹ hydrogen, hydroxyl, C₁-C₁₂-alkyl, C₃-C₁₂-alkenyl, C₃-C₁₂-alkynyl, C₃-C₈-cycloalkyl or C₃-C₁₂-alkoxy, where the organic radicals are substituted or unsubstituted;
- R² hydrogen, C₃-C₁₂-alkyl, C₃-C₁₂-alkenyl, C₃-C₁₂-alkynyl, C₃-C₈-cycloalkyl, C₃-C₈-alkenyl or di-C₁-C₄-

alkylamino, where the organic radicals are substituted or unsubstituted; or

R¹, R² together denote an alkylene chain with 2-6 members, and which may be interrupted by oxygen, sulfur or N-methyl;

X oxygen or sulfur;

Q a pyrido ring, which may also be mono- to tri-substituted or an environmentally tolerated salt thereof.

5,378,680

DICARBOXIMIDES AND THEIR USE AS HERBICIDES

Volker Maywald, Ludwigshafen; Klaus Ditrich, Bad Duerkheim; Thomas Kuekenhoefer, Frankenthal; Gerhard Hamprecht, Weinheim; Wolfgang Freund, Neustadt; Karl-Otto Westphalen, Speyer; Matthias Gerber, Mutterstadt, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 718,639, Jun. 21, 1991, Pat. No. 5,176,739.

This application Aug. 19, 1992, Ser. No. 931,951

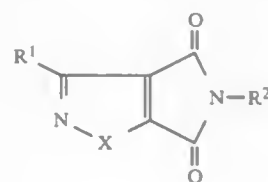
Claims priority, application Germany, Jun. 23, 1990, 4020072; Jul. 16, 1990, 4022566

Int. Cl.⁶ A01N 43/76; C07D 498/04

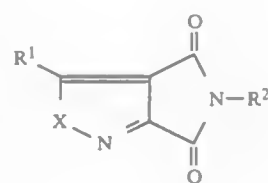
U.S. Cl. 504-270

26 Claims

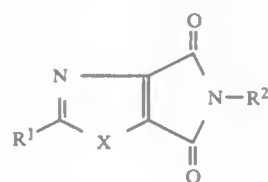
1. A dicarboximide of the formula Ia, Ib or Ic



Ia



Ib



Ic

wherein X is oxygen;

R¹ is (a) hydrogen, (b) halogen, (c) cyano, (d) C₁-C₆-alkyl which may be substituted by 1-5 halogen atoms or one or two C₃-C₆-cycloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, C₁-C₄-alkylsulfonyl, C₁-C₄-haloalkylsulfonyl or cyano groups, (e) C₃-C₈-cycloalkyl which may be substituted by 1-3 halogens or C₁-C₄-alkyl groups, (f) C₂-C₆-alkenyl which may be substituted by 1-3 halogen atoms, C₁-C₃-alkoxy or phenyl groups, wherein said phenyl groups may be substituted by one to three C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, halogen, cyano or nitro groups (g) C₂-C₆-alkynyl which may be substituted by 1-3 halogen atoms, C₁-C₃-alkoxy or phenyl groups, wherein said phenyl groups may be substituted by one to three C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, halogen, cyano or nitro groups, (h) C₁-C₄-alkoxy, (i) C₂-C₆-alkenyl, (j) C₂-C₆-alkynyl, (k) C₁-C₄-alkylthio, (l) C₁-C₄-haloalkoxy, (m) C₁-C₄-haloalkylthio, (n) C₁-C₄-alkylsulfonyl, (o) C₁-C₄-haloalkylsulfonyl, (p) phenoxy or phenylthio which may be substituted by one to three C₁-C₄-alkyl,

5,378,681

SUBSTITUTED TRIAZOLINONES

Otto Schallner, Monheim; Wilhelm Haas, Pulheim; Karl-Heinz Linker, Kurt Findelsen, both of Leverkusen; Klaus König, Odenthal; Albrecht Marhold; Hans-Joachim Santel, both of Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

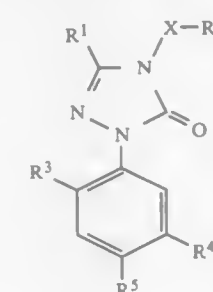
Filed Nov. 16, 1993, Ser. No. 153,935

Claims priority, application Germany, Nov. 23, 1992, 4239269 Int. Cl.⁶ A01N 43/653; C07D 249/12

U.S. Cl. 504-273

13 Claims

1. A substituted triazolinone of the formula



(I)

C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, halogen, cyano or nitro groups, (q) a 5-membered or 6-membered saturated or aromatic heterocyclic group containing one or two heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen, which may be substituted by one or two C₁-C₃-alkyl, halogen, C₁-C₃-alkoxy or C₁-C₃-alkoxycarbonyl groups, (r) a fused aromatic group selected from the group consisting of benzofuran-2-yl, benzofuran-3-yl, isobenzofuran-2-yl, benzothienophen-2-yl, benzothienophen-3-yl, isobenzothienophen-2-yl, indol-2-yl, indol-3-yl, 1,2-benzisoxal-3-yl, benzoxal-2-yl, 1,2-benzisothiazol-3-yl, benzothiazol-2-yl, indazol-3-yl, (1H)-benzimidazol-2-yl, quinol-3-yl, quinol-5-yl, quinol-6-yl, quinol-8-yl, isoquinol-1-yl and isoquinol-5-yl, which may be substituted by one or two C₁-C₃-alkyl, halogen, C₁-C₃-alkoxy or C₁-C₃-alkoxycarbonyl groups, (s) phenyl or phenyl-C₁-C₄-alkyl which may be substituted by one to three C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, halogen, nitro or cyano groups;

R² is (t) hydrogen, (u) hydroxyl, (v) C₁-C₄-alkoxy, (w) C₁-C₆-alkyl which may be substituted by 1-3 cyano, C₁-C₄-alkoxy-C₁-C₄-alkoxy, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, di-C₁-C₄-alkylamino, halogen, C₃-C₈-cycloalkyl or phenyl groups, wherein said phenyl groups may be substituted by one to three halogen, cyano, nitro, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio or C₁-C₄-haloalkylthio groups, (x) C₃-C₈-cycloalkyl which may be substituted by one to three C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, halogen, nitro or cyano groups, (y) C₃-C₆-alkenyl which may be substituted by 1-3 halogen atoms or one phenyl group, wherein said phenyl group may be substituted by one to three C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, halogen, cyano or nitro groups (z) C₃-C₆-alkynyl which may be substituted by 1-3 halogen atoms or one phenyl group, wherein said phenyl group may be substituted by one to three C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, halogen, cyano or nitro groups (aa) di-C₁-C₄-alkylamino, (bb) a 5-membered or 6-membered saturated or aromatic heterocyclic group containing one or two heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen, which may be substituted by one or two C₁-C₃-alkyl, halogen, C₁-C₃-alkoxy or C₁-C₃-alkoxycarbonyl groups, (cc) a fused aromatic group selected from the group consisting of benzofuran-2-yl, benzofuran-3-yl, isobenzofuran-2-yl, benzothienophen-2-yl, benzothienophen-3-yl, isobenzothienophen-2-yl, indol-2-yl, indol-3-yl, 1,2-benzisoxal-3-yl, benzoxal-2-yl, 1,2-benzisothiazol-3-yl, benzothiazol-2-yl, indazol-3-yl, (1H)-benzimidazol-2-yl, quinol-3-yl, quinol-5-yl, quinol-6-yl, quinol-8-yl, isoquinol-1-yl and isoquinol-5-yl, where said fused aromatic group may be monosubstituted to trisubstituted by C₁-C₄-alkyl or halogen, (dd) phenyl which may be substituted by one to four C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, C₁-C₄-haloalkylthio, halogen, cyano, formyl, phenyl, C₁-C₄-alkanoyl, C₁-C₄-haloalkanoyl or C₁-C₄-alkoxycarbonyl groups or (ee) naphthyl which may be substituted by 1-3 halogen atoms or C₁-C₄-alkyl groups; and plant tolerated salts thereof, except for 3-methylisoxazole-4,5-dicarboximide.

wherein

- R² represents hydrogen, alkyl, alkoxy, halogenoalkyl or halogenoalkoxy,
- R² represents hydrogen, alkyl or halogenoalkyl,
- R³ represents hydrogen or halogen,
- R⁴ represents hydrogen, cyano, halogen or a radical of the formula -O-R⁶, -S-R⁶, -C(O)-O-R⁶, -C(O)-S-R⁶, -NR⁶R⁷ or -C(O)-NR⁶R⁷,
- R⁵ represents cyano or nitro and
- X represents oxygen or sulphur, where
- R⁶ and R⁷ independently of one another in each case represent hydrogen or in each case optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkoxycarbonyl, aryl or arylalkyl.

5,378,682

DENSE SUPERCONDUCTING BODIES WITH PREFERRED ORIENTATION

Martin Schwarz; Iris Küllmer, both of Frankfurt am Main, and Joachim Bock, Erfstadt-Lechenich, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 761,983, Sep. 23, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,034

Claims priority, application Germany, Mar. 25, 1989, 3909882

Int. Cl.⁶ C01G 29/00; H01B 13/00

U.S. Cl. 505-490

5 Claims

1. A process for producing a solid oxide-ceramic superconductor which contains copper in the crystal lattice and is essentially composed of elongated crystals which are arranged in parallel and intergrown with one another, which process comprises mixing a powdered superconductor which contains copper in the lattice with 0.04 to 0.5 mol of copper fluoride per

100 g of copper in the superconductor, forming the mixture under a pressure of at least 1 MPa to produce a molded body and heating the molded body for at least 5 hours at a temperature from 1000° to 1050° C.

formed during said heat treatment from said metal sheath while maintaining said sheath at said constant intermediate temperature during heat treatment wherein said constant intermediate temperature is in the range of from about 500° C. to about 750° C.

5,378,683

JOSEPHSON JUNCTION STRUCTURE

Régis Cabanel, Paris; Guy Garry, Roel Malmanson; Alain Schuhl, Clamart, and Bruno Ghyselen, Meulan, all of France, assignors to Thomson-CSF, Puteaux, France

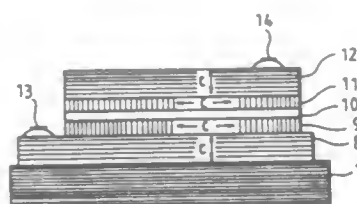
Filed Apr. 21, 1992, Ser. No. 871,537

Claims priority, application France, Apr. 23, 1991, 91 04996

Int. Cl.⁶ H01L 39/12, 39/22; H01B 12/00

U.S. Cl. 505—190

5 Claims



1. A Josephson junction structure, formed between a non-superconducting barrier and at least one film made of a first high-temperature superconducting material of a (R) BaCuO group, in which R is a rare earth element, said film being supported by at least one electrical access layer made of a second high-temperature superconducting material, of a same (R) BaCuO group as said at least one film, wherein a longest axis "c" of a film crystal unit cell of said at least one film is perpendicular to a longest axis "c" of an access layer crystal unit cell of said at least one access layer, each of said axes "c" being perpendicular to CuO planes of the respective first and second superconducting material.

5,378,684

METHOD OF PREPARING OXIDE HIGH-TEMPERATURE

Takeshi Hikata, and Kenichi Sato, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 10, 1991, Ser. No. 757,103

Claims priority, application Japan, Sep. 10, 1990, 2-240384

Int. Cl.⁶ H01L 39/24

U.S. Cl. 505—430

3 Claims

1. An improved method of preparing an oxide high-temperature superconductor in a metal sheath comprising the steps of: (a) maintaining a metal sheath containing a ceramic material capable of being superconductive at a constant intermediate temperature during heat treatment; and, (b) removing gas

from said metal sheath while maintaining said sheath at said constant intermediate temperature during heat treatment wherein said constant intermediate temperature is in the range of from about 500° C. to about 750° C.

5,378,685

PROCESS FOR PREPARING MIXTURE OF TRIMETHYL AND DIMETHYLMETHYLENE PROPYL POLYHYDROXYRANS, PRODUCTS PRODUCED THEREBY PERFUMERY USES OF SUCH PRODUCT

Mark A. Sprecker, Sea Bright; Robert P. Belko, Woodbridge, and Marie R. Hanna, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

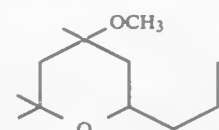
Filed Mar. 17, 1994, Ser. No. 214,185

Int. Cl.⁶ A61K 7/46

U.S. Cl. 512—11

12 Claims

1. The compound having the structure:



3. A process for augmenting, enhancing or imparting an aroma in or to a consumable material selected from the group consisting of perfume compositions, colognes or perfumed articles comprising the step of intimately admixing with said perfume composition, cologne or perfumed article, an aroma imparting, augmenting or enhancing quantity of a composition of matter defined according to claim 1.

5,378,686

THERAPEUTIC TREATMENT OF FIBROMYALGIA

Robert M. Bennett, Portland, Oreg., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Sep. 21, 1992, Ser. No. 947,792

Int. Cl.⁶ A61K 37/36

U.S. Cl. 514—12

10 Claims

1. A method for treatment of syndromes manifested in a human patient by non-restorative sleep and musculoskeletal pain comprising administering to said patient a pharmaceutically effective amount of human growth hormone.

5,378,687

USE OF HUMAN BLOOD COAGULATION FACTOR XIII FOR THE TREATMENT OF ULCERATIVE COLITIS

Mikio Urabe, Fukuoka; Satoshi Tanaka, Chiba, and Kenichiro Tsumura, Ichihara, all of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Continuation of Ser. No. 839,080, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 704,737, May 20, 1991, abandoned, which is a continuation of Ser. No. 152,822, Feb. 5, 1988, abandoned. This application May 13, 1993, Ser. No. 60,702

Claims priority, application Japan, Feb. 9, 1987, 62-26387

Int. Cl.⁶ A61K 37/00, 37/48

U.S. Cl. 514—12

4 Claims

1. A process for the treatment of ulcerative colitis characterized by administering to a patient requiring such treatment a daily dosage level of from 1500 to about 5000 units of human blood coagulation factor XIII concentrate.

5,378,688

GNRH ANALOGS FOR DESTROYING GONADOTROPHS

Torrance M. Nett, Ft. Collins, and Leonard M. Glode, Aurora, both of Colo., assignors to Colorado State University Research Foundation, Ft. Collins, Colo.

Continuation-in-part of Ser. No. 314,653, Feb. 23, 1989, abandoned. This application Feb. 14, 1992, Ser. No. 837,639

Int. Cl.⁶ A61K 37/00, 37/02; C07K 5/00, 7/00

U.S. Cl. 514—15

3 Claims

1. A method for sterilizing an animal, said method comprising administering an effective amount of a conjugate compound comprised of a gonadotropin releasing hormone (GnRH) or an analog thereof conjugated to a toxin selected from the group consisting of ricin, modecoin, abrin, pokeweed antiviral protein, α-amanitin, gelonin ribosome inhibiting protein ("RIP"), barley RIP, wheat RIP, corn RIP, rye RIP, flax RIP, diphtheria toxin, Pseudomonas exotoxin, shiga toxin, melphalan, methotrexate, nitrogen mustard, doxorubicin, daunomycin, and modified forms thereof, wherein said conjugate compound is capable of crossing the cell membrane of a gonadotroph.

5,378,689

PEPTIDES HAVING RENIN INHIBITORY ACTIVITY, THEIR PREPARATION AND USE

Yasuhiro Morisawa; Mitsuru Kataoka; Yuichiro Yabe; Hiroyuki Koike; Hidekuni Takahagi; Yasuteru Iijima, all of Hiromachi; Tatsuo Kokubu, Osakayama, and Kunio Hiwada, Ehime, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 979,442, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 480,060, Feb. 14, 1990, abandoned. This application Jul. 28, 1993, Ser. No. 98,746

Claims priority, application Japan, Feb. 16, 1989, 1-37097; Jun. 14, 1989, 1-149577

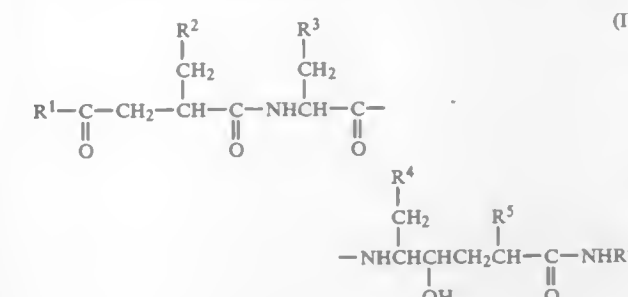
Int. Cl.⁶ A61K 37/02; C07K 5/08

U.S. Cl. 514—18

52 Claims

1. A compound of formula (I):

1. A compound of formula (I):



wherein R¹ is a 1-pyrrolidinyl, piperidino, morpholino, thiomorpholino, 1-piperazinyl, 4-methyl-1-piperazinyl or 4-piperidinyl-1-piperazinyl group or a group of formula —N(R⁷)(R⁸), wherein

R⁷ is a methyl group and R⁸ is a benzyl, phenethyl, 4-methylbenzyl, 4-methoxybenzyl or 4-chlorobenzyl group;
R² is a phenyl or methoxyphenyl group;
R³ is a thiazolyl group;
R⁴ is a cyclohexyl group;
R⁵ is a C₁—C₄ alkyl group; and
R⁶ is a C₁—C₆ alkyl group.

5,378,690

NEW RENIN-INHIBITORY OLIGOPEPTIDES, THEIR PREPARATION AND THEIR USE

Yasuhiro Morisawa; Mitsuru Kataoka; Yuichiro Yabe; Yasuteru Iijima; Hidekuni Takahagi; Hiroyuki Koike, all of Tokyo; Tatsuo Kokubu, and Kunio Hiwada, both of Ehime, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 980,322, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 713,042, Jun. 7, 1991, abandoned, which is a continuation of Ser. No. 133,017, Dec. 15, 1987, abandoned. This application Jul. 30, 1993, Ser. No. 99,776

Claims priority, application Japan, Dec. 19, 1986, 61-302983; Mar. 11, 1987, 62-56003; May 26, 1987, 62-127065; May 28, 1987, 62-129967; Sep. 9, 1987, 62-225739; Oct. 29, 1987, 62-273773

Int. Cl.⁶ A61K 37/02; C07K 5/08

U.S. Cl. 514—18

53 Claims

1. A compound of formula (I):

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5,378,691

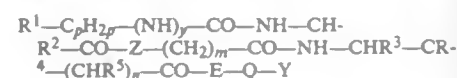
AMINO ACID DERIVATIVES

Peter Raddatz; Joachim Gante; Johannes Sombroek, all of Darmstadt; Claus J. Schmitges, Gross-Umstadt, and Klaus-Otto Minck, Ober-Ramstadt, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Germany

Continuation-in-part of Ser. No. 739,147, Aug. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 337,785, Apr. 13, 1989, abandoned. This application Aug. 15, 1994, Ser. No. 213,365

Claims priority, application Germany, Apr. 14, 1988, 3812328 Int. Cl.⁶ A61K 37/02; C07K 5/08, 5/10

U.S. Cl. 514—18 21 Claims
1. An amino acid compound of formula I



wherein

R¹ is R⁶R⁷N—, R⁶OOC— or R⁶—O—(CH₂CH₂O)_r—; —NH—CHR²—CO— is Leu, Mal, p-F-Phe, Phe, D-Phe, 3-Pya, 2-Tia, Tyr or D-Tyr;

—Z—C_mH_{2m}—CO— is βAla or Gly;

R³ is isobutyl, benzyl or cyclohexylmethyl;

R⁴ is (H, OH);

—(CHR⁵)_n— is —CH₂—, —CH₂CH₂—, or —CH₂—CHA—;

E is absent or is Ala, Gly, Ile, Leu, Nle or Ile-Val;

Q—Y is OH, OA, NHA, NH—C₇H₂—R¹¹, NH—C₇H₂—OH or NH—C₇H₂—NA₂;

R⁶ and R⁷ are each independently H or A;

R⁷ can also be R⁹—O—CO—;

R⁹ is A or benzyl;

R⁶R⁷N can also be piperidinyl, morpholinyl, piperazinyl or pyrrolidinyl, unsubstituted or substituted by A, OH, NH₂, NHA, NA₂, NH—CO—A, NH—CO—OA, NH—SO₂—A, hydroxyalkyl, COOH, COOA, NH—CO—NH₂, NH—CO—NHA or guanidinyl;

R¹¹ is p-aminosulfonylphenyl, 1-benzyl-4-piperidinyl, 3-pyridyl, 4-amino-2-methyl-5-pyrimidinyl, 2-amino-5,6-dimethyl-3-pyrazinyl or 5-tetrazolyl;

y is 0 or 1;

p is 0, 1, 2, 3, 4, 5, 6 or 7;

r is 1 or 2;

t is 1, 2, 3, 4 or 5;

alkyl- is an alkylene group having 1–8 C atoms; and

A is alkyl having 1–8 C atoms, or a physiologically acceptable salt thereof.

5,378,692

METHOD OF LOWERING LIPIDS

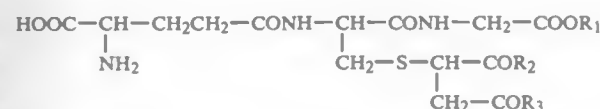
Shinji Ohmori, Okayama; Kazumi Ogata, Toyonaka; Hideki Tsuruoka, Kawanishi; Takahiro Sakao, Itami; Youichi Isowaki, Settsu, and Yasuko Umegaki, Kobe, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan Filed Jul. 6, 1993, Ser. No. 85,875

Claims priority, application Japan, Jul. 17, 1992, 4-190748

Int. Cl.⁶ A61K 37/00, 31/225, 31/22, 31/195

U.S. Cl. 514—19 5 Claims

1. A method for lowering triglyceride, total cholesterol, β-lipoprotein or very-low density lipoprotein in blood which comprises administering to a human in need of such lowering a triglyceride-, total cholesterol-, β-lipoprotein- or very-low density lipoprotein-lowering effective amount of a compound of the following formula:



wherein R₁ represents a hydrogen atom or a lower alkyl group; R₂ and R₃ are the same or different and each represents a hydroxyl group, a lower alkoxy group or an amino group, or a pharmacologically acceptable salt thereof.

5,378,693

2'-HALOMETHYLIDENE CYTIDINE, URIDINE AND GUANOSINE COMPOUNDS AND THEIR PHARMACEUTICAL COMPOSITIONS

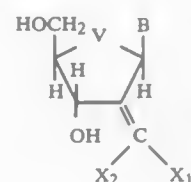
James R. McCarthy, West Chester; Michael L. Edwards, Cincinnati, and Donald P. Matthews, West Chester, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 563,470, Aug. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 271,479, Nov. 15, 1988, abandoned. This application Aug. 27, 1993, Ser. No. 113,505

Int. Cl.⁶ C07H 19/073, 19/173

U.S. Cl. 514—45 14 Claims

1. A compound of the formula

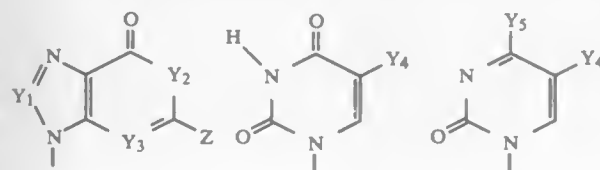


wherein

V is oxy,

X₁ and X₂ are each independently hydrogen or halogen, with the proviso that at least one of X₁ and X₂ is halogen,

B is a radical of the formula



wherein Y₁ is a CH group; Y₂ is an NH group; Y₃ is a nitrogen; Y₄ is hydrogen; Y₅ is amino; and Z is NH₂; or a pharmacologically acceptable salt thereof.

7. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1, in admixture or otherwise in association with one or more pharmaceutically acceptable carriers or excipients.

5,378,694

ACYL AND ALKOXY SUBSTITUTED QUINOLINES

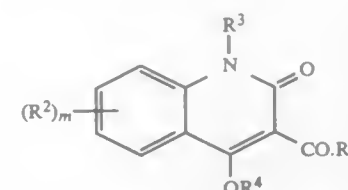
Adriano Afonso, West Caldwell; Jay Weinstein, Upper Montclair; Margaret J. Gentles, Bloomfield, and Stuart B. Rosenblum, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US91/06250, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/04328, PCT Pub. Date Mar. 19, 1992

Continuation-in-part of Ser. No. 579,749, Sep. 7, 1990, abandoned. This PCT application Sep. 6, 1991, Ser. No. 983,519 Int. Cl.⁶ C07D 215/56; A61K 31/47

U.S. Cl. 514—82 14 Claims

1. A compound of Formula 1.0:



(1.0)

and the pharmaceutically acceptable salts and solvates thereof wherein:

(B) R³ is selected from the group consisting of:

- (1) alkyl;
- (2) —CH₂-phenyl;
- (3) phenyl;
- (4) substituted phenyl;
- (5) 3-(2-chloro-4-methoxyphenoxy)propyloxymethyl;
- (6) —(CH₂)_a R¹¹ wherein a is an integer of 1 to 6 and R¹¹ is selected from the group consisting of —C(O)OR¹², —OR¹², R¹², and —N(R¹²)₂, wherein each R¹² can be the same or different and is selected from the group consisting of alkyl, alkenyl and H; and
- (7) —OR¹³ wherein R¹³ is selected from the group consisting of H, alkyl- which may be substituted with OH, SH, NH₂ and/or halogen -, alkenyl;

(C) R¹ is

- (1) H;
- (2) alkyl;
- (3) alkenyl;
- (4) phenyl;
- (5) —O—CH₂-phenyl;
- (6) halogen atoms selected from the group consisting of F, Cl, Br and I;
- (7) —O—CO—R⁶ wherein R⁶ is alkyl- which may be substituted with OH, SH, NH₂ and/or halogen -, phenyl; and alkenyl;
- (8) —N(R⁷)₂ wherein each R⁷ is independently selected from the group consisting of H, alkyl, phenyl, and R⁶C(O)— wherein R⁶ is as above defined;
- (9) —OH;
- (10) —CH₂OH;
- (11) —COOH;
- (12) —COOR⁸, wherein R⁸ is selected from the group consisting of alkyl and phenyl;
- (13) —SO₃H;
- (14) —SO₂NHR⁹, wherein R⁹ is selected from the group consisting of alkyl, phenyl, and H;
- (15) —PO₃H;
- (16) —PO(OR¹⁰)₂, wherein R¹⁰ is selected from the group consisting of alkyl and phenyl;
- (17) —OPO₃H;
- (18) —OP(OR¹⁰)₂ wherein R¹⁰ is as above defined; and
- (19) —CF₃;

(E) m is an integer from 0 to 1; and

(F) R⁴ is selected from the group consisting of H, aminoalkyl and hydroxyalkyl

and wherein

acyl represents alkyl-C(O)-, alkenyl-C(O)-, alkynyl-C(O)-, cycloalkyl-C(O)-, phenyl-C(O)- or cycloalkenyl-C(O)-;

alkaryl represents an phenyl group, as defined below, in which an alkyl group, as defined below, is substituted for one of the phenyl H atoms;

alkenyl represents straight and branched aliphatic hydrocarbon groups having 1 bond and having from 2 to 6 carbon atoms;

alkoxy represents an alkyl radical attached to a molecule through an oxygen atom (-O-alkyl);

alkyl represents straight or branched saturated hydrocarbon groups which have from 1 to 6 carbon atoms;

aminoalkyl represents NH₂-alkyl, alkyl-NH₂-alkyl, (alkyl)₂NH₂-alkyl;

cycloalkenyl represents a carbocyclic ring having from 5 to 7 carbon atoms and one carbon-to-carbon double bond in the ring;

cycloalkyl represents a saturated carbocyclic ring having from 3 to 7 carbon atoms;

hydroxyalkyl represents an alkyl group wherein one or two hydroxy groups is substituted for one or two hydrogen atoms; and

substituted alkyl represents an alkyl group, as defined above, wherein one of the alkyl H atoms is replaced with a group selected from the group consisting of alkyl, aryl, heteroaryl,—OH, —O-alkyl, —NH₂, —N(alkyl)₂ wherein each alkyl group is the same or different, —SH, —S-alkyl, —C(O)O-alkyl, —C(O)H, —NHC(=NH)NH₂, —C(O)NH₂, —OC(O)NH₂, NO₂ and —NHC(O)-alkyl, wherein alkyl, aryl, and heteroaryl are as above defined.

5,378,695

VITAMIN D ANALOGUES

Martin J. Calverley; Kai Hansen, both of Herlev, and Lise Binderup, Tastrup, all of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

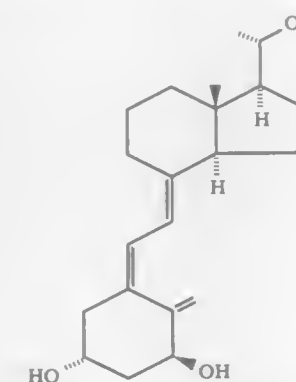
Continuation of Ser. No. 721,563, Aug. 2, 1991, abandoned. This application May 17, 1993, Ser. No. 62,154

Claims priority, application United Kingdom, Feb. 23, 1989, 8904153

Int. Cl.⁶ C07C 401/00

U.S. Cl. 514—167 8 Claims

1. A compound of the formula I



in which formula R stands for an alkyl or cycloalkyl group containing from 7 to 12 carbon atoms optionally substituted with a hydroxy group; and derivatives of the compounds of formula I in which one or more hydroxy groups have been transformed into —O-acyl or —O-glycosyl or phosphate ester groups, these groups being hydrolyzable in vivo.

5,378,696

RAPAMYCIN ESTERS

Craig E. Caufield, Plainsboro, N.J., assignor to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 44,341, Apr. 7, 1993, which is a continuation of Ser. No. 777,983, Oct. 19, 1991, Pat. No. 5,221,670, which is a continuation-in-part of Ser. No. 584,833, Sep. 19, 1990, abandoned. This application Jun. 8, 1993, Ser. No. 73,857

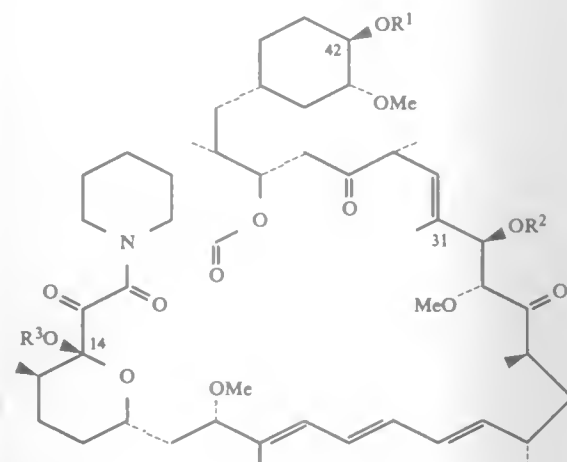
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.⁶ C07D 457/06; A61K 31/33

U.S. Cl. 514-183

6 Claims

1. A compound of the structure

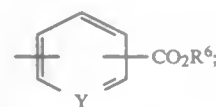


wherein

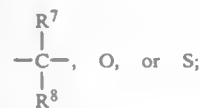
R¹, R², and R³ are each, independently, hydrogen or



with the proviso that R¹, R², and R³ are not all hydrogen; R⁴ is -(CH₂)_mX(CH₂)_nCO₂R⁵ or



R⁵ and R⁶ are each, independently, hydrogen, alkenyl of 2-7 carbon atoms, alkynyl of 2-7 carbon atoms, (CH₂)_pNR⁹R¹⁰, mono-, di-, or tri-hydroxyalkyl of 1-8 carbon atoms, or aryl, which is optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1-6 carbon atoms, arylalkyl of 7-10 carbon atoms of which the alkyl group is of 1-4 carbon atoms, alkoxy of 1-6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2-7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1-6 carbon atoms per alkyl group, dialkylaminoalkyl of 3-12 carbon atoms, hydroxyalkyl of 1-6 carbon atoms, alkoxyalkyl of 2-12 carbon atoms, and alkylthio of 1-6 carbon atoms, wherein the above aryl group is selected from phenyl, pyridinyl, thienyl, furyl, isoxazolyl, thiazolyl, imidazolyl, pyrazinyl, pyrimidinyl, benzofuryl, benzoxazolyl, benzoisoxazolyl, benzthiazolyl, benimidazolyl, indolyl, quinolyl, isoquinolyl, thianaphthyl and benzopyranyl; X is



R⁷, R⁸, R⁹, and R¹⁰ are each, independently, hydrogen or alkyl of 1-6 carbon atoms:

Y is CH or N:

m is 0-4;

n is 0-4;

p is 0-4;

with the proviso that m and n are not both 0 when X is O or S;

or a pharmaceutically acceptable salt thereof.

5,378,697

CEPHALOSPORINS

Jean-Francois Chantot, Gressy en France; Solange Gouin D'Ambrieres, Paris; Daniel Humbert, Fontenay Sous Bois, and Jean-Georges Teutsch, Pantin, all of France, assignors to Roussel-UCLAF, France

Filed Jun. 24, 1992, Ser. No. 903,610

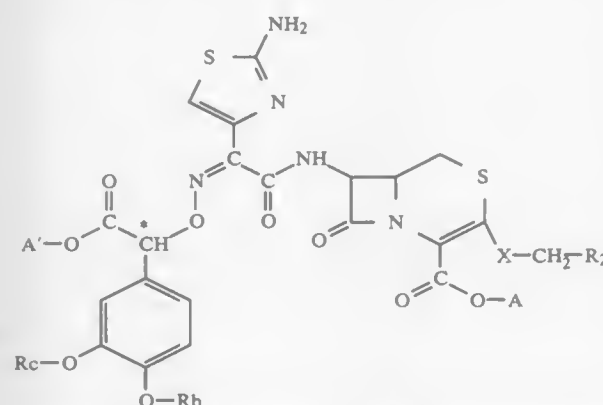
Claims priority, application France, Jun. 25, 1991, 91 07785

Int. Cl.⁶ C07D 513/04; A61K 31/54

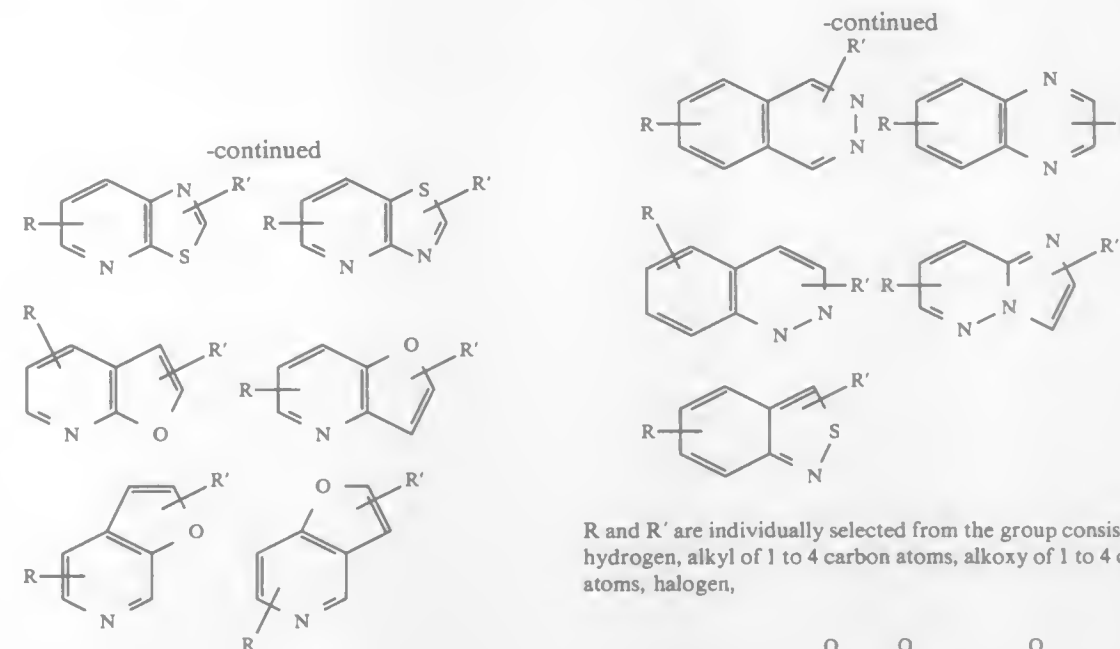
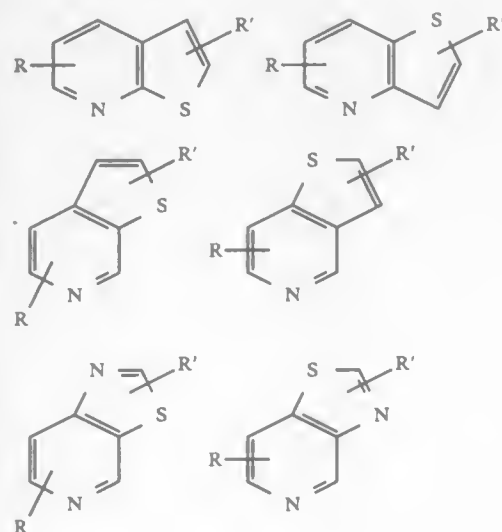
U.S. Cl. 514-210

11 Claims

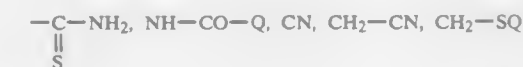
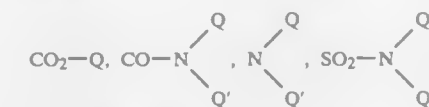
1. The syn isomer a quaternary ammonium compound of the formula



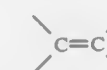
in the R or S form or a mixture of R and S forms wherein R₁ is selected from the group consisting of



R and R' are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen,



Q and Q' are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, X is a single bond or



in E or Z form, R_b and R_c are individually selected from the group consisting of an equivalent of alkali metal or alkaline earth metal, magnesium, ammonium and amino or A and A' are the remainder of an easily cleavable ester group or -CO₂A is -CO₂ and their nontoxic, pharmaceutically acceptable acid addition salts.

5,378,698

BENZOTHIAZEPINE DERIVATIVES

Teruo Yamamori, Takarazuka; Hiroshi Harada, Toyonaka; Katsunori Sakai, Osaka; Kazumi Iwaki, Higashiosaka, and Kazuki Matsunaga, Suita, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,851

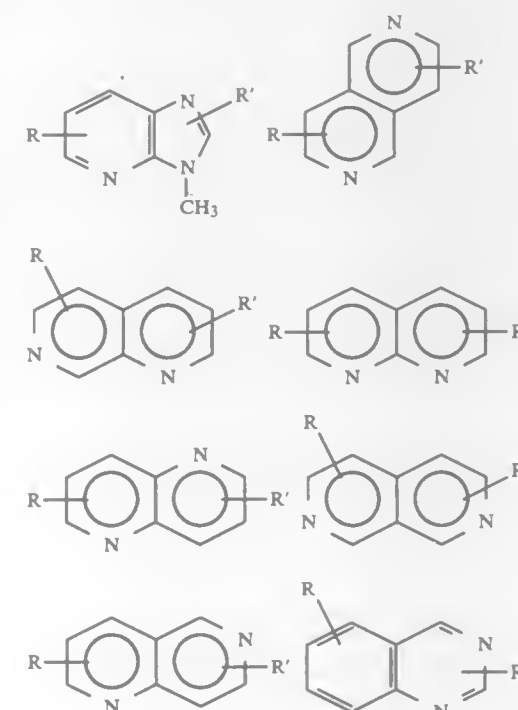
Claims priority, application Japan, Oct. 21, 1991, 3-302348

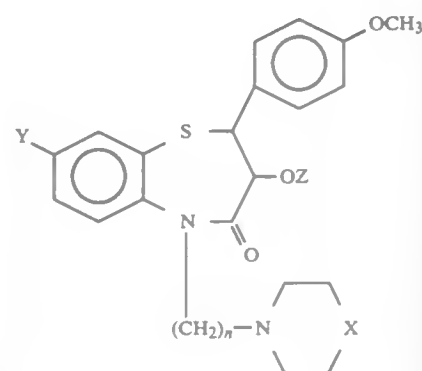
Int. Cl.⁶ A61K 31/55; C07D 417/06

U.S. Cl. 514-211

6 Claims

1. A compound of the formula:





wherein X is $=N-R^1$; R^1 is methoxyphenyl; Y is halogen, methyl or methoxy; Z is hydrogen or acetyl; n is an integer of from 3-6, or a pharmaceutically acceptable salt thereof.

5. A method for the treatment of hypertension which comprises administering an effective amount of a compound of claim 1 to a human being or animal.

6. A method for the treatment of transient ischemic disease which comprises administering an effective amount of a compound of claim 1 to a human being or animal.

5,378,699

METHODS OF USING DIHYDROPYRANS

Michael Brunavs, Frimley; Colin P. Dell, Dorking; Peter T. Gallagher, Camberley; William M. Owton, Lightwater, all of Great Britain; Jai P. Singh, Carmel, Ind., and Colin W. Smith, Bracknell, Great Britain, assignors to Lilly Industries Limited, Basingstoke, Great Britain and Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 5, 1993, Ser. No. 14,016

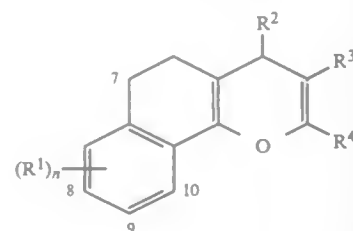
Claims priority, application United Kingdom, Feb. 19, 1992, 9203497

Int. Cl.⁶ A61K 31/35; C07D 311/04

U.S. Cl. 514-312

8 Claims

1. A method of treating a disease in which excess cell proliferation or enzyme release occur, which comprises administering to a patient in need of treatment a therapeutic dosage of a compound of the formula:



wherein:

n is 0, 1 or 2;

R^1 is attached at any of the positions 7, 8, 9 or 10, and each R^1 is halo, carboxy, trifluoromethyl, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, hydroxy- C_{1-4} alkyl, hydroxy- C_{1-4} alkoxy, nitro, trifluoromethoxy, $-COOR^5$ where R^5 is an ester group, $-COR^6$, $-CONR^6R^7$ or $-NR^6R^7$ where R^6 and R^7 are each hydrogen or C_{1-4} alkyl;

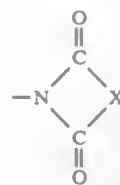
R^2 is phenyl, naphthyl or heteroaryl selected from thienyl, pyridyl, benzothienyl, or quinolyl, said phenyl, naphthyl and heteroaryl groups being optionally substituted with one or two substituents selected from nitro, CF_3 , halo, C_{1-4} alkyl, C_{1-4} alkoxy, carboxy or $-O(CH_2)_x-O-$ where x is one to four; or R^2 is furanyl optionally substituted with C_{1-4} alkyl;

R^3 is nitrile; and

R^4 is $-NR^{11}R^{12}$, $-NR^{11}COR^{12}$, $-N(COR^{11})_2$ or $-N=CHOCH_2R^{11}$ where R^{11} and R^{12} are each hydrogen or

(I)

C_{1-4} alkyl optionally substituted with carboxy, $-N=CH-NR^{13}R^{14}$ where R^{13} is hydrogen or C_{1-4} alkyl and R^{14} is C_{1-4} alkyl, or



where X is C_{2-4} alkylene; provided that when n is 0, R^3 is nitrile and R^4 is $-NH_2$, R^2 is not phenyl or phenyl substituted with 4-nitro, 2- or 4-chloro, 2,3-dichloro-, 4-nitrile, 4-methylthio, 2-bromo, 2- or 4-methyl or 2- or 4-methoxy, 4-S-Methyl; and salts thereof.

5,378,700

FUSED PYRIMIDINE DERIVATIVE, PROCESS FOR PREPARATION OF SAME AND PHARMACEUTICAL PREPARATION COMPRISING SAME AS ACTIVE INGREDIENT

Yasuji Sakuma; Masaichi Hasegawa; Kenichiro Kataoka; Kenji Hoshina, all of Hino; Noboru Yamazaki; Takashi Kadota, both of Hachioji, and Hisao Yamaguchi, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP90/01313, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO91/05784, PCT Pub. Date May 2, 1991

PCT Filed Oct. 11, 1990, Ser. No. 839,769

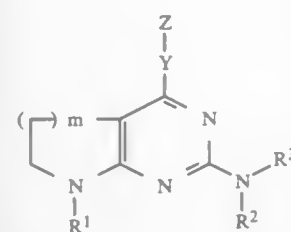
Claims priority, application Japan, Oct. 11, 1989, 1-264763

Int. Cl.⁶ C07D 471/04, 487/04; A61K 31/505, 31/55

U.S. Cl. 514-212

8 Claims

1. A fused pyrimidine derivative represented by formula (I):



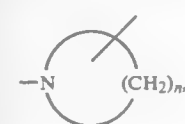
(I)

wherein:

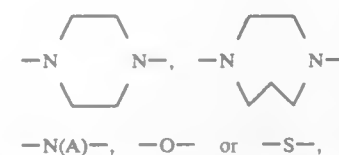
R^1 represents a hydrogen atom, or an unsubstituted or substituted alkyl, alkenyl, arylalkyl, arylalkenyl or alkylcarbonyl group;

R^2 and R^3 independently of each other represent a hydrogen atom, or an unsubstituted or substituted alkyl, alkenyl, arylalkyl, arylalkenyl or alkylcarbonyl group; or R^2 and R^3 are optionally taken together with the adjacent nitrogen atom to form an unsubstituted saturated 5- to 7-membered ring, which may be constructed with one or two hetero atoms selected from the group consisting of N, O and S, with the proviso that either R^2 or R^3 represents a group other than a hydrogen atom;

Y represents a linking group of the formula



wherein n is an integer of from 4 to 6,

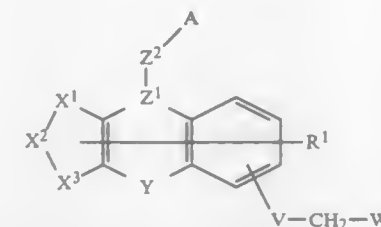


wherein A is a hydrogen atom or alkyl group; and

Z, when bonded to a carbon atom on the linking group, represents a hydrogen atom, or carboxylic, amino or hydroxyl group, or an unsubstituted or substituted alkyl, aryl, arylalkyl, alkoxy, alkylcarbonyloxy, alkoxy-carbonyl, arylcarbonyloxy, arylalkylcarbonyloxy, arylalkenylcarbonyloxy, alkylamino, alkenylamino, arylamino, arylalkylamino or alkylcarbonylamino group; and when bonded to an atom other than said carbon atom of the linking group, represents a hydrogen atom, or an unsubstituted or substituted alkyl, alkenyl, aryl, arylalkyl, arylalkenyl, alkylcarbonyl, arylalkylcarbonyl, arylalkenylcarbonyl or arylcarbonyl group; or Y and Z together represent an unsubstituted or substituted alkyl, alkenyl or arylalkyl group; or a 5- to 7-member heterocyclic ring which has a nitrogen atom, and further, an oxygen or sulfur atom as a hetero atom other than the nitrogen atom, being bonded via the nitrogen atom therein to the 4-position of the pyrimidine ring of the formula (I), a 5- to 7-member unsaturated heterocyclic ring which has 1 to 3 nitrogen atoms being bonded via the nitrogen atom therein to the 4-position of the pyrimidine ring of the formula (I), or a fused biheterocyclic ring, constructed with 5- or 6- membered aromatic or non-aromatic rings, which has 1 to 3 nitrogen atoms in any position, being bonded via the nitrogen atom therein to the 4-position of the pyrimidine ring of the formula (I);

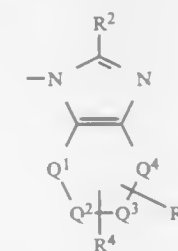
m is an integer of from 1 to 3; and

in said substituted alkyl, alkenyl, aryl, arylalkyl, arylalkenyl, alkylcarbonyl, arylcarbonyl, arylalkylcarbonyl, arylalkenylcarbonyl, alkylcarbonyloxy, alkoxy-carbonyl, arylcarbonyloxy, arylalkylcarbonyloxy, arylalkenylcarbonyloxy, alkylamino, arylamino, arylalkylamino and alkylcarbonylamino groups, the substituent represents an alkyl, halogenated alkyl, alkoxy, alkylcarbonyloxy, hydroxyl, amino, nitro or cyano group, or a halogen atom, which is bonded to a chain or ring moiety in said substituted groups, or alkylene group being taken together with a carbon atom in the chain moiety to form a ring; and a pharmaceutically acceptable acid addition salt thereof.

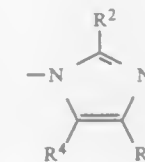


(I)

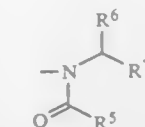
wherein R^1 represents hydrogen, halogen or lower alkyl; A represents cyano, carboxyl, tetrazolyl, cyano-substituted phenyl, carboxyl-substituted phenyl or tetrazolyl-substituted phenyl; V represents $-(CH_2)_m-$ wherein m is an integer of 0 to 2; W represents



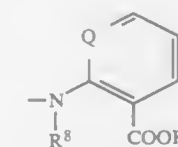
wherein R^2 , R^3 and R^4 independently represent hydrogen, halogen, lower alkyl, cycloalkyl, halogenated lower alkyl, hydroxy, lower alkoxy, amino, lower alkylamino, carboxyl or lower alkoxy-carbonyl; and $Q^1-Q^2-Q^3-Q^4$ represents $N=CH-CH=CH$, $CH=CH-CH=CH$ or $CH_2-CH_2-CH_2-CH_2$.



wherein R^2 , R^3 and R^4 have the same meanings as defined above,



wherein R^5 and R^6 independently represent hydrogen, lower alkyl or cycloalkyl; and R^7 represents carboxyl, lower alkoxy-carbonyl, carbamoyl or hydroxymethyl or



wherein R^8 and R^9 independently represent hydrogen or lower alkyl; and Q represents N or CH ; $X^1-X^2-X^3$ represents $CH=CH-CH=CH$, $S-CH=CH$ or $CH=CH-S$; Y represents CH_2CH_2 and Z^1-Z^2 represents $N-(CH_2)_n-$ wherein n is an integer of 1 to 3 or a pharmaceutically acceptable salt thereof.

5,378,701

TRICYCLIC COMPOUNDS

Etsuo Ohshima; Fumihiko Kanai; Hideyuki Sato; Hiroyuki Obase; Toshiaki Kumazawa; Shiho Takahara; Tetsuji Ohno; Tomoko Ishikawa, and Koji Yamada, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo, Tokyo, Japan

Continuation-in-part of Ser. No. 996,694, Dec. 24, 1992,

abandoned. This application May 25, 1993, Ser. No. 65,916

Claims priority, application Japan, Dec. 27, 1991, 3-347294

Int. Cl.⁶ A61K 31/55; C07D 223/16, 223/22

U.S. Cl. 514-215

10 Claims

1. A tricyclic compound represented by the following formula (I):

VOL
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1JA
3

1995

UMI

5,378,702

THIAIDIZINONES

Rochus Jonas; Ingeborg Lues, both of Darmstadt; Klaus-Otto Minck, Ober-Ramstadt, and Michael Klockow, Rosdorf, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Germany

Filed Jul. 16, 1993, Ser. No. 89,485

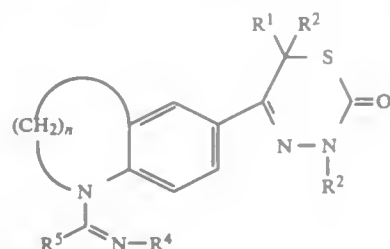
Claims priority, application Germany, Jul. 17, 1992, 4223537

Int. Cl.⁶ C07D 417/02; A61K 31/54

U.S. Cl. 514—222.5

18 Claims

1. A thiadiazinone compound of formula I



wherein

R¹ and R² in each case independently of one another are A;R³ is H, A or Ac;R⁴ is H, A, cycloalkyl having 3–7 C atoms, Ar or Ar-alk;R⁵ is Ar or Het;

A is alkyl having 1–8 C atoms;

Ac is A-CO-, Ar-CO-, Ar-alk-CO-, A-O-

CO- or A-NH-CO-;

-alk is alkylene having 1–5 C atoms;

Ar is an unsubstituted phenyl radical which is mono-, di- or trisubstituted by A, OH, OA, F, Cl, Br, I, SA, SOA, SO₂A, NH₂, NHA, NA₂, NHAc, NHSO₂A, CN or NO₂;Het is a thienyl or pyridyl group, which can be mono- or disubstituted by A, OA, F, Cl, Br, I, OH, NO₂, NH₂, NHA, NA₂, NHAc, NH-SO₂-A, SO-A, SO₂-A, SO₂NH₂ and/or SO₂NHA;

n is 2, 3 or 4;

or a salt thereof.

5,378,703

SULFONAMIDES USEFUL AS CARBONIC ANHYDRASE INHIBITORS

Thomas R. Dean, Weatherford; Hwang-Hsing Chen, and Jesse A. May, both of Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 775,313, Oct. 9, 1991, Pat. No. 5,240,923, which is a continuation-in-part of Ser. No. 618,765,

Nov. 27, 1990, Pat. No. 5,153,192, which is a

continuation-in-part of Ser. No. 506,780, Apr. 9, 1990,

abandoned. This application Feb. 18, 1993, Ser. No. 19,011

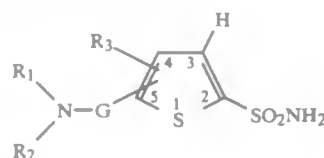
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.⁶ C07D 513/04; A61K 31/54

U.S. Cl. 514—222.8

14 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein:

R¹ and R² are each saturated carbon atoms joined together to form a ring of 6 members in which said carbon atoms can be unsubstituted or substituted optionally with R₄;R₂ is H; C₁₋₈ alkyl; C₂₋₈ alkyl substituted with OH, NR₅R₆, halogen, C₁₋₄ alkoxy, C₂₋₄alkoxyC₁₋₄alkoxy, OC(=O)R₇,

or C(=O)R₇; C₃₋₇ alkenyl unsubstituted or substituted optionally with OH, NR₅R₆, or C₁₋₄ alkoxy; C₃₋₇alkynyl unsubstituted or substituted optionally with C₁₋₃alkyl, C₁₋₃halo alkyl, OH, NR₅R₆, or C₁₋₄alkoxy; C₁₋₃ alkyl substituted with phenyl or R₁₀ either of which can be unsubstituted or substituted optionally with C₁₋₃alkyl, C₁₋₃halo alkyl, OH, (CH₂)_nNR₅R₆, halogen, C₁₋₄ alkoxy, C₁₋₄ haloalkoxy, C(=O)R₇, S(=O)_mR₈ or SO₂NR₅R₆, wherein m is 0–2 and n is 0–2; C₂₋₄ alkoxy substituted optionally with NR₅R₆, halogen, C₁₋₄ alkoxy, or C(=O)R₇; phenyl or R₁₀ either of which can be unsubstituted or substituted optionally with OH, (CH₂)_nNR₅R₆, halogen, C₁₋₄ alkoxy, C₁₋₄ haloalkoxy, C(=O)R₇, S(=O)_mR₈ or SO₂NR₅R₆, wherein m is 0–2 and n is 0–2; R₄ is OH; C₁₋₄ alkyl unsubstituted or substituted optionally with OH, NR₅R₆, halogen, C₁₋₄ alkoxy or C(=O)R₇; C₁₋₄ alkoxy; C₂₋₄ alkoxy substituted optionally with OH, NR₅R₆, halogen, C₁₋₄ alkoxy or C(=O)R₇; NR₅R₆; phenyl or R₁₀ either of which can be unsubstituted or substituted optionally with OH, (CH₂)_nNR₅R₆, halogen, C₁₋₄ alkoxy, C₁₋₄ haloalkoxy, C(=O)R₇, S(=O)_mR₈ or SO₂NR₅R₆, wherein m is 0–2 and n is 0–2;

R₅ & R₆ are the same or different and are H; C₁₋₄ alkyl; C₂₋₄ alkyl substituted optionally with OH, halogen, C₁₋₄ alkoxy or C(=O)R₇; C₁₋₄ alkoxy; C₂₋₄ alkoxy substituted optionally with OH, halogen, C₁₋₄ alkoxy or C(=O)R₇; C₃₋₇ alkenyl unsubstituted or substituted optionally with OH, NR₅R₆, or C₁₋₄ alkoxy; C₃₋₇ alkynyl unsubstituted or substituted optionally with OH, NR₅R₆, or C₁₋₄ alkoxy; C₁₋₂alkylC₃₋₅cycloalkyl; C(=O)R₇ or R₅ and R₆ can be joined to form a ring selected from the group consisting of pyrrolidine, oxazolidine, thiomorpholine, thiomorpholine 1,1 dioxide, morpholine, piperazine, and thiazolidine 1,1-dioxide, which can be unsubstituted or substituted optionally on carbon with OH, (=O), halogen, C₁₋₄ alkoxy, C(=O)R₇, C₁₋₆ alkyl, C₁₋₆ alkyl substituted optionally with OH, halogen, C₁₋₄ alkoxy, C(=O)R₇ or on nitrogen with C₁₋₄ alkoxy, C(=O)R₇, S(=O)_mR₈, C₁₋₆ alkyl or C₂₋₆ alkyl substituted optionally with OH, halogen, C₁₋₄ alkoxy, C(=O)R₇ or on sulfur by (=O)_m, wherein m is 0–2;

R₇ is C₁₋₈ alkyl; substituted optionally with OH, NR₅R₆, halogen, C₁₋₄ alkoxy or C(=O)R₉; C₁₋₄ alkoxy; C₂₋₄ alkoxy substituted optionally with OH, NR₅R₆, halogen or C₁₋₄ alkoxy; NR₅R₆; or phenyl or R₁₀ either of which can be unsubstituted or substituted optionally with OH, halogen, C₁₋₃ alkyl, C₁₋₃ haloalkoxy, (CH₂)_nNR₅R₆, S(=O)_mR₈ or SO₂NR₅R₆, wherein n is 0 or 1 and m is 0–2;

R₈ is C₁₋₄ alkyl; C₂₋₄ alkyl substituted optionally with OH, NR₅R₆, halogen, C₁₋₄ alkoxy or C(=O)R₇;R₉ is C₁₋₄ alkyl; C₁₋₄ alkoxy; amino, C₁₋₃ alkylamino, or di-C₁₋₃ alkylamino;R₁₀ is a monocyclic ring system selected from the group consisting of furan, thiophene, pyrrole, pyrazole, imidazole, triazole, tetrazole, oxazole, isoxazole, isothiazole, thiazole, thiadiazole, pyridine, pyrimidine, pyridazine, and pyrazine; andG is SO₂.

5,378,704

NON-PEPTIDIC

ANGIOTENSIN-II-RECEPTOR-ANTAGONISTS

Harold N. Welier, III, Pennington, N.J., assignor to E.R. Squibb & Sons, Inc., Princeton, N.J.

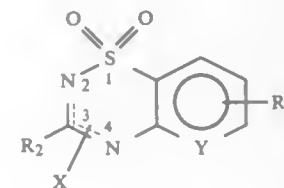
Filed Apr. 15, 1992, Ser. No. 870,007

Int. Cl.⁶ C07D 285/24, 417/04/417/14; A61K 31/54

U.S. Cl. 514—222.8

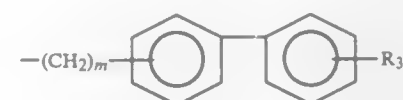
19 Claims

1. A compound of the formula

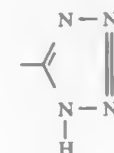


or a pharmaceutically acceptable salt thereof;

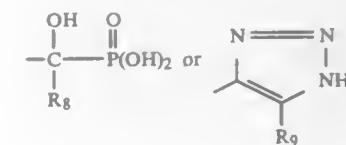
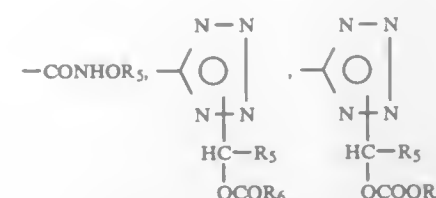
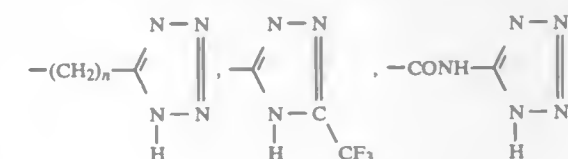
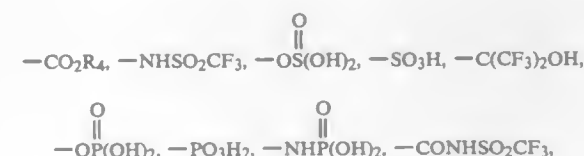
wherein the broken lines between the nitrogen atoms represent the presence of double bonds, and either the 2,3-position is bonded by a double bond and the 4-position nitrogen atom bears the group X, or the 3,4-position is bonded by a double bond and the 2-position nitrogen atom bears the group X, where the group X is



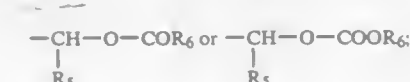
Y is a carbon or nitrogen atom;

R₁ is hydrogen, —CO₂R₄, —COR₄, perfluoroalkyl, halogen, cyano or

R₂ is hydrogen, alkyl, alkenyl, alkynyl, arylalkyl, —OR₇ or —SR₇ bonded to the ring system by a single bond or R₂ is O or S bonded to the ring system by a double bond to form a carbonyl or thiocarbonyl group;

R₃ is

R₄ is hydrogen, alkyl, perfluoroalkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, benzyl,

R₅ is hydrogen, alkyl, aryl, arylalkyl or cycloalkyl;R₆ is alkyl, aryl, alkylaryl, arylalkyl or cycloalkyl;R₇ is hydrogen, alkyl, alkenyl, alkynyl, aryl or arylalkyl;R₈ is hydrogen, alkyl of 1 to 5 carbon atoms or phenyl;R₉ is —CN, —NO₂ or —CO₂R₄;

m is an integer of 1 to 5;

n is 0 or the integer 1;

wherein "alkyl" refers to both straight and branched chain hydrocarbons, containing 1 to 12 carbon atoms in the normal chain and the various branched chain isomers thereof, optionally substituted with halo, alkoxy, aryl, alkylaryl, haloaryl, cycloalkyl, alkylcycloalkyl, hydroxy, alkylamine, alkanoylamino, nitro, cyano, thiol or alkylthio;

"alkenyl" refers to said "alkyl" groups further having at least one carbon to carbon double bond;

"alkynyl" refers to said "alkyl" groups further having at least one carbon to carbon triple bond; and

"aryl" refers to phenyl and phenyl substituted with 1, 2 or 3 amino, halogen, hydroxy, trifluoromethyl, alkyl (of 1 to 4 carbon atoms), alkoxy (of 1 to 4 carbon atoms), alkanoyloxy, aminocarbonyl, or carboxy groups.

5,378,705

STILBENE DERIVATIVES

Michael Klaus, Weil/Rhein, Germany; Peter Mohr, Basel, Switzerland, and Ekkehard Weiss, Inzlingen, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 829,666, Feb. 3, 1992, Pat. No. 5,250,562, which is a division of Ser. No. 510,705, Apr. 19, 1990, Pat. No. 5,106,981, which is a division of Ser. No. 310,442, Feb. 14, 1989, Pat. No. 4,940,707. This application Aug. 5, 1993, Ser. No. 102,609

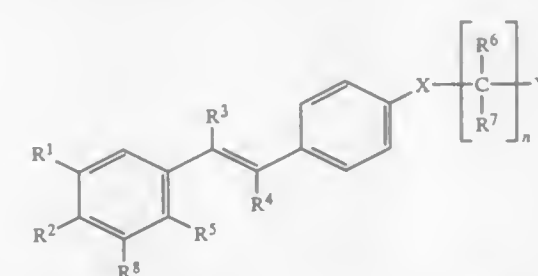
Claims priority, application Switzerland, Feb. 24, 1988, 689/88; Dec. 14, 1988, 4622/88

Int. Cl.⁶ A61K 31/38; C07D 279/12

U.S. Cl. 544—227.5

7 Claims

1. A compound of the formula



wherein R¹ and R² each independently is lower-alkyl; or together are alkylene with 3–5 C-atoms in a straight chain; or together are alkylene with 3–5 C-atoms in a straight chain wherein said alkylene is lower-alkyl substituted; one of the residues R³ and R⁴ is hydrogen and the other is hydrogen or lower-alkyl; R⁶ and R⁷ are hydrogen or lower-alkyl; R⁵ and R⁸ are hydrogen, lower-alkyl, lower-alkoxy or halogen; X is —O—, —S—, —SO—, —SO₂— or —NR⁹; R⁹ is hydrogen, lower alkyl or acyl; Y is thiomorpholino, thiomorpholino-4-oxide or thiomorpholino-4,4-dioxide; R¹⁰ is lower-alkyl; R¹¹ and R¹² are hydrogen, lower-alkyl or acyl; n is 2, 3 or 4.

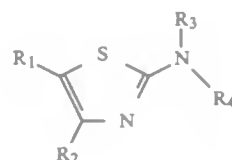
5,378,706

FUSED-THIAZOLE DERIVATIVES ACTIVE ON THE CHOLINERGIC SYSTEM, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Kathleen Biziere, Riedisheim; Dominique Olliero, Montpellier, and Paul Worms, Saint-Gely du Fesc, all of France, assignors to Sanofi, Paris, France

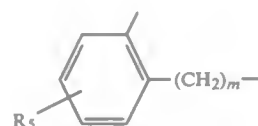
Division of Ser. No. 632,609, Dec. 27, 1990, Pat. No. 5,232,921, which is a continuation of Ser. No. 167,291, Mar. 11, 1988, abandoned. This application May 28, 1993, Ser. No. 68,224 Claims priority, application France, Mar. 12, 1987, 87 03398 Int. Cl.⁶ C07D 277/84, 417/12, 401/12; A61K 31/425 U.S. Cl. 514—232.8 10 Claims

1. An aminothiazole derivative having the formula:



wherein

R₁ and R₂, taken together, represent a group:

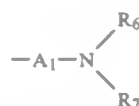


in which the phenyl group is bonded to the 4-position of the thiazole and the group (CH₂)_m to the 5-position, and in which m represents an integer equal to 2 or 3, and R₅ denotes H or nitro occupying one of the free positions on the ring;

-R₃ represents H or C₁-C₄ lower alkyl; and

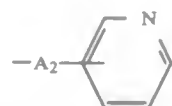
-R₄ represents:

- a group:



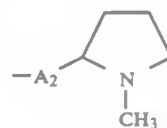
in which A₁ denotes linear or branched C₂-C₅ alkyl, and R₆ and R₇, taken independently, represent H, C₁-C₄ alkyl or C₃-C₆ cycloalkyl, or alternatively R₆ and R₇, taken with the nitrogen atom to which they are bonded, form a 5-membered or 6-membered heterocycle containing one or two nitrogen atoms as ring members or a nitrogen atom and an oxygen atom as ring members;

- a group:

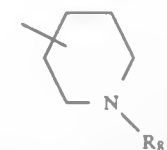


in which A₂ denotes a group (CH₂)_{m'} where m'=0, 1, 2 or 3, which is bonded to the pyridine ring in the 2-, 3- or 4-position;

- a group:



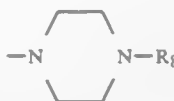
in which A₂ denotes a group (CH₂)_{m'} m'=0, 1, 2 or 3; or - a group:



in which R₈ denotes C₁-C₄ alkyl; or alternatively the substituent



represents a group:



in which R₈ denotes C₁-C₄ alkyl; or an addition salt thereof with a pharmaceutically acceptable mineral or organic acid.

5,378,707

ARYL-PROPYL-AMINES ENDOWED WITH ANTIFUNGAL ACTIVITY

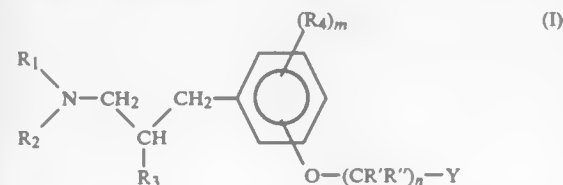
Giovanni Camaggi, Novara; Lucio Filippini, Varese; Marilena Gusmeroli, Milan; Carlo Garavaglia, Milan, and Luigi Mirena, Milan, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica e Tecnologica, Italy Division of Ser. No. 661,935, Feb. 28, 1991, Pat. No. 5,314,879. This application Nov. 22, 1993, Ser. No. 155,545

Claims priority, application Italy, Mar. 2, 1990, 19540 A/90

Int. Cl.⁶ A01N 43/84; C07D 265/30

U.S. Cl. 514—239.5 10 Claims

1. Antifungal compounds useful in the agricultural field having as active ingredient the formula:



wherein:

R₁ and R₂, which may be either equal to, or different from, each other, represent H atoms, either linear or branched (C₁-C₆)-alkyl groups, Ar-B groups in which Ar is a (C₆, C₁₀)-aryl or (C₆, C₁₀)-halo-aryl group and B is a (C₁-C₄)-alkylene or (C₁-C₂)-alkyl-(C₁-C₄)-alkylene group,

or R₁ and R₂ taken together with the N atom form a (C₃-C₈)-heterocyclic group or a (C₂-C₇)-heterocyclic group having a second heteroatom selected from among O and S, with said heterocyclic groups being optionally substituted with one or more C₁-C₄ alkyl groups, (C₆,

C₁₀)-aryl groups, halogens or Ar-B groups in which the symbols Ar and B have the same meanings as defined above;

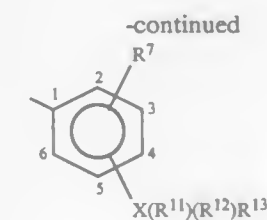
R₃ represents a (C₁-C₃)-alkyl group;

R₄ which, when m is greater than 1, may be either different from, or equal to, one another, represent halogen atoms, (C₁-C₃)-alkyl groups or (C₁-C₃)-halo-alkyl groups; m is an integer within the range of from 0 to 4;

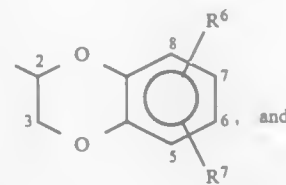
R', R'', which may be either equal to, or different from each other, represent H, (C₁-C₃)-alkyl group or halogen atoms; n is an integer within the range of from 0 to 3;

Y represents an ethenyl group or a (C₃-C₆)-cycloalkyl group;

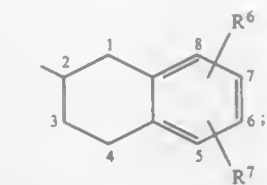
their enantiomers and diastereoisomers and corresponding metal salts and complexes.



Q-3



Q-5



Q-6

5,378,708

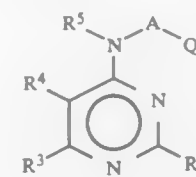
INSECTICIDAL, ACARICIDAL AND FUNGICIDAL AMINOPYRIMIDINES

Joseph E. Drumm, III, Newark; Renee M. Lett, Wilmington, and Thomas M. Stevenson, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US91/08241, § 371 Date May 13, 1993, § 102(e) Date May 13, 1993, PCT Pub. No. WO92/08704, PCT Pub. Date May 29, 1992

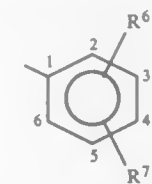
Continuation-in-part of Ser. No. 615,509, Nov. 19, 1990, abandoned. This PCT application Nov. 13, 1991, Ser. No. 50,263 Int. Cl.⁶ C07D 239/42, 407/12, 409/12; A01N 43/54 U.S. Cl. 514—256 19 Claims

1. A compound of the formula:

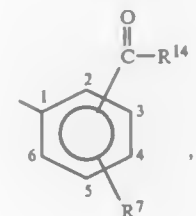


wherein:

Q is selected from the group



Q-1



Q-2

A is selected from the group C₁-C₅ alkylene and C₃-C₆ cycloalkylene, where any one atom of A can be optionally substituted with R¹;

X is Si or Ge;

R¹ is selected from the group C₁-C₂ haloalkyl, CN, C(O)R⁸, CO₂R⁸, C(O)N(R⁸)R⁹, N₃, NO₂, N(R⁸)R⁹, N(R⁸)C(O)R⁹, N(R⁸)C(O)N(R¹⁰)R⁹, N(R⁸)S(O₂)R¹⁰, OR⁸, OC(O)R⁸, OCO₂R⁸, OC(O)N(R⁸)R⁹, OS(O₂)R⁸, SR⁸, S(O)R⁸, S(O)₂R⁸ and SCN; provided that when R¹ is N(R⁸)S(O₂)R¹⁰, then R¹⁰ is other than H and when R¹ is OC(O)R⁸, OCO₂R⁸, OS(O₂)R⁸, S(O)R⁸ or S(O)₂R⁸, then R⁸ is other than H;

R² is selected from the group H, halogen, C₁-C₄ alkyl and C₁-C₄ haloalkyl;

R³ is selected from the group H, halogen, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₂-C₆ alkoxyalkyl and C₂-C₆ alkylthioalkyl;

R⁴ is selected from the group halogen, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₂-C₆ alkoxyalkyl and C₂-C₆ alkylthioalkyl;

R⁵ is selected from the group H, HCO, C₂-C₆ alkoxyalkyl, C₂-C₆ alkylcarbonyl, C₂-C₆ alkoxyalkyl, C₂-C₆ haloalkoxycarbonyl, C(O)R¹⁵, R¹¹OC(O)N(R¹²)S—, R¹¹(R¹²)NS—, and SR⁸; or R⁵ is C₁-C₆ alkyl optionally substituted with a group selected from halogen, CN, NO₂, S(O)₂R¹¹, C(O)R¹¹, CO₂R¹¹, C₁-C₃ haloalkoxy and phenyl optionally substituted by halogen, CN, or C₁-C₂ haloalkyl;

R⁶ is selected from the group H, C₁-C₆ alkyl, C₁-C₆ alkoxy, C₂-C₆ alkoxyalkyl, C₂-C₆ alkoxyalkoxy, C₂-C₆ alkenyl, C₂-C₆ haloalkenyl, C₂-C₆ alkynyl, C₂-C₆ alkenyloxy, C₂-C₆ alkynyloxy, C₃-C₆ cycloalkyl, C₃-C₆ cycloalkylalkyl, C₁-C₆ alkylthio, C₁-C₆ alkylsulfenyl, C₁-C₆ alkylsulfonyl, C₁-C₆ haloalkylthio, C₁-C₆ haloalkylsulfenyl, C₁-C₆ haloalkylsulfonyl, phenyl optionally substituted with W and phenoxy optionally substituted with W;

R⁷ is selected from the group H, halogen, CN, NO₂, C₁-C₂ alkyl, C₁-C₂ alkoxy and CF₃;

R⁸ and R¹⁰ are independently selected from the group H, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₂-C₆ alkenyl, C₂-C₆ haloalkenyl, C₂-C₆ alkynyl, C₃-C₆ haloalkynyl, C₂-C₆ alkoxyalkyl, C₂-C₆ alkylthioalkyl, C₁-C₆ nitroalkyl, C₂-C₆ cyanoalkyl, C₃-C₆ alkoxyalkylalkyl, C₃-C₆ cycloalkyl, C₃-C₆ halocycloalkyl, phenyl optionally substituted with 1 to 3 substituents independently selected from W and benzyl optionally substituted with 1 to 3 substituents independently selected from W;

R⁹ is selected from the group H and C₁-C₄ alkyl;

R⁸ and R⁹ can be taken together when attached to the same

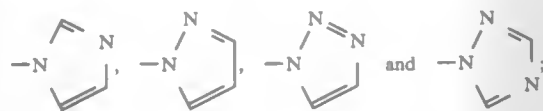
atom as $-(CH_2)_4-$, $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$;

R^{11} and R^{12} are independently selected from the group C_1-C_4 alkyl;

R^{13} is selected from the group C_1-C_4 alkyl, C_1-C_4 alkoxyalkyl and phenyl optionally substituted with W;

R^{14} is selected from the group C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 haloalkoxy, and phenyl or benzyl, each phenyl and benzyl optionally and independently substituted with 1 to 3 W;

R^{15} is selected from the group



W is selected from the group halogen, CN, NO_2 , C_1-C_2 alkyl, C_1-C_2 haloalkyl, C_1-C_2 alkoxy, C_1-C_2 haloalkoxy, C_1-C_2 alkylthio, C_1-C_2 haloalkylthio, C_1-C_2 alkylsulfonyl and C_1-C_2 haloalkylsulfonyl; and n is 0, 1 or 2;

provided that:

- when Q is Q-1 and A is C_1-C_5 alkylene, then A is substituted with R^1 ;
- when Q is Q-1, A is C_1-C_5 alkylene and R^1 is OR^8 or SR^8 , then R^8 is other than C_1-C_6 alkyl;
- when Q is Q-1 and A is C_1-C_5 alkylene, then R^1 is other than C_1-C_2 haloalkyl; and
- when Q is Q-1, R^2 is chlorine, R^3 is H, R^4 is fluorine, R^5 is H and R^6 and R^7 are H, then A is other than C_2 alkylene substituted with CO_2H .

5,378,709

TETRAHYDROPYRIDINE DERIVATIVES FOR THE PREPARATION OF CARDIOPROTECTIVE DRUGS

Allan S. Manning, Overijse, and Pierre P. Chatelain, Bruxelles, both of Belgium, assignors to Sanofi, Paris, France

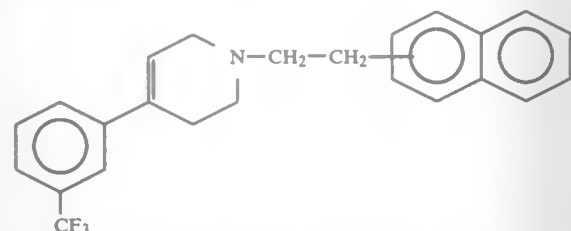
Filed Mar. 17, 1994, Ser. No. 214,307

Claims priority, application France, Mar. 18, 1993, 93 03149
Int. Cl.⁶ A61K 31/435

U.S. Cl. 514—277

11 Claims

1. A method for inducing cardioprotection in mammals which comprises administering to a mammal in need thereof a therapeutically or prophylactically effective amount of at least one compound of formula (I):



or of a pharmaceutically acceptable salt thereof.

5,378,710

17β-SUBSTITUTED AZA-ANDROSTANE DERIVATIVES

Michel Biollaz, Binninges, Switzerland, assignor to Ciba-Geigy Corp., Ardsley, N.Y.

Continuation of Ser. No. 954,081, Sep. 30, 1992, Pat. No. 5,304,562. This application Oct. 6, 1993, Ser. No. 132,399

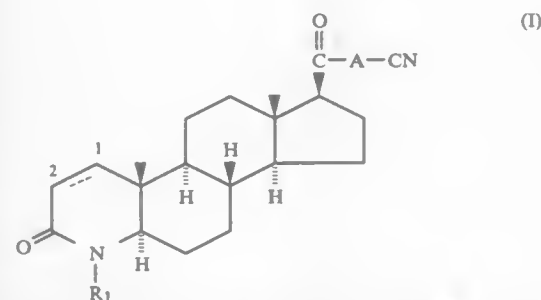
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

Int. Cl.⁶ C07D 221/02

U.S. Cl. 514—284

1. A compound of the formula

6 Claims



wherein carbon atoms 1 and 2 are linked by a single bond or a double bond; R_1 is hydrogen, methyl or ethyl; A is a group of the formula $-N(R_2)-X-$ or $-O-X-$, wherein R_2 is hydrogen or C_1-C_4 alkyl and X is C_1-C_{12} alkylene.

5,378,711

α-ARYLACRYLATES SUBSTITUTED BY A HETEROCYCLIC RADICAL, AND FUNGICIDES WHICH CONTAIN THESE COMPOUNDS

Franz Schuetz, Ludwigshafen; Thomas Kuekenhoefer, Frankenthal; Jochen Wild, Deldesheim; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

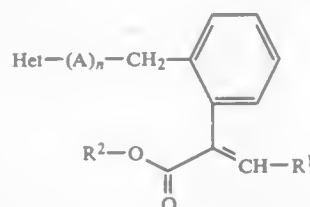
Division of Ser. No. 645,604, Jan. 25, 1991, Pat. No. 5,194,438, which is a division of Ser. No. 376,999, Jul. 7, 1989, Pat. No. 5,157,037. This application Dec. 28, 1992, Ser. No. 997,521

Claims priority, application Germany, Jul. 15, 1988, 3823991
Int. Cl.⁶ A61K 31/505; C07D 239/02

U.S. Cl. 514—311

11 Claims

1. A member selected from the group consisting of a compound of the formula:



where R^1 is C_1-C_4 -alkoxy or C_1-C_4 -alkylthio, R^2 is C_1-C_4 -alkyl, Het is quinolyl substituted by 1 to 3 radicals selected from the group consisting of halogen and C_1-C_4 -alkyl, A is oxygen, and n is 1, and their plant-tolerated acid addition salts, metal complexes, and N-oxides.

5,378,712

AMINO ACID DERIVATIVES

Leo Alig, Kaiseraugst; Paul Hadvary, Biel-Benken; Marianne Hürzeler, Däniken; Marcel Müller, Frenkendorf; Beat Steiner, Bättwil, and Thomas Weller, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc, Nutley, N.J.

Filed Mar. 19, 1992, Ser. No. 854,135

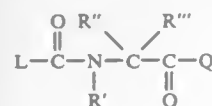
Claims priority, application Switzerland, Mar. 26, 1991, 910/91; Jan. 22, 1992, 176/92

Int. Cl.⁶ A61K 31/445; C07D 211/56, 211/62, 211/92

U.S. Cl. 514—315

37 Claims

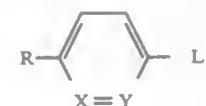
1. A compound of the formula



1

wherein

L is a group of the formula



or



R is amidino or guanidino, both X and Y are CH,

R^0 is hydrogen or amidino,

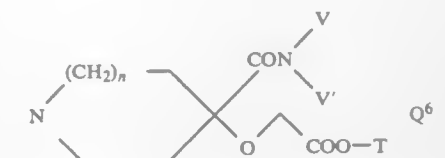
t is an integer between 2 and 6,

R^1 , R'' and R''' , in the α -aminocarboxylic acid residue of the formula $-N(R^1)C(R'')C(R''')CO-$, are hydrogen or N-substituents R' or sidechains R'' and R''' are open chain or cyclic, natural or synthetic α -aminocarboxylic acids, wherein a hydroxy or carboxy group present in the N-substituent R' and sidechains R'' and R''' can be etherified or, respectively, esterified or amidated, and amino groups can be C_1-C_6 alkanoylated or aroylated, and wherein R' and R'' together with the N atom and C atom to which they are attached can form a 4- to 6-membered ring;

Q is a group of the formula



or



n is the number 1,

T and T' are hydrogen or a lower-alkyl or phenyl-lower alkyl

group which is cleavable under physiological conditions,

V and V' are hydrogen or lower-alkyl, and

Ar is phenyl or phenyl substituted with up to three substituents selected from the group consisting of alkyl, hydroxy, lower-alkoxy, halogen and halo-lower alkyl,

as well as hydrates or solvates and physiologically usable salts thereof.

5,378,713

SUBSTITUTED THIENOPYRANS AS ANTIHYPERTENSIVE AGENTS

Jeffery B. Press, Rocky Hill; Pauline Sanfilippo, Flemington; James J. McNally, High Bridge, and Robert Falotico, Belle Mead, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 401,628, Sep. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,043, Sep. 23, 1988, Pat. No. 4,992,435. This application Nov. 4, 1991, Ser. No. 787,705

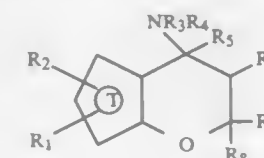
L2 The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.

Int. Cl.⁶ A61K 31/455; C07D 401/14

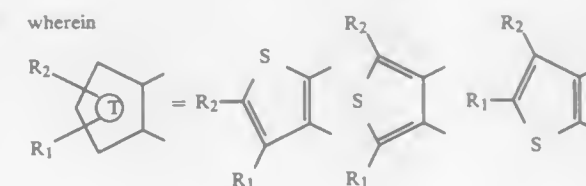
U.S. Cl. 514—321

11 Claims

1. A compound of the formula:



wherein



and R_1 and R_2 are selected from hydrogen, nitro, cyano, trifluoromethyl, halogen, lower alkyl (C_1-4), alkanoyl (C_2-4), substituted alkanoyl (C_2-4), benzoyl, substituted benzoyl wherein the substituent is halogen, alkoxy (C_1-4), alkanoyl (C_2-4), nitro, cyano or trifluoromethyl; methyl; alkoxy carbonyl (C_1-4), CHO, COOH, CONH₂, CON (R_2) and NHCOR wherein R is alkyl (C_1-4), alkoxy (C_1-4), phenyl or substituted phenyl wherein the substituent is halogen, alkyl (C_1-4), alkoxy (C_1-4), nitro, cyano, trifluoromethyl or alkanoyl (C_2-4);

R_3 and R_4 are selected from hydrogen, alkanoyl (C_2-5), alkyl (C_1-4), cycloalkyl (C_3-6), cycloalkyl carbonyl (C_3-6), pyridyl carbonyl, benzoyl, substituted benzoyl wherein the substituent is halo, alkyl (C_1-4), alkoxy (C_1-4), alkanoyl (C_2-4), trifluoromethyl, nitro, cyano, or RCONH wherein R is alkyl (C_1-4); or R_3R_4N together are an unsubstituted heterocyclic pyrrole, pyrrolidine or piperidine ring, an unsubstituted (C_3-9) lactam or an unsubstituted glycine anhydride;

R_5 is hydrogen or together with R_6 forms a double bond; R_6 is hydrogen, OH, alkoxy (C_1-6), alkanoyloxy (C_2-7), or benzoyloxy; and

R_7 and R_8 are hydrogen or alkyl (C_1-4) or together form a ring having 5-8 carbon atoms, or optical isomers thereof.

5,378,714

ANTIPSYCHOTIC PIPERIDINE DERIVATIVES

John B. Hansen, Jyderup; Lone Jeppesen, Virum, and Frederik C. Gronvald, Vedbø, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Nov. 19, 1992, Ser. No. 979,495

Claims priority, application WIPO, Nov. 27, 1991, PCT/DK91/00354

Int. Cl.⁶ A61K 31/445; C07D 401/04, 413/04, 417/04

U.S. Cl. 514—321

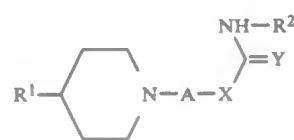
17 Claims

1. A compound of formula I

VOL
1170ISS
1JA
3

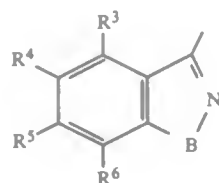
1995

UMI



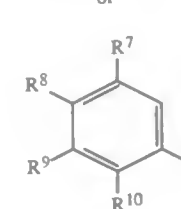
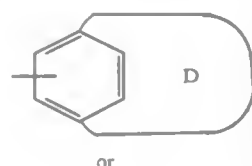
wherein

A is a straight or branched saturated hydrocarbon chain containing from 2 to 6 carbon atoms;
R¹ is



wherein

R³, R⁴, R⁵ and R⁶ independently are hydrogen, halogen or C₁₋₆-alkyl;
B is —O— or —NH—;
X is —O— or —NH—;
Y is O, S or NZ wherein Z is hydrogen, C₁₋₆-alkyl or —CN;
R² is selected from the group consisting of



wherein

R⁷, R⁸, R⁹ and R¹⁰ independently are hydrogen, C₁₋₆-alkyl, halogen, C₁₋₆-alkoxy or perhalomethyl; and
—D— is a pyrrolo, pyrazolo, thiazolo, oxazolo, 1,3-dioxolo or 1,4-dioxano group; or a pharmaceutically acceptable salt thereof.

5,378,715

SULFONAMIDE ENDOTHELIN ANTAGONISTS

Philip D. Stein; John T. Hunt, both of Princeton, and Natesan Murugesan, Lawrenceville, all of N.J., assignors to Bristol-Myers Squibb Co., Princeton, N.J.

Continuation-in-part of Ser. No. 998,246, Jan. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 840,496, Feb. 24, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 92,166

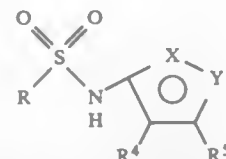
Int. Cl.⁶ C07D 261/06; A61K 31/42

U.S. Cl. 514—329

20 Claims

1. A compound of the formula

(I)



or a pharmaceutically acceptable salt thereof, wherein:

one of X and Y is N and the other is O;
R is naphthyl or naphthyl substituted with R¹, R² and R³;
R¹, R² and R³ are each independently

(a) hydrogen;
(b) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

(c) halo;

(d) hydroxyl;

(e) cyano;

(f) nitro;

(g) —C(O)H or —C(O)R⁶;(h) —CO₂H or —CO₂R⁶;

(i) —SH, —S(O)_nR⁶, —S(O)_m—OH, —S(O)_m—OR⁶, —O—S(O)_m—R⁶, —O—S(O)_mOH, or —O—S(O)_m—OR⁶;

(j) —Z⁴—NR⁷R⁸; or(k) —Z⁴—N(R¹¹)—Z⁵—NR⁹R¹⁰;R⁴ and R⁵ are each independently

(a) hydrogen;

(b) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

(c) halo;

(d) hydroxyl;

(e) cyano;

(f) nitro;

(g) —C(O)H or —C(O)R⁶;(h) —CO₂H or —CO₂R⁶;

(i) —SH, —S(O)_nR⁶, —S(O)_m—OH, —S(O)_m—OR⁶, —O—S(O)_m—R⁶, —O—S(O)_mOH, or —O—S(O)_m—OR⁶;

(j) —Z⁴—NR⁷R⁸;(k) —Z⁴—N(R¹¹)—Z⁵—NR⁹R¹⁰; or

(l) R⁴ and R⁵ together are alkylene or alkenylene (either of which may be substituted with Z¹, Z² and Z³), completing a 4- to 8-membered saturated, unsaturated or aromatic ring together with the carbon atoms to which they are attached;

R⁶ is alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

R⁷ is

(a) hydrogen;

(b) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

(c) cyano;

(d) hydroxyl;

(e) —C(O)H or —C(O)R⁶;(f) —CO₂H or —CO₂R⁶;

(g) —SH, —S(O)_nR⁶, —S(O)_m—OH, —S(O)_m—OR⁶, —O—S(O)_m—R⁶, —O—S(O)_mOH, or —O—S(O)_m—OR⁶, except when Z⁴ is —S(O)_n—;

R⁸ is

(a) hydrogen;

(b) —C(O)H or —C(O)R⁶, except when Z⁴ is —C(O)— and R⁷ is —C(O)H, —C(O)R⁶, —CO₂H, or —CO₂R⁶;

(c) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³; or

R⁷ and R⁸ together are alkylene or alkenylene (either of which may be substituted with Z¹, Z² and Z³), completing a 3- to 8-membered saturated, unsaturated or aromatic

ring together with the nitrogen atom to which they are attached;

R⁹ is

(a) hydrogen;

(b) hydroxyl;

(c) —C(O)H or —C(O)R⁶;(d) —CO₂H or —CO₂R⁶;

(e) —SH, —S(O)_nR⁶, —S(O)_m—OH, —S(O)_m—OR⁶, —O—S(O)_m—R⁶, —O—S(O)_mOH, or —O—S(O)_m—OR⁶;

(f) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

R¹⁰ is

(a) hydrogen;

(b) —C(O)H or —C(O)R⁶, except when Z⁵ is —C(O)— and R⁹ is —C(O)H, —C(O)R⁶, —CO₂H, or —CO₂R⁶;

(c) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

R¹¹ is

(a) hydrogen;

(b) hydroxyl, CO₂R⁶ or CO₂H, except when one of R⁹ and R¹⁰ is hydroxyl, CO₂R⁶ or CO₂H;

(c) —C(O)H or —C(O)R⁶; or

(d) alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

or any two of R⁹, R¹⁰ and R¹¹ together are alkylene or alkenylene (either of which may be substituted with Z¹, Z² and Z³), completing a 3- to 8-membered saturated, unsaturated or aromatic ring together with the atoms to which they are attached;

Z¹, Z² and Z³ are each independently

(a) hydrogen;

(b) halo;

(c) hydroxy;

(d) alkoxy;

(e) —SH, —S(O)_nZ⁶, —S(O)_m—OH, —S(O)_m—OZ⁶, —O—S(O)_m—Z⁶, —O—S(O)_mOH, or —O—S(O)_m—OZ⁶;

(f) oxo;

(g) nitro;

(h) cyano;

(i) —C(O)H or —C(O)Z⁶;(j) —CO₂H or —CO₂Z⁶; or(k) —NZ⁷Z⁸, —C(O)NZ⁷Z⁸, or —S(O)_nZ⁷Z⁸;Z⁴ and Z⁵ are each independently

(a) a single bond;

(b) —S(O)_n—;

(c) —C(O)—;

(d) —C(S)—; or

(e) alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, any of which may be substituted with Z¹, Z² and Z³;

Z⁶, Z⁷ and Z⁸ are each independently hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, aryl, or aralkyl, or Z⁷ and Z⁸ together are alkylene or alkenylene, completing a 3- to 8-membered saturated, unsaturated or aromatic ring together with the nitrogen atom to which they are attached;

m is 1 or 2; and
n is 0, 1, or 2.

5,378,716

PYRAZOL-1-YL PHENOXYACETIC ACID COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL UTILITY
Nobuyuki Hamanaka; Kanji Takahashi, and Hidekado Tokumoto, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 1, 1993, Ser. No. 24,306

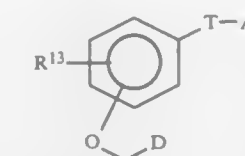
Claims priority, application Japan, Feb. 28, 1992, 4-78330

Int. Cl.⁶ C07D 231/12; A61K 31/415

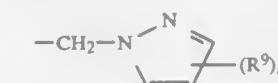
U.S. Cl. 514—333

7 Claims

1. A Phenoxyacetic acid derivative of the formula (I):



wherein A is



T is

i) single bond,
ii) C1-6 alkylene,
iii) C2-6 alkenylene or
iv) —O—(CH₂)₂—;

D is

i) —CO₂R¹⁰ or
ii) —CONR¹¹R¹²;

m is 1-3, wherein when m is 1, R⁹ is a C1-4 alkyl substituted by one or two of phenyl or 4-7 membered monocyclic hetero ring containing one nitrogen, and when m is 2 or 3, at least one R⁹ is a C1-4 alkyl substituted by one or two of phenyl or 4-7 membered monocyclic hetero ring containing one nitrogen and another

R⁹ is

i) hydrogen,
ii) phenyl,
iii) C1-4 alkyl or
iv) C1-4 alkyl substituted by one or two of phenyl or 4-7 membered monocyclic hetero ring containing one nitrogen;

R¹⁰ is hydrogen or C1-12 alkyl;

R¹¹ and R¹² each, independently, is hydrogen or C1-4 alkyl or

R¹¹ and R¹², taken together with nitrogen bond to R¹¹ and R¹² is the residue of an amino acid;

R¹³ is hydrogen, C1-4 alkyl, C1-4 alkoxy or nitro;

s is 2-4;

and the R⁹ rings may be substituted by one to three of C1-C4 alkyl, C1-C4 alkoxy, halogen, nitro or trihalomethyl; non-toxic salts thereof or non-toxic acid addition salts thereof.

5,378,717

THERAPY FOR DIABETIC COMPLICATIONS

Michael Brunavs, Frimley; Colin P. Dell, Dorking; Peter T. Gallagher, Camberley; William M. Owton, Lightwater, and Colin W. Smith, Bracknell, all of England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 14,016, Feb. 5, 1993. This

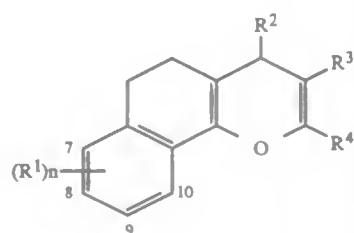
application Mar. 22, 1993, Ser. No. 34,059

Int. Cl.⁶ A61K 31/35, 31/38, 31/40, 31/44

U.S. Cl. 514—337

10 Claims

1. A method of treating diabetic complications, which comprises administering to a patient in need of treatment a therapeutic dosage of a compound of the Formula (I):



wherein n is 0, 1 or 2;

R¹ is C₁-C₄ alkoxy, OH, or COOH attached at any of the positions 7, 8, 9, or 10;

R² is phenyl, naphthyl or heteroaryl selected from thienyl, pyrrolyl, pyridyl, and benzothienyl;

said phenyl being optionally substituted in position 3, 4, or 5 with one or two substituents being selected from halo, C₁₋₄ alkoxy, nitro, or when the substitution is in position 3, trifluoromethyl, carboxy, trifluoromethoxy or COOR¹⁵ where R¹⁵ is an ester group;

said naphthyl and heteroaryl being optionally substituted at any available position with one substituent selected from halo, C₁₋₄ alkyl, C₁₋₄ alkoxy, hydroxy, or trifluoromethyl; or R² is furanyl optionally substituted with C₁₋₄ alkyl;

R³ is nitrile; and

R⁴ is -NR¹¹R¹², -NR¹¹COR¹², or -N=CHOCH₂R¹¹ where R¹¹ and R¹² are each hydrogen or C₁₋₄ alkyl.

5,378,718

1,4-DIHYDROPYRIDINE DERIVATIVES

Jan Bron, Glessenburg; Geert J. Sterk, Utrecht; Hendrik Timmerman, Voorschoten, and Jan F. Van Der Werf, Amsterdam, Netherlands, assignors to Cedona Pharmaceuticals B.V., Haarlem, Netherlands

PCT No. PCT/EP91/01442, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO92/02503, PCT Pub. Date Feb. 20, 1992

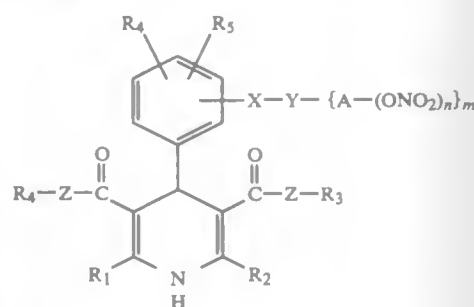
PCT Filed Jul. 31, 1991, Ser. No. 965,270

Claims priority, application Netherlands, Aug. 2, 1990, 9001752

Int. Cl.⁶ C07D 211/86; A61K 31/455

U.S. Cl. 514-356

1. A compound of the general formula 1,



wherein

R₁ represents a lower alkyl group,

R₂ represents a lower alkyl group or -CH₂-S-CH₂-CH₂-NH₂,

R₃ and R₄ independently represent a lower alkyl, cycloalkyl or bicycloalkyl group,

R₅ and R₆ independently represent H, a lower, optionally branched alkyl group, a lower, optionally branched alkoxy group, CN, NO₂, F, Cl or Br,

X represents O, NH, CO, -O(CH₂)_p-CO- or S,

Y represents O, N, NH, S, CO, CONH, CO₂ or a bond, with the provisos that

X and Y do not at the same time represent O and/or S, Y does not represent O, NH or S, when X is NH,

Y does not represent CO, CO₂ or CONH, when X is CO, and

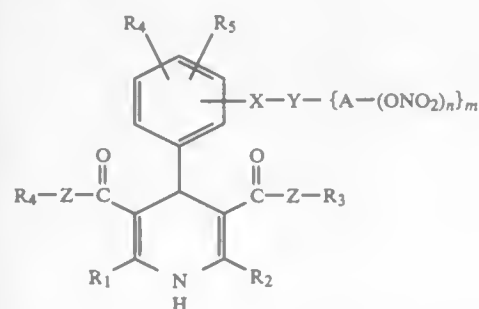
Y does not represent N, NH, CONH or CO₂, when X is O, A represents an optionally branched 2-15C-alkylene group, a methylene cyclohexylene-methylene group, a cyclohexane-1,2-ylene group or a group of the formula [(CH₂)₂O]_q(CH₂)₂ wherein q is 1 or 2,

n and m independently are 1, 2 or 3,

Z represents O or NH and

p is 1-6,

or a salt thereof.



wherein the substituents and symbols have the meanings given in the specification, are new compounds with marked cardiovascular activity.

5,378,719

IMIDAZOLES

Martin Missbach, Rheinfelden, Switzerland, assignor to Ciba-Gelgy Corporation, Ardsley, N.Y.

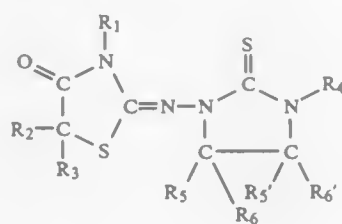
Continuation of Ser. No. 990,220, Dec. 14, 1992. This application Feb. 15, 1994, Ser. No. 196,880

Claims priority, application Switzerland, Dec. 18, 1991, 3751/91-8

Int. Cl.⁶ C07D 417/12; A61K 31/425

U.S. Cl. 514-369

1. A compound of formula 1



wherein

R₁ and R₄ are lower alkyl, lower alk-2-en-1-yl or lower alk-2-yn-1-yl,

R₂ and R₃ are each independently of the other hydrogen or lower alkyl or together form lower alkylidene, and

R₅ and R₆ are each hydrogen or lower alkyl or together form oxo, and R₅' and R₆' have the same definitions as R₅ and R₆,

with the proviso that at least one of the substituent pairs R₅ and R₆ or R₅' and R₆' together form oxo, or a salt thereof.

5,378,720

SACCHARIN DERIVATIVE PROTEOLYTIC ENZYME INHIBITORS

Dennis J. Hlasta, Lower Salford Township, Montgomery County, Pa.; James H. Ackerman, Albany; Albert J. Mura, Rochester, both of N.Y., and Ranjit C. Desai, Towamencin Township, Montgomery County, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

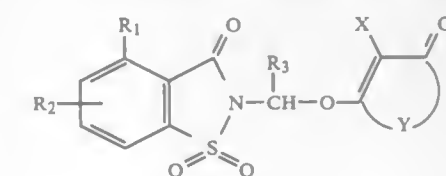
Continuation-in-part of Ser. No. 810,265, Dec. 19, 1991, abandoned. This application May 25, 1993, Ser. No. 66,805

Int. Cl.⁶ A61K 31/425, 31/535; C07D 417/14, 417/12

U.S. Cl. 514-373

44 Claims

1. A compound having the structural formula:



Formula 1

wherein

R₁ is hydrogen, halo, lower-alkyl, perfluoro-lower-alkyl, perchloro-lower-alkyl, lower-alkenyl, lower-alkynyl, cyano, amino, lower-alkylamino, di-lower-alkylamino, lower-alkoxy, benzyloxy, lower-alkoxycarbonyl or phenyl; and

R₂ is from one to three substituents at any or all of the 5-, 6- and 7-positions and is selected from the group consisting of hydrogen, lower-alkyl, cycloalkyl, amino-lower-alkyl, lower-alkylamino-lower-alkyl, di-lower-alkylamino-lower-alkyl, hydroxy-lower-alkyl, lower-alkoxy-lower-alkyl, perfluoro-lower-alkyl, perchloro-lower-alkyl, formyl, cyano, carboxy, aminocarbonyl, R-oxycarbonyl, B=N, 1-lower-alkyl-2-pyrrolyl, lower-alkylsulfonylamino, perfluoro-lower-alkylsulfonylamino, perchloro-lower-alkylsulfonylamino, nitro, hydroxy, R-carbonyloxy, lower-alkoxy, cycloalkoxy, B=N-lower-alkoxy, hydroxy-lower-alkoxy, poly-hydroxy-lower-alkoxy or acetal or ketal thereof, lower-alkoxy-lower-alkoxy, poly-lower-alkoxy-lower-alkoxy, hydroxy-poly-lower-alkylenoxy, lower-alkoxy-poly-lower-alkylenoxy, B=N-carbonyloxy, carboxy-lower-alkoxy, R-oxycarbonyl-lower-alkoxy, methylenedioxy, di-lower-alkylphosphonyloxy, R-thio, R-sulfinyl, R-sulfonyl, perfluoro-lower-alkylsulfonyl, perchloro-lower-alkylsulfonyl, aminosulfonyl, lower-alkylaminosulfonyl, di-lower-alkylaminosulfonyl, halo, B=N-(CH₂)_pC(O)O(CH₂)_p-O-, -O-(CH₂)_p-(5-(CH₂)_p-B=N-2-furanyl), and R-oxylower-alkoxy wherein p and p' are integers from 1 to 4, R is lower-alkyl, phenyl or phenyl-lower-alkyl, phenyl can have from one to three substituents selected from the group consisting of lower-alkyl, B=N-carbonyl, B=N, lower-alkoxy, B=N-lower-alkoxy and halo and B=N is amino, lower-alkylamino, di-lower-alkylamino, carboxy-lower-alkylamino, 1-pyrrolidinyl, 1-piperidinyl, 1-azetidyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl or 1-imidazolyl;

R₃ is hydrogen, lower-alkyl or phenyl;

X is hydrogen, nitro, halo, lower-alkyl, perfluoro-lower-alkyl, perchloro-lower-alkyl, phenyl, phenyl-lower-alkyl, phenylcarbonyl, pyridyl-lower-alkyl, formyl, lower-alkanoyl, carboxy, lower-alkoxycarbonyl, aminocarbonyl, lower-alkylaminocarbonyl, di-lower-alkylaminocarbonyl, cyano, B=N, B=N-lower-alkyl, B=N-lower-alkanoyl, B=N-lower-alkoxycarbonyl, hydroxy, lower-alkoxy, phenyloxy, B=N-lower-alkoxy, lower-alkylthio, phenylthio, lower-alkylsulfonyl, phenylsulfonyl or B=N-sulfonyl wherein phenyl is unsubstituted or has from one to three substituents selected from the group consisting of lower-alkyl, lower-alkoxy and halo and B=N is amino, lower-alkylamino, di-lower-alkylamino, carboxy-lower-alkylamino, 1-pyrrolidinyl, 1-piperidinyl, 1-azetidyl,

4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl or 1-imidazolyl; and

-Y- is the remaining atoms of a monocyclic or bicyclic, substituted or unsubstituted carbocyclic or oxygen or sulfur containing heterocyclic ring system;

or a pharmaceutically acceptable acid addition salt thereof if the compound has a basic functional group or a pharmaceutically acceptable base addition salt thereof if the compound has an acidic functional group.

5,378,721

HETEROARYLMETHYLBENZENES

Marc Lang, Mulhouse, France, assignor to Ciba-Gelgy Corporation, Ardsley, N.Y.

Division of Ser. No. 761,103, Sep. 17, 1991, Pat. No. 5,246,952.

This application Jun. 24, 1993, Ser. No. 82,000

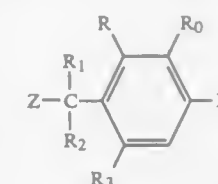
Claims priority, application Switzerland, Sep. 18, 1990, 03014/90-0

Int. Cl.⁶ C07D 263/32; A61K 31/42

U.S. Cl. 514-374

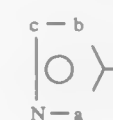
6 Claims

1. A compound of formula 1



(1)

wherein Z is a five-membered nitrogen-containing heteroatomic ring of the formula



(Z)

wherein one of the ring atoms a, b and c is oxygen and both of the other two ring atoms a, b and c are CH; R and R₀, independently of one another, are hydrogen or lower alkyl; or R and R₀ together are a benzo group that is unsubstituted or substituted as indicated below for aryl; R₁ is hydrogen, lower alkyl, hydroxy or halogen; R₂ is hydrogen; R₃ is hydrogen, lower alkyl or aryl; or R₁ and R₂ together are lower alkylidene; or R₂ and R₃ together are -(CH₂)₂- or -(CH₂)₃-; or R₁ and R₂ and R₃ together are a group =CH-CH₂- or =CH-(CH₂)₂-, wherein the single bond in each case is linked to the benzene ring; X is cyano, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, N-cycloalkylcarbamoyl, N-(lower alkyl-substituted cycloalkyl)-carbamoyl, N-cycloalkyl-lower alkylcarbamoyl, N-(lower alkyl-substituted cycloalkyl)-lower alkylcarbamoyl, N-aryl-lower alkylcarbamoyl, N-arylcarbamoyl or N-hydroxycarbamoyl; and X may also be halogen, hydroxy, lower alkoxy, aryl-lower alkoxy or aryloxy when R₂ and R₃ together are -(CH₂)₂- or -(CH₂)₃- or R₁ and R₂ and R₃ together are a group =CH-CH₂- or =CH-(CH₂)₂-; wherein aryl is phenyl that is unsubstituted or substituted by one or more substituents from the group consisting of lower alkyl, cycloalkyl, lower alkoxy, hydroxy, lower alkanoyloxy, nitro, amino, lower alkylamino, di-lower alkylamino, halogen, trifluoromethyl, carboxy, lower alkoxy, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, N-cycloalkylcarbamoyl, N-(lower alkyl-substituted cycloalkyl)-carbamoyl, N-cycloalkyl-lower alkylcarbamoyl, N-(lower alkyl-substituted cycloalkyl)-lower alkylcarbamoyl, N-aryl-lower alkylcarbamoyl, N-arylcarbamoyl or N-hydroxycarbamoyl, cyano; N-phenyl-lower alkylcarbamoyl, N-phenylcarbamoyl, phenyl-lower alkoxy and phenoxy, each of the phenyl groups in the last four substituents mentioned being unsubstituted or

substituted by lower alkyl, lower alkoxy, hydroxy, halogen or by trifluoromethyl; or a salt thereof.

5,378,722

NUTRITIONAL COMPOSITIONS FOR MANAGEMENT OF NITROGEN METABOLISM

David C. Madsen, Libertyville, and David Mark, Oak Park, both of Ill., assignors to Clintec Nutrition Co., Deerfield, Ill.
Filed Dec. 3, 1993, Ser. No. 161,917
Int. Cl.⁶ A01N 43/38

U.S. Cl. 514—410

18 Claims

1. A nutritional composition comprising:
An amino acid profile having less than 20% of the total amino acids as ammoniagenic acids;
including less than 0.2% of the total amino acids as arginine; and
at least 0.2% of the total amino acids as at least one of an amino acid selected from the group consisting of: ornithine and citrulline.

5,378,723

CARBAMATE ANALOGS OF THIAPHYSOVENINE AND METHOD FOR INHIBITING CHOLINESTERASES

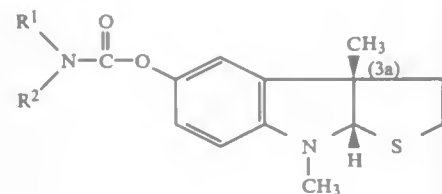
Arnold Bossi, Bethesda; Xiao-shu He, Rockville, and Nigel H. Greig, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Dept. of Health and Human Services, Washington, D.C.
Continuation of Ser. No. 845,081, Mar. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 765,766, Sep. 26, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 182,301

Int. Cl.⁶ A61K 31/40; C07D 487/00

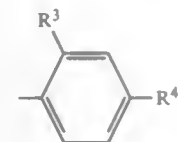
U.S. Cl. 514—411

14 Claims

1. A compound of the formula



wherein R¹ is H or a linear or branched chain C₁-C₁₀ alkyl group; and R² is selected from the group consisting of a linear or branched chain -C₁-C₁₀ alkyl group, or



wherein R³ and R⁴ are independently selected from the group consisting of H and a linear or branched chain C₁-C₁₀ - alkyl group;

and with the proviso that when one of R¹ or R² is a H or a methyl group, the other of R¹ or R² is not H; including optical isomers of the 3aS series.

5,378,724

PESTICIDAL SUBSTITUTED 2-ARYLPYRROLES

Hermann Uhr; Albrecht Marhold, both of Leverkusen; Stefan Böhm, Köln; Christoph Erdelen, Leichlingen; Ulrike Wachen-dorff-Neumann, Monheim, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 1, 1993, Ser. No. 131,251

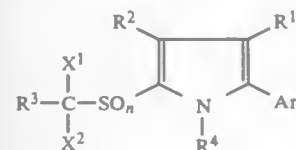
Claims priority, application Germany, Oct. 8, 1992, 4233885

Int. Cl.⁶ C07D 207/36, 403/02; A01N 43/36

U.S. Cl. 514—424

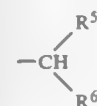
6 Claims

1. A substituted 2-arylpyrrole of the formula



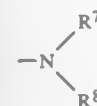
in which

R¹ and R² independently of one another represent hydrogen, bromine or chlorine, at least one of the radicals R¹ or R² representing bromine or chlorine,
R³ represents hydrogen, halogen or C₁-C₅-alkyl (which is optionally substituted by identical or different substituents from the group consisting of 1 to 5 fluorine, chlorine or bromine atoms),
R⁴ represents hydrogen or



in which R⁵ represents hydrogen or C₁-C₅-alkyl (which is optionally substituted by 1 to 5 identical or different halogen atoms, by C₁-C₅-alkoxy, C₁-C₅-alkylthio, C₁-C₅-acyloxy, C₂-C₆-alkoxycarbonyl, phenyl, cyano or nitro) and

R⁶ represents hydrogen or C₁-C₆-alkyl (which is optionally substituted by 1 to 5 identical or different halogen atoms, C₁-C₈-alkoxy, C₁-C₈-alkylthio, C₁-C₆-acyloxy, C₂-C₈-alkoxycarbonyl, phenyl, cyano or nitro) or in which R⁶ represents

or -O-R⁷

R⁷ and R⁸ independently of one another representing hydrogen, C₁-C₈-alkyl, C₃-C₈-alkenyl or C₃-C₈-alkinyl (the alkyl, alkenyl and alkynyl radicals in each case being optionally substituted by 1 to 6 identical or different halogen atoms, C₁-C₆-alkoxy, C₁-C₆-alkylthio, C₁-C₆-acyloxy, (C₁-C₆-alkoxy)-carbonyl, optionally substituted phenyl, cyano or nitro), or represent (C₁-C₈-alkoxy)-carbonyl, (C₃-C₈-alkenyl)-carbonyl or (C₃-C₈-alkinyl)-carbonyl, (the alkoxy, alkenoxy and alkinyloxy radicals in each case being optionally substituted by 1 to 6 identical or different halogen atoms, C₁-C₆-alkoxy, C₁-C₆-alkylthio, C₁-C₆-acyloxy, (C₁-C₈-alkoxy)-carbonyl, optionally substituted phenyl, cyano, or nitro), or represent C₁-C₈-acyl (which is optionally substituted by 1 to 6 identical or different halogen atoms, C₁-C₆-alkoxy, C₁-C₆-alkylthio, C₁-C₈-acyloxy, (C₁-C₈-alkoxy)-carbonyl, optionally substituted phenyl, cyano or nitro), or in which R⁷ and R⁸ together with the N atom to which they are bonded form a 4- to 8-membered ring,
Ar represents phenyl which is optionally monosubstituted to

pentasubstituted by identical or different substituents wherein said substituents are halogen,
optionally substituted C₁-C₈-alkyl, optionally substituted C₂-C₈-alkenyl, or optionally substituted C₂-C₈-alkinyl, wherein said substituents for the alkyl, alkenyl and alkynyl radicals are 1 to 6 halogen atoms, optionally substituted C₁-C₅-alkoxy, optionally substituted C₁-C₅-alkylthio or C₁-C₅-acyloxy, and said substituent for the alkoxy and alkylthio radicals are 1-6 halogen atoms,
optionally substituted C₁-C₈-alkoxy, optionally substituted C₂-C₈-alkenyl, or optionally substituted C₂-C₈-alkinyl, wherein said substituents for the alkoxy, alkenoxy and alkinyloxy radicals are 1 to 6 halogen atoms, optionally substituted C₁-C₈-alkylthio, optionally substituted C₂-C₈-alkenylthio, or optionally substituted C₂-C₈-alkinylthio wherein said substituents for the alkylthio, alkenylthio and alkynylthio radicals are 1 to 6 halogen atoms,
C₂-C₈-acyloxy, which is optionally substituted by 1 to 6 halogen atoms,
amino, which is optionally substituted by 1 to 2 identical or different C₁-C₈-alkyl radicals or C₁-C₈-halogenoalkyl radicals which contain 1 to 6 halogen atoms, nitro or cyano,
and in which
X¹ and X² independently of one another represent hydrogen, fluorine, chlorine or bromine and
n represents 0, 1 or 2.

5,378,725

INHIBITION OF PHOSPHATIDYLINOSITOL 3-KINASE WITH WORTMANNIN AND ANALOGS THEREOF

Rosanne Bonjouklian, Zionsville; Chris J. Vlahos, Carmel, both of Ind., and Garth Powis, Tucson, Ariz., assignors to The Arizona Board of Regents, Tucson, Ariz. and Eli Lilly and Company, Indianapolis, Ind.

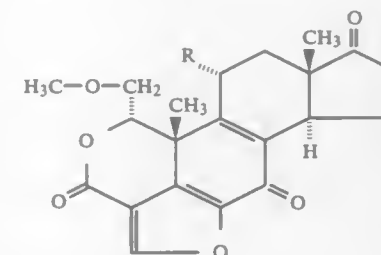
Filed Jul. 19, 1993, Ser. No. 94,279

Int. Cl.⁶ A61K 31/35, 31/34

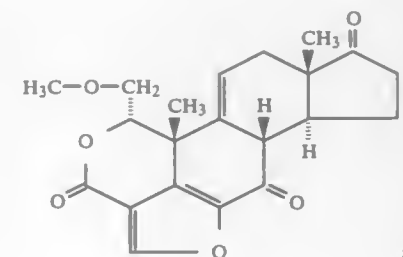
U.S. Cl. 514—453

9 Claims

1. A method for treating a phosphatidylinositol 3-kinase-dependent neoplasm in a mammal in need of such treatment comprising administering to said mammal a phosphatidylinositol 3-kinase inhibiting amount of a compound selected from the group consisting of

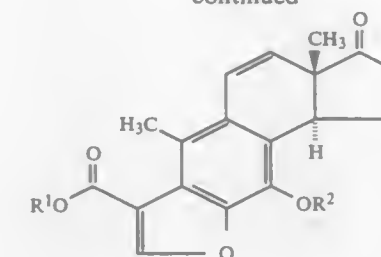


wherein R is H or acetoxy;



; and

-continued



wherein

R¹ is H, methyl, or ethyl; and
R² is H or CH₃.

5,378,726

NEW HYDRAZINE DERIVATIVE AND PESTICIDAL COMPOSITION COMPRISING SAID DERIVATIVE AS AN EFFECTIVE INGREDIENT

Mikio Yanagi, Okegawa; Hiroyasu Sugizaki, Tokyo; Tetsuya Toya, Yono; Yasuhiro Kato, Yono; Hidetoshi Shirakura, Yono; Tetsuo Watanabe, Yono; Yoshimi Yajima, Namegawa; Seiichiro Kodama, Yono; Akio Masui, Omiya; Toshiaki Yanai, Moriyama; Yoshihisa Tsukamoto, Kusatsu; Yoshihiro Sawada, Shiga, and Shinji Yokoi, Otsu, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha and Sankyo Company, Limited, both of Tokyo, Japan

Continuation of Ser. No. 821,016, Jan. 15, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 152,877

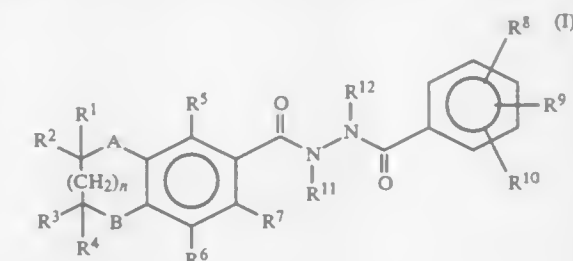
Claims priority, application Japan, Jan. 25, 1991, 3-023680; Oct. 17, 1991, 3-298313

Int. Cl.⁶ A01N 43/16; C07D 311/58

U.S. Cl. 514—456

7 Claims

1. A hydrazine derivative represented by the following formula (I):



wherein

A represents -CH₂-;
B represents -O-;
R¹, R², R³ and R⁴ each independently represent a hydrogen atom or a methyl group;
R⁵ represents a (C₁-C₄) alkyl group, a (C₁-C₄) haloalkyl group or a halogen atom;
R⁶ represents a hydrogen atom, a (C₁-C₄) alkyl group or a halogen atom;
R⁷ represents a hydrogen atom or a halogen atom;
R⁸, R⁹ and R¹⁰ each independently represent a hydrogen atom, a (C₁-C₄)alkyl group, a (C₁-C₄)haloalkyl group, a halogen atom, a nitro group, a (C₁-C₄)alkoxy group, a (C₂-C₄)alkenyl group, a (C₂-C₄)alkynyl group, a (C₂-C₄)alkenyl group, a (C₁-C₄)haloalkoxy group, a phenyl(C₁-C₄)alkoxy group whose phenyl moiety is optionally substituted with a halogen atom, or a phenoxy(C₁-C₄)alkoxy group whose phenyl moiety is optionally substituted with a (C₁-C₂) alkyl group, CF₃ or halogen atom;
R¹¹ represents a hydrogen atom, a cyano group, a (C₁-C₄)haloalkylthio group, a (C₁-C₄)alkoxycarbonyl group or a (C₁-C₄)alkylcarbonyloxymethyl group;
R¹² represents a branched (C₄-C₈)alkyl group; and

n represents 0.

5,378,727
SUBSTITUTED BICYCLIC HETEROCYCLIC
COMPOUNDS USEFUL AS PLATELET AGGREGATION
INHIBITORS

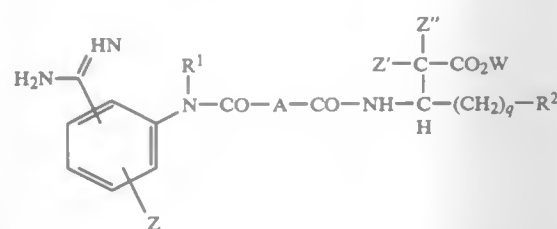
Philippe R. Bovy; Joseph G. Rico; Thomas E. Rogers, all of Ballwin; Foe S. Tjoeng, Manchester, all of Mo., and Jeffery A. Zablocki, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 953,661, Oct. 19, 1992, Pat. No. 5,254,573, which is a continuation-in-part of Ser. No. 888,686, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 777,875, Oct. 15, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 94,666

Int. Cl.⁶ C07D 319/14; A61K 31/36

U.S. Cl. 514—465 25 Claims

1. A compound or a pharmaceutically acceptable salt, pro-drug or ester thereof having the formula:



wherein R¹ is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic hydrocarbon radicals, aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, carboxyl, sulfonyl, trifluoromethyl, amino, acyloxy, phenyl and naphthyl which are optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

R² is selected from bicyclic heterocyclyl radicals in which 1 to about 3 heteroatoms are independently selected from oxygen, nitrogen and sulfur, which are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, carboxyl, sulfonyl, trifluoromethyl, amino, acyloxy, phenyl and naphthyl which are optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

A is selected from the group consisting of lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, aromatic hydrocarbons which are optionally substituted with halogen, nitro, lower alkoxy and lower alkyl;

W is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkenyl radicals, lower alkynyl radicals, alicyclic hydrocarbon radicals and aromatic hydrocarbon radicals, wherein all of said radicals are optionally substituted with hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, amino, acyloxy, phenyl and naphthyl which may be optionally substituted with halogen, nitro, lower alkoxy, and lower alkyl;

Z, Z', Z'' are independently selected from the group consisting of hydrogen, lower alkyl radicals, halogen, alkoxy, cyano, sulfonyl, carboxyl, and hydroxyl radicals; and q is an integer from 0 to about 6.

5,378,728
BENZOIC ACID DERIVATIVES AS ANTIDIABETIC
AGENTS

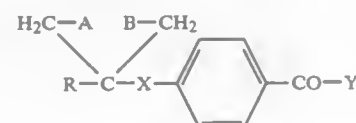
Jeffrey Nadelson, Denville; William R. J. Simpson, Mendham; Robert C. Anderson, Andover, all of N.J., and Joginder S. Bajwa, Stroudsburg, Pa., assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 970,754, Nov. 3, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,957
Int. Cl.⁶ C07C 69/78, 233/64

U.S. Cl. 514—507

28 Claims

1. A compound of the formula

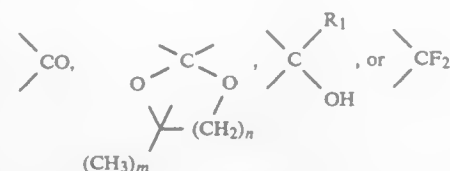


where

R is CH₃(CH₂)_m—,

A and B are each hydrogen or together are a bond or —(CH₂)_n,

X is

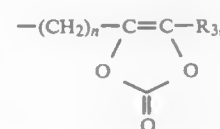


m is 0, 1, 2 or 3 and n is 1, 2 or 3,
R₁ is hydrogen or lower alkyl, and

a) Y is —OH, or —OR₂,

where

R₂ is lower alkyl, phenyl, phenalkyl or 7 to 9 carbon atoms,
—(CH₂)_n—CONR₃R₄, —(CH₂)_n—OCOR₃, —(CH₂)_n—NR₃R₄ or

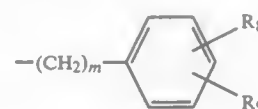


R₃ and R₄ are independently hydrogen or lower alkyl, with the proviso that when X is >CO and A and B are both hydrogen, Y is other than —OH or —OR₂, where R₂ is lower alkyl; or

b) Y is —NR₅R₆,

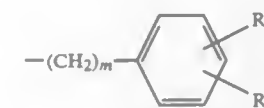
where

i) R₅ is hydrogen or lower alkyl,
R₆ is hydrogen, lower alkyl, —(CH₂)_m—SH, or —CH₂—R₇—COOR₃ and
R₇ is hydrogen, lower alkyl or

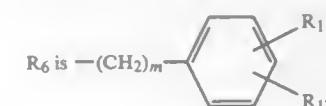


where R₈ and R₉ are each independently hydrogen, hydroxy, halogen, lower alkyl or lower alkoxy, and m, n, and R₃ are as defined above; or

ii) R₅ is hydrogen, lower alkyl, —COR₁₀ or

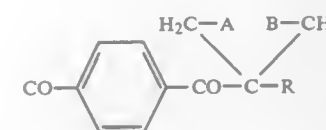
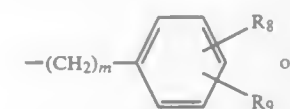


where R₁₀ is lower alkyl or —OR₃, and m, R₃, R₈ and R₉ are as defined above, and



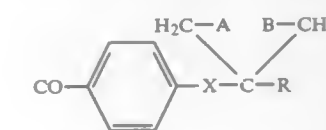
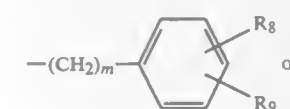
where R₁₁ and R₁₂ are each independently hydrogen, halogen, lower alkyl, lower alkoxy, —CR₃, —(CH₂)_mCOOR₃, —CONR₃R₄, —SO₃H or —PO₃H₂, and m, R₃ and R₄ are as defined above or

iii) R₅ is hydrogen, lower alkyl, —OR₃,



where m, A, B, R, R₃, R₈ and R₉ are as defined above and R₆ is —COR₁₃,

where R₁₃ is alkyl of 1 to 8 carbon atoms, phenalkenyl of 8 to 10 carbon atoms,



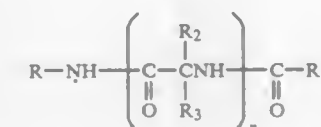
where m, A, B, R, R₈ and R₉ are as defined above, or a pharmaceutically acceptable metal salt or acid addition salt thereof.

5,378,729
AMINO ACID DERIVATIVE ANTICONVULSANT
Harold L. Kohn, Houston, and Darrell Watson, Belton, both of Tex., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 354,057, May 19, 1989, abandoned, and Ser. No. 392,870, Aug. 11, 1989, abandoned, which is a continuation of Ser. No. 80,528, Jul. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 916,254, Oct. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 702,195, Feb. 15, 1985, abandoned, said Ser. No. 354,057, is a continuation-in-part of Ser. No. 80,528, Feb. 15, 1985. This application Jun. 4, 1991, Ser. No. 710,610

Int. Cl.⁶ A61K 31/535, 31/445; C07D 211/72, 261/04
U.S. Cl. 514—231.2 150 Claims

1. An anticonvulsant composition comprising an anticonvulsant effective amount of a compound having the following general formula:



wherein R is aryl, aryl lower alkyl, heterocyclic lower alkyl, lower alkyl, or heterocyclic, each unsubstituted or substituted with at least one electron withdrawing substituent or at least one electron donating substituent;

R₁ is H or lower alkyl, unsubstituted or substituted with at least one electron withdrawing substituent or at least one electron donating substituent;

R₂ and R₃, independently, are hydrogen, lower alkyl, lower alkenyl, lower alkynyl, aryl, aryl lower alkyl, heterocyclic lower alkyl, or heterocyclic, each unsubstituted or substituted with at least one electron withdrawing substituent or at least one electron donating substituent; halogen or a heteroatom containing oxygen, nitrogen, or sulfur said heteroatom being substituted with hydrogen, lower alkyl or aryl, said lower alkyl or aryl groups being substituted or unsubstituted;

n is 1 to 4; and
a pharmaceutically acceptable carrier.

5,378,730
PERMEATION ENHANCER COMPRISING ETHANOL
AND MONOGLYCERIDES

Eun S. Lee, Redwood City, and Su H. Yum, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 703,000, May 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 592,712, Oct. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 482,625, Feb. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 474,741, Feb. 8, 1990, abandoned, and a continuation-in-part of Ser. No. 204,808, Jun. 9, 1988, abandoned. This application Dec. 3, 1992, Ser. No. 985,530

Int. Cl.⁶ A61K 31/24, 31/70, 31/60, 31/22
U.S. Cl. 514—535 12 Claims

1. A composition for application to a body surface or membrane to administer lidocaine by permeation through the body surface or membrane, the composition comprising, in combination:

- (a) a therapeutically effective amount of lidocaine; and
- (b) a permeation-enhancing mixture comprising:
 - (i) from about 20% to about 80% by weight of a monoglyceride or a mixture of monoglycerides of fatty acids with a total C₁₀₋₂₀ monoesters content of at least 90%,
 - (ii) from about 15% to about 75% by weight of ethanol, and
 - (iii) 1-60% by weight of water.

5,378,731
MEDICATED SHAMPOO

Jeffrey F. Andrews, and Jane T. Kure, both of Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 34,089, Mar. 22, 1993, which is a continuation of Ser. No. 893,666, Jun. 4, 1992, Pat. No. 5,219,887, which is a continuation-in-part of Ser. No. 712,915, Jun. 7, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 127,245

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.⁶ A61K 31/23, 31/66

U.S. Cl. 514—552 13 Claims

1. A method for cleansing, conditioning, disinfecting, and moisturizing hair comprising the steps of

- a) contacting hair in the presence of water with a single composition comprising a stable emulsion of

- i) 0.01-20 wt. % of an antimicrobial agent comprising a fatty acid monoester of a polyhydroxy alcohol,
 ii) 0.1-5 wt. % of a chelating agent selected from the group consisting of ethylenediamine tetraacetic acid and salts thereof, lactic acid, and acidic polyphosphates,
 iii) 20-70 wt. % of a cleansing agent selected from the group consisting of sulfosuccinate esters, polyoxyethylene-polyoxypropylene copolymer surfactants, sodium lauryl sulfate and derivatives thereof, polyoxyethylene cetyl ether, sorbital esters, triethanolamine lauryl sulfate, sodium cocoyl taurate, and mixtures thereof,
 iv) 1-10 wt. % of a conditioner selected from the group consisting of sodium isostearoyl lactylate, proteins, lanolin and derivatives thereof, silicone derivatives and quaternary ammonium salt derivatives, and mixtures thereof, and
 v) 25-75 wt. % water; and
 b) washing the hair with the emulsion for a sufficient time and in a sufficient manner to disinfect, cleanse, condition and moisturize the hair.

5,378,732

METHOD OF REDUCING THE RATE OF REOCCLUSION OF ARTERIES

David F. Horrobin, and John C. M. Stewart, both of Guildford, England, assignors to Scotia Holdings PLC, Surrey, England
 Filed Nov. 25, 1992, Ser. No. 981,116
 Claims priority, application United Kingdom, Dec. 2, 1991, 9125602

Int. Cl.⁶ A61K 31/20

U.S. Cl. 514-560

10 Claims

1. A method of reducing the rate of reocclusion of an artery from which an atherosclerotic occlusion has been removed in a patient in need thereof which comprises administering to said patient a composition comprising an effective, non-toxic amount of γ -linolenic acid and/or dihomogamma-linolenic acid.

5,378,733

SOUND ATTENUATING POLYMER COMPOSITES
 Lester W. Bates, and Eric P. Buchanan, both of Cross Junction, Va., assignors to Seaward International, Inc., Clearbrook, Va.
 Filed Apr. 9, 1993, Ser. No. 45,611
 Int. Cl.⁶ C08G 18/00; C08J 9/32

U.S. Cl. 521-54

19 Claims

1. A polymer composite for the attenuation of sound comprising:

- (a) a two-part polyurethane, polyurea or polyurethane-polyurea hybrid viscoelastic binder;
 (b) a high density particulate filler having a specific gravity greater than 5.0 which is substantially noncorrosive in sea-water; and
 (c) a low density hollow polymeric microsphere filler having a specific gravity less than 0.50;

wherein the high density particulate filler and the low density hollow polymeric microsphere filler are present in amounts sufficient to attenuate sound.

5,378,734

UV AND MOISTURE-CURABLE ORGANOPOLYSILOXANE COMPOSITIONS, CURED PRODUCTS THEREOF, AND METHOD FOR MAKING
 Yoshio Inoue, Annaka, Japan, assignor to Shin-Etsu Chemical Company, Ltd., Tokyo, Japan
 Filed Aug. 27, 1993, Ser. No. 112,457
 Claims priority, application Japan, Sep. 7, 1992, 4-264194

Int. Cl.⁶ C08F 2/50; C08G 77/18, 77/20

U.S. Cl. 522-11

19 Claims

1. A UV and moisture-curable organopolysiloxane composition comprising

- (i) an organopolysiloxane terminated with a radical of the formula (I):



wherein R¹ is a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon radical, each of R² and R³ is a substituted or unsubstituted divalent hydrocarbon radical which may contain a NH bond or ether bond, each of R⁴ and R⁵ is a substituted or unsubstituted monovalent hydrocarbon radical which may contain an ether bond, and letter a is equal to 0 or 1,

- (ii) a photo-polymerizable initiator, and
 (iii) a curing catalyst.

5,378,735

ULTRAVIOLET-CURING COVERING COMPOSITION WITH HARDWEARING PROPERTIES

Noritaka Hosokawa, and Kazuhide Hayama, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan
 Filed Apr. 6, 1993, Ser. No. 43,522

Claims priority, application Japan, Apr. 6, 1992, 4-083929; Sep. 17, 1992, 4-247767
 Int. Cl.⁶ C08F 2/48; C08K 5/01, 5/05

U.S. Cl. 522-79

8 Claims

1. An ultraviolet-curing covering composition with hardwearing properties comprising:

Component A: a compound which is obtained by reacting a hydroxyl group-containing polyfunctional acrylate having a hydroxyl group(s) and 3 or more acryloyl groups in the molecule with a silane coupling agent containing an isocyanate group(s) of the following general formula (I):



(wherein R¹ and R² are the same or different monovalent hydrocarbon groups, R³ is a divalent hydrocarbon group having from 2 to 8 carbon atoms; and a is an integer of 2 to 3, b is an integer of 0 to 1, and c is an integer of 1 or 2 which is equal to 4-a-b);

Component B: a polyfunctional acrylate having 3 or more acryloyl groups in the molecule;

Component C: a silica sol in an organic solvent as a dispersing medium; and

Component D: a photopolymerization initiator.

5,378,736

COMPOSITION COMPRISING NOVEL ALICYCLIC COMPOUND, PROCESS FOR PREPARATION THEREOF, CURABLE COMPOSITION, AND PHOTO-POLYMERIZABLE COMPOSITION

Takaaki Fujiwa, Hiroshima; Shoji Watanabe, Shizuoka; Shin Takemoto, and Yoshiyuki Harano, both of Hiroshima, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan
 Filed May 30, 1991, Ser. No. 707,736

Claims priority, application Japan, May 30, 1990, 2-140732; Jun. 15, 1990, 2-157062; Aug. 17, 1990, 2-216569

Int. Cl.⁶ C08G 63/08, 59/24; C07D 301/14; C07C 69/76

U.S. Cl. 522-170

10 Claims

1. A composition which comprises one or a mixture of alicyclic compounds represented by formula (I)

5,378,738

BIODEGRADABLE PLASTIC

(I) Tetsuya Deguchi; Tomoaki Nishida, and Yoshimasa Takahara, all of Tsukuba, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

PCT No. PCT/JP92/01411, § 371 Date Jun. 25, 1993, § 102(e)

Date Jun. 25, 1993, PCT Pub. No. WO93/09184, PCT Pub.

Date May 13, 1993

PCT Filed Oct. 30, 1992, Ser. No. 78,296

Claims priority, application Japan, Oct. 31, 1991, 3-311550;

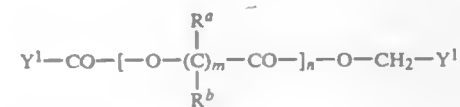
Mar. 4, 1992, 4-81485; Mar. 4, 1992, 4-81487

Int. Cl.⁶ C08J 11/00; C08K 5/00; C12P 1/04; C12N 1/00

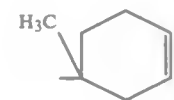
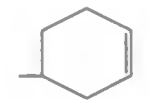
U.S. Cl. 435-262

19 Claims

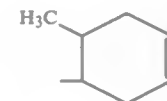
1. A biodegradable plastic produced by adding a substance imparting hydrophilic property to a plastic material, characterized in that the plastic is decomposed by Basidiomycetes, the cultured products thereof and/or the processed products thereof.



wherein Y¹ represents at least one of the structural groups



and



R^a and R^b each represents hydrogen or a methyl group, m represents a natural number of from 1 to 7, and n represents a natural number of from 1 to 20;

prepared by a process comprising reaction of a compound represented by formula (III)



with a lactone monomer under the presence of a catalyst.

5,378,737

TOOTH RESTORATION COMPOSITION, STRUCTURE AND METHODS

Richard Jacobs, 14822 Florwood Ave., Hawthorne, Calif. 90250, and Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90077

Continuation of Ser. No. 399,699, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 739,827, May 31, 1985, abandoned. This application Aug. 25, 1993, Ser. No. 111,711 The portion of the term of this patent subsequent to May 19, 2004, has been disclaimed.

Int. Cl.⁶ A61K 6/08; C08G 18/10; A61C 13/00

U.S. Cl. 523-116

22 Claims

1. Composition for restorative tooth structures, comprising a urethane polymer reaction product of a first side and a second side condensed in the shape of tooth restoration structure against a natural tooth, said first side comprising an aromatic isocyanato reagent reacted simultaneously with each reagent of said second side, said second side comprising a premix of an hydroxylated tertiary amine reagent and another polyol reagent, said premix reagents being differentially reactive with said isocyanato reagent.

5,378,740

WATERBORNE EPOXY DERIVATIVE COMPOSITION

Yiuto D. Ng, San Francisco, Calif., assignor to The Dexter Corporation, Pittsburgh, Calif.

Filed Apr. 30, 1992, Ser. No. 876,015

Int. Cl.⁶ C08L 63/00; C08K 5/09, 5/51

U.S. Cl. 523-414

15 Claims

1. A waterborne structural adhesive bonding primer composition suitable for (a) effective bonding to an adherend for structural adhesive applications, (b) containing a low concentration of VOCs so that it emits a VOC content of less than about 250 grams per liter, and (c) providing thermal stability, which contains the combination of (i) a dialkanol amine adduct of an oxazolidinone modified polyglycidyl ether of a tris(hydroxyphenyl)alkane dissolved in a water vehicle, and (ii) a rigid ring substituted polyethylenically unsaturated carboxylate, carboxamide or carboximide intimately dispersed in (i).

5,378,741

Patent Not Issued For This Number

complex of formula I in the form of a network of crystal needles in the polymer matrix

[A]⁺B⁻

5,378,742

OIL-RESISTANT SILICONE RUBBER COMPOSITION
Takao Matsushita, and Yasumichi Shigehisa, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1993, Ser. No. 127,913

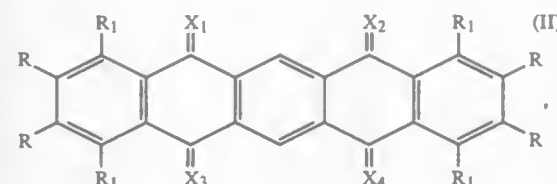
Claims priority, application Japan, Sep. 28, 1992, 4-282532
Int. Cl.⁶ C08K 9/06

U.S. Cl. 523—213

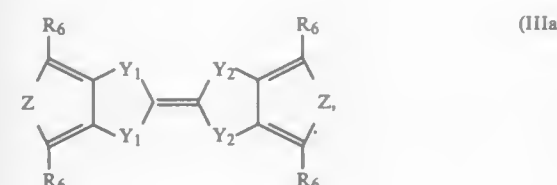
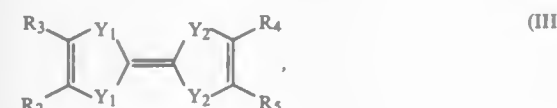
12 Claims

1. An oil-resistant silicone rubber composition, comprising:
 - (A) 100 weight parts dimethylsiloxane-3,3,3-trifluoropropyl-methylsiloxanemethylvinylsiloxane copolymer gum containing methylvinylsiloxane units in a range of about 0.001 to 5 mole percent,
 - (B) 1 to 80 weight parts of a hydrocarbon oil per 100 weight parts of component (A),
 - (C) 10 to 100 weight parts reinforcing filler per 100 weight parts of component (A), and
 - (D) a curing agent in a quantity sufficient to cure the composition.

wherein A is a compound of formula II or a mixture of compounds of formula II



wherein the R substituents are identical and are H or C₁-C₄-alkyl, or the adjacent R substituents, taken together, are —(CH₂)₂— or —(CH₂)₄—; R₁ is H or C₁-C₄-alkyl; and X₁ is —N—CN, and X₂, X₃ and X₄ are —O or —N—CN, and B is a compound of formula III or IIIa



wherein R₂, R₃, R₄ and R₅ are each independently of one another H, linear or branched C₁-C₁₈-alkyl—(Z₁)_n—, phenyl—(Z₁)_n— or benzyl—(Z₁)_n— which are unsubstituted or substituted by C₁-C₄-alkyl, C₁-C₄-alkoxy or C₁-C₄-alkylthio, or R₂ and R₃ as well as R₄ and R₅ are together, each independently of the other trimethylene, tetramethylene, —Z₂—(CH₂)₂—Z₂—, —Z₂—(CH₂)₂—Z₂—, —Z₁—CH=CH—Z₁— or —CH=CH—CH=CH—, each unsubstituted or substituted by C₁-C₄-alkyl, C₁-C₄-alkoxy or C₁-C₄-alkylthio, n is 0 or 1, Y₁ and Y₂ are each independently of the other —S— or —Se—, Z₁ is —S— or —Se—, Z₂ is —O—, —S— or —Se—, Z is —S—, —Se— or NR₇, and R₇ is H, C₁-C₄-alkyl, phenyl or benzyl, and R₆ is H, C₁-C₄-alkyl, phenyl or benzyl.

5,378,743

STABLE LOW STYRENE EMISSION VINYL ESTER AND UNSATURATED POLYESTER RESIN COMPOSITION
Rolf F. Liedtke, Baden-Baden, Germany, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 433,921, Nov. 8, 1989, Pat. No. 5,266,613. This application Sep. 24, 1993, Ser. No. 127,227
Int. Cl.⁶ C08L 67/06

U.S. Cl. 523—523

18 Claims

1. A stable, low polymerizable monomer emission resin composition comprising:
 - a) a vinyl ester or an unsaturated polyester resin,
 - b) a polymerizable monomer,
 - c) a film forming wax material,
 - d) an adhesion promoter, and
 - e) a stabilizer of a copolymer of maleic acid half ester of a polyethylene glycol arid a monoalkenyl aromatic monomer.

5,378,744

SYNTHETIC POLYMER COMPOSITIONS CONTAINING CHARGE TRANSFER COMPLEXES, THEIR PREPARATION AND THE USE THEREOF

Peter Chetcuti, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 22, 1993, Ser. No. 7,426

Claims priority, application Switzerland, Jan. 29, 1992, 242/92-1

Int. Cl.⁶ C08K 5/3415, 5/3417, 5/45, 5/48

U.S. Cl. 524—84

27 Claims

1. A composition comprising a) a thermosetting, thermoplastic or structurally crosslinked polymer and b) a charge transfer

5,378,745

WEATHER-RESISTANT THERMOPLASTIC RESIN COMPOSITION

Yoshihiro Nakatsuji, 2-10-3-310, Sonchigashimachi, Toyonaka-shi, Osaka 561; Masayuki Yoshihara, 6-15-24-604, Toneyama, Toyonaka-shi, Osaka 560; Hiroaki Maruyama, 9-6-5, Hoamachi, Toyonaka-shi, Osaka 560, and Toshio Igarashi, 59, Shimogamo-Miyazakicho, Sakyo-ku, Kyoto-shi, Kyoto 606, all of Japan

Continuation of Ser. No. 709,367, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 410,550, Sep. 21, 1989, abandoned. This application Jan. 21, 1994, Ser. No. 183,792
Claims priority, application Japan, Sep. 29, 1988, 63-248672
Int. Cl.⁶ C08K 5/34

U.S. Cl. 524—99

9 Claims

1. The method to improve weather resistance, particularly impact resistance after weathering, of a vinyl chloride polymer containing an impact modifier which comprises adding 0.1–1.0 part by weight of hindered amine light stabilizers selected from the group consisting of poly((6-((1,1,3,3-tetramethylbutyl)amino)-1,3,5-triazine-2,4-diyl)(2,2,6,6-tetramethyl-4-piperidyl)imino) hexamethylene((2,2,6,6-tetramethyl-4-piperidyl)imino)), and bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate to (1) 100 parts by weight of a mixture of 0–100 parts by weight of a vinyl chloride polymer and 0–60 parts by weight of a polymer containing no chlorine and having a glass transition temperature of 100°–200° C. and (2) 4–25 parts by weight of an impact strength modifier containing no double bond which is selected from the group consisting of chlorinated polyethylene and ethylene/vinyl acetate copolymer on which vinyl chloride is grafted.

5,378,746

PRIMER COMPOSITION CONTAINING AN ISOTACTIC CHLORINATED POLYPROPYLENE GRAFTED WITH MALEIC ANHYDRIDE AND AN EPOXY-SILANE

Andre Beyrle, Tracy-le-Val, and Ann L'Her, Paris, both of France, assignors to Saint Gobain Vitrage International, Courbevoie, France

Filed May 14, 1993, Ser. No. 61,071

Claims priority, application France, May 14, 1992, 92 05849
Int. Cl.⁶ C08K 5/15, 5/54

U.S. Cl. 524—114

8 Claims

1. A priming composition, comprising an isotactic chlorinated polypropylene grafted with maleic anhydride, and an epoxysilane.

5,378,747

ETHYLENE POLYMER COMPOSITIONS

Paritosh K. Das, and Kenneth W. Willcox, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1992, Ser. No. 997,976

Int. Cl.⁶ C08K 5/527

U.S. Cl. 524—120

29 Claims

1. An ethylene polymer composition that comprises:
 - (a) bis(2,4-di-tert-butylphenyl) pentaerythritol diphosphite, in an amount that is from about 0.0001 to less than 0.30 weight percent; and
 - (b) at least one color stabilization compound selected from the group consisting of:
 - (1) a carboxylic acid compound;
 - (2) an alcohol compound that has an aliphatic molecular structure; and
 - (3) a hydroxycarboxylic acid compound;
 - in an amount from about 0.0001 to about 1 weight percent wherein said weight percents are based on the weight of said ethylene polymer.

5,378,748

POLYACETAL RESIN COMPOSITION EXHIBITING REDUCED SURFACE GLOSS CHARACTERISTICS AND MOLDED ARTICLES THEREOF

Tohru Katsumata, and Nobuyuki Matsunaga, both of Shizuoka, both of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Dec. 16, 1992, Ser. No. 991,241

Claims priority, application Japan, Dec. 27, 1991, 3-346780
Int. Cl.⁶ C08K 5/69; C08L 67/02, 59/02

U.S. Cl. 524—196

4 Claims

1. A moldable polyacetal resin composition which when molded exhibits a surface gloss of 20% or less as measured at 45°–45° comprising a melt-blend or:
 - (A) 100 parts by weight of a polyacetal resin;
 - (B) between 1 to 50 parts by weight of a polyalkylene terephthalate copolymer having a melt flow temperature of 210° C. or below which is the polycondensation reaction product of (i) an acid component system consisting essentially of between 90 to 60 mole % of terephthalic acid and between 10 to 40 mole % of at least one other acid component selected from the group consisting of isophthalic acid, naphthalenedicarboxylic acid and adipic acid, and (ii) at least one diol component selected from the group consisting of 1,4-butanediol and ethylene glycol, which diol component may optionally be at least partially replaced by at least one other diol selected from the group consisting of diethylene glycol and 1,4-cyclohexanedimethylol; and
 - (C) between 0.1 to 10 parts by weight of an unmodified or modified isocyanate or isothiocyanate compound.

5,378,749

BLENDS OF PAS, NITROARYLKETO COMPOUNDS AND MALEIC IMIDES

Burkhard Köhler, and Bahman Sarabi, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 916,952, Jul. 20, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 120,136

Claims priority, application Germany, Aug. 3, 1991, 4125761
Int. Cl.⁶ C08G 75/16

U.S. Cl. 524—259

3 Claims

1. A blend consisting essentially of:
 - A. 99.8 to 70% by weight of polyarylene sulfide;
 - B. 0.1 to 15% by weight of m-nitrobenzaldehyde; and
 - C. 0.1 to 15% by weight of a maleic imide obtained from the reaction of maleic anhydride and a toluidine/terephthalic aldehyde condensate as amine.

5,378,750

FLAME-RETARDANT POLYAMIDE MOLDING COMPOUNDS

Aziz El Sayed, Leverkusen; Edgar Ostlinning, Düsseldorf, and Karsten-Josef Idel, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 27, 1993, Ser. No. 172,944

Claims priority, application Germany, Jan. 7, 1993, 4300261; Jan. 11, 1993, 4300451; Mar. 26, 1993, 4309965; Jul. 15, 1993, 4323676

Int. Cl.⁶ C08G 18/60; C08K 3/22

U.S. Cl. 524—400

6 Claims

1. A flame-resistant molding composition consisting of a thermoplastic, partially crystalline polyamide and 40–60% by weight, based on weight of molding composition, of magnesium hydroxide, and optionally one or more of a reinforcing material, an elastomer modifier, and processing additives.

5,378,751
COOH GROUP-CONTAINING POLYMER, MIXTURE OF
COOH GROUP-CONTAINING POLYMERS AND
FILLERS AND THE USE FOR THE PRODUCTION OF
MOULDED ARTICLES

Heinrich Deibig, Gaensberg, and Albrecht Dinkelaker, Biberist, both of Switzerland, assignors to Belland AG, Solothurn, Switzerland

Division of Ser. No. 7,804, Jan. 22, 1993, Pat. No. 5,322,878, which is a continuation of Ser. No. 593,491, Oct. 3, 1990, abandoned, which is a division of Ser. No. 262,621, Oct. 26, 1988, abandoned. This application Mar. 31, 1994, Ser. No. 220,735

Claims priority, application Germany, Oct. 28, 1987, 3736575; Oct. 14, 1988, 3825013

Int. Cl.⁶ C08K 3/32
U.S. Cl. 524—414

16 Claims

1. A thermoplastic molded article which disintegrates or dissolves in an aqueous media prepared from a thermoplastic, moldable, extrudable, uniform, water-dispersible copolymer capable of being moldable into a product by a molding process, said copolymer having moieties consisting essentially of the following formulation:



wherein R¹ is an alkyl group having 1 to 6 carbon atoms, y has a ratio to x from 0.2 to 0.8, and wherein the molecular weight is from about 10,000 to about 100,000 and has a ratio of MW to MN below about 4.

5,378,752
INK ERADICATOR SYSTEM INCLUDING FILM
FORMING POLYMER

Donald P. White, Norwell, and Rachel M. Loftin, Halifax, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 5, 1992, Ser. No. 972,268

Int. Cl.⁶ C08J 3/20; C08K 3/30; C08L 33/12

U.S. Cl. 524—418

10 Claims

1. An ink eradicator system comprising an eradicator fluid comprising a reducing sulfur compound, from about 15 to 40 weight percent of a film-forming polymer, said polymer being provided in the form of an emulsion, and water, and an ink comprising a colorant that is capable of being reduced by said reducing compound.

5,378,753
ALUMINA HYDRATES

Stephen C. Brown, Northolt, United Kingdom, assignor to Alcan International Ltd., Montreal, Canada

Division of Ser. No. 391,628, Aug. 4, 1989, abandoned, and a continuation of Ser. No. 74,044, Jul. 16, 1987, abandoned. This application Aug. 24, 1990, Ser. No. 572,066

Claims priority, application United Kingdom, Jul. 16, 1986, 8617387

Int. Cl.⁶ C08K 3/10; C09C 1/40; C01F 7/02

U.S. Cl. 524—430

13 Claims

1. A plastic composition comprising a thermoplastic polymer and an alumina hydrate filler comprising alumina hydrate particles having a surface area from 2 to 15 m²/g, a polydispersity not exceeding 0.3 and a soluble soda content (a sodium content expressed as a weight percent of sodium oxide present which is readily water extractable) not exceeding 0.02%.

5,378,754
TIRES HAVING IMPROVED ROLLING RESISTANCE

Richard G. Bauer, Kent; Donald J. Burlett, Wadsworth, both of Ohio; Johnny D. Massie, II, Lexington, Ky.; Paul H. Sandstrom, Tallmadge, Ohio; Thomas J. Segatta, Lawton, Okla., and John J. A. Verthe, Kent, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 28, 1993, Ser. No. 128,441

Int. Cl.⁶ C08K 3/04; C08L 7/00, 9/00

U.S. Cl. 524—514

4 Claims

1. A method of preparing a tire tread cap rubber composition comprising the sequential steps of

(a) blending a rubber selected from the group consisting of cis-1,4-polyisoprene (natural or synthetic), cis-1,4-polybutadiene, 3,4-polyisoprene, styrene/butadiene copolymers, styrene/isoprene/butadiene terpolymers, butadiene/acrylonitrile copolymers, isoprene/acrylonitrile copolymers, and mixtures thereof, said rubber containing carbon black; with thermoplastic polymer selected from the group consisting of polyamide and polypropylene to form a polymer alloy having a thermoplastic polymer resin content of 15 to about 20 weight percent; and (b) blending additional sulfur curable rubber with a sufficient amount of said polymer alloy to form a rubber composition having a thermoplastic resin content of about 2 to about 15 parts by weight per hundred parts total rubber and about 30 to 34.5 parts by weight carbon black per hundred parts total rubber.

5,378,755
BINDING AGENT

Venkataram Krishnan, Cary, and Amy G. Hammonds, Raleigh, both of N.C., assignors to Reichhold Chemicals, Inc., Durham, N.C.

Filed Aug. 27, 1993, Ser. No. 113,592

Int. Cl.⁶ C08L 31/06, 39/00

U.S. Cl. 524—555

35 Claims

1. In a textile coloring agent including a tinctorial amount of a dyestuff or pigment, the improvement comprising the use of a binding agent being a polymer comprising a non-aromatic unsaturated mono- or dicarboxylic ester monomer and an aliphatic conjugated diene monomer.

5,378,756
POLYURETHANE THICKENER COMPOSITIONS AND
THEIR USE FOR THICKENING AQUEOUS SYSTEMS

Uwe Thies, Goslar; Michael Griesbach, Vienenburg; Jürgen Schwindt, Leverkusen, and Jan Mazanek, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Gehr. Borchers AG, Goslar, both of Germany

Filed Mar. 22, 1994, Ser. No. 216,733

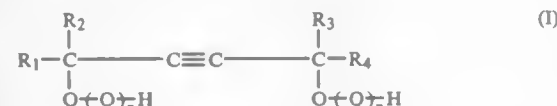
Claims priority, application Germany, Apr. 1, 1993, 4310702
Int. Cl.⁶ C08L 75/00

U.S. Cl. 524—591

16 Claims

1. A thickener composition for thickening aqueous systems which comprises a mixture of

a) a water-soluble or water-dispersible thickener containing urethane groups,
b) a non-ionic emulsifier and
c) a compound corresponding to the formula



wherein

R₁ and R₃ may be the same or different and represent hydrocarbon radicals,
R₂ and R₄ may be the same or different and represent hydrogen or hydrocarbon radicals,

Q represents alkylene oxide units obtained by the alkoxylation of alcohols with alkylene oxides having 2 to 4 carbon atoms, and
n represents a number from 0 to 120.

5,378,757
WATER-DISSIPATABLE ALKYD RESINS AND
COATINGS PREPARED THEREFROM

William W. Blount, Jr., and Thauming Kuo, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 15, 1993, Ser. No. 153,232

Int. Cl.⁶ C08J 3/00; C08G 63/48

U.S. Cl. 524—608

19 Claims

1. A process for the preparation of water-dissipatable alkyd resins comprising reacting:

(a) about 30 to 80 weight percent of a monobasic fatty acid, fatty ester or naturally occurring, partially saponified oil,
(b) about 10 to 40 weight percent of a glycol or polyol,
(c) about 10 to 40 weight percent of a polycarboxylic acid, and
(d) 2 to about 10 weight percent of a sulfomonomer or sulfomonomer adduct containing at least one sulfomonomer group, wherein the weight percent is based on the weight of sulfomonomer or sulfomonomer group,

wherein, when the weight percentages of (a) through (d) are converted to their respective moles and equivalents, the total number of moles, M_T, divided by the total equivalents of acid functionality, E_a, is between 1.0 and 1.5 (K value); and the total equivalents of hydroxyl functionality, E_{OH}, divided by the total equivalents of acid functionality, E_a, is between 1.0 and 2.0 (R value).

5,378,758
HOT MELT ADHESIVES

Robert M. Amici, Doylestown; Newman M. Bortnick, Orelan, both of Pa.; Roger K. Graham, Moorestown, N.J.; Edward E. LaFleur, Warminster, and William J. Work, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 98,585, Jul. 28, 1993, which is a continuation-in-part of Ser. No. 988,548, Dec. 10, 1992, which is a continuation-in-part of Ser. No. 872,478, Apr. 23, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 171,036
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

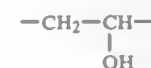
Int. Cl.⁶ C08L 29/04, 29/02, 33/02

U.S. Cl. 525—57

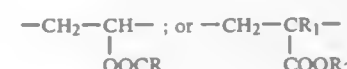
8 Claims

1. A hot melt adhesive for the bonding of paper, wood, and other cellulosic articles comprising a melt-processed polymeric blend of:

a) from about 90 parts to about 98 parts of at least one first polymer containing at least about 50 mol % units of the structure



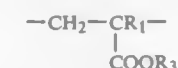
and optionally units selected from one or more of the following structures:



wherein R is alkyl, R₁ is H or CH₃, and R₂ is an alkyleneoxy group or a C₁ to C₄ alkyl group; and

b) from about 2 to about 10 parts of at least one second

polymer containing from about 90 to about 98 weight percent of units of at least one structure



where R₃ is at least one lower alkyl of from 1–4 carbon atoms, and from about 2 to about 10 weight percent of one or more units derived from an unsaturated copolymerizable carboxylic acid or anhydride, the total of units derived from (i) and (ii) being 100 %.

5,378,759
POLYMER BLENDS

Robert M. Amici, Doylestown; Edward E. LaFleur, Warminster, and William J. Work, Huntingdon Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

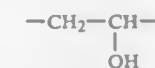
Continuation-in-part of Ser. No. 872,478, Apr. 23, 1992, abandoned. This application Dec. 10, 1992, Ser. No. 988,548

Int. Cl.⁶ C08L 29/04

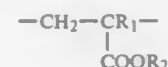
U.S. Cl. 525—57

5 Claims

1. A melt-processed polymeric blend comprising:
a) from about 80 to about 98 parts of a first polymer containing at least about 95 mol % units of the structure

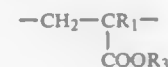


and optionally units selected from one or more of the following structures:



wherein R is alkyl, R₁ is H or CH₃, and R₂ is an alkyleneoxy group; and

b) from about 2 to about 20 parts of a second polymer containing
(i) from about 90 to about 98 weight percent of one or more units of the structure



where R₃ is lower alkyl of from 1 to 4 carbon atoms, and (ii) from about 2 to about 10 weight percent of one or more units derived from an unsaturated copolymerizable carboxylic acid or anhydride, the total of units derived from (i) and (ii) being 100%.

5,378,760
BLENDS OF POLYSTYRENE/POLYPROPYLENE
GRAFTED POLYMERS AND ELASTOMERIC
TETRABLOCK COPOLYMERS

Michael J. Modic, Houston; Richard Gelles, Sugar Land, and Lie K. Djiauw, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 10, 1993, Ser. No. 150,936

Int. Cl.⁶ C08L 51/06, 53/02

U.S. Cl. 525—71

3 Claims

1. An improved rigid thermoplastic composition, wherein the composition comprises from 60% to 95 % by weight of the polymer components of a graft copolymer comprising about 10

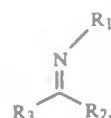
% to 65 % by weight of the graft copolymer of a polystyrene grafted onto a backbone of polypropylene, and from 40 % to 5 % by weight of the polymer components of a rubber component comprising from 20 %-100 % of the rubber component of one or more elastomeric block copolymers, wherein the improvement comprises selection of a selectively hydrogenated block copolymer having the structure styrene-hydrogenated isoprene-styrene-hydrogenated isoprene (S-EP-S-EP), styrene-hydrogenated butadiene-styrene-hydrogenated butadiene (S-EB-S-EB), wherein the block copolymer has a total peak molecular weight from 45,000 to 90,000, the S end-block has a peak molecular weight from 4,500 to 8,000, the EP or EB midblock has a peak molecular weight from 35,000 to 55,000, the S midblock has a peak molecular weight from 4,500 to 9,000, and the EP or EB endblock has a peak molecular weight that is 15% to 35% of the peak molecular weight of the EP or EB midblock.

5,378,761
MONOHYDROXYLATED
1,3-POLYBUTADIENE/POLYISOCYANATE PRODUCT
REACTED WITH HYDROXYL-FUNCTIONAL RESIN
David J. St. Clair, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 24, 1993, Ser. No. 82,215
Int. Cl.⁶ C08L 9/00, 33/14, 63/02
U.S. Cl. 525-111 5 Claims
1. A process for making a coating, comprising the steps of: reacting a monohydroxylated 1,3-butadiene polymer having a peak molecular weight as determined by gel permeation chromatography from 500 to 20,000 with a multifunction isocyanate to form a modified resin; reacting the modified resin with an epoxy resin having hydroxyl groups or an acrylic resin having hydroxyl groups.

5,378,762
POLYMERIC PIGMENT DISPERSANTS FOR USE IN
COATING COMPOSITIONS
Zenon P. Czornij, Warren; Clint Carpenter, Royal Oak, both of Mich., and Jeffrey DePue, Urbana, Ill., assignors to BASF Corporation, Southfield, Mich.
Filed Dec. 22, 1993, Ser. No. 172,692
Int. Cl.⁶ C08L 71/02

U.S. Cl. 525-187 18 Claims
1. A dispersant for pigments comprising the reaction product of:
(a) a functionalized copolymer, which is the reaction product of
(i) an ethylenically unsaturated monomer having a reactive functionality which is selected from the group consisting of isocyanates, anhydrides and epoxy functionalities,
(ii) at least one ethylenically unsaturated monomer having no reactive functionality to react with the reactive functionality of monomer (i),
(b) at least one compound selected from the group consisting of polyalkylene glycol homopolymers, alkylene glycol copolymers and mixtures thereof; and
(c) a compound having a pigment interactive substituent selected from the group consisting of
(i) hydrazides substituted with aliphatic, aromatic and substituted aromatic substituents, including alkyl, alkoxy, halogen and hydroxy substituted aromatic substituents and
(ii) imines having the formula

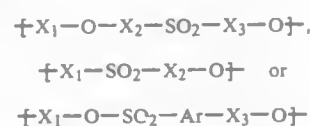


where R₁ is OH or NHR', and R' is H, alkyl or aryl, and R₂ and

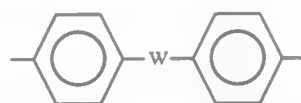
R₃ can be the same or different and are functionalities selected from the group consisting of aliphatic, aromatic, fused aromatic, benzoyl, substituted benzoyl, alkanoyl, substituted alkanoyl, substituted aromatic, wherein the substitution is alkyl, alkoxy, halogen, hydroxy, or mixtures thereof.

5,378,763
MISCIBLE BLENDS OF POLYSULFONES AND
AROMATIC ALKYL METHACRYLATE POLYMERS
Michael A. Drzewinski, Princeton Junction, N.J., assignor to Enichem S.P.A., Milan, Italy
Filed Oct. 30, 1992, Ser. No. 969,456
Int. Cl.⁶ C08L 81/06

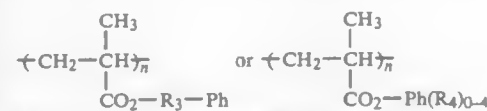
U.S. Cl. 525-189 16 Claims
1. A resin composition comprising:
(I) 1 to 99 wt. % of an aromatic polysulfone containing the repeating unit



where X₁, X₂ and X₃ are substituted or unsubstituted aromatic moieties selected from phenyl, naphthyl, diphenyl or polynuclear divalent radicals of formula:



where W is an aliphatic, cycloaliphatic or arylaliphatic radical containing 0 to 8 carbons, —O—, —S—, —SO₂—, or carbonyl group; Ar is a divalent substituted or unsubstituted aromatic radical selected from biphenylene, terphenylene, naphthylene or anthracene; said aromatic substituents are selected from halogen, C₁-C₄-alkyl or C₁-C₄-alkyl groups and
(II) 99 to 1 wt. % of an aromatic alkyl methacrylate homopolymer containing the repeating unit



where R₃ is a C₁-C₄ alkylene radical, R₄ is a C₁-C₄ alkyl group, Ph is a phenyl ring and n is an integer from 10 to 5,000.

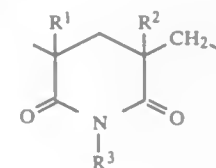
5,378,764
POLYETHYLENE BLENDS
Elizabeth A. Benham; F. Wally Bailey; John D. Wehmeyer, and Max P. McDaniel, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Oct. 8, 1992, Ser. No. 958,405
Int. Cl.⁶ C08L 23/04, 23/06

U.S. Cl. 525-240 27 Claims
1. A polyethylene composition comprising:
(a) about 1 to about 30 weight percent of a branched polyethylene resin, wherein said resin is produced by the high pressure, free radical, polymerization process, and wherein said resin has a density from about 0.91 to about 0.93 grams per cubic centimeter, and wherein said resin has a melt index less than 6 grams per 10 minutes; and
(b) about 99 to about 70 weight percent of a linear polyethylene resin, wherein said resin is produced by the low pressure, chromium catalyzed, polymerization process, and wherein said resin has a density from about 0.91 to about 0.937 grams per cubic centimeter, and wherein said resin

has a melt index from about 0.001 to 0.4 grams per 10 minutes, and wherein said resin has a heterogeneity index greater than 15;
wherein said weight percents are based on the total weight of said polyethylene composition.

5,378,765
N-ARYL-SUBSTITUTED POLY (METH) ACRYLIMIDES
Siegund Besecke, Hameln; Andreas Deckers, Ludwigshafen, and Harald Lauke, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Continuation of Ser. No. 994,631, Dec. 21, 1992, abandoned.
This application Nov. 12, 1993, Ser. No. 151,049
Claims priority, application Germany, Dec. 21, 1991, 4142572
Int. Cl.⁶ C08F 8/32

U.S. Cl. 525-330.5 2 Claims
1. A polymer comprising essentially repeat units of the formula I



where

R¹ and R² are each hydrogen or methyl, and R³ is C₆-C₁₄-aryl, which may be monosubstituted, disubstituted or trisubstituted by radicals selected from the group consisting of C₁-C₄-alkyl, C₁-C₄-alkoxy and halogen, obtained by reacting a polymer based on C₁-C₂₀-alkyl esters of methacrylic acid or of acrylic acid or mixtures of such esters with an aromatic amine of the formula II

R³NH₂ II
in the presence of an amine having a pH₅ value ≤ 9, said polymer having a n acid number of ≥ 0.5 equivalent per kilogram of polymer, a transmissivity of ≥ 85%, and a yellowness index of ≤ 15.

5,378,766
PROCESS FOR THE PREPARATION OF CHLORINATED
POLYOLEFIN AND CHLOROSULFONATED
POLYOLEFIN
Nobuyuki Ito; Katsushige Okayama; Toshinori Karasuda, and Yasumichi Miyagawa, all of Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan
Filed Nov. 24, 1993, Ser. No. 156,904
Claims priority, application Japan, Nov. 25, 1992, 4-314874; Nov. 25, 1992, 4-314875
Int. Cl.⁶ C08F 8/00

U.S. Cl. 525-333.8 5 Claims
1. A process for the preparation of a chlorosulfonated polyolefin having excellent low temperature characteristics and brightness which comprises allowing a polyolefin dissolved or suspended in a solvent to undergo chlorosulfonation reaction with chlorine and sulfur dioxide, chlorine and sulfuryl chloride, sulfuryl chloride alone, chlorine, sulfur dioxide and sulfuryl chloride or sulfuryl chloride and sulfur dioxide in the presence of a radical initiator as a catalyst, wherein i) 1,1,2-trichloroethane is used as the solvent and ii) the temperature is controlled to 90° C. or lower at the process for removing hydrogen chloride and/or sulfur dioxide by-produced during the reaction from the reaction system.

5,378,767
FIXED BED HYDROGENATION OF LOW MOLECULAR
WEIGHT POLYDIENE POLYMERS
Stephen N. Massie, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 18, 1993, Ser. No. 80,044
Int. Cl.⁶ C08F 8/04; C07C 5/02; B01J 23/40
U.S. Cl. 525-339 2 Claims
1. A method for hydrogenating unsaturated low molecular weight polydiene monool, diol and/or polyol polymers which comprises contacting the polymers under hydrogenation conditions with hydrogen in the presence of a fixed bed heterogeneous catalyst which is comprised of platinum, palladium or a mixture of the two supported on an alpha alumina support.
2. A method for hydrogenating unsaturated low molecular weight polymers of conjugated dienes and/or vinyl aromatic hydrocarbons which comprises contacting the polymers under hydrogenation conditions with hydrogen in the presence of a fixed bed heterogeneous catalyst which is comprised of platinum, palladium or a mixture of the two supported on an alpha alumina support.

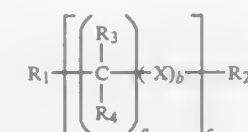
5,378,768
METHOD FOR SURFACE MODIFICATION OF
POLYOLEFIN RESIN MOLDED ARTICLE AND
METHOD FOR COATING SURFACE OF POLYOLEFIN
RESIN MOLDED ARTICLE

Yasuhiko Ogino; Mamoru Kato, and Shigeyuki Takahashi, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Ni-shikasugai, Japan
Filed Dec. 29, 1993, Ser. No. 174,061
Claims priority, application Japan, Dec. 28, 1992, 4-349100; Jul. 1, 1993, 5-163619
Int. Cl.⁶ C08F 8/06

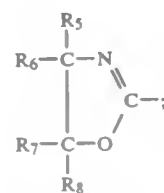
U.S. Cl. 525-388 5 Claims
1. A method for modifying the surface of a polyolefin resin molded article which comprises contacting a polyolefin resin molded article with an ozone aqueous solution to oxidize the surface of said molded article.

5,378,769
MOLDING COMPOSITIONS CONTAINING A
POLYCONDENSATION PRODUCT OF A POLYAMIDE,
A POLYESTER AND A COMPATIBILIZER
Joachim Mügge, Haltern, and Friedrich Sosna, Dorsten, both of Germany, assignors to Hüls Aktiengesellschaft, Marl, Germany

Filed Aug. 12, 1992, Ser. No. 928,453
Claims priority, application Germany, Nov. 14, 1991, 4137432; Nov. 23, 1991, 4138510
Int. Cl.⁶ C08L 67/02, 77/00, 77/12
U.S. Cl. 525-425 8 Claims
1. A molding composition comprising a polycondensation product of
A. 0.9 to 99% by weight of a wholly aliphatic polyamide
B. 99 to 0.9% by weight of a linear, crystalline polyester and
C. 0.1 to 10% by weight of a compound of the formula (A)



in which
R₁ and R₂, which may be the same or different, denote:



R₃ to R₈ denote —H or an aliphatic or cycloaliphatic C₁-12 radical, it being possible for R₃ to R₈ to be identical to or different from one another;

x denotes an aromatic C₆-12 diradical or a cycloaliphatic C₃-12 diradical;

a denotes 0 to 12;

b denotes 0 or 1 and

c denotes 0 or 1.

5,378,770

POLY(ARYLENE THIOETHER-KETONE-KETONE) COPOLYMER AND PRODUCTION PROCESS THEREOF
Yoshikatsu Satake, Yoshiyuki Inaguma, and Jiro Masuko, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 686,980, Apr. 18, 1991, Pat. No. 5,250,636.

This application Mar. 23, 1993, Ser. No. 35,768

Claims priority, application Japan, Apr. 25, 1990, 109482; Mar. 8, 1991, 67550

Int. Cl.⁶ C08G 2/00

U.S. Cl. 525—471

7 Claims

1. A process for the production of a poly(arylene thioether-ketone-ketone) copolymer comprising (A) at least one poly(arylene thioether-ketone-ketone) segment and (B) at least one poly(arylene thioether) segment, which comprises at least the following three steps:

i) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of a dihalobenzene, and an alkali metal sulfide, whereby a poly(arylene thioether) oligomer having at least 50 wt. % recurring units of the formula



and at least one terminal thiolate group is synthesized,

ii) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of at least one bis(halobenzoyl)benzene, and an alkali metal sulfide, whereby a poly(arylene thioether-ketone-ketone) oligomer having at least 50 wt. % recurring units of the formula



and terminal halogen atoms is synthesized, and

iii) mixing and reacting the poly(arylene thioether) oligomer, which has been obtained in the step i), with poly(arylene thioether-ketone-ketone) oligomer obtained in the step ii) and optionally, water;

said first through third steps i)-iii) being conducted under the following conditions (a)-(g):
(a) in the first step i), the ratio of the water content to the amount of the charged organic amide solvent being 0.1-15 (mol/kg), the ratio of the amount of the charged dihalogenated aromatic compound to the amount of the charged alkali metal sulfide being 0.3-0.9 (mol/mol), and the poly-

merization being conducted in such a manner that the weight-average molecular weight of the resulting poly(arylene thioether) oligomer having at least one terminal thiolate group becomes at least 200 but lower than 1000,

(b) in the second step ii), the ratio of the water content to the amount of the charged organic amide solvent being controlled within a range of 0.1-15 (mol/kg) and the reaction being conducted within a temperature range of 60°-300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours,

(c) in the third step iii), the ratio of the water content to the amount of the charged organic amide solvent being 0.1-15 (mol/kg),

(d) in the third step iii), the ratio of the total amount of the charged dihalogenated aromatic compound, said total amount being the amount of the whole dihalogenated aromatic compounds including the dihalobenzene and the bis(halobenzoyl)benzene, to the total amount of the charged alkali metal sulfide, said latter total amount being the total amount of the alkali metal sulfide charged in the first step i) and that charged in the second step ii), being controlled within a range of 0.95-1.2 (mol/mol),

(e) the ratio of the charged amount of the dihalogenated aromatic compound consisting principally of the dihalobenzene in the step i) to the charged amount of the dihalogenated aromatic compound consisting principally of the bis(halobenzoyl)benzene in the step ii) being controlled within a range of 0.25-26 (mol/mol),

(f) the reaction of the third step iii) being conducted within a temperature range of 150°-300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours, and

(g) in the third step iii), the reaction being conducted until the melt viscosity of the resulting copolymer becomes 2-100,000 poises as measured at 380° C. and a shear rate of 1,200/sec.

5,378,771

HIGH-HEAT-RESISTANT, CRYSTALLINE BLOCK COPOLYMERS AND PRODUCTION PROCESS THEREOF

Yoshikatsu Satake, Yoshiyuki Inaguma, both of Iwaki, and Shinji Yamamoto, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo K.K.K., Tokyo, Japan

Division of Ser. No. 633,892, Dec. 26, 1990, Pat. No. 5,248,743.

This application Mar. 30, 1993, Ser. No. 40,066

Claims priority, application Japan, Dec. 29, 1989, 1-342968; Nov. 27, 1990, 2-320810

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

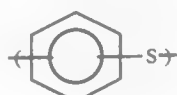
Int. Cl.⁶ C08G 2/00

U.S. Cl. 525—471

7 Claims

1. A process for the production of a high-heat-resistant, crystalline block copolymer comprising (A) at least one poly(arylene thioetherketoneketone) block and (B) at least one poly(arylene thioether) block, which comprises at least the following two steps:

i) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of a dihalobenzene, and an alkali metal sulfide, whereby a reaction mixture containing a poly(arylene thioether) prepolymer having at least 50 wt. % recurring units of the formula



and reactive terminal groups is formed, and
ii) mixing the reaction mixture, which has been obtained in

the step i), with a dihalogenated aromatic compound consisting principally of a bis(halobenzoyl)benzene and, if necessary, an alkali metal sulfide, an organic amide solvent or water and heating the resultant mixture to form a poly(arylene thioetherketoneketone) block having at least 50 wt. % recurring units of the formula



thereby obtaining the block copolymer, said first and second steps i) and ii) being conducted under the following conditions (a)-(f):

(a) in the first step i), the ratio of the water content to the amount of the charged organic amide solvent being 0.1-15 (mol/kg), the ratio of the amount of the charged dihalogenated aromatic compound to the amount of the charged alkali metal sulfide being 0.7-1.05 (mol/mol), and the polymerization being conducted until the weight average molecular weight of the poly(arylene thioether) prepolymer becomes at least 1,000,

(b) in the second step, the ratio of the water content to the amount of the charged organic amide solvent being controlled within a range of 0.1-15 (mol/kg),

(c) in the second step, the ratio of the total amount of the charged dihalogenated aromatic compound, said total amount being the amount of the whole dihalogenated aromatic compounds including the dihalobenzene and the bis(halobenzoyl)benzene, to the total amount of the charged alkali metal sulfide, said latter total amount being the total amount of the alkali metal sulfide charged in the first step i) and that charged in the second step ii) as needed, being controlled within a range of 0.95-1.2 (mol/mol),

(d) the ratio of the charged amount of the dihalogenated aromatic compound consisting principally of the dihalobenzene to the charged amount of the dihalogenated aromatic compound consisting principally of the bis(halobenzoyl)benzene being controlled within a range of 0.25-26 (mol/mol),

(e) the reaction of the second step ii) being conducted within a temperature range of 150°-300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours, and

(f) in the second step ii), the reaction is conducted until the melt viscosity of the resulting block copolymer becomes 2-100,000 poises as measured at 380° C. and a shear rate of 1,200/sec.

5,378,772

HIGH-HEAT-RESISTANT, CRYSTALLINE BLOCK COPOLYMERS AND PRODUCTION PROCESS THEREOF

Yoshikatsu Satake, Yoshiyuki Inaguma, both of Iwaki, and Shinji Yamamoto, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 633,892, Dec. 26, 1990, Pat. No. 5,248,743.

This application Mar. 30, 1993, Ser. No. 40,067

Claims priority, application Japan, Dec. 29, 1989, 1-342968; Nov. 27, 1990, 2-320810

Int. Cl.⁶ C08G 2/00

U.S. Cl. 525—471

7 Claims

1. A process for the production of a high-heat-resistant, crystalline block copolymer comprising (A) at least one poly(arylene thioetherketoneketone) block and (B) at least one poly(arylene thioether) block, which comprises at least the following three steps:

i) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of a dihalobenzene, and an alkali metal sulfide, whereby a reaction mixture containing a poly(ary-

lene thioether) prepolymer having at least 50 wt. % recurring units of the formula



and reactive terminal groups is formed,

ii) heating in the presence of water an organic amide solvent containing a dihalogenated aromatic compound, which consists principally of a bis(halobenzoyl)benzene and an alkali metal sulfide, whereby a second reaction mixture containing a poly(arylene thioetherketoneketone) prepolymer having at least 50 wt. % recurring units of the formula



is formed, and,

iii) mixing and reacting the first reaction mixture, which has been obtained in the first step i) and contains the poly(arylene thioether) prepolymer, with the second reaction mixture obtained in the second step ii) and containing the poly(arylene thioetherketoneketone) prepolymer and, if necessary, water,

said first through third steps i)-iii) being conducted under the following conditions (a)-(g):

(a) in the first step i), the ratio of the water content to the amount of the charged organic amide solvent being 0.1-15 (mol/kg), the ratio of the amount of the charged dihalogenated aromatic compound to the amount of the charged alkali metal sulfide being 0.7-1.05 (mol/mol), and the polymerization being conducted until the weight average molecular weight of the poly(arylene thioether) prepolymer becomes at least 1,000

(b) in the second step, the ratio of the water content to the amount of the charged organic amide solvent being controlled within a range of 0.1-15 (mol/kg) and the reaction being conducted within a temperature range of 60°-300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours,

(c) in the third step, the ratio of the water content to the amount of the charged organic amide solvent being controlled within a range of 0.1-15 (mol/kg),

(d) in the third step, the ratio of the total amount of the charged dihalogenated aromatic compound, said total amount being the amount of the whole dihalogenated aromatic compounds including the dihalobenzene and the bis(halobenzoyl)benzene, to the total amount of the charged alkali metal sulfide, said latter total amount being the total amount of the alkali metal sulfide charged in the first step i) and that charged in the second step ii), being controlled within a range of 0.95-1.2 (mol/mol),

(e) the ratio of the whole poly(arylene thioether) prepolymer to the whole poly(arylene thioetherketoneketone) prepolymer being controlled at 0.1-9 by weight,

(f) the reaction of the third step iii) being conducted within a temperature range of 150°-300° C. with the proviso that the reaction time at 210° C. and higher is not longer than 10 hours, and

(g) in the third step iii), the reaction is conducted until the melt viscosity of the resulting block copolymer becomes 2-100,000 poises as measured at 380° C. and a shear rate of 1,200/sec.

5,378,773
**PROCESS TO PREVENT SCALE ADHESION DURING
 POLYMERIZATION OF VINYL MONOMERS**
 Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu,
 both of Japan, assignors to Shin-Etsu Chemical Co., Ltd.,
 Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 70,994
 Claims priority, application Japan, Jun. 4, 1992, 4-170098;
 Jun. 4, 1992, 4-170099; Aug. 28, 1992, 4-253838
 Int. Cl.⁶ C08F 2/16, 114/06

U.S. Cl. 526—62

8 Claims

1. A process of producing a polymer by polymerization of a monomer having an ethylenically unsaturated double bond in a polymerization vessel, comprising the step of carrying out the polymerization in a polymerization vessel having, on its inner wall surface, a coating comprising a condensation product obtained by condensing

(A) an aliphatic diamine compound and

(B) a quinone compound

in an aqueous medium, whereby polymer scale is prevented from being deposited, wherein said component (A) comprises at least one compound selected from the group consisting of diaminoalkanes of from 2-12 carbon atoms, diaminocycloalkanes of from 3-8 carbon atoms, diaminodialkyl sulfides having the general formula (1)



wherein m is an integer from 2-12 and n is an integer from 2-12 and piperazine, wherein a reaction stopper (C) is added to components (A) and (B) when the condensation conversion of components (A) and (B) has reached a value in the range of from 70-90% by weight.

5,378,774
POLYMER SCALE PREVENTIVE AGENT
 Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu,
 both of Japan, assignors to Shin-Etsu Chemical Co., Ltd.,
 Tokyo, Japan

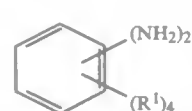
Filed Nov. 30, 1993, Ser. No. 159,250

Claims priority, application Japan, Nov. 30, 1992, 4-345440
 Int. Cl.⁶ C08F 2/00

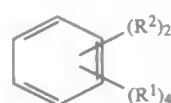
U.S. Cl. 526—62

12 Claims

1. A process of producing a polymer of monomer having an ethylenically unsaturated double bond, which comprises polymerizing the monomer in a polymerization vessel having a polymer scale preventive coating on its inner wall surfaces, wherein said coating comprises (A) at least one member selected from the group consisting of (A-1) an aromatic compound having at least 2 amino groups selected from the group consisting of the compounds represented by the formulas (1) to (11-2):

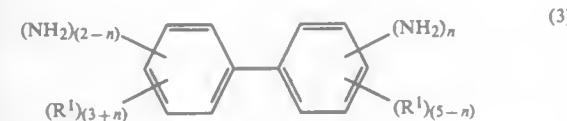


wherein the plural R¹ may be the same or different and each are an atom or group selected from the group consisting of —H, —NH₂, —Cl, —OH, —NO₂, —COCH₃, —OCH₃, —N(CH₃)₂, —COOH, —SO₃H and alkyl groups having 1 to 3 carbon atoms,

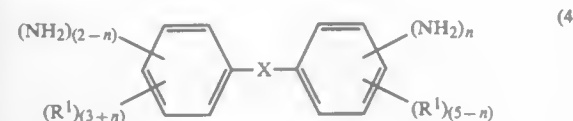


wherein the plural R¹ may be the same or different and each are as defined above, and the plural R² may be the same or

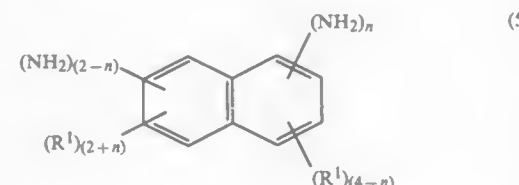
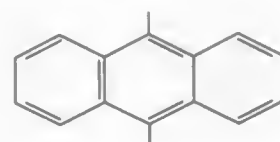
different and each are an amino group-containing alkyl group having 1 to 10 carbon atoms,



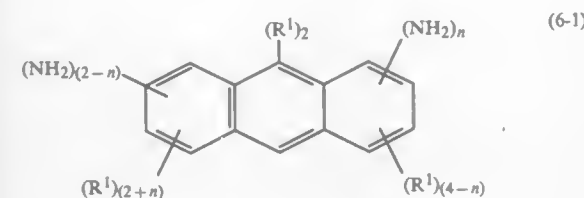
wherein the plural R¹ may be the same or different and each are as defined above, and n is an integer of 1 or 2,



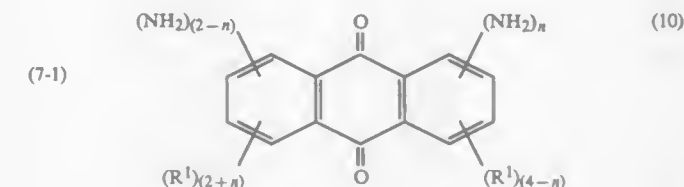
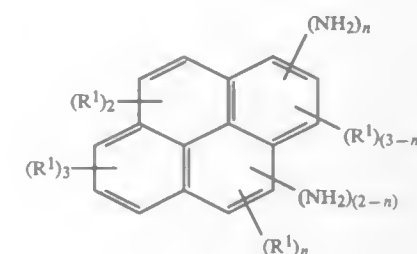
wherein the plural R¹ may be the same or different and each are as defined above, n is also as defined above, and X is an alkylene group having 1 to 5 carbon atoms, —CH=CH—, —N=N—, —NH—, —N(CH₃)—, —CONH—, —P(=O)—, —SO₂—, —O—, —S—, —Si(R)₂— (where R is an alkyl group of 1 to 10 carbon atoms), or the group having the formula:



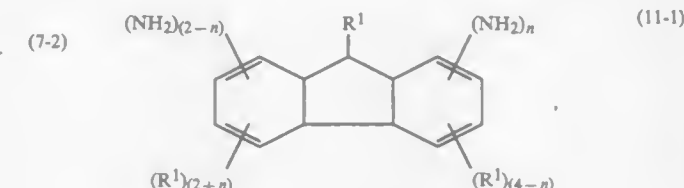
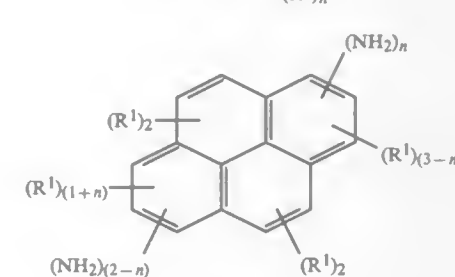
wherein the plural R¹ may be the same or different and each are as defined above, and n is also as defined above,



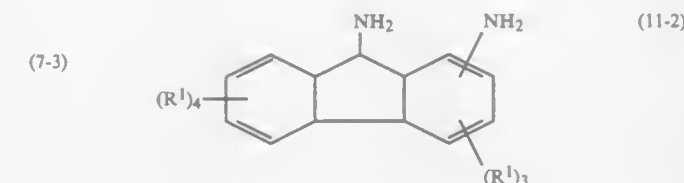
wherein in the formulas (6-1) and (6-2) the plural R may be the same or different and each are as defined above, and n is also as defined above,



wherein the plural R¹ may be the same or different and each are as defined above, and n is also as defined above,

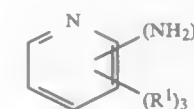


and

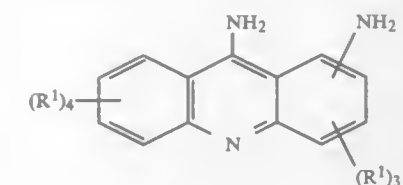
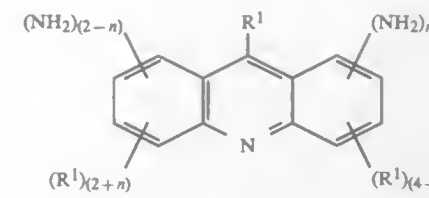


wherein in the formulas (11-1) and (11-2) the plural R¹ may be the same or different and each are as defined above, n is also as defined above and (A-2) are aromatic dibasic acid dihydrazide compound, (B) an inorganic colloid, and (C) a water-soluble polymer compound.

wherein in the formulas (7-1), (7-2) and (7-3) the plural R may be the same or different and each are as defined above, and n is also as defined above,



wherein the plural R¹ may be the same or different and each are as defined above,



wherein in the formulas (9-1) and (9-2) the plural R¹ may be the same or different and each are as defined above, and n is also as defined above,

5,378,775
**POLYMER SCALE PREVENTIVE AGENT,
 POLYMERIZATION VESSEL FOR PREVENTING
 POLYMER SCALE DEPOSITION, AND PROCESS OF
 PRODUCING POLYMER USING SAID VESSEL**
 Toshihide Shimizu, Urayasu, and Minoru Shigemitsu, Kamisu,
 both of Japan, assignors to Shin-Etsu Chemical Co., Ltd.,
 Tokyo, Japan
 Division of Ser. No. 883,345, May 15, 1992, abandoned. This
 application Mar. 8, 1994, Ser. No. 207,107
 Claims priority, application Japan, May 17, 1991, 3-141209
 Int. Cl.⁶ C08F 2/02, 2/04, 2/22, 2/34, 14/08

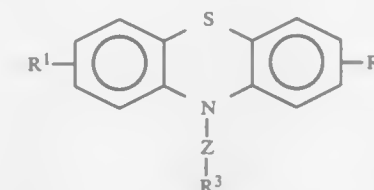
U.S. Cl. 526—62

3 Claims

1. A process of producing a polymer by polymerization of a monomer having an ethylenically unsaturated double bond in a polymerization vessel, comprising the step of carrying out said polymerization in a polymerization vessel having on its inner wall surfaces a coating for preventing polymer scale deposition, wherein the coating comprises:

a solution or dispersion of

(A) an N-substituted leucophenothiazine having the formula (I):



wherein Z is a carbonyl group or a sulfonyl group, R¹ and R² may be the same or different and each represent a hydrogen atom, a hydroxyl group or a group having the

formula $-N(R^4)(R^5)$ where R^4 and R^5 may be the same or different and each represent a hydrogen atom, an alkyl group or a formyl group, and R^3 is a hydrogen atom, halogen atom, alkyl group, haloalkyl group, alkoxy group, aryl group or a group having the formula: $-N(R^6)(R^7)$ where R^6 may be the same or different and each represent a hydrogen atom or an alkyl group, and

(B) a water-soluble basic polysaccharide which is a chitosan, water-soluble chitosan derivative, polygalactosamine, water-soluble polygalactosamine derivative or water-soluble chitin, in a solvent.

5,378,776

METHOD FOR PREPARING OPTICAL POLYMER WITH RADIAL TRANSITION IN REFRACTIVE INDEX

Yasuo Matsumura; Shogo Miyata, both of Yokohama; Kanji Kusada, Yokosuka, and Kaede Terauchi, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

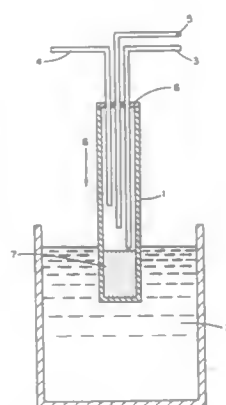
Filed Dec. 24, 1992, Ser. No. 996,951

Claims priority, application Japan, Dec. 26, 1991, 3-357676; Dec. 27, 1991, 3-360594

Int. Cl.⁶ C08F 220/16

U.S. Cl. 526—64

10 Claims



4. A method for preparing a polymer rod having a uniform composition in a vertical direction and a continuous refractive index gradient in a horizontal direction which comprises the steps of slowly feeding a liquid mixture of a plurality of radically copolymerizable monomers having a boiling point difference of 25° C. or more under atmospheric pressure and a refractive index difference of 0.005 or more between homopolymers formed from these monomers, to a vessel through the upper portion thereof; radically copolymerizing said monomers from a predetermined position to an opposite end portion in a horizontal direction in said vessel and in an upward direction via a gel condition; and during the radical polymerization, volatilizing a part of said monomers from the surface of said monomer liquid mixture, whereby the ratio of the monomer having a lower boiling point in a monomer composition distribution of the obtained polymer continuously decreases from said predetermined position to said opposite end portion in the horizontal direction.

5,378,777

PROCESS FOR PRODUCING STYRENIC POLYMER AND COPOLYMER

Masami Watanabe, and Shuji Machida, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 858,873, Mar. 27, 1992, abandoned.

This application Aug. 23, 1993, Ser. No. 110,766

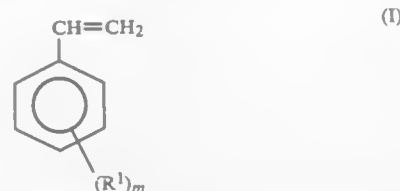
Claims priority, application Japan, Mar. 29, 1991, 3-089071; Mar. 29, 1991, 3-089072

Int. Cl.⁶ C08F 4/643, 12/14

U.S. Cl. 526—134

11 Claims

1. A process for producing a styrenic polymer or copolymer, each having syndiotactic configuration, which comprises polymerizing a styrenic monomer or copolymerizing at least two styrenic monomers each represented by the general formula (I)



wherein R^1 is a hydrogen atom or silicon-containing group and m is an integer from 1 to 5 provided that at least one of R^1 is a silicon-containing group in the presence of a catalyst comprising as principal ingredients (A) a transition metal compound derived from a group IVB metal of the Periodic Table and (B) a compound producing an ionic complex by the reaction with said transition metal compound, wherein said compound (B) is a compound represented by formula (V)



wherein L^1 is a Lewis base; M^2 is an element selected from the elements of groups VB, VIB, VIIB, VIII, IB, IIB, IIIA, IVA and VA of the Periodic Table; X^1 to X^p are each independently a hydrogen atom, dialkylamino group, alkoxy group, aryloxy group, alkyl group having 1 to 20 carbon atoms, aryl group having 6 to 20 carbon atoms, alkylaryl group, arylalkyl group, substituted alkyl group, organometalloid group or halogen atom; q is the valency of M^2 and is an integer of 1 to 7; p is an integer of 2 to 8; g is the ion valency of $[L^1-H]$ and is an integer of 1 to 7, h is an integer of 1 or more and $i = h \times g / (p - q)$.

5,378,778

LIQUID CATALYST COMPONENT, CATALYST SYSTEM CONTAINING THE SAME, AND PROCESS FOR PRODUCING ETHYLENE- α -OLEFIN COPOLYMERS USING THE CATALYST SYSTEM

Hirofumi Johoji; Hiroyuki Shiraishi; Toshio Sasaki, all of Ichihara, and Kiyoshi Kawai, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 961,023, Oct. 14, 1992, abandoned, which is a continuation of Ser. No. 512,453, Apr. 23, 1990, abandoned. This application Apr. 29, 1994, Ser. No. 235,236

Claims priority, application Japan, Apr. 27, 1989, 1-110414; Jun. 13, 1989, 1-151032

Int. Cl.⁶ C08F 4/651, 210/16

U.S. Cl. 526—142

7 Claims

1. A process for producing ethylene- α -olefin copolymers having no absorption peak at 730 cm^{-1} in its infrared absorption spectrum which comprises copolymerizing ethylene with at least one α -olefin in the presence of a catalyst system comprising:

- (A) a liquid catalyst component obtained by reacting:
- (a) a titanium compound represented by the formula:



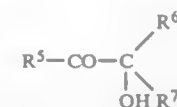
wherein R^1 and R^2 are the same as or different from each other, and each represents a hydrocarbon group having 8 to 10 carbon atoms, and n is a number satisfying $1 \leq n \leq 2$; with

(b) at least one compound selected from the compounds represented by the formula:

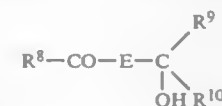


wherein R^3 and R^4 are the same as or different from each other and each represents a hydrocarbon group having 1 to 6 carbon atoms or an alkoxy group having 1 to 6 carbon atoms; or with

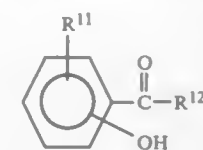
(c) at least one compound selected from the group consisting of the ketoalcohols represented by the formulas (I), (II) and (V):



wherein R^5 , R^6 and R^7 are the same as or different from each other; and each represents a hydrocarbon group having 1 to 6 carbon atoms;



wherein R^8 represents a hydrocarbon group having 1 to 6 carbon atoms; R^9 and R^{10} are the same as or different from each other and each represents a hydrogen atom or a hydrocarbon group having 1 to 6 carbon atoms; and E represents a hydrocarbon group having 1 to 2 carbon atoms:



wherein R^{11} represents a hydrogen atom or a hydrocarbon group having 1 to 6 carbon atoms, and R^{12} represents a hydrocarbon group having 1 to 6 carbon atoms,

in such a proportion that the amount of the compound (b) or the compound (c) is 0.1 to 0.6 mole per mole of the titanium atom contained in the titanium compound (a); and

(b) an organoaluminum compound at a temperature of -30°C . to 100°C . under a pressure of about 3 atmospheres to 1.500 atmospheres.

5,378,779

REGULATING THE REACTION IN THE PREPARATION OF POLYISOBUTYLENE

Karl-Heinz Fauth, Wattenheim, and Gunther Isbarn, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 21, 1993, Ser. No. 124,031

Claims priority, application Germany, Sep. 23, 1992, 4231748

Int. Cl.⁶ C08F 4/14, 110/10

U.S. Cl. 526—209

2 Claims

1. A process for regulating the reaction in the preparation of polyisobutylene by polymerizing isobutylene at from -130°C . to 0°C . in the presence of from 0.01 to 1.0% by weight of boron trifluoride, from 0.0001 to 0.005% by weight of a molecular weight regulator, and a low boiling solvent that is inert under the reaction conditions, the percentages by weight being based in each case on isobutylene, in which the solvent that has evaporated in the polymerization is continuously removed, liquefied and recycled in the liquid state to the polymerization

zone, wherein isobutyl vinyl ether or tert-butyl vinyl ether is used as molecular weight regulator.

5,378,780

PROCESS FOR THE PRODUCTION OF PASTE-FORMING VINYL CHLORIDE POLYMERS

Wolfgang A. Kruse, Marl, and Burkhard Boeke, Haltern, both of Germany, assignors to Huls Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 503,071, Mar. 29, 1990, abandoned, which is a continuation of Ser. No. 834,661, Feb. 28, 1986, abandoned, which is a continuation of Ser. No. 676,761, Nov. 30, 1984, abandoned. This application Jan. 11, 1992, Ser. No. 896,906

Claims priority, application Germany, Dec. 3, 1983, 3343766; May 11, 1984, 341743-4

Int. Cl.⁶ C08F 2/24

U.S. Cl. 526—212

27 Claims

1. In a process for the production of paste-forming polymer of vinyl chloride or copolymer of vinyl chloride with up to 30% by weight of a copolymerizable monomer, by discontinuous polymerization in the presence of an effective amount of a monomer-soluble catalyst and a predispersion consisting of,

- (a) 0.2–3.0% by weight, based on the amount of monomer, of an emulsifier component which is an alkali metal salt or ammonium salt of a fatty acid of 12–18 carbon atoms, an alkylsulfonic acid of 10–20 carbon atoms, an alkylbenzene-sulfonic acid of 8–18 carbon atoms in the alkyl chain, or a sulfosuccinic acid ester of 6–14 carbon atoms in the alcohol portion,

(b) 50–200% by weight, based on the amount of emulsifier (a) employed, of a C_{12} – C_{20} -alkanol,

(c) water, and

(d) optionally the monomer-soluble catalyst, when used, the improvement wherein said predispersion is prepared with only 30–80% by weight of the amount of emulsifier (a) used in total, and

said discontinuous polymerization consists of polymerizing the monomers, in the presence of said predispersion, a monomer-soluble catalyst, optionally at least one reducing agent, and optionally at least one buffer salt, optionally adding additional monomer, batchwise or continuously, during polymerization, optionally adding at least one activator by metered addition during polymerization, optionally adding at least one reducing agent during polymerization, adding additional catalyst by metered addition during polymerization, and adding the remainder of the emulsifier, or of a precomponent forming the emulsifier, by itself in metered quantities, batchwise, or continuously, as an aqueous solution to the polymerization mixture after a conversion of 10–60% by weight has been reached.

5,378,781

PROCESS FOR PRODUCING HIGH-QUALITY VINYL CHLORIDE POLYMERS USING A PERESTER OR PERCARBONATE AND 1-CYCLOHEXYL-1-METHYLETHYL PEROXYNEODECANOATE

Makoto Fujiwara, and Tadashi Amano, both of Ibaraki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 74,520

Claims priority, application Japan, Jun. 11, 1992, 4-177466

Int. Cl.⁶ C08F 4/38, 2/20

U.S. Cl. 526—228

8 Claims

1. In a process for producing a vinyl chloride polymer which comprises a vinyl chloride monomer or a mixture comprising a major proportion of a vinyl chloride monomer with at least one co-polymerizable monomer to suspension polymerization

in an aqueous medium in the presence of a monomer-soluble polymerization initiator, the improvement characterized in that said monomer-soluble polymerization initiator consists essentially of a combination of:

- (A) a compound selected from the group consisting of:
i) peresters of the following formula



wherein R^1 and R^2 , respectively, represent a n-alkyl group, sec-alkyl group, tert-alkyl group or cyclic alkyl group except for a cyclohexyl group, having from 1 to 20 carbon atoms; and
ii) percarbonates of the following formula



wherein R^1 and R^2 have, respectively, the same meanings as defined above, and mixtures thereof;

- the compound (A) having a 10 hour half-life at a concentration of 0.1 mole/liter of benzene being in the range of 30° C. to 50° C.; and
(B) 1-cyclohexyl-1-methylethyl peroxyneodecanoate; wherein the ingredients (A) and (B) are used at a ratio by weight of 9:1 to 1:9 and being present in a total amount of 0.03 to 0.7 wt % based on the monomer or monomer mixture used.

5,378,782

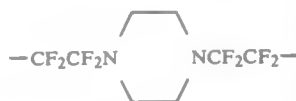
FLUORINE-CONTAINING POLYMERS AND PREPARATION AND USE THEREOF

Werner M. Grootaert, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 36,073, Mar. 23, 1993, Pat. No. 5,262,499.
This application Sep. 3, 1993, Ser. No. 116,898
Int. Cl.⁶ C08F 14/22

U.S. Cl. 526—255

4 Claims

1. An addition polymer comprising the divalent fluoroalkyl moiety



in the polymer backbone.

5,378,783

DICYCLOPENTADIENE ACTIVATION METHOD AND POLYMERIZATION COMPOSITION

Kin-ichi Okumura, Kamakura; Masao Torii, Kurashiki; Hiroshi Tanimoto, Ayase, and Motoyuki Yamato, Naka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed May 23, 1991, Ser. No. 704,550

Claims priority, application Japan, May 23, 1990, 2-133644
Int. Cl.⁶ C08G 61/08

U.S. Cl. 526—283

15 Claims

1. A metathesis polymerizable composition comprising activated dicyclopentadiene, wherein said activated dicyclopentadiene is obtained by contacting crude dicyclopentadiene containing metathesis polymerization inhibitors with at least one reducing agent and reacting said reducing agent with said polymerization inhibitors for about 10 minutes to about 2 hours at a temperature ranging from about 30° to about 120° C., wherein the reaction products of said reducing agent(s) and said metathesis polymerization inhibitors are not removed from the metathesis polymerizable composition and wherein said reducing agent is selected from the group consisting of lithium, sodium, metal hydrides selected from lithium hydride,

sodium hydride, lithium aluminum hydride, organoalkali metal compounds selected from methylolithium, ethyllithium, n-propyllithium, n-butyllithium, sec-butyllithium, cyclohexyllithium, phenyllithium, benzylolithium, phenylsodium, benzylsodium, naphthalenesodium, triphenylmethylsodium, phenylpotassium, butadienepotassium, styrenepotassium, naphthalenepotassium, cyclopentadienylsodium, lithium enolate, sodium enolate, Group IIIA organometal compounds selected from triethylboron, trimethylaluminum, triethylaluminum, triisobutylaluminum, tricyclohexylaluminum, ethylaluminum sesquichloride, ethylaluminum dichloride, diethylethoxyaluminum, Group IVA organic compounds selected from tetraethyl silicate, triethyl hydrogen silicate, hydrogen tributyltin, dibutyllead, Grignard reagents selected from methylmagnesium chloride, ethylmagnesium chloride, ethylmagnesium bromide, n-butyllithium chloride, butylmagnesium iodide, phenylmagnesium chloride, vinylmagnesium chloride, arylmagnesium chloride, and compounds selected from diethylmagnesium, dibutylmagnesium, dimethylzinc, diethylzinc, dibutylzinc, methylzinc iodide, ethylzinc iodide, n-propylzinc iodide, dimethylcadmium, diethylcadmium, dibutylcadmium, diphenylcadmium, and mixtures thereof.

5,378,784

FLUORESCENT MONOMER AND POLYMER

Dodd W. Fong, Naperville, and David J. Kowalski, LaGrange Park, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 4, 1993, Ser. No. 145,555

Int. Cl.⁶ C08F 212/32, 216/10, 220/06, 220/28, 220/68
U.S. Cl. 526—307.5

3 Claims

1. A water soluble polymer from the group consisting of acrylic acid, acrylamide and mixtures thereof, which contains from 0.1–2.0 mole % of 3-Hydroxy-2-methylene-3-(1-naphthyl)propionic acid, methyl ester said water soluble vinyl polymer having been prepared by vinyl addition polymerization.

5,378,785

CEMENTS FROM β -DICARBONYL POLYMERS

Sumita B. Mitra, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 843,420, Feb. 27, 1992, Pat. No. 5,227,413.
This application Mar. 10, 1993, Ser. No. 29,124

Int. Cl.⁶ C08F 16/36, 216/36, 220/10; A61K 6/08

U.S. Cl. 526—316

19 Claims

1. A polymer of the formula:



wherein B represents an organic backbone;
each X independently is a β -dicarbonyl group capable of undergoing a setting reaction in the presence of water;
each Y independently is a crosslinkable group capable of undergoing a free-radical or cationic crosslinking reaction;
each Z independently is an ionic group capable of undergoing a setting reaction in the presence of water,
m is a number having an average value of 1 or more,
n is a number having an average value of 1 or more,
p is a number having an average value of 0 or more, and
wherein said polymer has a weight average molecular weight between 1,000 and 500,000.

5,378,786

SPHERICAL VINYL CHLORIDE GRANULES FOR PASTE MOLDING

Kyoji Uku; Masahiro Ueda; Tetsuya Murakami, and Norio Hirokawa, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 694,608, May 2, 1991, abandoned, which is a division of Ser. No. 433,292, Nov. 9, 1989, abandoned.

This application Dec. 7, 1992, Ser. No. 987,238

Claims priority, application Japan, Nov. 14, 1988, 63-288604; Nov. 14, 1988, 63-288605; Nov. 14, 1988, 63-288606; Nov. 14, 1988, 63-288607; Nov. 14, 1988, 63-288608

Int. Cl.⁶ C08F 14/06

U.S. Cl. 526—344.2

1 Claim

1. A precursor composition for a vinyl chloride paste molding composition, consisting essentially of spherical granules of vinyl chloride resin having a water content of 0.1–0.5% by weight and an average particle size of 30–100 μ m, wherein said granules have an angle of repose of 30°–38°, and the proportion of granules having a particle size of 40 μ m or more is at least 70% by weight based on the total mass of the granules, said granules being obtained by a process comprising the steps of:

drying and granulating in a spray dryer an aqueous dispersion of paste vinyl chloride resin obtained by aqueous suspension polymerization or aqueous emulsion polymerization, wherein the drying air in said spray dryer has an absolute humidity of 0.008–0.012 kg/kg, and a temperature not higher than 100° C. at the inlet spray dryer and a temperature not higher than 50° C. at the outlet of the spray dryer

wherein a sol is formed wherein undispersed spherical granules of vinyl chloride resin have a diameter of 60 μ m or less when 500 g of said precursor composition is mixed with 325 g of dioctyl phthalate, and at 25° C. for 10 minutes using a hook propeller at 141 rpm rotation and 67 rpm revolution.

5,378,787

FIBER REACTIVE AMINO DIMETHICONE COPOLYOLS

Rick Vreckovnik, North York, Canada, and Anthony J. O'Lenick, Jr., Lilburn, Ga., assignors to Siltech Corporation, Toronto, Canada

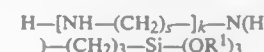
Filed Mar. 21, 1994, Ser. No. 210,934

Int. Cl.⁶ C08G 77/08

U.S. Cl. 528—14

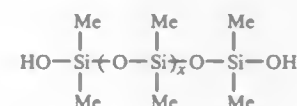
14 Claims

1. An amino silicone polymer made by the reaction of an amino trialkoxy silane conforming to the following structure:



wherein;

- R^1 is methyl or ethyl;
k is an integer ranging from 0 to 3;
s is an integer ranging from 1 to 3;
with and a silanol, conforming to the following structure:



wherein;

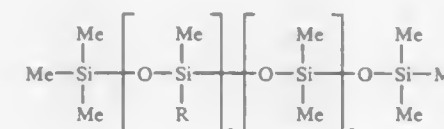
- x is an integer from 10 to 2000;
Me is methyl;
to make an intermediate which is subsequently reacted with a dimethicone copolyol conforming to one of the following structures:



wherein;

- Me is methyl;
 R' is $-(CH_2)_3-O-(EO)_a-(PO)_b-(EO)_c-H$
o is an integer ranging from 1 to 100;
EO is $-(CH_2CH_2-O)-$;
PO is a $-(CH_2CH(CH_3)-O)-$;
a, b and c are integers independently ranging from 0 to 20;

or



wherein;

- Me is methyl;
o is an integer ranging from 1 to 100;
q is an integer ranging from 0 to 500;
R is $-(CH_2)_3-O-(EO)_a-(PO)_b-(EO)_c-H$
EO is $-(CH_2CH_2-O)-$;
PO is a $-(CH_2CH(CH_3)-O)-$;
a, b and c are integers independently ranging from 0 to 20;
in the presence of alkaline catalyst.

5,378,788

PROCESS FOR PREPARATION OF LINEAR ORGANO-POLYSILOXANE HAVING HYDROXYL GROUP AT ITS MOLECULAR ENDS

Naoki Omura, and Minoru Igarashi, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 90,970

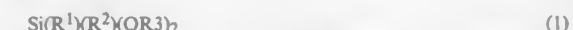
Claims priority, application Japan, Jul. 16, 1992, 4-212148

Int. Cl.⁶ C08G 77/06

U.S. Cl. 528—10

6 Claims

1. A process for preparation of a linear organopolysiloxane having a hydroxyl group at both terminal ends of its molecular chain, comprising the steps of:
mixing a dialkoxysilane having the following general formula (1):



wherein R^1 and R^2 are each a substituted or unsubstituted monovalent hydrocarbon group, and R^3 is a methyl group or an ethyl group, or a partial hydrolyzate of said dialkoxysilane with an aqueous acid solution having a pH of from 1.0 to 5.0, thereby permitting hydrolysis and condensation to take place; adding a metal oxide to the reaction mixture to adjust the pH of the reaction system to a value in the range from 6.0 to 9.0; and removing water and by-produced alcohols from the reaction mixture.

5,378,789
PHENOL-MODIFIED SILICONES
 William J. Raleigh, Rensselaer; Donald S. Johnson, Scotia, both of N.Y.; Michael A. Lucarelli, Mattoon, Ill.; Gary C. Davis, Albany, N.Y., and James F. Hoover, Evansville, Ind., assignors to General Electric Company, Waterford, N.Y.
 Continuation-in-part of Ser. No. 882,983, May 14, 1992, abandoned. This application Mar. 8, 1993, Ser. No. 28,085
 Int. Cl.⁶ C08G 77/06

U.S. Cl. 528—29

5 Claims

1. A silicone composition comprising branched silicones of the general formula:



wherein T is a trifunctional alkyl siloxy unit of the general formula $RSiO_{3/2}$ where R is an alkyl group of from 1 to about 20 carbon atoms; D represents an alkyl siloxy unit of the general formula $R_2SiO_{2/2}$ where R is as defined above, x is 0 or greater and M' is a phenol unit of the general formula



wherein R^a is an alkylene group of from 2 to 12 carbon atoms and Y is selected from hydrogen, hydrocarbyl, hydrocarbyloxy or halogen.

5,378,790
SINGLE COMPONENT INORGANIC/ORGANIC NETWORK MATERIALS AND PRECURSORS THEREOF
 Michael J. Michalczyk, Wilmington, Del., and Kenneth G. Sharp, Landenberg, Pa., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.
 Continuation-in-part of Ser. No. 945,777, Sep. 16, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,995
 Int. Cl.⁶ C08G 77/60

U.S. Cl. 528—35

5 Claims

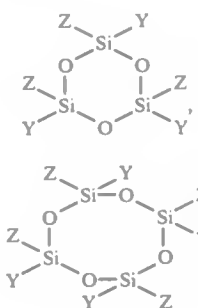
1. An inorganic/organic composition of the idealized empirical formula (II):



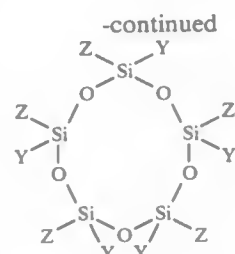
wherein

n is an integer greater than or equal to 2; and X is at least one flexible organic link selected from the group consisting of:

- (a) $R^1_mSiY_4-m$;
 (b) ring structures



and



11c

- (c) $R^1_mSi(OSi(CH_3)_2Y)_4-m$;
 (d) $R^1_mSi(OY)_4-m$;
 (e) $CH_3SiY_2-O-SiY_2CH_3$;
 (f) $Y(CH_3)_2Si-C_6H_4-Si(CH_3)_2Y$;
 (g) $O[-C_6H_4-Si(CH_3)_2Y]_2$;
 (h) $O[Si(CH_3)_2Y]_2$;
 (i) $Y(CH_3)_2SiCH_2-CH_2Si(CH_3)_2Y$;
 (j) $Y_3SiOSiY_3$;
 (k) $Y_3Si(CH_2)_6SiY_3$;
 (l) $Y_3SiC_6H_4SiY_3$;
 (m) substituted benzene selected from the group consisting of:
 (i) $C_6H_3(SiZ_3-aY_a)_3$;
 (ii) $C_6H_2(SiZ_3-aY_a)_4$;
 (iii) $C_6H(SiZ_3-aY_a)_5$; and
 (iv) $C_6(SiZ_3-aY_a)_6$; and
 (n) substituted cyclohexane selected from the group consisting of:
 (i) 1,2- $C_6H_{10}(Y)_2$; 1,3- $C_6H_{10}(Y)_2$; 1,4- $C_6H_{10}(Y)_2$;
 (ii) 1,2,4- $C_6H_9(Y)_3$; 1,2,3- $C_6H_9(Y)_3$; 1,3,5- $C_6H_9(Y)_3$;
 (iii) 1,2,3,4- $C_6H_8(Y)_4$; 1,2,4,5- $C_6H_8(Y)_4$; 1,2,3,5- $C_6H_8(Y)_4$;
 (iv) 1,2,3,4,5- $C_6H_7(Y)_5$; and
 (v) $C_6H_6(Y)_6$;

wherein:

Z is an alkyl group of 1 to 4 carbon atoms, 3,3,3-trifluoropropyl, aralkyl, or aryl;
 Y is $(CR^2R^3)_kCR^4R^5CR^6R^7(CR^8R^9)_h-$;
 R¹ is alkyl of 1 to about 8 carbon atoms or aryl;
 R² to R⁹ are each independently hydrogen, alkyl of 1 to about 8 carbon atoms or aryl, provided that at least one of R⁴ to R⁷ is hydrogen;
 m is 0, 1 or 2;
 k and h are each independently an integer from 0 to 10, provided that at least one of k or h is zero;
 a is 1, 2 or 3;
 p is an even integer from 4 to 10; and
 b is an integer from 1 to 10.

11a

11b

5,378,791
PHENOLIC RESINS
 Michael Lancaster; David J. Moreton, and Alexander F. Psaila, all of Hull, England, assignors to BP Chemicals Limited, London, England
 Continuation of Ser. No. 771,290, Oct. 3, 1991, abandoned. This application May 5, 1993, Ser. No. 58,828
 Claims priority, application United Kingdom, Oct. 6, 1990, 9021760; Oct. 27, 1990, 9023407
 Int. Cl.⁶ C08G 8/04

U.S. Cl. 528—137

9 Claims

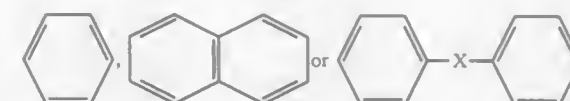
1. A process for producing low molecular weight phenol-aldehyde resin of the formula (I):

mol, per mole of the phosphorus pentachloride, of an aromatic dihydroxy compound of the formula (I),



(I)

wherein two OHs are present in positions where the two OHs do not bond to one phosphorus pentachloride molecule, and Ar is an aromatic hydrocarbon skeleton of the formula,



in which —X— is a single bond, —O—, —C(O)—, —CH₂—, —S—, —SO₂—, an alkylidene group having 2 to 6 carbon atoms or a cycloalkylidene group having 3 to 6 carbon atoms, provided that Ar may be substituted with at least one substituent selected from the group consisting of a lower alkyl group, a lower alkoxy group and a halogen atom, at a temperature between —30° C. and 150° C. for 0.5 to 12 hours to form a reaction product, and

(B) reacting the reaction product with 1.0 to 3.0 mol, per mole of the phosphorus pentachloride, of an aromatic monohydroxy compound of the formula (II)



(II)

wherein Ar' is an aromatic hydrocarbon skeleton selected from those defined as Ar in the formula (I), at a temperature between 0° C. and 150° C. for 0.5 to 6 hours to form an intermediate polymer, and

(C) reacting the intermediate polymer with water, a C₁-C₄ alkyl alcohol, an aqueous alcoholic solution of said alcohol or an aqueous alkaline solution, at a temperature of 0° C. to 150° C. for 0.1 to 6 hours.

5,378,792
FOAMED POLYLACTIDE MOLDINGS AND PRODUCTION THEREOF

Hans-Josef Sterzel, Dannstadt-Schauernheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany
 Division of Ser. No. 155,146, Nov. 22, 1993. This application Apr. 21, 1994, Ser. No. 230,716

Claims priority, application Germany, Nov. 26, 1992, 4239781
 Int. Cl.⁶ C08J 9/00

U.S. Cl. 521—138

3 Claims

1. Foamed polylactide articles obtainable by foaming a mixture of amorphous polylactide granules which contain a blowing agent and of a finely divided polylactide which does not contain a blowing agent wherein both polylactides contain at least 90% by weight of either L- or D-enantiomer.

5,378,793
PROCESS FOR HARDENING PHENOLIC RESINS
 Murray R. Orpin, Dyffryn, Wales, assignor to BP Chemicals Limited, London, England
 Filed Oct. 13, 1992, Ser. No. 960,008

Claims priority, application United Kingdom, Oct. 25, 1991, 9122654; Jun. 3, 1992, 9211695
 Int. Cl.⁶ C08G 8/04

U.S. Cl. 528—158

10 Claims

1. A hardener for producing phenolic resins from phenolic resoles by adding the hardener to the phenolic resole and allowing the phenolic resole to harden into a phenolic resin, said hardener comprising a partial phosphate ester.

5,378,794
PROCESS FOR THE PRODUCTION OF AROMATIC PHOSPHORUS-CONTAINING POLYMER
 Yoji Ohira, and Tetsuya Fujita, both of Mihara, Japan, assignors to Teijin Chemicals Ltd., Tokyo, Japan
 Filed Dec. 14, 1993, Ser. No. 166,363
 Claims priority, application Japan, Dec. 15, 1992, 4-334480
 Int. Cl.⁶ C08G 79/02

U.S. Cl. 528—167

20 Claims

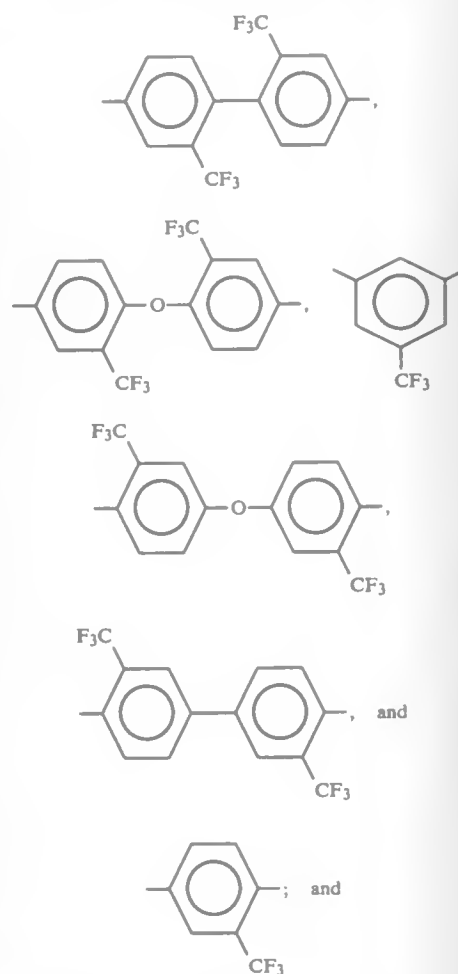
1. A process for the production of an aromatic phosphorus-containing polymer, which comprises the step of:
 (A) (A-1) reacting phosphorus pentachloride with 0.7 to 1.5

the repeat unit:

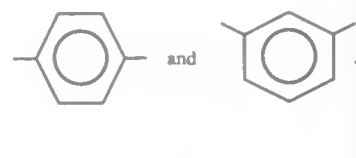




wherein R is selected from the group consisting of:



R' is selected from the group consisting of:



5,378,796
PROCESS FOR PREPARING COPOLYESTERS
 Scott E. George, and Douglas C. Hoffman, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

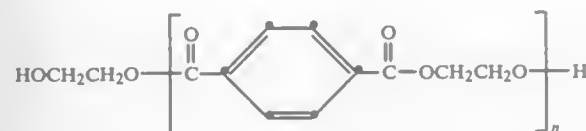
Filed Feb. 9, 1994, Ser. No. 194,368
 Int. Cl.⁶ C08G 63/82

U.S. Cl. 528—279 15 Claims

1. A process for preparing a copolyester, said process consisting essentially of the steps of:

(I) reacting in the presence of 25 ppm to 500 ppm of a polycondensation catalyst selected from the group consisting of germanium compounds, tin compounds, gallium compounds, and titanium compounds under an inert atmosphere at a temperature of 150° C. to 250° C. for 0.01 to 8 hours

(A) a dihydroxy terephthalate compound having the formula:



wherein n is 1 to 10 and at least 99% of the endgroups are ethylene glycol moieties; and

(B) 0.005 to 10 moles, per mole of the dihydroxy terephthalate compound, of a diol selected from the group consisting of cycloaliphatic diols having 6 to 20 carbon atoms, aliphatic diols having 2 to 20 carbon atoms and combinations thereof; and

(II) polycondensing the reaction product of Step (I) to form a copolyester at a temperature in the range of 175° C. to 325° C. under reduced pressure while excess diol is removed for 0.1 to 6 hours.

5,378,797
PROCESS FOR PREPARING ALIPHATIC POLYESTERS
 Jan H. H. Meurs, and Feike De Jong, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.
 Filed Oct. 4, 1993, Ser. No. 131,513
 Claims priority, application European Pat. Off., Oct. 22, 1992, 92203256.0

Int. Cl.⁶ C08G 63/83

U.S. Cl. 528—283 16 Claims

1. A process for preparing aliphatic polyesters by an acylative ether cleavage of monomer comprising:

at a temperature between about 20° and 150° C., contacting a catalytic quantity of Lewis acid with a monomer comprised of at least one C₈—C₂₄ aliphatic compound comprising at least one arylmethoxy group of the formula ArCR₁R₂O, wherein Ar is selected from the group consisting of benzyl and dibenzyl groups, R₁ and R₂ are each selected from the group consisting of hydrogen and C₂ to C₆ hydrocarbyl groups, said aliphatic compound further comprising at least one C₂—C₆ halocarbyl group of the formula



wherein X is a halogen atom; polymerizing said monomer to form a polyester said polymerizing step occurring essentially without the presence of competing side reactions; and recovering said polyester.

5,378,798
COMPOSITION AND PROCESS FOR COATING METALLIC SUBSTRATES
 Martin L. Ehrlich, Columbus, Ohio, assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 10, 1992, Ser. No. 911,967
 Int. Cl.⁶ C08G 69/26, 73/10; B32B 27/00

U.S. Cl. 528—310 12 Claims

1. A process for coating a metallic substrate to improve its corrosion resistance, the process comprising:

(1) providing a solventless flowable polyamide which is a solid at room temperature, exhibits a viscosity less than 1500 cps at 320° F., and comprises the reaction product of:
 (I) an acid component

(a) about 75 wt. % to about 90 wt. % of which comprises one or more dibasic carboxylic acids containing 28 to 44 carbon atoms and having 0 to 6 carbon-carbon double bonds;

(b) from 0 to about 20 wt. % of which comprises one or more tribasic carboxylic acids containing 42 to 66

carbon atoms and having 0 to 9 carbon-carbon double bonds;

(c) from 0.5 to about 5 wt. % of which comprises one or more polybasic carboxylic acids containing 2 to 14 carbon atoms, containing 2 to 4 COOH groups, and containing 0 to 2 carbon-carbon double bonds;

(d) about 1 wt. % to about 20 wt. % of which comprises one or more monobasic carboxylic acids containing 14 to 22 carbon atoms and 0 to 3 carbon-carbon double bonds; and

(e) another about 1 wt. % to about 20 wt. % of which comprises one or more monobasic carboxylic acids containing 2 to 22 carbon atoms and 0 to 3 carbon-carbon double bonds which can be the same or different that component (d); with

(II) an amine component comprising

(A) about 10% to about 90% by weight of the amine component of one or more compounds selected from the group consisting of diethylene triamine, and saturated alkylene diamines containing 2 to 6 carbon atoms; and

(B) about 10% to about 90% by weight of the amine component of one or more poly(oxyalkylene) diamines of the formula H-(Alk-O)_n-H wherein each Alk is substituted with —NH₂, and wherein n is selected such that the molecular weight of the poly(oxyalkylene)diamine is between 100 and 5000;

(2) heating said polyamide to a temperature within the range of about 300 to about 350° F. to form a fluid polyamide;

(3) applying said fluid polyamide as a spray onto the metallic substrate and forming a polyamide coating thereon.

5,378,799
HEAT-STABLE POLYIMIDES AND POLYAMIDE-IMIDES WITH MODIFIED BENZHYDROL STRUCTURAL ELEMENTS AND THEIR PREPARATION

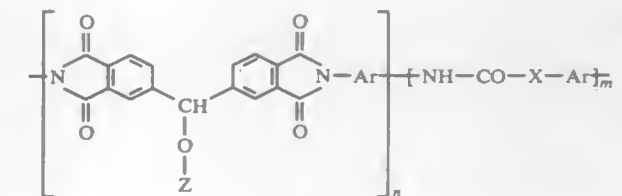
Gerhard Greber, deceased, late of Bad Vöslau, Austria by Johanna Greber, Peter Greber, heirs; Heinrich Gruber, Vienna, and Marcel Sychra, Krems a.d. Donau, both of Austria, assignors to Chemie Linz GmbH, Austria

Filed Sep. 13, 1993, Ser. No. 119,650

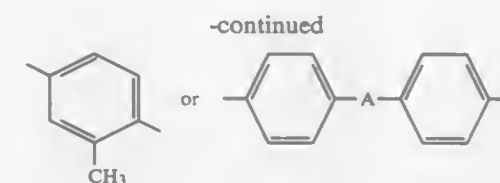
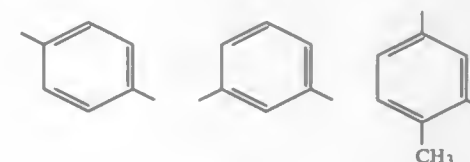
Claims priority, application Austria, Sep. 17, 1992, 1850/92
 Int. Cl.⁶ C08G 69/26, 73/10

U.S. Cl. 528—342 6 Claims

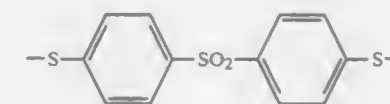
1. Heat-stable polyimides and polyamide-imides of the formula I



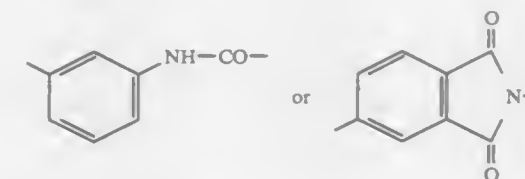
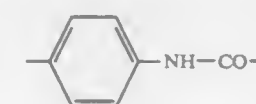
in which Ar denotes a divalent aromatic radical of the formula



or mixtures thereof, wherein A represents —CH₂—, —C(CH₃)₂—, —O—, —S—, —SO₂—, —SO—, —CO—, —COO—, —CO—NH—, —NH—, —(N-alkyl) having 1 to 20 C atoms, —N=N— or



X denotes a radical of the formula



and Z is identical or different and denotes hydrogen, a straight-chain or branched, saturated or mono- or polyunsaturated acyl radical having 2 to 20 C atoms or an aroyl radical having 7 to 20 C atoms, which can optionally be substituted by halogen, with the proviso that Z is not hydrogen alone, and n denotes an integer from 2 to 100 and m denotes an integer from 0 to 100, and, in the case where m > 1, the radical (—NH—CO—X—Ar—) is randomly distributed.

5,378,800
TEREPHTHALIC ACID COPOLYAMIDES
 Steven L. Mok, Kingston, Canada, and Rolando U. Paglagan, Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. and Du Pont Canada Inc., Mississauga, Canada

PCT No. PCT/CA91/00442, § 371 Date Aug. 12, 1992, § 102(e) Date Aug. 12, 1992, PCT Pub. No. WO92/10525, PCT Pub. Date Jun. 25, 1992

Continuation-in-part of Ser. No. 626,015, Dec. 12, 1990, abandoned. This PCT application Dec. 11, 1991, Ser. No. 917,024
 Int. Cl.⁶ C08G 69/26

U.S. Cl. 528—349

11 Claims

1. A partially crystalline copolyamide formed from aromatic dicarboxylic acid and aliphatic diamine, said aromatic dicarboxylic acid consisting essentially of terephthalic acid and said aliphatic diamine consisting essentially of a mixture of hexamethylene diamine and 2-methyl pentamethylene diamine, said aliphatic diamine containing at least 40%, molar basis, of hexamethylene diamine, said copolyamide having a melting point in the range of from 280° to 330° C.

5,378,801
CONTINUOUS PROCESS FOR THE PREPARATION OF RESORABLE POLYESTERS AND THE USE THEREOF
 Dieter Reichert, Albrecht-Durer-Str. 17, D-6507 Ingelheim am Rhein, Germany; Franz D. Klingler, Sattlerweg 3, D-6500 Mainz-Bretzenheim, Germany; Horst Schwall, Im Herzenacker 37, D-6535 Gan-Algesheim, Germany; Albert Christmann, In der Dorrwiese 33, D-6507 Ingelheim am Rhein, Germany, and Berthold Buchholz, Grundstr. 55, D-6507 Ingelheim am Rhein, Germany
 Continuation of Ser. No. 536,602, Aug. 22, 1990, abandoned.
 This application Aug. 3, 1993, Ser. No. 101,163
 Claims priority, application Germany, Nov. 1, 1988, 3837084
 Int. Cl.⁶ C08G 63/08; C08F 6/00

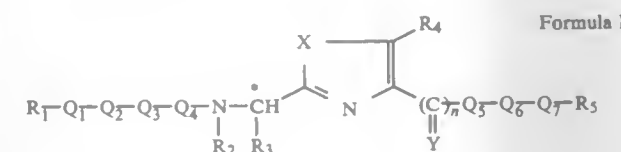
U.S. Cl. 528—354 **11 Claims**
 1. Process for the preparation of resorbable polyesters, characterized in that the polymerisation process is carried out continuously in an extruder provided with heating segments the temperature of which can be regulated, the extruder having controlled charge.

5,378,802
METHOD FOR REMOVING IMPURITIES FROM RESIST COMPONENTS AND NOVOLAK RESINS
 Kenji Honda, Barrington, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.
 Filed Sep. 3, 1991, Ser. No. 753,526
 Int. Cl.⁶ C08F 6/08

U.S. Cl. 528—480 **11 Claims**
 1. A method of removing metal impurities from a novolak resin, comprising the steps of:
 (a) dissolving said novolak resin in a solvent;
 (b) contacting said novolak resin solution with at least one fibrous cation exchange resin for sufficient amount of time to transfer at least a major portion of said metal impurities onto said fibrous cation exchange resin, wherein said cation exchange resin is prewashed with a solution of a quaternary ammonium salt compound; and
 (c) separating said cation exchange resin bearing said metal impurities from said novolak resin solution.

5,378,803
AZOLE-FUSED PEPTIDES AND PROCESSES FOR PREPARATION THEREOF
 Barry A. Morgan, Colonie; Thomas D. Gordon; Philip E. Hansen, both of Schodack, and Jasbir Singh, Albany, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.
 Continuation of Ser. No. 131,706, Dec. 11, 1987, abandoned.
 This application Jul. 10, 1992, Ser. No. 912,949
 Int. Cl.⁶ C07K 5/08, 5/10, 5/12, 7/06

U.S. Cl. 530—317 **34 Claims**
 1. An azole-fused peptide having the structural formula

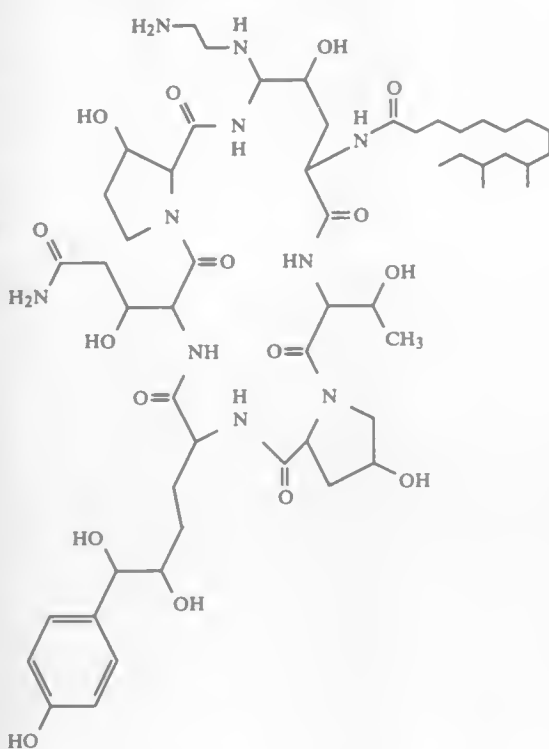


wherein
 Q₁ is L-prolyl or a direct linkage;
 Q₂ is L-prolyl, D-tryptophyl or a direct linkage;
 Q₃ is L-prolyl, D-tryptophyl, L-phenylalanyl, R-(2,3,4,9-tetrahydro-1H-pyrido[3,4-b]indol-2-yl-3-carbonyl) or a direct linkage;
 Q₄ is L-prolyl, D-tryptophyl, L-phenylalanyl or a direct linkage;
 Q₅ is L-prolyl, D-tryptophyl or a direct linkage;
 Q₆ is L-leucyl, L-methionyl or a direct linkage;

Q₇ is L-phenylalanyl, N-methyl-L-phenylalanyl, L-methionyl or a direct linkage;
 R₁ is a hydrogen atom, (phenylmethoxy)carbonyl or (1,1-dimethylethoxy)carbonyl;
 R₂ taken alone is a hydrogen atom;
 R₃ taken alone is 1-methylethyl, 2-methylpropyl, 4-aminobutyl, phenylmethyl, 4-hydroxyphenylmethyl, pyridylmethyl or (1H-indol-3-yl)methyl; or
 R₂ taken together with N, CH and R₃ is 2,3,4,9-tetrahydro-1H-pyrido[3,4-b]indol-2,3-diyl;
 R₄ is ethyl, propyl, 1-methylethyl, methylthiomethyl, ethylthiomethyl, phenyl, 4-hydroxyphenyl, pyridyl or 1H-indol-3-yl;
 R₅ is a hydrogen atom when n is 0 and Q₅, Q₆ and Q₇ are each a direct linkage; hydroxy or an alkali metal salt thereof, methoxy, ethoxy, 1,1-dimethylethoxy, amino, methylamino, dimethylamino, 2-(dimethylamino)ethylamino, (2-amino-3-phenylpropyl)amino or N-methyl-2-phenylethylamino when Y is oxo and n is 1; or hydroxy or an alkali metal salt thereof, amino, methylamino, dimethylamino, 2-(dimethylamino)ethylamino, (2-amino-3-phenylpropyl)amino, 2-amino-2-(phenylmethyl)ethylamino or N-methyl-2-phenylethylamino when Y is two separately bonded hydrogen atoms, n is 1 and Q₅, Q₆ and Q₇ are each a direct linkage;
 X is oxo, thia or imido;
 Y is oxo or two separately bonded hydrogen atoms;
 n is 0 or 1;
 * is L or D; and
 wherein at least two of Q₁, Q₂, Q₃ and Q₄, or Q₅, Q₆ and Q₇ are other than a direct linkage; or a pharmaceutically acceptable acid addition salt thereof.

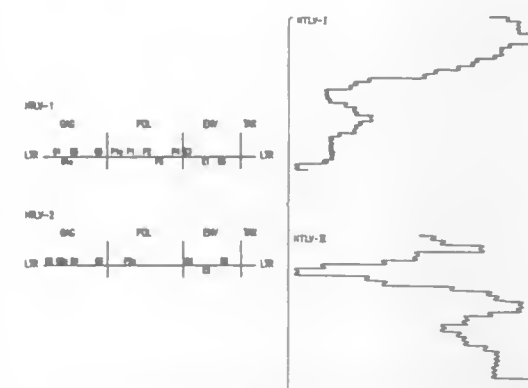
5,378,804
AZA CYCLOHEXAPEPTIDE COMPOUNDS
 James M. Balkovec, North Plainfield; Regina M. Black, Cranford, and Frances A. Bouffard, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
 Filed Mar. 16, 1993, Ser. No. 32,847
 Int. Cl.⁶ C07K 7/64

U.S. Cl. 530—317 **8 Claims**
 1. A compound having the formula:



5,378,805
IMMUNOREACTIVE HTLV-I/II ENV AND POLYPEPTIDES
 Renu B. Lal, Atlanta, Ga., assignor to United States of America, Washington, D.C.
 Filed Aug. 29, 1990, Ser. No. 574,352
 Int. Cl.⁶ C07K 7/08

U.S. Cl. 530—326 **2 Claims**



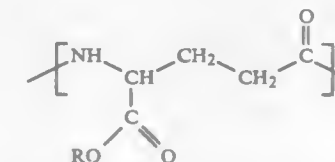
1. A peptide having specific immunoreactivity to antibodies to HTLV-I, HTLV-II, or combinations thereof consisting essentially of the amino acid sequence SPNVSPSSSTPLLY.

5,378,806
FUSION PROTEIN PRODUCED BY RETROVIRUS-MEDIATED SECRETION
 John W. Willis, Shreveport, La., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.
 Division of Ser. No. 522,428, May 11, 1990, Pat. No. 5,175,099, which is a continuation-in-part of Ser. No. 353,293, May 17, 1989, abandoned. This application May 12, 1992, Ser. No. 881,585
 Int. Cl.⁶ C07K 13/00

U.S. Cl. 530—350 **7 Claims**
 1. A fusion protein comprising a first domain, wherein said first domain is a retrovirus Gag protein comprising at least amino acid residues 1-8, 84-174 and 417-515 of Pr76^{myr1}, wherein said first domain is adapted to covalently bind myristic acid and which permits a host cell to produce a fusion protein in a membranous particle, and a second domain, wherein said second domain is a heterologous protein.

5,378,807
GAMMA-POLY(GLUTAMIC ACID) ESTERS
 Richard A. Gross, Chelmsford; Stephen P. McCarthy, Tyngsboro, and Devang T. Shah, Lowell, all of Mass., assignors to University of Massachusetts at Lowell, Lowell, Mass.
 Continuation-in-part of Ser. No. 742,839, Aug. 8, 1991, abandoned. This application Feb. 7, 1992, Ser. No. 832,255
 Int. Cl.⁶ C07K 7/10

U.S. Cl. 530—350 **2 Claims**
 1. An ester derivative of naturally-produced γ-PGA, the ester derivative having an empirical formula of:



wherein "R" a molecular group which causes the derivative to have a water solubility coefficient which is less than that of naturally-produced γ-PGA and where "n" is a number in the range of between about one thousand and eight thousand.

5,378,808
RECOMBINANT ERYTHROPOIETIN RECEPTOR PROTEIN
 Alan D'Andrea, Winchester; Gordon G. Wong, Brookline, and Simon S. Jones, Somerville, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.
 Division of Ser. No. 678,877, Mar. 25, 1991, Pat. No. 5,278,065, which is a continuation-in-part of Ser. No. 306,503, Feb. 3, 1989, abandoned. This application Jun. 10, 1993, Ser. No. 75,069
 Int. Cl.⁶ C07K 13/00

U.S. Cl. 530—350 **3 Claims**



1. An isolated polypeptide encoded by a DNA selected from the group consisting of:
 (i) a DNA comprising the DNA sequence set forth in FIGS. 2 and 2A;
 (ii) the DNA insert in plasmid pXM having ATCC No. 40546;
 (iii) a DNA capable of hybridizing under stringent conditions to the DNAs of (i) and (ii); and
 (iv) a DNA differing from the DNAs of (i)-(iii) in codon sequence due to the degeneracy of the genetic code; said polypeptide having the ability to specifically bind to erythropoietin.

5,378,809
POLYNUCLEOTIDES AND SUBSTRATE FOR THE EPIDERMAL GROWTH FACTOR RECEPTOR KINASE (EGFR)
 Pier P. Di Fiore, Bethesda, Md., and Francesca Fazioli, Ancona, Italy, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
 Filed Aug. 25, 1992, Ser. No. 935,311
 Int. Cl.⁶ C07K 13/00; C12N 15/12

U.S. Cl. 530—350 **11 Claims**
 1. A polynucleotide operably encoding human esp8, wherein said polynucleotide contains a sequence encoding the amino acid sequence of SEQ ID NO:2 and wherein said polynucleotide is isolated or enriched.

5,378,810

MUTANT SMG P21 PROTEIN WITH GTP BINDING ACTIVITY

Yoshimi Takai, Kobe; Jun Kondo; Yasushi Matsui, both of Machida; Yataka Teranishi, Sagami, and Rie Matsui, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 814,205, Dec. 20, 1991, which is a continuation of Ser. No. 358,835, May 30, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 949,105

Claims priority, application Japan, May 31, 1988, 63-133584; Nov. 11, 1988, 63-284860; May 9, 1989, 1-115831
Int. Cl.⁶ C07K 13/00; C12N 15/00

U.S. Cl. 530—350 1 Claim
1. A purified mutant Smg p21 protein wherein the Gly residue at position 12 of Smg p21 having the formula:

Met-Arg-Glu-Try-Lys-Leu-Val-Val-Leu-Gly-Ser-Gly-Gly-Val-Gly-Lys-Ser-Ala-Leu-Thr-Val-Gln-Phe-Val-Gln-Gly-Ile-Phe-Val-Glu-Lys-Tyr-Asp-Pro-Thr-Ile-Glu-Asp-Ser-Tyr-Arg-Lys-Gln-Val-Glu-Val-Asp-Cys-Gln-Gln-Cys-Met-Leu-Glu-Ile-Leu-Asp-Thr-Ala-Gly-Thr-Glu-Gln-Phe-Thr-Ala-Met-Arg-Asp-Leu-Tyr-Met-Lys-Asn-Gly-Gln-Gly-Phe-Ala-Leu-Val-Tyr-Ser-Ile-Thr-Ala-Gln-Ser-Thr-phe-Asn-Asp-Leu-Gln-Asp-Leu-Arg-Glu-Gln-Ile-Leu-Arg-Val-Lys-Asp-Thr-Glu-Asp-Val-Pro-Met-Ile-Leu-Val-Gly-Asn-Lys-Cys-Asp-Leu-Glu-Asp-Glu-Arg-Val-Val-Gly-Lys-Glu-Gln-Gly-Gln-Asn-Leu-Ala-Arg-Gln-Trp-Cys-Asn-Cys-Ala-Phe-Leu-Glu-Ser-Ser-Ala-Lys-Ser-Lys-Ile-Asn-Val-Asn-Glu-Ile-Phe-Tyr-Asp-Leu-Val-Arg-Gln-Ile-Asn-Arg-Lys-Thr-Pro-Val-Glu-Lys-Lys-Lys-Pro-Lys-Lys-Lys-Ser-Cys-Leu-Leu-Leu

is replaced by Val, wherein the mutant has GTP binding activity and GTP hydrolyzing activity and a molecular weight of about 22K dalton.

5,378,811

PURE C3B INACTIVATOR AND A PROCESS FOR PRODUCING SAID PROTEIN

Karina O. Alsos, Copenhagen K, and Jesper Kihl, Lyngby, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK89/00297, § 371 Date May 21, 1991, § 102(e) Date May 21, 1991, PCT Pub. No. WO90/06759, PCT Pub. Date Jun. 28, 1990

Continuation of Ser. No. 689,751, May 21, 1991, abandoned. This PCT application Dec. 19, 1989, Ser. No. 89,905

Claims priority, application Denmark, Dec. 20, 1988, 7084/88
Int. Cl.⁶ A61K 35/16, 37/02, 37/06; C07G 7/00

U.S. Cl. 530—381 4 Claims

1. A process for obtaining a solution of plasma-derived C3b inactivator essentially free of Factor B activity and infectious virus activity comprising subjecting a plasma fraction containing C3b inactivator to pasteurization by heating the plasma fraction to about 55°–65° C. for about 0.5–100 hours in the presence of at least one stabilizer selected from the group consisting of a saccharide, a sugar alcohol, and an amino acid, in which said stabilizer is present in an amount sufficient to stabilize C3b inactivator activity and in an amount to effect no more than 10% recovery of Factor B activity.

5,378,812

MONOCLONAL ANTIBODIES CROSS-REACTIVE AND CROSS-PROTECTIVE AGAINST P. AERUGINOSA SEROTYPES

Anthony W. Siadak, and Mae J. Rosok, both of Seattle, Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 931,179, Nov. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 807,391, Dec. 10, 1985, abandoned. This application May 24, 1993, Ser. No. 66,604
Int. Cl.⁶ C07K 15/28; A61K 39/395; C12N 5/22; G01N 33/554
U.S. Cl. 530—388.4 6 Claims

1. A composition comprising a human monoclonal antibody

or binding fragment thereof which specifically binds to accessible lipopolysaccharide determinants of IATS serotypes 2 and 5 and Fisher immunotype 3 of *Pseudomonas aeruginosa*, wherein said monoclonal antibody or binding fragment thereof inhibits the viability of at least two of said IATS serotypes and immunotype in the presence of the complement and neutrophils.

5,378,813

MESO-2,5-DIMERCAPTO-N,N,N',N'-TETRA-METHYLADIPAMIDE

George M. Whitesides, Newton, Mass.; Watson J. Lees, Charlottetown, Canada, and Rajeeva Singh, Cambridge, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed May 29, 1992, Ser. No. 891,565
Int. Cl.⁶ C07C 319/06

U.S. Cl. 530—404 3 Claims

1. Method for reducing disulfide bonds in a biochemical reaction by contacting a chemical comprising said bonds with meso-DTA under disulfide bond reducing conditions.

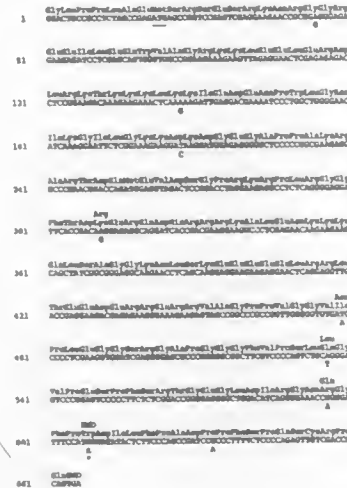
5,378,814

HEPATITIS DELTA VIRAL POLYPEPTIDES

Michael Houghton, Danville; Kang-Sheng Wang, Oakland; Qul-Lim Choo, El Cerrito; Amy J. Weiner, Berkeley, and Lacy R. Overby, Alamo, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 53,991, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 875,337, Jun. 17, 1986, abandoned. This application Jul. 9, 1992, Ser. No. 912,127
Int. Cl.⁶ C07K 13/00

U.S. Cl. 530—350 3 Claims



1. An isolated, purified, immunologically reactive polypeptide consisting essentially of a polypeptide encoded within open reading frame (ORF) 5 of the HDV genome, as depicted in FIG. 3.

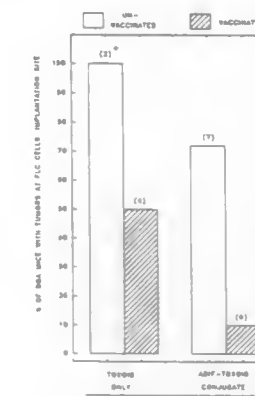
5,378,815

PROCESS FOR INDIRECT TARGETED IMMUNOCYTOLYSIS

Velibor Krsmanovic, Ecully, France; Joo P. Durkin, Gloucester; Jagmohan L. Bhasin, Orleans, both of Canada; Jean-Michel Biquard, Palaiseau, France; Phillip A. Macdonald, and James F. Whitfield, both of Ottawa, Canada, assignors to National Research Council Canada, Ottawa, Canada and Conseil National de Recherche Scientifique, Paris, France

Continuation-in-part of Ser. No. 424,636, Oct. 20, 1989, abandoned. This application Feb. 10, 1992, Ser. No. 872,966
Int. Cl.⁶ A61K 39/385

U.S. Cl. 530—405 2 Claims



* THE NUMBERS IN BRACKETS ARE THE NUMBERS OF ANIMALS IN EACH EXPERIMENTAL GROUP

1. A conjugate for treating leukemia or lymphoma comprising an immunogenic sensitizing agent and a targeting agent, wherein said targeting agent is an autocrine differentiation-inhibiting factor and said sensitizing agent is a toxoid.

5,378,816

METHODS FOR HIGH PURITY CHROMATOGRAPHIC SEPARATION OF PROTEINS HAVING EGF-LIKE BINDING DOMAINS

Erno Pungor, Foster City; Les Johnson, West Pittsburg, and Monica R. Foermer, San Francisco, all of Calif., assignors to Berlex Laboratories, Inc., Cedar Knolls, N.J.

Filed Dec. 16, 1992, Ser. No. 991,800
Int. Cl.⁶ A61K 37/00

U.S. Cl. 530—412 7 Claims

1. A method for purifying thrombomodulin from conditioned medium in the presence of bovine serum albumin, said method comprising:

applying the conditioned medium to a polyethyleneimine column under loading conditions of pH and ionic strength selected to bind thrombomodulin but not bind BSA and contaminants, wherein the pH is in the range from about 4 to about 4.5 and the ionic strength is in the range of from 0M NaCl to about 400 mM NaCl; washing the column to remove non-bound proteins and other contaminants; eluting the bound thrombomodulin from the column in an elution medium, wherein the elution medium has a pH greater than 4.5; collecting thrombomodulin in the elution medium; and concentrating the thrombomodulin.

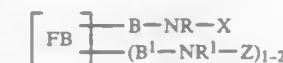
5,378,817

REACTIVE DYESTUFFS FOR DYEING AND PRINTING MATERIALS CONTAINING OH GROUPS OR AMIDE GROUPS

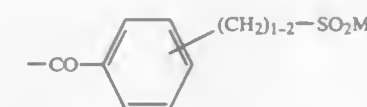
Konrad Bootz, Wetter, and Karl-Josef Herd, Odenthal-Holz, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 15, 1993, Ser. No. 4,807
Claims priority, application Germany, Jan. 22, 1992, 4201611
Int. Cl.⁶ C09B 62/503, 62/022; D06P 1/38
U.S. Cl. 534—618 11 Claims

1. A reactive dyestuff of the formula



where X =



FB = the radical of a dyestuff, B and B¹ = identically or differently, a direct bond or a bridge member to a ring C atom of an aromatic-carbocyclic or to a ring C or N atom of an aromatic-heterocyclic ring in FB,

M = CH=CH₂ or CH₂CH₂-V, wherein V = OH or a radical which can be eliminated under alkaline conditions,

Z = a heterocyclic fibre-reactive radical without a further chromophoric part and

R and R¹ = independently of one another, H or substituted or unsubstituted C₁-C₆-alkyl.

5,378,818

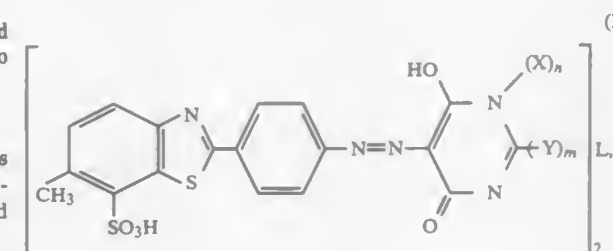
DOUBLED AZO DYES

Udo Mayer, Frankenthal, Germany, and Hans-Juergen Degen, Randolph, N.J., assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 29, 1993, Ser. No. 158,265
Claims priority, application Germany, Dec. 5, 1992, 4240981
Int. Cl.⁶ C09B 31/12, 67/22; D21H 21/28

U.S. Cl. 534—758 6 Claims

1. An azo dye of the formula I



where

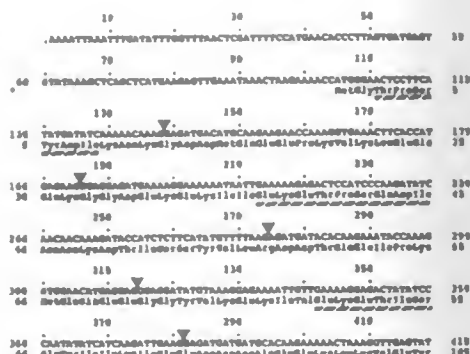
in case a)
m is 1,
n is 0,
Y is hydroxyl, and
L is C₁-C₆-alkylene, or
in case b)
m is 0 or 1,
n is 1,
X is hydrogen,
Y is imino, and
L is 1,4-piperazinediyl when m is 0 or

C₂-C₆-alkylene or phenylene when m is 1.

5,378,819

SYSTEMIN, AN INDUCER OF PLANT DEFENSE PROTEINS, AND METHODS OF USE

Clarence A. Ryan, Pullman; Gregory L. Pearce, Palouse, and Barry F. McGurl, Pullman, all of Wash., assignors to Washington State University Research Foundation, Pullman, Wash. Continuation-in-part of Ser. No. 528,956, May 25, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 855,412 Int. Cl.⁶ C07H 17/00; C12N 15/00; C12P 19/34; C12Q 1/68 U.S. Cl. 536—23.1 7 Claims

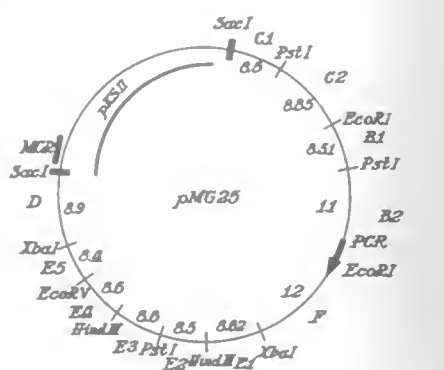


1. An isolated systemin or prosystemin nucleic acid or antisense DNA, wherein the nucleic acid encodes a polypeptide which is capable of increasing the synthesis of a defense protein in a plant and wherein the antisense DNA encodes an antisense RNA which is capable of decreasing the synthesis of a defense protein in a plant, wherein said nucleic acid or antisense DNA is capable of hybridizing under stringent conditions with the sense or antisense strand of the nucleotide sequence of SEQ. ID. NO. 2 or SEQ. ID. NO. 4.

5,378,820

GENE ENCODING CYTADHESIN PROTEIN OF MYCOPLASMA GALLISEPTICUM AND ITS USE

Calvin L. Keeler, 1320 Barksdale Rd., and John E. Dohms, 126 E. Cleveland Ave., both of Newark, Del. 19711 Filed Nov. 9, 1992, Ser. No. 973,257 Int. Cl.⁶ C07H 21/02, 17/00; C12N 15/00, 1/20 U.S. Cl. 536—23.1 6 Claims



1. An isolated nucleic acid molecule encoding a cytoadhesin protein of Mycoplasma gallisepticum having the amino acid sequence of SEQ ID NO: 1.

5,378,821

GENE ENCODING FOR ENDOCHITINASE

Gary E. Harman, Geneva, N.Y.; Arne Tronsmo, Aas, Norway; Christopher K. Hayes, Geneva, N.Y., and Matteo Lorito, Salerno, Italy, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 919,784, Jul. 27, 1992, which is a continuation-in-part of Ser. No. 716,134, Jun. 17, 1991, Pat. No. 5,173,149. This application Apr. 14, 1993, Ser. No. 45,269 Int. Cl.⁶ C12N 15/56, 9/42, 15/73

U.S. Cl. 536—23.2 1 Claim
1. A gene coding for endochitinase which is isolated from *Trichoderma harzianum* strain PI which comprises the sequence set forth in the Sequence Listing as SEQ ID NO:3.

5,378,822

NUCLEIC ACIDS ENCODING MURINE AND HUMAN AH RECEPTORS

Christopher A. Bradfield; Kristin M. Dolwick, both of Chicago, Ill., and Alan Poland, Madison, Wis., assignors to Wisconsin Alumni Research, Evanston, Ill. and Northwestern University & Foundation, Madison, Wis.

Filed Apr. 8, 1993, Ser. No. 45,806 Int. Cl.⁶ C07H 21/02, 21/04

U.S. Cl. 536—23.5 4 Claims
3. An isolated nucleic acid encoding the human Ah receptor, whose amino acid sequence is defined by SEQ ID NO. 4.

5,378,823

NUCLEIC ACIDS ENCODING TYPE I INTERFERON VARIANTS

Jacques Martal, Jouy-en-Josas; Erich DeGryse, Strasbourg; Pierre Gaye; Madia Charlier, both of Paris; Gilles Charpligny, Orleans; Pierrette Reinand, Chatillon, and Gérard Chaouat, Paris, all of France, assignors to Institut National de la Recherche Agronomique-I.N.R.A., Paris, France

PCT No. PCT/FR91/00953, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO92/09691, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 915,707 Claims priority, application France, Nov. 29, 1990, 90 14945; Nov. 29, 1990, 90 14946

Int. Cl.⁶ C07H 21/04

U.S. Cl. 536—23.52 5 Claims

1. A cassette for the expression in yeast of a variant of type I interferon having a formula selected from the group consisting of: Ala-Pro-R₀' (IV) and Ala-Gly-R₀' (V), wherein R₀' is the amino acid sequence of an IFN selected from the group consisting of IFN-αII and IFNs of the trophoblastin class; said cassette comprising

- a first DNA fragment coding for said variant;
- a second DNA fragment coding for a signal peptide selected from the group consisting of yeast α factor precursor signal peptide and yeast β-1,3-glucanase precursor signal peptide, said second DNA fragment being linked to the end of the first DNA fragment; and
- a promoter enabling said DNA fragments to be expressed in yeast.

5,378,824

NUCLEIC ACID FRAGMENT ENCODING HERBICIDE RESISTANT PLANT ACETOLACTATE SYNTHASE

John R. Bedbrook, Piedmont, Calif.; Roy S. Chaleff, Pennington, N.J.; Saverio C. Falco, Arden; Barbara J. Mazur, Wilmington, both of Del.; Christopher R. Somerville, Okemom, Mich., and Narendra S. Yadav, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. Division of Ser. No. 642,976, Jan. 18, 1991; Pat. No. 5,141,870, which is a division of Ser. No. 164,360, Mar. 4, 1988, Pat. No. 5,013,659, which is a continuation-in-part of Ser. No. 900,609, Aug. 26, 1986, abandoned. This application Jun. 2, 1992, Ser. No. 892,305

Claims priority, application Israel, Jul. 27, 1987, 83348 The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.⁶ C07H 21/04; C12P 21/00, 21/04; C12N 15/00 U.S. Cl. 536—23.6 1 Claim

1. An isolated nucleic acid fragment comprising a nucleotide sequence encoding a plant acetolactate synthase protein, said nucleic acid fragment is capable of being incorporated into a nucleic acid construct used to transform a plant containing wild-type acetolactate synthase protein which is sensitive to a compound selected from the group consisting of sulfonylurea, triazopyrimidine sulfonamide, and imidazolinone herbicides, said nucleic acid fragment having at least one point mutation relative to the wild-type nucleic acid fragment encoding plant acetolactate synthase protein such that upon transformation with said nucleic acid construct said plant is rendered resistant to the application of said herbicide compound.

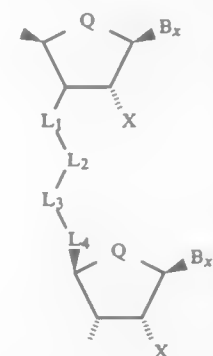
5,378,825

BACKBONE MODIFIED OLIGONUCLEOTIDE ANALOGS

Philip D. Cook, and Yogesh S. Sanghvi, both of Carlsbad, Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif. Continuation-in-part of Ser. No. 566,836, Aug. 13, 1990, Pat. No. 5,223,618, and a continuation-in-part of Ser. No. 558,663, Jul. 27, 1990, Pat. No. 5,138,045. This application May 21, 1991, Ser. No. 703,619

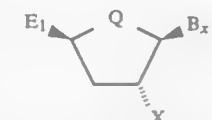
Int. Cl.⁶ C07H 1/00

U.S. Cl. 536—25.34 13 Claims
1. A method for synthesizing a compound having the structure:

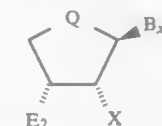


wherein:

- B_x is a nucleosidic base;
- Q is O;
- X is H, OH, F, or O-alkyl;
- L₁ and L₄ are CH₂; and
- L₂ and L₃ are, independently, P(O)R₄, O, or NR₃, provided that L₂ and L₃ are not both O; or
- L₁, L₂, L₃ and L₄, together, comprise a —CH=N—N—H—CH₂— or —CH₂—O—N=CH— moiety;
- R₃ is H or lower alkyl; and
- R₄ is OH; comprising the steps of: providing a first moiety comprising the structure:



and a second moiety comprising the structure:



wherein E₁ and E₂ are the same or different and are halo-methyl, trifluoromethyl sulfonylmethyl, p-methyl-benzene sulfonylmethyl, or formyl; and coupling said first and second moieties with a linking group through said electrophilic reactive groups to form said compound.

5,378,826

PROCESS FOR THE PREPARATION OF A STORAGE STABLE LOW ESTERIFIED NITROCELLULOSE MOISTENED WITH ALCOHOL OR WATER

Lutz Hoppe; Bernd Haase; Oke Brauer, and Klaus Szablikowski, all of Walsrode, Germany, assignors to Wolff Walsrode AG, Walsrode, Germany

Filed Jul. 28, 1993, Ser. No. 98,674

Claims priority, application Germany, Aug. 4, 1992, 4225761 Int. Cl.⁶ C08B 5/02, 5/04

U.S. Cl. 536—35 5 Claims

1. In the preparation of a storage stable nitrocellulose comprising the steps of reacting cellulose with a nitrating agent to obtain a fibrous nitrocellulose having a nitrogen content of up to about 12.6%, moistening such nitrocellulose with at least one of alcohol and water and compressing said moistened nitrocellulose between two rollers to a content of alcohol plus water of at least about 25%, the improvement which comprises effecting said compression with a linear pressure of from 0.2 to 10 t/cm between the rollers acting on the fibrous nitrocellulose, the friction between the rollers being adjusted to a value resulting in a difference in the power consumption of the two rollers of from 5 to 100 Watt/kg of nitrocellulose.

5,378,827

PROCESS FOR THE PRODUCTION OF CELLULOSE CARBAMATE

Gerhard Kennecke, Pulheim; Adolf Arnold, Maintal, and Sabine Batzke, Alzenau, all of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Germany

Filed Sep. 16, 1993, Ser. No. 122,244

Claims priority, application Germany, Dec. 16, 1992, 4242437 Int. Cl.⁶ C08B 5/00

U.S. Cl. 536—30 18 Claims

1. A process for producing cellulose carbamate from cellulose and excess urea in an inert liquid organic reaction carrier which comprises

- a) mixing the cellulose with an aqueous urea solution,
- b) exchanging the water portion of said solution for said liquid organic reaction carrier,
- c) converting said cellulose mixture to cellulose carbamate with the formation of by-product ammonia at a temperature in the range of 130° to 160° C. and a pressure in the range of 0.05 to 5 bar, while removing said ammonia by an inert gaseous carrier from the reaction product, said reaction product comprising cellulose carbamate, urea and organic reaction carrier,
- d) exchanging said organic reaction carrier in the reaction product for aqueous urea solution,

5,378,836

RAPAMYCIN OXIMES AND HYDRAZONES

Wenling Kao, Paoli, Pa.; Robert L. Vogel, Stratford, N.J.; Magid A. Abou-Gharbia, Glen Mills, Pa., and Craig E. Causfield, Princeton Junction, N.J., assignors to American Home Products Corporation, Madison, N.J.

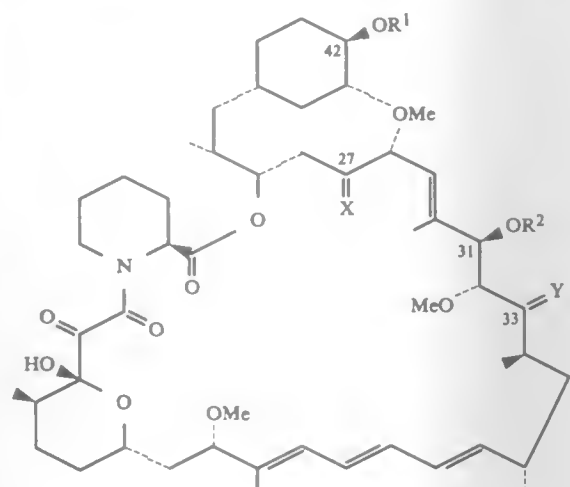
Filed Oct. 8, 1993, Ser. No. 134,224
Int. Cl.⁶ A61K 31/395; C07D 491/06

U.S. Cl. 540—456

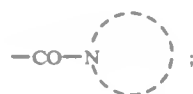
21 Claims

1. A compound of the structure

21 Claims



wherein R¹ and R² are each, independently, hydrogen, —CONH₂, —{(CR³R⁴)_m—(A—(CR⁵R⁶)_n)_p—B)_q—R_r, —SO₂R⁷; —SO₃H; —CHR⁸O(CH₂)₈R⁹; or



R³, R⁴, R⁵, R⁶, and B are each, independently, hydrogen, alkyl of 1-6 carbon atoms, alkenyl of 2-7 carbon atoms, alkynyl of 2-7 carbon atoms, hydroxyalkyl of 1-6 carbon atoms, alkoxyalkyl of 2-12 carbon atoms, alkylthioalkyl of 2-12 carbon atoms, alkylaminoalkyl of 2-12 carbon atoms, dialkylaminoalkyl of 3-12 carbon atoms, arylalkyl of 7-10 carbon atoms, cycloalkyl of 3-8 carbon atoms, —OR¹⁰, —SR¹⁰, halogen, —CN, —NO₂, —CF₃, —COR¹⁰, —CO₂R¹⁰, —CONHR¹⁰, —SO₂R¹⁰, —OSO₃R¹⁰, —NR¹⁰R¹¹, —NH—COR¹⁰, —NHSO₂R¹⁰, or Ar;

X is =NOR¹² or =NNR¹²R¹³,
Y is O, =NOR¹², or =NNR¹²R¹³,
R⁷, R¹², and R¹³ are each, independently, hydrogen, alkyl of 1-6 carbon atoms, alkenyl of 2-7 carbon atoms, alkynyl of 2-7 carbon atoms, arylalkyl of 7-10 carbon atoms, or Ar;

2-7 carbon atoms, arylalkyl of 7-10 carbon atoms, or Ar; R⁸, R⁹, R¹⁰, and R¹¹ are each, independently, hydrogen, alkyl of 1-6 carbon atoms, arylalkyl of 7-10 carbon atoms, alkenyl of 2-7 carbon atoms, alkynyl of 2-7 carbon atoms, hydroxyalkyl of 1-6 carbon atoms, alkoxyalkyl of 2-12 carbon atoms, alkylthioalkyl of 2-12 carbon atoms, alkylaminoalkyl of 2-12 carbon atoms, dialkylaminoalkyl of 3-12 carbon atoms, cycloalkyl of 3-8 carbon atoms, or Ar;

A is $-\text{CH}_2-$, $-\text{NR}^{10}-$, $-\text{O}-$, $-\text{S}-$, $-\text{SO}-$, $-\text{SO}_2-$, $-\text{PR}^{10}-$, $-\text{CO}-$, $-\text{NHCO}-$, $-\text{NHSO}-$, or $-\text{P}(\text{O})(\text{R}^0)-$;

Ar is aryl which may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1-6 carbon atoms, arylalkyl of 7-10 carbon atoms, alkoxy of 1-6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2-7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1-6 carbon atoms per alkyl group, dialkylaminoalkyl of 3-12 carbon atoms, hydroxyalkyl of 1-6 carbon atoms, alkoxyalkyl of

2-12 carbon atoms, alkylthio of 1-6 carbon atoms, $-\text{SO}_3\text{H}$, $-\text{PO}_3\text{H}$, and $-\text{CO}_2\text{H}$:



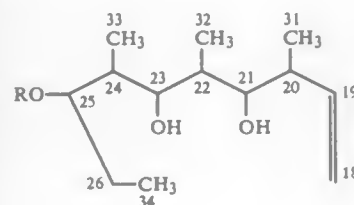
is a nitrogen containing heterocyclic radical selected from the group consisting of pyridyl, pyrazinyl, piperidinyl, morpholinyl, piperazinyl, pyrrolidinyl, thiazolyl, pyrimidinyl, isoxazolyl, pyrrolidinyl, and imidazolyl that may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1-6 carbon atoms, arylalkyl of 7-10 carbon atoms, alkoxy of 1-6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2-7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1-6 carbon atoms per alkyl group, dialkylaminoalkyl of 3-12 carbon atoms, hydroxyalkyl of 1-6 carbon atoms, alkoxyalkyl of 2-12 carbon atoms, alkylthio of 1-6 carbon atoms, $-\text{SO}_3\text{H}$, $-\text{PO}_3\text{H}$, and $-\text{CO}_2\text{H}$;

$a=0-1$;
 $m=0-6$;
 $n=0-6$;
 $p=0-1$;
 $q=0-1$;
 $r=1-2$; and
 $t=1-4$;
 wherein R^3 , R^4 , R^5 , R^6 , A, B, m, n, p, and q are independent in each of the $-\text{CON}-\{((\text{CR}^3\text{R}^4)_m(-\text{A}-(\text{CR}^5\text{R}^6)_n)_p)_q-\text{B}\}_r$ subunits when $r=2$;
 with the proviso that R^1 and R^2 are not both hydrogen, and further provided that if $r=2$, then $a=0$, and if $r=1$, then $a=1$; or a pharmaceutically acceptable salt thereof.

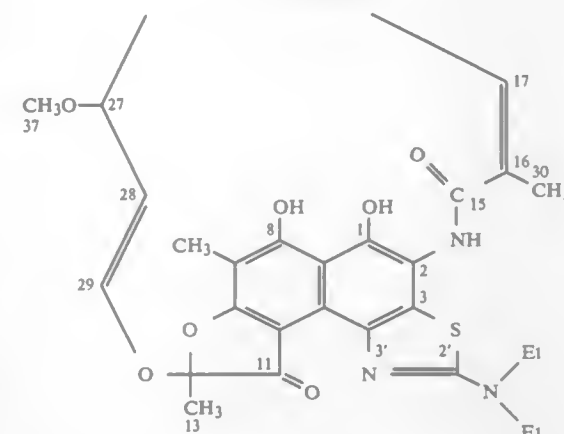
5,378,837
PROCESS FOR PREPARING
2'-(DIETHYLAMINO)RIFAMYCIN P (P/DEA)
Gianbattista Panzone, Cornaredo, and Anacleto Gianantonio,
Milan, both of Italy, assignors to Gruppo Lepetit S.p.A.,
Gerenzano, Italy
Continuation of Ser. No. 975,223, Nov. 12, 1992, abandoned,
which is a continuation of Ser. No. 823,237, Jan. 21, 1992,
abandoned. This application Oct. 8, 1993, Ser. No. 134,515
Claims priority, application European Pat. Off., Jan. 28, 1991,
91101037

Int. Cl.⁶ A61K 31/395; C07D 513/18
U.S. Cl. 540—456 12 Claims

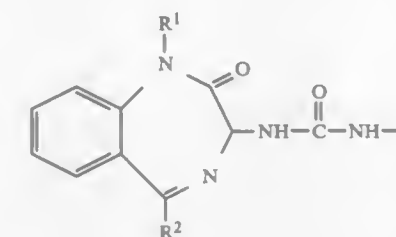
1. A process for preparing 2'-(diethylamino)rifamycin P (P/DEA) or its 25-desacetyl derivative of formula I wherein R is acetyl or hydrogen:



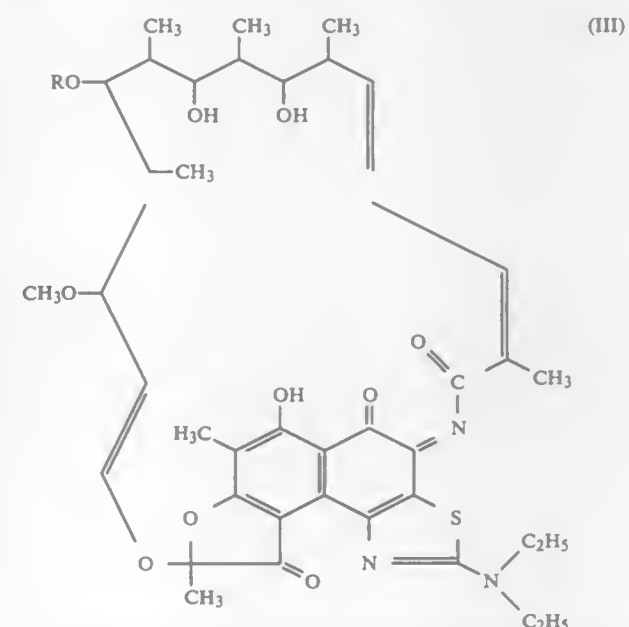
-continued



wherein:
R is



which is characterized in that 3-bromorifamycin S is reacted with 1,1-diethylthiourea in dimethylformamide, in the presence of a hydrobromic acid acceptor, to give a green colored 1,2-quinonimine intermediate of formula III, wherein R has the same meanings as above:



that is reduced, without isolation, by a mild reducing agent.

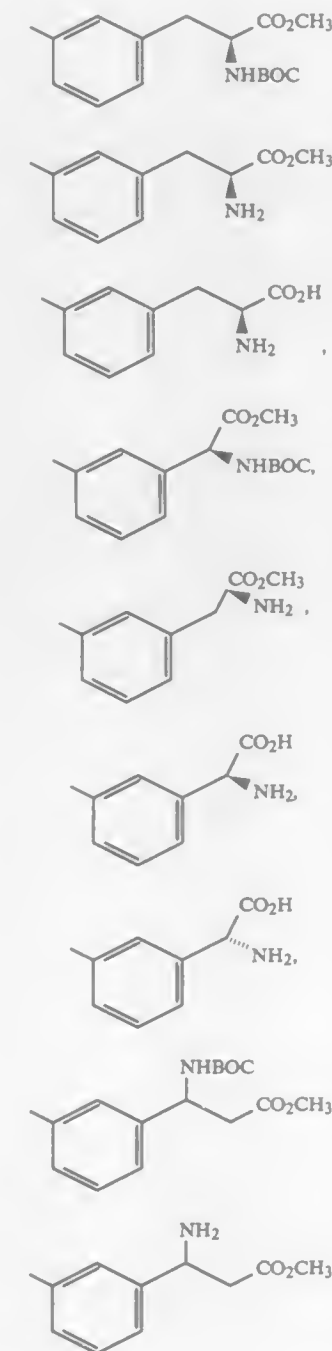
5,378,838
BENZODIAZEPINE CHOLECYSTOKININ
ANTAGONISTS
Jeffrey M. Bergman, Telford; Roger M. Freidinger, Lansdale,
and Mark G. Bock, Hatfield, all of Pa., assignors to Merck &
Co., Inc., Rahway, N.J.

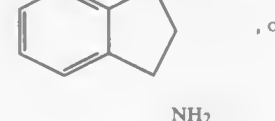
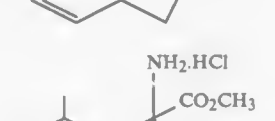
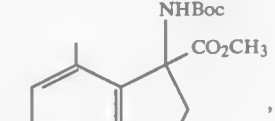
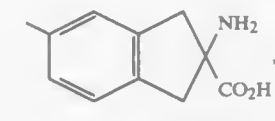
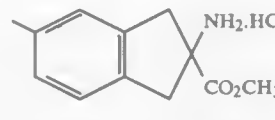
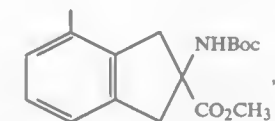
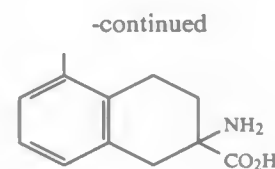
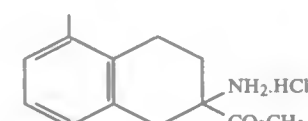
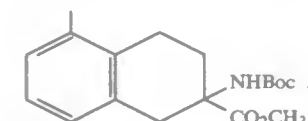
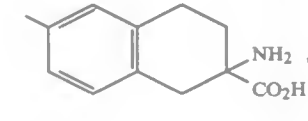
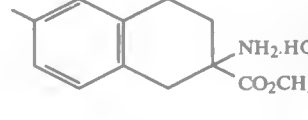
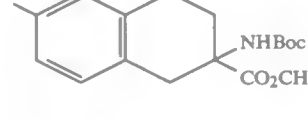
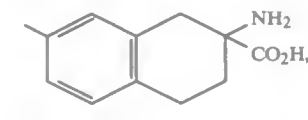
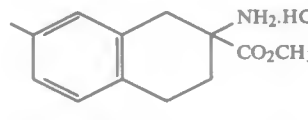
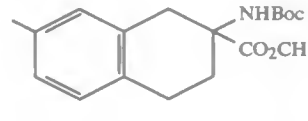
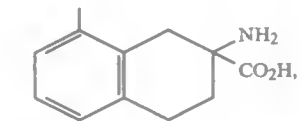
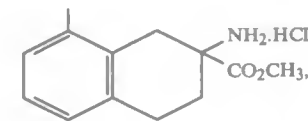
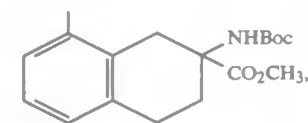
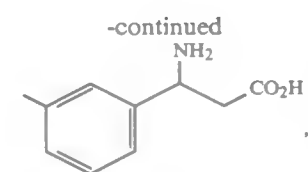
Filed Jan. 13, 1993, Ser. No. 3,927
Int. Cl.⁶ C07D 243/24; A61K 31/55

U.S. Cl. 540—509

14 Claims

1. A compound of Formula I:



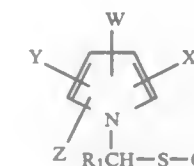


R¹ is C₁-C₆ linear or branched chain alkyl or cyclopropyl; R² is unsubstituted or substituted phenyl where the substituent is fluoro, chloro, bromo, iodo, nitro, carboxy, hydroxy, amino, hydroxy C₁-C₄-alkyl, C₁-C₄-mono or di-alkyl amino; or cyclohexyl; or the optical isomers, prodrugs or pharmaceutically acceptable salts thereof.

5,378,839*
INSECTICIDAL, ACARICIDAL AND MOLLUSCIDAL
1-(SUBSTITUTED)THIOALKYLPYRROLES
David G. Kuhn, Newtown, Pa., and Venkataraman Kameswaran,
Princeton Junction, N.J., assignors to American Cyanamid
Company, Wayne, N.J.
Division of Ser. No. 95,973, Jul. 22, 1993, Pat. No. 5,302,383,
which is a division of Ser. No. 804,260, Dec. 4, 1991, Pat. No.
5,254,559. This application Jan. 26, 1994, Ser. No. 187,266
Int. Cl.⁶ C07D 267/02, 279/04, 207/10, 277/16
U.S. Cl. 540—544 2 Claims
1. A process for the preparation of a compound of formula I

5,378,840

I
SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS
Albert C. Lee, Fort Collins, Colo.; E. Ann Hallinan, Evanston,
Ill.; Timothy J. Hagen; Robert K. Husa, both of Gurnee, Ill.;
Sofya Tsymbalov, Des Plaines, Ill., and Jean-Pierre Van
Hoeck, Chastre, Belgium, assignors to G. D. Searle & Co.,
Chicago, Ill.
PCT No. PCT/US92/03028, § 371 Date Aug. 24, 1993, § 102(e)
Date Aug. 24, 1993
PCT Filed May 16, 1992, Ser. No. 108,551
Int. Cl.⁶ C07D 413/12; A61K 31/55
U.S. Cl. 540—547 8 Claims
1. A compound having the structure:



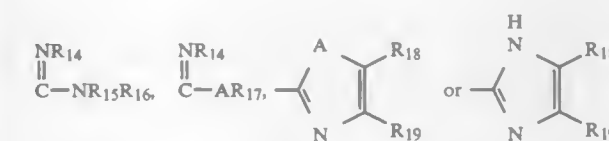
wherein W is CN or NO₂;

X is halogen or phenyl optionally substituted with one to three C₁-C₃alkyl, C₁-C₃alkoxy, C₁-C₃alkylthio, C₁-C₃alkylsulfinyl, C₁-C₃alkylsulfonyl, halogen, CN, NO₂, CF₃, R₄CF₂B, R₅CO or NR₆R₇ groups;

Y is CF₃, halogen or phenyl optionally substituted with one to three C₁-C₃alkyl, C₁-C₃alkoxy, C₁-C₃alkylthio, C₁-C₃alkylsulfinyl, C₁-C₃alkylsulfonyl, halogen, CN, NO₂, CF₃, R₄CF₂B, R₅CO or NR₆R₇ groups;

Z is halogen or CF₃;

R₁ is hydrogen, C₁-C₆alkyl, C₃-C₆cycloalkyl; and Q is



R₄ is hydrogen, fluorine, CHF₂, CHFCl or CF₃; R₅ is C₁-C₃alkyl, C₁-C₃alkoxy or NR₆R₇; R₆ is hydrogen or C₁-C₃alkyl; R₇ is hydrogen or C₁-C₃alkyl or R₈CO; R₈ is hydrogen or C₁-C₃alkyl; B is S(O)₄ or O; q is an integer of 0, 1 or 2;

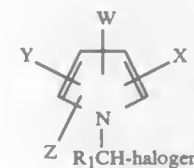
in which A is O or S;

R₁₄ is hydrogen, C₁-C₄alkyl or may be taken together with either R₁₅ or R₁₇ and the atoms to which they are attached to form a 5- to 7-membered ring optionally substituted with one or two C₁-C₃alkyl groups;

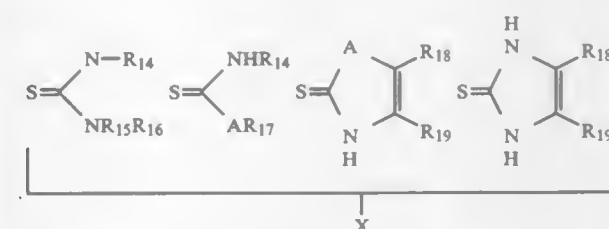
R₁₅ and R₁₆ are each independently hydrogen or C₁-C₄alkyl;

R₁₇ is C₁-C₄alkyl or when taken together with R₁₄ and the atoms to which they are attached may form a 5- to 7-membered ring optionally substituted with one or two C₁-C₃alkyl groups;

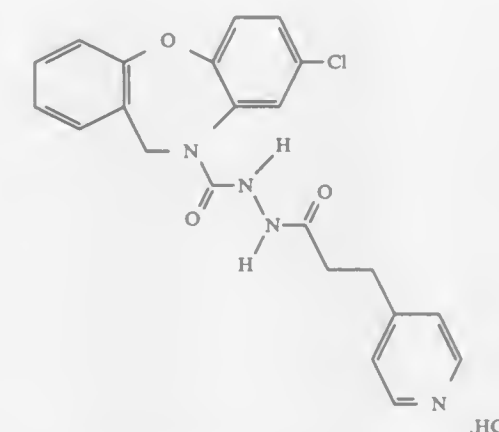
R₁₈ and R₁₉ are each independently hydrogen or C₁-C₃alkyl or when taken together may form a ring wherein R₁₈R₁₉ is represented by —CH=CH—CH=CH—; which comprises reacting a compound of formula III



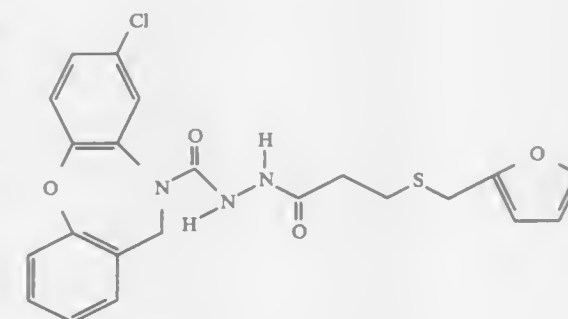
with at least one molar equivalent of a thiourea reagent of formula X



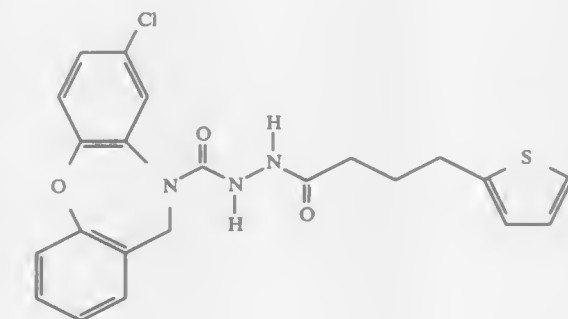
in the presence of a solvent.



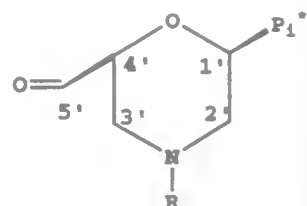
2. A compound having the structure:



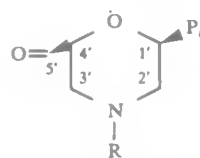
3. A compound having the structure:



5,378,841
**ALPHA-MORPHOLINO RIBONUCLEOSIDE
 DERIVATIVES AND POLYMERS THEREOF**
 James E. Summerton; Dwight D. Weller, and Eugene P. Stirchak, all of Corvallis, Oreg., assignors to Antivirals Inc., Corvallis, Oreg.
 Continuation of Ser. No. 454,056, Dec. 20, 1989, Pat. No. 5,235,033. This application Jun. 8, 1993, Ser. No. 74,120
 Int. Cl.⁶ C07D 413/04, 473/02, 473/26
 U.S. Cl. 544—118 6 Claims



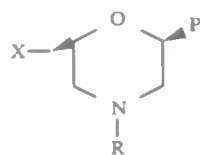
1. A morpholino-subunit of the form



where R is a hydrogen, substituted alkyl, or protective group; and,

Pi is a purine or pyrimidine base-pairing moiety effective to bind by base-specific hydrogen bonding to a base in a polynucleotide.

4. A morpholino-subunit of the form



where R is a hydrogen, substituted alkyl, or protective group;

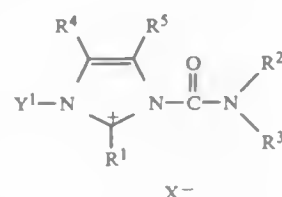
Pi is a purine or pyrimidine base-pairing moiety effective to bind by base-specific hydrogen bonding to a base in a polynucleotide; and

X is a hydroxyl, sulfhydryl, amine, or the salt of sulfonic acid.

5,378,842
**IMIDAZOLIUM HARDENERS FOR PROTEINACEOUS
 MATERIALS**

Ludovic Fodor; Richard R. M. Jones, both of Hendersonville, and Rolf T. Weberg, Brevard, all of N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
 Filed Dec. 21, 1993, Ser. No. 170,844
 Int. Cl.⁶ C07D 295/104, 233/22, 233/24
 U.S. Cl. 544—139 7 Claims

1. A compound suitable as a hardening agent chosen from the set consisting of:



wherein:

Y¹ represents an alkyl of 6–24 carbons, aryl of 6–24 carbons, aralkyl

of 7 to 25 carbons, the atoms chosen from C, N, O, and S necessary to form a 5- or 6-membered ring, or -L¹CR¹³CH₂;

L¹ is a linking group;

R¹ is hydrogen, alkyl of 1 to 24 carbons, aryl of 6 to 24 carbons, aralkyl of 7 to 25 carbons or halogen;

R² and R³ independently represent alkyl of 1–24 carbons, aryl of 6–24 carbons, aralkyl of 7 to 25 carbons or R² and R³ independently may represent, or be taken together to represent the atoms chosen from C, N, O and S necessary to form a 5- or 6-membered ring;

R⁴ and R⁵ independently represent hydrogen, alkyl of 1 to 24

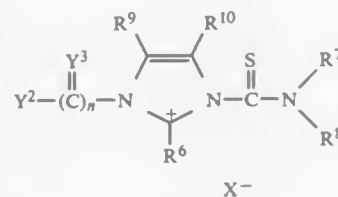
carbons, nitro, carboxyl, mercapto, —OR¹¹, or the atoms chosen from C, N, O, and S necessary to form a 5- or 6-membered ring or R⁴ and R⁵ may be taken together to represent the atoms chosen from C, N, O, and S necessary to form a 5- or 6-membered ring;

R¹¹ represents hydrogen or an alkyl of 1–5 carbons;

R¹³ represents hydrogen or an alkyl of 1–24 carbons;

X- is a counterion;

and



wherein: Y² is an alkyl of 1–24 carbons, aryl of 6–24 carbons, aralkyl of 7 to 25 carbons, the atoms chosen from C, N, O, and S necessary to form a 5- or 6-membered ring or L²CR¹⁴CH₂;

L² is a linking group;

Y³ represents O or S;

R⁶ is hydrogen, alkyl of 1 to 24 carbons, aryl of 6 to 24 carbons, aralkyl of 7 to 25 carbons or halogen;

R⁷ and R⁸ independently represent alkyl of 1–24 carbons, aryl of 6–24 carbons, aralkyl of 7 to 25 carbons or the atoms chosen from C, N, O and S necessary to form a 5- or 6-membered ring or R⁷ and R⁸ may be taken together to represent the atoms C, N, O and S necessary to form a 5- or 6-membered ring;

R⁹ and R¹⁰ independently represent hydrogen, alkyl of 1 to 24 carbons, nitro, carboxyl, mercapto, —OR¹², the atoms chosen from C, N, O, and S necessary to form a 5- or 6-membered ring or taken together R⁹ and R¹⁰ may represent the atoms chosen from C, N, O, and S necessary to form a 5- or 6-membered ring;

R¹² represents hydrogen or an alkyl of 1–5 carbons;

R¹⁴ represents hydrogen or an alkyl of 1–24 carbons;

X- is a counterion;

n is an integer chosen from 0 and 1.

5,378,843
**5,6-DISUBSTITUTED-3-PYRIDYLMETHYL AMMONIUM
 HALIDE COMPOUNDS USEFUL FOR THE
 PREPARATION OF 5-(SUBSTITUTED
 METHYL)-2,3-PYRIDINEDICARBOXYLIC ACIDS**

Henry L. Strong, Somerset, N.J., assignor to American Cyanamid Company, Wayne, N.J.

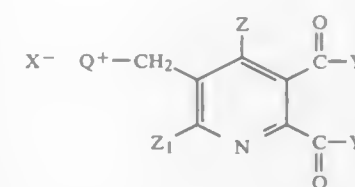
Division of Ser. No. 960,749, Oct. 14, 1992, Pat. No. 5,288,866, which is a continuation-in-part of Ser. No. 812,520, Oct. 20, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 156,205

Int. Cl.⁶ C07D 251/00, 213/04, 401/00

U.S. Cl. 544—215

24 Claims

1. A method for the preparation of a 5,6-disubstituted-3-pyridylmethyl ammonium halide compound having the structural formula



wherein

Z is hydrogen or halogen;

Z1 is hydrogen, halogen, cyano or nitro;

X is Cl, Br, I or R₃SO₃;

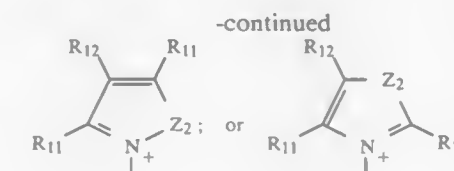
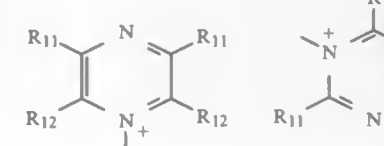
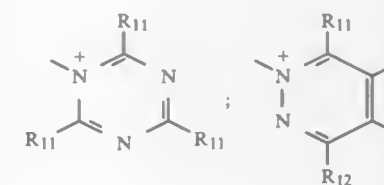
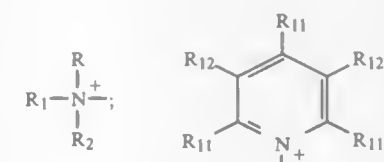
R₃ is C₁–C₄ alkyl or phenyl optionally substituted with one to three C₁–C₄ alkoxy groups, C₁–C₄ alkyl groups, nitro groups, cyano groups or halogen atoms;

Y and Y₁ are each independently OR₄, NR₄R₅, or when taken together YY₁ is —O—, —S— or —NR₆—;

R₄ and R₅ are each independently hydrogen, C₁–C₄ alkyl optionally substituted with C₁–C₄ alkoxy or phenyl optionally substituted with one to three C₁–C₄ alkyl groups, C₁–C₄ alkoxy groups or halogen atoms, or phenyl optionally substituted with one to three C₁–C₄ alkyl groups, C₁–C₄ alkoxy groups or halogen atoms;

R₆ is hydrogen or C₁–C₄ alkyl;

Q is

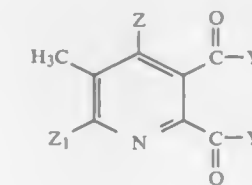


R, R₁ and R₂ are each independently C₁–C₄ alkyl, and when taken together, R and R₁ may form a 5- or 6-membered ring in which RR₁ is represented by the structure: —(CH₂)_n—, optionally interrupted by O, S or NR₁₀, where n is an integer of 3, 4 or 5, provided R₂ is C₁–C₄ alkyl;

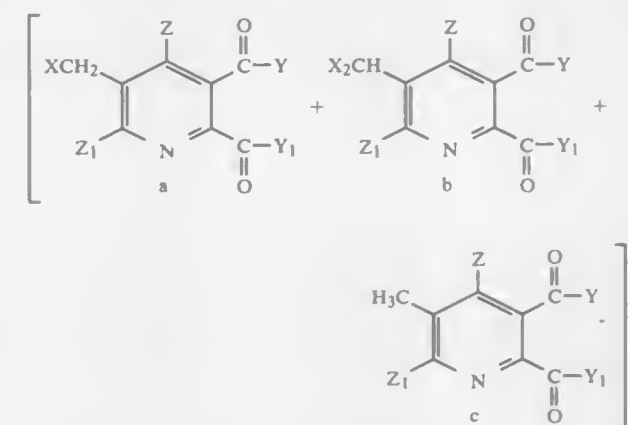
Z₂ is O, S or NR₁₀;

R₁₀ is C₁–C₄ alkyl; and

(I) R₁₁ and R₁₂ are each independently hydrogen, halogen, C₁–C₄ alkyl or C₁–C₄ alkoxy, and when taken together, R₁₁ and R₁₂ may form a 5- or 6-membered saturated or unsaturated ring optionally interrupted by O, S, or NR₁₀ and optionally substituted with one to three halogen atoms, C₁–C₄ alkyl groups or C₁–C₄ alkoxy groups; which comprises reacting a 5-methyl-2,3-pyridinedicarboxylic acid derivative compound having the structural formula



wherein Z, Z₁, Y and Y₁ are as described above with a halogenating agent in the presence of a first solvent, optionally in the presence of a radical initiator to form a first mixture containing compounds having the structural formulas



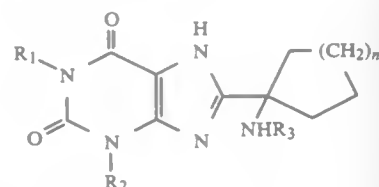
wherein, Z, Z₁, Y and Y₁ are as described above and X is Cl or Br, reacting said first mixture with at least 1.0 molar equivalent of a C₁–C₄ trialkylamine, a 5 to 6 membered saturated or 5 to 14 membered unsaturated heterocyclic amine, optionally substituted with one to three C₁–C₄ alkyl groups, C₁–C₄ alkoxy groups or halogen atoms in the presence of a second solvent to form said 5,6-disubstituted-3-pyridylmethyl ammonium halide compound.

5,378,844
8-(1-AMINOCYCLOALKYL)-1,3-DIALKYLXANTHINE
DERIVATIVES, PREPARATION PROCESS AND
ANTIDEPRESSANT, NOOTROPIC AND
PSYCHOSTIMULANT COMPOSITION THEREOF
Mario Brufani, Rome; Romolo Scuri, Piacenza; Stefano Cec-
carelli, Frosinone; Patrizia DeVellis, Frosinone; Patrizia
Giannetti, Frosinone; Agnese Paesano, Frosinone, and Zana-
rella Sergio, Mentana, all of Italy, assignors to Biomedica
Foscama Industria Chimico-Farmaceutica S.p.A., Rome, Italy
Filed Jan. 22, 1993, Ser. No. 7,757
Claims priority, application Italy, Jan. 24, 1992, MI91 A
000132

Int. Cl.⁶ C07D 473/08

U.S. Cl. 544—272

1. A compound of formula (I)



characterized in that

R₁ and R₂ stand for the same or different linear or branched
(C₁-C₆)alkyl, linear or branched (C₃-C₄)alkenyl, linear
or branched (C₃-C₄)alkinyl groups;

R₃ is hydrogen; —COR₄ in which R₄ stands for a (C₁-C₆)
alkyl, which is non-substituted or substituted with at least
one group chosen from carboxyl and (C₁-C₆)alkylox-
ycarbonyl, phenyl, which is non-substituted or substituted
with at least one group chosen from (C₁-C₄)alkoxy and
hydroxy, (C₁-C₄) alkoxy, (C₁-C₄)alkylamine; —SO₂R₅
in which R₅ is linear or branched (C₁-C₆)alkyl, phenyl,
which is non-substituted or substituted with at least one
(C₁-C₃)alkyl group;
n is from 1 to 2; and its salts.

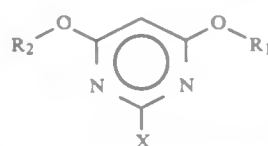
5,378,845
PROCESS FOR THE PRODUCTION OF
2-HALO-4,6-DIALKOXY PYRIMIDINES
André Escher, Glis; Felix Previdoli, Brig, and René Imwinkel-
ried, Brig-Glis, all of Switzerland, assignors to Lonza, Ltd.,
Basel, Switzerland

Filed Aug. 4, 1993, Ser. No. 101,761

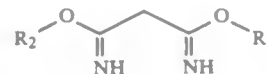
Claims priority, application Switzerland, Aug. 5, 1992,
2458/92Int. Cl.⁶ C07D 239/52

U.S. Cl. 544—319

15 Claims

1. A process for the production of a 2-halo-4,6-dialkoxy-
pyrimidine of formula:

wherein X is a halogen atom, and R₁ and R₂ are the same or
different and each is a C₁-C₄-alkyl group, comprising: in a
stage, converting a propanediimide or at least one salt
thereof of formula:

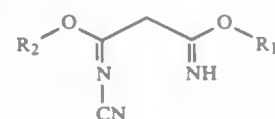


wherein R₁ and R₂ have the above-mentioned meaning, with a
cyanamide of formula:



III

in the presence of a base at a pH value above pH 7 into a
cyanimide of formula:



IV

wherein R₁ and R₂ have the above-mentioned meaning, and, in
a second stage, converting the cyanimide of formula IV with
a hydrogen halide into the 2-halo-4,6-dialkoxypyrimidine of
formula I.

5,378,846
1,2,3,4-TETRAHYDROPYRROLO-[1,2-A]-PYRAZINE
DERIVATIVES

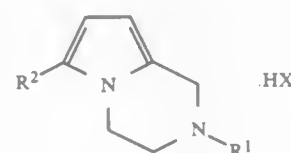
Sergey B. Seredenin; Tatiana A. Voronina; Arkady M. Likh-
sherstov; Vitaly P. Peresada; Gennady M. Molodavkin, all of
Moscow, U.S.S.R., and James A. Halikas, North Oaks,
Minn., assignors to Russian-American Institute For New
Drug Development, Bloomington, Minn.

Filed Jun. 11, 1993, Ser. No. 75,641

Int. Cl.⁶ C07D 487/04; A61K 31/495

U.S. Cl. 544—349

1. A compound of the following formula:



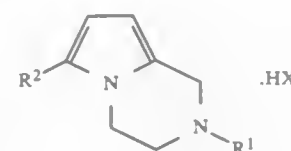
3 Claims

wherein

(a) R¹=H;(b) R²=H; and

(c) HX is succinic acid.

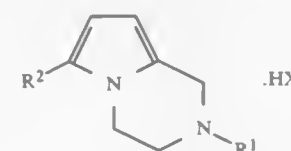
2. A compound of the following formula:



wherein

(a) R¹=—C(O)CH₃;(b) R²=—CH₂N(CH₃)₂; and(c) HX is an acid such that the compound is a therapeutically
acceptable acid addition salt.

3. A compound of the following formula:

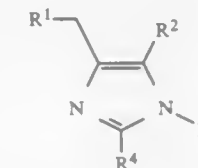


II

wherein

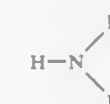
(a) R¹=—C(O)C₆H₅;(b) R²=—CH₂N(CH₃)₂; and

(c) HX is an acid such that the compound is a therapeutically
acceptable acid addition salt.



wherein R² is hydrogen and R¹, R³ and R⁴ are as defined;
followed by:

b) contacting the compound thus formed with a compound
represented by the formula:

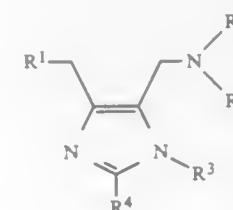


R⁶ and R⁷ are as defined:
in the presence of formaldehyde.

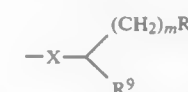
5,378,847
PROCESS FOR THE PREPARATION OF
1,2,4-SUBSTITUTED IMIDAZOLES AND RELATED
AMINOALKYLIMIDAZOLE DERIVATIVES
Gary McCort, Paris, and Jean-Claude Pascal, Cachan, both of
France, assignors to Syntex Pharmaceuticals, Ltd., Maiden-
head, England
Division of Ser. No. 46,002, Apr. 9, 1992, Pat. No. 5,296,609.
This application Dec. 21, 1993, Ser. No. 171,594
Int. Cl.⁶ C07D 233/56, 233/64

U.S. Cl. 544—370

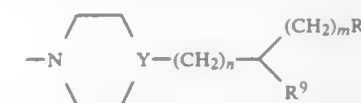
10 Claims

1. A process for the preparation of compounds represented
by the formula:

wherein:

R¹ is hydrogen or lower alkyl;R³ is hydrogen or alkyl;R⁴ is lower alkyl or optionally substituted phenyl;R⁶ is hydrogen or lower alkyl;R⁷ is

or R⁶ and R⁷ taken together with the nitrogen atom to which
they are attached represent a group of the formula:



wherein:

m is 0 or 1;

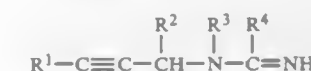
n is 0, 1, 2 or 3;

R⁸ is hydrogen, lower alkyl, or optionally substituted
phenyl;R⁹ is optionally substituted phenyl;X is —(CH₂)_n—, or 1-piperidin-4-yl; and

Y is —CH—, or —N—;

which process comprises:

a) cyclizing a compound represented by the formula:



to give a compound represented by the formula:

5,378,848
CONDENSED IMIDAZOPYRIDINE DERIVATIVES
Susumu Takada, Kawanishi; Takashi Sasatani, Nara; Nobuo
Chomei, Sakai; Makoto Adachi, Ikoma, and Akira Matsuo-
shita, Kobe, all of Japan, assignors to Shionogi & Co., Ltd.,
Osaka, Japan

Filed Feb. 2, 1993, Ser. No. 12,424

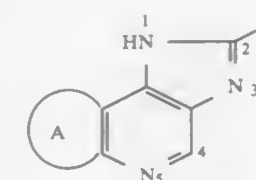
Claims priority, application Japan, Feb. 12, 1992, 4-59347

Int. Cl.⁶ C07D 471/04, 491/147, 495/14

U.S. Cl. 546—82

10 Claims

1. A compound of the formula (I):



(I)

wherein
R is (a) phenyl, (b) a 5 membered aromatic heterocyclic
group containing up to 3 hereto ring atoms selected from
the group consisting of oxygen, sulfur and nitrogen or (c)
a 6 membered aromatic heterocyclic group containing up
to 3 hetero ring atoms selected from the group consisting
of oxygen and sulfur, said groups (a), (b) and (c) being
unsubstituted or substituted by at least one substituent
selected from the group consisting of C₁-C₆ alkyl, hy-
droxy, C₁-C₆ alkoxy, carboxy, C₁-C₆ alkoxy-carbonyl,
phenyloxycarbonyl, cyano, amino, hydrazine, hydroxy-
amino, C₁-C₆ alkoxy-amino, halogen, nitro, formyl, alkyl-
carbonyl, (thio)carbonyl, (thio)carbonyloxy, (thio-
ureido, sulfonamide, sulfonic acid, halogeno C₁-C₆
alkyl, hydroxy-C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl,
acetyloxy C₁-C₆ alkyl, nitro C₁-C₆ alkyl, (acetyl)amino
C₁-C₆ alkyl, cyano-C₁-C₆ alkyl, and carboxy C₁-C₆ alkyl,
and

A represents (1) a 6 membered alicyclic group or (2) a 6
membered alicyclic group in which one or more of the
carbon atoms constituting said ring are substituted by a
member selected from the group consisting of oxygen and
sulfur, said groups (1) and (2) being unsubstituted or sub-
stituted by at least one alkyl group of 1 to 10 carbon
atoms, or a pharmaceutically acceptable salt thereof.

5,378,849

SUBSTITUTED TETRAHYDROISOQUINOLINE COMPOUNDS, AND PROCESS FOR PRODUCING THEM, AND COMPOSITION CONTAINING THEM
 Akihiro Tanaka, Tokyo; Takashi Fujikura, Saitama; Ryuji Tsuzuki, Tokyo; Masaki Yokota, Saitama, and Takeyuki Yatsu, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

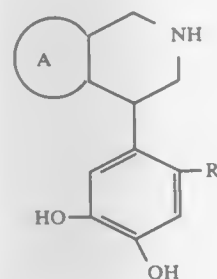
Division of Ser. No. 737,883, Jul. 25, 1991, Pat. No. 5,204,468, which is a continuation of Ser. No. 569,779, Aug. 21, 1990, which is a continuation of Ser. No. 440,086, Nov. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 320,975, Mar. 9, 1989, Pat. No. 4,966,904, which is a division of Ser. No. 173,376, Mar. 25, 1988, Pat. No. 4,876,261. This application Nov. 24, 1992, Ser. No. 981,137

Int. Cl.⁶ C07D 471/02, 217/00

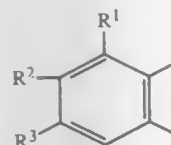
U.S. Cl. 546—114

5 Claims

1. An optical isomer of the compound of the formula:



wherein (A) represents the formula



wherein R is hydrogen or halogen;

R¹ is hydrogen, lower alkyl, hydroxyl, halogen, amino, or lower acylamino;

R² is hydrogen, lower alkyl, hydroxyl, amino, or lower alkylsulfonylamino;

R³ is hydrogen, lower alkyl, or hydroxyl;

with the proviso that when R¹ is hydrogen, hydroxyl, amino or halogen, R, R² and R³ are all not hydrogen or salts thereof.

ELECTRICAL

5,378,850

ELECTRIC STRINGED INSTRUMENT HAVING AN ARRANGEMENT FOR ADJUSTING THE GENERATION OF MAGNETIC FEEDBACK

Kenji Tumura, Osaka, Japan, assignor to Fernandes Co., Ltd., Tokyo, Japan

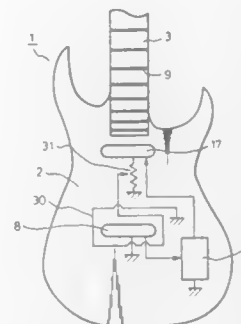
Filed Jan. 12, 1993, Ser. No. 3,418

Claims priority, application Japan, Jan. 14, 1992, 4-005054

Int. Cl.⁶ G10H 1/057, 3/18

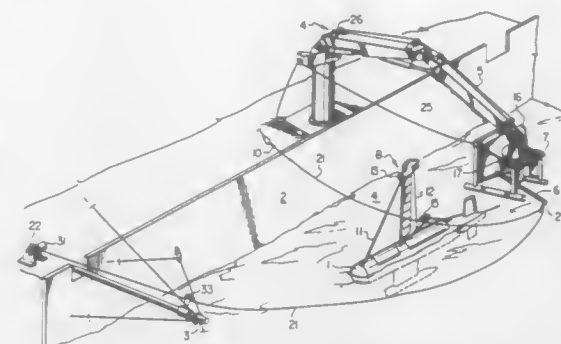
U.S. Cl. 84—727

19 Claims



2. An electric stringed instrument comprising:
 an electromagnetic pickup positioned on the instrument, said pickup having a permanent magnet and a string signal detecting coil wound around the permanent magnet and magnetically combined with the permanent magnet,
 an electromagnetic force producing means for producing an electromagnetic force, being positioned close to the electromagnetic pickup, and having a driving coil,
 an adjusting means for reducing magnetic feedback and for receiving a part of a current flowing in the driving coil of the electromagnetic force producing means and being positioned so that it is magnetically combined with the string signal detecting coil of the electromagnetic pickup, so that said adjusting means alters a tone color output from the electric stringed instrument by causing induced electromotive forces to be produced in said string signal detecting coil by magnetic flux produced by said adjusting means.

turing by the line capturing device of the remote vessel; and



a winch associated with the messenger/manipulating line for manipulating the remote vessel.

5,378,852

TREE AND SHRUB-CLEARING EQUIPMENT MOUNTED ON TRACTOR

Gedalyahu Manor, 15, Adam Hacohen Street, Haifa, Israel

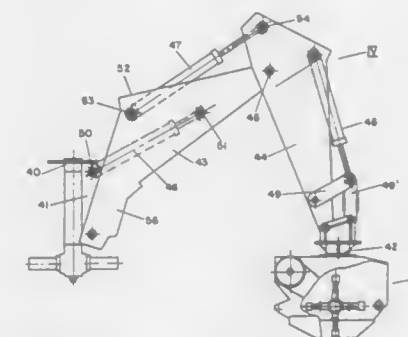
Filed Aug. 9, 1993, Ser. No. 103,975

Claims priority, application Israel, Nov. 8, 1992, 103671

Int. Cl.⁶ A01G 23/08; B27L 1/00; B02C 18/00

U.S. Cl. 144—3 D

22 Claims



1. Tree and brush clearing and trimming equipment adapted to be mounted on and operated by an engine driven tractor having an operator's position which is fixed relative to drive wheels of the tractor for cutting and shredding branches of plants during a traveling motion of said tractor, comprising:

a rotary cutter including blades which are pivotally mounted on a rotating shaft, and a housing partially enclosing said rotating shaft and blades, and said housing being open towards the branches to be cut, said rotary cutter including means mounted on said housing for rotating said rotating shaft, said rotary cutter being capable of cutting plants at the front or side of said tractor while said tractor is moving, said rotary cutter being capable of cutting said plants while being moved substantially horizontally in a direction substantially perpendicular to a longitudinal axis of said rotating shaft, and also while moved substantially vertically in a direction substantially perpendicular to the longitudinal axis of said rotating shaft;

an arm coupling said rotary cutter to one of a front portion and a side portion of said tractor, said arm including at least first and second arm sections which are pivotally interconnected at inner ends thereof so as to be angularly disposed in a vertical plane, wherein said first arm section is attached at an outer end thereof to said one of said front portion and side portion of said tractor by a vertical pivot means for permitting positioning of said arm at an angle relative to a direction of travel of said tractor, and by horizontal pivot means for permitting raising and lowering

5,378,851

SYSTEM FOR HANDLING A REMOTELY OPERATED VESSEL

John Brooke, Halifax; Arnold Furlong, Lower Sackville, and Geoff Lebans, Dartmouth, all of Canada, assignors to Her Majesty in right of Canada as represented by the Minister of Fisheries of Oceans, Ottawa, Canada

Filed Aug. 5, 1993, Ser. No. 102,193

Claims priority, application Canada, Aug. 14, 1992, 2076151

Int. Cl.⁶ B63B 23/00

U.S. Cl. 114—259

17 Claims

1. A system for handling a remote vessel from a mother vessel comprising:
 a messenger/manipulating line intercepting member extending upwardly from the remote vessel;
 a line capturing device associated with the line intercepting member;
 line traversing means for transferring the line to the line capturing device;
 a messenger/manipulating line associated with the mother vessel for engaging the line intercepting device and cap-

of said arm relative to said tractor and for positioning said rotary cutter at a selected height relative to the ground, and wherein said second arm section is coupled to said rotary cutter at an outer end of said second arm section by means of a joint permitting rotational and angular disposition of the longitudinal axis of said rotating shaft of said rotary cutter relative to said second arm section; and actuator means for changing the relative position of said first and second arm sections and for changing the rotational and angular position of said rotary cutter relative to said second arm section.

5,378,853

SHIELDED MULTIBRANCH HARNESS

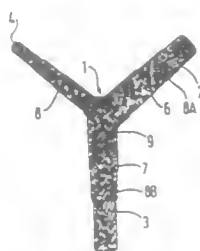
Pascal Clouet, Gregy-sur-Yverres; François Vaille, Corbeil Essonnes, and André Viaud, Crosne, all of France, assignors to Filotex, Draveil, France

Filed Jan. 27, 1993, Ser. No. 10,012

Claims priority, application France, Jan. 29, 1992, 92 00950
Int. Cl.⁶ H01B 7/34

U.S. Cl. 174—36

14 Claims



1. In a shielded multibranch harness including a network of conductors defining the multiple branches and at least one generally Y-shaped fork formed by first, second and third ones of said branches in a given pre-established layout, a plurality of shielding braids for shielding said branches, at least two of said branches having different cross-sectional dimensions, and first shielding continuity means over said fork, the improvement wherein said first shielding continuity means are defined exclusively by an enlarged tab in each of the shielding braids that are made in succession over the first, second and third branches of the fork, each enlarged tab extending over the fork and over at least a portion of another one of said three branches other than the branch carrying the shielding braid to which an enlarged tab belongs, and each enlarged tab being covered by the shielding braid of one of said other branches, with the exception of the enlarged tab of the last-made braid, which is not covered.

5,378,854

ELECTRICAL OUTLET BOX ASSEMBLY

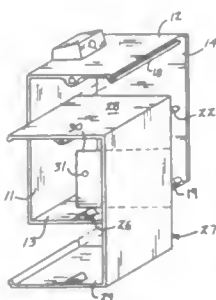
Daniel M. Hoover, 416 Salem Ave., Hagerstown, Md. 21740

Filed Apr. 12, 1993, Ser. No. 44,806

Int. Cl.⁶ H02G 3/08

U.S. Cl. 174—53

1 Claim



1. An electrical outlet box assembly, comprising, a box member having a fixed side wall, a top wall spaced from a bottom wall in a parallel coextensive relationship

integrally and orthogonally mounted to the fixed side wall, with the box member further including a rear wall, and

the top wall having a top wall lug, the top wall lug positioned in adjacency to the fixed side wall, and having a lug bore directed through the top wall lug oriented at an acute angle relative to the top wall, and

the top wall including a top wall free edge, the bottom wall including a bottom wall free edge, wherein the top wall free edge and the bottom wall free edge are arranged in a parallel coextensive relationship relative to one another, and a top wall free edge having a first semi-cylindrical trough, the bottom wall free edge having a second semi-cylindrical trough, and

a movable side wall, the movable side wall having a first rib spaced from a second rib, with the first and second rib arranged for reception within a respective first trough and second trough respectively, and

the rear wall includes a rear wall locking lug fixedly mounted to the rear wall in an orthogonal projecting relationship directed between the top wall and the bottom wall, and the movable side wall includes a side wall flange orthogonally and integrally mounted to the side wall, and the side wall flange includes a side wall flange aperture arranged for receiving the rear wall locking lug upon projection of the movable side wall into continuous communication with the rear wall, and

a U-shaped accessory box arranged for mounting to the top wall and the bottom wall, and the accessory box includes an accessory box top wall having an accessory box rib arranged for reception within the first trough, and including an accessory box bottom wall having a bottom wall rib arranged for reception within the second trough upon displacement of the movable side wall relative to the top wall and the bottom wall, and

the fixed side wall includes a side wall opening, and the rear wall includes a rear wall slot, and a positioning bracket arranged for mounting to the fixed side wall and the rear wall, wherein the positioning bracket includes a first plate having a first plate slot arranged for receiving the fastener therethrough for positioning into a wall stud, and a second plate integrally and orthogonally mounted to the first plate in an L-shaped configuration, wherein the second plate includes a second plate opening, and wherein a second fastener is arranged for reception through the rear wall slot and threadedly received within the second wall opening, and the first plate having a first plate positioning flange integrally and orthogonally mounted to the first plate spaced from the second plate, and positioning flange projecting beyond a first side of the first plate, and the second plate extends beyond a second side of the second plate, wherein the positioning plate is arranged for abutting the wall stud for positioning the fixed side wall thereto.

5,378,855

ELECTRICAL CONNECTOR

Jacques Delalle, Triel-sur-Seine, France, assignor to Raychem SA, France

PCT No. PCT/GB91/01016, § 371 Date Dec. 21, 1992, § 102(e)
Date Dec. 21, 1992, PCT Pub. No. WO92/00616, PCT Pub.
Date Jan. 9, 1992

PCT Filed Jun. 24, 1991, Ser. No. 971,927

Claims priority, application United Kingdom, Jun. 25, 1990,
9014119

Int. Cl.⁶ H01R 4/22, 43/00

U.S. Cl. 174—87

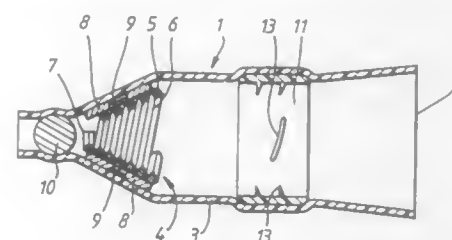
16 Claims

1. A device for forming an electrical connection at the end of a bundle of elongate electrical conductors, which comprises an electrically insulating sleeve, a metallic connecting element located within the sleeve, and a quantity of solder located within the sleeve and arranged to form a permanent electrical

connection between the conductors, the connecting element having a tapering internal surface which has a screw thread, so that a temporary electrical connection can be formed by screwing the bundle of conductors into the connecting element.

16. A method of forming an electrical harness from a plurality of insulated electrical wires, which includes:

- (a) gathering a number of insulated wires together to form a bundle at least at the end of the wires;
- (b) providing a device which comprises an electrically insulating sleeve, a metallic connecting element located within



the sleeve, and a quantity of solder located within the sleeve and arranged to form a permanent electrical connection between the conductors, the connecting element having a tapering internal surface which has a screw thread;

- (c) inserting the bundle into the device by means of a screwing action in order to form a temporary electrical connection;
- (d) applying electrical signals to the harness so formed in order to ascertain information about it; and
- (e) heating the sleeve to form a permanent solder connection between the wires.

5,378,856

TRANSMISSION CABLE HAVING A NONHALOGENATED JACKET FORMULATION

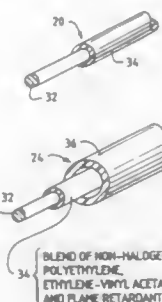
Richard C. Allen, Liberty, Ind., assignor to Belden Wire & Cable Company, Richmond, Ind.

Filed Dec. 11, 1992, Ser. No. 989,175

Int. Cl.⁶ H01B 7/34

U.S. Cl. 174—120 R

19 Claims



1. A transmission cable having a nonhalogenated jacket wherein said jacket comprises a mixture of a flame retardant, 100 parts of a high density nonhalogenated polyethylene, from about 0 to about 60 parts of low density nonhalogenated polyethylene and from about 20 to about 100 parts ethylene vinyl acetate.

14. A nonhalogenated jacket composition for a transmission cable jacket comprising 100 parts of a high density nonhalogenated polyethylene, from about 0 to about 60 parts of low density nonhalogenated polyethylene and from about 20 to about 100 parts ethylene vinyl acetate.

5,378,857

DIRECTLY BONDABLE TERMINATION FOR A FIXED DISCRETE WIRE

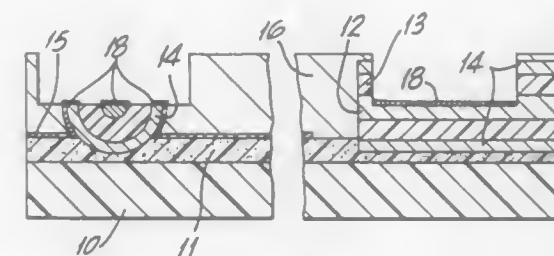
John T. Swales, Kings Park, N.Y., assignor to Advanced Interconnection Technology, Inc., Islip, N.Y.

Filed Jan. 15, 1993, Ser. No. 4,991

Int. Cl.⁶ H05K 1/02

U.S. Cl. 174—251

12 Claims



10. A circuit board comprising: a substrate, having a top surface and a bottom surface, for mounting components thereon; a plurality of conductive filaments that are adhesively bonded in a predetermined pattern to said top surface of said substrate so that said plurality of conductive filaments lie in an X-Y plane substantially parallel to said top surface, where said plurality of conductive filaments do not penetrate said substrate in a Z-direction between said top surface and said bottom surface; where each of said plurality of conductive filaments have a conductive portion for transmitting a signal, and a termination area; where said termination area of said conductive filaments have an exposed termination portion of said conductive portion; and where said termination portion is substantially parallel to said top surface and is capable of connecting to one of said components without a metallized hole intermediary.

5,378,858

TWO-LAYER OR MULTILAYER PRINTED CIRCUIT BOARD

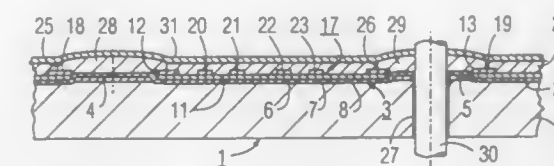
Helmut Bruckner, Eitorf; Siegfried Kopnick, Troisdorf, and Werner Uggowitzer, Ferlach, all of Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 27, 1992, Ser. No. 966,796

Claims priority, application Austria, Oct. 31, 1991, 2172/91
Int. Cl.⁶ H01K 1/02

U.S. Cl. 174—255

14 Claims



10. A multilayer printed circuit board, which comprises a support plate, a first conductor pattern connected to the support plate at one side thereof and comprising a connecting section, a second conductor pattern with connecting sections connected to the support plate at the side of the first conductor pattern via an electrically insulating adhesive layer, at least one opening being provided in the adhesive layer, which opening leads to a connecting section of the first conductor pattern and to a connecting section of the second conductor pattern through which opening the connecting section of the first conductor pattern and the second conductor pattern are electrically connected by an electrically conducting material distributed in a soft state

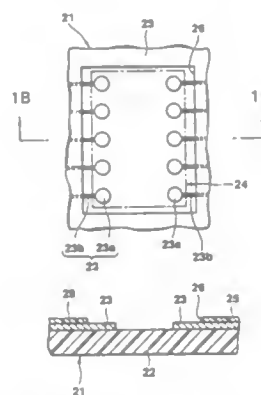
over the connecting sections to be electrically interconnected, wherein:

(a) the first conductor pattern is substantially completely pressed into the region of the support plate adjoining the first conductor pattern exclusively in its portion covered by the adhesive layer, and

(b) each connecting section of the first conductor pattern in its region surrounded by an opening is given a curved shape at least partly through the opening towards the connecting section of the second conductor pattern and lies substantially on the same plane as the region of the connecting section of the second conductor pattern adjoining the opening.

5,378,859
FILM WIRING BOARD
Tomoyuki Shirasaki, Hachioji, and Osamu Kuwabara, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 23,213
Claims priority, application Japan, Mar. 2, 1992, 4-080469
Int. Cl.⁶ H05K 1/02
U.S. Cl. 174—261 18 Claims



1. A film wiring board on which an electronic component is to be mounted via solder, comprising:

a film base having an upper surface;

a plurality of wiring patterns on said upper surface of said film base, each of said wiring patterns including a connection pad and a lead wire which is extended from the connection pad, the lead wire having a width of 10 μ m–30 μ m; and

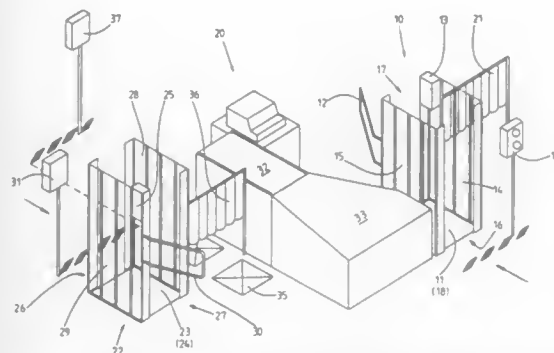
a protective film formed on said upper surface of said film base to hold said wiring patterns between said film base and said protective film, and said protective film having a single opening for a plurality of said connection pads, for exposing at least said plurality of said connection pads and the surroundings of said respective connection pads, the surroundings of said respective connection pads including portions of said lead wires which extend from said respective connection pads in the vicinity of each of the corresponding respective connection pads.

5,378,860
SYSTEM AND METHOD FOR THE PREVENTION OF THEFT IN SALESROOMS
Heinz Dingfelder, Irrlring 15 b, D-8550 Forchheim, and Heinz Boxleitner, Forstwaldstr. 14, D-8351 Neuschönau, both of Germany

Filed Mar. 30, 1993, Ser. No. 39,787
Claims priority, application European Pat. Off., Sep. 21, 1992, 92116091.7
Int. Cl.⁶ G01G 19/40, 19/62; A63F 9/02; G06K 15/00
U.S. Cl. 177—25.19 10 Claims

1. A method for the prevention of theft in salesrooms, including a weight check at the entrance and the exit of the

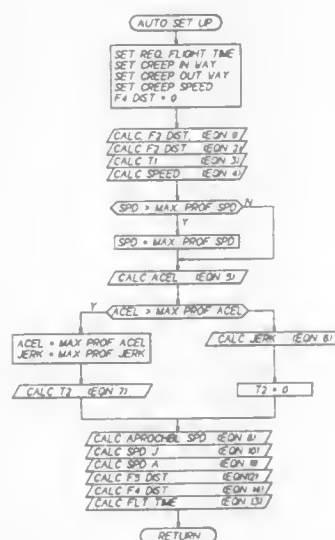
salesroom, in which the weight of a customer measured at the entrance in the region of an entry installation (10) is recorded and compared to the weight measured at the exit in the region of an exit installation (22), and in which, when the customer leaves the salesrooms, payment takes place in the region of a check-out installation (20), and a conveyance of goods in a downstream direction takes place in the region of a goods



transport device assigned to the check-out installation (20), said method comprising, in order to leave the salesrooms, the steps of: first placing the goods on the goods transport device in a depositing zone (34); next, measuring the weight of the customer in the region of the exit installation (22); and, thereafter, paying for the goods only in a paying zone (35) which is separated from the depositing zone (34) and located downstream with respect to the goods transport device.

5,378,861
AUTOMATIC SETTING OF THE PARAMETERS OF A PROFILE GENERATOR FOR A HIGH PERFORMANCE ELEVATOR DOOR SYSTEM
Michael Barten, and Mustapha Toutaoul, both of Berlin, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 16, 1993, Ser. No. 17,730
Int. Cl.⁶ B66B 13/14
U.S. Cl. 187—316 1 Claim



1. A method for opening or closing an elevator door, comprising:

a) providing a requested flight time for said elevator door opening or closing;

b) providing a requested creep in distance for said elevator door opening or closing;

c) providing a requested creep out distance for said elevator door opening or closing;

d) providing a requested creep speed for said elevator door opening or closing;

e) calculating a requested acceleration distance, for setting the distance that said opening or closing elevator door is in an acceleration or deceleration state, in response to said requested creep speed, requested creep in distance, requested creep out distance, requested flight time, a doorway width, and a constant maximum velocity distance;

f) providing a maximum elevator door speed, in response to said acceleration distance and a jerk-in/jerk-out time which is proportional to said requested flight time, for dictating a maximum speed said elevator may obtain when opening or closing;

g) calculating an acceleration, dictated for said elevator door to experience in said acceleration state, in response to said maximum speed and jerk-in/jerk-out time;

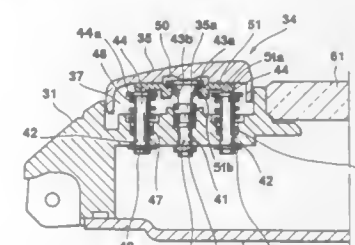
h) providing a jerk, which said elevator door will obtain during said opening or closing, said jerk being provided in response to said acceleration;

i) providing a constant acceleration time, for which said elevator door is opening or closing at said acceleration in response to said maximum speed and said acceleration;

j) providing a calculated flight time in response to said requested flight time, said maximum speed and said requested creep speed; and

k) moving said elevator door from a closed or opened state to the alternate state at said requested creep speed for said creep in distance, then moving said elevator door in response to said jerk and acceleration for approximately said acceleration distance and time, then decelerating said elevator door at a rate proportional to said acceleration and jerk for approximately said acceleration distance and time, then moving said elevator door at said requested creep speed for said creep out distance, the total time for said elevator door movement being equal to said calculated flight time.

5,378,862
UNIVERSAL PIVOT SWITCH WITH A HEMISPHERIC PIVOTAL SUPPORT MEMBER
Hideo Tasaka, Akigawa, and Masaaki Hirai, Fussa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Aug. 5, 1993, Ser. No. 102,582
Claims priority, application Japan, Aug. 18, 1992, 4-241305; Nov. 30, 1992, 4-345461
Int. Cl.⁶ H01H 9/00, 19/00
U.S. Cl. 200—6 A 8 Claims



1. (Amended) A switch, comprising:

a casing having an antero-posterior axis and at least four through-holes, the through-holes extending along the antero-posterior axis of said casing;

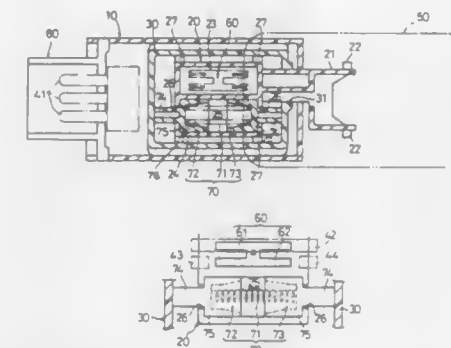
a fixed shaft mounted to said casing, the fixed shaft having a flat portion at one end thereof and a hemispherical portion continuously connected to the flat portion, the through-holes being provided in the vicinity of said fixed shaft, and extending in four radial directions from the fixed shaft; at least four movable shafts slidably received in the through

holes respectively, the movable shafts each having a flat portion at one end thereof;

an operating button, having a shape so as to cover the flat portion of the fixed shaft and all of the flat portions of the movable shafts, said operating button being provided with an engaging portion which is pivotally supported by the hemispherical portion of the fixed shaft so that the operating button is pivotally supported by the fixed shaft, said operating button having a plurality of bosses, one of the bosses being in contact with the flat portion of said fixed shaft, the other bosses adapted to be brought into contact with the flat portions of said movable shafts; and

a contact assembly mounted within said casing, for performing a switching operation in response to a sliding movement of one said movable shaft within the respective through hole.

5,378,863
ELECTRIC SWITCH
Youichi Sekita, Turugashima, Japan, assignor to Toyodensho Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 3, 1993, Ser. No. 12,747
Claims priority, application Japan, Feb. 6, 1992, 4-013086[U]
Int. Cl.⁶ H01H 15/00, 21/84
U.S. Cl. 200—16 R 9 Claims



6. An electric switch comprising:

a substantially hollow tubular casing;

a slider linearly movable from a neutral position in opposite forward and backward directions along a longitudinal axis of said casing;

a holder being immovable arranged in said casing and slidably accommodating therein said slider to guide the forward and backward movement thereof;

slider return means for returning said slider to the neutral position;

a plurality of fixed contacts including a common contact fixedly arranged on a base plate which is provided on said holder, said fixed contacts to be selectively engaged by a movable contact upon forward and backward movement of said slider;

said movable contact comprising two sliding pieces arranged on said slider, one of said sliding pieces of said movable contact sliding on said common contact of said plurality of fixed contacts and another sliding piece thereof contacting with one of the remaining plurality of fixed contacts so as to close the electric circuit; and

a manipulator pivotally mounted on an end of said casing to be swingable clockwise and counterclockwise and operatively linked with an end of said slider to push and pull the slider in accordance with the clockwise and counterclockwise motion thereof, said slider return means being provided on said slider with a compressed spring for biasing the slider to the neutral position after making said movable contact engage momentarily with one of said remaining selected fixed contacts by swinging said manipulator.

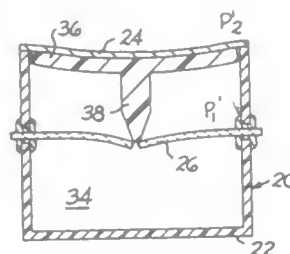
5,378,864

NON-RESETTABLE, PRESSURE-ACTUATED SWITCH
André W. Olivier, New Orleans, and Oneil J. Williams, Jr., Metairie, both of La., assignors to The Laitram Corporation, Harahan, La.

Filed Jun. 9, 1993, Ser. No. 74,056
Int. Cl.⁶ H01H 39/00

U.S. Cl. 200—61.08

31 Claims



1. A non-resettable, pressure-actuated electrical switch, comprising:
 - a base;
 - frangible conducting means including a continuous electrical path traversing the base;
 - a diaphragm attached along an edge to the base to form a chamber between the diaphragm and the base, the diaphragm having an exterior side and an interior side bordering the chamber, said chamber being closed to the atmosphere; and
 - a force transmission element physically coupled to the interior side of the diaphragm;
- the diaphragm responding to a preselected pressure differential across the diaphragm by deflecting and imparting a deflection force to the force transmission element to break the frangible conducting means and cause the electrical path to open irreversibly.

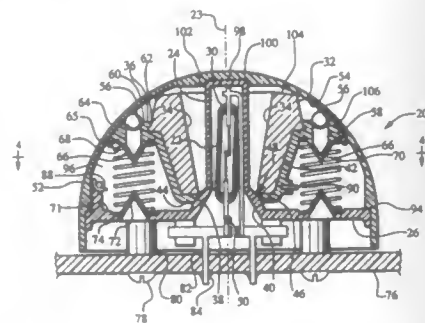
5,378,865

MULTI-DIRECTIONAL SHOCK SENSOR
Daniel R. Reneau, Madison, Wis., assignor to Hamlin, Inc., Lake Mills, Wis.

Filed Sep. 20, 1993, Ser. No. 124,267
Int. Cl.⁶ H01H 35/14

U.S. Cl. 200—61.45 R

29 Claims



1. A multi-directional shock sensor comprising:
 - a housing;
 - at least one reed switch mounted to the housing;
 - a carriage pivotably mounted to the housing by a joint having two degrees of freedom;
 - a mass affixed to the carriage for causing pivoting of the carriage about the joint in response to an acceleration;
 - a shell fixed to the housing which engages the carriage, the shell constraining the carriage throughout the carriage's motion;
 - a magnet engaged with the carriage, wherein pivoting of the carriage brings the magnet into proximity to the reed switch.

- switch to cause a change in state of the reed switch in response to an acceleration applied to the sensor; and
- e) a means for biasing the carriage in a vertical direction, the means for biasing being disposed below the carriage and extending between the carriage and the housing.

5,378,866

ELECTRIC DISCHARGE MACHINING SYSTEM HAVING A SECONDARY POWER SUPPLY INCLUDING A CONTROLLABLE VOLTAGE SOURCE AND IMPEDANCE

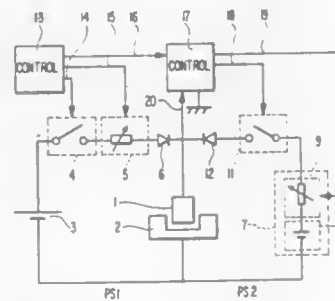
Atsushi Taneda, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 915,546, Jul. 20, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 188,851

Claims priority, application Japan, Jul. 26, 1991, 3-187500
Int. Cl.⁶ B23H 1/02

U.S. Cl. 219—69.18

16 Claims



1. A power supply for an electric discharge machining system, comprising:
 - a first power supply for supplying machining energy to a machining gap, a second power supply different from said first power supply for supplying machining energy to said machining gap and means for changing an output impedance of said second power supply according to machining conditions.
9. A power supply for an electric discharge machining system, comprising:
 - a first power supply for supplying machining energy, a second power supply having an output voltage higher than that of said first power supply and an output impedance higher than that of said first power supply, and means for changing the output voltage of said second power supply according to machining conditions.

5,378,867

REPAIRING METHOD WITH WELDING, WELDING METHOD AND WELDING APPARATUS FOR METAL MEMBER

Jun Niinuma, 4-27-3 Chiharadai, Ichihara-shi, Chiba 290, Japan
Filed Mar. 10, 1993, Ser. No. 29,240

Claims priority, application Japan, Jan. 7, 1992, 4-045890;
Mar. 19, 1992, 4-063387; Mar. 19, 1992, 4-063701

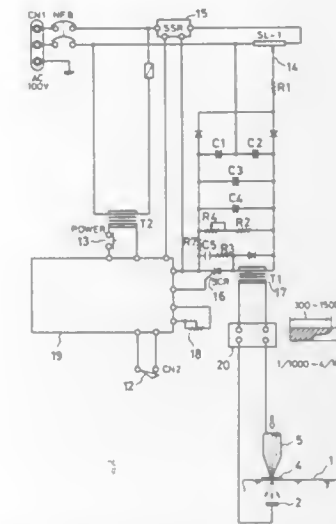
Int. Cl.⁶ B23P 1/18

U.S. Cl. 219—76.13

8 Claims

1. A method of repairing a metal member by welding, comprising the steps of:
 - connecting a secondary electrode to the metal member to be repaired;
 - providing a thin sheet type welding material of about 0.1–0.2 mm thickness on a part of the metal member to be repaired or piling up a fine welding powder on the part of the metal member to be repaired, the volume of the fine welding powder being sufficient to repair the part of the metal member to be repaired;
 - pressing said welding material of said welding powder to said metal member along a determined, minute line or at

specific determined points by a primary electrode for an electrical conduction;
applying a large pulse current of about 300–1500 amperes through the conduction portion during a short period of about 1/1000–4/1000 seconds in order to form nuggets along said determined minute line or at said determined points on said metal member;



executing a point or line type build-up welding of a sufficient thickness in a necessary area of the part to be repaired by repeating the welding operation of pressing said primary electrode and of supplying the current intermittently to form the continuous line of nuggets or to overlap the nuggets; and
wearing away and grinding the built-up welded part to obtain a desired surface or shape.

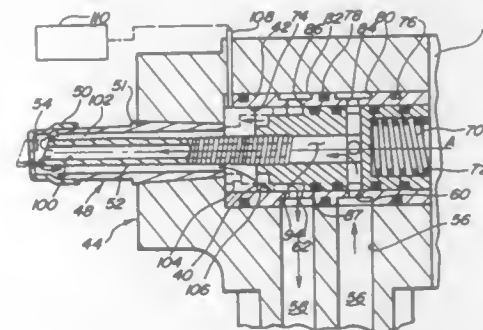
5,378,868

SHUT OFF CHECK VALVE FOR A WELDING GUN
James F. Burkhardt, 31755 Ridgeside Dr., Apartment #3524, Farmington Hills, Mich. 48334; Ronald R. Matheson, 53340 Beechwood, Shelby Township, Oceana County, Mich. 48316; Daniel R. Burnham, 40833 Ruggero, Clinton Township, Jackson County, Mich. 48038, and David A. Burnham, 4339 Lehigh, Troy, Mich. 48098

Continuation-in-part of Ser. No. 852,787, Mar. 17, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 30,813
Int. Cl.⁶ B23K 11/31

U.S. Cl. 219—89

18 Claims



1. A shut off check valve for a welding gun housing comprising:
 - (a) a piston adapted for positioning within a bore having an inlet and an outlet port in the welding gun housing, said piston including an elongated portion, said elongated portion including an end abutting a welding tip;
 - (b) biasing means moving said piston in said bore upon re-

moval of force on said piston elongated portion end, and said end of said piston projecting through said welding tip; and
(c) fluid directing means for directing incoming and outgoing fluid flow between the bore inlet and outlet in the welding gun housing.

5,378,869

METHOD FOR FORMING AN INTEGRATED CIRCUIT PACKAGE WITH VIA INTERCONNECTION

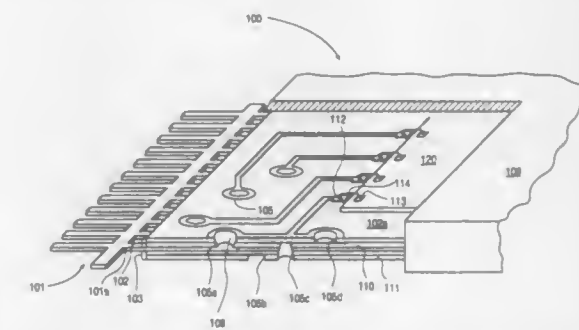
Robert C. Marrs, Scottsdale, Ariz., and Tadashi Hirakawa, Osaka, Japan, assignors to Amkor Electronics, Inc., Payoli, Pa. and Teijin Limited, Osaka, Japan

Division of Ser. No. 893,518, Jun. 2, 1992. This application Mar. 26, 1993, Ser. No. 37,209

Int. Cl.⁶ B23K 26/00

U.S. Cl. 219—121.71

28 Claims



1. A method of forming a via or vias in a substrate attached to electrically conductive leads, comprising the steps of:
 - attaching a surface of the substrate to a surface of the leads; and
 - forming at least one via through the substrate to at least one lead, the at least one via being formed with laser energy such that substrate material is removed by the laser, but none of the lead material is removed by the laser.

5,378,870

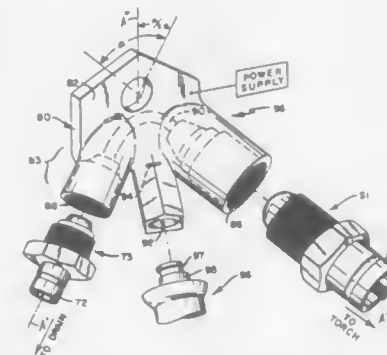
POWER BLOCK FOR LIQUID-COOLED POWER CABLES

Theodore A. Krupnicki, 565 Adams Rd., Webster, N.Y. 14580
Filed Nov. 3, 1992, Ser. No. 970,848

Int. Cl.⁶ B23K 9/32

U.S. Cl. 219—137.63

12 Claims



1. A power block for coupling a fluid-cooled power cable to (a) a source of electrical energy and (b) a fluid conduit, said power block comprising:
 - an electrically conductive housing comprising (a) a first portion adapted to receive an electrically-conductive post to which one terminal of a power supply is connectable, said first portion having a planar surface, and (b) a second portion defining first and second cylindrical ports for

respectively receiving and securing a fluid conduit and a fluid-cooled power cable, said cylindrical ports having respective longitudinal axes which are angularly disposed with respect to each other and with respect to said planar surface so that said cylindrical ports project forwardly, with respect to said planar surface, in directions which differ by an angle between 30 and 120 degrees, each of said longitudinal axes forming an acute angle with said planar surface.

5,378,871
FLUX CONTAINING WIRE FOR USE IN STAINLESS STEEL WELDING

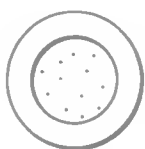
Yutaka Nishikawa; Tsuneshi Ogawa, both of Fujisawa; Tsuyoshi Kurokawa, Chigasaki, and Toshiharu Maruyama, Kamakura, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 948,471, Sep. 22, 1992, Pat. No. 5,219,425, which is a continuation of Ser. No. 563,329, Aug. 7, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 21,069 Claims priority, application Japan, Aug. 25, 1989, 1-218844 The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.⁶ B23K 35/22

U.S. Cl. 219—145.22

18 Claims



1. A flux containing wire for use in stainless steel welding, said wire having a flux filled in a stainless steel sheath, said flux comprising, on the basis of the total weight of said wire, slag-forming components comprising 4.7-8.5% of TiO₂, 0.5-3.5% of Al₂O₃ and 0.6-3.2% of SiO₂, ZrO₂ or a mixture of SiO₂ and ZrO₂ in proportions satisfying the following formula:



and 0.02-0.25% of metal fluoride (in terms of F conversion value), 3.0% or more Cr, and 0.1-1.0% of Ti, wherein said flux contains, on the basis of the total weight of said wire, said slag-forming components in the range of 8.5-13.5% and in proportions satisfying the following formula:



5,378,872
INFRARED APPARATUS FOR BAKING PASTRIES AND PIZZAS

Dragomir Jovanovic, 6, impasse Jean Moulin, 38000 Pont de Claix (Isere), France

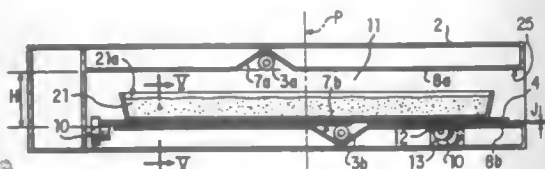
Filed Oct. 28, 1992, Ser. No. 967,069

Claims priority, application France, Oct. 30, 1991, 91 13763

Int. Cl.⁶ F27B 9/06, 9/16

U.S. Cl. 219—388

7 Claims



1. An apparatus for baking flat foods, comprising: an upper and a lower rectilinear source of infrared radiation,

said sources being separated by a space between 5 and 10 cm;

a support means for supporting the food to be baked, said support means being a rotatably supported removable plate disposed between said upper and lower sources, wherein said plate is made of an infrared-permeable material and is disposed less than 1 mm above said lower source, wherein said upper and lower infrared radiation sources are displaced on either side of a median vertical plane passing through the plate diameter with which their respective lengthwise axes are parallel, and wherein each of said infrared sources is designed to furnish infrared radiation that increases starting from its midpoint out to each of its ends extending beyond the plate;

a constant speed positive rotational drive means for rotating said plate thereby conferring a sequential character on the infrared source radiation energy; and

a roof and a floor, said upper and lower sources being disposed between said roof and said floor in reflecting gutters respectively provided in said roof and said floor.

5,378,873
ELECTROTHERMAL CONVERSION ELEMENTS, APPARATUS AND METHODS FOR USE IN COMPARING, CALIBRATING AND MEASURING ELECTRICAL SIGNALS

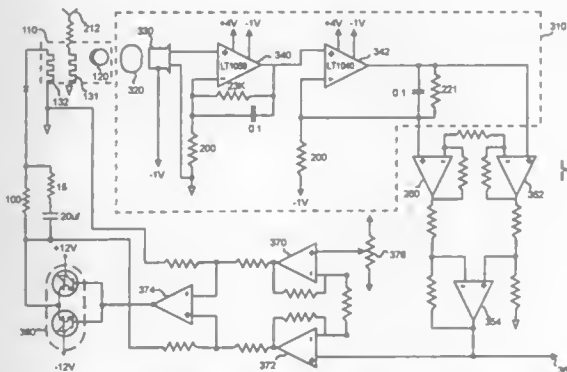
Fred L. Katzmann, 48 Bennett Ave., Cedar Grove, N.J. 07009-2004

Filed Jun. 5, 1992, Ser. No. 894,103

Int. Cl.⁶ H05B 1/02

U.S. Cl. 219—502

17 Claims



1. An electrothermal conversion element for use in a system including a radiation pyrometer, for use in conversion of a first electrical signal of unknown RMS amplitude to another electrical signal having an amplitude representative of the RMS amplitude of the first signal, said conversion element comprising a thin, low mass, high emissivity target and a first heater which is thermally connected to heat said target and can be electrically connected to receive said first signal.

5,378,874
DIAGNOSTIC METHOD AND APPARATUS FOR A DOMESTIC APPLIANCE

Ronald W. Holling, Lincoln Township, Berrien County; Patrick J. Glotzbach, St. Joseph, both of Mich., and Jerome D. Hener, South Bend, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 5, 1993, Ser. No. 43,952

Int. Cl.⁶ H05B 1/02

U.S. Cl. 219—506

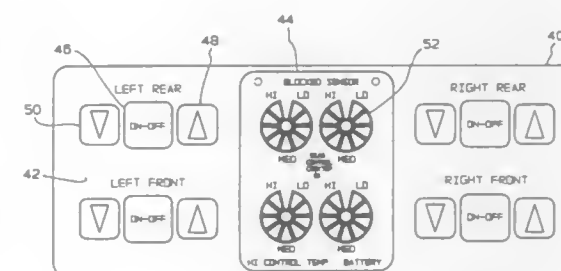
21 Claims

1. An electronic control for use with a cooking appliance, comprising:

a remote control unit adapted to be located remote from said cooking appliance, said remote control unit having:

means for generating output signals including the operative parameters of said cooking appliance, first wireless communication means for transmitting said output signals and for receiving reply signals, and error detection means for determining an error in said reply signals; and

an appliance control unit for controlling said cooking appliance, said appliance control unit having:



means for generating reply signals and for setting an error code within said reply signals, and (and) second wireless communication means for receiving said output signal, said second wireless communication means being operatively connected to said reply signal generating means for transmitting said reply signals in response to the receipt of said output signals.

5,378,875
MICROWAVE OVEN WITH POWER DETECTING DEVICE

Masahiro Hiramia; Masami Koshimura; Sakae Mori, and Jiro Yoshida, all of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

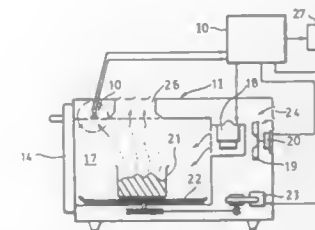
Filed Dec. 11, 1992, Ser. No. 989,173

Claims priority, application Japan, Dec. 25, 1991, 3-357057; Dec. 25, 1991, 3-357058; Mar. 26, 1992, 4-100348; Mar. 26, 1992, 4-100349; Mar. 26, 1992, 4-100350; May 29, 1992, 4-163582; Jul. 6, 1992, 4-202037; Jul. 6, 1992, 4-202038; Oct. 23, 1992, 4-309514

Int. Cl.⁶ H05B 6/68

U.S. Cl. 219—705

11 Claims



1. A microwave oven comprising: a wall defining a microwave chamber; a microwave energy source for supplying microwave energy to the chamber; a microwave sensor comprising: a wave absorber for generating heat through absorption of microwave energy; and a first thermistor for detecting the temperature of said absorber, said first thermistor having a temperature sensing part positioned adjacent to said wave absorber and positioned to avoid microwave energy from the microwave energy source; a temperature sensor comprising a second thermistor for detecting the ambient temperature immediate said wave absorber; and

computing means for computing microwave power as a function of time, according to the expression:

$$P = C \cdot d\Theta / dt + \delta \cdot \Theta$$

where P represents microwave power absorbed by the wave absorber, $\Theta = \Theta_1 - \Theta_2$, where Θ_1 represents temperature rise detected by the first thermistor and Θ_2 represents temperature rise detected by the second thermistor, C represents heat capacity of the microwave sensor, and δ represents a thermal radiation constant of the microwave sensor.

5,378,876
FAIL SAFE MICROWAVE OVEN
Yuichi Kitagawa, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan

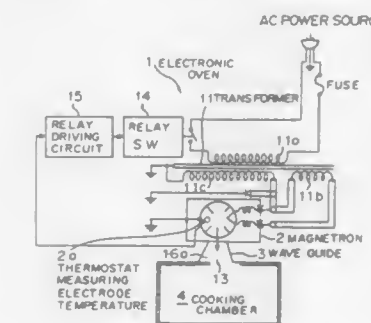
Filed Aug. 25, 1993, Ser. No. 111,841

Claims priority, application Japan, Oct. 28, 1992, 4-312934

Int. Cl.⁶ H05B 6/70

U.S. Cl. 219—710

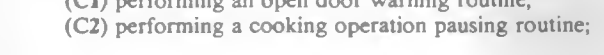
5 Claims



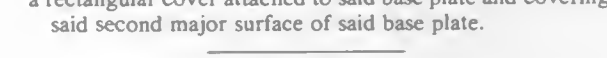
1. A microwave oven having a cooking chamber, comprising:

a magnetron for generating microwaves in an electrical circuit powered by an AC source, a thermostat associated with said magnetron and adapted to shut off said AC source when said thermostat detects a predetermined high temperature of said magnetron, a cooking chamber opening, associated with a wave guide having a center, disposed so as to radiate said microwaves upon a load adapted to be placed for heating in said cooking chamber, and to capture microwaves reflected back toward said magnetron when there is no load in said cooking chamber, and said thermostat causing said magnetron to cease generating microwaves upon reflection of said microwaves back and sensing an increase in the temperature of said magnetron, and wherein said heating being performed by microwave radiation of the load in the cooking chamber, and said microwaves generated by said magnetron being routed into said cooking chamber via said wave guide and said cooking chamber opening.

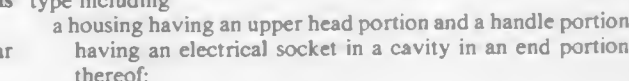
4 Claims



19 Claims



3 Claims



light source means in the head for generating an incident laser beam;

optic means in the head for optically forming and directing the incident laser beam along an optical path toward indicia located in the optical path, thereby reflecting off the indicia reflected laser light, at least a returning portion of which travels away from the indicia back toward the system;

scanning means in the head for scanning the indicia in a scan across the indicia, said returning portion of the reflected laser light having a variable intensity over the scan;

sensor means in the head for detecting the variable intensity of the returning portion of the reflected laser light over a field of view, and for generating an electrical analog signal indicative of the detected variable light intensity;

said scanning means being operative for scanning at least one of said incident laser beam and said field of view;

signal processing means for processing the analog electrical signal, and for supplying a processed signal indicative of the indicia to said electrical socket; and

an electrical cable removably connected to the electrical socket and operative for conducting said processed electrical signal to external equipment,

the improvement comprising:

a connector member attached to a terminal end of said electrical cable assembly, said connector member including a terminal electrical connector engagable with said electrical socket and a sleeve adjacent said terminal electrical connector, and

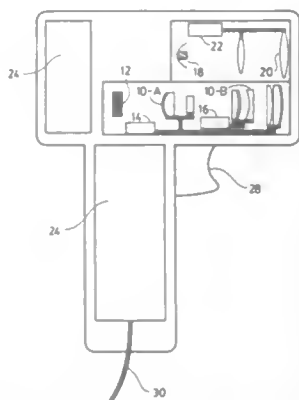
a retaining member positionable over said sleeve, said retaining member having an internal stepped bore forming a collar at an end of said retaining member for retaining said sleeve within said bore and a locking portion at an opposite end of said retaining member cooperating with an internal surface of said handle portion for securing said retaining member to said handle portion whereby said terminal electrical connector is maintained coupled with said electrical socket,

wherein said retaining member has (i) an external flange formed between said collar and said locking portion and (ii) a gasket mounted on said flange for seating said retaining member onto an outer surface of said handle portion surrounding said cylindrical cavity.

5,378,883
OMNIDIRECTIONAL WIDE RANGE HAND HELD BAR CODE READER
 Eric P. Batterman, Flemington, and Donald G. Chandler, Princeton, both of N.J., assignors to Omniplanar Inc., N.J.
 Filed Jul. 19, 1991, Ser. No. 736,920
 Int. Cl.⁶ G06K 7/10

U.S. Cl. 235-472

48 Claims



1. In a hand held bar code reader having a two dimensional image capture means with a field of view defining an imaged

area, said imaged area containing a bar code, a method of operation comprising:

providing a flash of illumination forming an illuminated area, wherein said illuminated area is substantially coincident with and substantially equal to said imaged area over a substantial portion of the operating range of said hand held bar code reader;

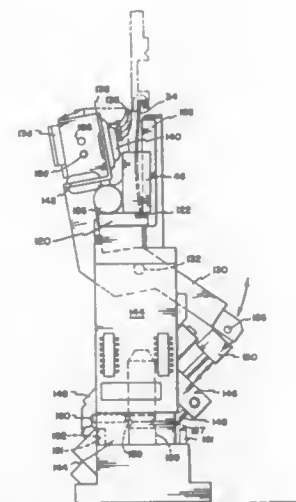
capturing a two dimensional image of said imaged area; and

processing said captured two dimensional image in an omnidirectional manner to read out information contained in said bar code.

5,378,884
PERSONALIZATION STATION FOR PROGRAMMING INTEGRATED CIRCUIT CARDS
 Robert W. Lundstrom, Plymouth, and Steven A. Miller, Mahomet, both of Minn., assignors to DataCard Corporation, Minnetonka, Minn.
 Division of Ser. No. 993,105, Dec. 18, 1992, Pat. No. 5,332,889.
 This application Jan. 12, 1994, Ser. No. 180,657
 Int. Cl.⁶ G06K 7/06

U.S. Cl. 235-441

6 Claims



1. A personalization station for an integrated circuit card programming device for programming integrated circuit cards, the personalization station comprising:

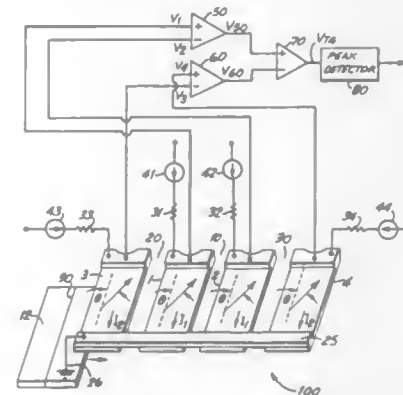
a personalization station base operably connectable to an integrated circuit card programming device base;

card receiving means for grasping the integrated circuit card to be programmed, the card receiving means having a contact for interfacing with an integrated circuit disposed on the card;

reversible mounting means for mounting the card receiving means on the base, the reversible mounting means being capable of mounting the card receiving means on the base in a first position wherein the contact is disposed on a first side of the base and a second position wherein the receiving means is rotated proximately 180° about the longitudinal axis so that the contact is disposed on a second and opposite side of the base.

5,378,885
UNSHIELDED MAGNETORESISTIVE HEAD WITH MULTIPLE PAIRS OF SENSING ELEMENTS
 Robert E. Jones, Jr., San Jose, Calif.; Mark H. Kryder, Bradford Woods, Pa.; Keith R. Mountfield, and Javier I. Guzman, both of Pittsburgh, Pa., assignors to Mars Incorporated, McLean, Va.
 Filed Oct. 29, 1991, Ser. No. 784,582
 Int. Cl.⁶ G06K 7/08; G11B 5/127
 U.S. Cl. 235-449

13 Claims



1. An unshielded horizontal magnetoresistive head for sensing magnetic data, comprising:

a first pair of unshielded magnetoresistive elements separated by a gap having a predetermined gap size that enables one magnetic transition to appear during a given instant of time;

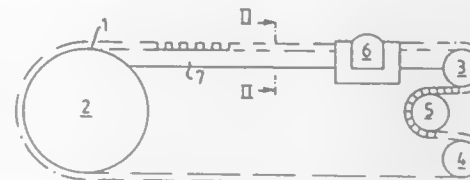
at least one outboard pair of unshielded horizontal magnetoresistive elements, wherein the first pair is situated between the outboard pair elements, for reducing the negative portions of the output signal amplitude and for increasing the central pulse peak amplitude of the output signal;

a conductive cross member connected at one end of each of the elements to operatively connect the elements together and to a common electrical point; and

differential voltage sensing circuitry connected to each pair of elements to sense variations in the voltage when magnetic data is sensed by the head and to generate signals in response to the variations.

5,378,886
MAGNETIC HEAD DRIVE DEVICE HAVING A COGGED BELT
 Allan Stiernspetz, Vikingstad, and Tor Kagebeck, Linköping, both of Sweden, assignors to ICL Systems Aktiebolag, Kista, Sweden
 PCT No. PCT/SE92/00564, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO93/04469, PCT Pub. Date Mar. 4, 1993
 PCT Filed Aug. 20, 1992, Ser. No. 39,395
 Claims priority, application Sweden, Aug. 23, 1991, 9102433
 Int. Cl.⁶ G06K 7/08
 U.S. Cl. 235-449

5 Claims

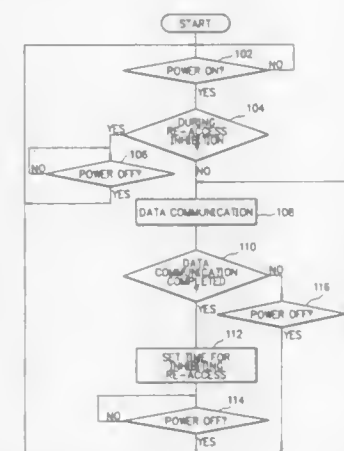


1. Drive device for a magnetic head for reading and/or recording magnetic data on a document or the like, said mag-

netic head being driven reciprocally in a slot in a document-supporting surface (7), substantially perpendicularly to the feeding direction (A) of the documents, characterized in that the magnetic head (6) is mounted on an endless cogged belt running in and covering the slot (8), said belt having a smooth side and a cogged side, the latter facing outwards, the cogs in the portion of the belt (1) in the slot (8) having top surfaces lying essentially in the same plane as the supporting surface (7), said magnetic head (6) having a contact surface in proximity to said plane.

5,378,887
NON-CONTACT TYPE IC CARD
 Yoshinori Kobayashi, Tokyo, Japan, assignor to Kyodo Printing Co., Ltd., Tokyo, Japan
 PCT No. PCT/JP92/00653, § 371 Date Jan. 14, 1993, § 102(e) Date Jan. 14, 1993, PCT Pub. No. WO92/21104, PCT Pub. Date Nov. 26, 1992
 PCT Filed May 21, 1992, Ser. No. 961,882
 Claims priority, application Japan, May 22, 1991, 3-146760; Jun. 14, 1991, 3-169169
 Int. Cl.⁶ G06K 19/06
 U.S. Cl. 235-492

21 Claims



1. A non-contact type IC card that communicates signals with an external device in a non-contact manner, comprising:

main circuit means for conducting various operations based on functions of said non-contact type IC card;

operation inhibition signal generating means for creating an operation inhibition signal to inhibit an operation of said main circuit means for a predetermined period of time; and

control means for controlling said main circuit means and said operation inhibition signal generating means, wherein said control means operates said operation inhibition signal generating means when said operation of said main circuit means is finished and inhibits said operation of said main circuit means for a predetermined period of time according to said operation inhibition signal from said operation inhibition signal generating means.

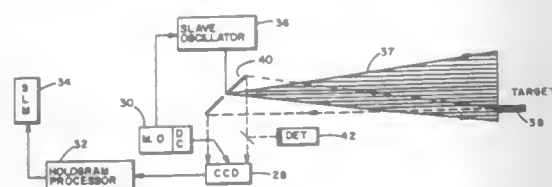
5,378,888
HOLOGRAPHIC SYSTEM FOR INTERACTIVE TARGET ACQUISITION AND TRACKING
 Eddy A. Stappaerts, Rancho Palos Verdes, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.
 Filed Aug. 16, 1993, Ser. No. 106,840
 Int. Cl.⁶ G01J 1/20
 U.S. Cl. 250-201.9

21 Claims

1. A laser target acquisition and tracking system with compensation for aberrations comprising:

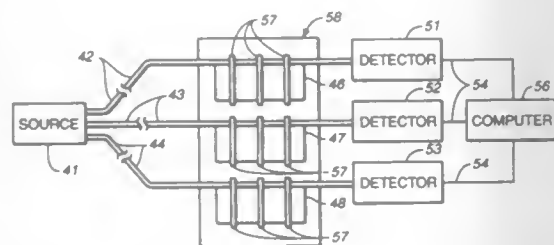
laser means for directing a first wide divergence beam of

radiation through media toward at least one target wherein said target reflects a portion of said radiation as a return beam, means for interfering said return beam with a reference beam on an electronic detector for generating an interference pattern in the form of electronic signals containing information about said target and said media, hologram processor means responsive to said electronic



signals from said electronic radiation detector for processing said signals to form an electronic hologram pattern; a spatial light modulator responsive to said electronic hologram pattern from said hologram processor means for recording said processed hologram, and means for directing a beam of radiation onto said hologram recorded on said spatial light modulator for providing a conjugate beam representative of said return beam, said conjugate beam being directed to said target.

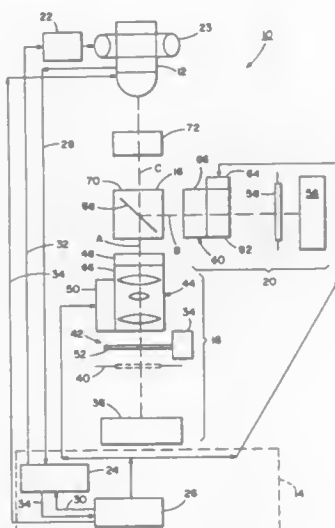
5,378,889
METHOD AND APPARATUS FOR DETECTING HYDROCARBON FUELS IN A VAPOR STATE WITH AN ABSORBER-EXPANDER MEMBER
William R. Lawrence, Dickinson, Tex., assignor to California Lightwave Laboratories, Inc., Downieville, Calif.
Filed Sep. 23, 1993, Ser. No. 125,259
Int. Cl.⁶ H01J 5/16
U.S. Cl. 250—227.16 50 Claims



1. A method for detecting the presence of a hydrocarbon analyte in at least one of a liquid and a vapor state comprising the steps of:

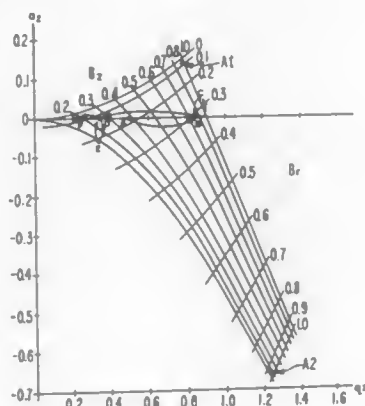
positioning an optical fiber in a location for detection of said hydrocarbon with an absorber-expander member mechanically coupled to said fiber to produce a change in light transmission in said fiber upon absorption of said hydrocarbon analyte by, and expansion of, said absorber-expander member, said absorber-expander being hydrophobic and being selected to have multiple reversible expansion and contraction cycles upon absorption and evaporation of said hydrocarbon analyte by said absorber-expander; and detecting a change in light transmission in said fiber.

5,378,890
ATMOSPHERIC SCINTILLATION SIMULATOR
James A. Wes, Diamond Bar; Harold J. Orlando, Costa Mesa, and Steven R. Zammit, Redondo Beach, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Apr. 23, 1993, Ser. No. 54,656
Int. Cl.⁶ G01M 11/00
U.S. Cl. 250—252.1 16 Claims



10. An apparatus for simulating atmospheric scintillation of an energy source, the apparatus comprising: a scintillation disk having a dense varied pattern of substantially small closely placed holes, the holes having different sizes and spatial distribution that is Gaussian in amplitude and poisson distributed in separation; and means for rotating the disk at a substantially high speed to produce desired temporal variations as energy from the energy source passes through the holes of the disk.

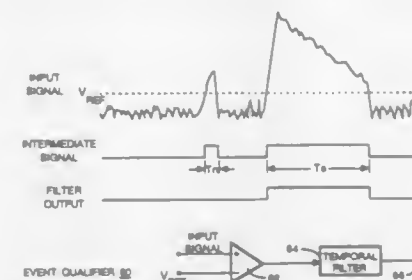
5,378,891
METHOD FOR SELECTIVE COLLISIONAL DISSOCIATION USING BORDER EFFECT EXCITATION WITH PRIOR COOLING TIME CONTROL
Raymond E. March; Frank A. Londry, both of Ontario, Canada, and Silvia Catinella, Padova, Italy, assignors to Varian Associates, Inc., Del.
Filed May 27, 1993, Ser. No. 68,484
Int. Cl.⁶ H01J 49/42
U.S. Cl. 250—282 5 Claims



1. The method of selectively fragmenting parent ions by collisional dissociation in a quadrupole ion trap comprising: (a) introducing a buffer gas to said quadrupole ion trap,

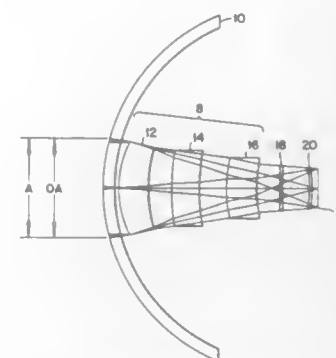
(b) admitting sample gas for analysis to said quadrupole ion trap, (c) applying at least an RF field of amplitude V and a DC potential U to said quadrupole ion trap whereby to, trap ions of selected mass-to-charge ratio in a selected stable operational mode of said quadrupole ion trap, (d) ionizing said sample gas, (e) continuing said step of applying for a selectably variable time interval, (f) adjusting either said amplitude V or said potential U to assume values whereby said stable mode of operation is caused to closely approach a condition of instability whereby energy from said RF field is non-resonantly transferred to said selected ions and thence transferred from said selected ions to said buffer gas.

tor and delaying the intermediate signal by a predefined interval of time, said digital delay line blocking any pulses



in the intermediate signal which are shorter in duration than the predefined interval of time.

5,378,892
ANGLE FILTER FOR USE IN AN INFRARED OPTICAL SYSTEM
Alvin J. Levy, Orlando, and Allan J. Lyon, Apopka, both of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.
Filed Sep. 28, 1990, Ser. No. 589,791
Int. Cl.⁶ G01J 1/00
U.S. Cl. 250—352 23 Claims

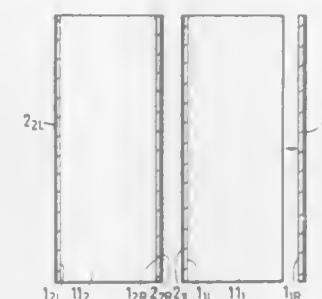


1. An infrared optical system, comprising: imaging optics for transmitting and focusing infrared light from object space onto an image plane; an infrared light detector positioned closely proximate to said image plane for detecting said transmitted and focused infrared light; a vessel for cryogenically cooling said detector; and a thin film angle filter for restricting a range of light received by said detector from said imaging optics to a predetermined angle.

5,378,893
RADIATION EVENT QUALIFIER FOR POSITRON EMISSION TOMOGRAPHY
Jonathan A. Murray, Sussex, and John J. Williams, Hartland, both of Wis., assignors to General Electric Company, Milwaukee, Wis.
Filed Oct. 26, 1993, Ser. No. 143,322
Int. Cl.⁶ G01T 1/16, 1/17, 1/172
U.S. Cl. 250—363.03 4 Claims

1. A circuit for qualifying an occurrence of a radiation emission event for further processing comprises: an input terminal for receiving a radiation detector signal indicating the intensity and duration of radiation emitted from a patient and striking a radiation detector; a comparator connected to said input terminal and producing an intermediate signal when the radiation detector signal exceeds a threshold level as occurs during the radiation emission event; and a digital delay line connected to the output of the compara-

5,378,894
X-RAY DETECTOR INCLUDING SCINTILLATOR CHANNEL SEPARATOR CAPABLE OF IMPROVING SENSITIVITY OF X-RAY DETECTOR
Yoshimi Akai, Tochigiken, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan
Filed Dec. 4, 1992, Ser. No. 985,298
Claims priority, application Japan, Dec. 11, 1991, 3-327475
Int. Cl.⁶ G01T 1/20
U.S. Cl. 250—368 30 Claims



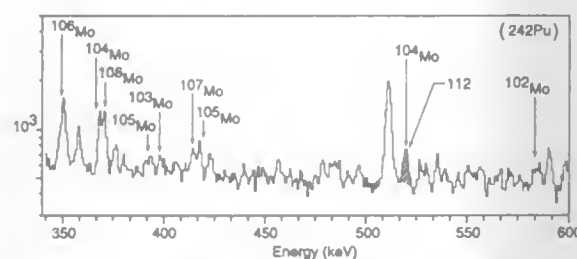
1. A scintillator channel separator for optically separating scintillation light from each other within each of plural scintillator element channels of an X-ray scintillator array, consisting essentially of a first thin film capable of blocking transmission of the scintillation light occurring in the adjoining scintillator element channels; and first and second polymer sheets each having first and second major surfaces, and capable of reflecting the scintillation light, said first thin film being sandwiched between said first major surfaces of said first and second polymer sheets, and said second major surfaces of said first and second polymer sheets being stuck to corresponding side surfaces of the respective adjoining scintillator elements, whereby said thin film and said first and second polymer sheets constitute the scintillator channel separator.

5,378,895
GAMMA NEUTRON ASSAY METHOD AND APPARATUS
Jerald D. Cole; Rahmat Aryaeinejad, and Reginald C. Greenwood, all of Idaho Falls, Id., assignors to EG&G Idaho, Inc., Idaho Falls, Id.
Filed Nov. 12, 1993, Ser. No. 149,874
Int. Cl.⁶ G01T 1/172, 3/00
U.S. Cl. 250—390.04 14 Claims

1. A gamma-ray and neutron assay system for determining a type of one or a mixture of fissionable nuclear materials, wherein pairs of fission products from this nuclear material consist of a heavy-mass isotope and a lighter mass isotope, said pairs exhibiting a conservation of protons between the two

fission product isotopes and said nuclear materials emitting gamma rays and neutrons in prompt coincidence, the system comprising:

- a detector frame;
- an array of two or more neutron detectors mounted on the frame;
- an array of two or more gamma-ray detectors mounted on the frame;
- multiple electrical connections between the gamma-ray detectors, the neutron detectors, and an electronics system for transmitting power to said neutron and gamma-ray detectors and pulse signals from said neutron and gamma-ray detectors to the electronics system;



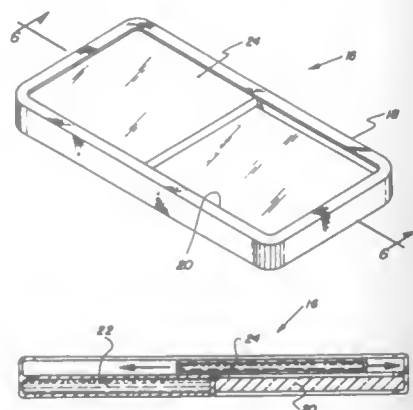
- electronic means for amplifying and expanding said neutron and gamma-ray pulses;
- electronic means for determining prompt coincidence by monitoring an overlap of any two or more of the expanded pulses, whether gamma-gamma pulses, gamma-neutron pulses, or neutron-neutron pulses, and only when said overlap equals or exceeds a predetermined time period are digital signals transmitted and processed by a computer having output to a record keeping system, wherein processing the record keeping system can determine the light mass isotope associated with the heavy-mass isotope, thereby identifying the fissionable nuclear material.

5,378,896

HARMFUL SOLAR RADIATION DETECTION DEVICE
Sascha R. Knjaschewitsch, PO Box 863, Bernon, British Columbia V1T 6M8, and David A. Petch, PO Box 193, 41 Riverview Place, Lasalle, Manitoba, R0G 1B0, both of Canada
Continuation-in-part of Ser. No. 85,256, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 845,703, Mar. 4, 1992, abandoned. This application Jan. 5, 1994, Ser. No. 177,561
Int. Cl.⁶ G01J 1/50

U.S. Cl. 250—474.1

10 Claims



1. A harmful solar radiation detection apparatus, comprising:
a first fluorescent composition comprised of a blend of a first fluorescent material and a second fluorescent material, said first fluorescent material capable of absorbing radiation having a wavelength less than 300 nm and capable of

fluorescing at a first fluorescent wavelength above 300 nm upon absorption of said radiation less than 300 nm, said second fluorescent material capable of absorbing radiation at said first fluorescent wavelength and capable of fluorescing at a second fluorescent wavelength which is a visible wavelength,
a second fluorescent composition comprised of said second fluorescent material,
a first retainer for retaining said first fluorescent composition,
a second retainer for retaining said second fluorescent composition, and
a housing assembly for supporting and housing said first retainer and said second retainer such that said first fluorescent composition and said second fluorescent composition are capable of being exposed to sunlight.

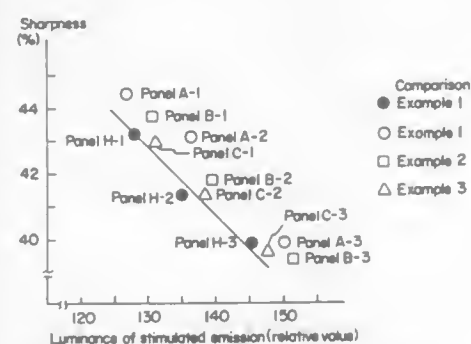
5,378,897

RADIATION IMAGE STORAGE PANEL

Hideki Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 9, 1993, Ser. No. 164,444
Claims priority, application Japan, Dec. 9, 1992, 4-352098
Int. Cl.⁶ G21K 4/00

U.S. Cl. 250—484.4

6 Claims



1. A radiation image storage panel which has a stimutable phosphor layer containing stimutable divalent europium activated barium fluorohalide phosphor and a reflecting-material layer containing a white pigment, wherein said white pigment is a metal oxide which emits secondary X-rays having energy in the range of 38 to 60 KeV.

5,378,898

ELECTRON BEAM SYSTEM

Peter R. Schonberg, Santa Cruz County; Russell G. Schonberg, Los Altos Hills, and David R. Fadness, both of Santa Clara County, all of Calif., assignors to Zapit Technology, Inc., Santa Clara, Calif.
Continuation-in-part of Ser. No. 992,614, Dec. 18, 1992, and a continuation-in-part of Ser. No. 941,788, Sep. 8, 1992. This application May 14, 1993, Ser. No. 62,964
Int. Cl.⁶ B01J 19/08

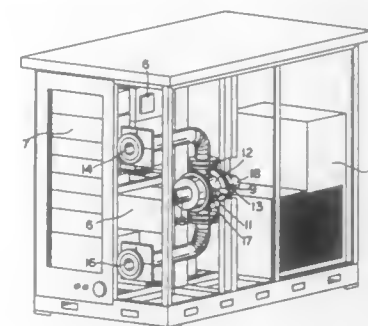
U.S. Cl. 250—492.3

28 Claims

1. A portably sized processing unit of modular elements for an electron beam treatment system for organic compounds, said modular elements comprising:

- a reaction chamber; and
 - a source for an electron, beam positionable to direct a beam of electrons through a window into said reaction chamber; said window having at least a corrosion resistant outer surface;
- coupling means associated with said reaction chamber for releasably coupling said source for said electron beam to said reaction chamber;
means to apply an electron beam of sufficient power to treat an influent flow of organic compounds flowing through

said reaction chamber to cause chemical transformations of said compounds in connection with industrial processes;
first attachment means for releasably attaching said reaction



chamber to, and detaching said reaction chamber from a source of an influent flow;
second attachment means for releasably attaching said reaction chamber to, and detaching said reaction chamber from, output means for an effluent flow.

5,378,899

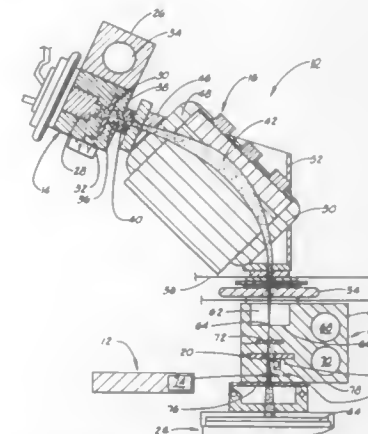
ION IMPLANTATION TARGET CHARGE CONTROL SYSTEM

Eugene L. Kimber, 950 W. Brookcrest Cir., South Jordan, Utah 84065

Filed Oct. 7, 1993, Ser. No. 133,746
Int. Cl.⁶ H01J 37/317

U.S. Cl. 250—492.21

5 Claims



1. A control system for minimizing destructive dielectric breakdown of devices on a target wafer during ion implantation wherein the ion implantation is achieved by the use of an ion implanter having an electron shower filament for generating electrons to offset the charging effect of the ion beam and a Faraday flag selectively movable between an open position wherein an ion beam and electrons emitted from the electron shower filament contact the target wafer and a closed position wherein the ion beam is blocked from contact with the target wafer, the control system comprising:
means for electrically isolating the target wafer;
means for monitoring the disk current; and
means for maintaining the electron shower filament at a level which permits rapid adjustment of disk current while providing control of disk current during the time period required to close the Faraday flag.

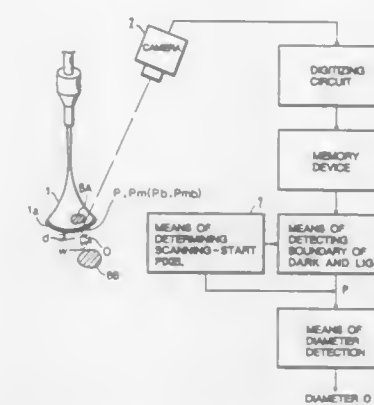
5,378,900

CRYSTAL DIAMETER MEASURING DEVICE

Yoshihiro Hirano, and Masahiko Baba, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Nov. 29, 1993, Ser. No. 158,849
Claims priority, application Japan, Nov. 27, 1992, 4-319053
Int. Cl.⁶ G01N 21/86

U.S. Cl. 117—201

4 Claims



1. A crystal diameter measuring device comprising:
a camera (2) for recording a growing portion of a single crystal (1) grown by a pull method and outputting image signals thereof;
a digitizing circuit (3) for converting said image signals into binary data;
a memory device (4) for storing said binary data;
a means (5) for detecting a point (P) at a boundary between dark and light by scanning said stored binary data in a direction parallel to a direction of single crystal pulling starting from a scanning-start pixel;
a means (6) for detecting a diameter (D) of said growing portion of said single crystal based upon said boundary (P); and
a means (7) for determining said scanning-start pixel in current operation, said scanning-start pixel being separated from said boundary (Pb) in preceding operation by a preset number of pixels (d) in the opposite direction of the scanning.

5,378,901

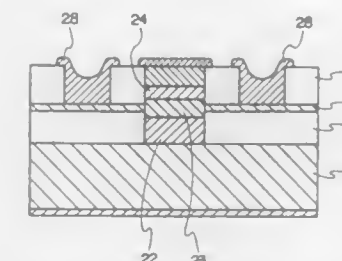
HETEROJUNCTION BIPOLAR TRANSISTOR AND METHOD FOR PRODUCING THE SAME

Keita Nii, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 21, 1992, Ser. No. 993,779
Claims priority, application Japan, Dec. 24, 1991, 3-341150
Int. Cl.⁶ H01L 33/00, 27/14, 31/00

U.S. Cl. 257—77

1 Claim



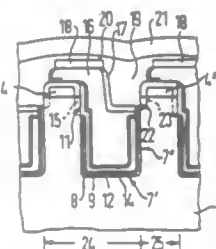
1. A heterojunction bipolar transistor comprising:
a 3c-silicon carbide crystal layer of a first conductive-type, a silicon crystal layer of a second conductive-type and another 3c-silicon carbide crystal layer which are sequentially formed to define a stair-like configuration on a sub-

5,378,907

COMPACT SEMICONDUCTOR STORAGE ARRANGEMENT AND METHOD FOR ITS PRODUCTION

Hanno Melzner, Grosshelfendorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/EP92/01653, § 371 Date Jan. 26, 1994, § 102(e)
Date Jan. 26, 1994, PCT Pub. No. WO93/03501, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 20, 1992, Ser. No. 182,187
Claims priority, application Germany, Jul. 30, 1991, 4125199
Int. Cl.⁶ H01L 29/68, 29/78
U.S. Cl. 257—301

16 Claims



1. A semiconductor storage arrangement comprising: word lines, bit lines and storage cells in a semiconductor substrate, each storage cell having a capacitor, which is arranged substantially in a trench, and an MOS selection transistor, a vertical trench contact being arranged between a first conductive region of the selection transistor and a first electrode of the capacitor, at a first point on a trench wall of the trench, a respective bit line running at least partially in the trench, and a vertical bit line contact arranged at a second point on the trench wall, between the respective bit line and a second conductive region of a further selection transistor of an adjacent storage cell.

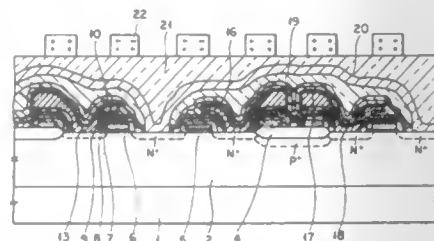
5,378,908

STACK CAPACITOR DRAM CELL HAVING INCREASED CAPACITOR AREA

Dae-Je Chin, Seoul, and Tae-Young Chung, Kyungki-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon City, Rep. of Korea

Filed Dec. 13, 1988, Ser. No. 283,968
Claims priority, application Rep. of Korea, Jun. 7, 1988, 88-6796
Int. Cl.⁶ H01L 29/78, 29/92
U.S. Cl. 257—309

8 Claims



1. A stacked capacitor DRAM formed on a substrate comprising a plurality of memory cells on said substrate, each of said cells comprising a charge transfer transistor and a stacked capacitor, said stacked capacitor comprising a laminated insulating layer having a plurality of laminae disposed on a portion of the substrate, said insulating layer terminating in a side edge, a storage polysilicon layer for said capacitor including a first portion disposed on said insulating layer and a second portion extending beyond the side edge thereof, said second portion extending to and overlying a gate of said charge transfer transistor, said first portion having a greater thickness than said

second portion, said polysilicon layer terminating in a side edge, and including a conductive layer separated from said polysilicon layer by a dielectric layer, said conductive and dielectric layers extending over an upper surface of said polysilicon layer, along said side edge thereof, and beneath a section of said first portion of said polysilicon layer, an edge of a first, uppermost lamina of said insulating layer being disposed beneath and inwardly of said side edge of said polysilicon layer thereby providing a space between a bottom surface portion of said polysilicon layer thereby providing a space between a bottom surface portion of said polysilicon layer and a surface portion of a second lamina of said insulating layer beneath said uppermost lamina, and said space being filled with the portions of said conductive and dielectric layers extending beneath said polysilicon layer whereby said conductive and dielectric layers do not surround said storage polysilicon layer.

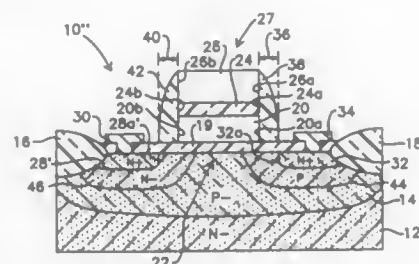
5,378,909

FLASH EEPROM CELL HAVING GAP BETWEEN FLOATING GATE AND DRAIN FOR HIGH HOT ELECTRON INJECTION EFFICIENCY FOR PROGRAMMING

Chen-chi P. Chang, Newport Beach, and Mei F. Li, Mission Viejo, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 18, 1993, Ser. No. 136,852
Int. Cl.⁶ H01L 29/78
U.S. Cl. 257—316

5 Claims



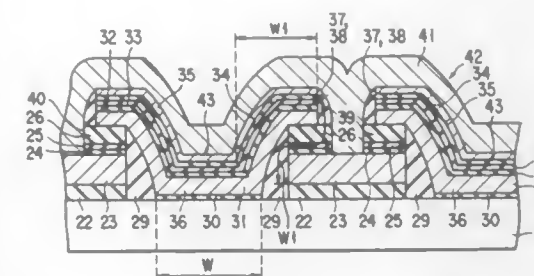
1. An electrically erasable programmable read-only memory (EEPROM) cell, comprising:
a semiconductor substrate;
a channel formed in the substrate;
a source and a drain formed in the substrate on opposite sides of the channel respectively;
a first insulating layer formed over the channel;
a floating gate formed over the first insulating layer and having a sidewall which faces the drain and is laterally spaced therefrom by a predetermined drain gap, wherein the floating gate further has a sidewall which faces the source and is laterally spaced therefrom by a source gap which is substantially symmetrical to said drain gap;
a second insulating layer formed over the floating gate;
a control gate formed over the second insulating layer;
an oxide drain sidewall spacer formed over the first insulating layer in said drain gap;
an oxide source sidewall spacer formed over the first insulating layer in said source gap;
a shield strata formed in the substrate which underlies and has opposite conductivity type to the drain, and extends into the channel in said drain gap; and
lightly doped strata formed in the substrate which underlies and has the same conductivity type as the source, and extends into the channel in said source gap.

5,378,910

MEMORY TRANSISTOR HAVING INCREASED INTERELECTRODE CAPACITANCE

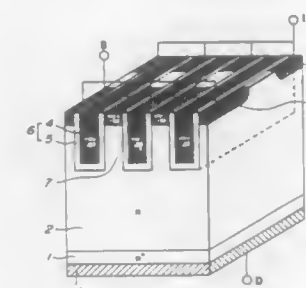
Kuniyoshi Yoshikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 6, 1993, Ser. No. 86,035
Claims priority, application Japan, Jul. 8, 1992, 4-180922
Int. Cl.⁶ H01L 29/68, 29/78
U.S. Cl. 257—319

8 Claims



1. A semiconductor memory device comprising:
a semiconductor substrate;
an element separating film formed on the semiconductor substrate and having separating film side surfaces;
a conductive film formed on the element separating film and having conductive film side surfaces;
a contact insulating film structure formed on the conductive film and having insulating film side surfaces;
first side wall members formed on the separating, conductive and insulating film side surfaces of the respective element separating film, conductive film, and contact insulating film structure;
a first gate insulating film structure formed on the semiconductor substrate, adjacent to the first side wall members;
a first gate electrode formed on the contact insulating film structure, on the first side wall members, and on the first gate insulating film structure and having electrode side surfaces;
a second gate insulating film structure formed on the first gate electrode and having second gate insulating film side surfaces;
second side wall members formed on the second gate insulating film side surfaces of the second gate insulating film structure and on the electrode side surfaces of the first gate electrode;
contact holes formed in the contact insulating film structure in a self alignment manner by virtue of the second side wall members, the contact holes having inner peripheral surfaces; and
a second gate electrode formed on the inner peripheral surfaces of the contact holes, on the second side wall members, and on the second gate insulating film structure, the second gate electrode being connected to the conductive film.

potential is fixed to the potential of said source region, and which includes an insulating film covering a whole inner surface of the trench and a conductive material having a work function so as to form a depletion region in said drain region near said insulating film;
e) a channel region which is a part of said drain region, which is adjoined below said source region, and which is so constructed as to be provided adjacent to said trench; and
f) at least one injector region having an opposite conductivity type to said drain region, formed on said drain region and which contacts with said insulating film of said potential-fixed insulated electrode, but does not contact with said source region, and wherein, during an off-state of said semiconductor device which is maintained by setting a potential of said injector region which is the same as that of said source



region, a potential barrier against the majority carriers constituted by said depletion region is formed so that said source region is disconnected with a neutral region of said drain region electrically, and during an on-state of said semiconductor device, which is realized by applying a predetermined potential to said injector region, the minority carriers are introduced into an interface between said insulating film and said drain region with which said injector region contacts, and said minority carriers form an inversion layer which shields an electric field from said potential-fixed insulated electrode to said channel region to reduce a height of said potential barrier, thus said source region connects with said drain region electrically, and wherein, the conductivity of said drain region is increased by the minority carrier injection from said injector region to said drain region.

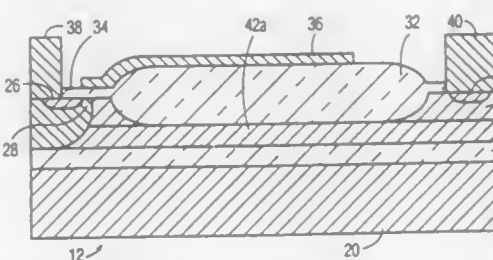
5,378,912

LATERAL SEMICONDUCTOR-ON-INSULATOR (SOI) SEMICONDUCTOR DEVICE HAVING A LATERAL DRIFT REGION

Howard B. Pein, Briarcliff Manor, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Nov. 10, 1993, Ser. No. 151,075
Int. Cl.⁶ H01L 29/10, 27/01
U.S. Cl. 257—335

10 Claims



1. A lateral Semiconductor-on-Insulator (SOI) device comprising a substrate, a buried insulating layer on said substrate,

5,378,911

STRUCTURE OF SEMICONDUCTOR DEVICE

Yoshinori Murakami, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jan. 27, 1994, Ser. No. 186,847
Claims priority, application Japan, Feb. 23, 1993, 5-033419
Int. Cl.⁶ H01L 29/10, 29/78
U.S. Cl. 257—334

22 Claims

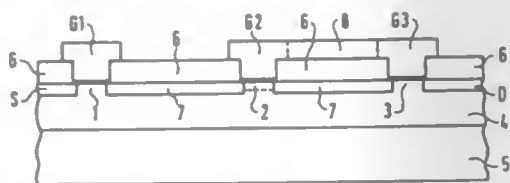
1. A structure of a semiconductor device, comprising:
a) a semiconductor substrate having one conductivity type, which constitutes a drain region;
b) at least one trench dug from a surface of said substrate;
c) at least one source region having the same conductivity type as said drain region, which is formed on a main surface of said substrate, and which is so constructed as to be provided adjacent to said trench;
d) at least one potential-fixed insulated electrode whose

and a lateral semiconductor device on said insulating layer, said semiconductor device comprising a source region of a first conductivity type, a channel region of a second conductivity type opposite to that of the first, an insulated gate electrode over said channel region, a lateral drift region of said first conductivity type on said buried insulating layer and having a substantially linearly graded lateral doping profile, and a drain region of said first conductivity type, laterally spaced apart from said channel region and connected thereto by said drift region, characterized in that said lateral drift region comprises a Semiconductor layer of a wide bandgap semiconductor material, said material having a wider bandgap than that of silicon.

5,378,913
MOS TRANSISTOR HAVING THREE GATE ELECTRODES

Harald Hoeltge, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 10, 1993, Ser. No. 119,704
Claims priority, application European Pat. Off., Sep. 10, 1992, 92115516.4

Int. Cl.⁶ H01L 29/76, 29/94
U.S. Cl. 257—365 4 Claims



1. A MOS transistor, comprising:
 - a base of including a layer of semiconductor material of a predetermined doping concentration;
 - a source region on said base;
 - a drain region on said base;
 - a first gate electrode on said base between said source region and said drain region;
 - a first channel zone in said base adjacent said first gate electrode;
 - a second gate electrode on said base;
 - a second channel zone in said base adjacent said second gate electrode, said second channel zone having a doping concentration higher than said predetermined doping concentration of said layer of said base;
 - a third gate electrode on said base between said second gate electrode and said drain region, said third gate electrode being electrically connected to said second gate electrode; and
 - a third channel zone in said base adjacent said third gate electrode, said third channel zone being more lightly doped than said second channel zone.

5,378,914
SEMICONDUCTOR DEVICE WITH A PARTICULAR SOURCE/DRAIN AND GATE STRUCTURE

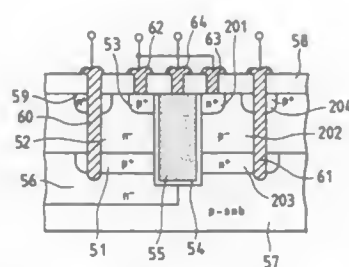
Hayao Ohzu, Fuchu, and Tetsunobu Kochi, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 706,188, May 28, 1991, abandoned.

This application Dec. 24, 1992, Ser. No. 997,135
Claims priority, application Japan, May 31, 1990, 2-139618; Aug. 8, 1990, 2-208145

Int. Cl.⁶ H01L 27/085, 27/088, 27/092, 29/60
U.S. Cl. 257—369 12 Claims

1. A semiconductor device having a semiconductor body provided with a vertical field-effect transistor, which body comprises:
 - a first semiconductor region and a second semiconductor

region of a first conductivity type to provide source and drain regions;
a third semiconductor region of a second conductivity type different from said first conductivity type having an intermediate portion to provide a channel portion and a surface portion;
said first semiconductor region disposed on said intermediate portion;
said third semiconductor region disposed on said second semiconductor region;

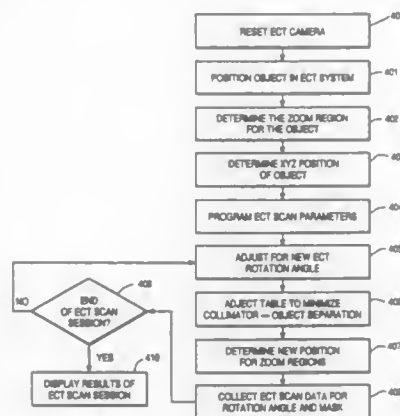


a gate electrode separated from said intermediate portion by an insulating material, wherein said source and drain regions and said channel portion are arranged only vertically along a side surface of said gate electrode; and
a buried electrode electrically connected with said second semiconductor region and said third semiconductor region via a through hole penetrating said third semiconductor region, wherein said second region and said third region are thereby short circuited; and wherein said buried electrode is formed in said body.

5,378,915
APPARATUS AND METHOD FOR AUTOMATIC TRACKING OF A ZOOMED SCAN AREA IN A MEDICAL CAMERA SYSTEM

Horace H. Hines, San Jose; Brian J. Walsh, Danville; Ronald Koops, San Leandro, and Steven M. Jones, Pleasanton, all of Calif., assignors to ADAC Laboratories, Milpitas, Calif.
Division of Ser. No. 981,367, Nov. 25, 1992, Pat. No. 5,304,806.
This application Mar. 28, 1994, Ser. No. 219,645

Int. Cl.⁶ G01T 1/17, 1/166
U.S. Cl. 250—369 29 Claims

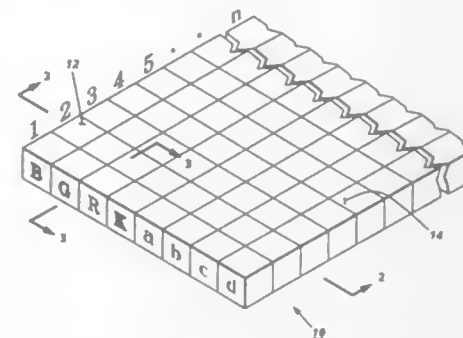


1. An apparatus for increasing image resolution of an object in a nuclear imaging camera system comprising:
 - an imaging surface for collecting image information, said imaging surface rotated through a plurality of angles about said object;
 - a gantry coupled to said imaging surface for rotating said imaging surface about said object during a scanning operation;
 - first logic determining a zoom region associated with a

portion of said imaging surface, said zoom region having an associated zoomed field of view aligning with said object; and
wherein said first logic also automatically determines an updated position of said zoom region with respect to said imaging surface so that said associated zoomed field of view of said zoom region remains aligned with said object in response to said imaging surface rotating about said object.

5,378,916
COLOR IMAGING CHARGE-COUPLED ARRAY WITH MULTIPLE PHOTSENSITIVE REGIONS
David A. Mantell, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1993, Ser. No. 18,587
Int. Cl.⁶ H01L 27/14
U.S. Cl. 257—440 6 Claims



1. A photosensitive apparatus having a single crystal structure and defining a light-receiving surface, comprising:
 - a first photosensitive region of the light-receiving surface, including a first material generating electron-hole pairs in an area thereof in response to being exposed to light within a predetermined first range of wavelength;
 - a second photosensitive region of the light-receiving surface, including a second material different from said first material, generating electron-hole pairs in an area thereof in response to being exposed to light within a predetermined second range of wavelength different from the first range of wavelength; and
 - a non-photosensitive region, retentive of charge packets in discrete locations thereof, wherein the non-photosensitive region defines a plurality of discrete sub-regions, each sub-region being selectively retentive of a discrete charge packet.

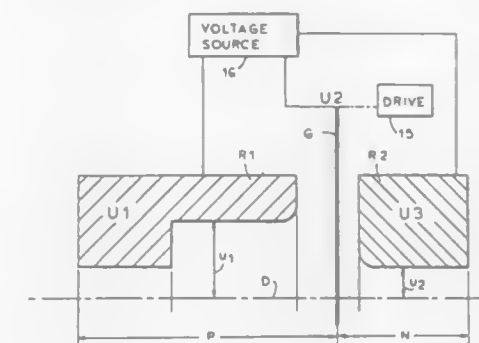
5,378,917
PARTICLE-BEAM IMAGING SYSTEM
Alfred Chalupka, Wlen; Gerhard Stengl, Wernberg, and Herbert Vonach, Klosterneuburg, all of Austria, assignors to IMS Ionen Mikrofabrations Systeme Gesellschaft m.b.H., Vienna, Austria

Filed Mar. 30, 1993, Ser. No. 40,536
Claims priority, application Austria, Mar. 30, 1992, 638/92
Int. Cl.⁶ H01J 37/30

U.S. Cl. 250—492.21 15 Claims

1. A particle imaging lithographic system, comprising:
 - a particle source generating a particle beam trained on an image plane and traveling along an optical axis of the imaging system;
 - a mask disposed in a path of said beam upstream of said imaging plane and provided with at least one opening forming a structure to be imaged on said imaging plane;
 - means for supporting a wafer upon which said structure is to be imaged by said beam at said imaging plane;
 - two collecting lenses for said ion beam disposed along said beam between said mask and said wafer,
 - at least one of said lenses being a three-electrode lens

including two tube electrodes and a third electrode in the form of a grid between said tube electrodes, said third electrode having a multiplicity of openings and being disposed normal to said optical axis, said grid subdividing said three-electrode lens into a first refrac-

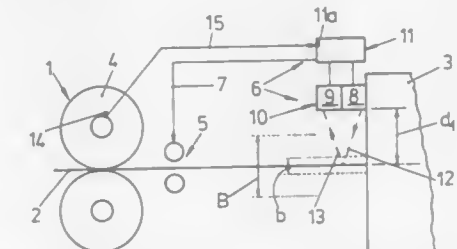


tive region including one of said tube electrodes and a second refractive region including the other of said tube electrodes, said regions having different refractivities; and
means for applying different potentials to said electrodes of said three-electrode lens.

5,378,918
METHOD AND A DEVICE FOR MONITORING A WEB
Josef Öttl, Diedorf, Germany, assignor to Grafotec Kotterer GmbH, Diedorf, Germany

Filed Feb. 6, 1992, Ser. No. 831,931
Claims priority, application Germany, Mar. 5, 1991, 4106901
Int. Cl.⁶ G01N 21/86

U.S. Cl. 250—571 6 Claims



1. A method of monitoring a web in a machine processing such a web comprising the steps of:
 - transmitting a monitoring beam toward the web;
 - receiving a part of the beam returned from the web;
 - measuring the interval between the transmitting of the beam and the receiving of the part of the beam;
 - producing a control pulse when the measured interval exceeds a predetermined tolerated range, the tolerated range being a function of web speed, the tolerated range changing from a larger tolerated range to a smaller tolerated range with an increase in web speed, said step of producing further comprising the steps of:
 - measuring a distance between the web and a receiving sensor upon a transition from the larger tolerated range to the smaller tolerated range;
 - storing the measured distance; and
 - utilizing the measured distance as a mean value of the smaller tolerated range.

5,378,919
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
WITH PLURAL GATES AND PLURAL PASSIVE
DEVICES

Akihiko Ochiai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

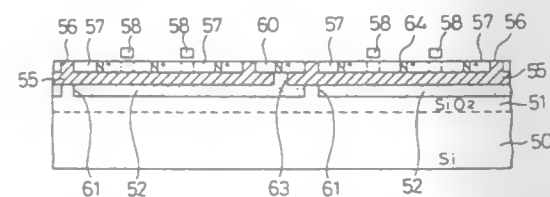
Filed Jan. 21, 1992, Ser. No. 822,928

Claims priority, application Japan, Jan. 21, 1991, 3-019138

Int. Cl.⁶ H01L 29/78; G11C 11/24

U.S. Cl. 257—204

5 Claims



1. A semiconductor integrated circuit device comprising: a supporting substrate; a second device-forming region containing plural passive devices made up of a semiconductor layer or a conductive layer formed on said supporting substrate; a first device-forming region which is formed by grinding a substrate and in which a plurality of logical gates are arrayed; each of said passive devices being connected to an individual one of said logical gates; and an insulating layer formed between said first device-forming region and said second device-forming region and provided with a grinding stop for stopping substrate grinding; said first device-forming region and said second device-forming region being electrically connected to each other at certain regions; wherein said plurality of logical gates formed in said first device-forming region have no region which is not directly opposite said insulating layer from a portion of said passive devices formed in said second device-forming region.

5,378,920
HIGH BREAKDOWN VOLTAGE SEMICONDUCTOR
DEVICE

Akio Nakagawa, Hiratsuka, and Norio Yasuhara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

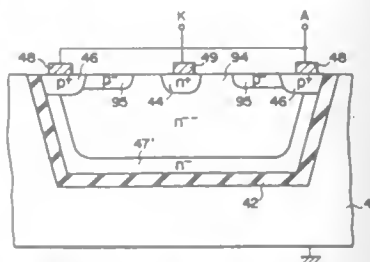
Continuation of Ser. No. 642,565, Jan. 18, 1991, Pat. No. 5,241,210, which is a continuation-in-part of Ser. No. 236,746, Aug. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 161,102, Feb. 26, 1988, abandoned. This application Jul. 2, 1993, Ser. No. 85,055

Claims priority, application Japan, Feb. 26, 1987, 62-43564; Jul. 29, 1987, 62-189420; Jul. 4, 1988, 63-166403

Int. Cl.⁶ H01L 29/74

U.S. Cl. 257—487

14 Claims



1. A high breakdown voltage semiconductor device, comprising: a composite substrate obtained by directly bonding a high-resistance semiconductor substrate having an insulating film formed on at least one surface thereof to a semicon-

ductor substrate, said insulating film being formed at an interface thereof; a first semiconductor region constituting part of said high-resistance semiconductor substrate and isolated from other regions by an isolating region; a second semiconductor region of a first conductivity type having an impurity concentration higher than that of said first semiconductor region and selectively formed in a surface portion of said first semiconductor region; a fourth semiconductor region of a second conductivity type having an impurity concentration higher than that of said first semiconductor region and formed in the surface portion of said first semiconductor region so as to be outside said second semiconductor region; a fifth semiconductor region formed on a bottom portion of said first semiconductor region, and having a dose of impurity atoms not more than $5 \times 10^{14} / \text{cm}^2$; and a sixth semiconductor region of a second conductivity type having an impurity concentration higher than that of said fifth semiconductor region and formed so as to extend from said fourth semiconductor region to said fifth semiconductor region, depletion layers being formed in said first, third and fifth semiconductor regions when a high voltage is applied between said second and fourth semiconductor region, and the applied voltage being shared by the depletion layers and the insulating film; wherein said first semiconductor region is of the first conductivity type and said fifth semiconductor region is of the first conductivity type.

5,378,921
HETEROJUNCTION MULTICollector TRANSISTOR
 Shigeyuki Ueda, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

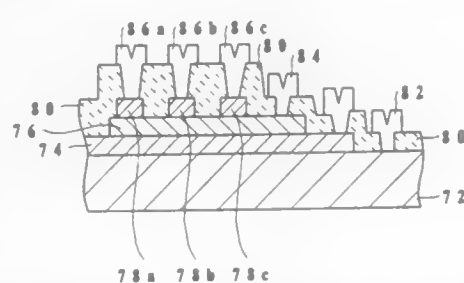
Filed Sep. 28, 1992, Ser. No. 952,079

Claims priority, application Japan, Oct. 21, 1991, 3-272444; Oct. 24, 1991, 3-277515; Oct. 25, 1991, 3-279073; Oct. 30, 1991, 3-285019

Int. Cl.⁶ H01L 49/00, 29/72

U.S. Cl. 257—574

6 Claims

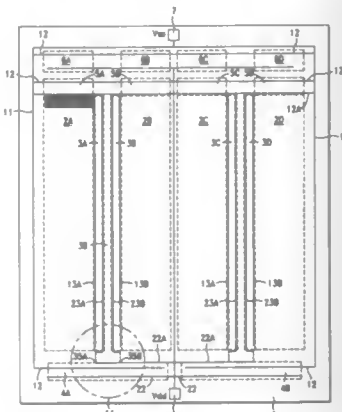


corresponding plurality of conductive pathways to said memory blocks, formed in peripheral regions of said IC, said signal processing circuits having an area allocated for jumper formation;

c) a first routing channel formed between said memory blocks and said signal processing circuits;

d) a plurality of power supply buses oriented parallel to said first routing channel, and formed in a first conductive layer; and

e) at least one second routing channel formed between at least one pair of memory blocks, said second routing channel orthogonal to said first routing channel; wherein at least two of said power supply buses are formed super adjacent said signal processing circuits, and



wherein said conductive pathways comprise a first conductive segment formed in said first conductive layer, a second conductive segment, coupled to said first conductive segment by a contact structure, formed in a second conductive layer, said first conductive layer having a first sheet resistance and said second conductive layer having a second sheet resistance, said second sheet resistance being greater than or equal to said first sheet resistance, and said first conductive segment is orthogonal to said power supply buses, said second conductive segment is orthogonal to and disposed under at least two of said power supply buses, and said first conductive segment has at least a first portion, disposed in said first routing channel, that is parallel to said power buses, and a second portion, disposed in said second routing channel, that is orthogonal to said power buses.

5,378,926

BONDING OF INTEGRATED CIRCUIT CHIP TO CARRIER USING GOLD/TIN EUTECTIC ALLOY AND REFRACTORY METAL NITRIDE BARRIER LAYER TO BLOCK MIGRATION OF TIN THROUGH VIA HOLES
Tom Y. Chi, San Gabriel, and Brook D. Raymond, Hermosa Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

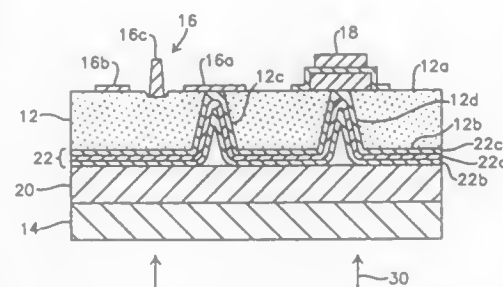
Continuation of Ser. No. 889,023, May 26, 1992, abandoned, which is a division of Ser. No. 767,969, Sep. 30, 1991, Pat. No. 5,156,998. This application Jan. 10, 1994, Ser. No. 179,898
Int. Cl.⁶ H01L 23/48, 29/62, 29/40

U.S. Cl. 257—767

9 Claims

1. An integrated circuit assembly, comprising:
a chip carrier;
a gallium arsenide integrated circuit chip having a frontside surface with a microelectronic device fabricated thereon, a backside surface, and a via hole formed therethrough between the frontside and backside surfaces thereof;
a bonding layer of an eutectic alloy material including tin which is fused between and bonds the backside surface of the chip to the carrier; and
a barrier layer including a refractory metal nitride material formed between the backside surface of the chip and the

bonding layer and inside the via hole of the chip such that the via hole is blocked by the barrier layer, said nitride material of the barrier layer blocking a migration of tin from said alloy material of the bonding layer through the via hole to the frontside surface of the chip that would



otherwise occur in the absence of said barrier layer during heating of said assembly for eutectic bonding of said chip to said carrier by said bonding layer, said barrier layer providing an electrically and thermally conductive path through said via hole between said chip and said chip carrier.

5,378,927

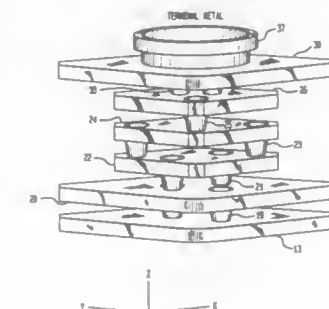
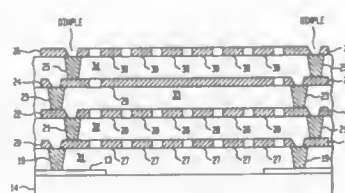
THIN-FILM WIRING LAYOUT FOR A NON-PLANAR THIN-FILM STRUCTURE

Michael F. McAllister, Clintondale; James A. McDonald, Newburgh; Keshav Prasad, Poughkeepsie; Gordon J. Robbins, Wappingers Falls, and Madhavan Swaminathan, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1993, Ser. No. 65,385
Int. Cl.⁶ H01L 23/50, 23/52

U.S. Cl. 257—773

15 Claims



1. An arrangement of vias in a thin-film structure, comprising:
a substrate;
a plurality of thin-film layers stacked on top of each other placed above said substrate, each of said layers having a conductive pattern and a plurality of vias, said vias providing a connection between the conductive pattern in one of said layers to the conductive pattern in another of said layers;
at least one of said vias in one of said layers being offset from

and in electrical contact with at least a via in another layer, and wherein
a plurality of said connecting vias are stacked in a non-linear, non-planar arrangement forming a helix.

5,378,928

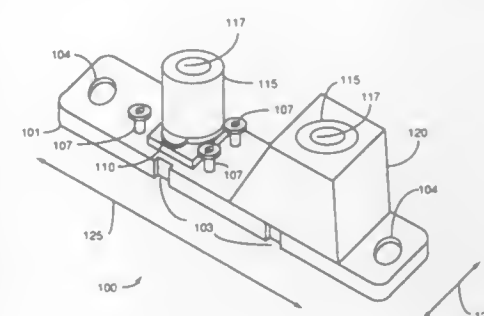
PLASTIC ENCAPSULATED MICROELECTRONIC DEVICE AND METHOD

Samuel J. Anderson, Tempe; John Baird, and Martin A. Kalfus, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1993, Ser. No. 52,962
Int. Cl.⁶ H01L 23/16, 23/28

U.S. Cl. 257—787

10 Claims



1. A plastic encapsulated microelectronic device including in combination:

a base;
a semiconductor device having a top and a bottom, said bottom attached to said base, said semiconductor device having a thickness in the range from one-fourth to three-fourths of a millimeter, a metallization on said bottom comprising aluminum;
a contact attached to said top;
a molded top surrounding said semiconductor device, said molded top comprising low stress molding material; and
mold locking posts attached to said base, said mold locking posts for providing a firm coupling between said base and said molded housing, wherein said mold locking posts comprise self-tapping screws inserted into holes extending through said base, said holes disposed proximately to said semiconductor device.

5,378,929

TRAILER ANTI-THEFT DEVICE

Yitzhak Mor, Ellat, Israel, and Daniel Yuranyi, Thornhill, Canada, assignors to Mor Security & Electronics Ltd., Ellat, Israel

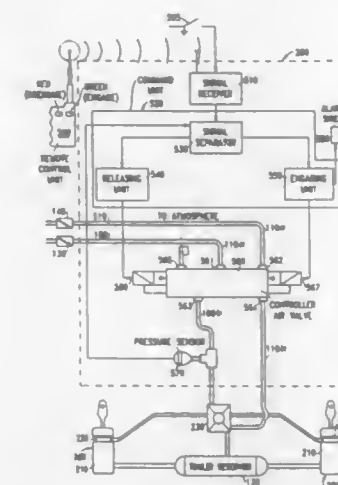
Filed Jun. 14, 1993, Ser. No. 75,961
Int. Cl.⁶ B60T 17/16

U.S. Cl. 303—89

20 Claims

1. An anti-theft device for use with a vehicle having an air brake system, the anti-theft device comprising:
a command unit for receiving a signal from a triggering device and for outputting one of a first and a second command in response to receipt of the signal;
a controller having an input coupled to the command unit for receiving the one of the first and the second command from the command unit, the controller for coupling in series with a service line of the vehicle, the controller having a service line input and a service line output, the controller coupling the service line input to the service

line output when the second command from the command unit is received, the controller decoupling the service line



input from the service line output when the first command from the command unit is received.

5,378,930

METHOD AND ARRANGEMENT FOR ACCOMPLISHING ASSEMBLY SUBSTITUTION ACTIONS DURING ONGOING OPERATION OF A BUS SYSTEM

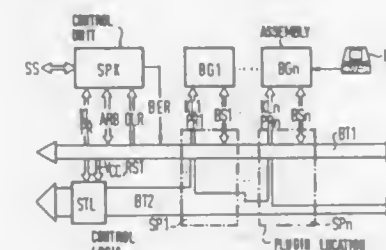
Karl-Heinz Kuchenreuther, Munich, Germany, assignor to Siemens Nixdorf Informationssysteme AG, Germany
Filed Dec. 11, 1992, Ser. No. 989,389

Claims priority, application European Pat. Off., Dec. 20, 1991, 91121884.0

Int. Cl.⁶ G06F 13/14

U.S. Cl. 307—38

10 Claims



1. A method for accomplishing assembly substitution actions during ongoing operation of a bus system having slots for assemblies which are based on a defined interface that has a bus blocking signal by means of which the bus system is immediately switched into and out of a status wherein the bus system is free of bus accesses, comprising the steps of:

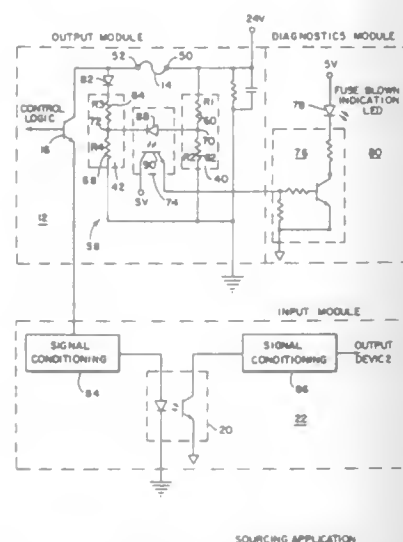
setting the bus blocking signal to cause the bus system to switch into the status wherein the bus system is free of bus accesses;
disconnecting an individual supply voltage of slots affected by an assembly substitution action and separated from a common connection to a supply voltage line of the bus system;
identifying a conclusion of an assembly substitution action; starting an individual initialization phase at the assemblies affected by the assembly substitution action and separated from a common connection to a reset line of the bus system; resetting the bus blocking signal to cause the bus system to switch out of the status wherein the bus system is free of bus accesses; and
enabling the bus system according to a bus protocol of the bus system.

5,378,931
LOW LEAKAGE FUSE BLOWN DETECTION CIRCUIT
 Daniel Bolda, Milwaukee County; Michael R. Havey, Waukesha
 County, and Anthony G. Gibart, Milwaukee County, all of
 Wis., assignors to Allen-Bradley Company, Inc., Milwaukee,
 Wis.

Filed Mar. 31, 1993, Ser. No. 40,696
Int. Cl.⁶ H02H 3/24; H05B 41/29

U.S. Cl. 307-131

14 Claims



1. A low leakage fuse blown detection circuit for use with a fuse having a fuse input terminal connected to a voltage supply source and a fuse output terminal opposite the fuse input terminal, comprising:

a first voltage divider including a first resistor connected to said fuse input terminal and a second resistor connected to a ground return polarity for said voltage supply for defining a first voltage at a first node at the voltage divider connection between said first and second resistors;

a second voltage divider including a third resistor connected to said fuse output terminal and a fourth resistor connected to said voltage supply ground return for defining a second voltage at a second node at the voltage divider connection between said third and fourth resistors;

means connected between said first and second nodes for responding to changes in the voltage difference between said first and second voltages to indicate when said fuse is blown; and

a blocking diode connected in series with said third resistor for blocking current flow from said second node in said second voltage divider back through to the fuse output terminal when said fuse is blown.

5,378,932
LEVEL SHIFTING CIRCUIT
Yasuhiro Shin, and Tatsuya Kimura, both of Tokyo, Japan,
assignors to Oki Electric Industry, Co., Ltd., Tokyo, Japan
Filed Apr. 22, 1993, Ser. No. 50,612
Claims priority, application Japan, Apr. 23, 1992, 4-104602
Int. Cl.⁶ H03K 17/60

U.S. Cl. 327—333

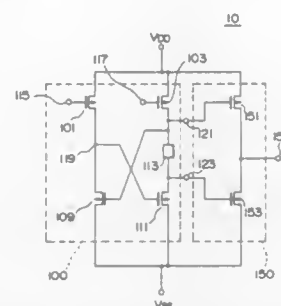
1. A level shifting circuit comprising:
a first voltage terminal for supplying a first voltage level;
a second voltage terminal for supplying a second voltage level;
a first input terminal for receiving a first input signal;
a second input terminal for receiving a second input signal;
an output terminal;
a level converter circuit including,
first, second and third nodes,
a first field effect transistor having a first electrode cou-

pled for receiving the first voltage level, a second electrode connected to the first node and a control electrode connected to said first input terminal,

a second field effect transistor having a first electrode coupled for receiving the first voltage level, a second electrode connected to the second node and a control electrode connected to said second input terminal,

a third field effect transistor having a first electrode coupled for receiving the second voltage level, a second electrode connected to the first node and a control electrode connected to the second node,

a resistive element connected between the second and third nodes, and



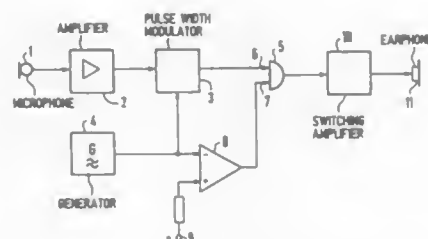
a fourth field effect transistor having a first electrode coupled for receiving the second voltage level, a second electrode connected to the third node and a control electrode connected to the first node; and
an output circuit including,

a fifth field effect transistor having a first electrode coupled for receiving the first voltage level, a second electrode connected to said output terminal and a control electrode connected to the second node, and

a sixth field effect transistor having a first electrode coupled for receiving the second voltage level, a second electrode connected to said output terminal and a control electrode connected to the third node.

5,378,933
CIRCUIT ARRANGEMENT HAVING A SWITCHING
AMPLIFIER
Gerhard Pfannenmueller, Oberasbach, and Raimund Martin,
Eggolsheim, both of Germany, assignors to Siemens Audi-
ologische Technik GmbH, Erlangen, Germany
Filed Mar. 11, 1993, Ser. No. 29,542
Claims priority, application European Pat. Off., Mar. 31,
1992. 92105549

Int. Cl.⁶ H03K 4/00, 6/00, 12/00
U.S. Cl. 327-172 22 Claims



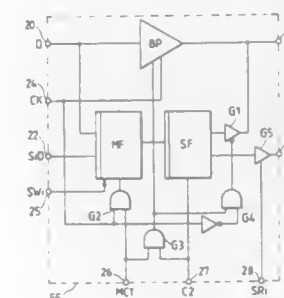
1. In a hearing aid a circuit arrangement having a switching amplifier and for limiting a pulse-width-modulated signal that is formed from a low-frequency signal and a higher-frequency delta signal, comprising a limiting circuit that receives the pulse-width-modulated signal and that limits the pulse-width-modulation signal between a maximum level and a minimum level, said limiting circuit at least shortening the width of individual pulses in the pulse-width-modulated signal that have

a width greater than a maximum pulse width prescribed by the limiting circuit; and the pulse-width-modulated signal modified by the limiting circuit being supplied to the switching amplifier as an input signal.

5,378,934
CIRCUIT HAVING A MASTER-AND-SLAVE AND A
BY-PASS

Toshiro Takahashi, Princeton, N.J.; Masaaki Ohkawa, Tokyo, and Kazuo Koide, Saitama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 743,746, Aug. 12, 1991, Pat. No. 5,227,674. This application Dec. 16, 1992, Ser. No. 991,102
Claims priority, application Japan, Sep. 12, 1990, 2-242257;
Jan. 10, 1992, 4-021984

Int. Cl.⁶ H03K 3/289, 17/56
U.S. Cl. 327—203



1. A semiconductor integrated circuit including a sequential circuit capable of operating synchronously with a clock signal comprising:

comprising:

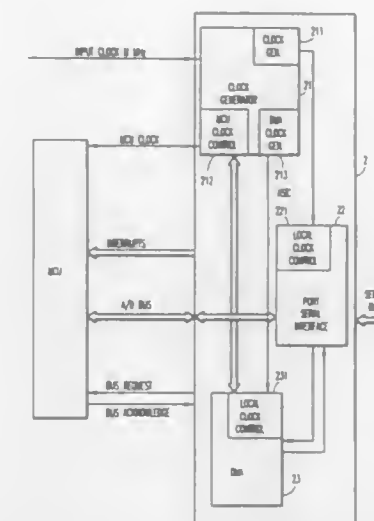
- a first storage circuit having a write state and hold state where input data supplied from a main data input terminal can be written and held is controlled in accordance with first and second control signals;
- a second storage circuit coupled between said first storage circuit and a data output terminal, having a write state and hold state in which output data from the first storage circuit can be written and held are controlled in accordance with a third control signal; and
- a bypass circuit connected to the main data input terminal and the data output terminal, in which data transfer time until the input data supplied from the main data input terminal reaches the data output terminal is shorter than time taken for the input data to pass through both the storage circuits, an output operation of the bypass circuit is inhibited according to states of the second and third control signals when the second and third control signals master/slave operate the first and second storage circuits, and the output operation of the bypass circuit to transfer data to the data output terminal is enabled according to the state of the third control signal when the second storage circuit is instructed to operate in a normal write state and according to the states of the first and second control signals for controlling the state where the input data sent from the main data input terminal is written in the first storage circuit;

wherein the sequential circuit comprises the first storage circuit, second storage circuit, and bypass circuit.

5,378,935
CLOCK FREQUENCY ADJUSTMENT OF AN
ELECTRICAL CIRCUIT
Sirpa Korhonen, Ravattula, and Rune Lindholm, Salo, both of
Finland, assignors to Nokia Mobile Phones Ltd., Salo, Fin-
land

Filed Jun. 17, 1992, Ser. No. 900,006
Claims priority, application Finland, Jun. 18, 1991, 912954;
Dec. 20, 1991, 916051

U.S. Cl. 327-114



1. An electrical device comprising at least one circuit controlled by a clock signal having a predetermined frequency the device comprising:

means for supervising the state and need for processing power of the said circuit; and

means connected to said supervising means for changing the clock frequency into a lower frequency when the power requirement of the said circuit is lowered, and into a higher frequency when the power requirement is increased.

wherein said means for changing the clock frequency includes switching means for changing the clock frequency into a lower clock frequency when said clock frequency and said lower clock frequency are in the same pre-selected identical state.

5,378,936
VOLTAGE LEVEL DETECTING CIRCUIT
Nobuyuki Kokubo, and Kazuya Ikeda, both of Hyogo, Japan,
assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo,
Japan
Continuation of Ser. No. 921,652, Jul. 30, 1992, abandoned. This
application Mar. 30, 1994, Ser. No. 219,865
Claims priority, application Japan, Dec. 19, 1991, 3-337149
Int. Cl.⁶ H03K 17/22

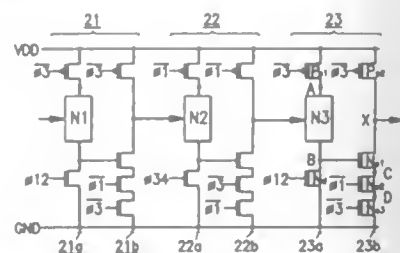
U.S. Cl. 327—17

1. A circuit device for detecting a level of a power supply voltage, comprising:

- a first terminal for receiving said power supply voltage;
- reference voltage generating circuit for generating a reference voltage substantially independent of variations in the power supply voltage, said reference voltage generating circuit including:
 - a first field effect transistor having a source connected to said first terminal, a drain connected to a first output node, for outputting said reference voltage, and a gate connected to ground, said first transistor being configured as a load resistance,
 - a second field effect transistor having a drain connected to

second potential, and a third terminal connected to the input terminal, thereby operating in a manner complementary to said NPN type bipolar transistor;
D) at least one second FET connected between the base and the emitter of said NPN type bipolar transistor, and having a gate connected to either one of the first potential and the second potential.

5,378,942
CMOS DYNAMIC LOGIC STRUCTURE
Chung-Yu Wu, Hsinchu, and Kuo-Hsing Cheng, Taipei, both of Taiwan, Prov. of China, assignors to National Science Council, Taipei, Taiwan, Prov. of China
Filed Jun. 3, 1993, Ser. No. 71,523
Int. Cl.⁶ H03K 19/096, 19/0948
U.S. Cl. 326—97 2 Claims

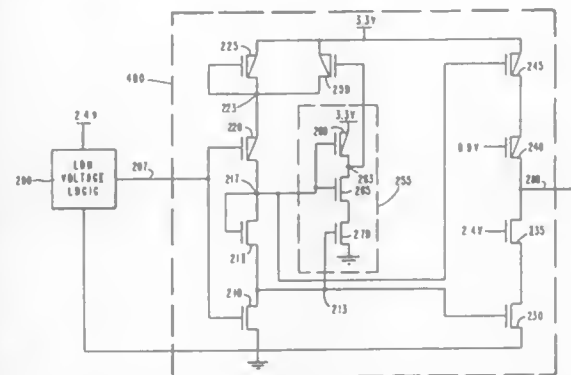


1. A CMOS dynamic logic structure comprising: a plurality of logic gates connected in sequence from first to last, each logic gate including a function unit having in series a first PMOS precharge transistor, a logic tree block; and a driver unit coupled to said function unit, and having in series first, second, and third NMOS evaluation transistors, and a second PMOS precharge transistor; the gate of said second NMOS evaluation transistor being coupled to said logic tree block of said function unit, and said third NMOS evaluation transistor and said second PMOS precharge transistor being controlled by a second identical clock in order not to be turned on simultaneously; wherein, for each of said logic gates after the first, the first NMOS evaluation transistor and first PMOS precharge transistor of the previous logic gate are controlled by a first identical clock in order not to be turned on simultaneously.

5,378,943
LOW POWER INTERFACE CIRCUIT
Robert H. Dennard, New Rochelle, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 20, 1993, Ser. No. 49,912
Int. Cl.⁶ H03K 19/094
U.S. Cl. 326—68 13 Claims

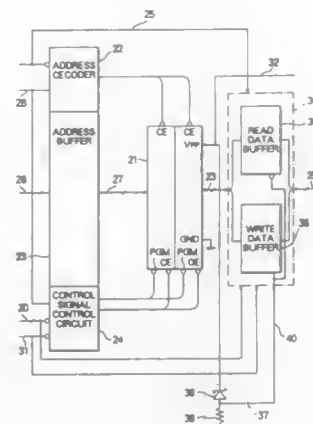
1. An interface circuit for transmitting logic signals, comprising: a parallel connection of first and second PFET devices, said first PFET device having its gate connected to its drain; said first and second PFET devices connected in series with an input means, said input means receiving logic signals, inverting said logic signals, and coupling said inverted logic signals to an inverter, said series connection of said input means and said PFET devices being coupled between a first power supply connection and a ground connection; and said inverter reinverting said inverted logic signals and

coupling said reinverted logic signals to a gate of said second PFET device, wherein:



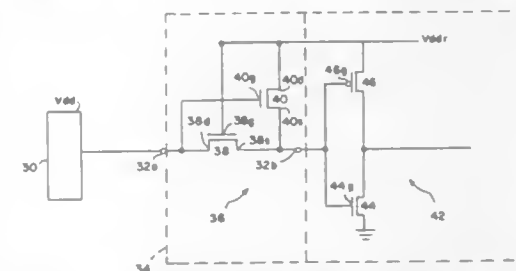
said inverter comprises a series connection of at least two NFET devices and a PFET device, at least one of said NFET devices having a gate connected to a drain.

5,378,944
IC CARD INPUT/OUTPUT CONTROL CIRCUIT
Hidenobu Gochi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 11, 1993, Ser. No. 59,935
Claims priority, application Japan, May 20, 1992, 4-127483
Int. Cl.⁶ H03K 19/0175, 17/16
U.S. Cl. 326—62 6 Claims



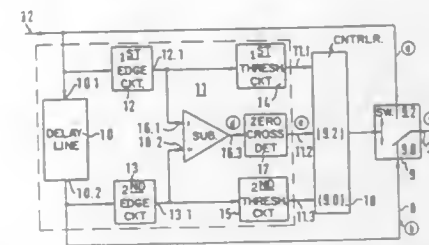
1. An input/output control circuit for an IC card equipped with one-time programmable read only memory integrated circuits (PROM-ICs) comprising: a read data bus buffer connected between a plurality of one-time PROM-ICs and a data bus; a write data bus buffer connected between the one time PROM-ICs and the data bus; and selection means for detecting a power supply voltage supplied to the one-time PROM-ICs on a power supply line and selecting one of said read data bus buffer and said write data bus buffer in response to the detected power supply voltage wherein said selection means includes a Zener diode and a resistance connected in series between the power supply line and a ground.

5,378,945
VOLTAGE LEVEL CONVERTING BUFFER CIRCUIT
Hamid Partovi, Mountain View, Calif.; Steven W. Butler, Marlboro, and Luan Q. Trar, Northborough, North at Mass. assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Jul. 26, 1993, Ser. No. 97,781
Int. Cl.⁶ H03K 19/0944
U.S. Cl. 326—68 9 Claims



1. A voltage level conversion buffer circuit having an input and an output, comprising: a first transistor including a gate, a drain, and a source, said gate is connected to a supply voltage; and a second transistor including a gate, a drain, and a source, said drain of said second transistor is connected to said supply voltage, said gate of said second transistor is connected to said drain of said first transistor, and said source of said second transistor is connected to said source of said first transistor.

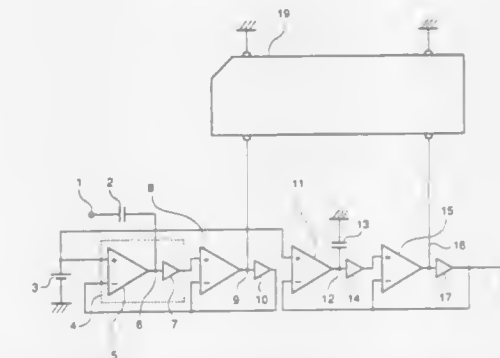
5,378,946
ARRANGEMENT FOR TEMPORAL DETECTION OF A SIGNAL EDGE OF AN ELECTRICAL SIGNAL TRANSMITTED OVER A TRANSMISSION LINE
Gerd Reime, Schöenberg, Germany, assignor to Nokia Technology GmbH, Pforzheim, Germany
Filed Apr. 30, 1993, Ser. No. 55,838
Claims priority, application Germany, May 6, 1992, 4214949
Int. Cl.⁶ H03K 5/153, 5/22
U.S. Cl. 327—14 7 Claims



1. Edge detection arrangement for temporal detection of a signal edge (20.0) between a first signal state (20.1) and a second signal state (20.2) of a delayed signal (20) transmitted after a delay (10) from a first transmission line (32) on a second transmission line (8), and to generate a switching edge (28) of a switching signal (29) at a detection time (13) of the signal edge, comprising: a first edge detector (12) connected to the first transmission line (32), for providing a first detection signal (22) in the form of an individual pulse upon detection of a signal edge (19.0) of an undelayed signal (19); a second edge detector (13) connected to the second transmission line, for providing a second detection signal (23), identical in shape to the first detection signal, upon detection of the signal edge (20.0) of the delayed signal (20) corresponding to the signal edge of the undelayed signal; wherein a delay time (T.v) of the delayed signal is selected such that the delay time (T.v) is slightly less than a shortest edge duration of the transmitted signal and such that

the first and second detection signals (22, 23) provided by the edge detectors partly overlap in time; a subtraction means (16) connected to the first and second edge detectors (12, 13) for providing a difference signal (25) from the first and second detection signals (22, 23) for providing a composite signal having a zero crossing (27) at said time during which said first and second detection signals overlap at a detection point (t3) of the signal edge (20.0) of the delayed signal; and a zero crossing detector (17), connected to an output (16.3) of the subtraction means, for providing the switching edge (28) at the time (t3) at which the zero crossing is detected.

5,378,947
FILTER CIRCUIT COMPOSED OF GLASS DELAY LINE WITH NO COIL
Toshiya Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 5, 1993, Ser. No. 42,939
Claims priority, application Japan, Apr. 3, 1992, 4-110684
Int. Cl.⁶ H03K 5/00; H03H 7/38
U.S. Cl. 327—552 3 Claims



1. A filter circuit comprises an input terminal for receiving an input signal, an output terminal for outputting a delayed signal, a glass delay line for delaying said input signal, said glass delay line having an input end and an output end, an input impedance matching active filter connected to said input terminal and coupled to said input end of said glass delay line for performing an input impedance matching for said glass delay line, and an output impedance matching active filter connected to said output terminal and coupled to said output end of said glass delay line for performing an output impedance matching for said glass delay line, each of said input and output impedance matching active filters being composed of a first differential amplifier having its non-inverted input to a direct current voltage source, a first impedance converting buffer having its input connected to an output of said first differential amplifier, a second differential amplifier having its non-inverted input connected to an output of said first impedance converting buffer, and a second impedance converting buffer having its input connected to an output of said second differential amplifier, an output of said second impedance converting buffer being connected to an inverted input of each of said first and second differential amplifiers, said output of said first differential amplifier of said input impedance matching active filter being connected to said input terminal through an input capacitor, and said output of said second differential amplifier of said input impedance matching active filter being connected to said input end of said glass delay line, and said output of said first differential amplifier of said output impedance matching active filter being connected to a filter capacitor, and said output of said second differential amplifier of said output impedance matching active filter being connected to said output end of said glass delay line, said output of said second impedance converting buffer of said output impedance matching active filter being connected to said output terminal.

5,378,948

ELECTROACTIVE MOTOR

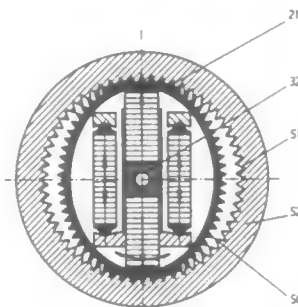
Hans Richter, Orterstrasse 77, Augsburg, Germany D-8900
PCT No. PCT/EP92/01860, § 371 Date Apr. 13, 1993, § 102(e)
Date Apr. 13, 1993, PCT Pub. No. WO93/04505, PCT Pub.
Date Mar. 4, 1993

PCT Filed Aug. 13, 1992, Ser. No. 39,208

Claims priority, application Germany, Aug. 13, 1991, 4126667;
Aug. 16, 1991, 4127163; Mar. 21, 1992, 4209230
Int. Cl.⁶ H01L 41/08

U.S. Cl. 310—328

11 Claims



1. A stepping motor comprising plural expansion actuators positioned between opposite surfaces of a stator, a resilient flexible material interposed between said actuators and one surface of said stator, means for holding the actuators between the other of said surfaces and said material, and means for expanding said actuators alternately and cyclically against said other of said surfaces and said material, said flexible material being comprised of a flexible steel band having a toothed underside, said band being vulcanized to said one surface by means of an elastic rubber layer.

5,378,949

SIGNAL MIXING DEVICE UTILIZING A
SUPERCONDUCTING STRIP LINE WITH
SUPERCONDUCTING WEAK LINKS AND TWO
CONTROL LINES

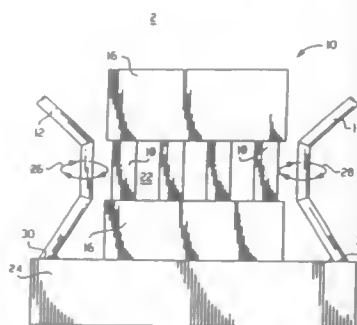
Michael Cummings, Howell; Roland Cadotte, Jr., Freehold, both of N.J.; Adam Rachlin, Germantown, Md., and Richard W. Babbitt, Fair Haven, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 25, 1993, Ser. No. 69,051

Int. Cl.⁶ H03B 19/00

U.S. Cl. 327—113

5 Claims



1. A superconducting flux flow mixer comprising:
a substrate;
a superconducting signal line formed on the substrate with a weak link region etched therein, the weak link region extending laterally across the superconducting signal line and having at least a first and second opposite sides;

an RF control line formed on the substrate and disposed adjacent the first side of the weak link region;
a local oscillator control line formed on the substrate and disposed adjacent the second opposite side of the superconducting weak link region; and
a ground which is electrically connected to the superconducting signal line, the RF control line and the local oscillator control line;
wherein electrical current flowing through the RF and local oscillator control lines establishes a magnetic field across the superconducting weak link region such that changes in the magnetic field alters the resistance of the superconducting weak link region, thereby controlling the mix of signals being carried by the RF and local oscillator control lines.

5,378,950

SEMICONDUCTOR INTEGRATED CIRCUIT FOR
PRODUCING ACTIVATION SIGNALS AT DIFFERENT
CYCLE TIMES

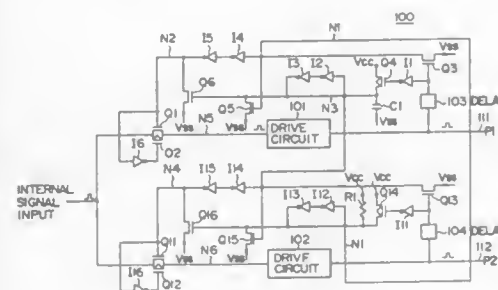
Hiroshi Takamoto, Tokyo, and Mikio Etou, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 3, 1992, Ser. No. 829,473

Int. Cl.⁶ H03K 17/28, 5/159

U.S. Cl. 327—401

2 Claims



1. A semiconductor integrated circuit comprising:
n number of operating circuits that operate at a predetermined time interval, wherein n is a positive integer;
a number of wirings respectively connected to said n number of operating circuits; and
selective drive means comprising n number of input signal pass means for passing an input signal, n number of driver means for receiving an input signal from said input signal pass means for outputting an activation signal, and n number of pass control means for controlling said input signal pass means in response to a rise of power supply voltage at power on, the selective drive means responsive to only one input signal for generating activation signals and transmitting said activation signals to said n number of wirings in order to activate said operating circuits in different cycle times, the activating portions of said activation signals not being overlapped with each other;
wherein each said input signal pass means comprises a transfer gate having a pair of transistors of opposite conductivity types, one of said pass control means comprising a capacitor for controlling one of said input signal pass means to one state which permits passing said input signal, and another of said pass control means comprises a resistor for controlling another of said input signal pass means to another state which permits passing said input signal.

5,378,951

FRICTION WELDER WHICH PRODUCES ORBITAL
MOTION AND DRIVE THEREFOR

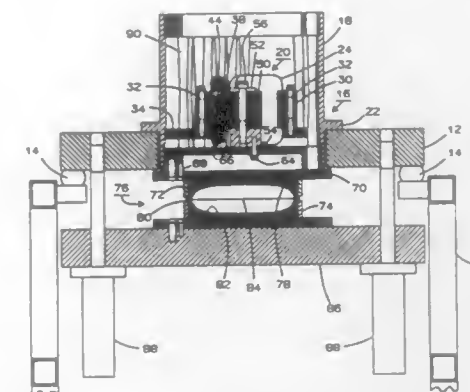
Edward A. Snyder, Brockport, N.Y., assignor to Hydroacoustics Inc., Rochester, N.Y.

Division of Ser. No. 884,803, May 19, 1992, Pat. No. 5,277,744, which is a continuation-in-part of Ser. No. 634,666, Dec. 27, 1990, Pat. No. 5,160,393. This application Oct. 7, 1993, Ser. No. 134,565

Int. Cl.⁶ H02K 33/12; B29C 65/06

U.S. Cl. 310—17

14 Claims



3. An orbital motor adapted to be driven by 3-phase electrical power which comprises:

- a) an armature which produces orbital force, which armature is a single body of magnetic material;
- b) a plate connected to said armature for executing orbital motion responsive to said orbital force;
- c) a stator surrounding said armature and disposed on a frame, which stator is a single body of magnetic material having poles circumferentially displaced from each other, each pole having a face, said armature having faces spaced circumferentially from each other and each opposed to a different stator pole face;
- d) coils on said stator magnetically coupled to said stator poles to which different phases of said 3-phase power are applied; and
- e) flexural means connecting said stator frame to said plate, said flexural means having the same stiffness in all directions in the plane in which said plate executes said orbital motion, and being rigid in the direction perpendicular to said plane of orbital motion to constrain said armature and plate to motion in only said plane.

5,378,952

MACHINE DRIVE SYSTEM AND METHOD

Heinz Schäfersmann, Bielefeld, Germany, assignor to ERA Elektronik-Regelautomatik GmbH & Co. KG, Bielefeld, Germany

Filed Jun. 17, 1992, Ser. No. 899,784

Claims priority, application Germany, Jun. 17, 1991, 4119901; Jun. 17, 1991, 4119902; Sep. 18, 1991, 4131048; Nov. 11, 1991, 4137006; Nov. 11, 1991, 4137007

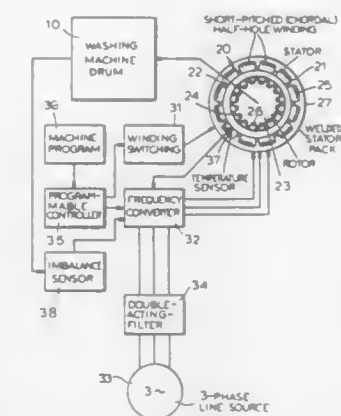
Int. Cl.⁶ H02K 11/00, 3/00, 3/12; H02P 1/40

U.S. Cl. 310—68 R

8 Claims

5. A drive for a machine, comprising:
an asynchronous low-voltage induction motor having a stator and a rotor with windings designed to operate at operating frequency corresponding to a design corner frequency corresponding, in turn, to a break point on a graph of power against speed of said motor, said windings being provided in more than two grooves per pole and phase and with a number of rotor grooves exceeding a number of stator grooves, whereby said motor encounters

within a speed range of the machine different levels of torque;
a frequency converter supplied with line current and connected to said motor for energizing said motor beyond said design frequency, the maximum voltage of the motor



being reached at said design frequency and not further amplifying upon subsequent augmenting of an output frequency of the converter; and
means for effecting a matching of motor current with torque encountered by said motor by correspondingly switching said windings.

5,378,953

ROTOR FOR SYNCHRONOUS MOTOR

Hiroyuki Uchida; Tomonaga Yamamoto; Noboru Iwamatsu, and Hideaki Oku, all of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP93/00760, § 371 Date Feb. 7, 1994, § 102(e)
Date Feb. 7, 1994, PCT Pub. No. WO93/26076, PCT Pub.
Date Dec. 23, 1993

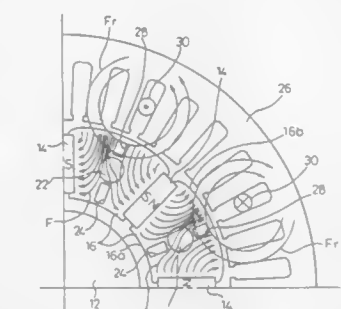
PCT Filed Jun. 7, 1993, Ser. No. 185,962

Claims priority, application Japan, Jun. 8, 1992, 4-147509

Int. Cl.⁶ H02K 21/12

U.S. Cl. 310—156

7 Claims



1. A rotor for a synchronous motor, comprising:
a shaft;
a plurality of permanent magnets arranged at generally equal intervals around said shaft, and magnetized in a circumferential direction;
a plurality of core members arranged around said shaft while holding each of said permanent magnets therebetween, and passed by a magnetic flux due to said permanent magnets, so as to constitute magnetic poles; each core member being provided with a substantially symmetrical plane extending while involving a center axis of said shaft, a rod insertion hole axially passing through the core member, and hole means separated from said rod insertion hole and axially passing through the core member along said symmetrical plane;

a pair of end plate members arranged at both axial ends of said permanent magnets and said core members, and fixed to said shaft; and
rod members respectively passing through said rod insertion hole of said core member in the axial direction, and connected to said end plates at both ends of the rod members.

5,378,954

ELECTROSTATIC ACTUATOR

Toshiro Higuchi, Yokohama; Saku Egawa, Tokyo; Masao Hi-yane, and Katsuhide Natori, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/00497, § 371 Date Feb. 6, 1992, § 102(e) Date Feb. 6, 1992, PCT Pub. No. WO91/16757, PCT Pub. Date Oct. 31, 1991

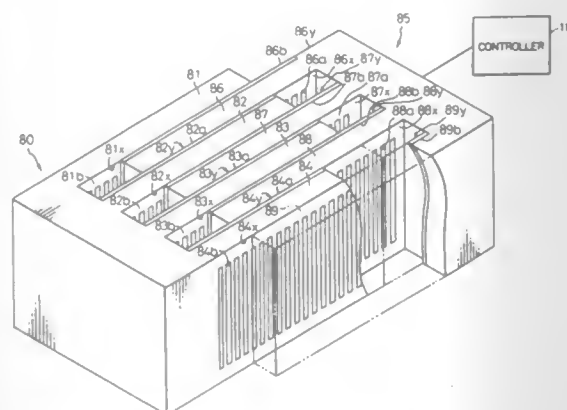
PCT Filed Apr. 16, 1991, Ser. No. 778,216

Claims priority, application Japan, Apr. 16, 1990, 2-099694

Int. Cl.⁶ H02N 1/00

U.S. Cl. 310—309

12 Claims



1. An electrostatic actuator comprising:
 - a first member having a plurality of belt-like electrodes insulated from one another and disposed in a predetermined direction with predetermined gaps between the belt-like electrodes;
 - a second member having an opposed surface made of a resistance body, said opposed surface coming into contact with a surface of said first member; and
 - control means for changing an impressed voltage to be applied to each of said plurality of belt-like electrodes disposed on said first member,
 said first and second members being relatively moved in a direction perpendicular to a direction of an arrangement of said belt-like electrodes, by said control means, and a value of a time constant of said resistance body in said second member, determined primarily by volume resistivity and dielectric constant of a material constituting said resistance body, is predetermined so as to be twice or more of a time necessary for at least one of said first and second members to relatively move a distance corresponding to a length between said belt-like electrodes.

5,378,955

METHOD FOR FABRICATION OF A MICROCHANNEL ELECTRON MULTIPLIER

Russell F. Scott, Jr., Palo Alto, Calif., and John E. Tiffany, Jr., Salt Lake City, Utah, assignors to Intevac, Inc., Santa Clara, Calif.

Continuation of Ser. No. 436,265, Jan. 16, 1974, abandoned, which is a continuation of Ser. No. 197,557, Nov. 8, 1971, abandoned. This application Jul. 19, 1976, Ser. No. 707,791

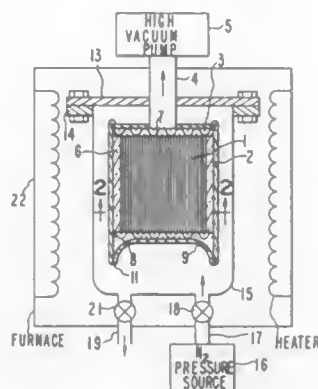
Int. Cl.⁶ H01J 43/00

U.S. Cl. 313—105 CM

16 Claims

1. In a method for fabrication of a microchannel electron multiplier, the steps of:
 - assembling a bundle of glass multifibers, each of said multifibers

consisting of a multitude of lesser glass fibers, each of said lesser glass fibers including a core portion of etchable glass surrounded by a sheath portion of more stable cladding glass, said sheath portions of said lesser glass fibers being fused together to form said multifiber; positioning around said bundle an intermediate structure including glass having a softening temperature within -5% and $+15\%$ of the softening Celsius temperature of said cladding glass; sealing the bundle of fibers and intermediate glass structure



within an outer tube of glass having a softening temperature higher than said softening temperature of said intermediate structure; evacuating the sealed assembly; heating said sealed assembly to a uniform temperature; pressing inwardly uniformly on the sides of said heated assembly, said uniform temperature being such that under said pressing said outer tube collapses onto said intermediate structure, said intermediate structure transmits a compressive force upon said bundle, and said multifibers fuse together and to said intermediate structure.

5,378,956

MOISTURE RESISTANT CERAMIC IGNITER FOR A BURNER

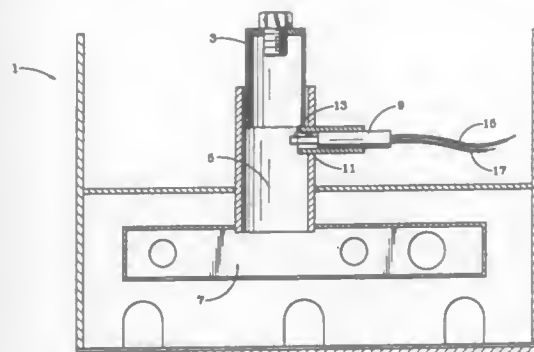
David R. Salzmann, Chambersburg, and James C. Purington, Pocono Lake, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 27, 1993, Ser. No. 68,465

Int. Cl.⁶ H01L 13/20

U.S. Cl. 313—141

8 Claims



1. A moisture resistant igniter for a burner comprising:
 - a. an elongated, hollow, refractory, porous, ceramic shell forming an opening at a forward end and an opening at a rearward end;
 - b. wire means extending in said shell for transmitting at least one electrical signal, said wire means having a terminal end adjacent said forward end of said shell;

- c. a heat-resistant igniter tip connected to said wire terminal end, said tip having an external end extending out of said forward end of said shell;
- d. refractory cement means for fastening said wire means and said igniter tip inside said shell, said cement means substantially sealing said forward end opening;
- e. a flexible layer of refractory potting material in said shell, contacting said wire means and said cement means adjacent said rearward end, said flexible layer substantially sealing said rearward end opening;
- f. an inorganic, nonmetallic coating substantially impermeable to moisture, said coating covering an exterior surface of said shell, said coating comprising dried water-glass; and
- g. means for connecting said wire means to a source of electrical signals.

5,378,957

METHODS AND APPARATUS FOR DISPERSING A FLUENT MATERIAL UTILIZING AN ELECTRON BEAM

Arnold J. Kelly, Princeton Junction, N.J., assignor to Charged Injection Corporation, Princeton Junction, N.J.

PCT No. PCT/US90/06749, § 371 Date Jun. 11, 1992, § 102(e) Date Jun. 11, 1992, PCT Pub. No. WO91/07772, PCT Pub. Date May 30, 1991

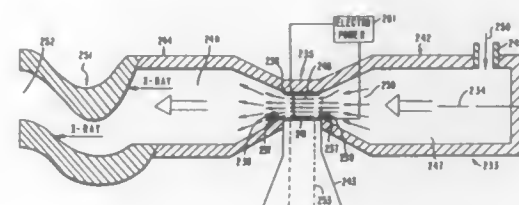
Continuation-in-part of Ser. No. 438,696, Nov. 17, 1989, Pat. No. 5,093,602. This PCT application Nov. 16, 1990, Ser. No. 856,901

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.⁶ H01J 33/04, 17/22; H05F 3/00; B05B 5/025

U.S. Cl. 313—231.01

41 Claims



1. A method of dispersing a fluent material comprising the steps of:
 - (a) passing a fluent material to be dispersed past a first side of an electron-permeable membrane and discharging the fluent material;
 - (b) supplying electrons on a second, opposite side of said membrane so that the electrons pass through the membrane and enter the fluent material so as to provide a net charge on the discharged fluent material, whereby the discharged fluent material is dispersed at least partially under the influence of said net charge, the method further comprising the step of removing positively charged particles from said fluent material in the vicinity of the first side of said membrane prior to dispersion of said fluent material.

5,378,958

CAPPED ELECTRIC LAMP AND CONNECTOR FOR THIS LAMP

Johannes A. A. M. van Heeswijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 5, 1992, Ser. No. 926,069

Claims priority, application Netherlands, Mar. 6, 1992, 9200421

Int. Cl.⁶ H01J 5/48, 5/50

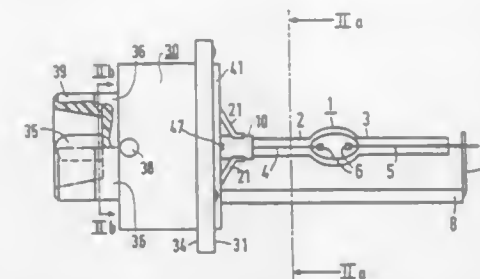
U.S. Cl. 313—318

31 Claims

1. A capped electric lamp, comprising:
 - a. a lamp vessel having a first and a second mutually opposing neck-shaped portion with seals, an electric element arranged in the lamp vessel, a first and a second current

supply conductor, respectively, each connected to the electric element and extending through a respective seal;

- b) a metal clamping member which clamps around the first neck-shaped portion of the lamp vessel;
- c) a metal fixation member having first tongues which are connected to the clamping member;
- d) a lamp cap of insulating material connected to the lamp vessel and having a side facing the lamp vessel and a side facing away from the lamp vessel, at the side facing the lamp vessel said lamp cap having (i) a first, circumferential cavity in which the fixation member is fixed, (ii) a second, central cavity in which the first neck-shaped portion is accommodated, which central cavity communicates with the side of the lamp cap facing away from the lamp vessel,



- and (iii) a further opening providing access to the side facing away from the lamp vessel, separated from the second central cavity;
- e) a centrally positioned cylindrical contact pin extending from the second, central cavity in the direction away from the lamp vessel;
- f) a second, annular contact extending from the side of the lamp cap facing away from the lamp vessel along the length dimension of the contact pin, said annular contact surrounding said contact pin and being radially spaced therefrom;
- g) a connection conductor extending from the annular contact alongside the lamp vessel through the further opening to the second current supply conductor; and
- h) means for fixing a connector on the lamp cap.

5,378,959

SHADOW MASK TYPE COLOR PICTURE TUBE WITH REDUCED MOIRE

Filippo Mancini, Rome, Italy, assignor to Videocolor, S.p.A., Anagni, Italy

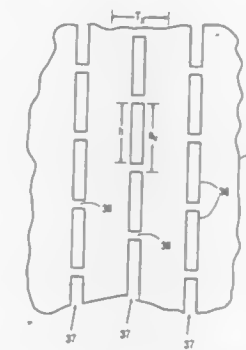
Filed Feb. 2, 1993, Ser. No. 12,206

Claims priority, application Italy, Feb. 20, 1992, MI92 A 000378

Int. Cl.⁶ H01J 29/07

U.S. Cl. 313—402

3 Claims



1. In a color picture tube having a viewing screen, a shadow mask located adjacent to said screen, and an electron gun for generating and directing a plurality of electron beams through

said mask to said screen, said mask having a rectangular periphery with two long sides and two short sides, with a major axis passing through the center of said mask and paralleling said long sides and a minor axis passing through the center of said mask and paralleling said short sides, and said mask including slit-shaped apertures aligned in columns that essentially parallel said minor axis, adjacent apertures in each column being separated by tie bars in said mask, and said beams being scanable over said screen in effective scanning lines that parallel said major axis, the improvement comprising the length of said apertures, measured in the direction of said minor axis, being approximately equal to a multiple of the center-to-center distance between adjacent scanning lines.

5,378,960

THIN FILM CONTINUOUS DYNODES FOR ELECTRON MULTIPLICATION

G. William Tasker, West Brookfield, Mass., and Jerry R. Horton, Cape Elizabeth, Me., assignors to Galileo Electro-Optics Corporation, Sturbridge, Mass.

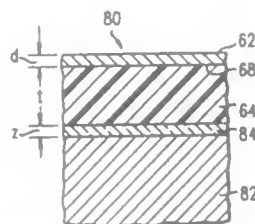
Continuation of Ser. No. 395,588, Aug. 18, 1989, abandoned.

This application Jul. 12, 1993, Ser. No. 89,771

Int. Cl.⁶ H01J 43/04

U.S. Cl. 313—103 CM

37 Claims



1. A continuous thin film dynode for replicating the function of reduced lead silicate glass (RLSG) dynodes in an electron multiplier comprising:

- a substrate formed with at least one capillary channel therein having a channel wall;
- an isolation layer overlying the channel wall; and
- at least one thin film overlying the isolation layer; said at least one thin film having a current carrying portion and an electron emissive portion overlying the current carrying portion, said current carrying portion having a resistance capable of carrying a current adequate to replace emitted electrons and establishing an accelerating electric field for said emitted electrons, and said emissive portion having a secondary electron yield capable of resulting in electron multiplication, said electron emissive portion being essentially free of a material which is silica-rich, alkali-rich and lead-poor, and said current carrying portion being essentially free of a material which is lead-rich so as to exhibit resistance to radiolytic damage caused by electron bombardment greater than RLSG, for extending the operational lifetime of said dynode.

5,378,961

DEFLECTION YOKE APPARATUS

Yusaku Shiro, Fukaya, and Takeshi Kitahara, Kumagaya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 899,862, Jun. 17, 1992, abandoned.

This application May 2, 1994, Ser. No. 236,166

Claims priority, application Japan, Jun. 19, 1991, 3-147564

Int. Cl.⁶ H01J 29/70

U.S. Cl. 313—440

5 Claims

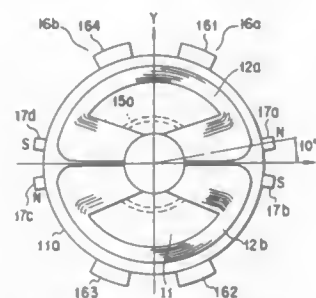
1. A deflection yoke apparatus comprising: a coil separator having a hollow area so shaped as to substantially conform to an outer periphery of a cathode ray tube

at a merged neck/funnel area, where the cathode ray tube has a viewing screen;

a pair of saddle type horizontal deflection coils located on an inner surface of the coil separator on upper and lower sides;

vertical deflection coils located on the outer periphery of the coil separator and toroidally wound on a bobbin-like core; a pair of upper and lower magnetic pieces provided on the neck-side of the coil separator at an area between the vertical deflection coil and the coil separator;

first and second crossarms provided, as a pair of right and left crossarms, on a front-side flange section of the coil



separator, the first and second crossarms extending in an up/down direction along the outer periphery of the coil separator in a manner to have their ends placed near each other in a Y axis direction to provide magnetic field creation area at their ends; and

four permanent magnets arranged on the front-side flange section of the coil separator and located, in a spaced-apart relation, at an angle of about 10° relative to an X axis extending in the right/left direction with a tube axis as a center, whereby their magnetizations are oriented in substantially the tube axis direction thereby correcting vertically directed misconvergence occurring at a center region along right or left sides of the viewing screen.

5,378,962

METHOD AND APPARATUS FOR A HIGH RESOLUTION, FLAT PANEL CATHODOLUMINESCENT DISPLAY DEVICE

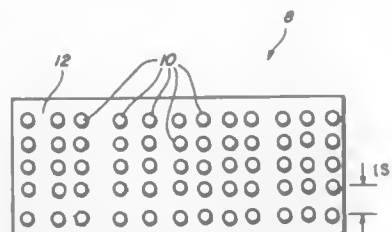
Henry F. Gray, Alexandria, Va., and Ronald R. Price, Stevensville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1992, Ser. No. 889,885

Int. Cl.⁶ H01J 29/10

U.S. Cl. 313—495

29 Claims



1. A display screen comprising:

a plurality of channel structures, each said channel structures having a longitudinal axis with a first and second end;

means for holding said plurality of channel structures in a plane with the longitudinal axes thereof perpendicular to the plane; and

a cathodoluminescent material deposited on, in, and in between the channel structures, in a preselected region of the channel structure to cause incident electrons and light

generated by the incident electrons to be directed along said channel structures.

5,378,963

FIELD EMISSION TYPE FLAT DISPLAY APPARATUS

Rikio Ikeda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

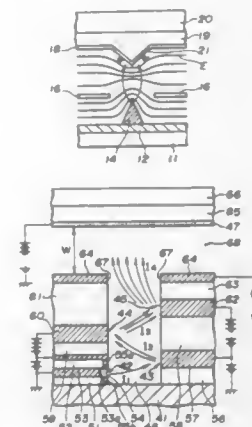
Continuation of Ser. No. 846,792, Mar. 5, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 188,736

Claims priority, application Japan, Mar. 6, 1991, 3-063726; Mar. 7, 1991, 3-067999; Mar. 8, 1991, 3-069250

Int. Cl.⁶ H01J 1/02, 19/10, 43/00

U.S. Cl. 313—495

10 Claims



1. A flat display apparatus, comprising:

- a substrate;
- a plurality of separate pointed cathodes formed on said substrate;
- a planar anode facing toward said cathodes via a vacuum space;
- a light emitting member on a side of said planar anode which is opposite and facing away from said cathodes; and
- said planar anode having a plurality of conical shaped projections extending therefrom in positions corresponding to and aligned with said pointed cathodes, a separate projection being provided for each separate cathode.

5,378,964

ELECTRONIC BALLAST CIRCUIT FOR DISCHARGE LAMPS

Bog Youn Kang, Cheongju, Rep. of Korea, assignor to Goldstar Instrument & Electric Co., Ltd., Seoul, Rep. of Korea

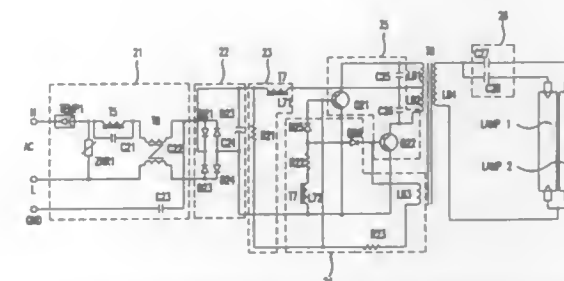
Filed Nov. 24, 1993, Ser. No. 156,818

Claims priority, application Rep. of Korea, Nov. 1, 1993, 23117/1993

Int. Cl.⁶ H05B 41/24

U.S. Cl. 315—247

1 Claim



1. An electronic ballast circuit for discharge lamps, comprising: power factor enhancing and noise removing means for en-

hancing a power factor of an input AC voltage and removing a noise component therefrom;

rectification means for full wave-rectifying and smoothing an output voltage from said power factor enhancing and noise removing means to output a DC voltage;

drive voltage supply means having a primary winding of a first transformer for limiting current, said drive voltage supply means receiving the DC voltage from said rectification means, limiting an amount of current to a second transformer and supplying an initial drive voltage to inverter means, said second transformer driving the discharge lamps;

base driving means having a secondary winding of said first transformer, said base driving means supplying a voltage induced in a third winding of said second transformer and a current induced in the secondary winding of said first transformer as base drive voltage and current to said inverter means; and

current control means for stabilizing a current induced in said second transformer and then supplied to the discharge lamps;

said inverter means driving said second transformer in response to the voltages from said rectification means and said base driving means;

wherein said base driving means includes the secondary winding of said first transformer, said secondary winding of said first transformer having one side connected commonly to emitters of a first transistor and a second transistor and the other side connected to a base of said first transistor of said inverter means through a first resistor and a first diode and to a base of said second transistor of said inverter means and one side of the third winding of said second transformer through said first resistor and a second diode, said third winding of said second transformer having the other side connected to the base of said first transistor through a second resistor.

5,378,965

LUMINAIRE INCLUDING AN ELECTRODELESS DISCHARGE LAMP AS A LIGHT SOURCE

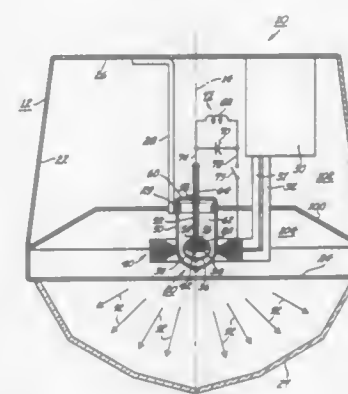
James T. Dakin, Shaker Heights, Ohio; Lawrence W. Speaker, Hendersonville, N.C.; Mark E. Duffy, Shaker Heights, and Raymond A. Heindl, Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 787,158, Nov. 4, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,088

Int. Cl.⁶ H05B 41/16

U.S. Cl. 315—248

23 Claims



1. A luminaire comprising:

- (a) an enclosure comprising a hollow wall portion having an opening formed in one end thereof;
- (b) an electrodeless discharge lamp comprising an arc tube and an outer envelope surrounding said arc tube, said outer envelope being supported within said enclosure by a

- first support member, said arc tube being supported within said outer envelope by a second support member and having a wall of light-transmissive material,
- (c) exciting structure disposed about a portion of said arc tube and energizable with radio frequency current to develop within said arc tube, an arc discharge,
- (d) a reflective coating of electrically insulating material disposed on said arc tube wall near said second support member and around said portion of said arc tube about which said exciting structure is disposed and located to reflect light from said arc discharge through said opening of the enclosure via an uncoated portion of said arc tube wall, said uncoated portion occupying approximately at least 30% of the surface area of said arc tube and not more than 70% of said surface area and being disposed away from said exciting structure and said second support member so that light from said arc discharge can be reflected by said reflective coating and travel through said uncoated portion to said opening without blockage by said exciting structure and said first and second support members, and
- (e) light-redirecting means mounted on said enclosure for receiving reflected light from said reflective coating and redirecting said light to control the distribution of light output from the luminaire and to avoid reflectance of light back to said arc discharge.

5,378,966

FLUX CAPTIVATED EMISSION CONTROLLED FLYBACK TRANSFORMER

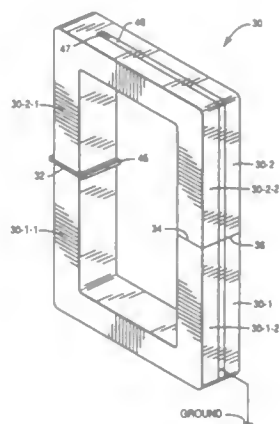
Richard J. Marszalik, Shirley, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 16, 1992, Ser. No. 991,870

Int. Cl.⁶ H01J 29/70

U.S. Cl. 315—411

3 Claims



1. A flyback transformer comprising:
- a first U-shaped core member having first and second legs, with said second leg having an associated planar face thereon;
- a second U-shaped core member having first and second legs, with said second leg having an associated planar face thereon;
- said first legs of said first and second U-shaped core members being aligned and spaced from each other to form a gap therebetween when said first and second U-shaped core members are in an assembled relationship;
- said second legs of said first and second U-shaped core members having the associated said planar faces in parallel abutting relationship with each other when said first and second U-shaped core members are in said assembled relationship; and
- coil windings surrounding said gap and only a portion of

- each of said first legs of said first and second U-shaped core members when in said assembled relationship;
- said coil windings having a longitudinal axis which is aligned with said first legs of said first and second U-shaped core members;
- said flyback transformer further comprising:
- first and second cylindrical tubes;
- said coil windings comprising a primary winding mounted on said first cylindrical tube and a secondary coil winding mounted on said second cylindrical tube, with said first cylindrical tube with said primary winding thereon mounted inside of said second cylindrical tube; and
- said first legs of said first and second U-shaped core members being mounted inside said first cylindrical tube when said first and second U-shaped members are in said assembled relationship;
- said first and second U-shaped core members each having a recess therein to receive a C-shaped clip when in said assembled relationship; and
- a C-shaped clip mounted in the recesses of said first and second U-shaped members to hold said planar faces in parallel abutting relationship with each other and to provide a ground connection for said flyback transformer.

5,378,967

BRUSHLESS MOTOR DRIVE CIRCUIT

Hayato Naito, Komagane, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan

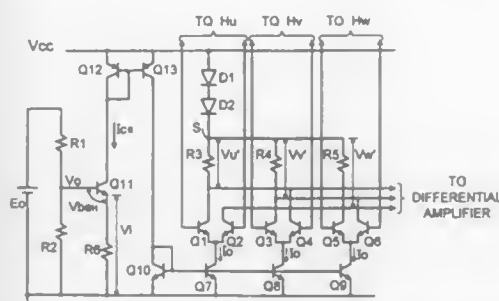
Continuation of Ser. No. 771,125, Oct. 3, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 54,865

Claims priority, application Japan, Oct. 15, 1990, 2-275907

Int. Cl.⁶ H02P 6/02

U.S. Cl. 318—254

5 Claims



1. In a brushless motor drive circuit comprising a stator having m drive coils for m-phases, a rotor having a plurality of poles, a position detecting device for detecting the rotary position of the rotor, an m-differential amplifier for receiving input voltage signals from the position detecting device and synthesizing waveforms for electric currents to be carried to the coils and a plurality of transistors for receiving the outputs of the m-differential amplifier and selectively allowing a current to be carried to a specific drive coil, the improvement comprising means for causing the amplitude of the input voltage signals applied to said m-differential amplifier to be positively temperature-dependent in order to reduce temperature dependence of torque ripple correction capability developed by the m-differential amplifier.

5,378,968

MANIPULATOR

Naoya Ezawa, Naoki Noguchi, Shinichi Takarada, and Masahiro Matsuzawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 813,836, Dec. 27, 1991, abandoned.

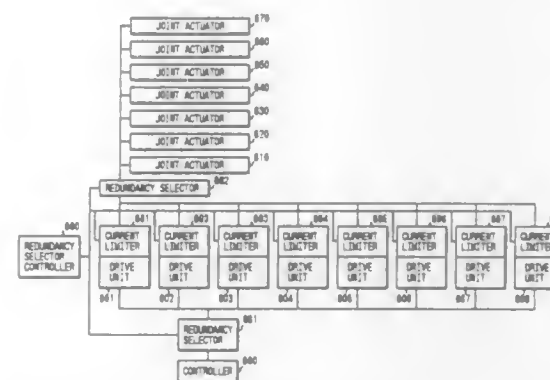
This application Oct. 25, 1993, Ser. No. 140,891

Claims priority, application Japan, Dec. 27, 1990, 2-407622

Int. Cl.⁶ G05D 3/00

U.S. Cl. 318—568.1

8 Claims



1. A manipulator, comprising:
- a plurality of joints each having a joint actuator;
- said joint actuators having at least one of the same structure and mechanism as one another;
- an end effector having an end effector actuator coupled to an end of the manipulator, wherein said end effector actuator has one of the same structure and mechanism as said one of said structure and mechanism of said joint actuator;
- drive units for driving the joint actuators and the end effector actuator;
- a controller for controlling said drive units; and
- a spare drive unit that is interchangeable with the drive units for driving the joint actuators and the end effector actuator, and a redundancy selector for selecting and allocating the drive units to the actuators of said plurality of joints and the actuator of said end effector from among said drive units for driving the joint actuators and said end effector actuator, and said spare drive unit.

5,378,969

NAVIGATION CONTROL SYSTEM FOR MOBILE ROBOT

Yuji Haikawa, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 45,840

Claims priority, application Japan, Apr. 15, 1992, 4-121431

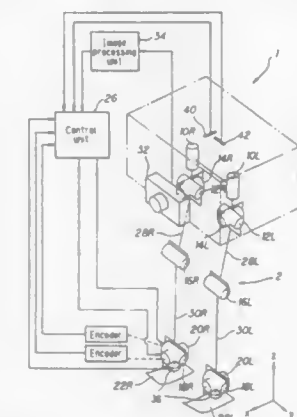
Int. Cl.⁶ B25J 11/00, 9/00

U.S. Cl. 318—568.12

16 Claims

1. A system for controlling navigation of a mobile robot comprising:
- a vision sensor for sensing a spatial configuration of an environment in which the robot moves;
- first means for predesignating shape features of an object existing in the environment;
- second means for preestablishing an evaluation function defined at least with respect to a distance between the object and the mobile robot and an angle determined at least by a pair of shape features; and
- third means for selecting at least one pair of shade features

among the shape features in accordance with the evaluation function to measure distances from the pair of shape



features so as to recognize a current position of the mobile robot in the environment.

5,378,970

IC CARRIER CAPABLE OF LOADING ICS OF DIFFERENT SIZES THEREON

Hiroshi Sato, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

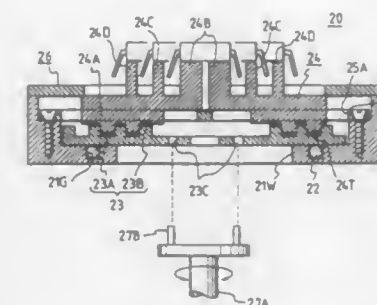
Filed Sep. 2, 1992, Ser. No. 939,722

Claims priority, application Japan, Sep. 9, 1991, 3-229093

Int. Cl.⁶ G01R 1/04

U.S. Cl. 324—158.1

12 Claims



1. An IC carrier for loading ICs of different sizes thereon comprising:
- a box-shaped frame member having a circular concavity formed in the inner surface of the bottom thereof and a window formed in said circular concavity, through which a drive means can be inserted from the outside;
- a disk having a spiral groove formed on one surface thereof and received within said circular concavity with the other surface of the disk abutting against the surface of the circular concavity in such a manner that the disk is rotatable within the circular concavity, said disk including engagement means formed at a portion thereof exposed to said window of the bottom of the box-shaped frame member, said engagement means of the disk being adapted to be engaged with the drive means inserted through said window to rotate the disk;
- at least one pair of IC support members disposed over the disk symmetrically with respect to its center and opposed to each other, said pair of IC support members being mounted to said box-shaped frame member to be movable in a straight-line direction, each of said IC support members having engaging means protruding from the underside thereof for engaging with said spiral groove of the disk and having on the upper side thereof at least one IC positioning portion for an IC to be loaded thereon, whereby the pair of IC support members can move in

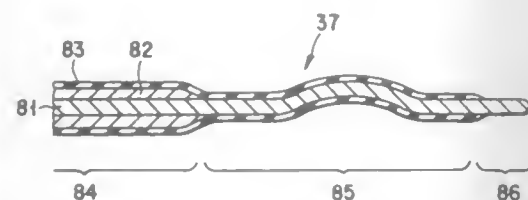
opposite directions to each other in said straight-line direction by rotation of the disk by the drive means so that the distance between the positioning portions of the pair of IC support members can be changed; and a frame-shaped cover for preventing the pair of IC support members from coming out of the box-shaped frame member and for slidably holding the pair of IC support members.

5,378,971 PROBE AND A METHOD OF MANUFACTURING THE SAME

Satoru Yamashita, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo and Tokyo Electron Yamanashi Limited, Yamanashi, both of Japan
Continuation-in-part of Ser. No. 800,001, Nov. 29, 1991, Pat. No. 5,266,895, and Ser. No. 943,492, Sep. 11, 1992, Pat. No. 5,325,052. This application Aug. 19, 1993, Ser. No. 108,240
Claims priority, application Japan, Nov. 30, 1990, 2-339803; Aug. 19, 1992, 4-244157

Int. Cl.⁶ G01R 1/073
U.S. Cl. 324—760

7 Claims



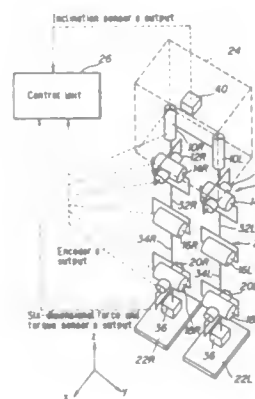
1. A probe formed of an A—Cu alloy essentially consisting of 74 to 76 parts by weight of gold and 24 to 26 parts by weight of copper, by a process comprising the steps of heating the alloy to a predetermined temperature and gradually cooling the heated alloy.

5,378,972 ACTUATOR DRIVING METHOD

Toru Takenaka, and Masato Hirose, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 56,347
Claims priority, application Japan, Apr. 30, 1992, 4-137882
Int. Cl.⁶ G05B 19/405
U.S. Cl. 318—568.22

12 Claims



12. A method of controlling movement of a biped walking robot having actuators for moving limbs of the robot, comprising the steps of:

retrieving walking pattern data defined in advance in terms of joint trajectories from a memory;
outputting the walking pattern data to a processor;
determining an initial displacement command value for an actuator of the robot;
adding a value to the initial displacement command value to determine a second displacement command value;
determining the direction of a non-frictional load associated with the actuator;
driving the actuator with the second displacement command value, in a direction opposite to the direction of the load; and
returning the second displacement command value to the initial displacement command value and driving the actuator by the initial displacement command value, thereby causing frictional forces to act in a direction opposite to the direction of the load, such that actuator energy consumption may be reduced.

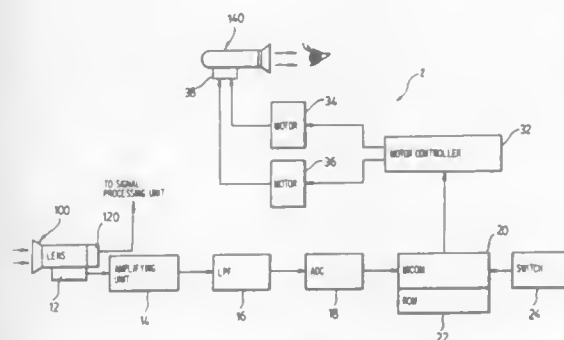
5,378,973 AUTOMATIC EYE ANGLE ADJUSTING APPARATUS FOR AN ELECTRONIC VIEW FINDER AND METHOD THEREOF

Hyoung-Gwon Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Aug. 9, 1993, Ser. No. 103,219

Claims priority, application Rep. of Korea, Aug. 8, 1992, 92-14251

Int. Cl.⁶ G05B 11/18
U.S. Cl. 318—640

12 Claims



1. An automatic eye angle adjusting apparatus for an electronic view finder, comprising:
a motion detector for output of a control signal in accordance with motion of a body of a camcorder; and
an eye angle adjuster for adjusting an angle of the electronic view finder with respect to said body in response to said control signal.

5,378,974 VIBRATION DAMPING SYSTEM

Steven F. Griffin, Atlanta, Ga., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

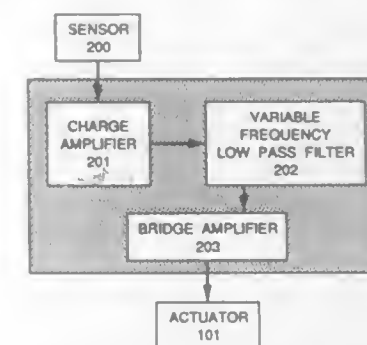
Filed Jul. 2, 1993, Ser. No. 88,965
Int. Cl.⁶ B64C 17/06

U.S. Cl. 318—649

4 Claims

1. In combination with a mechanical structure which experiences motion-induced vibration, a vibration damping system comprising:
means for electrically sensing the motion-induced vibration in the mechanical structure to produce thereby an electrical vibration measurement signal;
a pair of piezoceramic actuators which are fixed on opposite sides of the mechanical structure at contact points and responding to composite motion command signals to

counter all motion induced vibration at their contact points;
a charge amplifier which is electrically connected with said sensing means to receive and amplify the electrical vibration measurement signal therefrom and which produces an amplified vibration measurement signal thereby;
a variable frequency low pass filter which converts the amplified vibration measurement signal of the charge amplifier into a pair of motion command signals;



a bridge amplifier which is electrically connected between the variable frequency low pass filter and the pair of piezoceramic actuators and which receives and amplifies the pair of motion command signals for the pair of piezoceramic actuators; and
an internal means for providing electrical power to said sensing means, said piezoceramic actuators, said charge amplifier, said low pass filter and said bridge amplifier, wherein said sensing means and said pair of piezoceramic actuators is powered using four 8 volt batteries as said providing means.

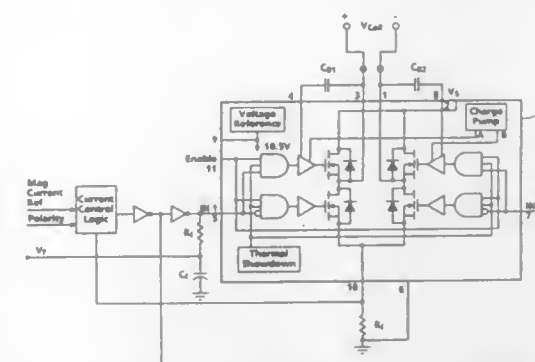
5,378,975 POSITION MEASUREMENT OF A STEPPING MOTOR

Stuart A. Schweid, Henrietta; Robert M. Lofthus, Honeoye Falls, and John E. McInroy, Albany, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 787,423, Nov. 4, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 995,645
Int. Cl.⁶ G05B 19/40

U.S. Cl. 318—685

2 Claims



1. Apparatus for position measurement of a stepping motor having a rotor and a plurality of electromagnetic field windings adapted to be separately energized to control rotation of said rotor comprising:
means for generating signals representative of a back electromotive force induced by said rotor in the field windings, the means for generating including
means for indirect measurement of a field winding voltage through low-pass filtering of switching control logic of a full bridge amplifier and
means for removal of a voltage contribution of the resistance

and inductance of said field windings from the field winding voltage measurement, and
means for estimating said rotor position using the signals representative of the back electromotive force of said field windings.

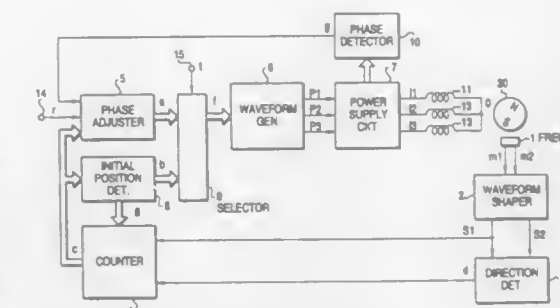
5,378,976 BRUSHLESS DC MOTOR WITHOUT A POSITION SENSOR

Toshio Inaji, Minoo, and Eiji Ueda, Katano, both of Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Filed Apr. 12, 1993, Ser. No. 45,104
Claims priority, application Japan, Apr. 10, 1992, 4-090549; Oct. 9, 1992, 4-271342

Int. Cl.⁶ H02P 5/40
U.S. Cl. 318—810

25 Claims



1. A brushless DC motor comprising:
a rotor having a plurality of magnetic poles;
plural-phase windings disposed adjacent to said rotor;
a frequency generator, said generator generating plural-phase frequency signals, each signal having a frequency proportional to a rotational speed of said rotor;
a direction detector, said detector detecting a rotational direction of said rotor from said plural-phase frequency signals to obtain a direction signal;
a counter, said counter counting pulses of at least one frequency signal of said plural-phase frequency signals in response to said direction signal;
a detector, said detector outputting a phase signal in response to a phase of one of a voltage and a current of at least one of said plural-phase stator windings;
an adjuster, said adjuster adjusting a count value of said counter by one of adding thereto and subtracting therefrom a predetermined value in response to a rotational direction command and performing a phase adjustment in response to said phase signal to obtain a command value;
a generator, said generator generating plural-phase waveform signals in response to said command value; and
a power supply, said power supply supply one of driving currents and driving voltages to the plural-phase stator windings in response to said plural-phase waveform signals.

5,378,977 DEVICE FOR MAKING CURRENT MEASUREMENTS USED IN DETERMINING THE CHARGING OF A VEHICLE STORAGE BATTERY

Urban Kristiansson, Göteborg, and Robert Eriksson, Kungälv, both of Sweden, assignors to AB Volvo, Sweden

PCT No. PCT/SE91/00231, § 371 Date Oct. 15, 1992, § 102(e) Date Oct. 15, 1992, PCT Pub. No. WO91/14600, PCT Pub. Date Oct. 3, 1991

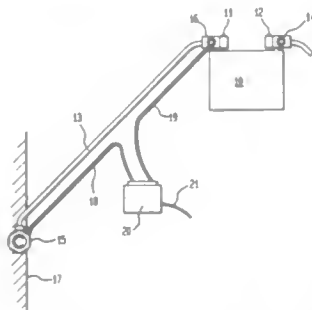
PCT Filed Mar. 27, 1991, Ser. No. 941,076
Claims priority, application Sweden, Mar. 29, 1990, 9001143
Int. Cl.⁶ H02J 7/04

U.S. Cl. 320—44

2 Claims

1. A device for making current measurements used in deter-

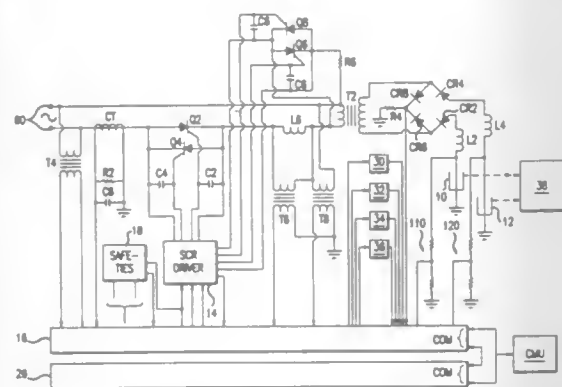
mining a charging status of a storage battery of a vehicle having a pair of poles, comprising a ground connector electrically connected between one of the pair of poles and a chassis of the vehicle via a ground contact, sensor means for sensing a flow of current, and first and second electrical conductors electrically connecting said ground connector to said sensor means to form a common cabling, said sensor means comprising a source



of electrical power for providing an electric current through said ground connector, at least one measuring unit for measuring said current flowing through said ground connector, and processing means for processing electrical signals, wherein values which are deduced from said current flowing through said ground connector revealed by said measuring unit are provided to said processing means for use in determining the charging status of the storage battery.

5,378,978
SYSTEM FOR CONTROLLING AN ELECTROSTATIC PRECIPITATOR USING DIGITAL SIGNAL PROCESSING
Frank Gallo, Wanaque, N.J., and Jean-Francois Vicard, Lyon, France, assignors to Belco Technologies Corp., Parsippany, N.J.

Filed Apr. 2, 1993, Ser. No. 42,354
Int. Cl.⁶ G05F 1/455; B03C 3/68
U.S. Cl. 323—241 64 Claims



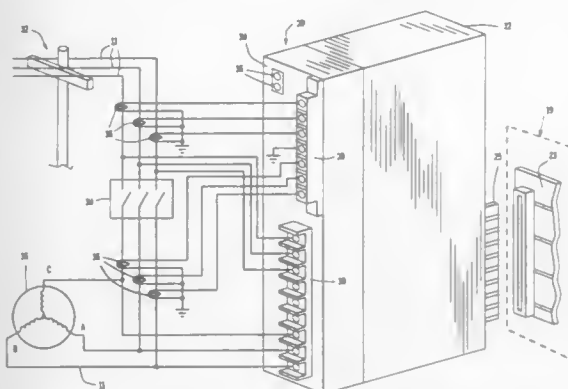
1. A system for controlling an electrostatic precipitator adapted to be powered by an alternating power source comprising:
means for regulating at least one precipitator operating parameter in response to at least one control signal;
measurement means coupled to the precipitator for providing measurement signals corresponding at least to precipitator secondary voltage and precipitator secondary current; and
processing means coupled to the measurement means and to the means for regulating for generating said at least one control signal, said processing means operable to sample successive discrete values of the measurement signals corresponding to secondary voltage and secondary current during an individual half cycle of the alternating power source, to determine present precipitator operating

conditions based on at least the sampled values, to predict precipitator operating conditions for the next half cycle of the alternating power source based on at least the present operating conditions, and to selectively vary said at least one control signal by the next half cycle of the alternating power source in response to the predicted operating conditions.

5,378,979
METHOD AND APPARATUS FOR EFFICIENTLY COMPUTING SYMMETRIC SEQUENCE SIGNALS IN A THREE PHASE POWER SYSTEM

Steven A. Lombardi, Waukesha County, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Nov. 25, 1992, Ser. No. 981,573
Int. Cl.⁶ G01R 1/04 11 Claims



1. An instrument for analyzing unbalance in three-phase power as reflected in three electrical signals having corresponding phases and amplitudes and together having a phase sequence, comprising:

a data acquisition means sampling the electrical signals for producing digitized electrical signal samples at a plurality of times;

an electronic memory communicating with the data acquisition means for storing the digitized electrical signal samples according to a sample number which both identifies the electrical signal corresponding to the sample and identifies a time sequence in said plurality of times at which the sample was taken; and

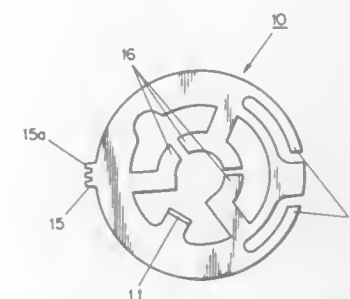
sequence signal computation means for deriving at least one set of sequence signal samples which represent at least one sequence signal corresponding thereto, wherein each said sequence signal sample is computed as a summation of one electrical signal sample corresponding to each of the three electrical signals, in which each electrical signal sample used in said summation is read from said electronic memory according to sample numbers indicative of substantially 120° difference in phase in said time sequence mutually between each of the three electrical signal samples used.

5,378,980
CROSS COIL TYPE INDICATING INSTRUMENT WITH AN EXTERNALLY ADJUSTABLE STOPPER PLATE
Yukio Oike, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 948,419
Claims priority, application Japan, Oct. 8, 1991, 3-081632[U]
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.
Int. Cl.⁶ G01R 1/20

U.S. Cl. 324—146

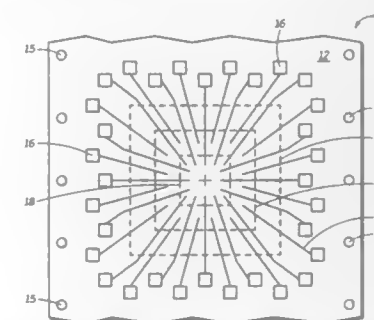
10 Claims



1. A cross coil type indicating instrument comprising:
a coil bobbin composed of an upper bobbin and a lower bobbin;
a magnet rotor contained in said coil bobbin, rotatable about a rotation shaft on which a pointer is fixed at a fore end;
a cross coil comprised of two coils wound around said coil bobbin perpendicular to each other, said cross coil, with an electric current flow through said two coils, making a composite magnetic field to rotate said magnet rotor by a predetermined angle to rotate said pointer; and
a stopper plate disposed between the upper bobbin and the lower bobbin, adjustable in position of engagement with said magnet rotor, said stopper plate holding said pointer at a predetermined zero point under a zero point return without an electric current flow through the cross coil; wherein spring means is provided on an outer periphery of said stopper plate while elastically contacting with an inner circumferential face of said coil bobbin to urge said stopper plate substantially in a radial direction thereof.

5,378,981
METHOD FOR TESTING A SEMICONDUCTOR DEVICE ON A UNIVERSAL TEST CIRCUIT SUBSTRATE
Leo M. Higgins, III, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 2, 1993, Ser. No. 12,193
Int. Cl.⁶ G01R 31/02; H01R 9/00
U.S. Cl. 324—765 18 Claims



1. A method for testing a semiconductor device comprising the steps of:
providing a universal test circuit substrate comprising:
an insulating film of electrically nonconductive material having a surface; and
first and second interleaving fan-out patterns of conduc-

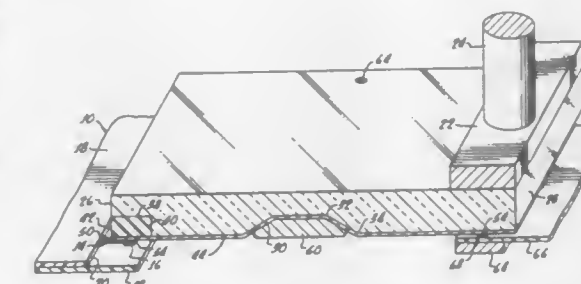
tive traces extending radially outward on the surface of the insulating layer, wherein the first and second interleaving fan-out patterns of conductive traces initiate from different predetermined distances from a central die accommodating region and terminate in a plurality of test pads in an offset pattern around a distal periphery of the central die accommodating region, wherein said test pads are sufficiently large to enable electrical contact to test contactors;

placing a semiconductor die in the central die accommodating region;
wire bonding the semiconductor die to some of the conductive traces to provide electrical connections; and
testing the semiconductor die via the plurality of test pads prior to excising the semiconductor die from the universal test circuit substrate.

5,378,982
TEST PROBE FOR PANEL HAVING AN OVERLYING PROTECTIVE MEMBER ADJACENT PANEL CONTACTS
Haim Felgenbaum, Irvine; John S. Szalay, Corona Del Mar, and Blake F. Woith, Orange, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

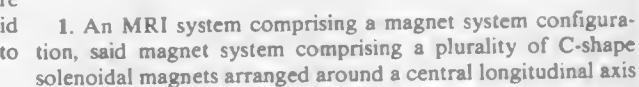
Filed Feb. 25, 1993, Ser. No. 23,019
Int. Cl.⁶ G01R 1/04 12 Claims

U.S. Cl. 324—770



1. A test probe for testing a liquid crystal display device having a substrate with a row of contact pads and a member on said substrate having an edge closely adjacent said row of contact pads, said test probe comprising:

a carrier block having a free end and a lower side,
a flexible circuit extending along said lower side of said block and having a circuit free end co-terminous with said free end of said block, said flexible circuit having a plurality of raised features extending in a line parallel to and closely adjacent said circuit free end and projecting from said flexible circuit, said line of raised features being spaced from said circuit free end by a distance less than the distance between said row of contact pads and said edge of said member of the substrate of said liquid crystal display device, and
means for securing said flexible circuit to said carrier block, said flexible circuit comprising a thin flexible dielectric substrate and conductor means in electrical contact with said raised features for connecting said features to external test circuitry.



to form an imaging volume in a central region of the magnets along said central axis so that the magnetic flux from each C-shape solenoidal magnet is superposed with the flux from the other C-shape solenoidal magnets and contributes to the magnetic field in the imaging volume, each C-shape solenoidal magnet comprising a tubular structure of a non-ferromagnetic material configured in a C-shape, one end of the C-shape tubular structure providing the N-pole and the other end providing the S-pole, the tubular structure having a plurality of electrical coils wound around the circumference of the tubular structure to provide a toroidal shape magnetic flux through the air space defined by the tubular structure and the imaging volume, the MRI system further comprising a gradient coil for providing a magnetic field gradient in the imaging volume and an Rf coil for providing an Rf signal in the imaging volume.

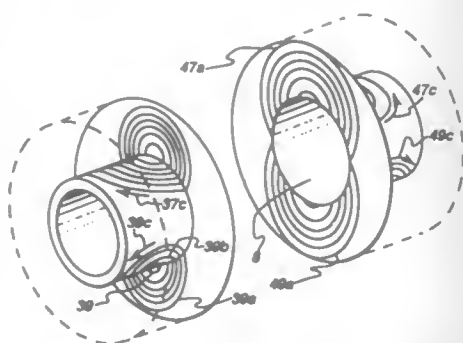
5,378,989

OPEN GRADIENT COILS FOR MAGNETIC RESONANCE IMAGING

William D. Barber, Ballston Lake; Peter B. Roemer, Schenectady, and Kenneth W. Rohling, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 2, 1993, Ser. No. 146,346
Int. Cl.⁶ G01V 3/00

U.S. Cl. 324—318

4 Claims



1. A gradient coil set for an open magnet magnetic resonance (MR) imaging system for imaging a patient, comprising:
 - a) at least one pair of coil assemblies, each coil assembly comprising:
 - i. a pair of gradient coil carrier having a cylinder having at least one open end and having a flange attached to one end, the carriers fitting into a bore of the open magnet spaced apart from each other with the flange ends toward each other defining an open imaging region between the flanges allowing access to said patient,
 - ii. at least two current-carrying continuous paths, each path having a plurality of turns, with each turn being partially disposed on the cylinder and the flange; and
 - b) a gradient coil amplifier for energizing the current-carrying continuous paths with an electrical current, creating a spatially-changing linear magnetic field gradient to allow MR imaging of said patient.

5,378,990

DYNAMIC FUSE TESTING DEVICE HAVING TEST PROBES AND FUSE CONDITION INDICATOR CARRIED ON PIVOTAL HEAD

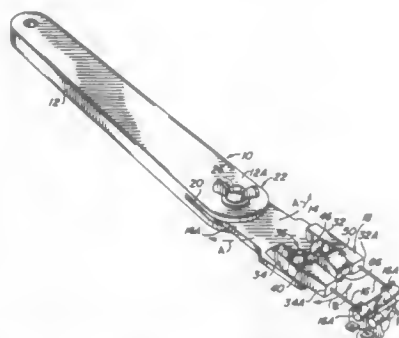
Roger M. Terry, 900 Brush St., #451, Las Vegas, Nev. 89107
Filed Oct. 18, 1993, Ser. No. 138,416
Int. Cl.⁶ G01R 31/02

U.S. Cl. 324—550

20 Claims

1. A dynamic fuse testing device, comprising:
 - (a) an elongated handle;
 - (b) a head;
 - (c) means for pivotally mounting said head to said handle for movement to different angular positions relative to said handle;
 - (d) a pair of elongated electrically conductive test probes for

contacting opposite ends of a fuse, said test probes being mounted to said head and extending outwardly therefrom; and



- (e) means for providing an indication of the condition of the fuse, said indication providing means being mounted on said head and electrically connected with said probes.

5,378,991

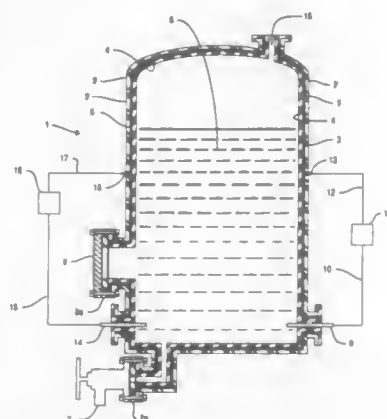
DETECTING DEGRADATION OF NON-CONDUCTIVE INERT WALL LAYERS IN FLUID CONTAINERS

Thomas F. Anderson, 535 Oak Dr., Lake Jackson, Tex. 77566; Otto H. Fenner, 650 Hollywood Pl., Webster Groves, Mo. 63119, and Richard D. Fenner, 7303 Springside, Houston, Tex. 77040

Filed May 27, 1992, Ser. No. 889,284
Int. Cl.⁶ G01N 27/00; G01R 31/12

U.S. Cl. 324—557

28 Claims



14. A multi-layered container for a non-conductive fluid, said container comprising
 - a conductive, substantially inert inner layer for containment of a non-conductive fluid, said inner layer separating the fluid from a first non-conductive layer which encircles said inner layer and is co-extensively in contact therewith,
 - a third layer which is conductive and which encircles the non-conductive layer and is co-extensively in contact therewith,
 - each of the said conductive layers having electrical conductors extending therefrom for attachment to an instrument for measuring electrical properties.

5,378,992

METHOD AND APPARATUS FOR MEASURING THE LOOP SELF IMPEDANCE OF SHIELDED WIRING NON-INTRUSIVELY UTILIZING THE CURRENT TRANSFORMER RATIO OF A SENSE CURRENT PROBE AND THE CURRENT TRANSFORMER RATIO OF A DRIVE CURRENT PROBE

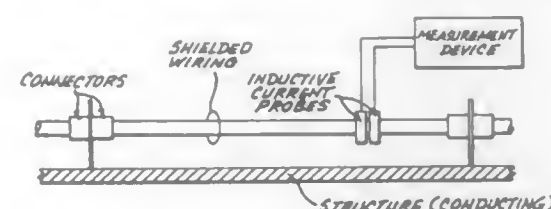
Timothy A. Murphy, Lynnwood, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 10, 1993, Ser. No. 75,197

Int. Cl.⁶ G01R 31/02, 27/02

U.S. Cl. 324—627

2 Claims



1. A method for measuring the loop self impedance of shielded wiring comprising the steps of:
 - providing an inductive sense current probe;
 - providing an inductive drive current probe;
 - measuring the voltage impressed at the input port of said inductive drive current probe;
 - measuring the voltage at the port of said inductive sense current probe;
 - providing the current transformer ratio of said inductive sense current probe;
 - determining the impedance of the circuit utilized to measure said voltage at port of said inductive sense current probe;
 - determining the ratio of the voltage impressed at the input port of said inductive drive current probe to the voltage at the port of said inductive sense current probe and multiplying the ratio by said current transformer ratio of said inductive drive current probe and subtracting therefrom said current transformer ratio of said inductive sense current probe to obtain a resultant;
 - multiplying said resultant by said current transformer ratio of said inductive sense current probe to obtain a further resultant; and then
 - multiplying said further resultant by said impedance of the circuit utilized to measure said voltage at the port of said inductive sense current probe thereby obtaining the loop self impedance of said shielded wiring.

5,378,993

LIQUID SENSING CIRCUIT

Robert J. Flask, Dayton, and Charles E. Warner, Troy, both of Ohio, assignors to Premark FEG Corporation, Troy, Ohio

Filed Dec. 20, 1993, Ser. No. 169,624

Int. Cl.⁶ G01R 27/26

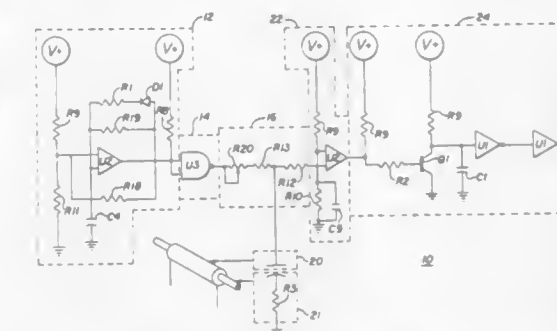
U.S. Cl. 324—663

4 Claims

1. A device for sensing a presence of at least one of the following fluids in a chemical feed tube selected from the group consisting of sanitizer, detergent and rinse agent, said device comprising:
 - an oscillator section for determining an oscillating frequency and for determining a duty cycle at which said device operates;
 - at least one frequency shaper connected to said oscillator section, said shaper receiving the oscillating frequency and converting said frequency to a square wave;
 - at least one sensitivity element connected to said shaper, said sensitivity element being adjustable for changing the sensitivity of the device;
 - at least one sensor element connected to said sensitivity element, said sensor sensing the presence of said at least one of the following fluids in the chemical feed tube se-

lected from the group consisting of sanitizer, detergent and rinse agent, and providing an indication signal representing said sensed fluid;

at least one comparator connected to said sensitivity element, said comparator receiving said indication signal and



- comparing said signal to a predetermined sequence signal, said comparator outputting a result signal based on said comparison; and
- at least one output section connected to said comparator, said output section receiving said result signal and changing said signal to a steady direct current signal.

5,378,994

NON-CONTACT CAPACITANCE BASED IMAGE SENSING METHOD AND SYSTEM

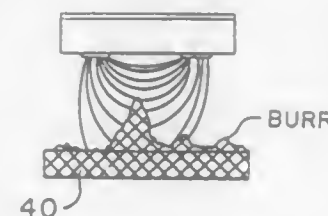
James L. Novak, 11048 Malaguena Ln. N.E., and James J. Wiczer, 4915 Glenwood Hills Dr. N.E., both of Albuquerque, N. Mex. 87111

Division of Ser. No. 514,051, Apr. 24, 1990, Pat. No. 5,281,921.
This application Dec. 9, 1993, Ser. No. 163,555

Int. Cl.⁶ G01R 27/26

U.S. Cl. 324—671

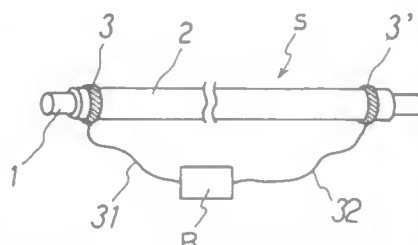
29 Claims



1. A method for machining desired surfaces of a workpiece, comprising the steps of:
 - (a) positioning sensor means and machining means above and in proximity to the workpiece;
 - (b) developing an electric field between first and second sensing electrodes of said sensor means in response to input signals applied to said sensor means;
 - (c) changing the location of said sensor means and said machining means with respect to the desired surfaces of the workpiece;
 - (d) sensing any effects in said electric field produced by the workpiece being disposed within the electric field;
 - (e) developing image signals in response to said steps (c) and (d);
 - (f) adjusting said machining means according to said image signals from said step (e); and
 - (g) machining the desired surfaces of the workpiece by said machining means in response to said image signals.

5,378,995
LOW MOLECULAR WEIGHT ORGANIC LIQUID
DETECTION SENSOR IN THE SHAPE OF A WIRE AND
DETECTOR USING THIS SENSOR

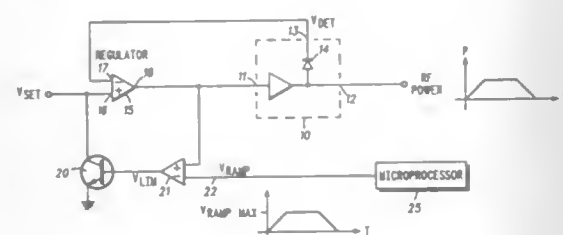
Toshio Kudo, Tokyo; Masaaki Nagai, Amagasaki, and Yasuo Shiraiwa, Tokyo, all of Japan, assignors to Mitsubishi Cable Industries, Ltd., Amagashi, Japan
 Filed Mar. 2, 1993, Ser. No. 25,135
 Claims priority, application Japan, Mar. 5, 1992, 4-084450
 Int. Cl.³ G01R 27/22; G01N 27/07; G01M 3/16
 U.S. Cl. 324-693 19 Claims



1. A low molecular weight organic liquid detection sensor comprising a core material having a cylindrical shape coated with a conductive layer having an electric resistance that varies in a longitudinal direction of the cylindrical shape upon contact with a low molecular weight organic liquid, wherein the conductive layer is made of a substantially non-crosslinked material having a Shore A hardness of not more than 70 which is mainly composed of thermoplastic elastomer and conductive carbon.

5,378,996
RF POWER AMPLIFIER CONTROL
 Klaus Pai, Hohenstein, and Ralf Gregory, Darnstadt, both of Germany, assignors to Motorola, Inc., Schaumburg, Ill.
 Filed Nov. 18, 1993, Ser. No. 154,241
 Claims priority, application United Kingdom, Nov. 28, 1992, 9224975

Int. Cl.⁶ H03G 3/20 10 Claims
 U.S. Cl. 330-129

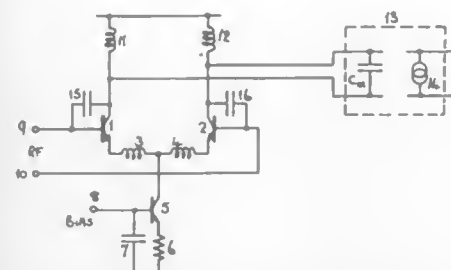


1. A power amplifier circuit for a radio transmitter comprising:
 a power amplifier having a control input and an output;
 a detector for monitoring the output power of the amplifier;
 a first regulator having a first input, a second input and an output coupled to the control input of the power amplifier, the first input of the regulator being coupled to the detector, thereby providing a power control feedback loop;
 means for providing a rising and falling control signal for control of the power amplifier;
 a second regulator having a first input, a second input and an output, the first input being coupled to the output of the first regulator, the second input being coupled to the means for providing the rising and falling control signal and the output being coupled to the second input of the first regulator, thereby providing negative feedback to the first regulator.

5,378,997
LOW NOISE AMPLIFIER WITH CAPACITIVE
FEEDBACK

David A. Sawyer, Swindon, England, assignor to Plessey Semiconductors Limited, Wiltshire, United Kingdom
 Filed Oct. 20, 1993, Ser. No. 139,436
 Claims priority, application United Kingdom, Oct. 26, 1992, 9222449

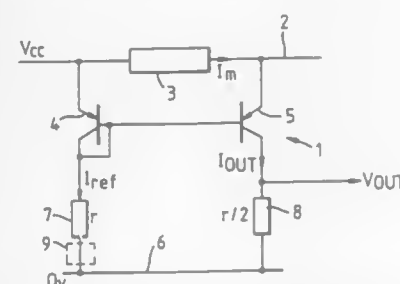
Int. Cl.⁶ H03F 3/45, 3/191 3 Claims
 U.S. Cl. 330-260



1. A differential input/differential output amplifier stage for amplifying signals over a range of frequencies, comprising: a pair of junction transistors, each transistor having emitter, base and collector electrodes; a current source; means including respective inductive impedance elements connecting the emitter electrodes of said pair of transistors to said current source; means connecting the collector electrodes of said pair of transistors to respective inductive loads; connecting means including respective capacitive feedback means for connecting the collector electrode of each of said pair of transistors to the base electrode of the respective transistor; and output circuit means connected to the collector electrodes of said pair of transistors and presenting a reactive impedance at said collector electrodes, said output circuit means, said capacitive feedback means and said inductive loads together being substantially resonant over said range of frequencies.

5,378,998
CURRENT MEASUREMENT CIRCUITS
 Andrew C. Davies, Cheltenham, England, assignor to Smiths Industries Public Limited Company, London, England
 Filed Nov. 2, 1993, Ser. No. 143,900
 Claims priority, application United Kingdom, Nov. 5, 1992, 9223219

Int. Cl.⁶ G01R 1/30 5 Claims
 U.S. Cl. 330-288

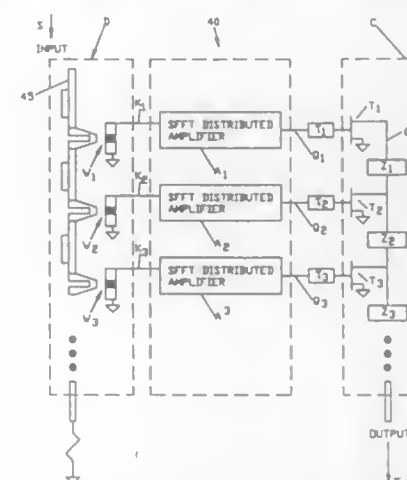


1. A circuit for measuring current flowing along a line including a resistance that introduces a voltage drop in the line, wherein the circuit comprises: a first element that includes a first transistor; means coupling the first element to the line on one side of said resistance so that a first current flows through the first element; a second element that includes a second transistor; means coupling the second element to the line on the opposite side of said resistance so that a second current flows through the second element; a zero voltage rail; two resistors;

means connecting said first and second transistors to said zero voltage rail via respective ones of said two resistors; means coupling the base of said first transistor to the base of said second transistor such that the first element controls the second current flowing through the second element; and means for deriving an output from the second current that is indicative of current flow along the line.

5,378,999
HYBRID MATRIX AMPLIFIER
 Jon S. Martens, Sunnyvale, Calif.; Vincent M. Hietala, Placitas, and Thomas A. Plut, Albuquerque, both of N. Mex., assignors to the United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Aug. 16, 1993, Ser. No. 108,941
 Int. Cl.⁶ H03F 3/68; H03K 3/38 17 Claims
 U.S. Cl. 330-295



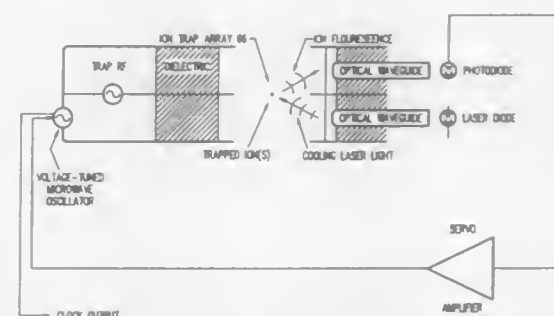
1. A matrix amplifier for amplifying an input signal S, comprising:
 a) an active superconducting divider circuit having an input port for receiving an input signal S and N output ports for dividing the input signal S into N separate signals S_n , where $N \geq 1$;
 b) N distributed amplifiers each operatively connected to a respective output port of the superconducting divider circuit for receiving and amplifying the signal S_n and producing an amplified signal σ_n ; and
 c) a combiner circuit having N input ports and an output port, wherein each input port is operatively connected to one of the distributed amplifiers for receiving and combining the amplified signals σ_n of each distributed amplifier and producing an output signal Σ .

5,379,000
ATOMIC CLOCK EMPLOYING ION TRAP OF MONO-OR MULTI-PLANAR GEOMETRY
 Richard G. Brewer, Ralph G. Devoe, both of Palo Alto; Kenneth L. Foster, Los Gatos; John A. Hoffnagle, Morgan Hill, all of Calif., and Reinald Kallenbach, Bern, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 883,798, May 12, 1992, Pat. No. 5,248,883, which is a continuation-in-part of Ser. No. 710,188, May 30, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 81,505
 Int. Cl.⁶ H03L 7/26 4 Claims

U.S. Cl. 331-3 4 Claims
 1. An ion trap atomic clock system comprising:
 at least one ion having at least three energy levels, wherein a first energy level is the lowest, a third energy level is slightly higher, and a second energy level is substantially higher than the first and the third energy levels, said ion further having a resonant atomic energy level transition between the first and the second levels and a resonant

atomic energy levels transition between the first and the third levels;
 a planar ion trap including three electrically conductive sheets with one inner sheet disposed between two outer sheets, said three sheets being substantially parallel to each other having dielectric spacers disposed on the outer edges of said sheets separating one sheet from another, each of the three sheets having a circular hole and said circular holes being symmetrically aligned substantially along a common axis;
 a first and a second electrically conductive RF leads said first lead connected to the two outer sheets and said second lead connected to the inner sheet;
 an electrically insulative mounting and clamp assembly affixed to said three sheets and said RF leads;
 a vacuum chamber capable of enclosing and generating a high vacuum in the space therein, enclosing the mounting and clamp assembly, the three sheets, and the RF leads, said vacuum chamber further having a vacuum feedthrough, said vacuum feedthrough including a first and a second electrical connector connecting to the first and the second RF leads, respectively, enclosed in the vacuum chamber;
 an RF voltage build-up transformer including first and second conducting lines, said first and second conducting lines connecting to the first and second electrical connectors, respectively, said conducting lines further connected to an RF power supply with the first connecting line connected to a positive voltage source and the second conducting line connected to a negative voltage source of said RF power supply;



said first and second conducting lines being substantially parallel to each other and functioning as a voltage build-up transformer whereby a high voltage RF field is generated between said two conducting lines;
 said two conducting lines being further in electrical connection to the three sheets through the RF leads and the electric connectors of the vacuum feedthrough for generating a substantially quadrupole electrical field in the space near the three holes whereby a charged particle, being injected into the space, is confined in said field, maintaining a dynamic equilibrium condition;
 a laser source irradiating a laser beam having slightly less energy than the resonant atomic energy level transition between the first and the second energy levels of the confined ion, said laser beam being irradiated into the planar ion trap and being selected and adjusted for absorption by the confined ion resulting in an atomic energy transition from the first energy level to the higher and more unstable second energy level, the ion decaying to either the first or the third energy levels having a greater probability of decaying to the first energy level and spontaneously emitting a scattered photon, said scattered photon emission causing the confined ion to have a kinetic energy loss resulting in a laser cooling of the ion;
 a photodetector disposed near the ion trap for detecting the spontaneous emission of the scattered photon;
 an RF microwave source irradiating a sequence of microwaves into the ion trap, said microwaves being selected

and controlled having an energy equivalent to the resonant atomic energy level transition between the first and the third levels for absorption by the ion for inducing an ionic energy level transition from the first energy level to the third energy level so that in reducing the probability of having an atomic energy transition from the first energy level to the second energy level resulting in reduced spontaneous emission of the scattered photons;

a voltage-controlled microwave oscillator connected to the RF microwave source and the photo detector for receiving an input signal from the photodetector corresponding to the spontaneous emission of the scattered photons, the microwave oscillator adjusting and controlling the frequency of the RF microwave source for minimizing the emission of the scattered photons from the second energy level whereby the microwave frequency irradiated from the RF microwave is servo controlled, having a frequency locked and resonating with the energy level transition between the first and the third energy levels of the confined ion.

5,379,001 CLOSED LOOP LINEARIZER FOR RAMP MODULATED VCO

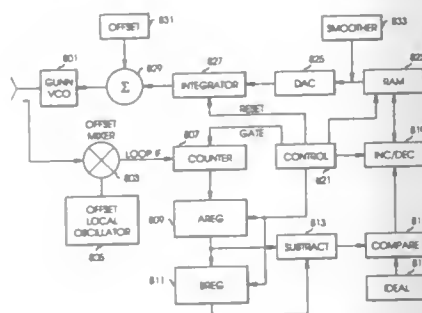
Neil G. Hedtke, Minnetonka, Minn., assignor to Alliant Techsystems Inc., Edina, Minn.

Filed Oct. 25, 1993, Ser. No. 142,699

Int. Cl.⁶ H03B 23/00

U.S. Cl. 331-4

12 Claims



1. A linearizer apparatus for providing a linear ramp modulation for a voltage controlled oscillator (VCO), the apparatus comprising:

- counter means connected to the VCO for calculating two or more frequency values of the oscillator at one or more time points during a ramp interval;
- comparison means connected to the counter means for comparing the difference of at least two frequency values with that of a predetermined value, wherein the predetermined value represents an ideal difference frequency value, and for outputting a resulting correction value; and
- adjustment means connected to the comparison means for adjusting digital control values upward and downward according to the correction value, thereby causing the VCO to produce a linear modulation ramp output slope over time.

5,379,002 FREQUENCY SYNTHESIZER USING INTERMITTENTLY CONTROLLED PHASE LOCKED LOOP

Jnn Jokura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 29, 1993, Ser. No. 84,423

Claims priority, application Japan, Jan. 29, 1992, 4-169765

Int. Cl.⁶ H03L 7/189

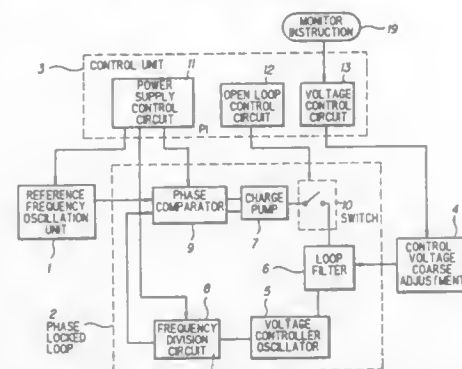
U.S. Cl. 331-10

3 Claims

1. A frequency synthesizer, comprising:
 - a reference signal oscillation unit for providing a reference signal;
 - a phase locked loop comprising a voltage controlled oscillator

tor for generating a carrier frequency dependent on a control voltage applied thereto, a frequency division circuit for dividing said carrier frequency to provide a divided frequency by a predetermined division ratio, a phase comparator for comparing said reference frequency and said divided frequency to provide a phase difference, a charge pump for applying a charging voltage and a discharging voltage to a nodal point, a loop filter having a capacitor connected to said nodal point for generating said control voltage to be applied to said voltage controlled oscillator, and a loop on/off switch for closing and opening said phase locked loop;

a control unit comprising a power supply control circuit for applying an operative voltage to said phase locked loop



which is closed by said loop on/off switch which is turned on intermittently for a switch-over of channels, an open loop control circuit for controlling said loop on/off switch to be turned on and off in accordance with intermittent operation of said phase locked loop, and a selectively operable voltage control circuit for controlling an application of a coarsely controlled voltage to said voltage controlled oscillator for said switch-over of channels in a communication frame, said coarsely controlled voltage being proportional to a difference between frequencies of channels for said switch-over; and

a control voltage coarse adjustment circuit for generating said coarsely controlled voltage to be added to said control voltage of said capacitor in said loop filter by a control of said voltage control circuit.

5,379,003 VCO AND BUFFER HAVING NOISE FILTER ON POWER SUPPLY LINE

Tatsuo Bizen, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

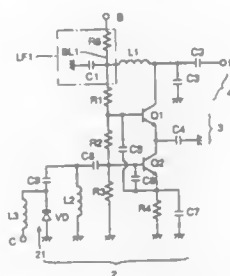
Filed Dec. 9, 1993, Ser. No. 164,370

Claims priority, application Japan, Dec. 16, 1992, 4-336083

Int. Cl.⁶ H03B 5/12

U.S. Cl. 331-117 R

9 Claims



1. A voltage-controlled oscillation circuit, comprising:
 - oscillation means having an oscillation frequency which changes in response to a control voltage;
 - a power supply terminal for receiving power and supplying

said oscillation means with power via a power supply line; and

a low-pass filter including a capacitance element connected between said power supply line and ground, and a resistance element connected in series with said power supply line between said power supply terminal and said capacitance element;

said capacitance element and resistance element having values which are determined so that the low-pass filter has a cutoff frequency which is at most a predetermined frequency of electrical noise superimposed on said power supply terminal, so as to remove said noise from said power supply line.

5,379,004 HIGH FREQUENCY-USE NON-RECIPROCAL CIRCUIT ELEMENT

Hiroshi Marusawa, Takashi Kawanami, Takehiro Kounoike, and Kunisaburo Tomono, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

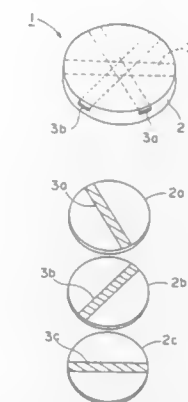
Filed Aug. 2, 1993, Ser. No. 101,895

Claims priority, application Japan, Aug. 5, 1992, 4-208963

Int. Cl.⁶ H01P 1/387

U.S. Cl. 333-1.1

20 Claims



1. A high-frequency-use non-reciprocal circuit element comprising:

- a high-frequency-use magnetic body comprising high-frequency-use magnetic layers; and
 - a plurality of center electrodes, at least one of said center electrodes being embedded within said high-frequency-use magnetic body to make an integrated structure therewith, said center electrodes being so arranged as to intersect with each other at a junction, and being electrically insulated from each other;
- said plurality of center electrodes being separated from each other along the direction of thickness through said high-frequency-use magnetic layers.

5,379,005 FLAT CABLE TO FLAT PARALLEL WIRE CABLE

Charles M. Aden, Martin H. Graham, both of Berkeley; Matthew Taylor, Pleasant Hill, and Mark Miller, Oakland, all of Calif., assignors to Tut Systems, Inc., Pleasant Hill, Calif.

Filed Jul. 16, 1993, Ser. No. 92,721

Int. Cl.⁶ H03H 7/42

U.S. Cl. 333-24 R

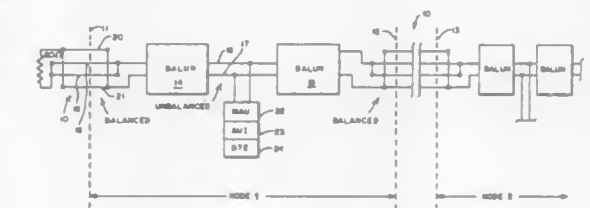
8 Claims

5. An improved method for coupling a terminal into a network where the network uses a generally flat parallel wire cable having two inner conductors and at least two outer conductors comprising the steps of:

- electrically connecting together the two inner conductors of a first one of the generally flat parallel wire cable to form a first lead;
- electrically connecting together the two outer conductors of

the first one of the generally flat parallel wire cable adjacent to the inner conductors to form a second lead; electrically connecting together the two inner conductors of a second one of the generally flat parallel wire cable to form a third lead;

electrically connecting together the two outer conductors of



the second one of the generally flat parallel wire cable to form a fourth lead;

providing a first and a second balun connected in series; connecting the first balun to the first and second leads; connecting the second balun to the third and fourth leads; and, coupling the terminal between the first and second baluns.

5,379,006 WIDEBAND (DC TO GHZ) BALUN

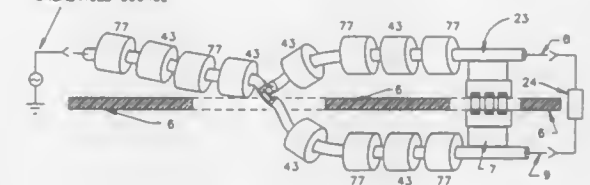
John W. McCorkle, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 11, 1993, Ser. No. 75,368

Int. Cl.⁶ H01P 5/10

U.S. Cl. 333-26

8 Claims



1. An ultra wide band balun comprising:
 - an unbalanced coaxial input transmission line, said input transmission line being encircled with at least one ferrite core;
 - a first output coaxial transmission line encircled with at least one ferrite core connected to said unbalanced input transmission line at a first junction wherein the center conductor of said first output transmission line is connected to the outer conductor of said unbalanced coaxial input transmission line, and wherein the outer conductor of said first output coaxial transmission line is connected to the inner conductor of said unbalanced coaxial input transmission line;
 - a second output coaxial transmission line encircled with at least one ferrite core connected to said unbalanced input transmission line at said first junction wherein the center conductor of said second output coaxial transmission line is connected to the center conductor of said unbalanced input transmission line, and wherein the outer conductor of said second output coaxial transmission line is connected to the outer conductor of said unbalanced input transmission line; and
 - a resistor-capacitor circuit connecting the outer conductors of said first and said second output coaxial transmission lines at a second junction wherein the center conductors of said first and said second output coaxial transmission lines are connected to a balanced load.

5,379,007

REFLECTION PHASE SHIFTER AND MULTIPLE BIT PHASE SHIFTER

Kazuhiko Nakahara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

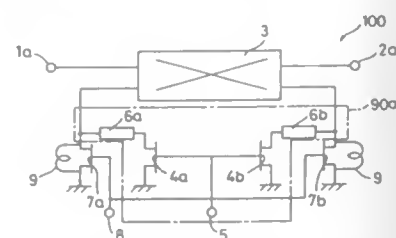
Filed Nov. 8, 1993, Ser. No. 148,612

Claims priority, application Japan, May 31, 1993, 5-128620

Int. Cl.⁵ H01P 1/18

U.S. Cl. 333—156

6 Claims



1. A reflection phase shifter comprising:
 - a 3 dB directional coupler having first and second ends;
 - a reflection circuit having first and second ends connected to the first and second ends of said 3 dB directional coupler, respectively;
 - a first resonant circuit comprising a first field effect transistor (FET) and a first resonant inductor connected between source and drain electrodes of said first FET, the drain electrode of said first FET being connected to a node connecting the first end of said 3 dB directional coupler and the first end of said reflection circuit, the source electrode of said first FET being grounded; and
 - a second resonant circuit comprising a second FET and a second resonant inductor connected between source and drain electrodes of said second FET, the drain electrode of said second FET being connected to a node connecting the second end of the 3 dB directional coupler and the second end of said reflection circuit, the source electrode of said second FET being grounded.

5,379,008

VARIABLE IMPEDANCE CIRCUIT PROVIDING REDUCED DISTORTION

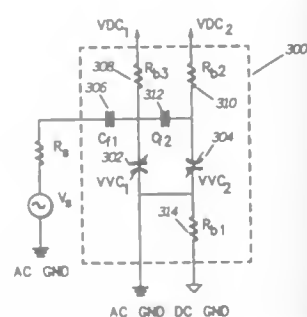
David E. Bockelman, Lauderdale, Robert E. Stengel, Ft. Lauderdale, both of Fla., and Kenneth D. Cornett, Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1993, Ser. No. 25,458

Int. Cl.⁶ H03H 7/00, 5/12

U.S. Cl. 333—174

7 Claims



1. An electronic circuit providing for reduced distortion characteristics, the electronic circuit having at least one operating point, the electronic circuit comprising:
 - a first voltage variable capacitor having a positive and a negative terminal;
 - a second voltage variable capacitor having a positive and a negative terminal; and
 - the positive terminal of the first voltage variable capacitor is coupled to the negative terminal of the second voltage

variable capacitor, and said first and second voltage variable capacitors each have a capacitance-to-voltage (C-V) curve about the at least one operating point and the curves when subtracted from each other yield a substantially constant capacitance value.

5,379,009

ACTIVE-TYPE BAND-PASS FILTER

Youhei Ishikawa, and Seiji Hidaka, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

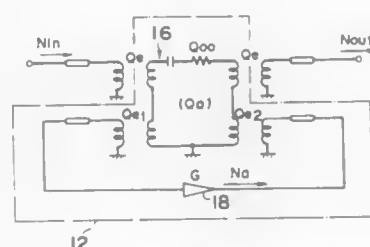
Filed Jul. 15, 1993, Ser. No. 92,366

Claims priority, application Japan, Jul. 17, 1992, 4-190398

Int. Cl.⁶ H03H 11/12; H01P 1/20, 7/00

U.S. Cl. 333—175

6 Claims



1. An active-type band-pass filter comprising:
 - a) an active feedback resonator and
 - b) an amplifier having an input side and an output side magnetically coupled to the active feedback resonator; wherein
 - a no-load quality factor of said active feedback resonator is set in a negative region, said active-type band-pass filter satisfies the conditions that $Q_{e1} < Q_{e2}$ and $1/Q_{e1} = G/Q_{e2}$, the intensity of coupling quality factor on the input side of the amplifier coupled to the active feedback resonator is Q_{e1} , the intensity of coupling quality factor on the output side of the amplifier coupled to the active feedback resonator is Q_{e2} , and the gain of the amplifier is G .

5,379,010

SURFACE ACOUSTIC WAVE REFLECTOR FILTER HAVING TWO NON-RESONANT TRACKS

Werner Ruile, Jürgen Machui, both of München, Germany, and Giuliano Visintini, Unterbaching, Italy, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/EP90/02193, § 371 Date Jun. 22, 1992, § 102(e)

Date Jun. 22, 1992, PCT Pub. No. WO91/09465, PCT Pub.

Date Jun. 27, 1991

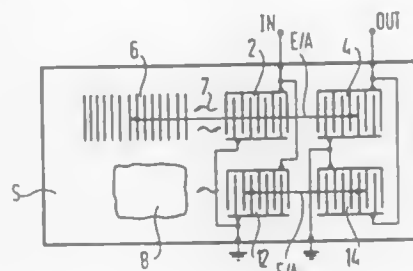
PCT Filed Dec. 14, 1990, Ser. No. 861,968

Claims priority, application Germany, Dec. 20, 1989, 3942140

Int. Cl.⁶ H03H 9/64

U.S. Cl. 333—195

8 Claims



1. A surface acoustic wave reflector filter with useful surface acoustic wave transmission effected exclusively by reflection, comprising:
 - a substrate consisting of a material for propagation for surface acoustic waves;
 - a first input transducer on said substrate operable to receive

an input signal and to emit first surface acoustic waves in response thereto, and a first output transducer on said substrate for receiving said first surface acoustic waves, said first input transducer and said first output transducer defining a first main non-resonant propagation track; at least one reflector disposed on said substrate for reflecting said first surface acoustic waves in said first main propagation track to cause non-resonant 180° reflection of the first surface acoustic waves on a path between said first input transducer and said first output transducer;

a second input transducer on said substrate operable to receive said input signal and to emit second surface acoustic waves in response thereto, and a second output transducer on said substrate for receiving said second acoustic waves, said second input transducer and said second output transducer defining a second main non-resonant propagation track separate from said first main non-resonant propagation track, said first and second input transducers and said first and second output transducers having identical electrode structures and each having electrical terminals connected to the respective electrode structures; and means for respectively connecting said electrical terminals of said first and second input transducers and for connecting said electrical terminals of said first and second output transducers such that said first surface acoustic waves in said first main non-resonant propagation track propagate with a phase which is substantially opposite to a phase of said second surface acoustic waves propagating in said second main non-resonant propagation track.

5,379,011

SURFACE MOUNT CERAMIC FILTER DUPLEXER HAVING REDUCED INPUT/OUTPUT COUPLING AND ADJUSTABLE HIGH-SIDE TRANSMISSION ZEROES

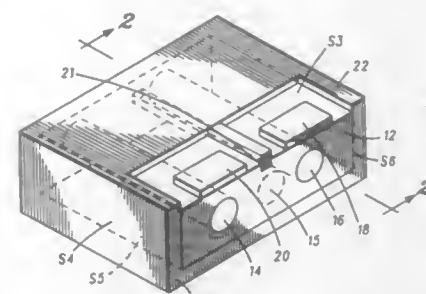
Raymond L. Sokola, Albuquerque, N. Mex., and Joseph P. Krause, Wheaton, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1992, Ser. No. 965,468
The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.⁶ H01P 1/202, 1/205; H04B 1/50

U.S. Cl. 333—206

32 Claims



1. A filter for passing desired frequency electrical signals comprising:
 - a filter body comprised of a block of dielectric material having a first predetermined physical length, substantially planar top and bottom surfaces and having a least one substantially planar side surface, said filter body having at least first and second holes extending through the top and bottom surfaces, said holes spatially disposed at a predetermined distance from one another, said block of dielectric material including on said substantially planar side surface and between said first and second holes, at least one slot formed thereon, said slot being substantially parallel to said holes, having a length dimension, and extending substantially between at least a first and second input-output pad for improved isolation between the first and the second input-output pads;
 - said first input-output pads comprised of an area of conduc-

tive material disposed on said planar side surface substantially surrounded by an uncoated area on said side surface; said second input-output pad comprised of an area of conductive material disposed on said planar surface substantially surrounded by an uncoated area on said planar side surface;

said filter body and interior surfaces of said first and second holes being substantially covered with a conductive material with the exception of said top surface being entirely uncoated, said coated interior surfaces of said first and second holes and said coated filter body forming first and second shorted coaxial resonators respectively having first and second electrical lengths, said first and second input-output pads being capacitively coupled to said first and said second shorted coaxial resonators.

5,379,012

DIELECTRIC FILTER DEVICE

Hiroaki Shimizu, and Kenji Ito, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Apr. 26, 1993, Ser. No. 51,766

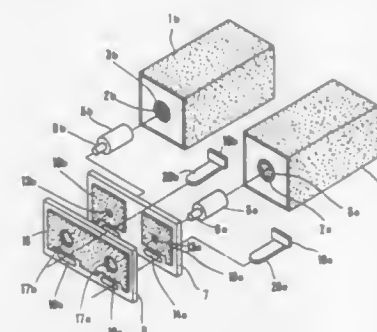
Claims priority, application Japan, Apr. 30, 1992, 4-139863;

May 7, 1992, 4-143259; May 22, 1992, 4-155930

Int. Cl.⁶ H01P 1/205

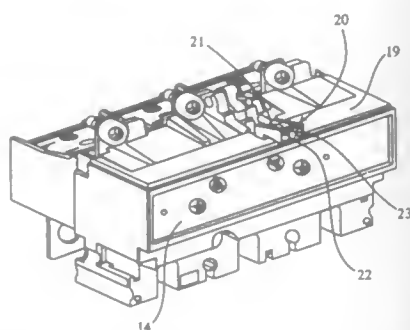
U.S. Cl. 333—206

4 Claims



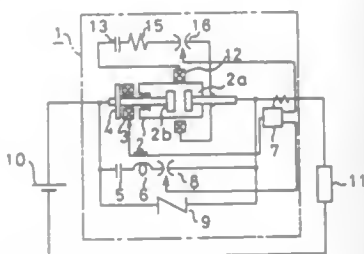
1. A dielectric filter device comprising:
 - at least two coaxial dielectric resonator bodies juxtaposed to each other, each resonator body including an outer conductive layer provided on an outer surface except at a front surface thereof and an axially extended through bore which has an inner surface provided with an inner conductive layer;
 - a first dielectric substrate disposed on the front surfaces of the juxtaposed coaxial dielectric resonator bodies, the first dielectric substrate having respective input and output conductors on an inner surface thereof facing the front surfaces and respective connecting conductors on an outer surface opposite the inner surface thereof for forming input and output capacities therebetween;
 - a second dielectric substrate superimposed on the first dielectric substrate, the second dielectric substrate having a plurality of conductors arranged on an inner surface facing the front surfaces which are capacitively coupled to each other for forming a coupling capacity and a ground conductor arranged on an outer surface opposite to the inner surface thereof and hence opposite to the plurality of conductors on the inner surface thereof for forming stray capacities; and
 - a respective connecting means for connecting the respective connecting conductors on the outer surface of the first dielectric substrate and the respective capacitively coupled conductors on the inner surface of the second dielectric substrate with the respective inner conductive layers on respective outermost ones of the at least two resonator bodies.

5,379,013
MOLDED CASE CIRCUIT BREAKER WITH INTERCHANGEABLE TRIP UNITS
 Patrick Coudert, Eybens, France, assignor to Merlin Gerin, France
 Filed Sep. 15, 1993, Ser. No. 120,762
 Claims priority, application France, Sep. 28, 1992, 92 11573
 Int. Cl.⁶ H01H 73/12
 U.S. Cl. 335—17 2 Claims



1. A molded case circuit breaker having a circuit with separable contacts, comprising:
 a front panel having an orifice formed through said front panel;
 a pivoting manual operating handle passing through said orifice and protruding through said front panel;
 an interchangeable trip unit for automatic separation of the contacts in the event of a fault;
 indicating means for indicating a rating of said trip unit, said indicating means comprising a bracket support fixed to said trip unit, said bracket support having an end face bearing an identifying mark to indicate the rating of the trip unit, said bracket support protruding through the plane of said front panel; and
 a frame surrounding said orifice, said frame protruding from said front panel and comprising an aperture, said end face of said bracket support being positioned to be substantially flush with said frame and to substantially fill said aperture such that said identifying mark is visible through said aperture.

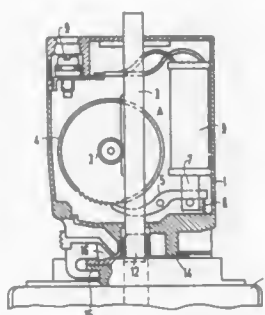
5,379,014
VACUUM CIRCUIT BREAKER
 Takashi Sato; Yukio Kurosawa, both of Hitachi; Kouji Suzuki, Takahagi; Akira Hashimoto, and Shunkichi Endoo, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Apr. 2, 1993, Ser. No. 41,470
 Claims priority, application Japan, Apr. 2, 1992, 4-081168
 Int. Cl.⁶ H01H 9/00
 U.S. Cl. 335—177 16 Claims



1. A vacuum circuit breaker, comprising:
 at least one pair of opposed switchable contacts for making/-breaking an electrical circuit;
 first magnetic flux generation means for generating a magnetic flux in a space between said opposed contacts when

said opposed contacts are parted so as to interrupt the electrical circuit;
 at least one second magnetic flux generation means for generating a magnetic flux so as to cancel the magnetic flux generated by said first magnetic flux generation means sufficiently for charged particles in said space to diffuse radially from said space; and
 a power supply circuit which causes current to flow through said second magnetic flux generation means.

5,379,015
LATCHING BLOCK FOR ELECTROMAGNETIC SWITCHING DEVICES
 Johann Lehmeier, Lauterhofen; Erwin Flierl, Rieden, and Gerhard Schroether, Amberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
 Filed Jul. 15, 1993, Ser. No. 92,293
 Claims priority, application Germany, Jul. 16, 1992, 9209555[U]
 Int. Cl.⁶ H01H 3/00
 U.S. Cl. 335—185 16 Claims

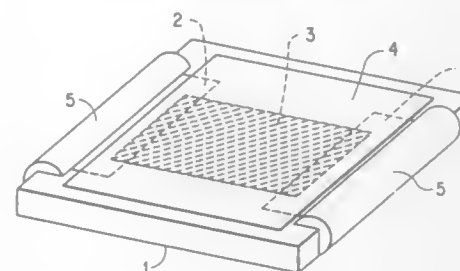


1. A latching block capable of being coupled to an electromagnetic switching device that includes a mechanism for carrying out a switching action, the latching block comprising:
 a housing;
 a rack adapted to be coupled to the mechanism of the electromagnetic switching device for carrying out a switching action;
 a ratchet wheel including catches and a pinion, said pinion coupled to said rack such that movement of said rack causes said pinion and thus said ratchet wheel to rotate; and
 a spring-loaded lever having an end capable of engaging catches of said ratchet wheel,
 wherein said rack holds said electromagnetic switching device in a working position by locking said mechanism of the switching device for carrying out the switching action with a positive lock, said positive lock being unlocked by disengagement of said spring-loaded lever from said catches of said ratchet wheel.

5,379,016
CHIP RESISTOR
 Jerome D. Smith, Yokohama; Keiichi Hayakawa, Kanagawa, and Yasuo Yamamoto, Tokyo, all of Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
 Filed Jun. 3, 1993, Ser. No. 71,625
 Int. Cl.⁶ H01C 1/012, 1/148
 U.S. Cl. 338—308 3 Claims

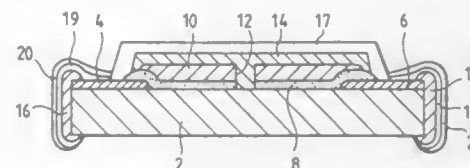
1. A chip resistor comprising:
 (1) an insulating substrate,
 (2) a pair of terminations disposed over said substrate,
 (3) a resistor layer of thick film composition comprising a mixture of finely divided particles of conductive component and glass binder, and
 (4) optionally, a coat covering glass or organic polymeric layer over said resistor layer,
 wherein said resistor is disposed and patterned on the surface

of said substrate by printing and firing said thick film composition to form a continuous conductive resistance path comprising a pair of termination sections each of which contacts one of said terminations and which are insulated from one another by the underlying insulating substrate, and a turn section connect-



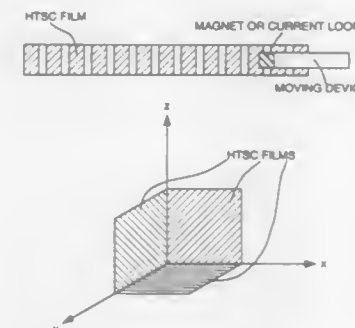
ing the termination sections, the turn section comprising at least one segment angled with respect to the longitudinal direction of current flow defined in the respective termination sections whereby the continuous conductive resistance path is considerably longer than a straight line across the insulating substrate lying between said terminations.

5,379,017
SQUARE CHIP RESISTOR
 Takafumi Katsuno, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
 Filed Oct. 25, 1993, Ser. No. 142,225
 Int. Cl.⁶ H01C 1/148
 U.S. Cl. 338—332 3 Claims



1. A square chip resistor comprising:
 a substrate formed of an insulating substrate;
 a pair of primary electrodes formed oppositely on said substrate;
 a resistor formed on said substrate so as to stretch over said pair of primary electrodes;
 a first glass layer formed so as to cover the surface of said resistor and having a thermal expansion coefficient of $66 \times 10^{-7}/^{\circ}\text{C.}$ to $76 \times 10^{-7}/^{\circ}\text{C.}$;
 a second glass layer formed on said first glass layer and having a thermal expansion coefficient of $63 \times 10^{-7}/^{\circ}\text{C.}$ to $73 \times 10^{-7}/^{\circ}\text{C.}$;
 a third glass layer formed on said second glass layer and having a thermal expansion coefficient of $60 \times 10^{-7}/^{\circ}\text{C.}$ to $70 \times 10^{-7}/^{\circ}\text{C.}$; and
 a pair of secondary electrodes electrically connected to said pair of primary electrodes respectively and formed on the edge portions of said substrate respectively, wherein a powder of an inorganic material having a greater thermal expansion coefficient than glass is added to said glass layers.

5,379,018
HIGH TEMPERATURE SUPERCONDUCTOR MAGNETIC SWITCH
 Roger E. De Wames; Ira B. Goldberg; Peter E. D. Morgan; Joseph J. Ratto; David B. Marshall, and William F. Hall, all of Thousand Oaks, Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.
 Continuation-in-part of Ser. No. 303,708, Jan. 27, 1989. This application Jul. 10, 1991, Ser. No. 727,763
 Int. Cl.⁶ H01F 7/22
 U.S. Cl. 505—211 6 Claims

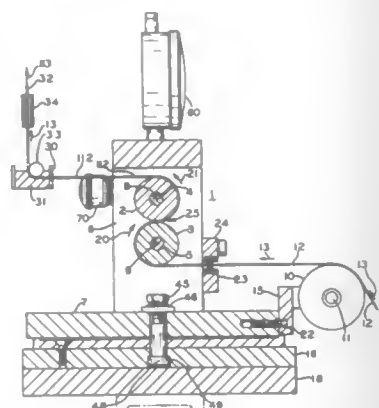


1. A magnetic switch for recording the change in position of a magnetic field, comprising:
 a first object on which is positioned a source of magnetic force for creating a magnetic field;
 a second object on which is positioned at least one type II superconducting medium which exhibits a permanent magnetic component after exposure to a magnetic field, such that relative motion between the first object and the second object causes the magnetic field to induce a residual magnetization in the superconducting medium; and
 means for measuring the residual magnetization induced in the superconducting medium.
 5. A device for sensing the direction of a magnetic field, comprising:
 a first type II superconducting medium adapted to exhibit a permanent magnetic component after exposure to a magnetic field having a first direction;
 a second type II superconducting medium adapted to exhibit a permanent magnetic component after exposure to a magnetic field having a second direction orthogonal to the first direction;
 a third type II superconducting medium adapted to exhibit a permanent magnetic component after exposure to a magnetic field having a third direction orthogonal to the first and second directions; and
 means for measuring the direction of any permanent magnetic component induced in the first, second, or third superconducting medium.

5,379,019
APPARATUS FOR EMBOSSED SUPERCONDUCTING TAPE FOR USE IN A SUPERCONDUCTING MAGNET
 Neil G. Fiddes, Columbia; Christopher G. King, Florence; Gerhard S. Kobus; Anthony Mantone, both of Effingham, and Frank D. Shaffer, Quimby, all of S.C., assignors to General Electric Company, Milwaukee, Wis.
 Filed Oct. 12, 1993, Ser. No. 134,456
 Int. Cl.⁶ H01F 1/00; H01L 39/24; B31F 1/20
 U.S. Cl. 335—216 14 Claims

1. Apparatus for uniformly embossing by deforming long lengths of foil for use in liquid coated multi-layer tape for superconducting magnets to control the flow of the liquid metal layer formed on the surface of the foil comprising:
 a pair of rotatable knurling rollers each having an axis of rotation and positioned contiguous to each other and forming an embossing region between the circumferential surfaces thereof;

each of said circumferential surfaces including a repetitive knurled tooth pattern which substantially mesh and nest in said embossing region; further providing liquid metal coating means; means to pass said deformable foil between the meshing and nested teeth and through said embossing region to deform



said foil with channels formed between the teeth of said tooth pattern to subsequently control the flow of liquid metal on the surfaces of said foil; and means to control the relative positioning of said knurling rollers in said embossing region to control the embossing of said knurled pattern onto said foil and said subsequent flow of liquid metal.

5,379,020

HIGH-TEMPERATURE SUPERCONDUCTOR AND ITS USE

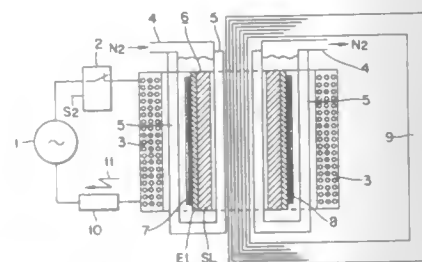
Jürg Meier, Stein am Rhein, and Willi Paul, Wettingen, both of Switzerland, assignors to ABB Research Ltd., Zurich, Switzerland

Filed May 16, 1994, Ser. No. 243,167

Claims priority, application Germany, Jun. 4, 1993, 4318562
Int. Cl.⁶ H01F 7/22; H02H 7/00

U.S. Cl. 505—211

10 Claims



1. A high-temperature superconductor, having at least one metallic electrical conductor on at least one conductor surface of a molding of the high-temperature superconductor and in good electrical contact with it, wherein the at least one metallic electrical conductor is deposited in the form of one or more layers or foils, for which:

$$\sum \delta E_m / \sigma E_m > \delta S_L / \sigma S_L$$

the addition being carried out from $m=1$ to m_l , where m_l =number of layers, σE_m =resistivity of an m^{th} metal layer at room temperature, σS_L =resistivity of the molding at room temperature, δE_m =thickness or wall thickness of the m^{th} metal layer, and δS_L =thickness or wall thickness of the molding of the high-temperature superconductor.

5,379,021

INDUCTIVE COUPLER FOR TRANSFERRING ELECTRICAL POWER

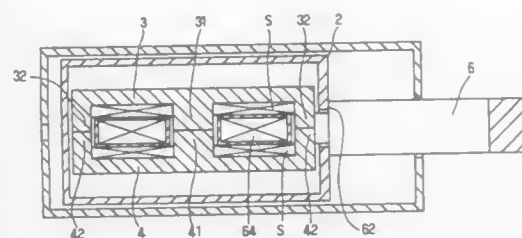
Makoto Ito; Yoichiro Kashiwagi, and Goro Asahi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Dec. 9, 1993, Ser. No. 164,421

Claims priority, application Japan, Dec. 11, 1992, 4-331612
Int. Cl.⁶ H01F 15/02, 27/26

U.S. Cl. 336—83

12 Claims



1. An inductive coupler comprising: a first coil assembly having a pair of cores and a first winding disposed in at least one of said cores; a case housing therein said first coil assembly and having an opening at one end thereof, said first coil assembly being movable toward and away from said opening and said cores being movable toward and away from each other in said case; a second coil assembly having a second winding and insertable between said cores of the first coil assembly through said opening of the case; guide means for causing said cores of the first coil assembly to move toward each other as said second coil assembly inserted between the cores is moved to push the first coil assembly in the case until a magnetic circuit of said inductive coupler is formed.

5,379,022

THERMISTOR DEVICE WITH EXTENDED OPERATING RANGE

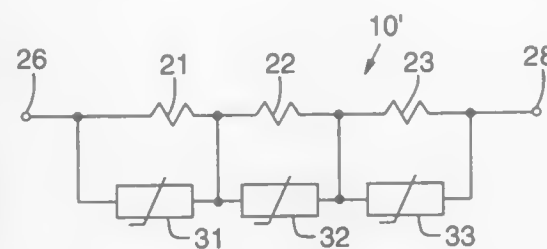
Glade B. Bacon, Everett, and Heber P. Farnsworth, Snohomish, both of Wash., assignors to Fluke Corporation, Everett, Wash.

Filed May 3, 1993, Ser. No. 57,170

Int. Cl.⁶ H01C 7/10

U.S. Cl. 338—20

21 Claims



1. A protection circuit adapted to transition from a low resistance state to a high resistance state when a voltage exceeding a predetermined value appears thereacross, said circuit comprising: a pair of terminals adapted for connection in circuit for coupling a current, and between which a voltage drop is adapted to take place, plural thermistor means disposed in series relationship with one another intermediate said terminals, and a varistor coupled in shunt relation across a given thermistor means of said plural thermistor means so that when the given thermistor means conducts current and the temperature thereof rises to a level causing its share of said voltage drop to exceed a predetermined voltage value, said varistor

tor conducts and protects the given thermistor means until other of said thermistor means in series also rise in temperature to drop a significant proportion of said voltage drop.

5,379,023

ALARM SYSTEM

Paul W. Dalton, Coventry, England, assignor to Volumatic Limited, Coventry, England

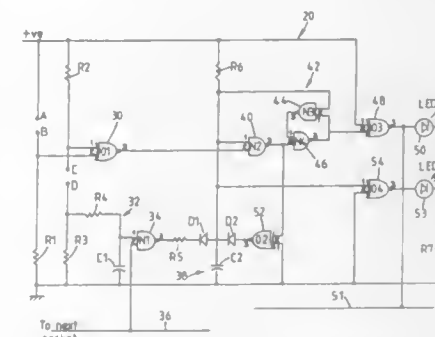
Filed Oct. 9, 1992, Ser. No. 958,925

Claims priority, application United Kingdom, Oct. 12, 1991, 9121684

Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—568

6 Claims



1. An alarm system protecting products on display in a shop or store, the alarm system comprising: an alarm unit having an alarm; and a plurality of alarm stations, each associated with a respective product, each alarm station being independent of other alarm stations in the system, each alarm station having indication means at the respective product for providing a reset indication signal such as a visual indication when an associated alarm station is in a reset mode and for providing an alarm indication signal such as an audio or visual alarm when the associated alarm station is in an alarm mode, sensor means associated with each alarm station, for sensing the presence of said product and for providing an alarm signal to the alarm at the alarm unit and to said indication means for switching it from the reset mode to the alarm mode, and reset means for selectively negating the alarm signal to said alarm unit, and for switching said indication means from the alarm mode to the reset mode.

5,379,024

PICKPOCKET PROTECTIVE WALLET

Simon Hsu, 10 Fl., No. 413, Lin San N. Rd., Taipei, Taiwan, Prov. of China

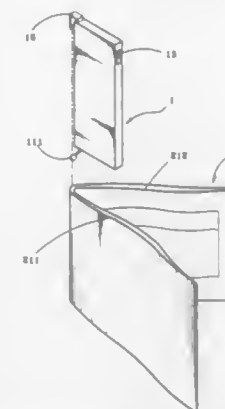
Filed Oct. 1, 1993, Ser. No. 130,999

Int. Cl.⁶ G08B 13/14

U.S. Cl. 340—571

5 Claims

1. A pick-pocket protective wallet comprising a wallet and an alarm device fastened to said wallet, said alarm device comprising an alarm circuit controlled by a control switch to electrically connect a battery power supply unit to a sound generating circuit, causing said sound generating circuit to produce an audio alarm signal through a buzzer, wherein said control switch consists of a contact and a switch lever extending out of said wallet and normally disposed in contact with said contact, said switch lever being moved away from said contact to cut off said battery power supply from said sound



with said contact to turn on said sound generating circuit as said wallet is removed from said pocket.

5,379,025

METHOD AND APPARATUS FOR SEISMIC TORNADO DETECTION

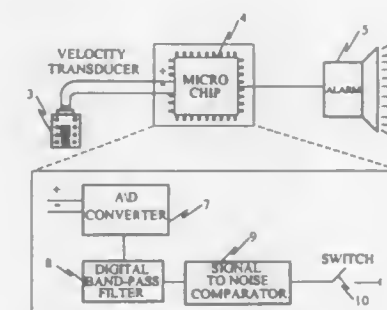
Frank B. Tatom, 3062 Dupree Dr., Huntsville, Ala. 35801, and Stanley J. Vitton, 4402 Kingdom Ct., Northport, Ala. 35476

Filed Jul. 12, 1993, Ser. No. 91,245

Int. Cl.⁶ G08B 21/00

U.S. Cl. 340—601

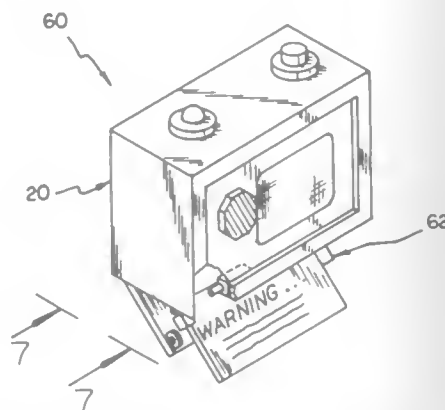
9 Claims



1. A method of providing warning signals of an approaching tornado, comprising: locating a velocity transducer in direct contact with the ground to detect seismic waves including surface waves of predetermined frequencies produced in the ground as a result of an approaching tornado, said transducer disposed for generating electrical signals indicative of said seismic waves including said surface waves of predetermined frequencies which are produced in the ground as a result of an approaching tornado; providing a band-pass filter remotely from said velocity transducer, said band-pass filter disposed for receiving said electrical signals from said velocity transducer indicative of said seismic waves, and, for attenuating substantially all of the said electrical signals except said electrical signals indicative of said surface waves produced in the ground as a result of an approaching tornado having a signal-to-noise ratio; comparing said signal-to-noise ratio of said signals indicative of said surface waves produced in the ground as a result of an approaching tornado to a predetermined level; and activating an alarm when said signal-to-noise ratio exceeds a predetermined level.

5,379,026
TOXIC COMBUSTION GAS ALARM
 Leonard C. Whittle, RT #1 Box 795C, Spicewood, Tex. 78669
 Filed Jun. 17, 1993, Ser. No. 77,276
 Int. Cl.⁶ G08B 17/10
 U.S. Cl. 340—632

2 Claims

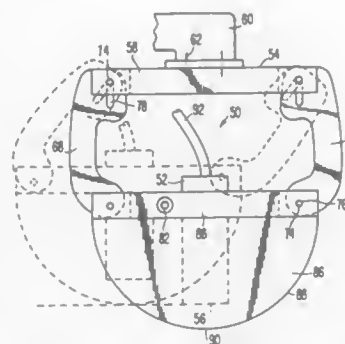


1. A new toxic combustion gas alarm for use with a furnace having an air duct and an electric gas valve, said alarm comprising:

- a toxic gas detection means for detecting a predetermined level of carbon monoxide gas within said air duct;
- an alarm circuit electrically coupled to said toxic gas detection means for closing said electric gas valve upon detection of said predetermined level of carbon monoxide by said toxic gas detection means;
- a siren means electrically coupled to said alarm circuit for generating audible noise upon said detection of said predetermined level of carbon monoxide by said toxic gas detection means;
- a light means electrically coupled to said alarm circuit for generating visual light upon said detection of said predetermined level of carbon monoxide by said toxic gas detection means;
- a test circuit means in electrical communication with said alarm circuit for selectively actuating said alarm circuit to simulate said detection of said predetermined level of carbon monoxide by said toxic gas detection means to verify proper operation of said alarm circuit;
- a case mountable to a wall for containing said alarm circuit, said siren means, said light means, and said test circuit, said case comprising a hinge and a bottom side having a catch, with the hinge pivotally connecting the bottom side to the case, said bottom side having an interior surface and a pair of spaced, parallel aligned guides mounted to said interior surface of said bottom side; a solenoid latch mounted to said case and electrically coupled to said alarm circuit, with the solenoid latch being engagable to said catch to retain said bottom side in a first horizontal position; a warning sign slidably captured between said guides and releasably contained within said case, said warning sign having a stop limiting slidable movement of said warning sign relative to said bottom side, with said warning sign further having written instructions explaining the nature and danger of said detection of said predetermined level of carbon monoxide by said toxic gas detection means, whereby upon said detection of said predetermined level of carbon monoxide by said toxic gas detection means the solenoid latch releases said catch to allow said bottom side to pivot away from the case under a force of gravity into a second non-horizontal position, whereby said warning sign will slidably extend downward into view.

5,379,027
ORIENTED STRAND BOARD PRODUCT DETECTING APPARATUS USING PROXIMITY SENSOR
 Leroy F. Curtis, Calais, Me., assignor to Georgia-Pacific Corporation, Atlanta, Ga.
 Filed Apr. 15, 1993, Ser. No. 46,167
 Int. Cl.⁶ G08B 21/00; B65G 43/00
 U.S. Cl. 340—676

13 Claims



1. For use in a processing system for producing pressed board product including a conveyor, a processing station and a conveyor unloading station, the combination including:
- sensing means operably disposed in a position overlying the path of travel of said conveyor;
 - means for suspendedly mounting said sensing means comprising:
 - a substantially fixed plate vertically spaced above said conveyor path of travel,
 - a floating plate securing said sensing means with its operating face in detecting relation with respect to the surface of said conveyor,
 - a pair of mutually spaced feeler feet depending from said floating plate, said feeler feet having a vertical dimension to place the bottom edge thereof a predetermined distance below the operating face of said sensor, and
 - a plurality of support arms disposed at spaced locations about the periphery of said floating plate, said support arms being pivotally connected at their opposite ends to said floating plate and to said fixed plate, respectively.

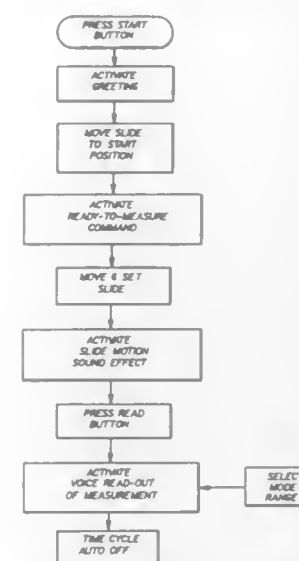
5,379,028
HEIGHT MEASUREMENT DEVICE WITH VOICE READOUT

Caleb Chung, Van Nuys, Calif., assignor to With Design In Mind, Chatsworth, Calif.
 Filed Mar. 11, 1993, Ser. No. 29,626
 Int. Cl.⁶ G08B 25/08; A61B 1/00
 U.S. Cl. 340—692

16 Claims

1. A height measurement device comprising:
- a housing adapted for mounting onto a wall;
 - a measuring arm carried by said housing for vertical displacement manually within a selected height measurement range to a position seated on top of a person's head to represent that person's height;
 - a control circuit including voice synthesizer means for producing preprogrammed voice audio outputs, said control circuit further including audio means for producing an audio signal in response to said vertical displacement of said measuring arm;
 - start means on said housing for activating said control circuit to generate instructional voice commands to explain how to operate said device;
 - said control circuit including means for tracking the vertical

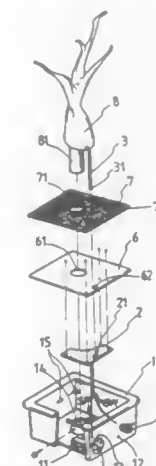
position of said measuring arm and for correlating said vertical position with a height measurement; and



readout means for activating said control circuit to generate a voice readout announcing the vertical position of said measuring arm.

5,379,029
SENSING DECORATIVE TREE
 Cheng Kuo-Tang, and Hung Ching-Ho, both of P.O. Box 82-144, Taipei, Taiwan, Prov. of China
 Filed Nov. 16, 1993, Ser. No. 152,377
 Int. Cl.⁶ G08B 23/00
 U.S. Cl. 340—693

3 Claims



1. A sensing decorative tree comprising:
- a pot provided with a raised annular member on the bottom and a plurality of protuberances on the inner side;
 - a trunk having a lower end engaged with the raised annular member of said pot, said trunk further having a passage;
 - a partition plate mounted on the protuberances of said pot;
 - an artificial lawn mounted on said partition plate;
 - a voice producer mounted on the bottom of said partition plate;
 - an amplifier mounted on said pot and electrically connected with said voice producer;
 - a sleeve inserted in the upper outlet of the passage of said trunk;
 - a sensing wire provided at one end with a plug connected

with said voice producer and at the other end with a sensor received in said sleeve;

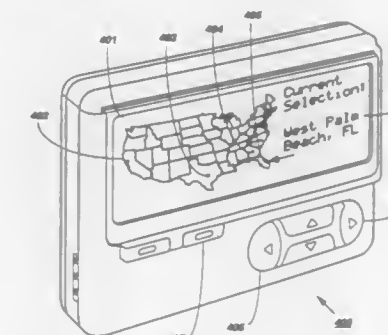
- a volume control mounted in said pot and electrically connected with said amplifier for controlling volume of said amplifier; and
- a plurality of flexible canes twisted on said trunk and provided at one end with a plug electrically connected with said voice producer and at the other end with a sensor.

5,379,030
USER FRIENDLY CHANNEL SELECTION IN A SELECTIVE CALL RECEIVER AND METHOD THEREFOR

Thomas R. Nolan, Deerfield Beach; Mark T. Stair, Delray Beach, both of Fla., and Patrick S. Kung, Taipei, Taiwan, Prov. of China, assignors to Motorola, Inc., Schaumburg, Ill.
 Filed Jul. 27, 1992, Ser. No. 919,675
 Int. Cl.⁶ H04Q 7/00

U.S. Cl. 340—825.03

12 Claims



1. A selective call receiver for receiving an information signal, the selective call receiver comprising:
- an information display for presenting information representing an area map having a plurality of operating regions in which the selective call receiver can receive the information signal from a selected channel, each region in the plurality of operating regions having a corresponding predetermined selective call signaling channel; and
 - a processor operationally coupled to the information display and to at least one user activated control for selecting one of the plurality of operating regions and the corresponding predetermined selective call signaling channel as the selected channel, and in response to selecting of one of the plurality of operating regions, operating the selective call receiver on the selected channel to receive the information signal.

5,379,031
METHOD AND APPARATUS FOR CONVERSION OF MAILDROP MESSAGE TO SELECTIVE CALL INDIVIDUAL MESSAGE

Nancy E. Mondrosch, Boynton Beach, and Gregory L. Cannon, Delray Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 19, 1992, Ser. No. 963,788

Int. Cl.⁶ H04Q 1/00

U.S. Cl. 340—825.07

20 Claims

1. A selective call receiver comprising:
- receiving means for receiving and demodulating selective call signals;
 - decoding means coupled to the receiving means for decoding the selective call signals to recover a decoded selective call message;
 - first determining means coupled to the decoding means for determining whether the decoded selective call message is of a first type or a second type;
 - first memory means for storing selective call messages of a first message type;

the input stream that matches a corresponding stored string, the pointer representative of the corresponding stored string, thereby to convert the input stream in a compressed set of pointers representative of the input stream,

decompression means for receiving a stream of pointers representative of strings of characters, the decompression means comprising

means for comparing each received pointer with strings stored in the dictionary to locate a string corresponding to each received pointer, and

means for transmitting, in place of each received pointer corresponding to a stored string, the stored string corresponding to the pointer, thereby to decompress the stream of pointers into an uncompressed stream of characters, means for ensuring that the encoder and decoder have a consistent method for learning pairs of pointers by employing a modified learning rule and/or retiming of the input-output stream.

5,379,037 APPARATUS FOR DECODING DEGRADED DATA SIGNALS

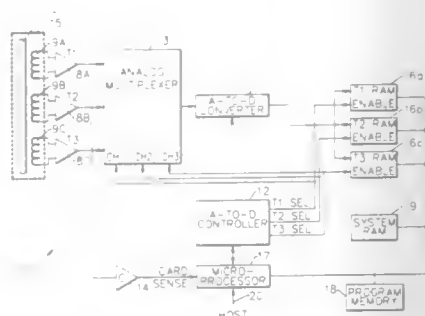
Clarence Harrison; Mark D. Marik, and Roger L. Posthumus, all of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 822,595, Jan. 17, 1992, Pat. No. 5,298,897, which is a division of Ser. No. 477,320, Feb. 7, 1990, Pat. No. 5,168,275. This application Sep. 29, 1993, Ser. No. 128,986

Int. Cl.⁶ H03M 5/12

U.S. Cl. 341—71

30 Claims



1. A system for decoding a data signal encoded on a data signal media, comprising:
means for reading said data signal on said data signal media;
means, responsive to said reading means, for decoding the data signal on said data signal media;
means, responsive to said decoding means, for determining that said data signal is degraded notwithstanding that said decoding means decoded the data signal free of errors; and
means, responsive to said determining means, for producing a degraded data signal indication;
wherein said data signal media comprises magnetic data signal media;
wherein said determining means comprises means for determining that excess magnetic flux transitions are present on said magnetic data signal media;
wherein said data signal comprises a two-frequency data signal encoded on said magnetic data signal media as a plurality of bit cells, with a first data value being represented by a bit cell having no intermediate flux transition therein, and a second data value being represented by a bit cell having one flux transition therein; and
wherein said determining means comprises means for determining that more than one flux transition occurred in a bit cell having said second data value represented therein.

5,379,038 PARALLEL-SERIAL DATA CONVERTER

Yoshimi Matsumoto, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

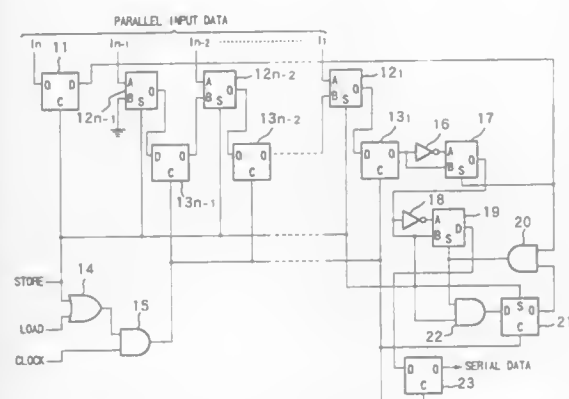
Filed Aug. 4, 1993, Ser. No. 101,922

Claims priority, application Japan, Aug. 6, 1992, 4-209909

Int. Cl.⁶ H03M 9/00

U.S. Cl. 341—101

7 Claims



1. A parallel-serial data converter to convert parallel data of n (positive integer) bits in sign magnitude notation into serial data in two's complement notation comprising:
a n -th circuit latching the sign bit at the most significant bit of said parallel data according to a STORE signal;
a n -1th selector receiving the n -1th bit of said parallel data as the first input and the ground level as the second input and selecting either of them for output according to said STORE signal;
a n -1th latch circuit latching the output from said n -1th selector according to a predetermined CLOCK signal;
a i -th selector receiving the i -th bit of said parallel data ($i = n-2, n-3, \dots, 2$ and 1) as the first input and the output from a $i+1$ th latch circuit as the second input and selecting either of them for output according to said STORE signal;
a i -th latch circuit latching the output from said i -th selector according to said CLOCK signal;
a first inverter inverting the output from said first latch circuit;
a n -th selector receiving the output from said first inverter as the first input and the output from said first latch circuit as the second input and selecting either of them for output according to the output from said n -th latch circuit;
a second inverter which inverts the output from said n -th selector;
a $n+1$ th selector receiving the output from said second inverter as the first input and the output from said n -th selector as the second input and selecting either of them according to the predetermined selection signal for output as the serial data in two's complement notation;
a first AND circuit taking the logical AND the output from said n -th selector and said selection signal;
a set latch circuit being set according to said STORE signal and latching the output from said first AND circuit according to said CLOCK signal; and
a second AND circuit taking the logical AND the output from said set latch circuit and the output from said n -th latch circuit for output as said selection signal.

5,379,039 METHOD AND IMPROVED APPARATUS FOR STABILIZING ANALOG-TO-DIGITAL CIRCUITS

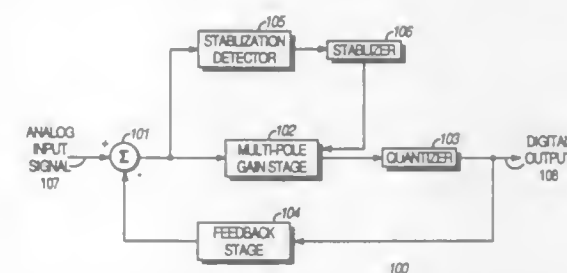
Joseph A. Charaska, Melrose Park; Mark A. Gannon, Sleepy Hollow, and Paul H. Gailus, Prospect Heights, all of Ill., assignors to Motorola Inc., Schaumburg, Del.

Filed Jul. 26, 1993, Ser. No. 96,386

Int. Cl.⁶ H03M 3/02

U.S. Cl. 341—143

14 Claims



1. In an analog-to-digital (A/D) circuit that includes a multi-pole gain stage, an input summation stage, a feedback stage, and a quantizer, wherein the feedback stage is operably coupled to an output of the quantizer and the input summation stage, and wherein the input summation stage sums an analog input signal with a feedback signal, a method for stabilizing the A/D circuit when the analog input signal is excessive, the method comprises the steps of:

- sampling a representation of stabilization of the A/D circuit;
- when the representation of stabilization is unfavorable, adjusting the multi-pole gain stage by increasing phase margin, wherein an increase in phase margin is based on degree of unfavorability of the representation of stabilization; and
- providing, by the A/D circuit at the increased phase margin, digital representations of the analog input signal.

5,379,040 DIGITAL-TO-ANALOG CONVERTER

Hirofumi Mizumoto, and Yoshiaki Kitamura, both of Tokyo, Japan, assignors to NEC Corporation, Japan

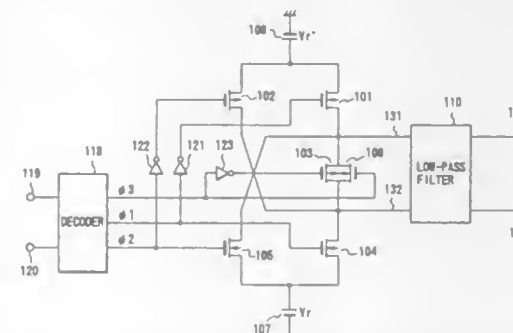
Filed Feb. 17, 1993, Ser. No. 18,756

Claims priority, application Japan, Feb. 17, 1992, 4-029541

Int. Cl.⁶ H03M 3/00

U.S. Cl. 341—143

4 Claims



1. A digital-to-analog converter comprising:
a decoder having first and second inputs and firsts second and third outputs;
a full differential type low-pass filter having first and second inputs and first and second outputs;
a first switch having a first terminal connected to a first reference voltage source, a second terminal connected to the first input of said full differential type low-pass filter,

and a third terminal as a control terminal connected to the first output of said decoder;

a second switch having a first terminal connected to said first reference voltage source, a second terminal connected to the second input of said full differential type low-pass filter, and a third terminal as a control terminal connected to the second output of said decoder;

a third switch having a first terminal connected to a second reference voltage source, a second terminal connected to the second input of said full differential type low-pass filter, and a third terminal as a control terminal connected to the first output of said decoder;

a fourth switch having a first terminal connected to said second reference voltage source, a second terminal connected to the first input of said full differential type low-pass filter, and a third terminal connected to the second output of said decoder;

a fifth switch having a first terminal connected to the first input of said full differential type low-pass filter, a second terminal connected to the second input of said full differential type low-pass filter, and a third terminal as a control terminal connected to the third output of said decoder; and

a sixth switch having a first terminal connected to the second input of said full differential type low-pass filter, a second terminal connected to the first input of said full differential type low-pass filter, and a third terminal as a control terminal connected to the third output of said decoder.

5,379,041 SYNTHETIC APERTURE RADAR HAVING ROTATING ANTENNAS

Helmut Klausung, Bad Aibling, Germany, assignor to Deutsche Aerospace AG, Germany

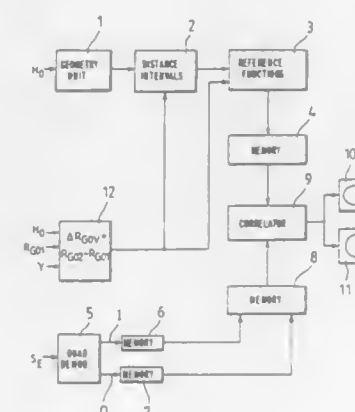
Filed Oct. 5, 1993, Ser. No. 131,634

Claims priority, application Germany, Oct. 5, 1992, 4233416

Int. Cl.⁶ G01S 13/90

U.S. Cl. 342—25

10 Claims



1. A radar device comprising:
at least one transmitter,
at least one receiver;
at least one antenna for transmitting and receiving radar pulses, said antenna being arranged on an end of a rotating arm;
a device for demodulating and immediately storing received signals;
a first processor circuit for forming and storing reference functions based on a predetermined array of system parameters;
a second processor circuit for subdividing a distance range illuminated by the antenna into individual distance intervals, and for determining reference functions for each such distance interval;

a correlator for correlating the received signals with the reference functions; and
a display device for the correction result;
wherein the second processor circuit has a memory circuit for storing image definition data and for controlling the distance ranges for the subdivision of the distance intervals and the reference functions.

5,379,042

METHOD OF STORING DATA RELATING TO THE LIFE OF A COMPLICATED PRODUCT

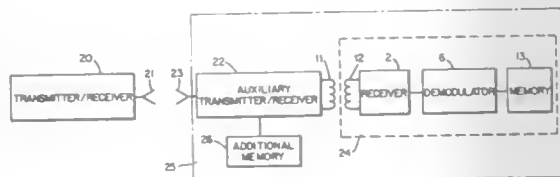
Bengt Henoch, Backvindelns 90, S-126 57 Hagersten, Sweden
PCT No. PCT/SE91/00341, § 371 Date Nov. 12, 1992, § 102(e)
Date Nov. 12, 1992, PCT Pub. No. WO91/18452, PCT Pub. Date Nov. 28, 1991

PCT Filed May 14, 1991, Ser. No. 941,145

Claims priority, application Sweden, May 14, 1990, 9001729-4
Int. Cl.⁶ G01S 13/80

U.S. Cl. 342-42

13 Claims



1. A method for storing product-related data for retrieval during manufacture of a product and for retrieval during use of the product after manufacture, said method comprising:

- providing a transponder including a non-volatile memory for retaining product-related data including both product production data and product operation data, antenna means for receiving and for transmitting data signals, a receiver for receiving a modulated signal from a data transmitter, a demodulator coupled with the receiver for demodulating the modulated signal and coupled with the memory for conveying the modulated signal to the memory;
- attaching the transponder to the product during manufacture of the product for retention by the product during manufacture and during use of the product subsequent to manufacture;
- transmitting product production data between the transponder and a product manufacturing data transmitter/receiver while the product is being manufacture, for retention in the transponder memory of product manufacturing data for subsequent retrieval;
- providing on the product a data network including an apparatus for receiving and storing product operating data, wherein the product operating data receiving and storing apparatus is adapted for communication with the transponder carried by the product;
- retaining the transponder on the product after manufacturing operations on the product have been completed and while the product is in its intended use;
- recording product operating data in the transponder memory as the product is being used for its intended purpose; and
- communicating product operating data and product production data between the transponder and a product operating data receiving apparatus after the product has been manufactured and has been in use.

5,379,043 REPLY-FREQUENCY INTERFERENCE/JAMMING DETECTOR

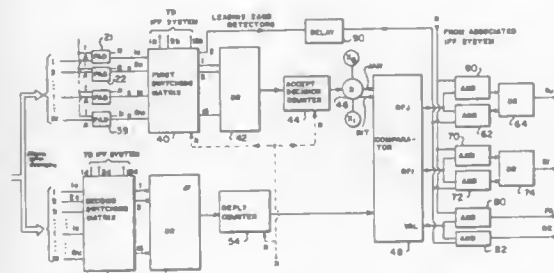
Walton B. Bishop, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1975, Ser. No. 617,470

Int. Cl.⁶ G01S 13/78, 1/36

U.S. Cl. 342-45

3 Claims



1. An evaluation and decision device for evaluating signals received by an IFF interrogator site reply receiver from a selected range bin to determine whether signals from the selected range bin are produced by a friendly or unknown source and whether reply frequency interference exists, originating in the vicinity of the selected range bin or associated adjacent range bins, said reply-receiver system providing means for separately receiving IFF replies on said reply-frequency from all range bins, reply-counting means for counting the number of replies received from respective range bins, means for determining whether a received reply comes from a friend and thereupon making an accepted-signal decision, and friend-accept signal means for counting the number of accepted-signal decisions made and providing a friend-accept signal when a sufficient number of accepted-signal decisions for a predetermined number of interrogations is counted; said evaluation and decision system comprising:

- means coupled to said friend-accept signal means, for producing a decision signal upon the occurrence of a friend-accept signal corresponding to said center selected channel; and
means coupled to said reply counting means and to said friend-accept signal means for comparing said counted number of replies R_0 with said counted number of friend-accept decisions A_0 , and for producing a) a jamming-threshold-achieved indication signal RFJ when said count R_0 is greater than said count A_0 multiplied by a predetermined jamming threshold, number X_1 ; b) an interference-threshold-achieved indication signal RFI when said number R_0 is less than $X_1 A_0$ but is greater than said count A_0 multiplied by a predetermined interference threshold number X_0 ; and c) a lowest interference-threshold-achieved indication signal VAL when said number R_0 is equal to or less than $X_1 A_0$;
said signal RFJ indicating that said interference is at a level which significantly interferes with the IFF system operation, said signal RFI indicating that said interference is at a level which does not interfere in a significant way with the IFF system operation, and said signal VAL indicating that said interference is of a negligible value.

5,379,044

EFFICIENT MULTI-TARGET TRACKING METHOD

Robert C. Carlson, Colorado Springs, Colo., and Robert A. Rosen, Agoura Hills, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 23, 1993, Ser. No. 173,322

Int. Cl.⁶ G01S 13/00

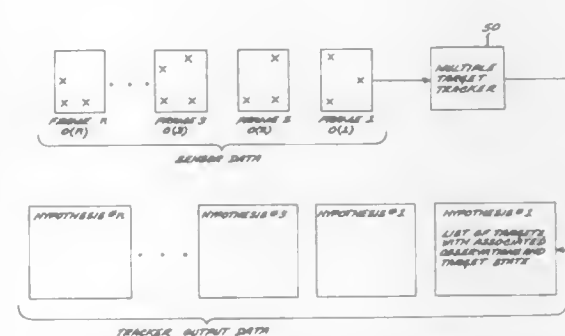
U.S. Cl. 342-90

27 Claims

1. A method for multi-target tracking of targets for a sensor system generating a sequence of successive data frames, each

comprising a set of observations representing data collected by the sensor system during a sensing period, comprising a sequence of the following steps:

- receiving the first frame and setting up a set of tracks in dependence on the data comprising said first frame;
- for each successive frame received, performing the following steps:
deleting stale data regarding said previously received frames;



processing the observations in the new frame to generate a new set of tracks based on said new set of observations as well as observations received from previous frames; and
generating a fresh set of hypotheses each comprising a set of tracks such that no two tracks within any hypothesis have any observations in common.

5,379,045

SATPS MAPPING WITH ANGLE ORIENTATION CALIBRATOR

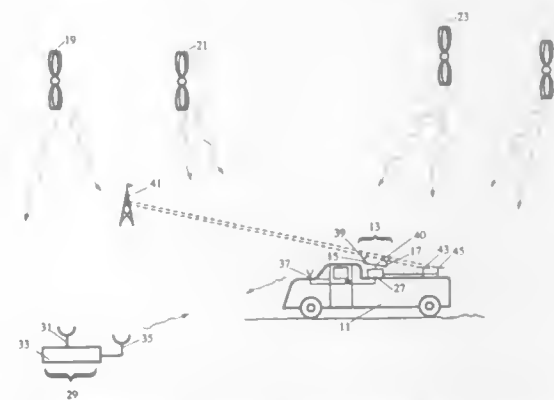
Charles Gilbert, Sunnyvale, Calif.; Steve Kersey, Elgin, Ill., and James M. Janky, Los Altos, Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Sep. 1, 1993, Ser. No. 115,432

Int. Cl.⁶ G01S 5/08

U.S. Cl. 342-357

32 Claims



1. Apparatus for accurately determining the location of a designated object from a position spaced apart from the object, without requiring that the object be approached, the apparatus comprising:

- a first SATPS station whose location is known with high accuracy, the first station comprising:
a first SATPS antenna to receive SATPS signals from a plurality of SATPS satellites;
- a first SATPS receiver/processor, connected to the first SATPS antenna, to receive the SATPS signals from the first SATPS antenna, to determine the location of the first SATPS antenna and to determine an SATPS location correction that is the difference between the SATPS-determined location of the first SATPS an-

5,379,046

INTERFERENCE WAVE CANCELLER

Ichiro Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

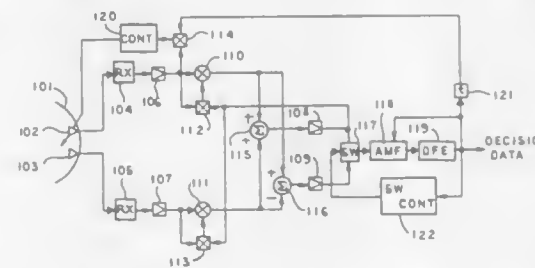
Filed Jun. 8, 1993, Ser. No. 73,796

Claims priority, application Japan, Jun. 9, 1992, 4-149038;
Jul. 8, 1992, 4-180202

Int. Cl.⁶ G01S 3/16; H04B 1/00, 1/10

U.S. Cl. 342-378

18 Claims



1. An interference wave removing apparatus for removing an interference wave between angle diversity branches, comprising:

- first reception means corresponding to a first beam of said angle diversity branches,
- second reception means corresponding to a second beam of said diversity branches and capable of varying a directivity characteristic thereof with regard to the second beam,
- first correlation signal generation means for generating a first correlation signal corresponding to said first reception means,
- second correlation signal generation means for generating a second correlation signal corresponding to said second reception means,
- a first multiplier for multiplying an output of said first reception means and the first correlation signal,
- a second multiplier for multiplying an output of said second reception means and the second correlation signal,
- opposite phase combining means for combining an output of said first multiplier and an output of said second multiplier and outputting a result of the combining,

channel quality compensation means for compensating for the result of the combining for the channel quality, and delay means for delaying the output of said channel quality compensation means, the directivity characteristic of said second reception means being varied in response to an output of said delay means.

5,379,047

REMOTE POSITION DETERMINATION SYSTEM
Hanoeb Yokev, Ramat Gan, and Haim Harel, Herzliya, both of Israel, assignors to Nexus Telecommunication Systems, Inc., Israel

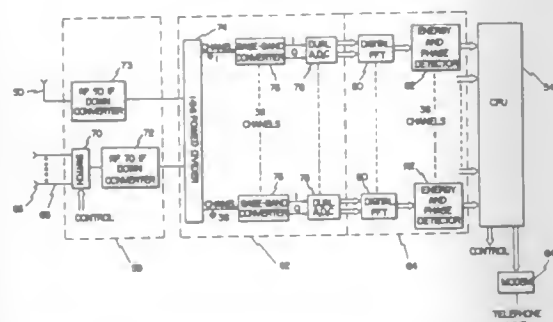
Continuation of Ser. No. 932,610, Aug. 20, 1992, abandoned.

This application Oct. 21, 1993, Ser. No. 140,716

Int. Cl.⁶ G01S 3/02

U.S. Cl. 342—457

20 Claims



1. A remote position determination system, comprising: at least one synchronization transmitter which periodically transmits a timing signal; a plurality of mobile stations each including: a mobile receive operative to receive the timing signal transmitted by the at least one synchronization transmitter; synchronization circuitry receiving the timing signal from the mobile receiver and providing a unique spread spectrum frequency-hopping sequence wherein the frequency hopping sequence is generated in accordance with the timing signal; a mobile transmitter producing a radiated frequency hopped spread spectrum signal responsive to the frequency-hopping sequence, and at least one base station having a plurality, of receiving antennas and a computer and operable for: receiving the radiated frequency hopped spread spectrum signal; determining the identity of each of the mobile stations from the unique spread spectrum frequency-hopping sequence; and calculating the direction of the radiated frequency hopped spread spectrum signal by determining the phase of the radiated frequency hopped spread spectrum signal received by each of the plurality of receiving antennas.

5,379,048

AUTOMATIC ANTENNA TILT APPARATUS
Stephen R. Kaufman, Georgetown, Tex., assignor to The Electro-Mechanics Company, Austin, Tex.

Filed Aug. 4, 1993, Ser. No. 101,635

Int. Cl.⁶ H01Q 3/00

U.S. Cl. 343—765

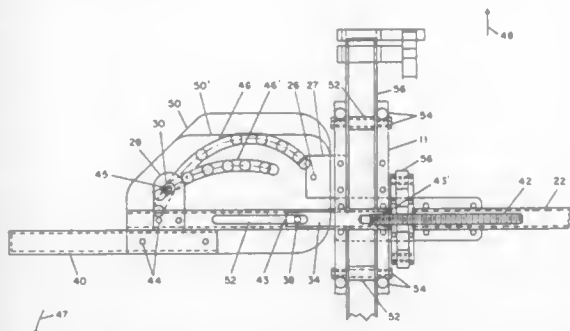
5 Claims

1. An automatically antenna tilt apparatus for an electromagnetic emission testing device for testing at a pre-selected distance, said device having a vertical drive mechanism with a sprocket to raise and lower said testing device to pre-determined height, said apparatus comprising:

tilt drive means, connected to said drive mechanism of said testing device, for changing the motion provided by the

drive mechanism of said testing device into horizontal motion;

a carrier boom, having a horizontal slot and a first pivot bolt therethrough, with said bolt cooperating with said tilt drive means such that horizontal motion of said tilt drive means causes said first pivot bolt to correspondingly move in said horizontal slot;



a cam plate having an arcuate-shaped slot with said slot dimensioned to correspond to the pre-selected test distance and test height of said testing device, with said cam plate pivotally attached to said carrier boom via said first pivot bolt and a second pivot bolt through the arcuate slot in said cam plate; wherein the horizontal motion of said first pivot bolt causes said second pivot bolt to move within the arcuate slot in said cam plate whereby said cam plate tilts.

5,379,049

ADVANCED VIDEO DISPLAY PROCESSOR HAVING COLOR PALETTE

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 455,869, Dec. 18, 1989, Pat. No.

5,089,811, which is a continuation of Ser. No. 262,176, Oct. 20,

1988, abandoned, which is a continuation of Ser. No. 38,476,

Apr. 13, 1987, abandoned, which is a continuation of Ser. No.

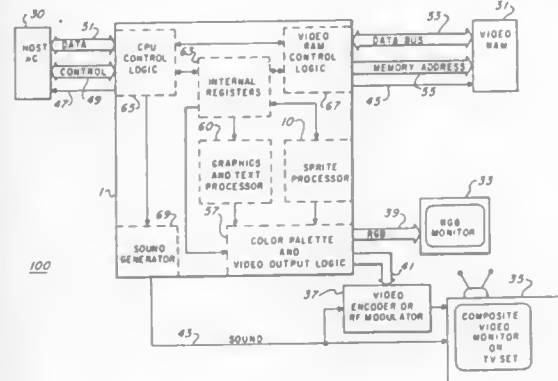
600,921, Apr. 16, 1984, abandoned. This application Dec. 5,

1991, Ser. No. 803,236

Int. Cl.⁶ G09G 5/02

U.S. Cl. 345—22

12 Claims



1. A video display processor comprising: a memory port for reading and writing a plurality of color data and color codes from an external memory; a graphics processor connected to said memory port for sequentially reading color data from the external memory via said memory port corresponding to respective pixels of a raster scan video display; at least one sprite register storing a sprite horizontal location and sprite color data for a corresponding mobile pattern of

a predetermined size in pixels smaller than said video display, said at least one sprite register outputting said sprite color data when said raster scan of said video display has a horizontal location including said corresponding mobile pattern;

a color palette including an input, a plurality of color palette registers each storing a color code wherein the number of colors specificable by said color codes exceed the number of said color palette registers and an output, said color palette outputting a color code via said output corresponding to color data received at said input;

a color priority logic connected to said graphics processor, said at least one sprite register and said color palette, said color priority logic supplying said color data from said graphics processor to said input of said color palette when none of said at least one sprite register output sprite color data and supplying said sprite color data to said input of said color palette from a sprite register having the highest priority in a predetermined priority of sprites when any one of said at least one sprite register outputs sprite color data; and

a digital to analog converter having an input connected to said output of said color palette and an output, said digital to analog converter outputting at least one analog color signal corresponding to color codes received at said input of said digital to analog converter.

5,379,050

METHOD OF DRIVING A MATRIX DISPLAY DEVICE AND A MATRIX DISPLAY DEVICE OPERABLE BY SUCH A METHOD

Alexander D. Annis, Haywards Heath; Alan G. Knapp, Crawley; Jeremy N. Sandoe, Horsham, all of Great Britain, and Peter B. A. Wolfs, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

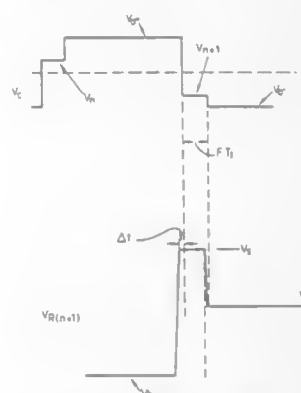
Filed Nov. 26, 1991, Ser. No. 797,887

Claims priority, application United Kingdom, Dec. 5, 1990, 9026494; Nov. 6, 1991, 9123551

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—94

15 Claims



1. A method of driving a matrix display device comprising an electro-optical display medium between two supporting plates, an array of display elements arranged in rows and columns with each display element being constituted by electrodes provided on the facing surfaces of the supporting plates, and sets of row and column conductors, each display element being connected in series with a two-terminal nonlinear switching device between associated ones of the row and column conductors, in which each row of display elements is selected during a respective row address period by a row selection signal applied to the respective row conductor and data signals are applied via the column conductors by means of which selection and data signals a range of operational voltages can be produced at the display elements for display purposes, and in which each of the data signals is applied for only a part of the row address period, a reference potential being

applied to the column conductors during the remainder of the row address period, characterised in that for a row of display elements the respective row selection signal commences prior to the application of the data signals and during the application of the reference potential, and has a duration which is longer than the duration of the data signals, whereby the display elements are initially charged to a level approaching the range of operational voltages and thereafter are charged to the required level according to the applied data signals.

5,379,051

METHOD AND APPARATUS FOR REARRANGING AND DISPLAYING LINE DATA

Kazumi Suga, and Taketo Hasegawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

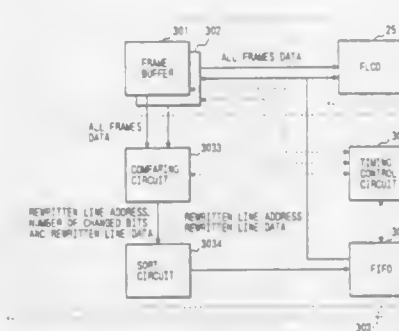
Filed May 10, 1993, Ser. No. 58,357

Claims priority, application Japan, May 19, 1992, 4-126147

Int. Cl.⁶ G09G 3/36

U.S. Cl. 345—97

8 Claims



1. A display control apparatus comprising: display means for displaying lines of data; data storage means for storing data presently displayed on said display means; supplying means for receiving updated data and for supplying the update data to said data storage means; detecting means for detecting a difference between the updated data being supplied to said supplying means and the data presently displayed on said display means; memory means for storing a result of the detection by said detecting means; control means for supplying data stored in said data storage means to said display means based on the result of the detection stored in said memory means; counting means for counting a number of changed bits in data for a line in which a difference is detected by said detecting means; and rearranging means for rearranging the lines of data in descending order of the number of changed bits counted by said counting means for lines in which a difference is detected, wherein said control means supplies the data to said display means in accordance with the order of the data as rearranged by said rearranging means.

5,379,052

VGA AND EGA VIDEO CONTROLLER APPARATUS USING SHARED COMMON VIDEO MEMORY

Jeffrey A. Walck, Lebanon, N.J.; Christopher D. Coley, Elmerville, Del., and Donald W. Kugler, Jr., Frenchtown, N.J., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 26, 1992, Ser. No. 858,243

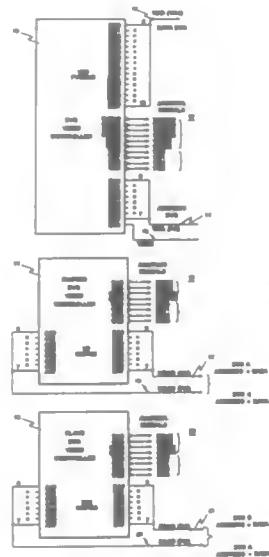
Int. Cl.⁶ G09G 1/02

U.S. Cl. 345—185

30 Claims

1. Video controller apparatus comprising first video controller means of a first type for operating in accordance with a first video mode, normally with video memory dedicated thereto, and operative to provide ad-

dress and control signals to, and to write data signals to and read data signals from its video memory in accordance with a first memory interface protocol, second video controller means of a second type for operating in accordance with a second video mode, normally with video memory dedicated thereto, and operative to provide address and control signals to, and to write data signals to and read data signals from its video memory in accordance with a second memory interface protocol, said first and second memory interface protocols being substantially different with respect to each other, a shared video memory utilized and shared by said first and second video controller means when operating in said first and second video modes, respectively,



a source of mode enabling signal for selectively enabling said first or second video mode, and interface means coupling said first and second video controller means to said shared video memory and responsive to said mode enabling signal, said interface means being constructed and arranged to couple said address, data and control signals between said first video controller means and said shared video memory in accordance with said first memory interface protocol when said mode enabling signal is enabling said first video mode or to couple said address, data and control signals between said second video controller means and said shared video memory in accordance with said second memory interface protocol when said mode enabling signal is enabling said second video mode.

5,379,053
ELECTROMAGNETIC CURSOR CONTROL DEVICE FOR A COMPUTER DISPLAY
John D. Steinberg, 320 Lake St., #304, Huntington Beach, Calif. 92648

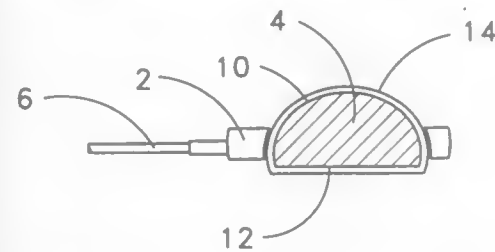
Filed Jul. 15, 1992, Ser. No. 913,214
Int. Cl.⁶ G09G 1/00

U.S. Cl. 345—157

4 Claims

1. A cursor control device including a solid, a flexible bladder enveloping the solid and moveable in at least two generally perpendicular directions relative to the solid, and

a pair of transducers mounted relative to the solid to convert the motion of the flexible sleeve into corresponding electrical signals.



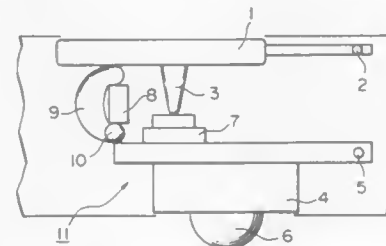
trical for controlling movement of a cursor the transducers being mounted within the solid.

5,379,054
POINTING DEVICE
Shinya Tanaka, Tokyo, and Yoshiyuki Ito, Yokohama, both of Japan, assignors to ASCII Corporation, Japan
Continuation of Ser. No. 138,805, Oct. 15, 1993, abandoned.
This application Apr. 25, 1994, Ser. No. 233,892

Claims priority, application Japan, Oct. 19, 1992, 4-072733[U]
Int. Cl.⁶ G09G 3/02

U.S. Cl. 345—163

3 Claims



1. A pointing device for inputting coordinate information of a CRT display of a computer, with said pointing device comprising:

- a keyboard means for inputting at least an on-off signal which is mounted at one side of the case of said pointing device so that it is capable of an up-and-down motion;
- a coordinate converting means for converting a movement of a ball, which is rotatably mounted thereabout, and a portion of the ball which is protruded from said coordinate converting means, where said coordinate converting means is mounted on the opposite side of the case of the pointing device so that it is capable of an up-and-down motion;
- a switching means for detecting an on-off operation of the user, where said switching means is mounted on a reverse side of said coordinate converting means;
- a protrusion means for pushing said switching means when user pushes either said keyboard means or said coordinate converting means, where said protrusion means is mounted on a reverse said of said keyboard means; and
- a rocking means for fixing either said keyboard means or said coordinate converting means, where said coordinate converting means is set at upper side, said rocking means is moved by gravitation toward said coordinate converting means to fix the up-and-down motion of said coordinate converting means whereas, on the other hand, when said coordinate converting means is set on the upper side, said rocking means is moved by gravitation toward said keyboard means to fix the up-and-down motion of said keyboard means.

5,379,055
THERMAL TRANSFER RECORDING APPARATUS AND FACSIMILE TERMINAL EQUIPMENT USING SAID APPARATUS

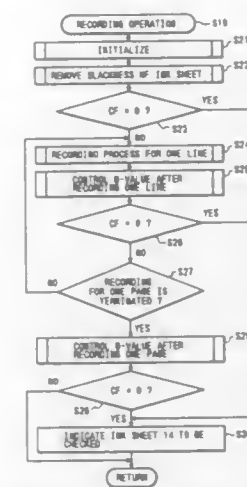
Takehiro Yoshida; Makoto Kobayashi, both of Tokyo; Minoru Yokoyama, Yokohama; Takeshi Ono, Kawasaki; Takashi Awai; Yasushi Ishida, both of Tokyo; Akihiro Tomoda; Tomoyuki Takeda, both of Yokohama; Masaya Kondo, Tokyo, and Masakatsu Yamada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1991, Ser. No. 813,095
Claims priority, application Japan, Dec. 25, 1990, 2-405893; Apr. 22, 1991, 3-090582

U.S. Cl. 346—76 PH

Int. Cl.⁶ B41J 17/08, 17/10

10 Claims



1. A recording apparatus for recording an image by transferring an ink contained in an ink sheet onto a recording medium, the apparatus comprising:

- ink sheet conveying means for conveying said ink sheet;
- recording medium conveying means for conveying said recording medium;
- said ink sheet conveying means conveying per unit time an amount of said ink sheet which is less than an amount of said recording medium conveyed per unit time by said recording medium conveying means;
- recording means for recording onto said recording medium by acting on said ink sheet;
- slackness removing means for removing a slackness of said ink sheet; and
- control means for controlling a driving amount of said ink sheet conveying means after the slackness of said ink sheet is removed with said slackness removing means, said control means controlling, after the slackness of the ink sheet is removed, the driving amount of the ink sheet conveying means prior to recording so as to maintain a substantially constant ratio of said amount of said ink sheet conveyed per unit time and said amount of said recording medium conveyed per unit time.

5,379,056
MULTI-COLOR THERMAL TRANSFER PRINTER WITH ARCuate PRINT HEAD ARRANGEMENT AND PRINTING PRESSURE ADJUSTMENT

Graham D. Walter, Peterborough; Gary F. Fowler, Keene, and John H. Johansen, East Swanzey, all of N.H., assignors to Markem Corporation, Keene, N.H.

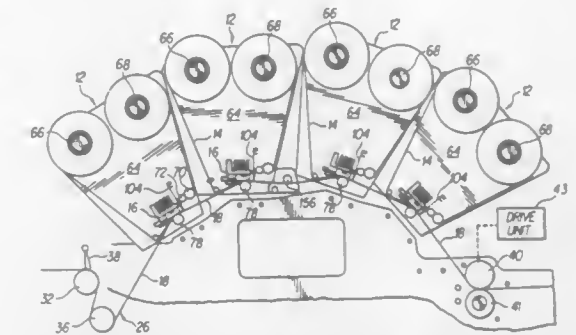
Filed Jan. 10, 1992, Ser. No. 818,759
Int. Cl.⁶ B41J 2/32

U.S. Cl. 346—76 PH

16 Claims

1. A printing system operable to print on a continuous substrate, comprising:
a series of thermal print stations for printing on said substrate

in a sequential manner, each of said print stations comprising:
a print head having a printing surface for printing images on the continuous substrate, said printing surface defining a plane, said print head further having adjacent to said printing surface a raised structure requiring said substrate to be advanced through said print station at an angle with respect to said plane, and
a platen against which said printing surface is applied during printing; and

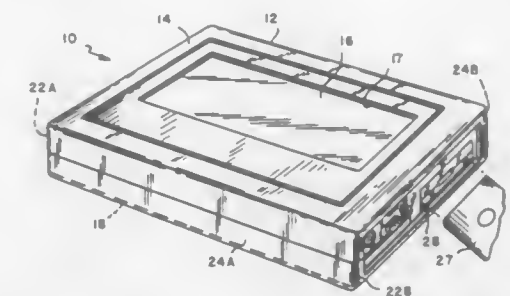


a substrate drive system for advancing said substrate past the printing surface of each of said print stations, said substrate being advanced through each of said print stations at an angle relative to the plane of the printing surface; wherein said print stations are arranged in a generally arcuate arrangement to allow the continuous substrate to follow a substantially straight path between the printing surface of each print station and the printing surface of each adjacent print station.

5,379,057
PORTABLE COMPUTER WITH TOUCH SCREEN AND COMPUTER SYSTEM EMPLOYING SAME
William A. Clough, Ontario; Daneil Onelette, St. Luc Quebec, and Serge De La Sablonniere, Ville d'Anjou, all of Canada, assignors to Microslate, Inc., Brossard, Canada
Continuation of Ser. No. 890,311, May 26, 1992, abandoned, which is a continuation of Ser. No. 731,735, Jul. 16, 1991, abandoned, which is a continuation of Ser. No. 271,237, Nov. 14, 1988, abandoned. This application Jul. 28, 1993, Ser. No. 98,219
Int. Cl.⁶ G09G 5/00, 5/12

U.S. Cl. 345—173

15 Claims



1. A self-contained, general-purpose, portable, keyboardless computer comprising:

- A. a combined input/output device including a display for displaying outputs on a touch-sensitive screen, said screen superposed over said display and configured for manual entry of responses;
- B. memory means for storing any of a plurality of data collection applications, an operating system and data, said data collection applications determining contents and formats of said outputs displayed on said screen;
- C. a central processing unit connected to said memory

means and said input/output device for executing said data collection applications stored in said memory means; and

- D. an application generator for generating said data collection applications and for creating different functional libraries relating to said contents and said formats displayed on said screen, said application generator operating in conjunction with said operating system to partition said memory means for storing said data collection applications and libraries.

5,379,059

ADJUSTMENT MECHANISM FOR EQUIPMENT CONVERTING DIGITAL DATA INTO A LIGHT IMAGE

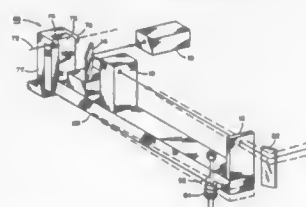
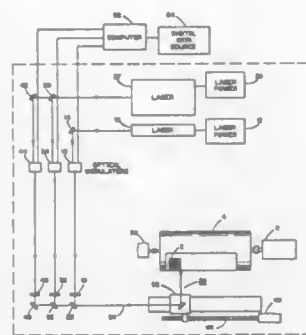
Malcolm Winsor, Mount Vernon, N.H., assignor to Cirrus Technology Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 462,009, Jan. 8, 1990, abandoned, which is a division of Ser. No. 252,670, Oct. 3, 1988, Pat. No. 4,933,687. This application Jun. 10, 1992, Ser. No. 896,226

Int. Cl.⁶ B41J 2/435

U.S. Cl. 346—108

10 Claims



6. In a photoplotter, the method of providing a focused exposure beam comprising the steps of providing a source of digital data, providing a first light beam source, providing an optical modulator for varying the intensity of a light beam in accordance with said digital data, positioning a first mirror to direct said beam into said modulator, intercepting said beam with a second mirror after intensity modulation by said modulator, simultaneously adjusting the angles of said first mirror and said modulator while maintaining said first mirror and said modulator in fixed relationship independent of the movements of said source of said first light beam or said second mirror, and independently adjusting the azimuth, elevation and lateral position of said second mirror without affecting the positions of said first mirror and said modulation means to direct said beam along a final beam path.

5,379,060

INK-JET RECORDING HEAD DEVICE

Hisashi Yoshimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 830,411, Feb. 4, 1992, abandoned. This application Sep. 29, 1993, Ser. No. 129,786

Claims priority, application Japan, Feb. 7, 1991, 3-016642

Int. Cl.⁶ B41J 2/045, 2/19

U.S. Cl. 347—71

3 Claims

1. An ink-jet recording head device comprising: a laminated body formed by a plurality of plates; a slit formed in said laminated body; an orifice opened on said slit for ejecting an ink; and an ink conducting path formed in said laminated body so as to communicate with said orifice, said ink conducting path having a branch point which is located between a lower end of said

RECORDING APPARATUS USING A THERMOSENSITIVE RECORDING MEDIUM

Makoto Obu, Yokohama; Yoshihiko Hotta, Mishima; Fumihito Masubuchi, Mishima; Katsuaki Miyawaki, Yokohama; Yusuke Takeda, Yokohama, and Toshio Kawakubo, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

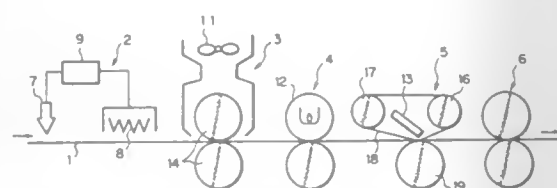
Filed Mar. 17, 1993, Ser. No. 32,655

Claims priority, application Japan, Mar. 19, 1992, 4-063037

Int. Cl.⁶ B41J 2/32; B41M 5/28

U.S. Cl. 346—76 PH

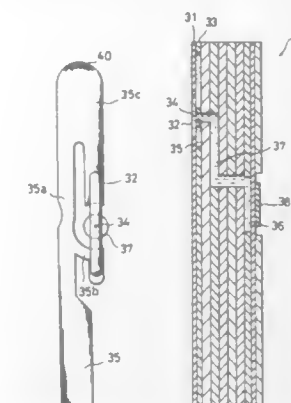
14 Claims



1. An apparatus for recording data in a thermosensitive recording medium made of a thermosensitive material which repetitively assumes a cloudy state and a transparent state when heated by particular temperatures corresponding to a data signal, said apparatus comprising:

writing means for writing data in the recording medium by heating said recording medium with a writing member; first heating means for heating the recording medium at a temperature which causes said recording medium to cloud; cooling means for cooling the recording medium at a temperature lower than a temperature at which the thermosensitive material reaches a cloud density close to a maximum level; and second heating means for heating the recording medium at a temperature which makes the thermosensitive material transparent; wherein said first heating means, said cooling means and said second heating means are arranged in this order along a path for transporting the recording medium, and further wherein said first heating means and said cooling means are located upstream of the writing means with respect to the path for transporting the recording medium, and said second heating means are located upstream of or at a same position as said writing means with respect to the path for transporting the recording medium.

slit and said orifice, by which said ink conducting path is divided into two branches, a first branch having a straight portion extending along said slit from said branch point over an upper end of said slit, a reverse U-shaped portion connecting between said straight



- portion and said upper end of said slit, a bottom portion of said reverse U-shaped portion being located above said slit for storing bubbles; and a second branch extending from said branch point toward the lower end of said slit and being connected to said lower end of said slit.

5,379,061

APPARATUS FOR DECLOGGING AN INK JET RECORDING APPARATUS

Shuichi Yamaguchi; Seiji Mochizuki; Hideaki Suzuki; Satoshi Shinada, and Mayumi Aida, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

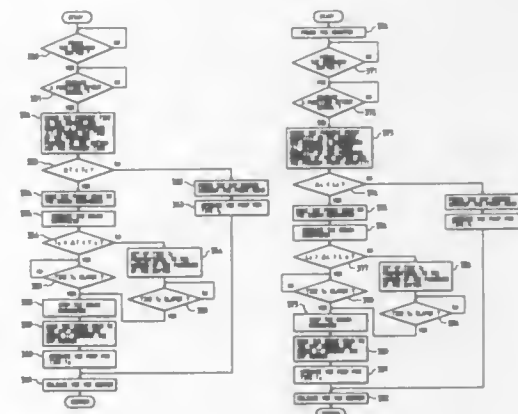
Continuation of Ser. No. 913,639, Jul. 16, 1992, abandoned, which is a division of Ser. No. 608,858, Nov. 5, 1990, Pat. No. 5,153,614. This application Mar. 15, 1993, Ser. No. 32,186

Claims priority, application Japan, Nov. 6, 1989, 1-288390; Nov. 21, 1989, 1-302853; May 29, 1990, 2-138980

Int. Cl.⁶ B41J 2/165

U.S. Cl. 346—141

12 Claims



10. An ink jet recording apparatus, comprising: an ink jet printhead for forming dots on a recording sheet by shooting ink jets from an array of nozzles; a wiping mechanism for contacting the face of said nozzles to perform a wiping operation by wiping said nozzle face; a wiping mechanism driving means for driving said wiping mechanism into contact with said nozzle face; and a control circuit responsive to a signal received from a recovery button provided on a printer chassis, said control circuit including means for computing a difference between a particular quantity at a present depression of said

recovery button and a particular quantity at a previous depression, determining a wiping time on a basis of a computed difference, and means for effecting said wiping operation according to said determined wiping time.

5,379,062

GRID CORRECTION DEVICE FOR A TELEVISION SET

Günter Gleim, Villingen, and Jacques Chauvin, Mönchweiler, both of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

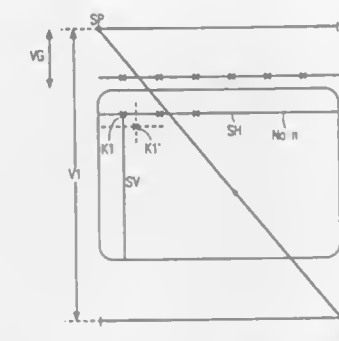
Filed Jan. 21, 1993, Ser. No. 7,290

Claims priority, application Germany, May 25, 1990, 4016886

Int. Cl.⁶ H04N 17/00, 17/02, 17/04

U.S. Cl. 348—184

2 Claims



1. A method of correcting the spatial positions of crossing points of the lines in the grid on the visible portion of the screen of a television receiver used in different modes of operation comprising the steps:

storing a first set of correction values for each of said crossing points, said first correction values defining the spatial positions of said crossing points for any of said modes of operation of said television receiver; storing an individual set of additional correction values for each of said modes of operation, said additional correction values being generated during an overscan period and during the scanning of an initialization line positioned outside the visible portion of the screen; and simultaneously applying said first correction values and said additional correction values to the deflection current of said television receiver while scanning said visible portion of said screen to compensate for deflection errors induced by tolerances.

5,379,063

ELECTRONIC STILL CAMERA SYSTEM COMPENSATING FOR IMAGE DISPLACEMENT

Kenji Kishi, and Tatsuo Nagasaki, both of Yokohama, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 690,717, Apr. 24, 1991, abandoned.

This application Sep. 13, 1993, Ser. No. 120,655

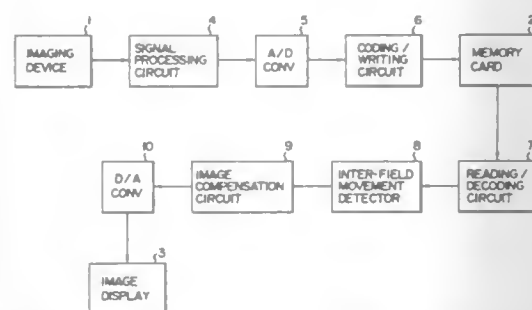
Int. Cl.⁶ H04N 5/228

U.S. Cl. 348—208

16 Claims

1. An electronic still camera system comprising: an imaging element for converting an amount of light corresponding to an object image formed through an optical system to a signal corresponding to said amount of light; imaging means for field-sequentially obtaining two field images from said signal outputted by said imaging element, one of the two field images being an odd field image constituted by odd scanning lines, and the other of the two field images being an even field image constituted by even scanning lines; a first memory unit coupled to said imaging means and in which said odd and even field images are stored; means for interpolating said data of each of said odd and even field images obtained by said imaging means to respectively obtain first and second pseudo frame images;

means for determining a correlation between said first and second pseudo frame images to detect an amount of image shift between the odd and even field images;
means for shifting one of the odd and even field images with respect to the other of the odd and even field images in accordance with the detected amount of image shift;



means for storing said shifted field image in a second memory unit while said other field image is retained in said first memory unit; and
means for combining the data of said stored shifted field image with the stored data of said other field image into a frame image for display as a still image.

5,379,064

CCD IMAGER HAVING FOUR-PHASE VERTICAL SHIFT REGISTERS OPERATED BY THREE-VALUED CLOCK SIGNALS

Naoki Kato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 902,665, Jun. 22, 1992, abandoned.

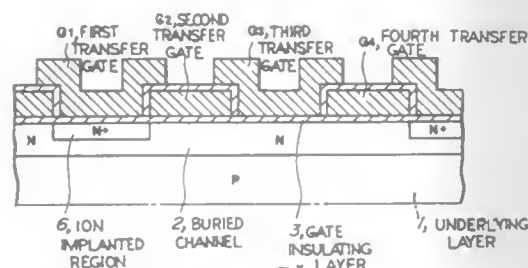
This application Feb. 15, 1994, Ser. No. 196,794

Claims priority, application Japan, Jun. 21, 1991, 3-150517

Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—248

7 Claims



1. A solid-state imager comprising:
a photosensitive imaging section comprising a plurality of photosensitive elements arranged on a surface of a semiconductor substrate;
first, second, third and fourth input terminals for receiving, respectively, first, second, third and fourth four-phase drive pulse signals; and
a four-phase vertical shift register arranged along side said photosensitive imaging section and clocked by the four-phase drive pulse signals comprising a first transfer electrode connected with said first input terminal, a second transfer electrode connected with said second input terminal, a third transfer electrode connected with said third input terminal, and a fourth transfer electrode connected with said fourth input terminal, each of said transfer electrodes being formed on an insulating layer which is formed on a top surface of said semiconductor substrate wherein prior to applying a readout voltage, unwanted charges are trapped under the first transfer electrode at a first time and potential barriers are formed under the second transfer electrode at a second time, said vertical shift register being connected with said imaging elements

so that signal charge packets are transferred from said imaging elements to said vertical shift register by applying the readout voltage at a third time to each of said first and third transfer electrodes;
wherein a potential well under said first transfer electrode is deeper than a potential well under any of said second, third and fourth transfer electrodes when same voltages are applied to said first, second, third and fourth transfer electrodes.

5,379,065

PROGRAMMABLE HYPERSPECTRAL IMAGE MAPPER WITH ON-ARRAY PROCESSING

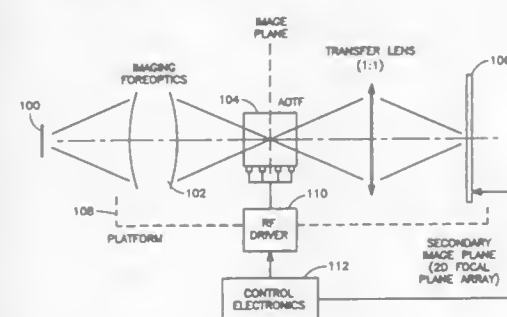
James A. Cutts, Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 22, 1992, Ser. No. 904,550

Int. Cl.⁶ H04N 9/04

U.S. Cl. 348—269

33 Claims



1. A hyperspectral imager, comprising:
focal plane means comprising an array of spaced pixel recording means for receiving light from a scene moving relative to said focal plane means in a longitudinal direction, said pixel recording means being transportable at a controllable rate in said focal plane means in said longitudinal direction by rate-controllable transport means;
controllable electronic shutter means for adjusting an exposure time t_q of said focal plane means, whereby pixel recording means in an active area of said focal plane means are removed therefrom and signal charges accumulated therein are stored upon expiration of said exposure time;
controllable electronic spectral filter means for selecting a spectral band q of light received by said focal plane means from said scene for each exposure time t_q ; and
electronic controller means connected to said transport means, to said electronic shutter means and to said electronic spectral filter means for controlling (a) said controllable rate at which said recording means is transported in said longitudinal direction, (b) said exposure time t_q and (c) said spectral band q so as to record in respective ones of said pixel recording means a selected portion of said scene through M spectral bands with a respective exposure time t_q for each respective spectral band q , wherein M is a positive integer.

5,379,066

HORIZONTAL REGISTER FOR CCD IMAGER

Naoki Kato, Kanagawa, Japan, assignor to Maoki Kato, Tokyo, Japan

Filed Dec. 10, 1991, Ser. No. 804,374

Claims priority, application Japan, Dec. 12, 1990, 2-410455

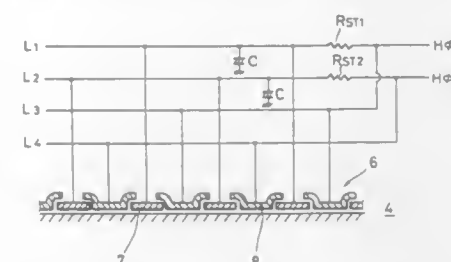
Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—311

7 Claims

1. A solid state image sensing device, comprising:
a plurality of light sensing units arranged at pixel units in

vertical and horizontal directions in a two-dimensional array;
a vertical transfer means for transferring electric charges read out from said plurality of light sensing units at vertical columns in the vertical direction; and
a horizontal transfer means having a plurality of transfer electrode pairs with each pair formed of a storage gate electrode and a transfer gate electrode, and means for driving said plurality of transfer electrode pairs in a two-phase fashion by first and second phase transfer clock



lines, the first transfer clock line being connected to some of the transfer electrode pairs and the second transfer clock line being connected to other of the transfer electrode pairs for transferring electric charges from said vertical transfer means in the horizontal direction, and wherein for each transfer electrode pair, the corresponding transfer clock line is directly connected to said transfer gate electrode and is indirectly connected to said storage gate electrode by delay means for delaying said transfer clock signals to said storage gate electrode.

5,379,067

CCD LINEAR SENSOR AND METHOD OF READING-OUT CHARGES THEREFROM

Hisanori Miura, Hyogo, Japan, assignor to Sony Corporation, Tokyo, Japan

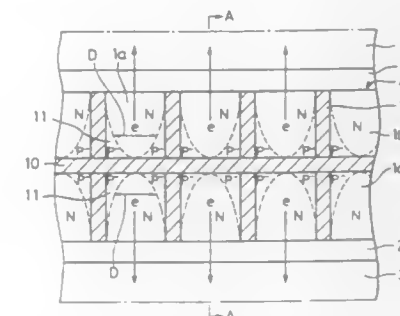
Filed Mar. 31, 1993, Ser. No. 41,032

Claims priority, application Japan, Apr. 3, 1992, 4-082262

Int. Cl.⁶ H04N 3/14, 5/325

U.S. Cl. 348—311

2 Claims



1. A CCD linear sensor comprising:
a photosensor row having photosensitive regions separated at every pixels by channel stopper regions and arranged in one direction;
read-out gate electrodes formed on opposite sides of said photosensor row and being common to said photosensitive regions;
shift registers formed on opposite sides of said read-out gate electrodes and being common to said photosensitive regions;
an output unit formed at the output of said shift register wherein a channel separating region is formed along the center of said photosensor row, in said one direction for separating each of said photosensitive region into two photosensitive portions;

wherein said channel separating region is kept at the same potential as said channel stopper regions; and
wherein an impurity diffused region is formed at an intersection of said channel stopper region and said channel separating region in each of said photosensitive portions and forming a generally U-shape so as to facilitate the movement of charges from said two photosensitive portions toward said shift registers.

5,379,068

SOLID STATE IMAGING DEVICES FOR PRODUCING NORMAL AND MIRROR IMAGE SIGNALS WITH THE USE OF A REVERSIBLE SHIFT REGISTER

Masaharu Hamasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

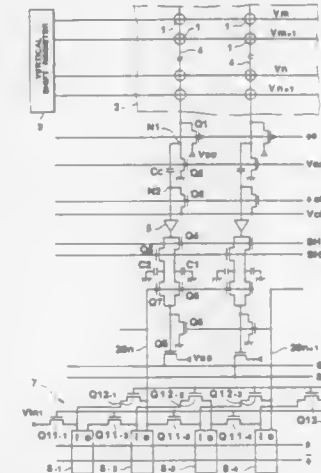
Filed Apr. 28, 1993, Ser. No. 53,220

Claims priority, application Japan, May 11, 1992, 4-146608

Int. Cl.⁶ H04N 5/335

U.S. Cl. 348—322

8 Claims



1. A solid state imaging device comprising:
an image sensor including a two-dimensional matrix of picture elements arranged horizontally and vertically therein to form a plurality of vertically spaced horizontal lines thereof, the image sensor further including a plurality of vertical lines each coupling vertically disposed ones of the picture elements;
a vertical scanning means for selecting the horizontal lines in a predetermined order for reading picture elements thereof; and
a horizontal scanning means coupled with the plurality of vertical lines on one horizontal side of the two-dimensional matrix for selecting picture elements in the selected horizontal lines to output image signals therefrom;
the horizontal scanning means being the picture elements of the selected horizontal lines through said one horizontal side of the two-dimensional matrix in a first horizontal direction to output a normal image signal, and being operative to scan the picture elements of the selected horizontal lines through said one horizontal side of the two-dimensional matrix in a second horizontal direction opposite the first horizontal direction to output a mirror image signal;
the horizontal scanning means comprising a plurality of switching circuits each having an ON state and an OFF state and having an input coupled with a respective one of the plurality of vertical lines, each of the plurality of switching circuits having an output for providing an image signal from the respective vertical line during the ON state of the switching circuit and a control input for controlling the ON/OFF state thereof; and
a horizontal shift register including a plurality of inverters arranged in successive pairs, each of said pairs having an

output terminal coupled with the control input of a corresponding one of said plurality of switching circuits for controlling the ON/OFF state thereof, said horizontal shift register including mode control means for selectively coupling first, second and third successively arranged ones of said plurality of inverters such that, in a first mode of operation, an input of the second successively arranged inverter is coupled with an output of the first successively arranged inverter and, in a second mode of operation, the input of the second successively arranged inverter is coupled with an output of the third successively arranged inverter.

5,379,069

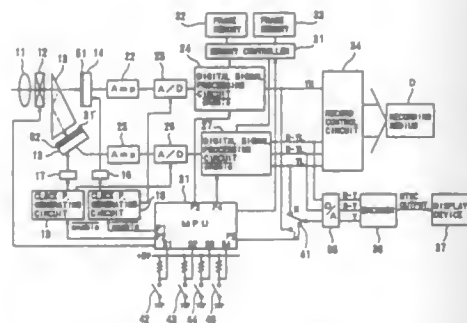
SELECTIVELY OPERABLE PLURAL IMAGING DEVICES FOR USE WITH A VIDEO RECORDER
Nobuhiko Tani, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 75,884

Claims priority, application Japan, Jun. 18, 1992, 4-184460
Int. Cl.⁶ H04N 9/09

U.S. Cl. 348—333

27 Claims



1. A still video camera, comprising:

a first imaging device for sensing a luminance of an object to be recorded to output a signal corresponding to said luminance;

a second imaging device for sensing at least one color of said object to output a signal corresponding to said at least one color;

means for selecting between a monitor-through mode in which a moving picture of said object is monitored and a photographing mode in which a still picture of said object is recorded to a recording medium;

first generating means for generating an image signal of said moving picture of said object in accordance with a signal outputted by one of said first imaging device and said second imaging device when said selecting means selects said monitor-through mode; and

second generating means for generating an image signal of said still picture of said object in accordance with signals outputted by said first imaging device and said second imaging device when said selecting means selects said photographing mode.

11. A still video camera, comprising:

a first imaging device that outputs a luminance signal;

a second imaging device that outputs a color signal;

means for selecting between a monitor-through mode in which a moving picture of an object to be recorded is monitored and a photographing mode in which a still picture of said object is recorded to a recording medium; and

means for disabling one of said first imaging device and said

second imaging device when said selecting means selects said monitor-through mode.

5,379,070

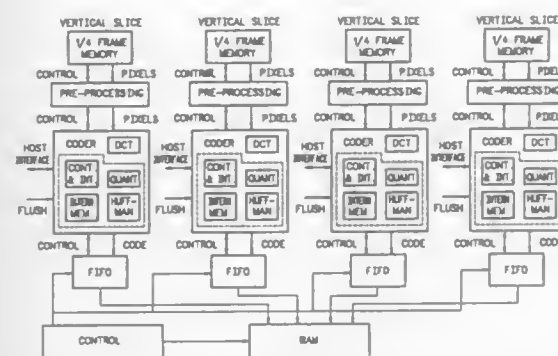
PARALLEL ENCODING/DECODING OF DCT COMPRESSION/DECOMPRESSION ALGORITHMS
Rafael Retter, Aharon Gill, both of Haifa, Israel, and Isaac Shenberg, Palo Alto, Calif., assignors to Zoran Corporation, Santa Clara, Calif.

Filed Oct. 2, 1992, Ser. No. 956,727

Int. Cl.⁶ H04N 7/133

U.S. Cl. 348—403

12 Claims



1. A method of encoding image data for an image frame, using a discrete cosine transform (DCT) compression algorithm comprising the steps of:

- providing a plurality (N) of encoding devices,
- dividing each frame of said image data into a plurality (N) of vertical slices,
- assigning each one of said vertical slices to each respective one of said encoding devices,
- operating said plurality of encoding devices in parallel to concurrently provide encoded slice data, and
- concatenating said encoded slice data to construct encoded data from said image frame.

5,379,071

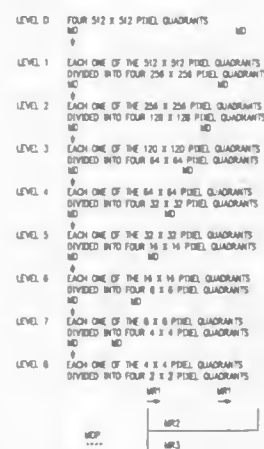
METHOD OF ENCODING A LOCATION OF CHANGES IN A SEQUENCE OF VIDEO IMAGES
Shrikant N. Parikh, Mesquite, and Hari N. Reddy, Grapevine, both of Tex., assignors to IBM Corporation (International Business Machines Corporation), Armonk, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,232

Int. Cl.⁶ H04N 7/137

U.S. Cl. 348—409

9 Claims



1. A method of reducing required memory storage space on a data processing system for a digitized video by defining a

color change in a subsequent video frame from a previous video frame, comprising the steps of:

- subdividing the previous and subsequent video frame each into a plurality of levels comprising progressively smaller quadrants down to a pre-defined size;
- defining a location of a color change in the subsequent frame compared to the previous frame by a level designator and a quadrant designator; and
- storing in a memory said change as said level designator, said quadrant designator and a color designator.

5,379,072

DIGITAL VIDEO SIGNAL RESOLUTION CONVERTING APPARATUS USING AN AVERAGE OF BLOCKS OF A TRAINING SIGNAL

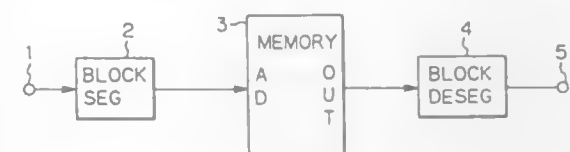
Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,707

Claims priority, application Japan, Dec. 13, 1991, 3-352300
Int. Cl.⁶ H04N 5/14

U.S. Cl. 348—441

10 Claims



1. A digital video signal converting apparatus, comprising: block segmentation means for segmenting a first digital video signal having a first resolution into blocks of video data,

memory means for receiving each of said blocks of video data as respective addresses and for reading out converted data stored in a mapping table at said respective addresses, said mapping table representing a relationship between blocks of a training signal expressed in a second resolution at addresses respectively given by said blocks of said training signal expressed in said first resolution, and block separation means for deblocking said converted data into a second digital video signal having said second resolution.

5,379,073

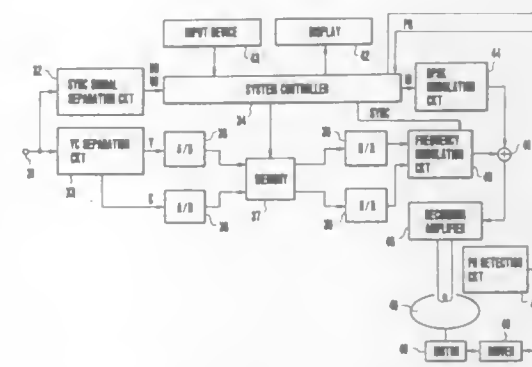
STILL IMAGE SIGNAL PROCESSING DEVICE
Masato Kosugi, Tokyo, and Yuji Sakaegi, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 934,788

Claims priority, application Japan, Aug. 27, 1991, 3-240481
Int. Cl.⁶ H04N 5/907

U.S. Cl. 348—513

18 Claims



1. An image signal processing device for processing image signals, comprising:

- memory means for storing an image signal;
- means arranged to receive an input image signal including

horizontal and vertical synchronizing signals, to make a discrimination, by using the horizontal and vertical synchronizing signals included in the input image signal, as to whether a period of the input image signal is less than a predetermined period or not and to output a discrimination information signal indicative of a result of the discrimination; and

c) memory control means arranged operatively in accordance with the discrimination information signal outputted from said discrimination means, to cause said memory means to store only a part of the input image signal corresponding to said predetermined period if the period of the input image signal is not less than said predetermined period, and if the period of the input image signal is less than said predetermined period, to cause said memory means to complement the input image signal with a predetermined signal for a period by which the period of the input image signal is less than said predetermined period and store the complemented image signal.

4. An image signal processing device for processing image signals, comprising:

- memory means for storing an image signal;
- discrimination means arranged to receive an input image signal, to make a discrimination as to whether the input image signal is an interlaced image signal or a noninterlaced image signal and to output a discrimination information signal indicative of a result of the discrimination; and
- memory control means arranged operatively in accordance with the discrimination information signal outputted from said discrimination means, to cause, in a case where the input image signal is the noninterlaced image signal, said memory means to store only a part of the input image signal corresponding to a predetermined period if a period of the input image signal is not less than said predetermined period, and if the period of the input image signal is less than said predetermined period, to complement the input image signal with a predetermined signal for a period by which the period of the input image signal is less than said predetermined period and store the complemented image signal.

7. An image signal processing device for processing image signals, comprising:

- memory means for storing an image signal;
- discrimination means arranged to receive an input image signal including horizontal and vertical synchronizing signals, to make a discrimination, by using the horizontal and vertical synchronizing signals included in the input image signal, as to whether a period of the input image signal is less than a predetermined period or not and to output a discrimination information signal indicative of a result of the discrimination;

c) recording method selection means arranged to select a recording method from among a field recording method for recording an image signal for one field in an image signal recording area for one field on a recording medium and a frame recording method for recording an image signal for one frame in an image signal recording area for two fields on the recording medium and to output a selection information signal indicative of the selected recording method;

d) recording means for recording on the recording medium an output image signal outputted from said memory means; and

e) control means for controlling a storing action of said memory means on the input image signal and a recording action of said recording means on the output image signal in accordance with the discrimination information signal outputted from said discrimination means and the selection information signal outputted from said recording method selection means.

13. An image signal processing device for processing image signals, comprising:

- memory means for storing an image signal;

- b) discrimination means arranged to receive an input image signal, to make a discrimination as to whether the input image signal is an interlaced image signal or a noninterlaced image signal and to output a discrimination information signal indicative of a result of the discrimination;
- c) recording method selection means arranged to select a recording method from among a field recording method for recording an image signal for one field in an image signal recording area for one field on a recording medium and a frame recording method for recording an image signal for one frame in an image signal recording area for two fields on the recording medium and to output a selection information signal indicative of the selected recording method;
- d) recording means for recording on the recording medium an output image signal outputted from said memory means; and
- e) control means for controlling a storing action of said memory means on the input image signal and a recording action of said recording means on the output image signal in accordance with the discrimination information signal outputted from said discrimination means and the selection information signal outputted from said recording method selection means.

5,379,074

MULTILEVEL NONLINEAR FILTER FOR EDGE DETECTION AND NOISE SUPPRESSION

Humor Hwang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

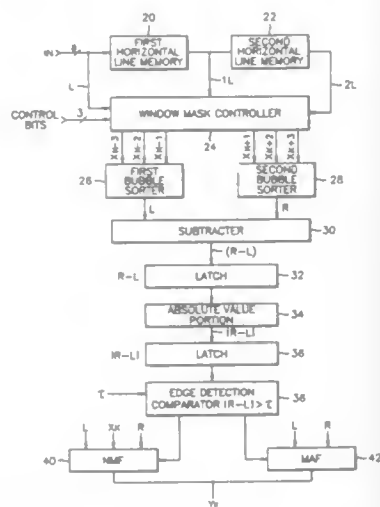
Filed Jul. 19, 1993, Ser. No. 92,856

Claims priority, application Rep. of Korea, Jul. 18, 1992, 92-12806

Int. Cl.⁶ H04N 5/213

U.S. Cl. 348—606

9 Claims



1. A multilevel nonlinear filter for edge detection and noise suppression comprising:

- delay means for outputting a 1 horizontal line delayed signal 1H and a 2 horizontal line delayed signal 2H;
- edge level estimation signal output means generating first and second window mask data masked into respective first, second and third patterns, each having a predetermined size, from said input image signal and said delayed signals 1H and 2H in response to input control bits, and performing high-speed bubble sorting of said first and second window mask data, thereby outputting first and second edge estimation signals;
- absolute difference signal outputting means for performing subtraction of said outputted first and second edge estimation signals, thereby outputting an absolute difference signal;
- edge detection means for comparing said outputted absolute

difference signal with a predetermined threshold value, thereby outputting edge detection information on a current pixel; and

noise suppression means for median-filtering said first and second estimation signals and said information on said current pixel in response to said detected edge detection information, and averaging-filtering said first and second estimation signals in response to non-edge detection information, thereby outputting a filtered signal.

5,379,075

VIDEO SIGNAL AGC CIRCUIT FOR ADJUSTING THE SYNC LEVEL OF A VIDEO SIGNAL

Hirokazu Nagasawa, Kanagawa; Masahiro Yamaguchi, Tokyo, and Hiroaki Matsumoto, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

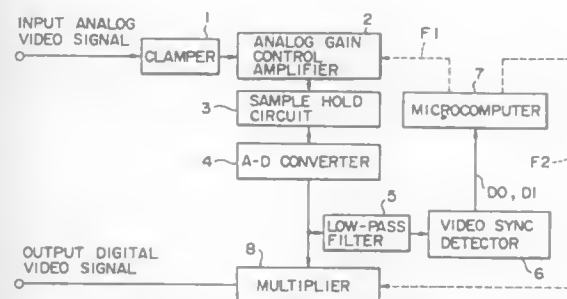
Filed Feb. 2, 1993, Ser. No. 12,400

Claims priority, application Japan, Feb. 4, 1992, 4-047614; Feb. 4, 1992, 4-047615

Int. Cl.⁶ H04N 5/52

U.S. Cl. 348—678

19 Claims



1. A video signal AGC circuit, comprising
- an analog gain control amplifier for adjusting the level of an input analog video signal;
- an A-D converter for converting the output of said analog gain control amplifier to a digital video signal output;
- a sync level detector including means for detecting the sync signal of the output of said A-D converter, means for detecting, on the basis of said sync signal, the pedestal data corresponding to the pedestal level, and means for detecting, on the basis of said sync signal, the sync tip data corresponding to the sync tip level;
- a digital gain control amplifier for adjusting the level of the digital video signal outputted from said A-D converter;
- a first control signal generator for generating a first control signal to adjust the gain of said analog gain control amplifier on the basis of the output of said sync level detector; and
- a second control signal generator for generating a second control signal to adjust the gain of said digital gain control amplifier on the basis of the output of said sync level detector.

5,379,076

VIDEO MOTION COMPENSATION CIRCUIT

Ki H. Song, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 7, 1993, Ser. No. 117,424

Claims priority, application Rep. of Korea, Sep. 7, 1992, 16324/1992

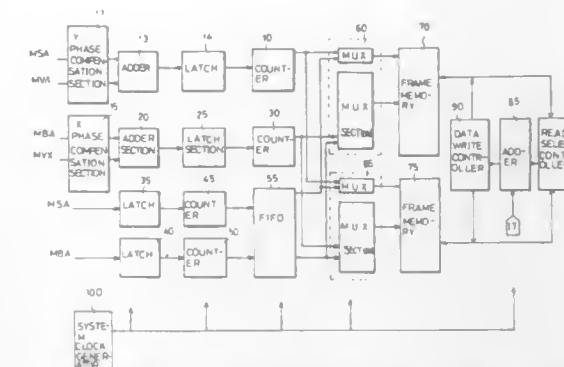
Int. Cl.⁶ H04N 1/41

U.S. Cl. 348—699

8 Claims

1. A video motion compensation circuit comprising:
- Y phase variation compensation means for inputting a macro slice address signal and a motion vector Y signal and compensating for a variation in a phase of the motion vector Y signal;

- first adding means for adding two output signals from said Y phase variation compensation means;
- first latch means for latching an output signal from said first adding means;
- first counting means for counting an output signal from said first latch means;
- X phase variation compensation means for inputting a macro block address signal and a motion vector X signal and compensating for a variation in a phase of the motion vector X signal;
- second adding means having a plurality of adders for adding a plurality of sets of two output signals from said X phase variation compensation means respectively in the unit of set;
- second latch means for latching a plurality of output signals from said second adding means respectively;
- second counting means for counting a plurality of output signals from said second latch means respectively;
- third latch means for latching the macro slice address signal;
- third counting means for counting an output signal from said third latch means;
- fourth latch means for latching the macro block address signal;
- fourth counting means for counting an output signal from said fourth latch means;



- storage means for storing output signals from said third and fourth counting means;
- first and second multiplexing means, each having a first 2:1 multiplexer for 2:1-multiplexing output signals from said first counting means and said storage means and a second 2:1 multiplexer for 2:1-multiplexing each of a plurality of output signals from said second counting means and the output signal from said storage means;
- first frame memory means for storing a plurality of output signals from said first multiplexing means;
- second frame memory means for storing a plurality of output signals from said second multiplexing means;
- read select control means for selecting one of said first and second frame memory means, inputting a plurality of output signals from the selected frame memory means and providing one output signal;
- third adding means for adding the output signal from said read select control means to decoded reproduction video data and outputting the resultant phase-compensated video data;
- data write control means for selecting one of said first and second frame memory means and writing the phase-compensated video data from said third adding means into the selected frame memory means; and
- system clock generating means for generating a system clock pulse.

5,379,077

SYSTEM FOR AND METHOD OF, OPERATING UPON NTSC AND PAL SIGNALS

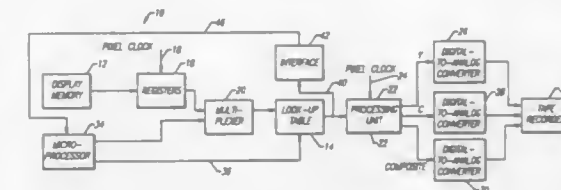
Keith A. Jack, San Diego; Douglas D. Moran, Carlsbad, and David J. Wicker, Poway, all of Calif., assignors to Brooktree Corporation, San Diego, Calif.

Continuation of Ser. No. 806,711, Dec. 12, 1991. This application Dec. 9, 1993, Ser. No. 164,263

Int. Cl.⁶ H04N 9/64

U.S. Cl. 348—708

32 Claims



1. In combination for operating upon signals at a pixel clock frequency to obtain the production of signals at a television sub-carrier frequency,
- a first register for providing a count and for producing an overflow upon each occurrence of an accumulation of a first particular count in the first register,
- means for introducing signals at the pixel clock frequency to the first register,
- a second register for providing a second particular count, an adder,
- means for introducing to the adder the second particular count in the second register and a count remaining in the first register after each overflow of the first register,
- means for introducing the count in the adder to the first register upon each introduction of a signal at the pixel clock frequency to the first register to obtain an accumulation of such count in the first register,
- means for using the overflow from the first register as the signals at the television sub-carrier frequency,
- means for providing television signals representing at each instant the primary colors red, green and blue,
- means for converting the primary color signals at each instant into luminance and chrominance signals at such instant,
- means for operating upon the luminance and chrominance signals to produce signals representing a particular factor, and
- means for varying the amplitude of the chrominance signals in accordance with the signals representing the particular factor.

5,379,078

TRAP CIRCUIT APPARATUS FOR TELEVISION RECEIVER

Masafumi Tsuneki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 29, 1992, Ser. No. 824,625

Claims priority, application Japan, Jan. 29, 1991, 3-8879

Int. Cl.⁶ H04N 5/44

U.S. Cl. 348—725

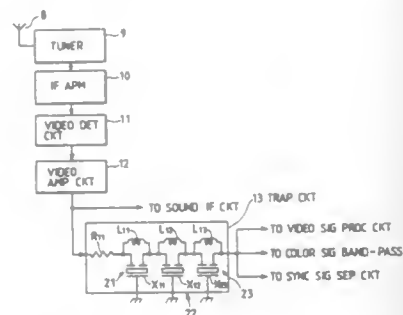
10 Claims

1. In a television receiver apparatus including a tuner, an IF amplifier receiving a tuned signal from the tuner, a video detection circuit for detecting a video detection signal from the tuner and a video signal processing circuit, the improvement comprising:

- a trap circuit for trapping a radio detection signal included in said video detection signal and a sound detection signal included in said video detection signal,
- said trap circuit connected between the video detection circuit and the video signal processing circuit,
- said trap circuit including:
- a first trap circuit for producing a first trapped video signal by reducing an amplitude of a component level of

a first signal, said first signal being one of either: said radio detection signal or said sound detection signal included in and accompanied with the video detection signal, wherein frequencies of the video detection signal and said first signal have a first predetermined relation therebetween; and

a second trap circuit responsive to said first trapped video



signal for producing a second trapped video signal by reducing an amplitude of a component level of a second signal, said second signal being the other signal of either: said radio detection signal or said sound detection signal included in and accompanied with the video detection signal, wherein frequencies of the video detection signal and said second signal have a second predetermined relation therebetween.

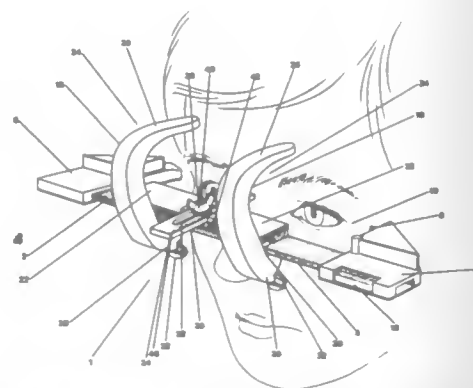
5,379,079 ATTACHMENT DEVICE FOR AN EXOPHTHALMOMETER

Vladimir Kratky, Kingston, Canada, assignor to Mount Sinai Hospital Corporation, Toronto, Canada
Continuation of Ser. No. 698,027, May 10, 1991, abandoned.

This application Jan. 19, 1993, Ser. No. 5,427
Int. Cl.⁶ A61B 3/10

U.S. Cl. 351—204

9 Claims



1. An attachment device for use with an exophthalmometer comprising positioning means mountable on said exophthalmometer for abutting the forehead and nasion of a patient, said positioning means being adjustable for adjustably positioning said exophthalmometer on the face of the patient to permit measurement of exophthalmos in the absence of intact lateral orbital rims in a patient, wherein the positioning means comprises a forehead engaging member including at least two laterally spaced apart contact points adapted to abut the patient's forehead and a nasion-engaging member shaped to abut the nasion of the patient, to provide a stable three point support.

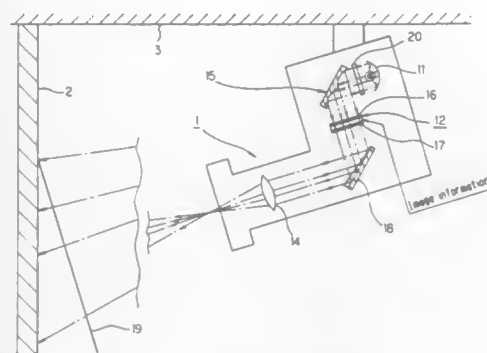
5,379,080 IMAGE PROJECTOR SYSTEM Kuniharu Onozuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 1, 1994, Ser. No. 189,719

Claims priority, application Japan, Feb. 10, 1993, 5-022914
Int. Cl.⁶ G03B 21/00

U.S. Cl. 353—37

8 Claims



1. An image projector system including a light source, a liquid crystal panel having a plurality of pixels controllable so as to selectively transmit or intercept light on the basis of image information fed thereto, and a projection lens for capturing and projecting as an enlarged image light emitted from said light source and transmitted through said liquid crystal panel, said image projector system comprising:

a reflecting mirror having a plurality of reflecting surfaces and disposed between said light source and said liquid crystal panel so that light emitted from said light source is reflected by said plurality of reflecting surfaces to enter said liquid crystal panel.

5,379,081 OPTICAL BAFFLING DEVICE

Jun-Bae Kim, and Seong-Woo Nam, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics, Co. Ltd., Seoul, Rep. of Korea

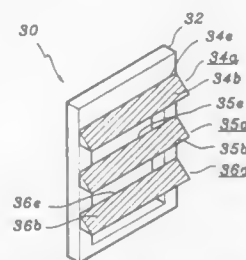
Filed Mar. 31, 1994, Ser. No. 220,799

Claims priority, application Rep. of Korea, Mar. 31, 1993, 1993-5406

Int. Cl.⁶ G03B 21/28

U.S. Cl. 353—99

10 Claims



1. An optical baffling device for use in an optical projection system, comprising:

a base having a first and a second surfaces, said first surface being on a flat plane;
a multiple number of reflective surfaces of an equal size disposed apart on the first surface of the base for reflecting a light incident thereon, each of the reflective surfaces being on a different flat plane other than said flat plane of the first surface on the base and having a first and a second edges parallel thereto, each of the first edges being equally distanced from and parallel to each other, the intercepting angles between each of the flat planes of the reflective surfaces and the flat plane of the first surface on the base

being substantially identical, and the first surface of the base and each of the reflective surfaces not being in a facing relationship; and
a corresponding multiple number of slits for transmitting a light along a direction from the first surface to the second surface of the base, each of the slits being open across said two surfaces of the base and being disposed in an alternating relationship with each of the reflective surfaces.

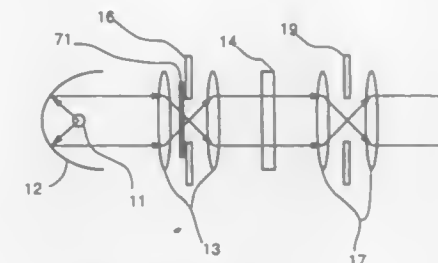
5,379,083 PROJECTOR

Akira Tomita, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 15, 1994, Ser. No. 196,924
Int. Cl.⁶ G03B 21/14

U.S. Cl. 353—122

20 Claims



5,379,082 METHOD OF AUTOMATICALLY FOCUSING GLASS-MOUNTED AND GLASSLESS SLIDES IN SLIDE PROJECTORS

Ulrich Staiger, Stuttgart, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

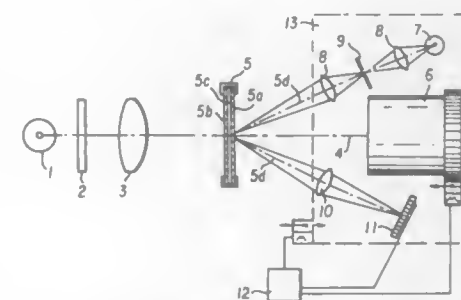
PCT No. PCT/EP93/00084, § 371 Date Sep. 14, 1993, § 102(e)
Date Sep. 14, 1993, PCT Pub. No. WO93/14440, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 15, 1993, Ser. No. 119,095

Claims priority, application Germany, Jan. 18, 1992, 4201272
Int. Cl.⁶ G03B 21/53

U.S. Cl. 353—101

2 Claims



1. A method of automatically focusing glass-mounted and glassless slides in slide projectors in which a mask aperture arranged sideways to the optical axis of a projection system is illuminated by an IR light source, imaged onto a glass-mounted or glassless slide via a first optical system and reflected from said glassless or glass-mounted slide so as to be projected in a considerably reduced size onto a receptor via a second optical system positioned on the other side of said optical axis, wherein a projected image provides a signal for controlling a focusing device for focusing said glassless or glass-mounted slide relative to said projection system, and in which multiple reflected aperture images are projected for a glass-mounted slide, the method comprising the steps of:

- focusing said multiple aperture images reflected from said glass-mounted slide onto a CDD line sensor;
- detecting the number and spacing of said multiple images with respect to their sequence on said CDD line sensor via electronic means;
- projecting the second of said multiple reflected aperture images onto a predetermined cell of said CDD line sensor by shifting an autofocus device and projection lens carrier of said projection system via electromechanical adjusting means; and
- simultaneously with iii) producing a signal corresponding to the spacing between the first and second of said reflected apertures causing said autofocus device to adjust said projection lens carrier by said spacing.

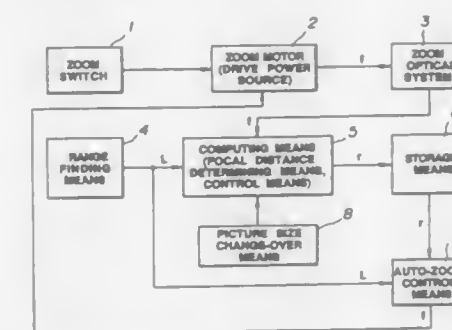
5,379,084 CAMERA HAVING A ZOOM OPTICAL SYSTEM Yasuo Yamazaki, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 977,765

Claims priority, application Japan, Nov. 22, 1991, 3-308029
Int. Cl.⁶ G03B 1/18, 17/02

U.S. Cl. 354—195.12

27 Claims



1. A camera having a zoom optical system, comprising: said zoom optical system being capable of varying a focal distance controlled by a driving source;
a focal distance determining means for determining a focal distance of said zoom optical system based on range information to a subject provided by a range finding means and a given coefficient for keeping a subject size on a film plane substantially constant;
a control means for controlling said driving source to attain

a focal distance determined by said focal distance determining means prior to a photographing operation; and a picture size selecting means for selecting a picture size; whereby when said picture size selecting means selects a picture size, means responsive to a selected picture frame modifies a quantity of zooming by said driving source so that a ratio of a subject size to the selected picture size will substantially agree with a ratio of the subject size to a previous picture size.

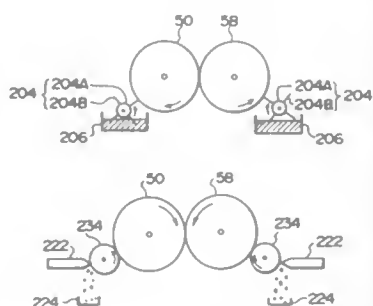
5,379,085

PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS

Shinichi Matsuda, and Jun Ikeda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 8, 1993, Ser. No. 87,316
Claims priority, application Japan, Jul. 14, 1992, 4-187091
Int. Cl.⁶ G03D 3/08

U.S. Cl. 354—319

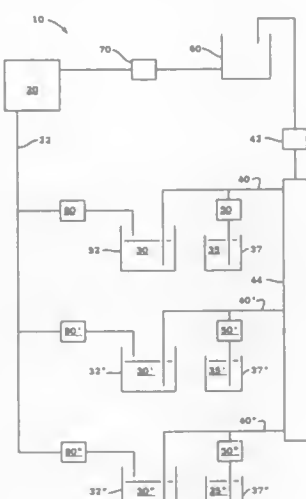
20 Claims



1. A photosensitive material processing apparatus, comprising:

a plurality of rollers whose circumferential surfaces are capable of directly or indirectly contacting a photosensitive material processed by at least one kind of processing solution, at least one of said rollers being adapted to heat and dry said photosensitive material by heat conduction thereof, said rollers being adapted to convey said photosensitive material by rotating of said rollers; and deposit removing means for removing substances deposited on the circumferential surfaces of said rollers.

tive one of said plurality of photo-chemicals from said respective storage container, said proportioning means is



connected between said displacement means and said containers.

5,379,087

PROCESSING APPARATUS

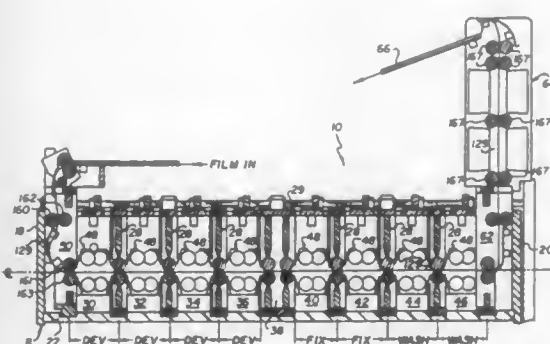
Mark J. Devaney; John S. Lercher; Lee F. Frank, all of Rochester; Paul W. Wagner, Holley, and Jeffrey L. Helfer, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 27, 1993, Ser. No. 54,810

Int. Cl.⁶ G03D 13/02

U.S. Cl. 354—331

44 Claims



1. In a processor for processing a photosensitive material, said processor having a housing chamber, comprising:
at least one modular wall structure for dividing the housing chamber into a plurality of fluid processing chambers; and modular processing means placed in at least one of said plurality of fluid processing chambers for circulating a processing fluid placed in said fluid processing chamber.

5,379,086

AUTOMATIC PHOTO-CHEMICAL REPLENISHMENT WITH BATCH PROCESSING

Roman Kuzyk, 110 Sewell Ave., Trenton, N.J.
Filed Jun. 16, 1993, Ser. No. 77,407
Int. Cl.⁶ G03D 3/02

U.S. Cl. 354—324

5 Claims

1. A photographic developing means for batch processing photograph film and paper, said photographic developing means comprising:

drum means for sequentially receiving and discharging a plurality of photo-chemicals, said photograph film and paper react to each of said plurality of photo-chemicals inside said drum means;
displacement means for transferring each of said plurality of photo-chemicals between a respective storage container and said drum means;
concentrate means for replenishing a respective one of said plurality of photo-chemicals; and
proportioning means for proportionally mixing both concentrate means from a concentrate container and said respec-

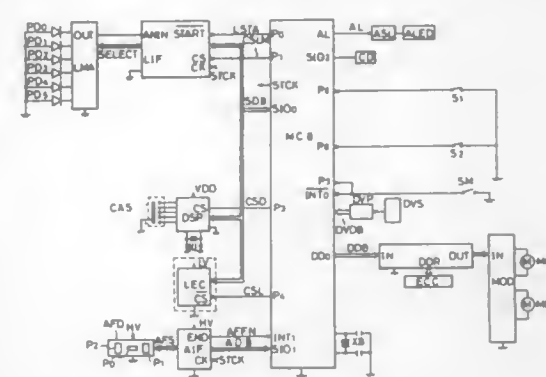
5,379,088

AUTOMATIC FOCUSING CAMERA WITH IMPROVED DETERMINATION OF OPERATION MODES

Hiroshi Ueda, Habikino; Hiroshi Ootsuka, Sakai; Tokuji Ishida, Daito, and Toshio Norita, Yokohama, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 615,271, Nov. 19, 1990, Pat. No. 5,218,394.
This application May 17, 1993, Ser. No. 41,175
Claims priority, application Japan, Nov. 20, 1989, 1-301338; Nov. 20, 1989, 1-301339; Nov. 20, 1989, 3-301340; Nov. 20, 1989, 1-301342; Nov. 20, 1989, 1-310341
Int. Cl.⁶ G03B 13/36

U.S. Cl. 354—402

20 Claims



1. A camera, comprising:
automatic focusing means, operable in a plurality of focusing modes, for detecting a focus condition and controlling the position of an objective lens to adjust the focus condition, wherein the objective lens is driven in accordance with the detected focus condition in each of the plurality of focusing modes;
detecting means for detecting a degree of camera-shake;
comparing means for comparing an output of said detecting means with a prescribed reference value; and
mode determining means for determining one of said focusing modes based on a result of the comparison performed by said comparing means.

5,379,089

FLASH CONTROL DEVICE USING

CASCADE-CONNECTED THYRISTOR AND MOSFET
Akio Uenishi, and Yasuaki Fukumochi, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 663,431, Mar. 1, 1991, Pat. No. 5,151,762.

This application Jul. 9, 1992, Ser. No. 911,670

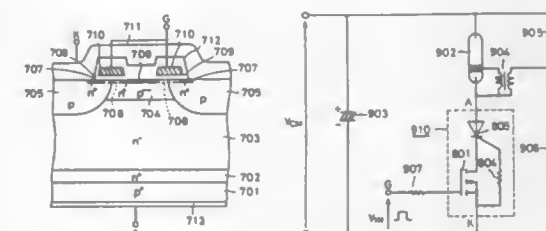
Claims priority, application Japan, Apr. 12, 1990, 2-98021(P); Apr. 26, 1990, 2-111119(P); Nov. 2, 1990, 2-298668

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.⁶ G03B 7/00; H05B 37/00; H01L 29/74

U.S. Cl. 354—416

1 Claim



1. A flash control device, comprising:
first and second high voltage source terminals;

a flash energy accumulating condenser connected across said first and second high voltage source terminals;
a flash discharge tube and a switch element connected in series across said first and second high voltage source terminals; and
a trigger circuit connected with said flash discharge tube for triggering said flash discharge tube to start a flash discharge, wherein
said switch element comprises a thyristor element and a MOSFET which are cascade-connected and formed on a single chip, wherein said single chip comprises:
a first conductivity type first semiconductor layer having first and second major surfaces;
a second conductivity type second semiconductor layer formed on said first major surface of said first semiconductor layer;
a first conductivity type first semiconductor region having a first impurity concentration selectively formed on a surface of said second semiconductor layer;
a first conductivity type second semiconductor region having a second impurity concentration which is greater than said first impurity concentration and is selectively formed on the surface of said second semiconductor layer adjacently to said first semiconductor region;
a second conductivity type third semiconductor region formed in at least a portion of a surface of said first semiconductor region;
a second conductivity type fourth semiconductor region selectively formed in a surface of said second semiconductor region at a distance from said first semiconductor region, wherein surface portions of said first and second semiconductor regions that are between said third and fourth semiconductor regions define a channel;
a gate insulation film formed on said channel;
a gate electrode formed on said gate insulation film;
a first main electrode formed to spread on said second and fourth semiconductor regions; and
a second main electrode formed on said second major surface of said first semiconductor layer, wherein
said first impurity concentration is so set that said first semiconductor region is completely depleted when a working voltage is applied across said first and second main electrodes in an off state of said switch element, and
said second impurity concentration is so set that said channel has a threshold voltage of a predetermined value in an enhancement mode.

5,379,090

PROJECTION EXPOSURE APPARATUS

Naomasa Shiraishi, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 20,803

Claims priority, application Japan, Feb. 25, 1992, 4-037897

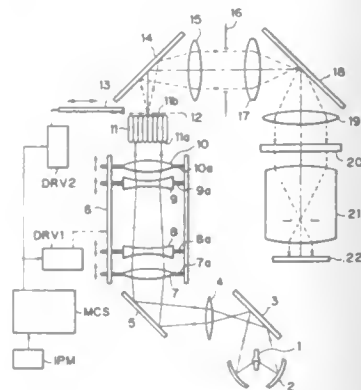
Int. Cl.⁶ G03B 27/54, 27/42

U.S. Cl. 355—67

19 Claims

1. A projection exposure apparatus comprising:
an illumination system for illuminating a pattern formed on a mask, said illumination system having a variable optical member for variably setting a size of a light beam passing through a plane having a Fourier transform relationship with a pattern surface of said mask and a stop member for shielding or reducing the light beam in a central portion thereof in order that distribution of light intensity of said light beam on or near the plane having the Fourier transform relationship is such that light intensity is higher in a

peripheral portion of the light beam than in the central portion, and



a projection optical system for projecting an image of the pattern of said mask on a photosensitive substrate.

5,379,091

ILLUMINATION OPTICAL APPARATUS AND SCANNING EXPOSURE APPARATUS

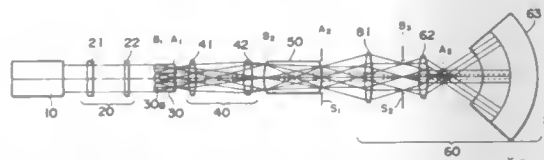
Osamu Tanitsu, Ohta, and Takashi Mori, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Nov. 4, 1993, Ser. No. 147,259

Claims priority, application Japan, Nov. 5, 1992, 4-295458; Feb. 5, 1993, 5-019098

Int. Cl.⁶ G03B 27/42, 27/54

U.S. Cl. 355-67

26 Claims



1. An illumination optical apparatus comprising:
a light supply means for supplying a beam of parallel rays;
a light-source-image forming means for forming a plurality of light source images in a substantially linear arrangement, based on the beam from said light supply means;
an optical integrator having a plurality of lens elements for forming a plurality of light source images in a substantially square arrangement, based on the beam from said light-source-image forming means, said lens elements having a rectangular cross section, two sides adjacent to each other of said rectangular cross section being different in length, said lens elements having a same refracting power both in the direction of the longer side of the rectangular cross section and in the direction of the shorter side thereof; and
a relay optical system disposed between said light-source-image forming means and said optical integrator, for making a position of the light source images formed by said light-source-image forming means conjugate with a position of the light source images formed by said optical integrator.

5,379,092

IMAGE FORMING APPARATUS WITH CASING LATCHING AND OPENING FEATURE

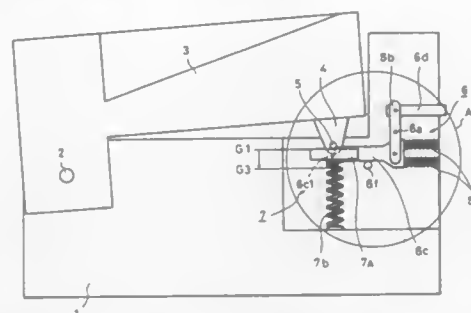
Kazunori Takashima, Kamakura, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 79,746

Claims priority, application Japan, Jun. 25, 1992, 4-190229
Int. Cl.⁶ G03G 15/00

U.S. Cl. 355-200

6 Claims



1. An image forming apparatus, comprising:
a casing including an openable and closable member movable relative to a fixed part of said casing;
biasing means for elastically biasing said openable and closable member, by exerting a biasing force, in a direction in which it is open relative to said fixed part; and
latching means for latching said openable and closable member to said casing, said latching means elastically biasing said openable and closable member, by exerting a biasing force, in a direction in which it is open when said openable and closable member is closed relative to said fixed part of said casing, and said openable and closable member being latched by said latching means at a latch position after said openable and closable member is closed in opposition to the biasing forces of said biasing means and said latching means,

wherein a following relationship is satisfied:

$$W_{1MAX} - W_{1L} < W_{2MAX}$$

when the biasing force of said biasing means and the biasing force of said latching means immediately before said openable and closable member is latched by said latching means are denoted as W_{1L} and W_{2MAX} , respectively, and the biasing force of said biasing means at a position at which said openable and closable member travels beyond the latch position to a point where said openable and closable member can no longer travel is denoted as W_{1MAX} .

5,379,093

IMAGE PROCESSING MACHINE CAPABLE OF INHIBITING COPYING OF VALUABLE PAPERS

Hideyuki Hashimoto, Toyokawa; Munehiro Nakatani, Toyohashi, and Hideo Kumashiro, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 25, 1993, Ser. No. 142,826

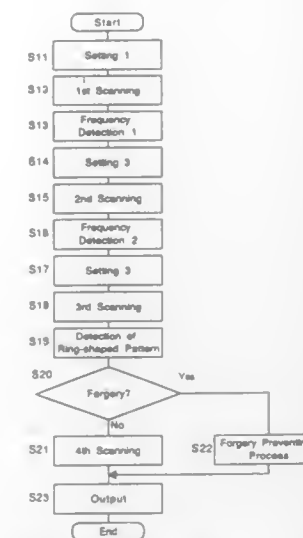
Claims priority, application Japan, Oct. 31, 1992, 4-316546
Int. Cl.⁶ G03G 15/00

U.S. Cl. 355-201

4 Claims

1. An image processing machine which comprises:
detecting means for detecting a spatial frequency of a small region of an original to be copied;
calculating means for comparing the detected spatial frequency with a standard spatial frequency used as a standard pattern, thereby to calculate the degree of similarity therebetween;
judging means for judging whether or not the degree of similarity so calculated is greater than a predetermined value; and

determining means for determining, when the judging means indicates the degree of similarity greater than the prede-



termined value, that the original to be copied is identical with an original used as a basis for the standard pattern.

5,379,094

VACUUM ASSISTED BEAD PICK OFF APPARATUS EMPLOYING A PLURAL LEVEL SURFACE-HYBRID AIR KNIFE

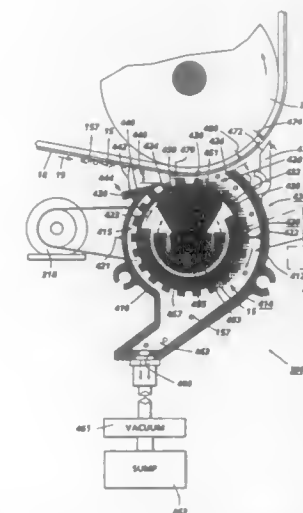
Joseph M. Wing, Ontario; Lawrence R. Benedict, Rushville; Bruce J. Parks, West Bloomfield; Robert A. Pictor, Webster; John D. Head, Henrietta; John W. Whipple, North Rose, and Charles M. Gardiner, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1993, Ser. No. 84,697

Int. Cl.⁶ G03G 15/08, 21/00

U.S. Cl. 355-215

9 Claims



1. An apparatus for removing granules from a moving imaging surface in a region between a developer station and a transfer station, comprising:
a member, interposed between the developer station and the transfer station;
a housing defining an aperture proximate the moving imaging surface, said housing defining a cavity having a shape substantially larger than and generally conforming to said member, said member eccentrically located within said

housing defining a first air passageway and a second air passageway therebetween, said first air passageway being larger than said second air passageway;
an air flow generator, coupled to said housing, for generating an air flow through the first air passageway and the second air passageway, whereby said granules are attracted toward said aperture and whereby the airflow is greater in the first air passageway than the second air passageway; and
means for attracting the granules from the imaging surface to said member.

5,379,095

IMAGE READING APPARATUS WITH THE OPTICAL READING UNITS AND PHOTOELECTRIC CONVERSION DEVICE MOUNTED ON A COMMON GUIDE MEMBER

Nozomu Oishi, Chigasaki, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

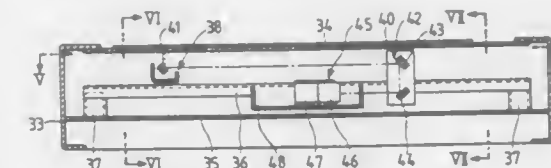
Filed Jun. 18, 1992, Ser. No. 900,374

Claims priority, application Japan, Jun. 18, 1991, 3-145877; Jul. 17, 1991, 3-176640

Int. Cl.⁶ G03G 15/28

U.S. Cl. 355-233

8 Claims



1. An image reading apparatus which comprises:
a chassis having a transparent original holding plate for holding thereon an original sheet to be read;
a light source for irradiating a surface of the original sheet held on said original holding plate;
an elongated guide member extending in a direction parallel to a sub-scanning direction of said image reading apparatus and having opposite ends arranged along said sub-scanning direction, said elongated guide member being firmly connected to said chassis only at said opposite ends;
a photoelectric conversion unit arranged to achieve photoelectric conversion of the reflected light received from said second movable optical reading unit and supported only by said guide member; and
light-path changing means supported only by said guide member for changing a path of light such that light reflected from the surface of the original sheet is directed to said photoelectric conversion unit.

5,379,096

DEVELOPING DEVICE

Akira Nakakuma, Takaishi, and Yasuyuki Fukunaga, Hirakata, both of Japan, assignors to Mita Industrial Co., Ltd., Japan Division of Ser. No. 845,319, Mar. 3, 1992, Pat. No. 5,311,260.

This application Feb. 1, 1994, Ser. No. 189,678

Claims priority, application Japan, Mar. 8, 1991, 3-67649; Mar. 8, 1991, 3-67651; Mar. 11, 1991, 3-69407

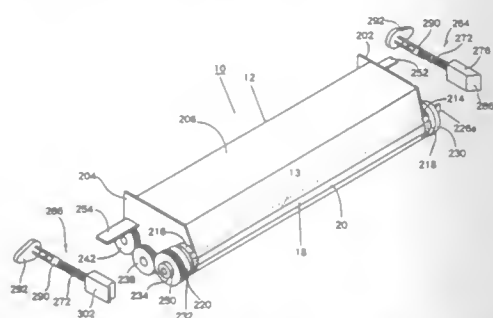
Int. Cl.⁶ G03G 15/06

U.S. Cl. 355-245

11 Claims

1. A developing device comprising:
a frame, and
a developing mechanism that is supported by said frame to move over a predetermined range in a direction toward and away from a surface of a rotary drum,
a plurality of urging means for urging said developing mechanism in said direction toward the surface of said rotary drum, said developing mechanism including

a developing housing
 a developing agent application means
 a support shaft means for mounting said developing agent application means on said developing housing,
 a pair of distance setting rollers rotatably arranged on both sides of said developing agent application means, said pair of distance setting rollers being brought into contact with the surface of said rotary drum by an urging action of said urging means to position said developing mechanism at a predetermined developing position with respect to said rotary drum



said urging means urging said developing mechanism in said direction toward said rotary drum by said support shaft means
 said support shaft means having ends which protrude outwardly beyond both sides of said developing mechanism, urging means of said plurality being disposed on both sides of said developing mechanism to urge both ends of said support shaft means,
 each of said urging means being provided with a pushing means which contacts an end of said support shaft means, at least one of said pushing means coming into contact with said support shaft means in order to impart a thrust force to said support shaft in an axial direction.

5,379,097

DEVELOPMENT APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Jun Aoto, and Yasuo Hirano, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

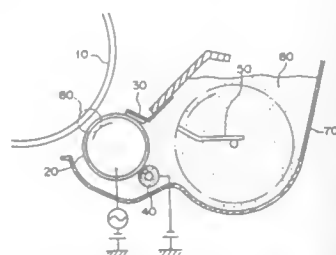
Filed Mar. 11, 1993, Ser. No. 29,475

Claims priority, application Japan, Mar. 13, 1992, 4-089375

Int. Cl.⁶ G03G 15/08

U.S. Cl. 355—259

8 Claims



1. A development apparatus comprising a developer-bearing-member for developing latent electrostatic images formed on a latent-electrostatic-image-bearing member to visible toner images by the application thereto of a non-magnetic one-component developer comprising matrix toner particles and a fluidity-imparting agent; and a developer-thin-layer-regulating member for forming a thin layer of said non-magnetic one-component developer on the surface of said developer-bearing member, said developer-bearing member having a surface portion which is intermediate between said matrix toner particles and said fluidity-imparting agent in the triboelectric series thereof.

5,379,098 APPARATUS AND METHOD FOR SEQUENCING A TRANSPORT SYSTEM OF AN IMAGE-PRODUCING APPARATUS

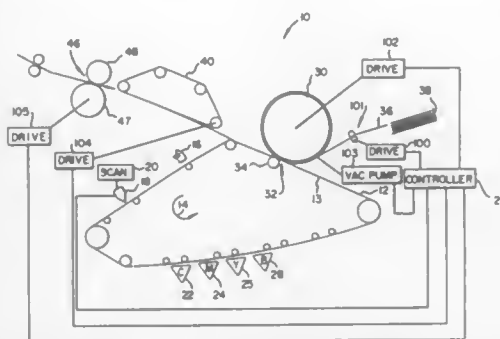
Charles J. Bennett, Hilton, and Thomas T. Stetz, III, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 2, 1992, Ser. No. 984,658

Int. Cl.⁶ G03G 15/14

U.S. Cl. 355—271

16 Claims



12. A receiver transport sequencing system for a two up transfer station for transferring developed images, from a first movable member having a series of image frames, to a series of receivers, said transport sequencing system comprising:
 means for delivering each receiver of the series of receivers to the transfer station separated by an interval of at least two image frames,
 means for transferring, at the transfer station, the developed images, from the image frames, in timed registration to the receivers and
 means for synchronizing the delivery of the receivers to the transfer station and movement of the receivers in the transfer station.

5,379,099

IMAGE FORMING APPARATUS FORMING OFFSET PREVENTIVE ELECTRIC FIELD ACCORDING TO STATIC ELECTRICITY REMOVAL CURRENT

Hisaaki Senba, Yokohama; Hiroshi Matsumoto, Kawasaki, and Keisuke Hasegawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

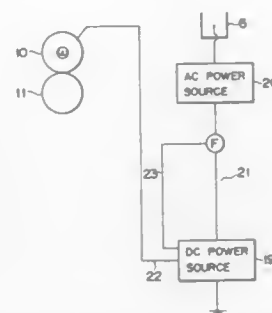
Filed Jun. 8, 1993, Ser. No. 73,764

Claims priority, application Japan, Jun. 17, 1992, 4-158120

Int. Cl.⁶ G03G 15/20

U.S. Cl. 355—284

5 Claims



1. An image forming apparatus comprising: an image supporter for holding a toner image;
 transfer means for electrostatically transferring the toner image held on the image supporter onto a recording medium;
 static electricity removal means for applying static electricity removal charge to the recording medium on which the toner has been transferred;

a rotating member for nipping and conveying the recording medium holding the toner image and for fixing the toner image;
 offset preventive electric field applying means for applying an offset preventive electric field to said rotating member for fixing; and
 field strength control means for controlling strength of the offset preventive electric field such that the strength becomes high when the static electricity removal charge applied by said static electricity removal means is increased, and becomes low when said static electricity removal charge is decreased.

5,379,100 CLEANING DEVICE FOR USE IN IMAGE FORMING APPARATUS

Tomoo Kudo; Junichi Hamada, and Toshiya Sato, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

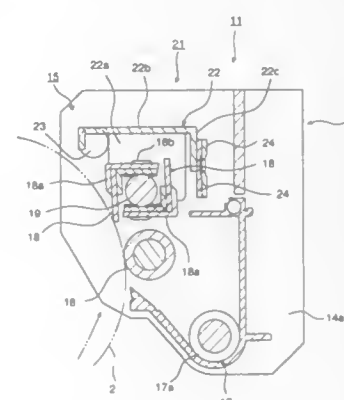
Filed Sep. 9, 1993, Ser. No. 118,970

Claims priority, application Japan, Sep. 14, 1992, 4-270965; Sep. 14, 1992, 4-270966; Sep. 14, 1992, 4-270968; Oct. 30, 1992, 4-316158

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—299

37 Claims



1. A cleaning device comprising:
 (a) a plurality of cleaning blades that are respectively capable of coming into contact with an image carrier for cleaning a surface of said image carrier;
 (b) a blade supporting shaft for supporting said plurality of cleaning blades;
 (c) supporting shaft moving means for moving said blade supporting shaft between a first position in which one of said plurality of cleaning blades is in contact with said image carrier and a second position in which said one blade is separated from said image carrier;
 (d) movement control means for controlling a movement of said supporting shaft moving means;
 (e) supporting shaft rotating means for rotating said blade supporting shaft;
 (f) a memory for rewritably storing a preset blade replacement timing for replacing a used blade with a new blade; and
 (g) means for controlling said supporting shaft rotating means according to the preset blade replacement timing stored in said memory, wherein a used blade is replaced with a new blade by rotating said blade supporting shaft.

5,379,101 IMAGE FORMING APPARATUS IN WHICH UNITS CONNECTED TOGETHER OCCUPY A RELATIVELY SMALL AREA

Tomohiko Takahashi; Takashi Matsuoka, both of Yokohama; Yoshitsugu Nakatomi, Yokosuka, and Koji Kagaya, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

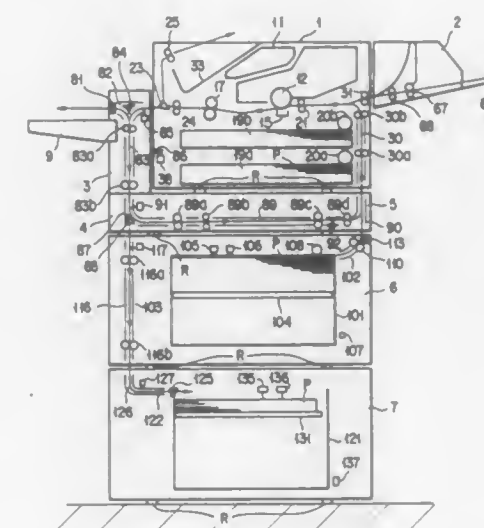
Filed Aug. 31, 1992, Ser. No. 937,400

Claims priority, application Japan, Sep. 5, 1991, 3-226075

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—309

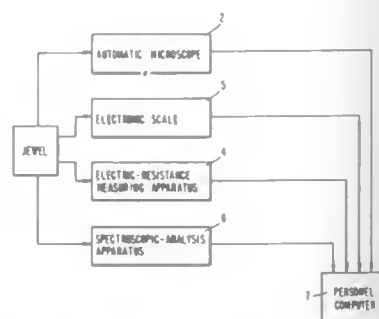
15 Claims



8. An image forming apparatus comprising:
 a first unit having a bottom with a first inlet port, a side with a first outlet port, image forming means for forming a visible image from image data externally supplied, image transfer means for transferring the visible image from said image forming means onto a transfer material, first conveyer means for conveying the transfer material to said image transfer means, and discharging means connected to said first outlet port, for discharging the transfer material bearing the visible image, outside said first unit;
 a second unit detachably connected to the side of said first unit and having a second inlet port communicating with said first outlet port, reversing means for selectively reversing the transfer material, a bottom with a second outlet port through which to discharge the transfer material, and second conveyer means for conveying the transfer material from said second inlet port to said second outlet port;
 a third unit located beneath said first and second units and having a top having a third inlet port communicating with said second outlet port and having a third outlet port communicating with said first inlet port, third conveyer means extending between said third inlet port and said third outlet port for conveying the transfer material therebetween, and a bottom having a fourth outlet port provided in correspondence with said third inlet port; and
 a fourth unit having a fourth inlet port communicating with said fourth outlet port, and means connected to said fourth inlet port for storing the transfer material conveyed from said fourth inlet port;
 wherein a total bottom area of said first and second units is substantially equal to each of a top area and bottom area of said third and fourth units, and wherein said second outlet port, third inlet port, fourth outlet port and fourth inlet port are aligned with each other through said second, third and fourth units.

5,379,102
SYSTEM FOR IDENTIFYING JEWELS
 Masaaki Takeuchi, Nagoya, Japan, assignor to E.R.C. Company Ltd., Nagoya, Japan
 Filed Dec. 22, 1992, Ser. No. 995,078
 Claims priority, application Japan, Dec. 24, 1991, 3-357016
 Int. Cl.⁶ G01N 21/87
 U.S. Cl. 356—30

1 Claim



1. A system for identifying a jewel having a gem (10a) and a metal portion (10b), each of which is marked with an identification number (11d) and a first spot (11a), a second spot (11b) and a third spot (11c), said system comprising

- (a) an identification-number reading apparatus for reading the identification number (11d),
- (b) an electric-resistance measuring apparatus (4) for measuring an electric resistance between each first spot (11a) and each second spot (11b) and for generating an electric signal to represent the electric resistance,
- (c) a specific-gravity measuring apparatus (5) for measuring the specific gravity of the jewel by determining its weight in air and its weight in water and generates an electric signal representing the specific gravity,
- (d) a spectroscopic-analysis apparatus (6) for directing a beam of light of selected band width on said third spot (11c) to determine the spectrum of the light reflected from the third spot (11c) and for generating an electric signal to represent a pattern of said spectrum, and
- (e) an electric information processing apparatus (7) for receiving and processing said electric signals and for storing them in memory,

wherein

- (i) said reading apparatus includes an automatic microscope (2) for reading the identification number (11d) and generating a signal of the image of the identification number (11d) and an apparatus (3) for receiving the signal from the automatic microscope (2) and analyzing and processing the same,
- (ii) said electric-resistance measuring apparatus (4) includes means for causing a weak current to flow between said first and second spots (11a), (11b), and
- (iii) said specific gravity measuring apparatus (5) comprising an electronic scale which measures the weight of the jewel in air and its weight in water to the nearest 0.001 gram.

5,379,103
METHOD AND APPARATUS FOR IN SITU DETECTION OF MINUTE AMOUNTS OF TRACE ELEMENTS
 Arie Zigler, Rishon LeZion, Israel, assignor to APTI, Inc., Del.
 Filed May 6, 1993, Ser. No. 57,475
 Int. Cl.⁶ G01N 21/00

U.S. Cl. 356—73

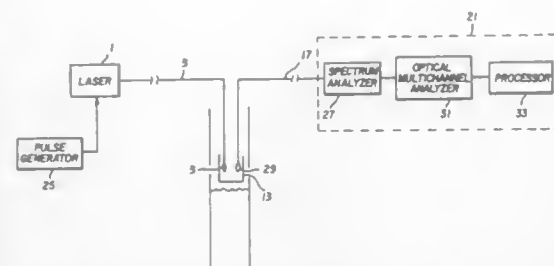
28 Claims

1. An apparatus for measuring the contents of an analysis sample comprising:

- a laser energy emitter;
- means for focusing energy emitted from said laser energy emitter on said sample, thereby generating excited electron states in a portion of said sample;
- means for measuring spectral characteristics of energy emitted from said sample when exposed to focused energy,

measured ones of said spectral characteristics identifying substances in said analysis sample;

means for defocusing said energy emitted from said laser

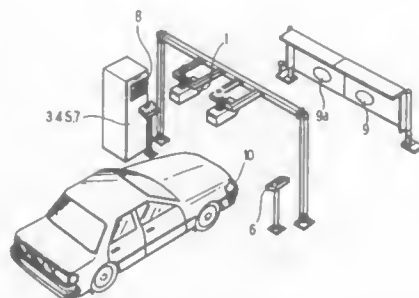


energy emitter to induce fluorescence in said sample and thereby generate fluorescent energy; and

a fluorescent energy detector for detecting the fluorescent energy.

5,379,104
METHOD OF, AND APPARATUS FOR, DETECTING OPTICAL AXIS OF HEADLAMP
 Osamu Takao, Hiroshima, Japan, assignor to Chuo Electronic Measurement Co., Ltd., Hiroshima, Japan
 Filed Jan. 4, 1994, Ser. No. 177,050
 Int. Cl.⁶ G01M 11/06
 U.S. Cl. 356—121

4 Claims



1. A method of quantitatively detecting the optical axis of a headlamp in an inspection line of vehicles such as automobiles, comprising the steps of:

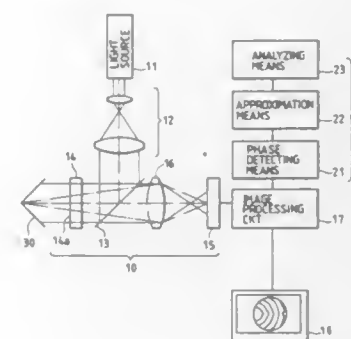
- picking up an image of a light emitted from a vehicle lamp under inspection and projected onto a screen placed in front of the vehicle;
- forming, and storing, on a reference plane segmented into a plurality of grids a luminous intensity distribution curve corresponding to an illuminance pattern of the picked-up light image;
- setting, and moving and scanning a test window occupying a predetermined area in the reference grid plane to calculate an integrated illuminance of each unit area in each test window; and
- selecting and detecting as the position of the headlamp optical axis the center of the test window when the integrated illuminance reaches a maximum value.

5,379,105
ROOF SURFACE MEASURING APPARATUS
 Makoto Iki, Hirofumi Matsuo, Masahiro Oono, and Masato Noguchi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Oct. 22, 1992, Ser. No. 964,959
 Claims priority, application Japan, Oct. 24, 1991, 3-339270; Oct. 31, 1991, 3-349295; Oct. 31, 1991, 3-349296; Oct. 31, 1991, 3-349297

Int. Cl.⁶ G01B 11/00

U.S. Cl. 356—359

17 Claims



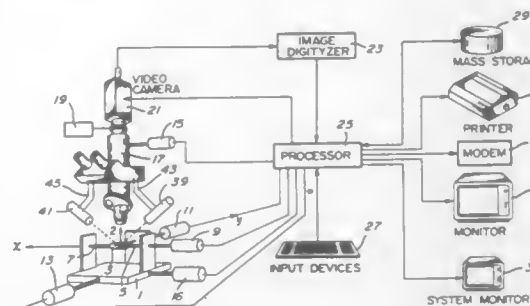
1. A roof surface measuring apparatus comprising:

- a light source for emitting a coherent light beam;
- a reference surface for reflecting part of the coherent light beam to produce a reference beam;
- means for making part of the coherent light beam incident on a roof surface to produce a subject beam that is reflected from the roof surface;
- an interferometer for causing the reference beam and the subject beam to interfere with each other to produce an interference fringe on a detection plane, and for detecting the interference fringe;
- means for detecting phase differences of the interference fringe in a predetermined measuring area of the detection plane;
- means for determining a continuous approximation function representing a relationship between positions in a first direction perpendicular to a line in the measuring area corresponding to a ridge line of the roof surface and the phase differences detected along the first direction; and
- means for performing an analysis relating to a roof angle of the roof surface based on the approximation function.

5,379,106
METHOD AND APPARATUS FOR MONITORING AND ADJUSTING THE POSITION OF AN ARTICLE UNDER OPTICAL OBSERVATION
 Roman Baldur, Baie d'Urfe, Canada, assignor to Forensic Technology WAI, Inc., Montreal, Canada
 Filed Apr. 24, 1992, Ser. No. 874,355
 Int. Cl.⁶ G01B 11/14

U.S. Cl. 356—375

8 Claims



1. An apparatus for monitoring and adjusting the position of a bullet, having a surface, under optical observation, said bullet

being observed by an optical device having an optical axis, said bullet extending generally in the direction of an observation axis, said observation axis extending at right angles to said optical axis, said optical axis intercepting said observation axis at a first point, a transverse axis extending at right angles to both said optical axis and said observation axis and intercepting said optical axis and said observation axis at said first point;

said apparatus comprising:

a first light source disposed on one side of said optical axis and directing a first planar light beam at said observation axis at a second point spaced from said first point on said one side of said optical axis, and a second light source disposed on the other side of said optical axis and directing a second planar light beam at said observation axis at a third point spaced from said first point on said other side of said optical axis;

whereby, the trace of said first light beam impinging on said bullet comprises a first line, on said one side of said optical axis, whose form is dependent on the shape of said surface of said bullet, and the trace of said second light beam impinging on said bullet is a second line, on the other side of said optical axis, whose form is dependent on the shape of said surface of said bullet;

and further including means for adjusting the position of said bullet, whereby, to adjust the focus, drift and pitch of said bullet, said means for adjusting the position comprising:

- a means for adjusting the focus comprising means for moving said bullet along said optical axis to thereby vary the distance between said bullet and said optical device;
- a means for adjusting the drift comprising means for moving the bullet along said transverse axis; and
- a means for adjusting the pitch comprising means for pivoting said bullet about said transverse axis.

5,379,107
PROCESS AND APPARATUS FOR THE MEASUREMENT OF OBJECT TOPOGRAPHIES BY MEANS OF PROJECTED FRINGE PATTERNS

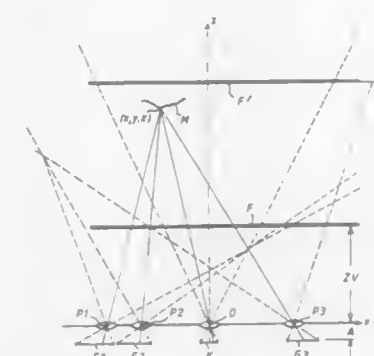
Adalbert Hanssen, Königsbrunn, and Albrecht Hof, Aalen, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed May 14, 1993, Ser. No. 63,175

Claims priority, application Germany, May 29, 1992, 4217768
 Int. Cl.⁶ G01B 11/24

U.S. Cl. 356—376

10 Claims



1. Process for the measurement of object topographies by means of fringe patterns projected onto a measurement object within a measurement volume by the aid of a measurement apparatus, which measurement apparatus deviates in unknown manner from its desired set up, the method comprising:

- evaluating phase measurement values from projections such that first phase measurement values arise relating to a first spatial periodicity with a large distance between contour surfaces and second phase measurement values arise relat-

ing to a second spatial periodicity with a small distance between contour surfaces,
 carrying out at least a first calibration measurement with respect to a calibration surface in a forward region of said measurement volume and generating first reference phase values,
 carrying out at least a second calibration measurement with respect to a calibration surface in a rearward region of said measurement volume remote from said measurement apparatus and generating second reference phase values, and
 correcting said phase measurement values taking into account said first and second reference phase values of said at least first and second calibration measurements, the correcting step comprising the steps of
 calculating a phase value, defining an apparent phase value, relating to said second spatial periodicity from said first phase measurement value under consideration of said first and second reference phase values and theoretical phase values calculated from the desired set up of the measurement apparatus for said at least first and second calibrations measurement,
 dividing said apparent phase value into a fringe order and phase remainder, and
 comparing said phase remainder with a value calculated from said second phase measurement value.

5,379,108

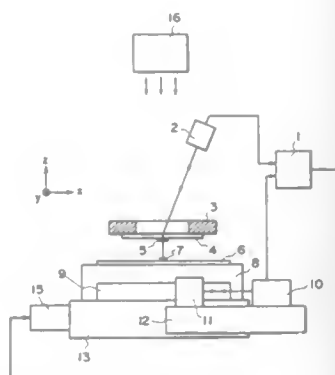
ALIGNMENT SYSTEM

Noriyuki Nose, Atsugi, and Naoto Abe, Isebara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jul. 15, 1993, Ser. No. 91,959

Claims priority, application Japan, Jul. 17, 1992, 4-190946
 Int. Cl.⁶ G01B 11/00

U.S. Cl. 356-400

8 Claims



1. An alignment system, comprising:
 alignment detecting means for detecting a relative deviation of first and second objects from a predetermined positional relationship;
 moving means for moving the first object relative to the second object;
 measuring means for producing information related to the movement by said moving means; and
 control means for determining an input to be applied to said moving means so as to bring the first and second objects into the predetermined positional relationship, on the basis of a detected value obtained through said alignment detecting means and a plurality of measured values obtained through said measuring means, all being taken up at the same time, and for controlling said moving means on the basis of the thus determined input.

5,379,109
 METHOD AND APPARATUS FOR
 NON-DESTRUCTIVELY MEASURING LOCAL
 RESISTIVITY OF SEMICONDUCTORS

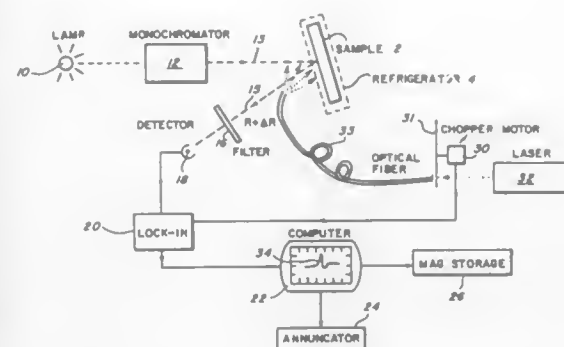
D. Kurt Gaskill, Alexandria; Nicholas Bottka, and Alok K. Berry, both of Burke, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1992, Ser. No. 899,977

Int. Cl.⁶ G01N 21/55, 21/84

U.S. Cl. 356-445

20 Claims



1. A method for measuring resistivity of a preselected portion of a semiconductor, said method comprising the steps of:
 illuminating the preselected portion of the semiconductor with a first substantially monochromatic light of a first preselected photon energy;
 selectively illuminating the preselected portion of the semiconductor with a second substantially monochromatic light of an energy sufficient to cause electron-hole generation in the preselected portion of the semiconductor;
 wherein said steps of illuminating, selectively illuminating are carried out at or about 82 K;
 measuring a change in reflectance of the first substantially monochromatic light from the preselected portion of the semiconductor responsive to said step of selectively illuminating;
 recording said change in reflectance;
 recording a photorefectance line-shape by repeating said steps of illuminating, selectively illuminating, measuring and recording, wherein said step of illuminating is repeated so that said first substantially monochromatic light has a second preselected photon energy different from said first preselected photon energy;
 calculating a photorefectance line-shape phase angle based on said photorefectance line-shape;
 determining the resistivity of the preselected portion of the semiconductor based on said photorefectance line-shape phase angle, and
 wherein said step of determining the resistivity of the preselected portion of the semiconductor comprises the substep of:
 calculating Hall resistivity ρ of the preselected portion of the semiconductor by the equation

$$\rho = 5.6 + 4.0 \times 10^{-3} \Theta + 4.6 \times 10^{-3} \Theta^2$$

where Θ is said photorefectance line-shape phase angle.

5,379,110
 METHOD AND APPARATUS FOR MEASURING
 SURFACE CHARACTERISTICS OF MATERIAL
 Toshiaki Matsui, Tokyo, and Kenichi Araki, Higashi-Murayama, both of Japan, assignors to Communications Research Laboratory, Ministry of Posts and Telecommunications, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,856

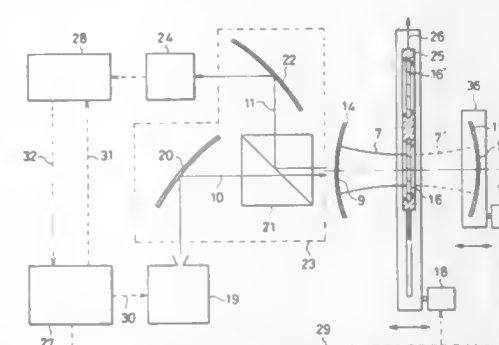
Claims priority, application Japan, Oct. 23, 1991, 3-339277

The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.

Int. Cl.⁶ G01N 21/55

U.S. Cl. 356-445

9 Claims



1. A method for measuring the surface characteristics of a material with respect to a high frequency electromagnetic field comprising: forming a reflection-type open resonator by placing opposite a flat mirror material to be tested one of a pair of spherical reflection mirrors being concave and having same-diameter circular mirror surface openings and the same radii of curvature, the surface openings being formed at the center of the pair of spherical reflection mirrors with circular coupling regions constituting partially transmissive reflection mirror surfaces of the same pattern and area, the spherical reflection mirrors having mirror surfaces and mirror surface substrates of entirely the same materials; placing the other of the pair of spherical reflection mirrors at a position symmetrical to said one of the pair of spherical reflection mirrors with respect to the flat mirror material as the plane of symmetry for use in calibrating mirror surface reflection loss; measuring the Q value of an open resonator formed by said one of the pair of spherical reflection mirrors and the flat mirror material; removing the flat mirror material from the optical axis; measuring the Q value of an open resonator formed by the pair of spherical reflection mirrors; calculating the absolute value of the reflectance of the flat mirror material to be tested from the difference between the two measured Q values; and calculating the phase of the reflected wave at the surface of the flat mirror material to be tested from the measured resonance position; thereby determining the surface characteristics of the material with respect to a high-frequency electromagnetic field.

5,379,111

LENS METER

Tadashi Kajino, Okazaki, and Mikio Kurachi, Aichi, both of Japan, assignors to Nidek Co., Ltd., Aichi, Japan

Filed Apr. 26, 1993, Ser. No. 51,707

Claims priority, application Japan, Apr. 30, 1992, 4-140173; Jun. 10, 1992, 4-177589; Jun. 10, 1992, 4-177591

Int. Cl.⁶ G01B 9/00

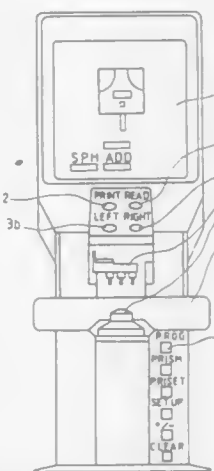
U.S. Cl. 356-124

16 Claims

1. A lens meter including a measuring optical system for determining the optical characteristics of a lens on the basis of the locus of measuring light projected on the lens, transmitted through the lens and detected by a photo-detecting device, said lens meter comprising:

- a display means for displaying the relation to adjust the lens to an optical axis of the measuring optical system;
- a measuring mode selector means for selecting a measuring

made from a single focus lens measuring mode to a progressive focus lens measuring mode;
 a control means for measuring a progressive focus lens at position measuring points at predetermined intervals on the lens successively on a measuring optical axis and measuring the refractive power of the lens at each position measuring point;
 a calculating means for calculating a dislocation between a vertical standard line and a measuring optical axis of said measuring optical system based on a prism power of the



refractive power in a direction of a horizontal standard line of the progressive focus lens, in which the vertical standard line contains a measuring point of the refractive power of a far viewing section, crosses a horizontal standard line, and passes through a geometrical center of the progressive focus lens; and
 a movement conducting mark displayed on said display means to conduct the measuring to the vertical standard line direction based on data obtained through said calculating means.

5,379,112

PROCESS FOR RELATIVE MEASUREMENT OF THE
 CENTER-LINE OF AN APERTURE AND THE
 CENTER-LINE OF A CYLINDRICAL OUTLINE

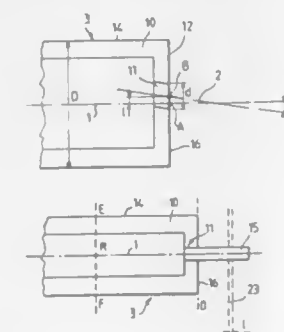
Jean-Francois Ollivier, Merdrignac; Said Lalaouna, La Ferte Bernard, and Manuel Penha, Le Mans, all of France, assignors to Framatome Connectors International, Paris La Defense, France

Filed Mar. 24, 1993, Ser. No. 35,764

Claims priority, application France, Mar. 26, 1992, 92 03657
 Int. Cl.⁶ G01B 5/14, 5/24

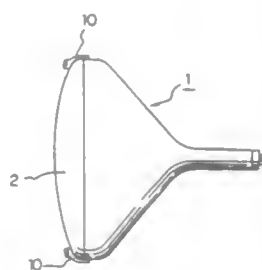
U.S. Cl. 356-150

20 Claims



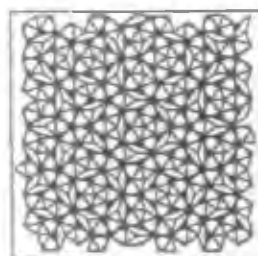
1. A process for measurement of the relative positions of the center-lines of an aperture and a cylindrical outline of a sample characterized in that it comprises the following steps:
 introducing a calibrated rod into said aperture;

5,379,117
SUPPORTING MEMBER FOR A VLMF COIL
 Hyeon S. Yang, Seoul, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea
 Filed Dec. 3, 1991, Ser. No. 801,067
 Claims priority, application Rep. of Korea, Dec. 12, 1990, 90-19572
 Int. Cl.⁶ H04N 5/645; H01J 29/06; H01F 13/00
 U.S. Cl. 358—400 10 Claims



1. Support means for a VLMF coil adapted for mounting on a CRT, the CRT having upper and lower edge portions at which rounded corners are formed, said support means comprising a first coupling member mounted on the upper edge portion of a CRT, a second coupling member mounted on the lower edge portion of said CRT, the first and second coupling members being separate and distinct, said coupling members having bend regions with a curvature corresponding to the rounded corners of the upper and lower edge portions of the CRT so that said bend regions can be snugly fitted on said corners, each said coupling member having a front face at which said coupling member is provided with an open slot extending transversely of said CRT, said slot facing outwardly of said coupling member to enable insertion of a VLMF coil in said slot after the coupling member is fitted on said corner of the CRT.

5,379,118
METHODS AND APPARATUS FOR ELIMINATING MOIRÉ INTERFERENCE USING QUASIPERIODIC PATTERNS
 Paul J. Steinhardt, Wynnewood, and Philip Taylor, Philadelphia, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.
 Division of Ser. No. 435,938, Nov. 13, 1989, Pat. No. 5,179,448, which is a continuation-in-part of Ser. No. 222,201, Jul. 21, 1988, Pat. No. 4,894,726. This application Nov. 6, 1992, Ser. No. 972,604
 The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.
 Int. Cl.⁶ H04N 1/23; B41F 1/18, 7/00
 U.S. Cl. 358—298 9 Claims

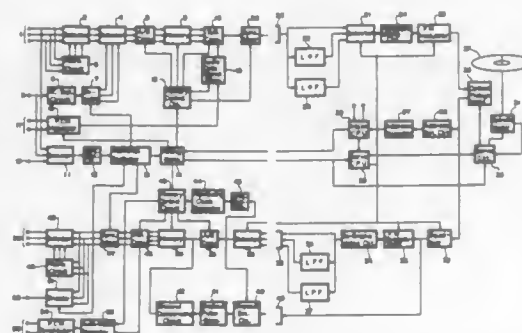


1. A screen for printing an image, comprised of a substrate having a plurality of elements defined by areas of substantial opacity and areas of substantial transparency arrayed in accordance with a quasiperiodic pattern, the elements defining two or more unequal intervals and a plurality of frequencies with which said elements appear, the intervals and frequencies being described by irrational numbers, which are defined as

numbers which cannot be expressed as a ratio of two whole numbers, and the pattern having a degree of symmetry.

5,379,119
VIDEO DISK RECORDING APPARATUS WHEREIN THE FREQUENCY OF THE CARRIER IS LOWERED AND THE FREQUENCY RANGE OF THE INFORMATION SIGNAL IS NARROWED WHEN A RECORDING LASER BEAM IS POSITIONED AT AN EXTENDED RECORDING AREA OF THE DISK

Hideo Owa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
 Filed Dec. 18, 1990, Ser. No. 629,245
 Claims priority, application Japan, Dec. 27, 1989, 1-339235
 Int. Cl.⁶ H04N 9/79; G11B 20/06
 U.S. Cl. 358—310 8 Claims

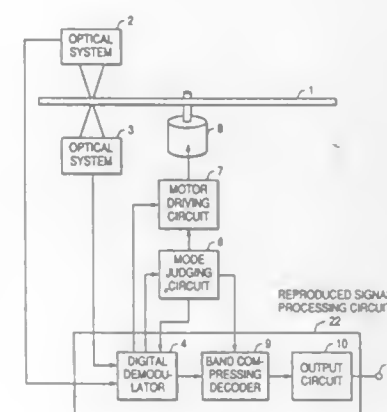


1. An apparatus for recording an information signal having a given frequency range on a disk by a laser beam, comprising: rotating means for rotating the disk with a constant angular velocity; modulator means for frequency-modulating a carrier signal having a given frequency by the information signal; and recording means for recording the frequency-modulated carrier signal on the disk by the laser beam, wherein the disk has a conventional recording area and an extended recording area positioned at an inner side of the conventional recording area, wherein the carrier signal has a changing frequency characteristic inclination within the extended recording area which frequency characteristic inclination is steeper than the frequency characteristic inclination of the carrier signal within the conventional recording area, and means for lowering the frequency of the carrier signal and narrowing the frequency range of the information signal when the laser beam is positioned at the extended recording area.

5,379,120
OPTICAL DISK APPARATUS FOR SELECTIVELY RECORDING AND REPRODUCING SIGNALS HAVING DIFFERENT BIT RATES
 Masahiro Honjo, Sakai, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Division of Ser. No. 794,013, Nov. 19, 1991, Pat. No. 5,255,103.
 This application May 24, 1993, Ser. No. 65,362
 Claims priority, application Japan, Nov. 20, 1990, 2-317216
 Int. Cl.⁶ H04N 5/84 16 Claims

13. An optical disk apparatus for reproducing a digital signal recorded on a recording disk in the form of either one channel of first modulated coded signal having a bit rate A1 and two channels of second modulated coded signals having a bit rate A2 higher than the bit rate A1, said apparatus comprising: an optical reproducer, said reproducer having two reproducing channels for reproducing from said recording disk the recorded one channel first modulated coded signal through one of said two reproducing channels to obtain

one channel of reproduced first modulated coded signal having the bit rate A1 when said first modulated coded signal is to be reproduced and for reproducing the recorded two channels of second modulated coded signals through said two reproducing channels to obtain two channels of reproduced modulated coded signals having the bit rate A2 when said second modulated coded signals are to be reproduced;
 a reproduced signal processor, said processor, in a first processing mode, demodulating and decoding said one channel of reproduced first modulated coded signal to obtain a reproduced digital signal and, in a second pro-

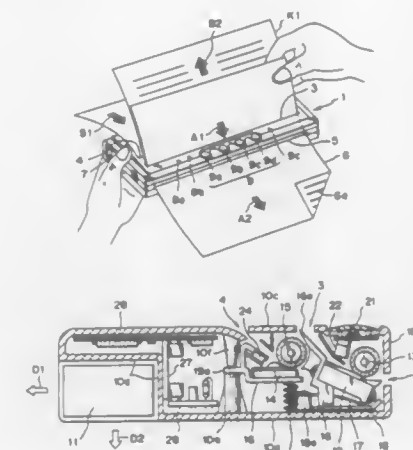


cessing mode, demodulating and decoding said two channels of reproduced second modulated coded signals to obtain another reproduced digital signal;
 a disk driver, said driver driving said recording disk to rotate at a specified substantially constant rotating speed or at a specified substantially constant linear velocity;
 a mode controller, said controller controlling said reproduced signal processor so as to operate in said first processing mode when said first modulated coded signal is to be reproduced and so as to operate in said second processing mode when said second modulated coded signals are to be reproduced.

5,379,121
PORTABLE FACSIMILE APPARATUS
 Masakatsu Yamada, Kawasaki; Minoru Yokoyama, Yokohama; Toshio Kenmochi, Yokohama; Yosuke Ezumi, Yokohama; Hisashi Toyoda, Yokohama, and Hideyuki Terashima, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jan. 11, 1993, Ser. No. 3,030
 Claims priority, application Japan, Jan. 14, 1992, 4-004567; Jan. 14, 1992, 4-004568; Jan. 14, 1992, 4-004569
 Int. Cl.⁶ H04N 1/00, 1/04, 1/23
 U.S. Cl. 358—400 19 Claims

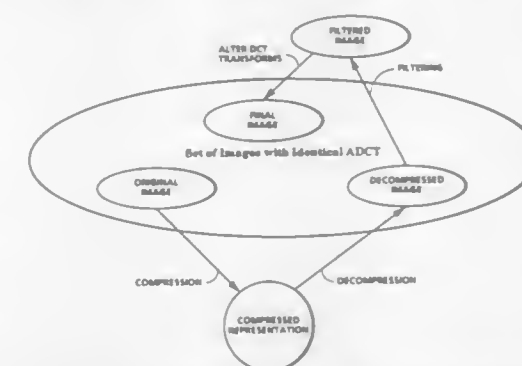
1. A portable facsimile apparatus comprising:
 a housing constituting an outer surface of said portable facsimile apparatus;
 a first opening portion formed in a front portion of an upper surface of said housing, said first opening portion provided to insert an original;
 a front surface opening portion formed in a front surface of said housing;
 an original reading section for reading an original while conveying said original between said first opening portion and said front surface opening portion, said original reading section being arranged on a front portion of said housing;
 a second opening portion formed in the upper surface of said housing at a position closer to a rear side than said first opening portion, said second opening portion being pro-

vided to insert a recording sheet from outside of said housing;
 a recording section for recording onto a recording section while inserting said recording sheet through said second opening portion and said first opening portion, said recording section being arranged close to said original reading section in said housing; and



a battery storage portion for a battery that drives said original reading section and said recording section, said battery storage portion being arranged at a rear portion of said recording section, thus forming said housing both flat and compact.

5,379,122
DECOMPRESSION OF STANDARD ADCT-COMPRESSED IMAGES
 Reiner Eschbach, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
 Filed Oct. 2, 1992, Ser. No. 956,128
 Int. Cl.⁶ H04N 1/41 13 Claims



1. A method of improving the appearance of a decompressed document image while maintaining fidelity with an original document image from which it is derived, wherein for compression, an original document image is divided into blocks of pixels, said blocks of pixels are changed into blocks of transform coefficients by a forward transform coding operation using a frequency space transform operation, said transform coefficients subsequently quantized with a lossy quantization process in which each transform coefficient is quantized according to a quantizing value from a quantization table and the result is used as a quantized transform coefficient, the method including the decompression steps of:
 a) receiving said quantized transform coefficient blocks for said original image;

- b) dequantizing the transform coefficients in a block according to a corresponding quantizing value from the quantization table to obtain a block of received transform coefficients;
- c) recovering the image by applying an inverse transform operation to the received transform coefficients;
- d) with a selected non-linear filter, reducing high frequency noise appearing in the recovered image as a result of the lossy quantization process, while preserving edges, whereby the appearance of the recovered image is rendered more visually appealing;
- e) changing the filtered recovered image into blocks of new transform coefficients by the forward transform coding operation using the frequency space transform compression operation;
- f) comparing each block of new transform coefficients to a corresponding block of received transform coefficients and the selected quantization table, to determine whether the filtered recovered image is derivable from the original image; and
- g) upon said determination transferring the filtered recovered image to an output buffer.

5,379,123
FACSIMILE APPARATUS HAVING IMPROVED
CODING FOR TRANSMISSION OF PLURAL IMAGES
WITHOUT INTERRUPTION

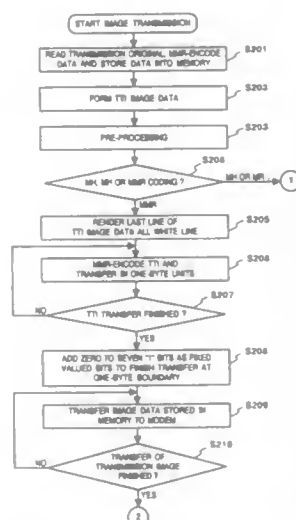
Junnosuke Kataoka, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 96,449

Claims priority, application Japan, Aug. 3, 1992, 4-206409

U.S. Cl. 358—427

26 Claims



1. A facsimile apparatus for transmitting image data, in which a second image is added to follow a first image, comprising:

means for providing a first image composed of a plurality of lines of pixels of image data and including a last line; first data appending means for appending a line of data in which all pixels are white data after the last line of the first image to form a supplemented image; first coding means for encoding the supplemented image in accordance with an MMR coding scheme to provide first coded data; second data appending means for appending bits to the first coded data to form supplemented coded data having a total number of bits equal to an integral multiple of a predetermined number of bits defining a predetermined data unit for transmission preparation; and second coding means for encoding a second image in accordance with the MMR coding scheme to provide second coded data.

coded data, whereby said apparatus can transmit the supplemented coded data in said predetermined data units followed without interruption by the second coded data.

5,379,124
FACSIMILE SYSTEM

Tadahiko Ikegaya; Yasuhiro Maei; Tsunehiro Matsui; Takashi Sakayama, and Yasuhiro Kamiyama, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

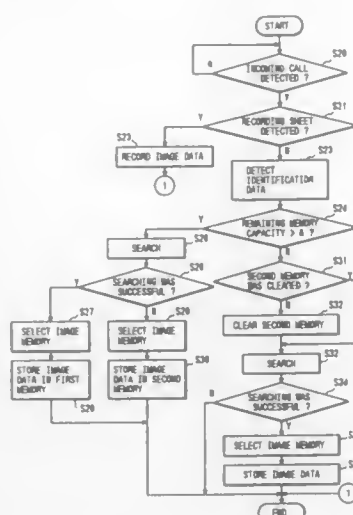
Filed May 26, 1992, Ser. No. 888,026

Claims priority, application Japan, May 27, 1991, 3-149217

Int. Cl.⁶ H04N 1/00

U.S. Cl. 358—440

2 Claims



1. A facsimile system comprising:
means for detecting identification data of a counterpart station, said identification data being received together with image data from said counterpart station;
means for storing identification data of specific counterpart stations;
means for searching said identification data detected by said identification data detection means from among identification data stored in said identification data storage means;
a first image memory for storing image data transmitted from said specific counterpart stations;
a second image memory for storing mainly image data transmitted from stations other than said specific counterpart stations;
means for detecting a remaining memory capacity in said first image memory;
means for judging whether storage of image data is permitted or prohibited based on a result of the searching by said searching means and a result of the detection by said remaining memory capacity detection means; and
means for selecting either said first image memory or said second image memory as a destination for storing said image data based on said result of the searching by said searching means and said result of the detection by said remaining memory capacity detection means.

5,379,125
SIGNAL PROCESSING CIRCUIT FOR SOLID-STATE
IMAGE SENSOR

**Tetsuya Iizuka, Kanagawa, Japan, assignor to Sony Corpora-
tion, Tokyo, Japan**

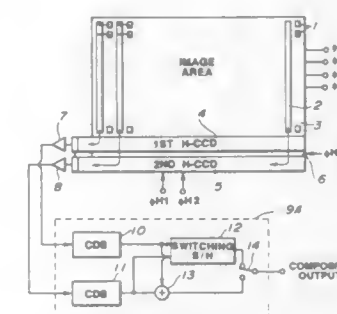
Filed Jul. 17, 1992, Ser. No. 913,970

Claims priority, application Japan, Jul. 17, 1991, 3-203798

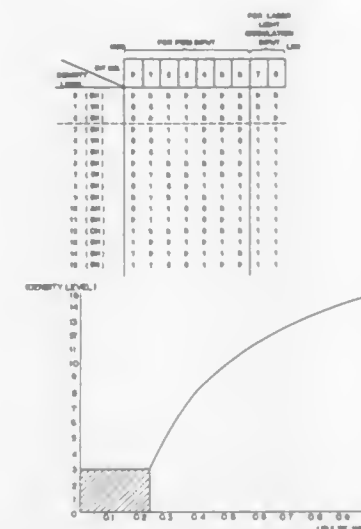
Int. Cl.⁶ H04N 5/335

U.S. Cl. 358-443

13 Claims



1. An imaging system comprising:
 - a solid-state image sensor comprising a plurality of horizontal transfer sections providing a like plurality of channel signals; and
 - a signal processing circuit comprising a first combining circuit coupled to receive said channel signals for producing a first composite signal by cyclically selecting one of said channel signals, a second combining circuit also coupled to receive said channel signals and configured for producing a second composite output signal by adding together said channel signals and a third combining circuit coupled to receive said first and second composite output signals and configured for combining said first and second composite output signals to produce a third composite output signal.



data, and said control means controlling the pulse-width as to high-density tone data.

5,379,127
IMAGE RECORDING APPARATUS AND IMAGE
RECORDING RETRIEVING APPARATUS

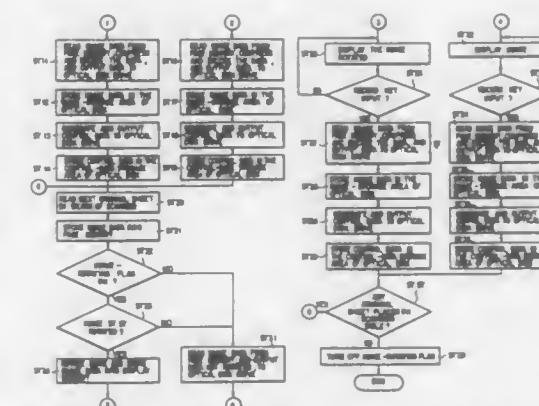
Takeshi Ando, Tokyo, Japan, assignor to Kabushiki Kaisha
Toshiba, Kawasaki, Japan

Filed Mar. 18, 1993, Ser. No. 33,355

Claims priority, application Japan, Mar. 23, 1992, 4-064982
Int. Cl.⁶ H04N 1/00, 1/40; G03G 21/00; G06K 9/32

U.S. Cl. 358—448

5 Claims



4. An image recording apparatus for recording an image on a recording medium, comprising:
original-feeding means for sequentially feeding a plurality of original sheets, each having an image;
original-reading means for scanning each of the plurality of original sheets fed by said original-feeding means in a main-scanning direction and a sub-scanning direction to read the image from each of the plurality of original sheets, the image having a number of pixels arranged in the main-scanning direction and a number of pixels arranged in the sub-scanning direction;
display means for displaying the image read by said original-reading means from a first sheet of the plurality of original sheets;
instruction means for generating an instruction indicating

5,379,126
IMAGE PROCESSING METHOD AND APPARATUS
HAVING HIGH TONE QUALITY

Kaoru Seto, Chigasaki, and Hiroshi Atobe, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 590,700, Oct. 1, 1990, abandoned. This application Jul. 30, 1993, Ser. No. 99,697

Claims priority, application Japan, Oct. 2, 1989, 1-255294;

17. 1989. 1-268227; Nov. 20. 1989. 1-299732

Int. Cl.⁶ H04N 1/23, 1/29, 1/40; H03K 7/08, 7/10

U.S. Cl. 358-456

6 Claims

1. An image forming apparatus comprising:
input means for inputting multivalued pixel data;
a first density generating means for generating density tone data in dependence upon the multivalued pixel data input by said input means; and
control means for performing control using both a pulse-width and a pulse-height based upon the density tone data from said first density generating means, said control means including a second density generating means for generating first control multi-bits for controlling the pulse-height and second control multi-bits for controlling the pulse-width based on the density tone data, said con-

whether the image read from the first sheet which is displayed by said displayed means will be rotated; instruction memory means for storing the instruction generating by said instruction means; image-rotating means for rotating the image read from the first original sheet based on the instruction generated by said instruction means; image-recording means for recording the image rotated by said image-rotating means on the recording medium; decision-making means for determining whether the image read from the first original sheet has been rotated in accordance with contents of said instruction memory means, said determination being made every time said original-reading means reads the image formed on an original sheet following the first original sheet, and for determining whether to rotate the image read from each original sheet following the first original sheet by comparing the number of pixels in the main-scanning direction with the number of pixels in the sub-scanning direction on the image read from the original sheet following the first original sheet when said first decision-making means determines that the image read from the first original sheet has been rotated; and image-processing means for causing said image-rotating means to rotate the image read by said original-reading means when the instruction stored in said instruction memory means indicates that the image from the first original sheet which is displayed by said display means is rotated by said image-rotating means, and for causing said image-recording means to record the image on said recording medium.

5,379,128

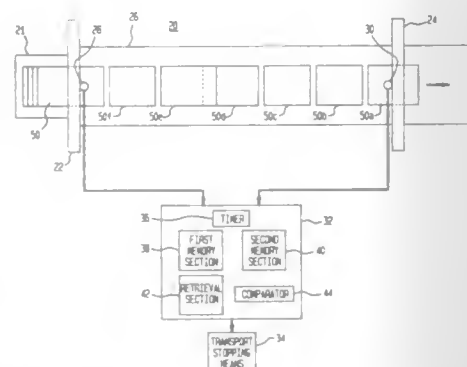
DOCUMENT TRANSPORT APPARATUS AND METHOD
Yoshitaka Ishida, Yokosuka, and Manabu Kiri, Machida, both of Japan, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1993, Ser. No. 18,586

Claims priority, application Japan, Jun. 5, 1992, 4-145956
Int. Cl.⁶ H04N 1/40

U.S. Cl. 358—449

8 Claims



1. Document transport apparatus for transporting documents comprising:
input document length measurement means provided at a document input section of the document transport apparatus for measuring the length of each document;
at least one transported document length measurement means, of the same type as the document length measurement means, positioned downstream of the input document length measurement means for measuring the length of transported documents by detecting the surface continuity of documents in transport;
comparison means for sequentially comparing the input document length with the transported document length for each document and outputs a comparison signal;
transport stopping means, which receives the comparison signal, for halting document transport when a transported

document length measurement is longer than the input document length measurement for the same document.

5,379,129

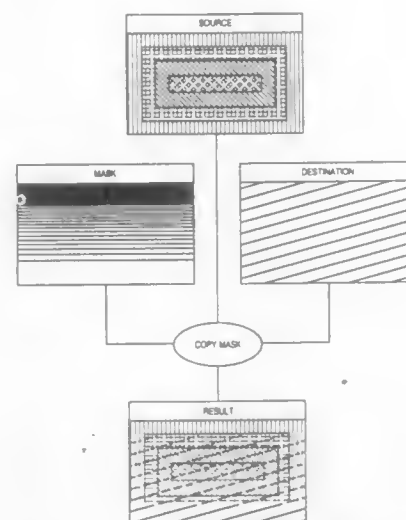
METHOD FOR COMPOSITING A SOURCE AND DESTINATION IMAGE USING A MASK IMAGE

Konstantin Othmer, San Jose, and Bruce A. Leak, Palo Alto, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 8, 1992, Ser. No. 880,623
Int. Cl.⁶ H04N 1/387

U.S. Cl. 358—450

8 Claims



1. A method for compositing a source image and a destination image using a mask image to produce a result image in a digital image processing system comprising: on a pixel-by-pixel basis, using the mask image to select between the source and destination images, where a black color value for a mask pixel selects the color value of the corresponding pixel of the source image, and a white color value for a mask pixel selects the color value of the corresponding pixel of the destination image, and where an intermediate color value for a mask pixel selects a weighted average between source and destination pixel color values, and writing said selected color values to corresponding pixels of the result image.

8. A method for compositing a source image and a destination image using a mask image to produce a result image in a digital image processing system comprising: on a pixel-by-pixel basis, combining images using boolean expression according to the formula;

$$\text{result} = ((1 - \text{mask}) * \text{source}) + (\text{mask} * \text{destination});$$

wherein for each said pixel, said combining is done in a color space on a color component by color component basis; and displaying the result image.

5,379,130

TEXT/IMAGE SEPARATION METHOD

Te-Mei Wang, Miao Li, Po-Chih Wang, Taichung, and King-Lung Huang, Hsinchu, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

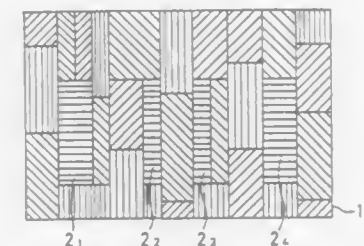
Filed Dec. 2, 1992, Ser. No. 984,325
Int. Cl.⁵ H04N 1/40

U.S. Cl. 358—462

10 Claims

1. A parallel-architecture method for separation of text segment and image segment contained in a document, said method comprising the following steps:

- (1) scanning said document by gray scale scan-in means as an input gray scale image, said input gray scale image comprising a plurality of pixels, each having a gray level belonging to a set of successive gray levels;
- (2) halftone-processing said input gray scale image to convert said gray level pixels into black/white pixels, to create the illusion of gray by means of an appropriate arrangement of black and white dots, and to produce a first signal representing the halftone processing result of a currently-processed gray level pixel;
- (3) constructing a window which covers at least the currently-processed pixel and a plurality of pixels surrounding the currently-processed pixel;
- (4) detecting whether edges exist between the currently-processed pixel and the surrounding pixels by means of reading said gray-level pixels from said gray-scale scan-in



camouflage pattern having a grating/fringe direction or grating/fringe spacing other than said primary diffraction grating or fringe pattern.

5,379,132

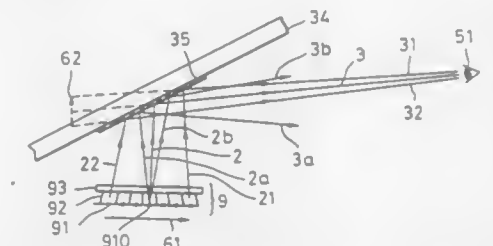
DISPLAY APPARATUS FOR A HEAD-UP DISPLAY SYSTEM

Tetsuro Kuwayama, Yokohama; Toshiaki Majima, Tokyo; Naosato Taniguchi, Atsugi; Yoko Yoshinaga, Machida; Hiroyoshi Kishi, Atsugi, and Nobuo Kushibiki, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 588,101, Sep. 25, 1990, abandoned. This application Aug. 5, 1992, Ser. No. 924,568

Claims priority, application Japan, Sep. 27, 1989, 1-251282
Int. Cl.⁶ G02B 5/32, 27/10

U.S. Cl. 359—13

18 Claims



1. A head-up display apparatus for use in a transportation vehicle, comprising:

an image generator for displaying an image, said image generator arranged in the transportation vehicle; and an optical system for directing a beam of the image from said image generator to a viewer, said optical system including beam combiner means having the same optical power as a convex mirror for reflectively diffracting beams from said image generator to thereby display a reduced virtual image.

5,379,133

SYNTHETIC APERTURE BASED REAL TIME HOLOGRAPHIC IMAGING

Ronald L. Kirk, Findlay, Ohio, assignor to ATL Corporation, Findlay, Ohio

Continuation of Ser. No. 901,422, Jun. 19, 1992, abandoned.
This application Sep. 9, 1993, Ser. No. 118,577

Int. Cl.⁶ G02B 5/32, 27/22; G03H 1/26
U.S. Cl. 359—15

20 Claims

1. A planar holographic film combiner component having a centrally disposed axis extending outwardly therefrom, and having at least two mutually superimposed holographic optical lens components thereon, said holographic optical lens components having back focal lengths extending to spaced apart image receiving positions offset from said axis an amount effective to avoid a view of objects thereat along a sighting path adjacent said axis, and having forward focal lengths ex-

5,379,131
METHOD OF PREVENTING FORGERY OF DIFFRACTION GRATING PATTERN AND FORGERY-PROOF DIFFRACTION GRATING PATTERN RECORDING STRUCTURE

Satoshi Yamazaki, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 989,086

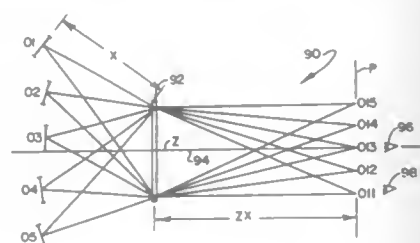
Claims priority, application Japan, Dec. 11, 1991, 3-327683
Int. Cl.⁵ G03H 1/00

U.S. Cl. 359—2

11 Claims

1. A method of encoding a diffraction grating pattern for preventing forgery thereof, said method comprising: providing a bar code shaped pattern comprising a plurality of parallel bar shapes of various widths and spacings and each in the form of a primary diffraction grating or fringe pattern which comprises grating lines or fringes extending in a specific direction at a specific spacing; and contiguously disposing said bar code shaped pattern within a pattern which surrounds said bar code shaped pattern and

tending generally oppositely with respect to said back focal lengths to mutually adjacent focal points spaced apart by an amount corresponding with one-half of the interpupillary distance between the eyes of a human to define an output



aperture for generating a binocular parallax view of synthetic aperture derived images provided at said image receiving positions, each of said images being provided by an image generating display.

5,379,134 HOLOGRAPHIC DISK MOUNTING SYSTEM AND METHOD

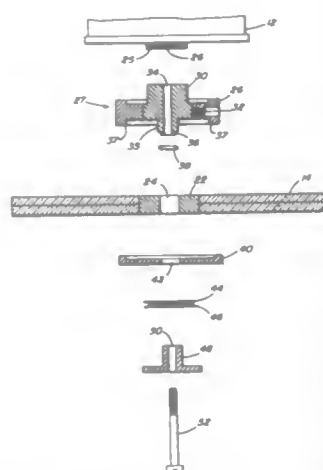
Daniel L. Manidakos, Haverhill, Mass., assignor to Miles Inc., Wilmington, Mass.

Continuation of Ser. No. 899,059, Jun. 16, 1992, abandoned, which is a continuation of Ser. No. 815,572, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 698,238, May 6, 1991, abandoned, which is a continuation of Ser. No. 560,236, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 196,867, May 20, 1988, abandoned, which is a continuation of Ser. No. 859,061, May 2, 1986, abandoned. This application Aug. 5, 1993, Ser. No. 102,318

Int. Cl.⁶ G02B 5/32, 26/10

U.S. Cl. 359—17

14 Claims



1. A holographic deflector assembly comprising:
 - (a) a rotatable shaft having means defining a planar disk reference surface the plane of which is normal to the longitudinal axis of the rotatable shaft;
 - (b) holographic planar disk means having an axial bore the diameter of which is greater than the diameter of said rotatable shaft, said holographic planar disk means being mounted on the rotatable shaft and in contact with the planar reference surface thereof;
 - (c) an O-ring positioned around said rotatable shaft and in the axial bore of said holographic planar disk means with clearance between said O-ring and the axial bore of the holographic planar disk means;
 - (d) means for securing the holographic planar disk means to the rotatable shaft, said securing means including means for axially compressing said O-ring to produce sufficient

radial expansion thereof to eliminate the clearance between said O-ring and the bore of said holographic planar disk means.

5,379,135 OPTICAL SYSTEM FOR DISPLAY APPARATUS

Shintaro Nakagaki, Miura; Ichiro Negishi; Tetsuji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama; Ryusaku Takahashi, Yokosuka; Hiroyuki Bonde, Yokohama, and Tsutomu Matsumura, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

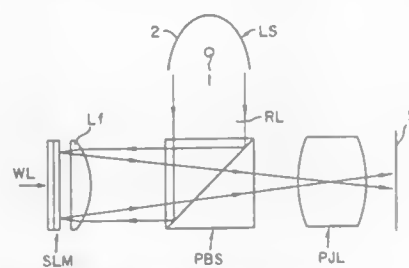
Filed Mar. 24, 1993, Ser. No. 35,757

Claims priority, application Japan, Mar. 24, 1992, 4-024228[U]

Int. Cl.⁶ G02F 1/13; H04N 9/30

U.S. Cl. 359—40

6 Claims



1. An optical system for a display apparatus comprising:
 - a light source for emitting read light;
 - a reflection type spatial light modulator for modulating the read light incoming thereto in accordance with an image written thereon by write light;
 - a projection lens for displaying the image by projecting the modulated light reflected from the reflection type spatial light modulator onto a screen; and
 - a field lens provided between the reflection type spatial light modulator and the screen at such a position that both the read light and the modulated light can pass therethrough for focusing the modulated light on the projection lens so that intensity of the modulated light is increased.

5,379,136 ELECTRON BEAM ADDRESSED ELECTRO-OPTICAL LIGHT VALVE HAVING INPUT OPENINGS

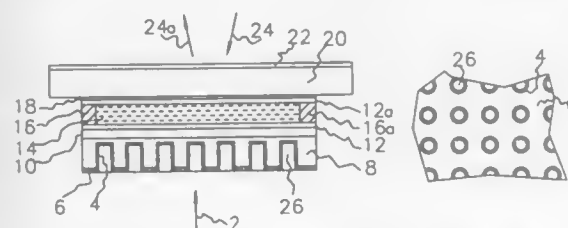
Shouxiang Hu, 2500 Q St., NW. #647, Washington, D.C. 20007, and Yanping Guo, 8808 Lanier Dr. #201, Silver Spring, Md. 20910

Filed Oct. 4, 1993, Ser. No. 130,700

Int. Cl.⁶ G02F 1/133; H01J 31/24

U.S. Cl. 359—47

20 Claims



1. An electro-optical light valve (EOLV) having an input side and an optical output side, and addressed by a writing scanning electron beam on the input side and by a readout optical beam on the optical output side, comprising:
 - (a) an electro-optical (EO) layer addressable by the readout optical beam,
 - (b) a transparent electrode on the optical output side of said EO layer,

- (c) an electrically insulating layer on the input side of said EO layer,
- (d) a matrix of openings formed on the input side of said insulating layer and extending into said insulating layer,
- (e) a conductive layer on the input side of said insulating layer, having a matrix of openings extending throughout the entire thickness of said conductive layer and matching said matrix of openings in said insulating layer,
- (f) a partially conductive coating formed on the surface of each of said openings in the insulating layer, having a substantially good electric contact with said conductive layer, whereby electric charges deposited on the surfaces of the coated openings in said insulating layer can spatially modulating the voltage across said EO layer as a result of said scanning electron beam entering the coated openings, said electric charges then being discharged through the partially conductive coatings to said conductive layer before the next scanning cycle, and
- (g) circuit means for removing electric charges received by said conductive layer from the partially conductive coatings and for establishing a bias voltage across said EO layer.

5,379,137 LIQUID CRYSTAL DISPLAY ELEMENT AND A PROJECTION TYPE LIQUID CRYSTAL DISPLAY APPARATUS

Yoshinori Hirai; Satoshi Niiyama, and Tomoki Gunjima, all of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

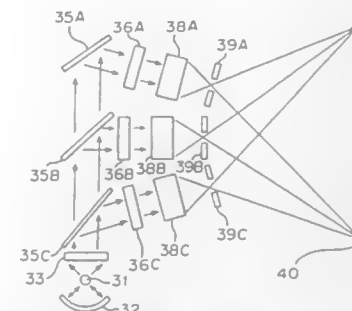
Continuation of Ser. No. 998,029, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 858,025, Mar. 26, 1992, Pat. No. 5,196,952. This application Aug. 18, 1993, Ser. No. 108,009

Claims priority, application Japan, Mar. 27, 1991, 3-87541

Int. Cl.⁶ G02F 1/13, 1/137

U.S. Cl. 359—51

27 Claims



15. A projection type gray scale liquid crystal display apparatus comprising in combination

a projection light source,
a projection optical system and
a liquid crystal display element comprising
a pair of substrates provided with electrodes and
a liquid crystal and solidified matrix composite material, disposed between said pair of substrates, which includes a nematic liquid crystal dispersed and held in a solidified matrix,

said nematic liquid crystal being such that the refractive index of said liquid crystal is changed depending on states of applying a voltage wherein in one state the refractive index of said liquid crystal substantially coincides with that of said solidified matrix to thereby pass light, and in another state the former does not coincide with the latter to thereby cause the scattering of light, characterized in that the refractive index anisotropy Δn of said liquid crystal used is $0.20 \leq \Delta n$,

and the dielectric anisotropy $\Delta \epsilon_{LC}$ of said liquid crystal used satisfies the relationship of $5 < \Delta \epsilon_{LC} < 13$,
and the average particle diameter R (μm) of said liquid

crystal and solidified matrix composite material satisfies the relationship of $0.2 < R \cdot \Delta n < 0.7$,
and the dielectric constant ϵ_M of said liquid crystal and solidified matrix composite material, satisfies the relationship of $\Delta \epsilon_{LC} < 1.45 \epsilon_M$,
and the elastic constant $K33$ ($10^{-12} N$) of said liquid crystal in said liquid crystal and solidified matrix composite material satisfies the relationship of $4(K33/\eta)^{0.5} > R > (K33/\Delta \epsilon_{LC})^{0.5}$.

5,379,138 BI-STABLE LIQUID CRYSTAL DEVICE AND DRIVING METHOD WHICH ALLOWS FOR TIME VARIABLE THRESHOLD VOLTAGES

Shinjiro Okada, Hiratsuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

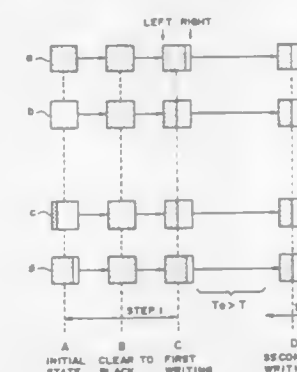
Continuation of Ser. No. 737,134, Jul. 29, 1991, abandoned. This application Feb. 15, 1994, Ser. No. 196,800

Claims priority, application Japan, Jul. 30, 1990, 2-199133

Int. Cl.⁶ G02F 1/1343

U.S. Cl. 359—56

18 Claims



1. A liquid crystal driving method, comprising:
 - providing a liquid crystal device comprising a plurality of scanning electrodes, a plurality of data electrodes intersecting the scanning electrodes, and a bistable liquid crystal showing a first stable orientation state and a second stable orientation state disposed between the scanning electrodes and the data electrodes so as to form a pixel at each intersection of the scanning electrodes and the data electrodes, and

writing steps for causing a selected pixel in an initial one of said first and second orientation states to show the first orientation state including:

- a first step of applying a prescribed voltage signal sufficient to cause a pixel to show the second orientation state to the selected pixel and then applying to the selected pixel a voltage signal which is at least V_1 and less than V_2 ; and

- a second step of applying a voltage signal of at least V_2 to the selected pixel,

wherein V_1 denotes a threshold voltage signal required for converting a pixel in the second orientation state into the first orientation state after applying the prescribed voltage signal when the initial state was the first orientation state, and V_2 denotes a threshold voltage signal required for converting a pixel in the second orientation state into the first orientation state after applying the prescribed voltage signal when the initial state was the second orientation state, and wherein a difference between V_1 and V_2 varies such that $V_1 < V_2$ in the first step and V_1 and V_2 are substantially identical to each other in the second step.

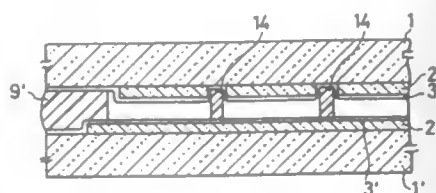
5,379,139

LIQUID CRYSTAL DEVICE AND METHOD FOR MANUFACTURING SAME WITH SPACERS FORMED BY PHOTOLITHOGRAPHY

Masahiko Sato; Toshimitsu Konuma, both of Atsugi; Seiichi Odaka, Kisakata; Toshiharu Yamaguchi, Zama; Toshi Watanabe, Atsugi; Osamu Aoyagi, Atsugi; Kaoru Tabata, Atsugi; Chizuru Isigaki, Atsugi; Hiroyuki Sakayori, Machida; Ippai Kobayashi; Akio Osabe, both of Atsugi, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 440,422, Nov. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 87,275, Aug. 20, 1987, abandoned. This application Jul. 6, 1992, Ser. No. 908,756
Claims priority, application Japan, Aug. 20, 1986, 61-196424
Int. Cl.⁶ G02F 1/1339

U.S. Cl. 359—81

16 Claims



1. A liquid crystal device comprising:

- a pair of spaced apart members including a pair of substrates and at least an electrode arrangement provided on said substrates;
- a liquid crystal layer disposed between said pair of spaced apart members;
- a sealing member provided on the perimeter of said spaced apart members; and
- a plurality of resinous pillar-spaced spacers disposed between said pair of spaced apart members, said spacers having a bottom surface cured directly to one of said pair of spaced apart members and a top surface cured directly to the other of the pair of spaced apart members.

5,379,140

GOGGLES HAVING MICROLENSSES AND DISPLAY ELEMENT

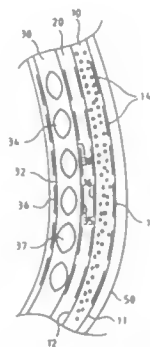
Claude Michel, Asnieres, and Jean-Pierre Le Pesant, Gif S/Y-vette, both of France, assignors to Thomson-CSF, Puteaux, France

Division of Ser. No. 978,775, Nov. 19, 1992. This application Jun. 3, 1994, Ser. No. 253,344

Claims priority, application France, Nov. 19, 1991, 91 14221
Int. Cl.⁶ G02F 1/13; G09G 3/36

U.S. Cl. 359—83

4 Claims



1. Goggles having a display face plate and comprising

- (a) a first layer of transparent material having opposite surfaces, the material having its optical characteristics alterable under the influence of a changeable electric field applied thereacross;

- (b) arrays of electrodes formed on each of the surfaces for generating the electric field thereacross;
 - (c) a third layer, spaced from the first layer and having opposite surfaces and an intermediate transparent polymer matrix therebetween in which micro-cavities are enclosed which serve as micro-lenses having optical axes perpendicular to the two third layer surfaces;
 - (d) the micro-cavities made from a transparent material different from that of the polymer matrix and having refractive indices which is selectively changeable in response to changes in an electric field passing between the two third layer surfaces;
 - (e) the material of the micro-cavities having the same refractive index as the matrix material for a first electric field value, and a greater refractive index than the matrix material for a second electric field value;
 - (f) arrays of electrodes formed on each of the third layer surfaces for generating the electric field thereacross;
 - (g) a second intermediate layer, of transparent polymer, existing between the first and third layers and fabricated from a transparent polymer;
- preselected electrodes of the first layer electrode arrays having a voltage impressed thereacross for forming a reference pattern in the first layer.

5,379,141

METHOD AND APPARATUS FOR TRANSMITTING BROADBAND AMPLITUDE MODULATED RADIO FREQUENCY SIGNALS OVER OPTICAL LINKS

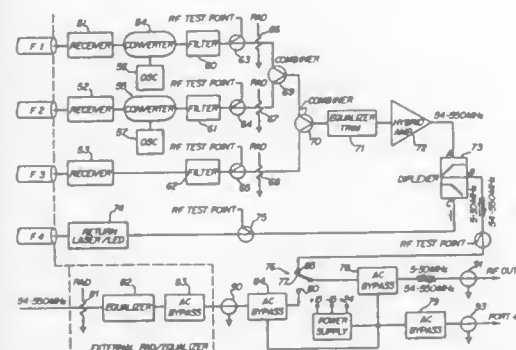
Leo Thompson, Lilburn; Frank Little, Alpharetta, and Rezin E. Pidgeon, Jr., Atlanta, all of Ga., assignors to Scientific Atlanta, Inc., Norcross, Ga.

Division of Ser. No. 446,461, Dec. 4, 1989, Pat. No. 5,191,459.
This application Dec. 30, 1992, Ser. No. 998,208

Int. Cl.⁶ H04J 14/02

U.S. Cl. 359—125

12 Claims



- 4. A method for receiving a plurality of optical signals, each of which is modulated with at least one modulated radio frequency carrier signal, said method comprising the steps of: demodulating each optical signal into its respective modulated radio frequency carrier signals, wherein at least one of said modulated radio frequency carrier signals has a frequency band that overlaps with another of said modulated radio frequency carrier signals;
- converting the at least one of said modulated radio frequency carrier signals to a different frequency band of carrier signals which does not overlap with any other modulated radio frequency carrier signal modulating said optical signals; and
- combining the resulting modulated radio frequency carrier signals in a single signal path.

5,379,142

DEMULTIPLEXING APPARATUS AND OPTICAL COMMUNICATION SYSTEM USING THE DEMULTIPLEXING APPARATUS

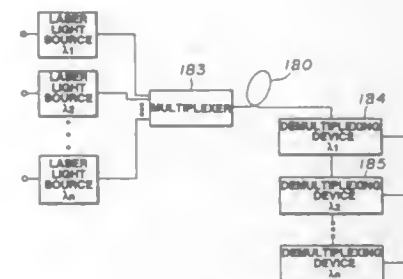
Yuichi Handa, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,905

Claims priority, application Japan, Dec. 25, 1992, 4-358126
Int. Cl.⁶ H04J 14/02

U.S. Cl. 359—129

39 Claims



- 37. A wavelength division multiplexing communication system for performing wavelength division multiplexing transmission through an optical fiber, said system comprising: a transmitter unit; and

- a receiver unit, said receiver unit including a wavelength demultiplexing apparatus for demultiplexing a light beam of at least one predetermined wavelength, and said wavelength demultiplexing apparatus comprising:

- first demultiplexing means for demultiplexing the light beam at a predetermined wavelength to obtain a component of the light beam in a first polarization state; and
- second demultiplexing means for demultiplexing the light beam at the predetermined wavelength to obtain a component of the light beam in a second polarization state, different from the first polarization state, said second demultiplexing means being optically connected to said first demultiplexing means in a serial manner with respect to light transmitted through said first demultiplexing means.

5,379,143

OPTICAL REGENERATIVE-REPEATER SYSTEM

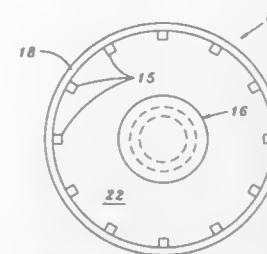
Isamu Takano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,004

Claims priority, application Japan, Sep. 24, 1991, 3-273212
Int. Cl.⁶ H04B 10/16

U.S. Cl. 359—177

10 Claims



- 1. An optical regenerative-repeater system, comprising: an input optical amplifier for amplifying an input optical signal;
- an optical branch device for branching an output signal of said optical amplifier;
- means for converting an optical signal supplied from said optical branch device to an electric signal;

5,379,144

OPTICAL TRANSMITTER

Masataka Shirasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

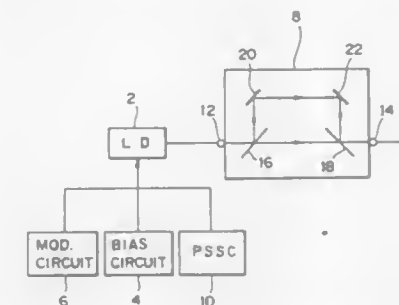
Continuation of Ser. No. 805,711, Dec. 12, 1991, abandoned.

This application Nov. 17, 1993, Ser. No. 153,494

Claims priority, application Japan, Dec. 17, 1990, 2-411004
Int. Cl.⁶ H04B 10/04

U.S. Cl. 359—181

5 Claims



- 1. An optical transmitter for transmitting an input signal, comprising:

- a laser diode;
- a bias circuit operatively connected to supply a bias current to cause lasing in said laser diode;
- a modulation circuit operatively connected to superpose on the bias current a modulation current pulse corresponding to the input signal so that an oscillation frequency of said laser diode varied by the modulation current pulse becomes a phase quantity of π or $-\pi$;
- an optical interferometer optically disposed to receive angle-modulated light from said laser diode and convert the angle-modulated light to intensity-modulated light; and
- a periodic signal superposing circuit operatively connected to superpose on the bias current a periodic signal having a period corresponding to one time slot of the modulation current pulse.

5,379,145

LASER TRANSMITTER FOR LIGHT WAVE (FIBER OPTIC) COMMUNICATION ESPECIALLY OF AM MODULATED CATV SIGNALS HAVING MEANS . . . AGAINST DAMAGE

John P. Nodine, Atlanta, Ga., assignor to Scientific Atlanta, Inc., Atlanta, Ga.

Continuation of Ser. No. 935,658, Aug. 26, 1992, abandoned,

which is a continuation of Ser. No. 444,486, Dec. 1, 1989,

abandoned. This application Oct. 19, 1993, Ser. No. 138,377

Int. Cl.⁶ H02H 5/04

U.S. Cl. 359—187

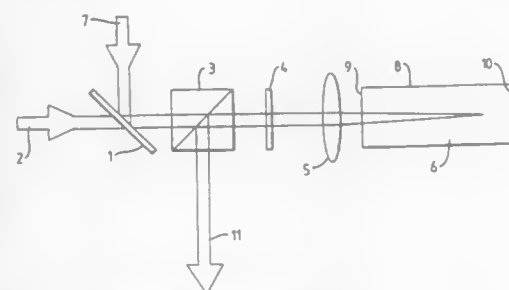
12 Claims

- 1. An optical transmitter for light wave communications which comprises:

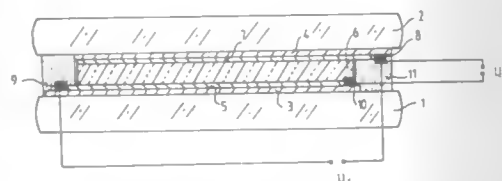
- a laser diode;
- means for deriving current from a source of operating voltage and applying said current through said laser diode at a sufficient magnitude to produce stimulated emission of coherent light from said laser diode;
- means for applying a modulated signal to said laser diode to modulate the light emitted therefrom;

[illegible]

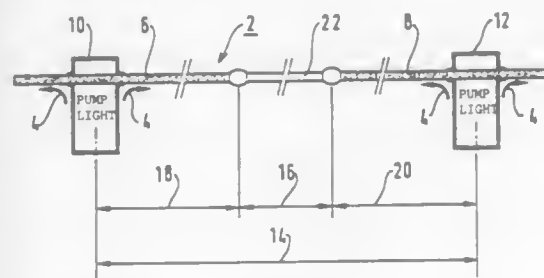
5,379,147
DYE LASER AMPLIFIERS
Gary Cook, Worcestershire, England, assignor to The Secretary
of State for Defence in Her Britannic Majesty's Government
of the United Kingdom and Northern Ireland, United King-
dom
PCT No. PCT/GB92/00410, § 371 Date Jan. 11, 1993, § 102(e)
Date Jan. 11, 1993, PCT Pub. No. WO92/16038, PCT Pub.
Date Sep. 17, 1992
PCT Filed Mar. 9, 1992, Ser. No. 960,386
Claims priority, application United Kingdom, Mar. 11, 1991,
9105058.3
Int. Cl.⁶ H01S 3/08, 3/23; G02F 1/35
U.S. Cl. 359—334 11 Claims



5,379,146
ELECTROCHROMIC PANE
Francis Defendini, Rueil Malmaison, France, assignor to Saint-
Gobain Vitrage International, Courbevoie, France
Filed Apr. 28, 1993, Ser. No. 53,351
Claims priority, application France, Apr. 28, 1992, 92 05246
Int. Cl.⁶ G02F 1/01
U.S. Cl. 359—275 16 Claims



5,379,148
CONNECTION WITH AMPLIFYING OPTICAL FIBERS
 Jean-Pierre Blondel, Viroflay, and José Chesnoy, Paris, both of
 France, assignors to Alcatel N.V., Amsterdam, Netherlands
 Filed Oct. 14, 1992, Ser. No. 961,117
 Claims priority, application France, Oct. 15, 1991, 91 12674
 Int. Cl.⁶ G02B 6/26, 6/42; H04B 10/16
 U.S. Cl. 359—341 5 Claims



a pump frequency that is different from said carrier frequency to thereby compensate for attenuation of said carrier wave and of said signal,

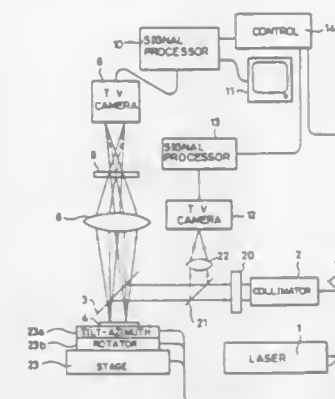
a succession of pump injectors following one another along the length of said transmission line to thereby delimit sections of said transmission line, each said section including

a respective said injector at one end of the respective section for injecting a respective said pump wave into said respective section,

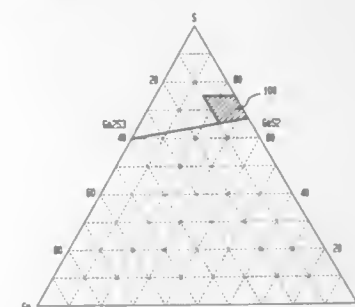
at least two of said optical fibers of said first group and collectively occupying a first fraction comprising more than 20% of the length of said each section, and

at least one of said optical fibers of a second group of optical fibers each having a second said doping concentration lower than said first doping concentration and collectively occupying a second fraction comprising more than 10% of the length of said each section;

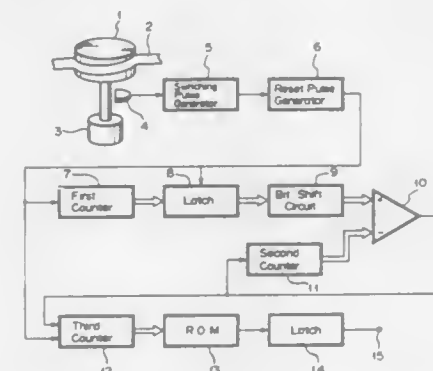
wherein within each said section one optical fiber of the first group is directly coupled to said respective injector and is followed by an optical fiber of the second group that is indirectly coupled to said respective injector via said one optical fiber of the first group.



5,379,149
GLASS COMPOSITIONS HAVING LOW ENERGY
PHONON SPECTRA AND LIGHT SOURCES
FABRICATED THEREFROM
Elias Snitzer, and Kanxian Wei, both of Piscataway, N.J., as-
signors to Kutger, The State University of New Jersey, New
Brunswick, N.J.
Filed Aug. 6, 1993, Ser. No. 102,899
Int. Cl.⁶ H01S 3/17
U.S. Cl. 359—341
29 Claims



5,379,151
MAGNETIC REPRODUCING DEVICE USING WINDOW
PULSES TO EXTRACT ADDRESS INFORMATION
Michio Nagai, Saitama, Japan, assignor to Sony Corporation,
Tokyo, Japan
Continuation of Ser. No. 669,604, Mar. 14, 1991, abandoned.
This application Oct. 7, 1993, Ser. No. 132,781
Claims priority, application Japan, Mar. 15, 1990, 2-065473
Int. Cl.⁶ G11B 5/02
U.S. Cl. 360—018 1 Claim



5,379,150

**METHOD OF MANUFACTURING A SPATIAL
FREQUENCY FILTER FOR USE IN A PATTERN DEFECT
DETECTION DEVICE**

Yoko Miyazaki; Toshimasa Tomoda; Hitoshi Tanaka; Nobuyuki
Kosaka, and Toyomi Ohshige, all of Hyogo, Japan, assignors
to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 787,929, Nov. 6, 1991, Pat. No. 5,289,260.

This application Dec. 30, 1993, Ser. No. 176,571

Claims priority, application Japan, Nov. 9, 1990, 2-305215;
Nov. 9, 1990, 2-305216; May 24, 1991, 3-120248; Jun. 26, 1991,
3-180470

Int. Cl.⁶ G02B 27/46; G01B 9/00

U.S. Cl. 359—561

5 Claims

1. A method of manufacturing a spatial frequency filter used
in a pattern defect detection device, comprising the steps of:
directing coherent light to a pattern on a model specimen,
focusing diffracted light from said pattern by a lens onto a

ing one of said plurality of window pulses so that said window pulses are controlled to enable extraction of the auxiliary information in said predetermined areas at any of said speeds;

wherein said means for producing one of said window pulses comprises:

- a latch responsive to said reset pulse generator and said first counter for latching a maximum count value from said first counter;
- a comparator having first and second input terminals; means responsive to said latch and said first input terminal a signal proportional to said maximum count value;
- a second counter for supplying a count value to said second input terminal of said comparator, said comparator producing a compared output pulse as an input to said second counter each time said second counter produces a count exceeding a value related to said maximum count value;
- a third counter responsive to said reset pulse generator and said compared output pulse; and
- a ROM table storing window pulse data corresponding to respective counts in said third counter and being addressed by the count in said third counter.

5,379,152

DATA RECORDER WHICH PARTITIONS THE RECORDING MEDIUM INTO DATA INFORMATION AND TABLE OF CONTENTS INFORMATION

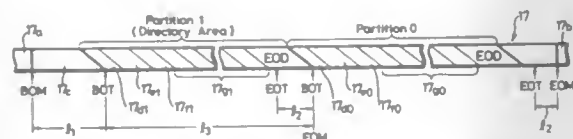
Kentaro Odaka, Tokyo; Shinya Ozaki, Kanagawa; Yoshizumi Inazawa, Kanagawa; Masaki Yamada, Kanagawa, all of Japan, and Peter Bramhall, Bristol, England, assignors to Sony Corporation, Tokyo, Japan and Hewlett-Packard Limited, Wokingham, England

Continuation of Ser. No. 873,583, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 442,545, Nov. 28, 1989, abandoned. This application Sep. 15, 1993, Ser. No. 121,664

Int. Cl.⁶ G11B 5/09, 15/14

U.S. Cl. 360—48

14 Claims



1. A data recorder for recording data on a recording medium according to a predetermined data recording format providing frame divisional data areas and frame addresses thereof, comprising:

- means for receiving data to be recorded;
- means for recording the data onto the recording medium into frames of a first partition;
- means for producing and recording onto the recording medium into frames of a second partition directory information of the data recorded in the first partition;
- means for receiving length data designating an amount of data to be recorded onto the recording medium for initialization of the second partition; and
- means supplied with the received length data for initializing the second partition to have a data length based upon the length data.

5,379,153

RECORDING AND REPRODUCING APPARATUS HAVING PROGRAM INFORMATION

Toshiyuki Ishii; Kousuki Misono, both of Kanagawa; Miwako Tsuneki; Kiyoshi Ota, both of Tokyo, and Tetsuo Nishigaki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

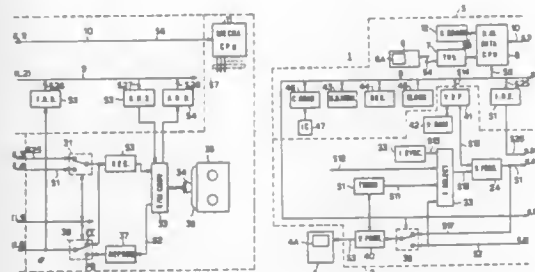
Filed Jan. 18, 1991, Ser. No. 644,294

Claims priority, application Japan, Jan. 21, 1990, 2-10865

Int. Cl.⁵ G11B 5/02, 27/36, 15/12, 15/18

U.S. Cl. 360—27

30 Claims



1. Apparatus for recording on and reproducing from a record medium event signals supplied at particular times from at least one source as well as preset data selectively input by a user which data establishes an event signal to be recorded and the time of recording that event signal, said apparatus comprising: data input means for selectively producing preset data to select source, time and duration of event signals to be recorded on said record medium; temporary storage means operatively coupled to said data input means for storing said preset data produced by said data input means for recording on said record medium and for storing preset data reproduced from said record medium; display means connected to display preset data stored in said storage means; and control means operatively coupled to said display means, said data input means and said temporary storage means for controlling said display means to display on a first time zone preset data representing time and duration of event signals which have already been selected for recording ("already preset data") and also to display on a second time zone preset data representing time and duration of event signals which are in the process of being selected for recording ("currently preset data"), said first and second time zones being aligned to display temporal overlaps between the already preset data and the currently preset data.

5,379,154

HIGH VARIABLE POWER RATIO ZOOM LENS

Atsushi Shibayama, Kawasaki, and Susumu Sato, Chiba, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

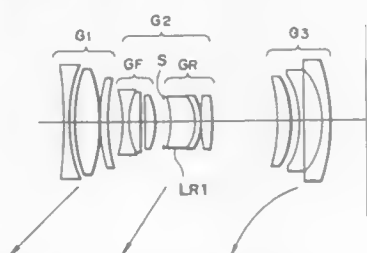
Filed Jul. 27, 1993, Ser. No. 97,030

Claims priority, application Japan, Aug. 7, 1992, 4-211221

Int. Cl.⁶ G02B 15/14

U.S. Cl. 359—689

34 Claims



1. A zoom lens having, in succession from the object side, a first lens unit G1 having positive refractive power, a second lens unit G2 having positive refractive power, and a third lens unit G3 having negative refractive power, the spacing between said first lens unit G1 and said second lens unit G2 being in-

creased and the spacing between said second lens unit G2 and said third lens unit G3 being decreased during the magnification change from the wide angle end to the telephoto end, said first lens unit G1 having at least one positive lens and at least one negative lens, said second lens unit G2 comprising, in succession from the object side, a front group GF of weak refractive power and a rear group GR of positive refractive power, said front group GF having at least one negative lens and at least one positive lens, said rear group GR having at least one positive lens and at least one negative lens, said third lens unit G3 having at least one positive lens and at least one negative lens, said zoom lens satisfying the following conditions:

$$\begin{aligned} -0.3 &\leq f_2/f_1 \leq 0.3 \\ 0.7 &\leq f_2/f_3 \leq 1.3 \\ 0.4 &\leq f_W/f_1 \leq 0.8 \\ 1.0 &\leq f_W/f_2 \leq 1.5 \\ 1.0 &\leq |f_W/f_3| \leq 2.0, \beta < 0 \\ -1.0 &\leq IIRT \leq 3.0 \end{aligned}$$

ps where f_1 is the focal length of said first lens unit G1, f_2 is the focal length of said second lens unit G2, f_3 is the focal length of said third lens unit G3, f_W is the focal length of said front group GF, f_R is the focal length of said rear group GR, f_W is the focal length of the whole system at the wide angle end, and IIRT is the third-order comatic aberration coefficient of said rear group GR at the telephoto end when the focal length at the telephoto end is normalized into 1.

5,379,155

AXIAL-SYMMETRIC JOINT OF HIGH THERMAL LOAD CAPACITY

Norbert Goetschmann, and Ortwin Hahn, both of Paderborn, Germany, assignors to Leica Industrieverwaltung GmbH, Wetzlar, Germany

PCT No. PCT/DE92/00110, § 371 Date Nov. 18, 1992, § 102(e) Date Nov. 18, 1992, PCT Pub. No. WO92/15031, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 15, 1992, Ser. No. 946,438

Claims priority, application Germany, Feb. 19, 1991, 4105083; Jun. 6, 1991, 4118523

Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—820

19 Claims



1. An axial-symmetric joint having high thermal load capacity for stress-free or low-stress mounting of a cylindrical joint part comprising:

- a) a mounting consisting of a first material for mounting a second material, said mounting being comprised of a material selected from the group consisting of metal or metal alloy, brass, steel and unalloyed steel;
- b) a second material mounted within said mounting, said second material being comprised of an optical glass material selected from BK7 or FK51; and
- c) at least one intermediate ring disposed between said second material and said mounting, said intermediate ring having an inner and an outer diameter wherein the inner diameter corresponds to the diameter of said second material,

and wherein said intermediate ring is composed of a material of a thickness so that the inner diameter of said intermediate ring expands to substantially the same extent as the diameter of said second material with a change in temperature, said material being selected from the group consisting of polycarbonate plastic, polymeric material, metal and "10 Ni 14" steel, and

wherein the mounting, the second material and the intermediate ring have thermal expansion coefficients satisfying the relation:

$$\alpha_R > \alpha_F > \alpha_L$$

wherein α_R is the thermal expansion coefficient of the intermediate ring, α_F is the thermal expansion coefficient for the mounting, and α_L is the thermal expansion coefficient for said second material.

5,379,156

OPTICAL VIEWING DEVICE

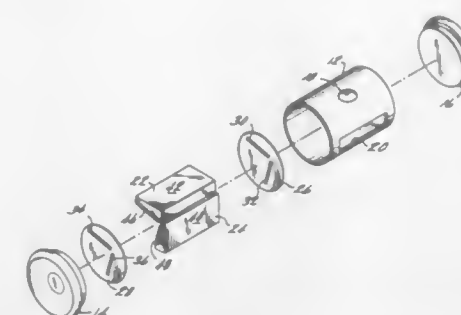
Lawrence E. Van Cort, Conway, Mass., assignor to Van Cort Instruments, Inc., Northampton, Mass.

Filed Apr. 16, 1993, Ser. No. 48,805

Int. Cl.⁶ G02B 5/04

U.S. Cl. 359—831

5 Claims



1. An optical viewing device comprising an elongated, thin wall, hollow body, a viewing aperture disposed in said thin wall, a light entry port also disposed in said thin wall, said viewing aperture being circumferentially offset from said light entry port by an angle of from about 120° to about 125°, a pair of wedge prisms disposed within said hollow body, each of said prisms having an entrance face and an exit face, means for holding said prisms in a predetermined angular relationship relative to each other and to said viewing aperture and said light entry port so that light entering said port is refracted twice before exiting said viewing aperture and end caps disposed at each end of said hollow body.

5,379,157

COMPACT, FOLDED WIDE-ANGLE LARGE REFLECTIVE UNOBSERVED OPTICAL SYSTEM

Yaujen Wang, Arcadia, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 2, 1993, Ser. No. 168,786

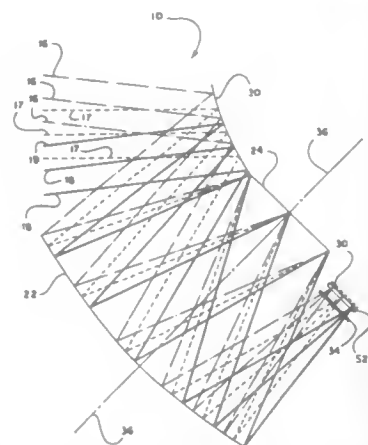
Int. Cl.⁶ G02B 5/08

U.S. Cl. 359—861

10 Claims

1. A wide-angle optical imaging system comprising: primary reflecting means comprising a segment of a convex mirror having high-order aspheric coefficients, positioned and adapted for receiving and reflecting beams of electromagnetic energy from a remote source; secondary and quaternary reflecting means comprising a segment of a concave mirror having high-order aspheric coefficients and having a first reflecting area as said secondary reflecting means and a second reflecting area adjacent said first reflecting area as said quaternary reflecting means, positioned and adapted such that the beams of electromagnetic energy reflected by said primary reflecting surface are received by said first reflecting area and said second reflecting area reflects the beams of electromagnetic energy received to an image plane whereat an image produced by the reflected beams of electromagnetic energy is perceivable; and tertiary reflecting means comprising a substantially flat mirror pivotable with respect to said convex mirror posi-

tioned and adapted for receiving the beams of electromagnetic energy reflected from said first reflecting area of said concave mirror and reflecting the beams of electromagnetic energy toward said second reflecting area of said



concave mirror; and wherein a vertex of said convex mirror and a vertex of said concave mirror are coincident with a common optical axis which is perpendicular to a center of said substantially flat mirror.

5,379,158

RECORDING AND/OR REPRODUCING APPARATUS WITH CHANGEABLE NUMBER OF RECORDED PICTURES PER UNIT OF TIME

Shigeo Yamagata, Yasutomo Suzuki, and Masahiro Takei, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

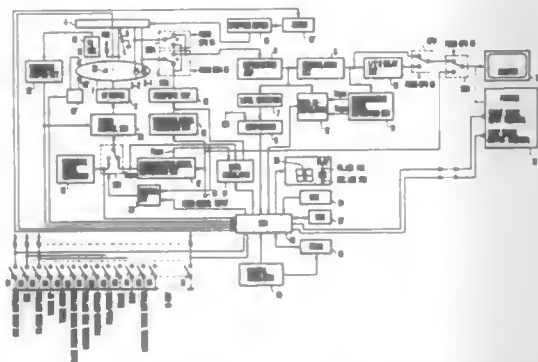
Continuation of Ser. No. 921,423, Jul. 28, 1992, abandoned, which is a continuation of Ser. No. 517,395, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 7,374, Jan. 27, 1987, abandoned. This application Apr. 19, 1994, Ser. No. 231,370

Claims priority, application Japan, Jan. 31, 1986, 61-020507; Jan. 31, 1986, 61-020508; Jan. 31, 1986, 61-020509; Jan. 31, 1986, 61-020510; Jan. 31, 1986, 61-020511; Jan. 31, 1986, 61-020512; Jan. 31, 1986, 61-020513; Jan. 31, 1986, 61-020514

Int. Cl.⁶ H04N 5/78

U.S. Cl. 360-9.1

11 Claims



1. A control device for a recording apparatus including, as one recording unit, a first recording mode for recording an image information as one picture and a second recording mode for recording a larger amount of image information as one picture than the image information of said first recording mode, comprising:

- a) control means for repeating said first recording mode or said second recording mode to record a predetermined number of pictures per unit of time;

- b) setting means for setting a number of pictures to be recorded per unit of time;
- c) means for discriminating whether or not the number of pictures to be recorded per unit of time set by said setting means is inoperable in the second recording mode; and
- d) means for changing the number of pictures to be recorded per unit of time set by said setting means, depending upon that said discriminating means discriminates the number set by said setting means being inoperable.

5,379,159

PORTABLE TELEVISION CAMERA-RECORDER AND METHOD FOR OPERATING SAME

Jerome H. Lemelson, Ste. 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

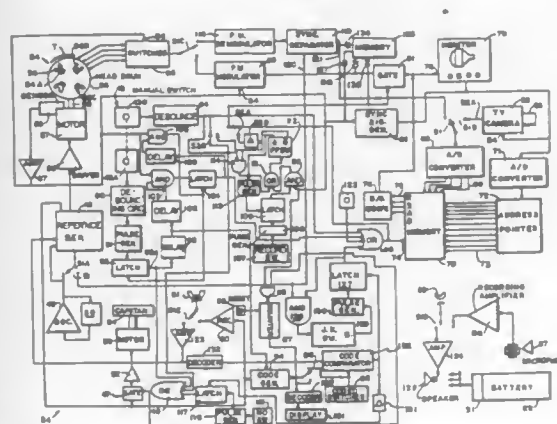
Division of Ser. No. 818,168, Jan. 8, 1992, Pat. No. 5,260,837, which is a division of Ser. No. 325,768, Mar. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 877,319, Jun. 23, 1986, Pat. No. 4,819,101, which is a continuation of Ser. No. 516,532, Jul. 25, 1983, Pat. No. 4,604,668, which is a continuation of Ser. No. 209,057, Nov. 21, 1980, abandoned. This application Aug. 24, 1993, Ser. No. 111,194

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.⁶ H04N 5/78

U.S. Cl. 360-35.1

20 Claims



1. A hand-held portable camera and recording unit comprising:

- (a) a housing;
- (b) a camera supported within said housing and having an input for image phenomena occurring outside said housing;
- (c) an activation device that causes said camera to generate video picture signals on an output thereof;
- (d) a video recorder supported within said housing and operable to record video picture signals;
- (e) a video monitor supported within said housing and having a viewing screen viewable from the exterior of said housing;
- (f) a memory supported within said housing structured to record video picture signals generated by said camera;
- (g) a selectively operable controller that directs the recording of video picture signals of image phenomena in sabot memory and permits the passage of said signals to said video monitor to generate and sustain a still image of said scanned phenomena on the screen of said monitor without requiring said video picture signals to be recorded in said video recorder; and
- (h) a further controller that permits video picture signals sequentially generated by said video camera to be applied to said video monitor to generate motion picture image phenomena on the viewing screen of said video monitor.

5,379,160

MAGNETIC DISK DRIVE APPARATUS INCLUDING IMPROVED DECODING CIRCUIT

Kazuoki Otani, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

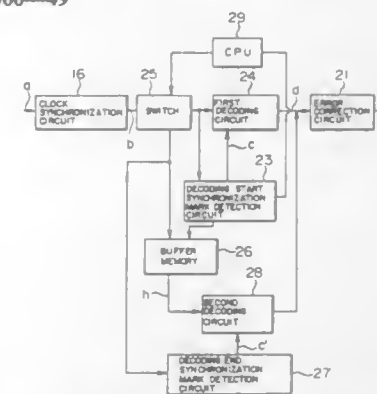
Division of Ser. No. 818,893, Jan. 10, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 156,850

Claims priority, application Japan, Jan. 18, 1991, 3-004609

Int. Cl.⁶ G11B 5/09, 15/12

U.S. Cl. 360-49

8 Claims



1. A magnetic disk drive apparatus comprising: means for detecting a decoding start synchronization mark indicative of a decoding start position of a series of reproduced data modulated by means of a decoding method and recorded in each sector of a magnetic disk; means for detecting a decoding end synchronization mark indicative of a decoding end position of the series of reproduced data recorded in each sector of the magnetic disk; means for decoding desired data when any one of said decoding start synchronization mark or said decoding end synchronization mark is detected; and switch means for supplying the series of reproduced data to said means for detecting said decoding end synchronization mark when said decoding start synchronization mark can not be detected.

5,379,161

METHOD AND SYSTEM FOR SYNCHRONIZATION CHARACTER LOCATION AND PREDICTION IN A DATA STORAGE SYSTEM

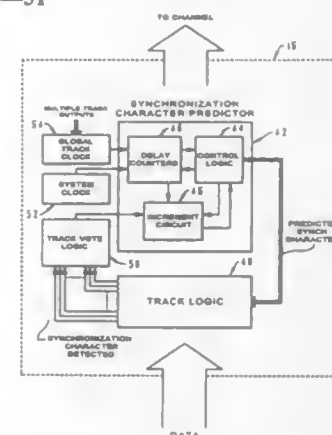
Fernando Quintana, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 75,623

Int. Cl.⁶ G11B 5/09

U.S. Cl. 360-51

6 Claims



1. A storage system for accurately storing and reading data within multiple tracks on a removable data storage medium mounted therein, said data including an initial acquisition data character and multiple diverse synchronization characters disposed therein in an order determined in accordance with a

predetermined format identification, said system comprising: a transducing head; means for moving said removable data storage medium relative to said transducing head; means for controlling said transducing head to store and read data within multiple tracks on said removable data storage medium; a clock circuit; a synchronization character predictor circuit coupled to said transducer head for generating an output indicative of an expected one of said multiple diverse synchronization characters in response to detection of said initial acquisition data character; and a synchronization character increment counter coupled to said synchronization character predictor circuit and said clock circuit for updating said output of said synchronization character predictor circuit in response to either detection of said expected one of said multiple diverse synchronization characters or an elapse of a predetermined period of time in combination with a failure of detection of said expected one of said multiple diverse synchronization characters wherein synchronization characters within said data may be efficiently located, permitting data to be accurately stored and read within said removable data storage medium.

5,379,162

CUSTOMIZED DATA RECOVERY PROCEDURES SELECTED RESPONSIVE TO READBACK ERRORS AND TRANSDUCER HEAD AND DISK PARAMETERS

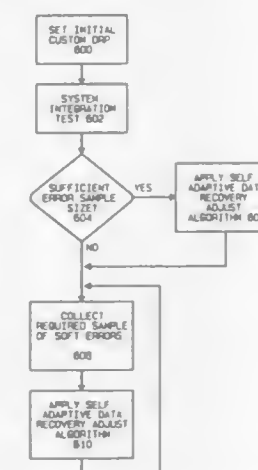
Earl A. Cunningham, and Bradley E. Hanson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1993, Ser. No. 109,756

Int. Cl.⁶ G11B 5/09; H03M 13/00

U.S. Cl. 360-53

9 Claims



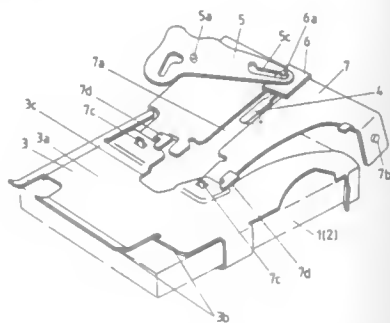
1. A method of data recovery in a disk drive data storage system of the type including at least one disk surface and at least one transducer head for reading and/or writing data to a respective disk surface, said method comprising the steps of: storing a plurality of data recovery procedures (DRPs); detecting a readback error in a readback data signal; identifying a plurality of predetermined transducer head and disk parameters including the steps of identifying a head width parameters value; and identifying a track misregistration parameter value responsive to said identified head width parameter value; and selecting one of said stored plurality of data recovery procedures (DRPs) responsive to said detected readback error and said identified plurality of predetermined transducer head and disk parameters.

the cross section of the middle portion of the notch being smaller than the cross section of the bottom portion of the notch and the cross section of the top portion of the notch being smaller than the cross section of the middle portion of the notch;

each of the top, middle and bottom portions of the notch having a lateral opening with a width greater than 6.05 mm; and

the cross section of the bottom portion of the notch being defined by a circular arc of more than 180 degrees for receiving anal capturing the enlarged cylindrical portion of the leader block pin.

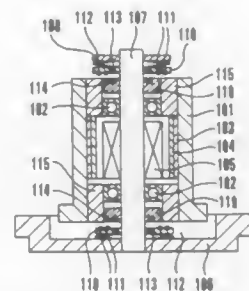
5,379,168
TAPE RECORDER APPARATUS
Shingo Kage, Koube; Yasunari Toyama, and Yoshikazu Yamano, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 28, 1992, Ser. No. 997,069
Int. Cl.⁶ G11B 5/008, 15/60
U.S. Cl. 360—96.5



1. A tape recorder apparatus which is compatible with two different kinds of tape cassettes, each tape cassette housing a magnetic tape being wound around a pair of reels and having an upper surface formed with respective holes disposed to allow engagement of the reels, comprising:

- a holder for selectively receiving a tape cassette of one of said two different kinds of tape cassettes;
- a retainer member having a plurality of engaging hooks disposed along an insertion direction of said tape cassette, each of said engaging hooks exclusively engaging with one of the engaging holes formed in said tape cassette, said retainer member causing a swing movement for allowing said plurality of engaging hooks to engage with said tape cassette;
- shift means, connected with said retainer member for transporting said tape cassette from a first position where the tape cassette is completely held in said holder to a second position where the tape cassette is set to execute its recording or reproducing operation;
- said retainer member including a shaft, which is secured to said shift means and disposed perpendicularly to the insertion direction of the tape cassette and also in parallel with the upper surface of the tape cassette, so that the retainer member is supported through said shaft at different pivotal positions according to kind of tape cassette selected; and
- said retainer member further including a protruding piece formed in parallel with said shaft of the retainer member, said protruding piece restricting the swing movement of said retainer member during transportation from said first position to said second position.

5,379,169
MAGNETIC DISK DRIVE SPINDLE MOTOR HAVING PLATES TO SHIELD THE MOTOR ENCLOSED SPACE FROM THE OUTSIDE
Yotaro Sanada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 8, 1993, Ser. No. 117,622
Claims priority, application Japan, Sep. 8, 1992, 4-239335; Jun. 21, 1993, 5-148743
Int. Cl.⁶ G11B 17/02
U.S. Cl. 360—99.08



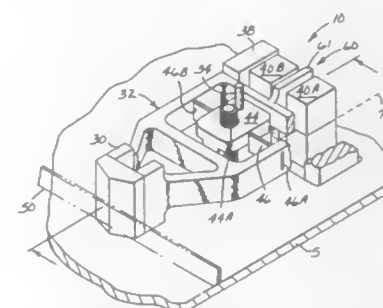
1. A magnetic disk drive spindle motor comprising:
- a cylindrical spindle hub for stacking and supporting an information storage medium on an axial direction and incorporating a first member constituting a rotary drive system;
 - a pair of cylindrical bearings for rotatably holding two ends of said Spindle hub by outer rings;
 - cylindrical bearing holders, rotating together with said spindle hub, for holding said outer rings of said bearings;
 - a shaft for holding inner rings of said bearings and fixing a second member constituting a rotary drive system so as to oppose said first member;
 - a housing for fixing and supporting one end of said shaft, said housing and said spindle hub generally defining an inner space of said spindle motor;
 - dynamic pressure generating means, formed in a disk-like form to have predetermined thickness and fixed on said shaft outside said bearings to oppose inner side surfaces of said bearings with small gaps, for generating dynamic pressures in said gaps between said dynamic pressure generating means and said inner side surfaces of said bearings, thereby shielding the internal space of said motor from the environment; and
 - shielding means for shielding said gaps between said dynamic pressure generating means and said inner side surfaces of said bearing holders while being in tight contact with said dynamic pressure generating means, and drive means for keeping said shielding means away from said dynamic pressure generating means during the rotation of said spindle hub and bringing said shielding means in tight contact with said dynamic pressure generating means whenever said spindle hub is not rotated.

5,379,170
DYNAMICALLY ADJUSTABLE HEAD POSITIONING MECHANISM FOR TAPE DRIVES
Theodore A. Schwarz, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 867,985, Apr. 13, 1992, abandoned.
This application Jan. 31, 1994, Ser. No. 190,246
Int. Cl.⁶ G11B 5/584, 5/55, 21/08
U.S. Cl. 360—109

- 15 Claims
1. In a tape drive adapted for recording and playing back data from any one of a plurality of parallel data tracks extending along a length of magnetic recording tape, in which the tape drive includes a housing and in which at least one recording/playback head is adapted to interface with the tape along a tape transport path and to be variably positioned transversely

with respect to the tape length, a head positioning mechanism comprising:

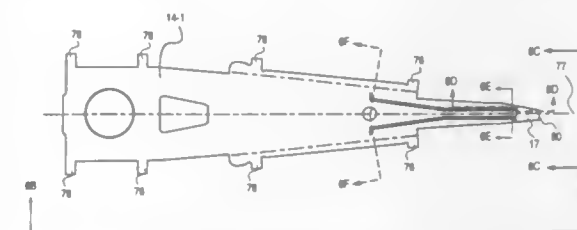
- a. a base;
- b. linear support means secured to the base generally parallel with the plane of the recording tape along the transport path;
- c. actuating arm means rigidly attached to said at least one head for supporting said head;
- d. a coarse positioning means for coarsely positioning said at least one head in a selected coarse track position in relation to a selected one of the plurality of parallel data tracks, wherein the coarse positioning means includes a stage slideably engaged to the linear support means;



- e. means for pivotally mounting the actuating arm means to the stage and for providing torsional force to maintain the actuating arm means at a center position normal to the tape transport path while eliminating any transverse movement during pivoting of the actuating arm means, wherein the pivotal mounting means is secured to the stage and has first and second ends individually affixed to respective opposing sides of the actuating arm means;
- f. means attached to the actuating arm means for finely positioning said at least one head in relation to the center of a selected data track; and
- g. means for allowing movement of the actuating arm means relative to the base in a direction normal to the plane of the tape to assure constant loading at the tape head interface.

5,379,171
MICROMINIATURE HARD DISK DRIVE
James H. Morehouse, Jamestown; David M. Furay, Boulder; Robert A. Alt, Longmont; Bruce D. Emo, Niwot, and James A. Duncley, Boulder, all of Colo., assignors to Integral Peripherals, Boulder, Colo.
Filed Sep. 25, 1991, Ser. No. 766,480
Int. Cl.⁶ G11B 5/54, 21/22
U.S. Cl. 360—10.5

13 Claims



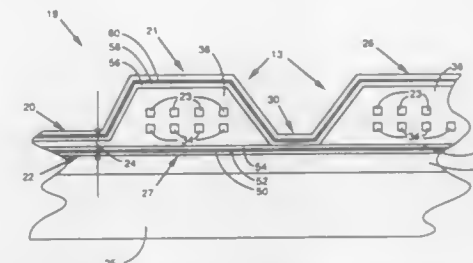
1. A disk drive information storage device comprising:
- a housing having a footprint that includes a first dimension of about 35 mm;
 - a substantially rigid disk supported by said housing for rotation;
 - an elongated actuator arm including a load beam, said actuator arm being pivotally supported by said housing about a center of rotation, for rotation of one end of said load beam in a plane substantially parallel to a surface of said

disk, said load beam including at its outermost end a lift tab, said lift tab being positioned such that a centerline of said lift tab is offset from a centerline of said load beam; a slider body including a read/write recording element; means connected to said load beam and said slider body for supporting said slider body at a position intermediate said center of rotation and said lift tab; and

a cam assembly supported by said housing adjacent to said lift tab and the edge of said disk, said cam assembly including a cam surface positioned in operative relationship with said lift tab, said lift tab contacting said cam surface and in cooperation with said cam surface providing a lifting force along the centerline of said load beam.

5,379,172
LAMINATED LEG FOR THIN FILM MAGNETIC TRANSDUCER
Simon H. Liao, Santa Barbara, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Sep. 19, 1990, Ser. No. 585,005
Int. Cl.⁶ G11B 5/147; H01F 10/00
U.S. Cl. 360—126

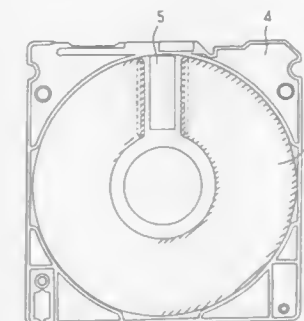
20 Claims



1. In a thin film magnetic transducer having a flux path formed of a first leg and a second leg forming a gap region and a back gap via region, the first leg comprising:
- a first magnetic nickel iron alloy layer;
 - a second magnetic nickel iron alloy layer; and
 - a nonmagnetic nickel phosphorus alloy layer sandwiched between the first and second magnetic nickel iron alloy layers.

5,379,173
MAGNETIC DISK JACKET
Hiroshi Ikeda, Tochigi, Japan, assignor to Kao Corporation, Tokyo, Japan
Filed Jun. 10, 1993, Ser. No. 74,467
Claims priority, application Japan, Jul. 17, 1992, 4-191124
Int. Cl.⁶ G11B 23/50, 5/41
U.S. Cl. 360—133

4 Claims



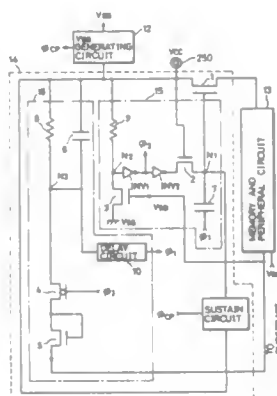
1. A magnetic disk jacket having, disposed on an internal surface of a jacket frame, a liner for cleaning a magnetic disk, said liner comprising 0.03–0.5 g per kg of said liner of a modified straight chain type polydimethylsiloxane having in each molecule thereof at least one group selected from the group

consisting of hydroxyl, amino, mercapto, carboxyl, α -methylstyrene group, α -olefin group, fluorine, alkyl, higher fatty acid group, methacrylic group, acrylic group, polyether group and epoxy group, said modified straight chain type polydimethylsiloxane having a viscosity of from 50 to 3000 cSt at a temperature of 25° C.

5,379,174
SEMICONDUCTOR PROTECTING APPARATUS AND METHOD FOR PREVENTING DESTRUCTION OF INTERNAL CIRCUIT CAUSED BY LATCH-UP
 Masayuki Kasamoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Jul. 13, 1992, Ser. No. 912,368
 Claims priority, application Japan, Sep. 29, 1991, 3-247391
 Int. Cl.⁶ H02H 9/02

U.S. Cl. 361—56

21 Claims

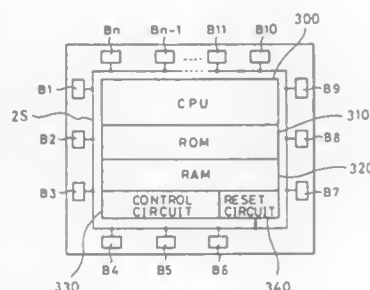


1. A semiconductor protecting apparatus for protecting a circuit formed on a semiconductor substrate and driven by a predetermined external voltage for operating from an influence of latch-up caused in said semiconductor substrate, comprising:

- an external terminal receiving said external voltage;
- a substrate potential detecting means for detecting a potential of said semiconductor substrate being higher than a predetermined potential, said substrate potential detecting means comprising
 - a first node electrically coupled to said external terminal,
 - a first switching means electrically connecting said first node to a predetermined low potential source when the potential of said semiconductor substrate is in a first range and electrically cutting off said first node from said predetermined low potential source when the potential of said semiconductor substrate is in a second range, wherein a potential of said first node is used as a detection output, and wherein
- said first switching means comprises a field effect semiconductor element having a first conductive terminal connected to said predetermined low potential source, a second conductive terminal connected to said first node and a control terminal receiving the potential of said semiconductor substrate; and
- a voltage supply interrupting means responsive to the detection output of said substrate potential detecting means for interrupting the supply of said predetermined external voltage to said circuit.

5,379,175
INTEGRATED CIRCUIT DEVICE HAVING HIGH ABNORMAL VOLTAGE DETECTION CIRCUIT
 Satoru Masaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
 Filed May 15, 1992, Ser. No. 883,456
 Claims priority, application Japan, May 17, 1991, 3-113160
 Int. Cl.⁶ H02H 3/20, 9/00
 U.S. Cl. 361—56

15 Claims



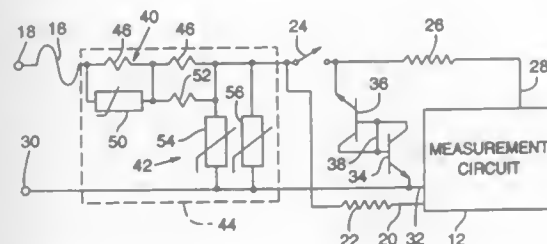
1. An integrated circuit device comprising:
- a plurality of interface circuits located in peripheral areas of a chip;
 - internal circuits located inside the interface circuits and coupled to the interface circuits;
 - reset means, coupled to the interface circuits and said internal circuits, for executing a predetermined reset operation of the integrated circuit device in response to receipt of a reset signal;
 - each of said plurality of interface circuits including
 - a pad,
 - protection means, coupled to said pad and the internal circuit, for preventing an abnormal voltage having a first polarity from passing through the internal circuits, and
 - abnormal voltage detection means, coupled to said pad and said protection means, for detecting an abnormal voltage having a second polarity opposite the first polarity and for generating a detection signal when the abnormal voltage having the second polarity is detected; and
 - logic means for generating said reset signal from detection signals of the abnormal voltage detection means of the plurality of interface circuits.

5,379,176
PROTECTIVE INPUT CIRCUIT FOR AN INSTRUMENT
 Glade B. Bacon, Everett, and Heber P. Farnsworth, Snohomish, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed May 3, 1993, Ser. No. 57,698
 Int. Cl.⁶ H02H 5/04

U.S. Cl. 361—106

15 Claims



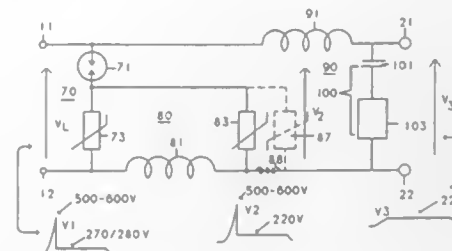
1. A protective circuit for an instrument comprising:
- a serial protective path for connection in series with an

instrument circuit and a parallel protective path for connection in shunt relation to said instrument circuit, said serial protective path including plural thermistor means connected in series and a varistor disposed across at least one of said plural thermistor means, said parallel protective path comprising at least one varistor coupled across said instrument circuit, wherein thermistor means of said serial protective path and said at least one varistor of said parallel protective path are disposed in heat conducting relation enabling heat from the last mentioned varistor to raise the temperature of the last mentioned thermistor means causing the same to transition to a high resistance state for protecting said last mentioned varistor.

5,379,177
TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH I²R/I²T OVERCURRENT PROTECTION SWITCH
 Anthony O. Bird, Melbourne, Fla., assignor to Atlantic Scientific, Melbourne, Fla.
 Division of Ser. No. 865,307, Apr. 8, 1992, Pat. No. 5,311,393.
 This application Nov. 12, 1993, Ser. No. 150,979
 Int. Cl.⁶ H02H 3/22

U.S. Cl. 361—118

25 Claims



1. A voltage surge suppressor comprising:
- first and second input terminals to which an input voltage is applied;
 - first and second output terminals from which an output voltage is derived;
 - a first impedance element coupled in circuit with said first input terminal and said first output terminal;
 - a first voltage responsive switching element coupled in series with a first voltage limiting element between said first and second input terminals;
 - a second impedance element coupled in circuit with said second input terminal and said second output terminal;
 - and
 - a second voltage limiting element coupled in circuit between said first voltage responsive switching element and said second output terminal.

5,379,178
METHOD AND DEVICE FOR TRIGGERING AN ELECTROMAGNETIC CONSUMER
 Herbert Graf, Dornstetten; Juergen Schwenger, Waiblingen; Werner Zimmermann, Stuttgart; Bernd Wichert, Kernen, and Thomas Bielech, Muehlacker, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
 PCT No. PCT/DE91/00572, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/03646, PCT Pub. Date Mar. 5, 1992

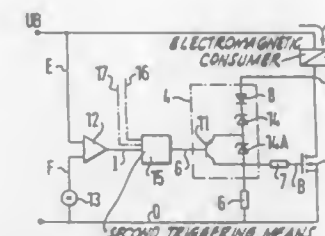
PCT Filed Jul. 12, 1991, Ser. No. 965,298
 Claims priority, application Germany, Aug. 18, 1990, 4026224; Sep. 20, 1990, 4029794

Int. Cl.⁶ F02D 5/00; G05F 1/58; H02H 7/122
 U.S. Cl. 361—152

16 Claims

1. A method for triggering an electromagnetic consumer, comprising the steps of:
- applying a supply voltage to the electromagnetic consumer;
 - switching the electromagnetic consumer between first and second states with a first switching device having output

terminals coupled in series to the electromagnetic consumer; applying a second voltage, which is formed across the output terminals of the first switching device, to a suppressor device;

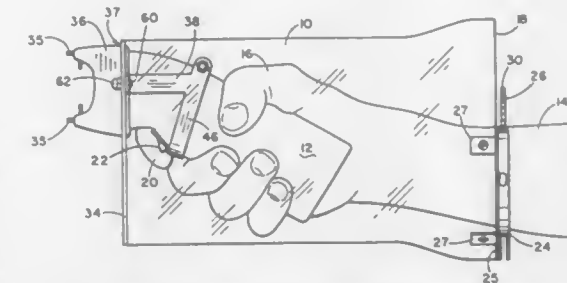


suppressing the second voltage with the suppressor device; comparing the supply voltage to a preselected threshold value; and controlling the suppression of the second voltage as a function of the comparison.

5,379,179
LOCKING CONTAINER FOR HAND WEAPON
 David A. Graves, 3631 E. 55th St., Tulsa, Okla. 74135
 Filed Jul. 28, 1993, Ser. No. 98,505
 Int. Cl.⁶ A41D 19/00

U.S. Cl. 361—232

17 Claims



1. A locking container for a hand weapon comprising a longitudinally extending container having an open end and an opposite closed end, a transverse plate mounted at the closed end of the container, a hand weapon mounted within the container and connected to the transverse plate by means of a bracket, the hand weapon having a discharge end adapted to be utilized against an assailant, the transverse plate being provided with an opening cooperating with the discharge end of the hand weapon whereby the discharge end can be directed against the assailant, the open end of the container being adapted to receive a hand of a user of the hand weapon such that the hand can be inserted into the container to grasp the hand weapon and so as to position a finger of the hand against a trigger of the hand weapon, and a locking device mounted on the open end of the container adapted to encircle a wrist of the user and lock the hand within the container and thereby prevent an assailant from taking the hand weapon away from the user.

5,379,180
CAPACITOR COMPRISING POLYETHYLENE 2,6-NAPHTHALATE FILM
 Shin-ichi Kinoshita, Tokyo, Japan, assignor to Diafoil Hoechst Company, Limited, Tokyo, Japan
 Filed Aug. 11, 1993, Ser. No. 104,586
 Claims priority, application Japan, Aug. 17, 1992, 4-217970
 Int. Cl.⁶ H01G 4/08, 1/01, 1/015

U.S. Cl. 361—323

8 Claims

1. A capacitor comprising a polyethylene 2,6-naphthalate film as a base film, a coating layer, formed on at least one

surface of said base film, which coating layer comprises a water-soluble or water-dispersible resin and has a center line average surface roughness (Ra) of 0.005 to 0.5 μm , and a metal layer deposited on said coated polyethylene 2,6-naphthalate film, wherein said coated polyethylene 2,6-naphthalate film has an F5 value in a machine direction of at least 1.5×10^8 Pa, a Young's modulus in a machine direction of at least 5.9×10^9 Pa, and a Young's modulus in a transverse direction of at least 5.9×10^9 Pa.

5,379,181

SMOOTHING DEVICE FOR A POWER SUPPLY

Kazuo Ishii, Tokyo, Japan, assignor to Jelmex Co., Ltd., Tokyo, Japan

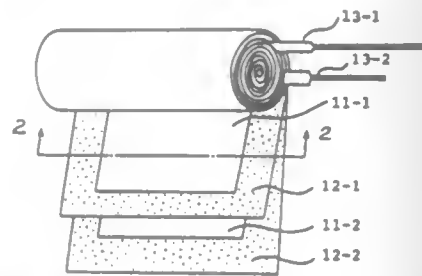
Filed Dec. 31, 1992, Ser. No. 999,115

Claims priority, application Japan, Jan. 10, 1992, 4-20629

Int. Cl.⁶ H01G 4/32, 9/04; H04B 3/28; H02M 1/12

U.S. Cl. 361—511

7 Claims



1. A smoothing device for a power supply comprising: a rectifier for rectifying an output of an alternating current power supply; and at least a pair of electrolytic capacitors for smoothing an output of said rectifier; each of said pair of electrolytic capacitors having a non-polarized structure in which a pair of electrode foils each having an oxide film on a surface are wound into a roller with a separator interposed therebetween and with a pair of electrodes being connected to said pair of electrode foils, respectively, said separator being of an ion permeable material and containing an electrolyte; at least one of said pair of electrodes having a mark for distinguishing them from each other; and said pair of electrolytic capacitors being so connected to each other that a magnetic flux generated by said electrode foils in one of said pair of electrolytic capacitors is cancelled by another magnetic flux generated by said electrode foils in the other of said pair of electrolytic capacitors.

5,379,182

HINGED DISPLAY PANEL WITH OUTER COVER AND DISPLAY PANEL UNIT SEPARATELY CONNECTED TO AN INNER COVER AND INFORMATION MACHINE INCLUDING THE SAME

Hideaki Fujimori, Tokyo; Tetsu Ishikawa, Tochigi; Yoshihisa Tamura, Gunma, and Minoru Imaizumi, Saitama, all of Japan, assignors to NEC Corporation, Tokyo and Sanyo Electric Co., Ltd., Moriguchi, both of Japan

Filed Nov. 23, 1992, Ser. No. 980,190

Claims priority, application Japan, Nov. 29, 1991, 3-098391[U]; Nov. 29, 1991, 3-315086; Nov. 29, 1991, 3-315088

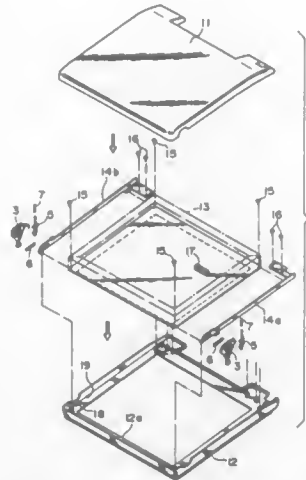
Int. Cl.⁶ H05K 5/03; G06F 1/16

U.S. Cl. 361—681

16 Claims

1. A display panel which is pivotally attached to the main body of a machine so as to display various data, said display panel comprising: a display panel unit including a display screen; an outer cover for covering the outside of said display panel unit; an inner cover for covering the inside of said display unit,

said inner cover being provided with an opening for exposing the display portion of said display unit at the position corresponding to said display portion; a pair of metal fittings which are screwed to side end portions of said display panel unit so as to be rotatably supported by the main body of said machine;



wherein said outer cover and said display panel unit are both separately connected to said inner cover such that said outer cover can be removed while leaving said display panel unit attached to said inner cover.

5,379,183

COMBINATION I/O PLATE/LID HINGE STRUCTURE FOR A NOTEBOOK COMPUTER

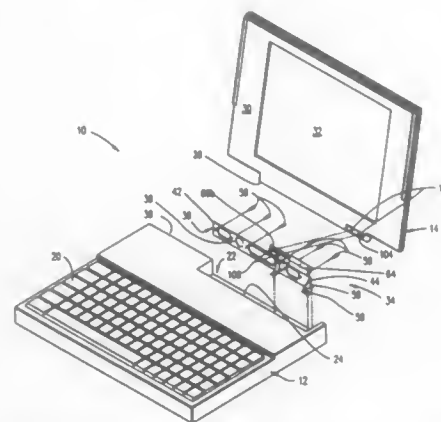
Christian Okonsky, and David Lunsford, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Apr. 27, 1993, Ser. No. 54,503

Int. Cl.⁶ H05K 7/16; G06F 1/16

U.S. Cl. 361—681

14 Claims



4. Hinge apparatus for pivotally securing a portable computer lid portion to an associated base portion having a back side, said hinge apparatus comprising: a metal I/O plate on the back side of the associated base portion; a metal hinge pin member having first and second end portions; a metal mounting structure comprising: first means for anchoring said mounting structure directly to said I/O plate; second means for pivotally securing said first end portions of said hinge pin member to said mounting structure; and

third means, associated with said metal hinge pin member, for anchoring said second end portion of said hinge pin member to the lid portion.

5,379,184

PRY-IN/PRY-OUT DISK DRIVE RECEPTACLE

Steven Barraza, Santa Clara; Mark Feldmeyer, San Jose; William Black, San Jose, and Thomas Hassur, San Jose, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

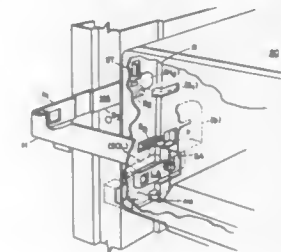
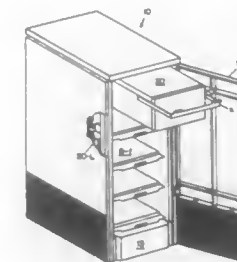
Continuation of Ser. No. 753,276, Aug. 30, 1991, abandoned.

This application Oct. 25, 1993, Ser. No. 141,461

Int. Cl.⁶ H05K 7/10; H01A 13/629; A47B 95/02

U.S. Cl. 361—685

39 Claims



20. A multi-module storage array including a set of replaceable, modular push-in/pull-out articles and at least one cabinet, each cabinet having a number of identical storage-bays for receiving any of said articles which may be inserted into any bay, each article including a carry-handle having an outer bar joining a pair of arms pivoted from opposite sides of the article so that the arm ends can be swung; each storage-bay having a first stop means adapted to engage an arm-end to pry-in the article into its bay and also having a second stop means adapted to engage an arm-end when swung oppositely to pry out the article; each storage-bay also including hold-spring means adapted to engage said carry-handle and maintain it in a horizontal position when the associated article is less-than-fully inserted into a bay.

5,379,185

LEADLESS SURFACE MOUNTABLE ASSEMBLY

Curtis Griffin, Boca Raton; John R. Siomkos, Royal Palm Beach, and Geroncio Tan, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

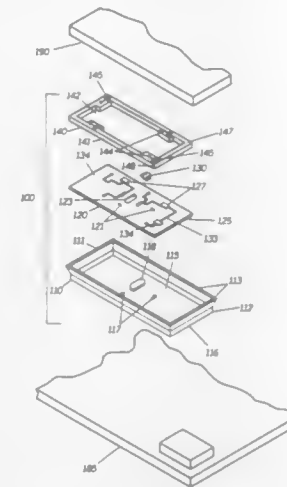
Filed Nov. 1, 1993, Ser. No. 143,728

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361—709

19 Claims

12. A leadless surface mountable assembly comprising: heat dissipating cover; a substrate mounted within the cover; a heat generating semiconductor device thermally coupled to the cover and electrically coupled to the substrate; a spacer having an interface portion, the interface portion having electrical conductors thereon electrically coupled to the substrate wherein the spacer has a cavity extending



a plurality of electrical contacts disposed on the interface portion of the spacer, the plurality of electrical contacts being electrically coupled to the electrical conductors.

5,379,186

ENCAPSULATED ELECTRONIC COMPONENT HAVING A HEAT DIFFUSING LAYER

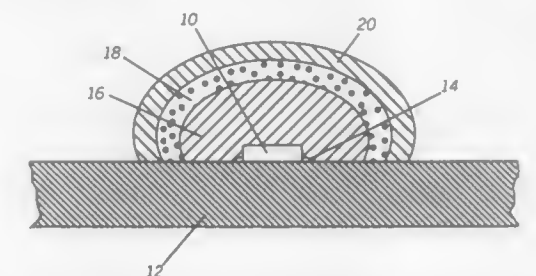
Glenn E. Gold, Coconut Creek; Anthony B. Suppelsa, and Anthony J. Suppelsa, both of Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1993, Ser. No. 85,807

Int. Cl.⁶ H05K 7/20

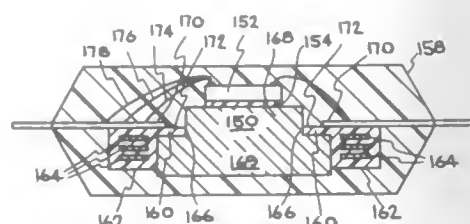
U.S. Cl. 361—706

8 Claims



8. An encapsulated electronic assembly having an integral heat diffuser, comprising: a printed circuit board; a plurality of heat producing electronic components mounted to the printed circuit board; a first layer of dielectric material encapsulating the plurality of electronic components and portions of the printed circuit board, the dielectric material selected from the group consisting of silicone elastomers, silicone gels, epoxy encapsulants, acrylics, silicon-carbon resins, and urethanes, and the dielectric material being a poor thermal conductor; a heat diffusing layer of aluminum nitride powder or beryllium oxide powder disposed directly on the dielectric material, the heat diffusing layer having substantially greater thermal conductivity than the encapsulant layer and having the property of being electrically non-conductive; and a second layer of dielectric material disposed directly on the heat diffusing layer, the second layer of dielectric material selected from the group consisting of silicone elastomers, silicone gels, epoxy encapsulants, acrylics, silicon-carbon resins, and urethanes.

5,379,187
DESIGN FOR ENCAPSULATION OF THERMALLY ENHANCED INTEGRATED CIRCUITS
 Sang S. Lee, Sunnyvale, and George Fujimoto, Santa Clara, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.
 Filed Mar. 25, 1993, Ser. No. 37,059
 Int. Cl.⁶ H05K 7/20
 U.S. Cl. 361-707 8 Claims

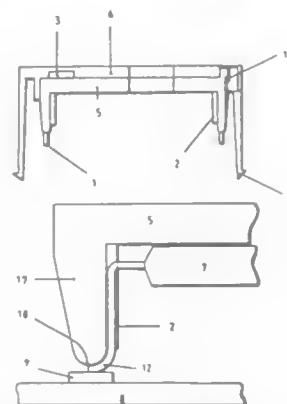


1. An improved package assembly for a thermally-enhanced, molded-plastic quad flat package (TE-QFP), comprising:
 a thermally conductive, electrically-insulated substrate having a top surface with a central region to which an integrated-circuit die is attached
 a molded body of plastic material formed around said a thermally conductive, electrically-insulated substrate; means for centering the thermally conductive, electrically-insulated substrate in the package body about a central plane in which a lead frame lies, said centering means including a recessed surface formed in the sidewalls of said substrate, said recessed surface formed into the top surface of said thermally conductive, electrically-insulated substrate such that said periphery is surrounded by said recessed surface; and
 wherein the lead frame has bonding fingers located in a central plane of the package assembly and wherein the thermally conductive, electrically-insulated substrate includes a heat conductive slug having a recessed area formed around its outer margins and includes a multilayer printed circuit board having a central opening through which a portion of said heat conductive slug extends, a portion of the heat conductive slug extending above the central plane and the recessed area of the heat conductive slug extending below the central plane.

5,379,188
ARRANGEMENT FOR MOUNTING AN INTEGRATED CIRCUIT CHIP CARRIER ON A PRINTED CIRCUIT BOARD
 David W. G. Winslow, Powys, United Kingdom, assignor to Winslow International Limited, Gwent, United Kingdom
 Filed May 3, 1993, Ser. No. 55,245
 Claims priority, application United Kingdom, May 8, 1992, 9209912
 Int. Cl.⁶ H05K 7/02
 U.S. Cl. 361-760 7 Claims

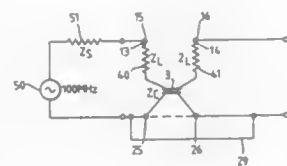
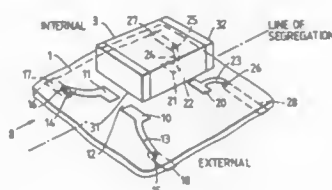
1. A mounting for an integrated circuit chip carrier comprising, in combination, a chip carrier having a flat insulating body with top and bottom surfaces, a plurality of conductive leads projecting outwardly and downwardly from a periphery of the body, a holder having a shaped rim to receive the chip carrier in the holder prior to insertion on a printed circuit board having a plurality of conductive pads on an upper surface of the circuit board, and means for clamping the holder and the chip carrier onto the printed circuit board so that the

conductive leads extending below a bottom surface of the chip carrier are pressed by the shaped rim of the holder into direct



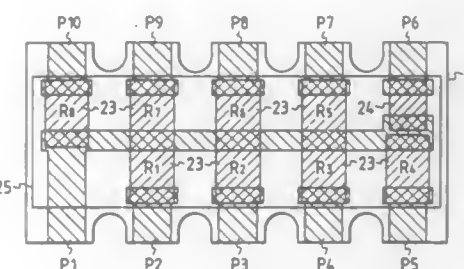
contact with the conductive pads on the upper surface of the circuit board.

5,379,189
ELECTRICAL ASSEMBLIES
 Terence C. Merriman, Tewkesbury, England, assignor to Smiths Industries Limited Company, London, England
 Filed Nov. 2, 1993, Ser. No. 143,901
 Claims priority, application United Kingdom, Nov. 3, 1992, 9223008
 Int. Cl.⁶ H05K 7/02
 U.S. Cl. 361-760 4 Claims



1. An electrical assembly comprising a substrate and at least one surface mount capacitor, wherein the capacitor has a single connector pad at each end, wherein the substrate has two separate electrical contact pads and means electrically connecting both contact pads on the substrate to the same connector pad on the capacitor, the contact pads being otherwise electrically isolated from one another at the capacitor, wherein the substrate includes two tracks, wherein the two tracks extend away from the capacitor, the contact pads on the substrate being electrically connected with respective ones of the tracks, and wherein the substrate has two other electrical contact pads separate from one another that both make electrical connection to the other connector pad on the capacitor but are otherwise electrically isolated from one another at the capacitor.

5,379,190
CHIP-TYPE COMPOSITE ELECTRONIC PART AND MANUFACTURING METHOD THEREFOR
 Toshihiro Hanamura, and Kaoru Sakai, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
 Filed Feb. 24, 1993, Ser. No. 21,762
 Claims priority, application Japan, Feb. 25, 1992, 4-037521
 Int. Cl.⁶ H05K 1/16
 U.S. Cl. 361-766 4 Claims



1. A chip-type composite electronic part comprising:
 a substrate;
 a plurality of circuit elements, including a plurality of common electrodes and a plurality of individual electrodes, formed on the substrate, at least one of the common electrodes having a disconnected portion preventing a parallel circuit connection between another common electrode and at least some of the plurality of circuit elements; and
 a conductor formed at the disconnected portion of the at least one common electrode, for bridging the disconnected portion.

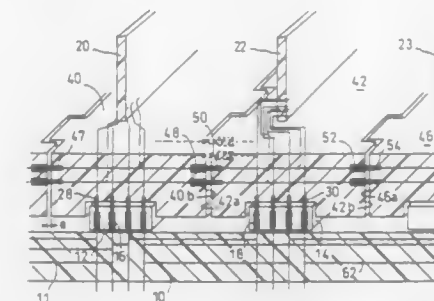
5,379,191
COMPACT ADAPTER PACKAGE PROVIDING PERIPHERAL TO AREA TRANSLATION FOR AN INTEGRATED CIRCUIT CHIP
 David H. Carey, and Barry H. Whalen, both of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.
 Continuation of Ser. No. 176,924, Jan. 3, 1994, abandoned, which is a continuation of Ser. No. 17,580, Feb. 16, 1993, Pat. No. 5,289,346, which is a continuation of Ser. No. 887,198, May 21, 1992, abandoned, which is a continuation of Ser. No. 661,579, Feb. 26, 1991, abandoned. This application Jun. 9, 1994, Ser. No. 257,235
 Int. Cl.⁶ H05K 7/02; H01R 9/09
 U.S. Cl. 361-777 8 Claims



1. A compact adapter package providing peripheral to area translation for an integrated circuit chip, comprising:
 a single integrated circuit chip having top and bottom surfaces and having a plurality of conductive terminals disposed on the bottom surface wherein the entire bottom surface of the chip forms a major surface area of the chip and a portion of the major surface area inside the terminals towards the center of the chip forms an inner surface area of the chip;
 a dielectric support having upper and lower surfaces wherein the support is positioned entirely within the inner surface area of the chip and the bottom surface of the chip is spaced from and faces the upper surface of the support;
 a plurality of electrically conductive pads extending laterally from the upper surface of the support wherein the pads are aligned with and bonded in one-to-one relationship to the terminals thereby attaching the chip to the

support wherein the pads, terminals and bonds are positioned entirely within the major surface area of the chip outside the inner surface area of the chip;
 a plurality of flat electrically conductive horizontal reroute lines on the upper surface of the support wherein each reroute line includes a first end at one of said pads and a second end within the inner surface area of the chip wherein the reroute lines are positioned entirely within the major surface area of the chip and disposed entirely above and parallel to the upper surface of the support;
 a plurality of electrically conductive vertical vias extending through the support between the upper and lower surfaces of the support wherein each via is positioned entirely within the inner surface area of the chip and positioned directly beneath and electrically connected to the second end of one of said reroute lines; and
 a plurality of coupling elements in an array pattern on the bottom surface of the support wherein each coupling element is positioned entirely within the inner surface area of the chip and includes a portion directly beneath and electrically connected to one of said vias such that each terminal is electrically connected to one of said coupling elements;
 wherein each terminal is electrically connected to a single pad, reroute line, via and coupling element, the reroute lines provide all horizontal translation between the terminals and the coupling elements, and the vias provide all vertical translation between the terminals and the coupling elements.

5,379,192
ELECTRICAL INTERCONNECTION SYSTEM BETWEEN A PLURALITY OF DAUGHTER CARDS
 Jacques Lievin, Paris, France, assignor to Amphe-sol Socapex, France
 PCT No. PCT/FR92/00883, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO93/06704, PCT Pub. Date Apr. 1, 1993
 PCT Filed Sep. 23, 1992, Ser. No. 50,065
 Claims priority, application France, Sep. 23, 1991, 91 11686
 Int. Cl.⁶ H01R 23/68
 U.S. Cl. 361-785 10 Claims



1. An electrical interconnection system for providing connections between a plurality of daughter card assemblies, each daughter card means being provided with a daughter card and an associated connector having first connection elements, the system also comprising a mother card including a plurality of bases for establishing electrical connections with said connectors associated with said daughter cards, wherein the first connection elements of each connector are electrically connected to conductor tracks of the associated daughter card, wherein some of the daughter card assemblies constituted by the connector and the associated daughter card include second electrical connection elements which are distinct from the first connection elements and which directly connect a daughter card with at least one adjacent daughter card assembly constituted by a connector and its associated daughter card without connection through the mother card, said second elements

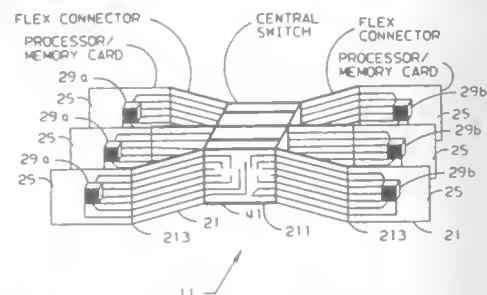
being adapted to establish some of the electrical interconnections between the conductive tracks of the corresponding daughter cards, while the other electrical interconnections are established using the bases connected to said connectors and electrical conductors of said mother card.

5,379,193
PARALLEL PROCESSOR STRUCTURE AND PACKAGE
Thomas P. Gall, Endwell, and James R. Loomis, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 27, 1993, Ser. No. 97,520
Int. Cl.⁶ H05K 1/14

U.S. Cl. 361—784

2 Claims



1. A parallel processor having a plurality of processor integrated circuit chips, a plurality of memory integrated circuit chips, and signal interconnection circuitization means therebetween for providing signal interconnection among said processor integrated circuit chips and said memory integrated circuit chips, said parallel processor comprising:

- a first processor integrated circuit printed circuit board having a first processor integrated circuit chip mounted thereon;
- a second processor integrated circuit printed circuit board having a second processor integrated circuit chip mounted thereon;
- a first memory integrated circuit printed circuit board having a first memory integrated circuit chip mounted thereon;
- a second memory integrated circuit printed circuit board having a second memory integrated circuit chip mounted thereon;
- a plurality of discrete circuitized flexible strips, each of said circuitized flexible strips having:
 - a signal interconnection circuitization portion, having X-Y planar circuitization and vias and through holes for Z-axis circuitization,
 - a terminal portion having means joining a respective printed circuit board thereto, and
 - a flexible, circuitized portion between said signal interconnection circuitization portion and said terminal portion; and
- a signal interconnection circuitization body portion having X-axis, Y-axis, and Z-axis signal interconnection between processor integrated circuit chips and memory integrated circuit chips and comprising a laminate of said circuitized flexible strips at their signal interconnection circuitization portions, whereby said circuitized flexible strips are laminated in physical and electrical connection at their signal interconnection circuitization portions and spaced apart at their terminal portions, and wherein a pair of circuitized flexible strips each have a terminal portion at only one end, and (1) the signal interconnection circuitization portion of one circuitized flexible strip overlaps the signal interconnection circuitization portion of the adjacent circuitized flexible strip in the signal interconnection circuitization body portion of the parallel processor, and (2) the terminal portion having means joining a respective printed circuit board thereto, and the flexible, circuitized portion between the signal interconnection circuitization portion and the terminal portion of one of said adjacent circuitized flexible strips extends outwardly from one side of the signal interconnection circuitization body portion

of the parallel processor, and the flexible, circuitized portion between the signal interconnection circuitization portion and the terminal portion of the adjacent circuitized flexible strip extends outwardly from the opposite side of the signal interconnection circuitization body portion of the parallel processor.

5,379,194

Patent Not Issued For This Number

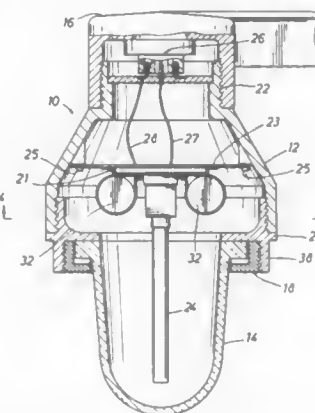
5,379,195
LIGHTING FIXTURE

J. Michael Epstein, Houston, Tex., assignor to RMS Lighting, Inc., Houston, Tex.

Filed Feb. 19, 1993, Ser. No. 19,605
Int. Cl.⁶ F21V 19/04

U.S. Cl. 362—20

6 Claims



1. A light fixture for illuminating an area containing ignitable materials, comprising:
 - an explosion proof housing;
 - a bracket for removably mounting said housing in the area containing ignitable materials;
 - a light source mounted in the housing;
 - a power storage cell mounted in said housing;
 - means connected to said power storage cell, for transmitting power from an external source to said power storage cell for charging said power storage cell; and
 - means connected to said power transmitting means for electrically connecting said power storage cell to said light source to illuminate said light source in response to loss of the external power source to said light source.

5,379,196

PROJECTION HEADLAMP FOR VEHICLES

Sboji Kobayashi, Toshihisa Hayami, and Masaaki Ishikawa, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1993, Ser. No. 70,902

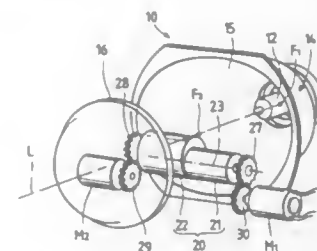
Claims priority, application Japan, Jun. 5, 1992, 4-146027
Int. Cl.⁶ B60Q 1/06

U.S. Cl. 362—61

8 Claims

1. A projection type headlamp, comprising:
 - a substantially oval reflector;
 - a light source disposed at a first focal point of said reflector;
 - a projection lens disposed in front of said reflector; and
 - shade means for cutting at a predetermined position a part of light beam emitted from said light source and reflected by said reflector, said shade means being provided between said reflector and said projection lens in the vicinity of a second focal point of said reflector and substantially at a focus point of said projection lens, said shade means rotating along a horizontal axis thereof for forming variable light distribution patterns, said shade means comprising:

a first shade member rotatably supported on said horizontal axis; and



a second shade member rotatably supported on said horizontal axis and rotating therealong independently from said first shade member.

5,379,197

LIGHTED BICYCLE SAFETY DEVICE

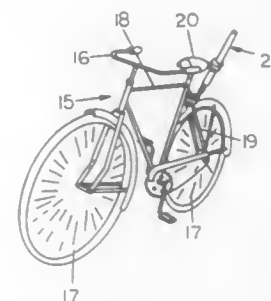
Philip C. Conyers, and Maxine E. Conyers, both of Connersville, Ind., assignors to Conyers (Gpmrr) Enterprises, Inc., Connersville, Ind.

Filed Feb. 22, 1993, Ser. No. 20,673

Int. Cl.⁶ B62J 6/00

U.S. Cl. 362—72

5 Claims



1. A bicycle safety device for use with a bicycle comprising handlebars, which define the outermost sides of the bicycle, and a frame, the device comprising:
 - a lighting apparatus comprising

an elongated lens connected to a power source housing, a light bulb, a light bulb retaining member, a power source, and a light switch means for shifting the light bulb between an off-position, where the light bulb is not connected to the power source, and an on-position where the light bulb is in electrical communication with the power source, the light switch means comprising a sleeve rotatable with the apparatus which cooperates with the light bulb retaining member to shift the light bulb between on and off positions, and a projecting on-off switch that is slidably disposed within a channel formed in the apparatus, the projecting on-off switch operatively connected to the rotatable sleeve;

means for securing the light apparatus to the bicycle frame; means, located intermediate the lighting apparatus and the securing means, for pivoting the lighting apparatus with respect to the securing means to orientations between and including an operational orientation, wherein the lighting apparatus is oriented substantially horizontally and laterally such that the illuminating lens extends laterally from the bicycle beyond the outermost bicycle side and is visible from behind the bicycle, and a storage orientation wherein the lighting apparatus is oriented approximately 90° from the operational orientation, the pivot means comprising first and second frictionally engaging pivoting

members and a compression spring assembly biasing the pivot members together; and a straightening spring coupling the lighting apparatus to the pivot means.

5,379,198

COURTESY LAMP SYSTEM FOR VEHICLES

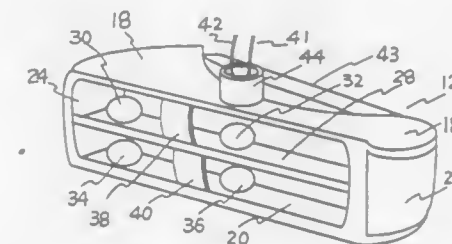
Zhijie Zhang, 469 S. 7th St., San Jose, Calif. 95112

Continuation-in-part of Ser. No. 911,259, Jul. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 815,573, Dec. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 809,647, Dec. 17, 1991, abandoned. This application Dec. 4, 1992, Ser. No. 985,664

Int. Cl.⁶ B60Q 1/26

U.S. Cl. 362—83.1

20 Claims



1. A courtesy lamp system for a vehicle comprising:
 - an elongated housing having a pair of opposed ends, said housing also having a front recess;
 - means coupled with the housing for defining a lamp array in the recess, said lamp array including a number of lamps, and means for coupling the lamps of the array to a portion of the vehicle;
 - an elongated mirror having a pair of opposed ends; and
 - universal joint means shiftably coupling one end of the mirror to one end of the housing for movement relative to the housing so as to allow the mirror to be selectively adjusted in a plurality of directions and about a plurality of pivot axes.

5,379,199

LOW PROFILE RECESSED WALL LIGHTING FIXTURE

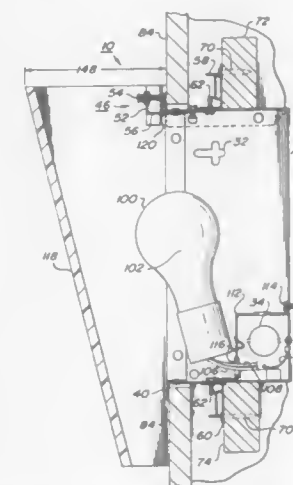
Steven J. Hirshenbom, Maple Glen; Steven T. Reisbord, Ardmore, and William P. Galgon, Meadowbrook, all of Pa., assignors to Progress Lighting, Philadelphia, Pa.

Filed Jan. 6, 1993, Ser. No. 895

Int. Cl.⁶ F21S 1/02

U.S. Cl. 362—147

15 Claims



1. A lighting fixture assembly comprising:

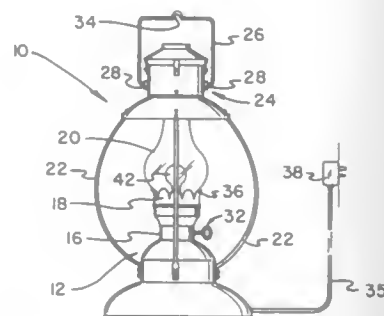
- (a) a recessed enclosure that houses a light source, said recessed enclosure having a back wall and an opened face with a flange portion, said flange portion having predetermined length and width dimensions that exceed those of the back wall;
- (b) a tray connected to said recessed enclosure and extending outward from said flange portion and providing a platform adapted for supporting a light diffuser, said tray having an upright partition, said platform extending between from about the upright partition of the tray to about the flange portion, the tray further including adjustable connecting means extendable between from about the upright partition of the tray to about said flange portion for engaging the light diffuser; and
- (c) means for mounting said recessed enclosure in a predetermined orientation.

5,379,200

PORTABLE ELECTRIC LANTERN APPARATUS
Terry P. Echard, Rte. 1 Box 220A, Harrisville, W. Va. 26362
Filed Dec. 29, 1993, Ser. No. 175,129
Int. Cl.⁶ F21L 11/00

U.S. Cl. 362—186

13 Claims



1. A new and improved portable electric lantern apparatus, comprising:

- a base assembly which includes a housing portion, a lamp-supporting portion supported by said housing portion, and a light-diffuser-retaining portion supported by said lamp-supporting portion;
- a plurality of strut members connected to said base assembly and projecting upward from said base assembly;
- a handle-supporting assembly connected to said strut members;
- a handle supported by said handle-supporting assembly, said handle located above said base assembly and above said strut members, said handle connected to said handle-supporting assembly by a pivoted connection;
- a light diffuser supported by said light-diffuser-retaining portion of said base assembly, said light diffuser extending upward from said base assembly toward said handle-supporting assembly;
- a lamp assembly supported by said lamp-supporting portion of said base assembly, said lamp assembly being supported by said lamp-supporting portion such that said lamp assembly is centrally disposed in said light diffuser when said light diffuser is supported by said light-diffuser-retaining portion of said base assembly;

wherein a combination of top portions of said strut members and said handle-supporting assembly are positioned a sufficient distance from said base assembly and said light diffuser such that a clearance is provided between said light diffuser and said handle-supporting assembly which is sufficient to permit said light diffuser to be raised above said light-diffuser-retaining portion of said base assembly and to clear a top portion of said lamp assembly, to permit said light diffuser to be removed sideways from the lantern apparatus through a space between the strut members for replacement of said lamp assembly, and to permit said

light diffuser to be returned to said light-diffuser-retaining portion of said base assembly;

a switch assembly supported by said base assembly for controlling operation of said lamp assembly, and

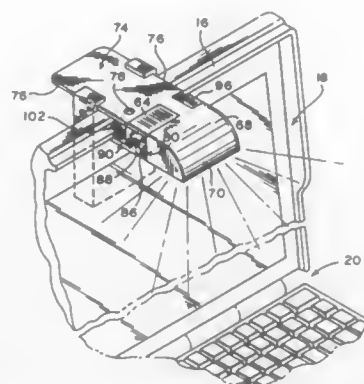
an electrical power source which includes an electrical conductor assembly supported by said base assembly and connected to said lamp assembly and said switch assembly for providing electrical power to said lamp assembly and said switch assembly.

5,379,201

PORTABLE LIGHT FOR LAPTOP COMPUTER
Arthur S. Friedman, 2144 Seneca West, Merrick, N.Y. 11566
Filed Jan. 10, 1994, Ser. No. 179,197
Int. Cl.⁶ F21L 7/00

U.S. Cl. 362—191

13 Claims



1. A portable light comprising a battery pack and a light assembly, mounting means on said battery pack for selectively receiving and positioning said light assembly on said battery pack with said light assembly extending laterally from said battery pack in a use position, and storage means on said light assembly for selectively receiving and storing said battery pack on said light assembly with said battery pack extending linearly relative to said light assembly in a stored position; said light assembly comprising a reflector with an outer wall, a rear wall and opposed end walls defining an open face opposed to said outer wall, means for mounting a bulb within said reflector for projection of illumination through said open face, an elongate mounting panel generally coplanar with said reflector outer wall and extending rearwardly beyond said rear wall of said reflector, said mounting panel, in said use position, extending transversely across said battery pack and engaging said mounting means with said reflector being positioned in spaced relation to a side of said battery pack; said battery pack comprising a battery chamber, opposed first and second face walls, opposed first and second side walls, and opposed first and second end walls, said mounting means comprising slot means on said first end wall for slidably receiving said mounting panel positioned transversely to said battery pack.

5,379,202

OUTDOOR ANIMATED HOLIDAY LIGHT DISPLAY
Daniel Daun, Hoffman Estates, Ill., assignor to Noma International, Inc., Forest Park, Ill.

Filed Apr. 22, 1993, Ser. No. 51,196

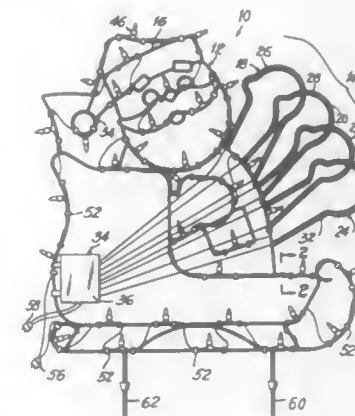
Int. Cl.⁶ F21P 1/00

U.S. Cl. 362—252

10 Claims

1. An animated light display, comprising:
- (a) a decoration having a decorative part to be animated, said decorative part having a series of successive display elements, each display element partially overlapping an adjacent display element along the series;
 - (b) a plurality of string sets of electric lights supported on the display elements; and
 - (c) control means for simulating animation of the decorative

part by sequentially illuminating the sets of lights on the display elements in succession, only one set of lights being



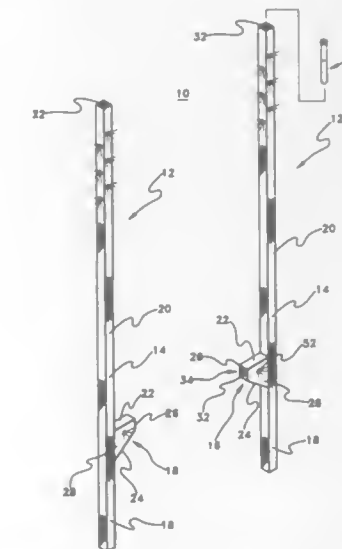
illuminated at any one time while all the other sets of lights are maintained extinguished.

5,379,203

ILLUMINATED STILT APPARATUS
Patricia A. Marano, 3313 McIntyre Dr., Murrysville, Pa. 15668
Filed Sep. 16, 1993, Ser. No. 121,531
Int. Cl.⁶ F21V 33/00

U.S. Cl. 362—253

4 Claims



1. A stilt apparatus, said stilt apparatus comprising:
- a pair of elongated linear column members;
 - a horizontal foot hold projecting outwardly from each of said elongated linear column members;
 - said elongated linear members each comprising an elevation member extending downward from said horizontal foot hold and a graspsable support member extending upward from said horizontal foot hold;
 - a cavity provided in each elongated linear column member;
 - a cavity provided in each horizontal foot hold;
 - at least one light passing channel communicating from the interior of each of said cavities to an exterior surface of each elongated linear column member and each horizontal foot hold;
 - self-powered illumination means disposed within each of said cavities;
 - said self-powered illumination means comprising:
 - a housing insertable into and removable from said cavity;

a pair of spaced, outstanding studs disposed on an outside surface of said housing;

an electric bulb disposed within said housing;

a battery disposed within said housing for powering said electric bulb; and

switch means for controlling the flow of electricity from said battery through said electric bulb.

5,379,204

LUMINAIRE

George W. Paterson, Fife, Great Britain, assignor to Strand Lighting Ltd., Middlesex, United Kingdom

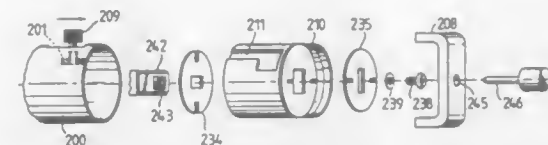
Filed Nov. 16, 1992, Ser. No. 976,478

Claims priority, application United Kingdom, Mar. 31, 1992, 9207085

Int. Cl.⁶ F21V 21/00

U.S. Cl. 362—285

15 Claims



1. A luminaire comprising means for mounting a light source, and means for directing the beam therefrom along an optical axis of the luminaire in which the means for mounting the light source is removable, and further comprising means for adjusting the position along the optical axis of the light source relative to the adjusting means, wherein the position adjusting means comprises an abutment provided on the luminaire and an engaging feature provided on the mounting means, the engagement between the two defining the position at which the light source mounting means is axially located when inserted into the lamp, the relative axial position of the abutment or feature being variable.

5,379,205

STRUCTURE FOR A SWINGABLE ARM MOUNTING BASE

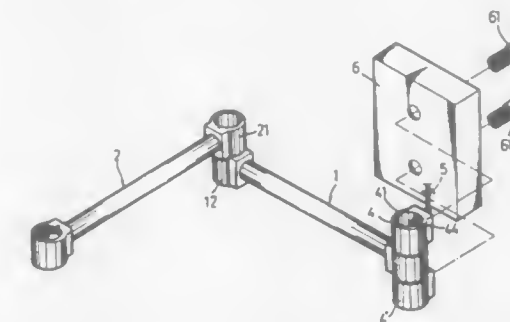
Chih-Wen Peng, No. 9, Lane 1, Chung Hsing Road, Sec. 1, Wu Ku Hsiang, Taipei Hsien,

Filed Oct. 8, 1993, Ser. No. 133,307

Int. Cl.⁶ F21S 1/02

U.S. Cl. 362—430

1 Claim



1. A mounting base structure for a swingable arm which is placed in an appropriate position of a wall sconce lamp, an upper securing adapter and a lower securing adapter used with a connecting member to pivotally connect the mounting base to a swingable arm, characterized in that said swingable arm having an adapter with a square aperture at one end, the centers of the upper and the lower securing adapters have a passage, a first groove is provided on the surface along one side of the aperture, a second groove is provided inside the first

groove, said connecting member is provided inside the first groove, said connecting member is provided with a connecting body, two anti-friction plates, two C-shaped rings and two washers, the connecting body being a square tube for insertion into the passage of the swingable arm and has a flange ring of smaller diameter at each end, and electric wiring hole is provided in a location confronting the passage of the swingable arm, the two C-shaped rings being insertable into the second grooves of the two securing adapters to project into the wall of the aperture, the two anti-friction plates being insertable into the first grooves of the two securing adapters respectively, both ends of the connecting body are feedable through the two C-shaped rings and the two washers are insertable, and by extrusion and stretching process the two flange rings of the connecting body are extended outwardly to form a positioning ring for swinging.

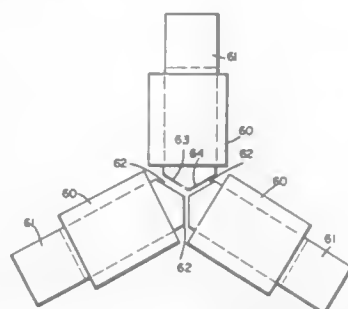
5,379,207
CONTROLLED LEAKAGE FIELD MULTI-INTERPHASE TRANSFORMER EMPLOYING C-SHAPED LAMINATED MAGNETIC CORE

Manoj R. Shah, Latham, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,194
Int. Cl.⁶ H02M 7/00

U.S. Cl. 363—64

9 Claims



1. A multi-interphase transformer for use in paralleling outputs of a polyphase input power source having nine or more phases, said transformer comprising:

at least three magnetic core sections each having first and second leg portions with first, and second ends and a third leg portion disposed between the first ends of said first and second leg portions;

the second ends of the first and second leg portions of each core section being positioned in adjoining relationship with at least two other core sections to form a space gap between the first and second leg sections of each adjoining core section so as to control leakage fields related to D.C. or low frequency inductance;

a single continuous winding disposed in inductive relationship with each said core section, each said winding being wound substantially equally around the first and second leg portions of a core section and having first and second ends;

the first ends of each of said windings being commonly connected with one another;

the second ends of each of said windings being connected to a three phase symmetrical input source, and wherein the second ends of the first and second leg portions of each core section include adjacent surfaces for forming predetermined substantially uniform space gaps with each said adjoining core section so as to control high frequency inductance of the core sections.

5,379,208
HIGH SPEED DRIVING CIRCUIT FOR MAGNETIC HEAD EFFECTIVE AGAINST FLYBACK PULSE

Eiji Shinozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 7, 1993, Ser. No. 132,831

Claims priority, application Japan, Oct. 7, 1992, 4-268295
Int. Cl.⁶ H02M 3/24; H03K 3/01

U.S. Cl. 363—97

9 Claims

1. A driving circuit for a magnetic head having first and second current nodes, comprising:

a) a switching network having a series combination of first and second transistors connected between a first source of voltage and a first common node,

a series combination of third and fourth transistors connected between said first source of voltage and said first common node and

a first constant current source connected between said first common node and a second source of voltage different in voltage level from said first voltage source, said first and second current nodes being connected be-

5,379,206
LOW LOSS SNUBBER CIRCUIT WITH ACTIVE RECOVERY SWITCH

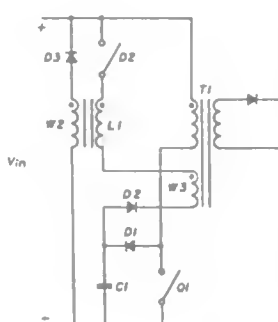
Christopher D. Davidson, Surrey, Canada, assignor to Argus Technologies, Ltd., Burnaby, Canada

Filed Dec. 2, 1992, Ser. No. 985,809

Int. Cl.⁶ H02H 7/122

U.S. Cl. 363—55

1 Claim



1. A switchmode power converter including a circuit for achieving low loss snubbing across the switching element comprising:

a transformer with at least two windings and the primary of which transformer has a switching element side and a line side;

a switching element in series with the primary winding, said switching element having a transformer side of the switching element and a line side of the switching element;

a snubber diode and a snubber capacitor in series with one another across the switching element;

a discharge path for discharging the capacitor including a second diode, a switch and an inductor, said discharge path extending from the node between the snubber diode and the snubber capacitor to the line side of the primary of the transformer;

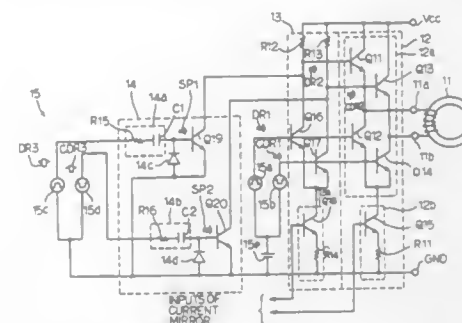
a winding coupled to the inductor, said winding being in series with a third diode and said winding and third diode in series extending between the line side of the switching element and the line side of the transformer; and

a third winding of the transformer in series with the discharge path.

tween said first transistor and said second transistor and between said third transistor and said fourth transistor, respectively;

b) a level shifter operative to produce a pair of secondary driving pulse signals complementary to each other from a pair of primary driving pulse signals complementary to each other, and supplying said secondary driving pulse signals to control nodes of said first and third transistors, respectively;

c) a signal source unit operative to produce said primary driving pulse signals having respective leading edges, and supplying said primary driving pulse signals to said level



$A_z = (\partial f_1 / \partial q^{(i)})$, a matrix or matrix function determined by the dynamics of the system;
 $f_1 = f_1(q, q^{(1)}, \dots, q^{(i)})$, a ζ -th order differential vector function of q which represents the dynamic properties of the system;
 $B = (\partial f_2 / \partial b)$, a matrix or matrix function determined by the dynamics of the actuators;
 $f_2 = f_2(u, u^{(1)}, \dots, u^{(i)}, \dots, u^{(n)})$, an η -th order differential vector function of u , wherein $u^{(i)}$ is the i th derivative of u with respect to time, and $\eta \geq 0$ is the highest order derivative of u needed to described the control input;
 $b = b(u, u^{(1)}, \dots, u^{(n)})$ is a vector function of u and its derivatives describing the effect of u on the actuators;
 r is the dimension of vector u ;
 n is the dimension of vector y ;
 $W(q) = [J(q, d)A_z^{-1}(q)B(q)]^T$ if $r > n$;
 $W(q) = I$, the identity matrix, if $r = n$;
 (d) means for deriving the external control vector u from the internal control vector w from a relationship which is expressible in a form substantially equivalent to

$$b(u, u^{(1)}, \dots, u^{(n)}) = w(t);$$

- (e) transmitting the external physical control vector u to the actuators, whereby a physical response in the actuators is induced, physically causing the physical output vector y to converge toward the selected physical output vector y_d ; and
 (f) repeating steps (a) through (e) sufficiently to physically force the physical output vector y to converge to the selected physical output vector y_d in accordance with the selected vector tracking property T .

5,379,211

PRESS FOLDER PRESET SYSTEM

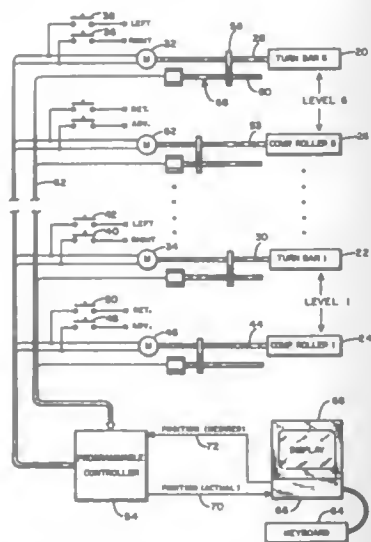
Timothy D. McVenes, Byron, Ill., assignor to Brown Printing Company, A Division of Gruner & Jahr Printing and Publishing Co., Waseca, Minn.

Filed May 11, 1993, Ser. No. 59,303

Int. Cl. G05B 19/18; G06F 15/46; B41F 13/24

U.S. Cl. 364—167.01

6 Claims



1. Apparatus for facilitating the set-up of a folder section of a web printing press to carry out a particular specified job, said folder being of the type having a plurality of motor-driven turn bars for adjusting the lateral position of a paper ribbon flowing through said folder section and a plurality of motor-driven compensation rollers for adjusting the advance and retard of said ribbons relative to a page cutting device, comprising:

- (a) a plurality of linear transducing means, individually associated with each of said plurality of motor-driven turn

bars and said motor-driven compensating rollers, for producing electrical signals proportional to the displacement of said turn bars and compensation rollers from predetermined reference locations;

- (b) memory means for storing data corresponding to a desired target position for each of said plurality of turn bars and compensation rollers for a plurality of possible job names;
 (c) programmable controller means coupled to receive said electrical signals from said plurality of linear transducing means and said data from said memory means relating to a specified job name for generating motor drive signals related to the extent of displacement of each of said turn bars and compensation rollers from said desired target positions for the specified job name; and
 (d) means for applying said motor drive signals to said motor-driven turn bars and said motor-driven compensation rollers to effect closed-loop repositioning thereof to said desired target positions of each.

5,379,212

LOCKING MEMORY DEVICE

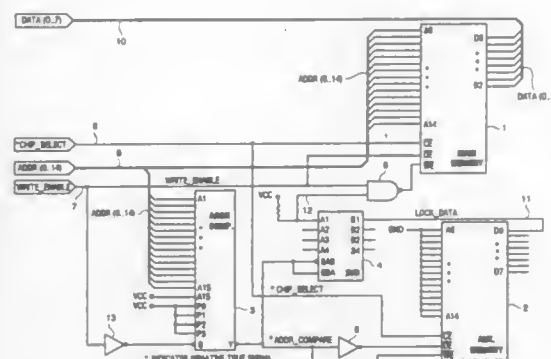
Larry W. Sarnier, Loveland, and David C. Beckwith, Boulder, both of Colo., assignors to United States Voting Machines, Inc., Boulder, Colo.

Continuation of Ser. No. 471,643, Jan. 29, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 16,195

Int. Cl. G06F 15/28

U.S. Cl. 364—409

11 Claims



1. In a voting system comprising a vote storage device, a method of preventing data from being written to said vote storage device after the occurrence of a predetermined event, said method comprising the steps of:
 comparing address information present on an address bus with a preselected address;
 generating an output signal when said address information corresponds to said preselected address;
 writing preselected data to an auxiliary memory device in response to the generation of said output signal;
 preventing data from being written to said vote storage device when said preselected data is stored in said auxiliary memory device wherein said vote storage device is located in a tally module of said voting system.

5,379,213

TEST SCORING SYSTEM AND METHOD

Harry G. Derks, Holland, Mich., assignor to Fleetwood Furniture Company, Inc., Holland, Mich.

Filed Jan. 28, 1992, Ser. No. 826,987

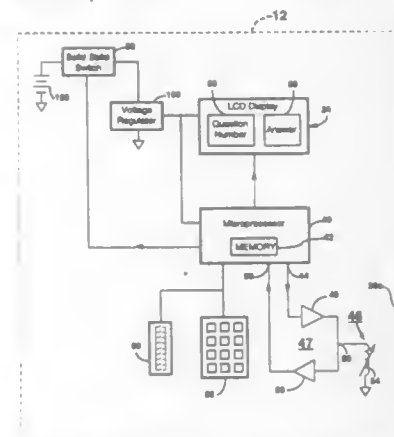
Int. Cl. G06F 15/28

U.S. Cl. 364—411

22 Claims

1. A test scoring system comprising:
 a hand-held answer recording unit having a user input de-

vice for receiving user answers and a storage device for storing said user answers;
 a scoring processor for receiving answer data from said answer recording unit;
 a data transfer unit connected with said scoring processor for providing a single bit discharge command signal to said answer recording unit, for receiving answer data from said answer recording unit and for transferring said answer data to said scoring processor;
 wherein said answer recording unit includes a monitor circuit that is responsive to said discharge command signal to read-out answer data recorded in said memory locations as data words;



wherein each said answer recording unit and said data transfer unit includes a housing defined by a physically substantially imperforate wall; and

a non-symmetrical communication link between said answer recording unit and said data transfer unit including a pair of transducers, each transducer entirely within the respective housing of each of said answer recording unit and said data transfer unit, for transferring data words from said answer recording unit to said data transfer unit, and single bit command signals from said data transfer unit to said answer recording unit between said transducers across said imperforate walls, whereby multiple bit data words can be transferred by said non-symmetrical communication link in response to a single bit discharge command signal.

5,379,214

METHOD FOR READING THE CONCENTRATION OF A MEDICALLY SIGNIFICANT COMPONENT OF A BIOLOGICAL FLUID FROM A TEST STRIP

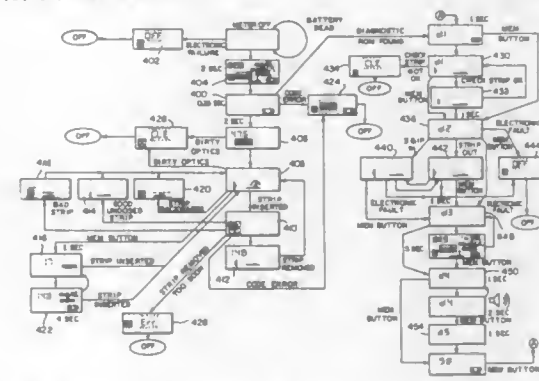
Steven R. Arbuckle, Indianapolis, Ind.; Michael E. Grant, Sand Point, Id.; Richard Riedel, Carmel, and Roge L. Hammer, Knightstown, both of Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Oct. 21, 1993, Ser. No. 140,601

Int. Cl. G06F 15/42

U.S. Cl. 364—413.01

5 Claims



1. A method of altering an instruction in, and using the altered instruction to determine the concentration of a medi-

cally significant component of a body fluid by, one or more microcomputer controlled instruments, wherein each instrument includes a port for receiving a substrate upon which a chemistry is supported, the chemistry reacting with the medically significant component of the body fluid when a specimen of the body fluid is applied to the chemistry, the instrument determining the concentration of the medically significant component in the body fluid by exposing the reacted chemistry to radiation and determining a characteristic from the reacted chemistry, the determined characteristic of the reacted chemistry bearing a known relationship to the concentration of the medically significant component in the body fluid, the instrument further including a port through which instructions and data can be received from and transmitted to, an external device, the method comprising the steps of transmitting from the external device to each instrument a first attention protocol if the instruments are in a state in which they are capable of determining the concentration of the medically significant component and transmitting a second attention protocol if the instruments are not in a state in which they are capable of determining the concentration of the medically significant component for advising each instrument that a further instruction is to be transmitted, transmitting one of a global address to each instrument and an address unique to one of the instruments, transmitting an instruction to all or said one instrument, and employing the thus-transmitted instruction to determine the concentration of the medically significant component of a body fluid in all or said one instrument.

5,379,215

METHOD FOR CREATING A 3-D IMAGE OF TERRAIN AND ASSOCIATED WEATHER

Douglas P. Kruhoeffter, Long Lake, and Craig Burfelnd, Chanhassen, both of Minn., assignors to Douglas P. Kruhoeffter, Winnetka, Ill.

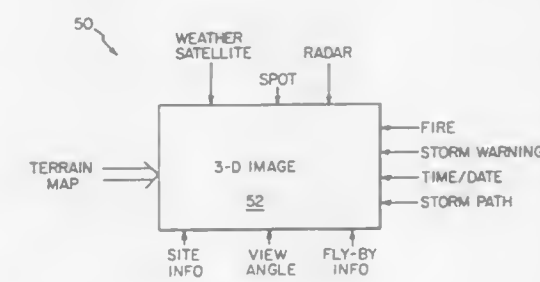
Continuation of Ser. No. 660,620, Feb. 25, 1991, abandoned.

This application Nov. 4, 1993, Ser. No. 147,021

Int. Cl. G06F 15/54

U.S. Cl. 364—420

10 Claims



1. A method of displaying an illustration of weather relative to terrain, comprising:

retrieving a digitized three-dimensional terrain map from a permanent storage, the terrain map including information relating to elevation and geographical features;
 retrieving information from digitized satellite photographs, the photographs including terrain information;
 combining the three dimensional terrain map with satellite photographs to form a composite terrain map wherein terrain information from satellite photographs supplement information from the terrain map;
 receiving virtual real time remote weather information from remote locations, wherein the remote locations are lo-

cated at positions represented on the composite terrain map;
 receiving virtual real time satellite weather information from a weather satellite, wherein the satellite weather information includes information related to cloud formations located at positions represented on the composite terrain map;
 receiving virtual real time weather radar information from weather radar located at a position represented on the composite terrain map, wherein the weather radar information includes information related to storms and precipitation;
 obtaining time and date information;
 obtaining from an operator initial coordinates related in three dimensions to the composite terrain map;
 obtaining from an operator a three dimensional fly by path which begins at the initial coordinates and follows a path related in three dimensions to the composite terrain map;
 obtaining view angle information from an operator representative of a desired view angle relative to the composite terrain map along the fly by path;
 creating a three dimensional weather map by combining the composite terrain map with virtual real time remote weather information, virtual real time satellite weather information, and virtual real time weather radar information, wherein the three dimensional weather map depicts clouds, storms, and precipitation in three dimensions shown relative to terrain elevation and geographical features on the composite terrain map;
 adding shadows to the three dimensional weather map based upon the time and date information whereby a sun angle is located in three dimensions relative to the terrain map thereby defining a light source and shadows resulting from the light source are projected onto the three dimensional weather map;
 creating a simulated fly by in three dimensions relative to the three dimensional weather map based upon the fly by path and view angle information; and
 displaying a sequence of images representing a view along the fly by path from the view angle.

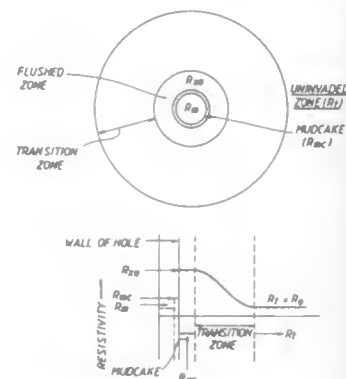
5,379,216 **METHOD AND APPARATUS FOR PRODUCING A NEW OUTPUT RECORD MEDIUM ILLUSTRATING A QUANTITATIVE DESCRIPTION IN THE VOLUME DIMENSION OF MUD FILTRATE INVASION INTO PERMEABLE ZONES OF A FORMATION IN A WELLBORE**

Eltoo L. Head, Kingwood, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed May 27, 1992, Ser. No. 889,545
 Int. Cl.⁶ G06F 15/20; G01V 5/00

U.S. Cl. 364—422

10 Claims



1. A system responsive to a set of invasion parameters associ-

ated with each unit of depth in a wellbore for generating an output record medium, comprising:

first means responsive to the set of invasion parameters associated with said each unit of depth in said wellbore for determining a corresponding volume of mud filtrate which has invaded into permeable zones of a formation traversed by said wellbore for a given thickness at said each unit of depth in said wellbore,
 said permeable zones of formation at said each depth in said wellbore including a flushed zone, an uninvasion zone, and a transition zone interposed between said flushed zone and said uninvasion zone,
 said invasion parameters including a resistivity of the flushed zone (R_{xo}), a radius (r_1) measured from a wall of said wellbore to an outer radial extremity of said flushed zone, and a radius (r_2) measured from a wall of said wellbore to an inner radial extremity of said uninvasion zone,
 said first means determining said volume of mud filtrate invasion into said flushed zone and said transition zone of said formation for a given thickness at said each unit of depth in said wellbore by using the following equation:

$$Vmf = 3.1416 \dots / 3 [(Rmf/Rxo)^{1/n} (r_1^2 + (r_1)(r_2) + r_2^2 - 3r_0^2)],$$

where Vmf is the volume of mud filtrate, Rmf is the resistivity of said mud filtrate, and r_0 is the radius of said wellbore; and

output record generating means responsive to the volume of mud filtrate invasion into said permeable zones of said formation for said given thickness at said each unit of depth in said wellbore determined by said first means for generating an output record medium illustrating said volume of mud filtrate invasion into said permeable zones of said formation at said each unit of depth in the wellbore.

5,379,217 **VEHICLE ELECTROMAGNETIC CLUTCH CONTROL DEVICE**

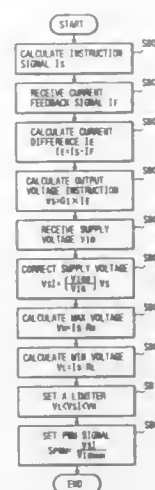
Munehiko Mimura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1992, Ser. No. 892,061

Claims priority, application Japan, May 29, 1991, 3-124266
 Int. Cl.⁶ F16D 27/00

U.S. Cl. 364—424.1

2 Claims



1. A vehicle electromagnetic clutch control device, comprising:

a microcomputer for calculating a current instruction signal according to travel control data and engine control data and for outputting a clutch release signal and having an analog-to-digital converter for converting a supply volt-

age into a digital signal, said microcomputer including a PWM modulator for obtaining a difference between said current instruction signal and an output current feedback signal to output a pulse-width modulation signal according to said difference and said digital signal;
 a PWM output transistor which operates in accordance with said pulse-width modulation signal to allow a clutch current to flow in an electromagnetic clutch;
 a quick-break transistor which is controlled by said clutch release signal to interrupt said clutch current which flows when said PWM output transistor is non-conductive;
 a current detecting resistor for detecting said clutch current flowing when said quick-break transistor is conductive; and
 a current detecting amplifier for detecting a voltage developed across said current detecting resistor to apply said output current feedback signal to said microcomputer.

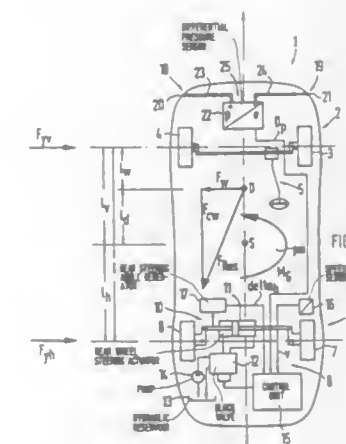
5,379,218 **METHOD AND APPARATUS FOR MINIMIZING EFFECTS OF CROSS WIND ON VEHICLE HANDLING** Stefan Jacobi, Sindelfingen, and Volker Berkefeld, Renningen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Aug. 20, 1992, Ser. No. 933,192

Claims priority, application Germany, Aug. 22, 1991, 4127725
 Int. Cl.⁶ G06F 7/70, 7/76

U.S. Cl. 364—424.01

44 Claims



1. A method for minimizing effects of cross wind on the handling of a vehicle having a vehicle body, at least two axles, means for driver steering of the vehicle, air pressure measuring points arranged on opposite sides of an outer skin of the vehicle body, a final control element which responds to a differential between pressures measured at the pressure measuring points on both vehicle sides, and means for generating vehicle steering movements which are directed against the effects of the cross wind, said method comprising the steps of:

determining differential pressure between the pressures measured at said pressure measuring points;
 using said differential pressure to determine a yaw angle velocity and yaw angle acceleration of said vehicle caused by force of said cross wind on said vehicle body; and causing said final control element to apply an additional steering angle adjustment to said vehicle to cause said yaw angle velocity and yaw angle acceleration to approach zero.

5,379,219 **VEHICLE DIGITAL MOVEMENT DATA RECORDING APPARATUS**

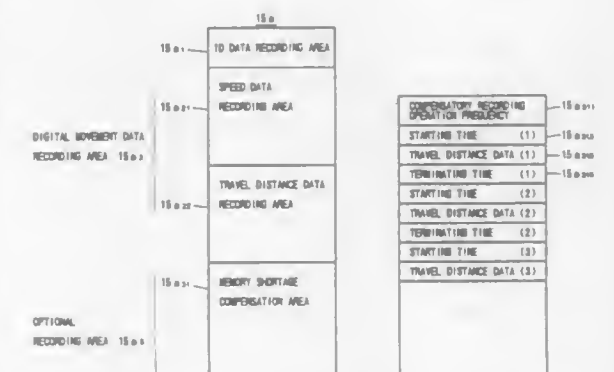
Wataru Ishibashi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 696,645, May 7, 1991, abandoned. This application Mar. 30, 1994, Ser. No. 220,628

Claims priority, application Japan, Jun. 12, 1990, 2-61354
 Int. Cl.⁶ G06F 13/00, 7/70

U.S. Cl. 364—424.04

4 Claims



1. A vehicle digital movement data recording apparatus comprising:

an external record medium having a digital movement data recording area for recording compressed data and an optional recording area for recording further data having a resolution lower than said compressed data when said digital movement data recording area has no more space available for recording data;
 a digital movement data generating means for supervising a moving state of a vehicle and for producing digital movement data thereof;
 a storage means for recording said digital movement data produced by said digital movement data generating means onto said digital movement data recording area of said external record medium, said external record medium adapted to be inserted into and removed from said recording apparatus; and
 a detecting means for detecting when there is no more available space for recording said digital movement data in said digital movement data recording area of said external record medium, wherein when said detecting means detects that there is no available space for recording said digital movement data in said digital movement data recording area of said external record medium, said storage means records data such as travel starting time, terminating time and a travel distance of said vehicle of each vehicle in a memory storage compensation area provided in said optional recording area of said external record medium.

5,379,220 **ELECTRONIC STEERING CONTROL**

William E. Allen, and David A. Paul, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/05294, § 371 Date Jul. 29, 1991, § 102(e)
 Date Jul. 29, 1991

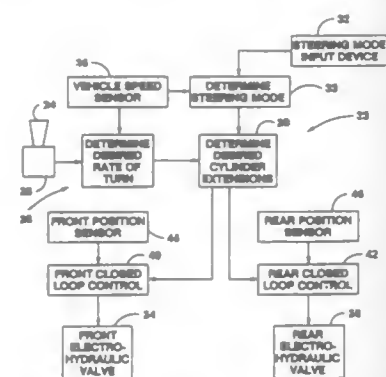
PCT Filed Jul. 29, 1991, Ser. No. 972,465
 Int. Cl.⁶ B62D 5/04, 1/00, 6/00

U.S. Cl. 364—424.05

17 Claims

1. An apparatus (23) for changing steering modes in a vehicle (10) having a plurality of steerable wheels (12) and a steering input device (24) being connected to said vehicle (10) and movable to and between a plurality of positions, each of said positions being associated with a desired rate of turn of the vehicle (10), comprising:

a previous steering mode;
means (33) for selecting a desired steering mode having a predetermined range of rates of turn;
a first subset (12,14,16) of the plurality of steerable wheels (12), said first subset (12,14,16) corresponding to the previous steering mode;
a second subset (12,14,16) of the plurality of steerable wheels (12), said second subset (12,14,16) corresponding to said desired steering mode; and

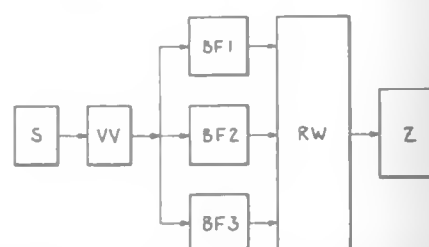


means (38) for transitioning from steering exclusively with said first subset (12,14,16) of steerable wheels to steering exclusively with said second subset (12,14,16) of steerable wheels while the steering input device (24) is in any of said plurality of positions, wherein said transitioning means (38) includes means for preventing a complete transition from said previous steering mode to said desired steering mode in response to the desired rate of turn of the vehicle being outside said predetermined range of rates of turn.

5,379,221
**TRIGGER PROCEDURE FOR A VEHICLE OCCUPANT
 RESTRAINING SYSTEM**

Wolfgang Schuster, Meersburg, and Rolf Schuler, Oberteuringen, both of Germany, assignors to Temic Telefunken micro-electronic GmbH, Heilbronn, Germany
Filed Apr. 23, 1993, Ser. No. 51,671
Claims priority, application Germany, Apr. 25, 1992, 4213673
Int. Cl.⁶ B60R 21/32

U.S. Cl. 364—424.05 **7 Claims**

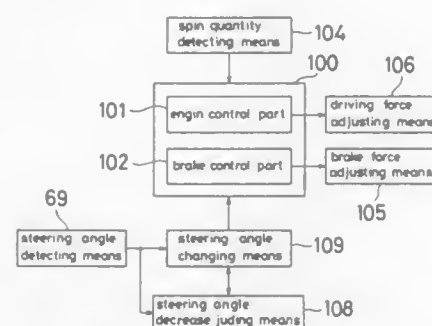


1. A trigger procedure for a restraint system for protection of the occupants in a vehicle, comprising the steps of: continuously implementing short-time spectral analyses of at least one acceleration component of the vehicle structure; calculating, from several spectral components, at least one trigger parameter which is characteristic for the deformation of said vehicle structure and which corresponds to at least one ratio of several of the spectral components; comparing the calculated trigger parameters with one or more preset threshold values; and, triggering said restraint system when the comparison result is indicative of a collision.

5,379,222

SYSTEM FOR CONTROLLING THE RUNNING STATE
OF A VEHICLE IN ACCORDANCE WITH A STEERING
ANGLE

Yoshiaki Anan; Tetsuhiro Yamashita, and Mitsuru Nagaoka, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 19, 1991, Ser. No. 794,518
Claims priority, application Japan, Nov. 30, 1990, 2-340058
Int. Cl.⁶ G06F 15/02; B60T 8/32; B60G 17/02
U.S. Cl. 364-426.03 8 Claims



1. A running state control system for a vehicle having running state control means for controlling running state of the vehicle, in which control target quantities for controlling the running state are set different according to a control steering angle, said running state control system comprising:

steering angle detecting means for detecting an actual steering angle;

steering angle changing means for changing the control steering angle from the actual steering angle detected by said steering angle detecting means to a filtered steering angle a decrease of which lags behind a decrease of the actual steering angle; and

steering angle decrease judging means for judging that the actual steering angle is decreasing when the absolute value of the present actual steering angle detecting by said steering angle detecting means is smaller than the previous output value of said steering angle changing means,

wherein said steering angle changing means changes the control steering angle from the actual steering angle to the filtered steering angle when said steering angle decrease judging means judges the decrease of the actual steering angle.

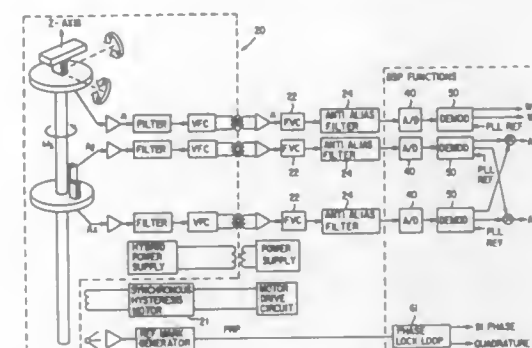
5,379,223
INERTIAL MEASUREMENT AND NAVIGATION
SYSTEM USING DIGITAL SIGNAL PROCESSING
TECHNIQUES

Mark D. Asplund, Olathe, Kans., assignor to Allied Signal Inc.,
Morris Township, Morris County, N.J.
Filed Jun. 19, 1992, Ser. No. 901,046
Int. Cl.⁶ G01C 19/00; G06G 7/78
U.S. Cl. 364—434 3 Claims

3. A navigation system comprising:
a multisensor providing a reference pulse output and acceleration and rate information outputs;
an analog to digital converter for receiving the acceleration and rate information from said multisensor;
a digital signal processing demodulator responsive to the outputs from said analog to digital converter;
a phased locked loop responsive to the phase reference pulse from said multisensor and providing reference signals for use by said digital signal processing demodulator and including a Hilbert transform phase detector which receives the reference pulse output and feeds a loop filter having an output which is fed to a digital controlled oscillator whose output is fed back to said Hilbert transform

phase detector and is the reference signals used by said digital signal processing demodulator; and,

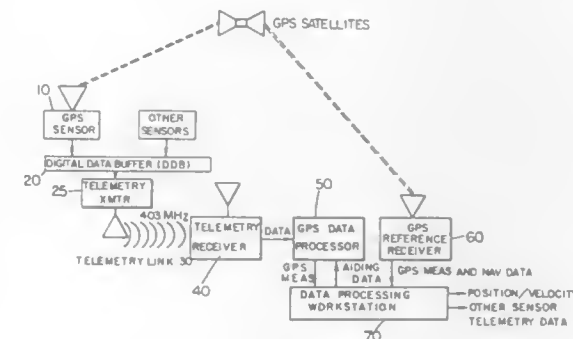
which said raw satellite signals were sampled by said sensor means.



processor means connected to receive the output from said digital signal processing demodulator for computing the direction cosine matrix and displaying pitch, roll and heading information.

5,379,224
GPS TRACKING SYSTEM
Alison K. Brown, Monument, Colo., and Mark A. Sturza, Wood-
land Hills, Calif., assignors to NAVSYS Corporation, Colo-
rado Springs, Colo.

U.S. Cl. 364-449

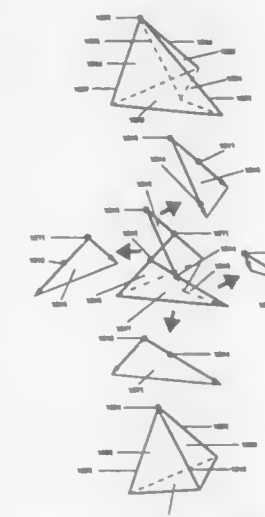


1. A tracking system employing global positioning system (GPS) satellites for determining the position of one or more objects to be tracked, the tracking system comprising:

sensor means, mounted on each object, for receiving signals provided by a plurality of visible GPS satellites and for recording and buffering sensor data, comprising raw satellite signals that are periodically sampled over a predetermined time window;

workstation means for receiving and storing said sensor data, for processing said sensor data to compute pseudo-range and delta-range data for periodically computing, from said pseudo-range and delta-range data, position and velocity information relative to the one or more objects, and for displaying the computed position and velocity information to an operator at a central location, said workstation means further comprising a GPS reference receiver for providing aiding data to facilitate searching, acquiring, and tracking said raw satellite signals received by said sensor means; and

a data telemetry link coupling said sensor means and said workstation means, for transferring the recorded and buffered sensor data from said sensor means to said workstation means at a transfer rate that is lower than a rate at



1. In a system for simulating the changes to the topography of a work piece during the manufacturing process, said work piece including one or more material layers, each layer represented by a material solid, a method for determining movement of vertex points of said material solid as a result of a manufacturing process step, said method comprising the steps of:

- a) identifying a first plane, a second plane and a third plane that approximate all the planes that are adjacent to a vertex point to be moved;
- b) constructing a first observation vector;
- c) creating a set of advanced virtual planes, including the following steps,
 - creating a first virtual plane between said first plane and said second plane,
 - creating a plurality of second virtual planes between said first virtual plane and said third plane,
 - advancing said plurality of second virtual planes,
 - identifying one of said plurality of advanced second virtual planes that intersects said observation vector at a furthest point, storing said identified one of said of said plurality of advanced second virtual planes in said set of advanced virtual planes;
- d) constructing a second observation vector;
- e) identifying a furthest intersection point of one of said planes in said set of advanced planes and said second observation vector; and
- f) moving said vertex point to said furthest intersection point identified in step e).

5,379,226

SEWING DATA FORMING DEVICE FOR SEWING MACHINING

Katsunori Shigeta, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

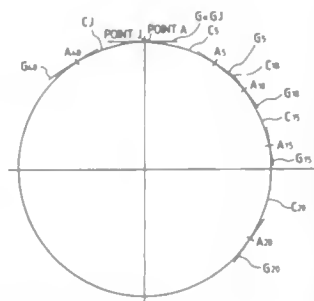
Filed Mar. 26, 1992, Ser. No. 857,955

Claims priority, application Japan, Mar. 29, 1991, 3-066539

Int. Cl.⁶ G06F 15/46; D05B 21/00

U.S. Cl. 364-470

5 Claims



1. A sewing data forming device for a sewing machine comprising: data input means for inputting coordinate data of a plurality of points along a sewing pattern, said data input means designating an input condition among point input, linear input and curve input;

data storage means for storing data inputted by said data input means successively; and

data processing means for applying inclination data to each of said coordinate data so as to form the sewing data between the points adjacent to each other according to a stitch length specified for an interval therebetween;

wherein the input coordinate data of an (N-1)th point, N-th point and (N+1)th point are subjected to arithmetic operation, to apply inclination data representing an inclination to the input coordinate data of the N-th point; wherein the inclination data of the N-th point is obtained by an average of the inclination of a straight line bridging the (N-1)th and N-th points and the inclination of a straight line bridging the N-th and (N+1)th points.

5,379,227

METHOD FOR AIDING SHEET METAL FORMING TOOLING DESIGN

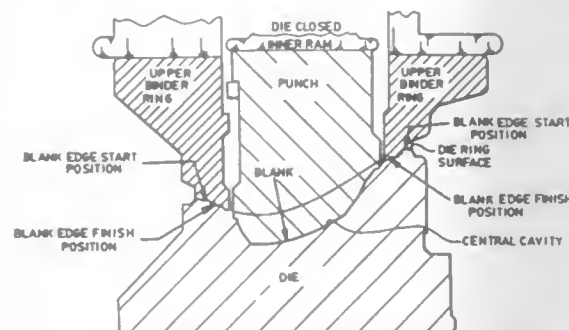
Sing C. Tang, Plymouth, and James C. Carnes, Willis, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1992, Ser. No. 994,014

Int. Cl.⁶ G06F 15/46; B21D 5/02

U.S. Cl. 364-472

18 Claims



9. A system for aiding sheet metal forming tool design, for use with forming tools including a draw die, punch and binder having surfaces designed to form the sheet metal into a part, the sheet metal being represented as a mesh including a plurality of nodes and associated elements, the system comprising:

input means for entering data representing the sheet metal mesh;

means for storing the entered data and a predetermined instruction set; and

a processor in communication with the input means and the means for storing, wherein the processor is operative to numerically determine the sheet metal mesh nodes contacting the punch and die tool surfaces due to the punch advancing to form the part and applying a position displacement increment to the nodes,

to determine a stress state at at least one sampling point associated with the elements, so as to determine whether the stress state is unloading based on an incremental deformation theory of plasticity, and

to determine for each unloading sampling point when the sampling point should change from a plastic state to an elastic state, so as to enhance convergence of a numerical solution for the displacement increment to an equilibrium value.

5,379,228

HEAT TREATMENT METHOD

Naoko Matsuda, and Hiroyuki Naka, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

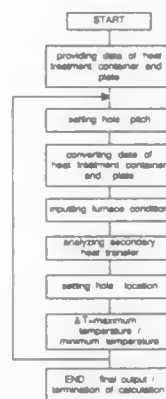
Filed Oct. 8, 1992, Ser. No. 957,790

Claims priority, application Japan, Oct. 8, 1991, 3-260003

Int. Cl.⁶ G06F 15/46

U.S. Cl. 364-477

1 Claim



1. A plate sintering method including using a heat transfer analysis of a heat treatment container using a cover having a hole pitch and a hole location for quantitatively determining a cover shape for realizing equal-heat heating, the cover having a single hole or a plurality of holes each uniform in diameter or having a single aperture or a plurality of apertures which have uniform opening in portion areas, and the cover being positioned in a normal direction of the above described plate, parallel to the heat source for generating radiant thermal rays with respect to the heat treatment container with a thin plate shaped plate being accommodated in it; the values being calculated by the following equations:

$$T_{ij}^{*+\Delta\tau} = \frac{\lambda h \Delta t}{C \gamma \delta_1 \delta_2} \left\{ \frac{\delta_2}{\delta_1} (T_{i+1,j}^* - 2T_{i,j}^*) + \frac{\delta_2}{\delta_1} (T_{i,j+1}^* + T_{i,j-1}^* - 2T_{i,j}^*) + \frac{q}{\lambda h} \right\} T_{i,j}^*$$

$$\lambda = \lambda_a + \lambda_b \frac{h_b}{h_a} + \lambda_c \frac{h_c}{h_a} + \lambda_d \frac{h_d}{h_a}$$

$$C\gamma = C_a\gamma_a + \frac{C_b\gamma_b}{C_a\gamma_a} h_b + \frac{C_c\gamma_c}{C_a\gamma_a} h_c + \frac{C_d\gamma_d}{C_a\gamma_a} h_d$$

$$q(\tau) = \alpha \delta_1 \delta_2 (T_{air} - T_{ij}) -$$

$$R(i,j)C\sigma \frac{\delta_1 \delta_2 \left\{ \left(\frac{T_{ij}^* + 273}{100} \right) - \left(\frac{T_w + 273}{100} \right) \right\}}{\frac{1}{\epsilon_1} + \frac{1}{\epsilon_2} - 1}$$

wherein C is a specific heat of a medium λ is a heat conduction of the medium, γ is a density of the medium δ_1 and δ_2 are respectively different grid internals in the x and y directions, h is the heat treatment container thickness, suffixes a through d respectively refer to a boat, an intermediate plate, the thin plate and the cover, q is the thermal amount of flow in a z direction, α is a heat transfer ratio, T_w is a radiant light source temperature, $C\sigma$ is the Stefan-Boltzmann's constant, ϵ_1 and ϵ_2 are radiant ratios of the heat treatment container and the light source, $R(i,j)$ is an open air ratio between the hole diameter area and region areas δ_1 and δ_2 represented by the difference grid.

5,379,229

AUTOMATED STORAGE AND RETRIEVAL SYSTEM

Donald F. Parsons, West Chester; Kyle Gress, Denver; James M. Dempsey, Phoenixville; Joseph Ross, Downingtown; William Parsons, Boothwyn, and Stephen Parsons, Devon, all of Pa., assignors to Communications Test Design, Inc., West Chester, Pa.

Filed Jun. 18, 1992, Ser. No. 900,964

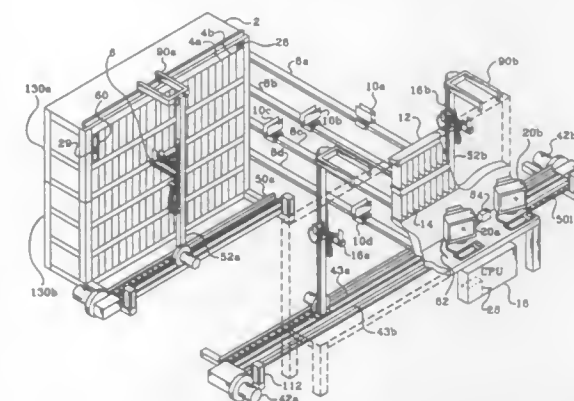
Int. Cl.⁶ G06F 15/46; B65G 1/00

U.S. Cl. 364-478

17 Claims

MICROFICHE APPENDIX INCLUDED

(5 Microfiche, 239 Pages)



1. An automated system for storing and retrieving objects which are assigned to object categories, the system comprising:

a plurality of storage rack assemblies, each storage rack assembly having a plurality of slots sized for storing said objects;

means for generating storage operation requests and retrieval operation requests;

control means responsive to said storage operation requests and retrieval operation requests for generating first, second, third and fourth control signals;

a plurality of independently movable storage transports, each storage adjacent a respective one storage rack assembly in response to said first control signals for transferring an object to any one of said plurality of slots in that respective storage rack assembly and movable in response to said second control signals for retrieving an object from any

one of said plurality of slots in that respective storage rack assembly, each storage transport including object handling means for receiving, holding and delivering one of said objects, said plurality of storage transports storing said objects in their respective storage rack assemblies; a plurality of independently movable runner transports which deliver objects to said plurality of storage transports in response to said third control signals and receive objects from said plurality of storage transports in response to said fourth control signals, each of said runner transports including means for holding one of said objects, wherein:

a first one of the runner transports provides an object to a first one of the storage transports during a first storage operation and receives an object from a second one of the storage transports during a first retrieval operation, and a second one of the runner transports provides an object to the second storage transport during a second storage operation and receives an object from the first storage transport during a second retrieval operation.

5,379,230

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING SEMICONDUCTOR OUTPUT DEVICE DRIVING EXTERNAL LOAD AND MICROPROCESSOR UNIT

Masatoshi Morikawa, Hachioji; Isao Yoshida, Tokyo; Terumi Sawase, Hannou; Kouzou Sakamoto, Hachioji, and Takeaki Okabe, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 785,808, Oct. 31, 1991, abandoned.

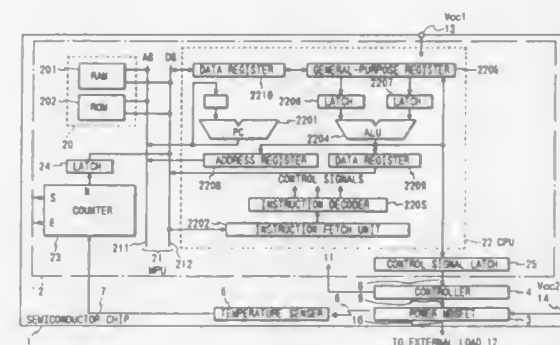
This application Apr. 25, 1994, Ser. No. 232,402

Claims priority, application Japan, Nov. 2, 1990, 2-295320

Int. Cl.⁶ G01K 7/00; H03K 17/12

U.S. Cl. 364-483

4 Claims



1. A semiconductor integrated circuit chip comprising: a semiconductor output device driving an external load; a sensor for sensing heat generated by said semiconductor output device, and a microprocessor unit including at least a memory, a counter and a CPU, wherein said semiconductor output device is a power MOSFET, wherein said sensor is a ring oscillator generating an oscillation signal, and oscillation frequency of which is dependent on said heat generated by said power MOSFET, wherein said oscillation signal of said ring counter is counted by said counter, wherein digital count data of said counter based on said oscillation signal of said ring oscillator is compared with a plurality of comparison levels by said CPU in accordance with a stored program of said memory, and wherein driveability of said power MOSFET is set at a selected one of a plurality of driveability levels corresponding to said plurality of comparison levels in accordance with a result of comparison of said digital count data with said plurality of comparison levels.

5,379,231

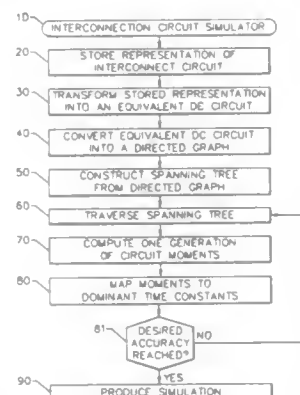
METHOD AND APPARATUS FOR SIMULATING A MICROELECTRIC INTERCONNECT CIRCUIT

Lawrence T. Pillage; Curtis L. Ratzlaff, and Nanda Gopal, all of Austin, Tex., assignors to University of Texas System, Austin, Tex.

Filed May 29, 1992, Ser. No. 891,649
Int. Cl.⁶ G06F 15/60

U.S. Cl. 364—488

60 Claims



1. A method for simulating behavior of a microelectronic circuit, comprising the steps of:
storing a representation of said microelectronic circuit in a computer;
transforming the stored representation of said microelectronic circuit into an equivalent DC circuit containing resistive and capacitive elements;
converting said equivalent DC circuit for said microelectronic circuit into a directed graph having a spanning tree;
traversing said spanning tree of said directed graph to obtain unshifted moments of said microelectronic circuit including resistive and capacitive elements;
shifting said unshifted moments to obtain shifted moments;
determining poles of said microelectronic circuit from said shifted moments;
determining residues from said unshifted moments and the poles; and
producing a time domain simulation of the behavior of said microelectronic circuit from the poles and residues.

5,379,232

LOGIC SIMULATOR

Michio Komoda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,614

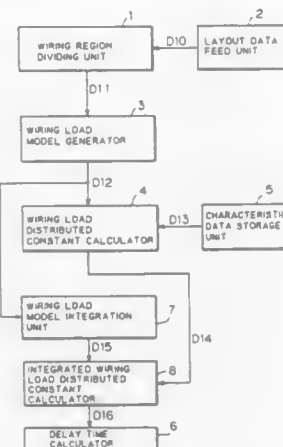
Claims priority, application Japan, Aug. 22, 1991, 3-210584
Int. Cl.⁶ G06F 15/60

U.S. Cl. 364—489

10 Claims

1. A logic simulator which functions to determine characteristic data of a wiring load of a logic circuit formed by a predetermined layout pattern, comprising:
layout pattern data feed means for feeding a layout pattern data specifying the layout pattern of said logic circuit;
wiring characteristic data storage means for storing characteristic parameters which are said characteristic data per unit length in corresponding relation to a plurality of types of wiring load models classified by a characteristic of a parasitic element incidental to a wiring;
wiring load model setting means for setting said wiring load models specified by the characteristic of the parasitic element incidental to said wiring on said wiring between elements of said logic circuit as a function of said layout pattern data to output a wiring load model circuit data; and
characteristic data calculation means receiving from said characteristic data storage means said characteristic pa-

rameters corresponding to said wiring load models of said wiring load model circuit data for calculating said characteristic data of said wiring load models as a function of said characteristic parameters and wiring lengths of said wiring load models to output a calculated characteristic data wiring load model circuit data;
wherein said parasitic element incidental to said wiring is an inter-wiring parasitic element generated between said wiring and another adjacent wiring which is not directly connected to said wiring; and
said wiring load model setting means includes:



wiring region dividing means for dividing said wiring between the elements of said logic circuit into divided wiring regions in accordance with the characteristic of said inter-wiring parasitic element generated between said wiring and said adjacent wiring which is not directly connected to said wiring as a function of said layout pattern data; and
wiring load model generation means for providing said wiring load models specified by the characteristic of said inter-wiring parasitic element respectively for said divided wiring regions of said wiring to output said wiring load model circuit data.

5,379,233

METHOD AND STRUCTURE FOR IMPROVING PATTERNING DESIGN FOR PROCESSING

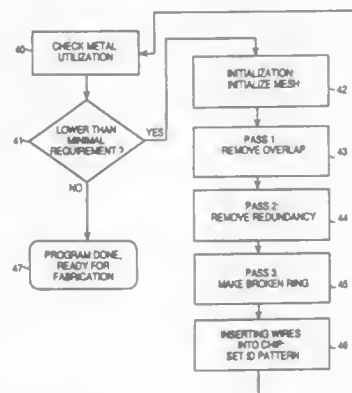
Prabhakar P. Tripathi, San Jose; Bruce Whitefield, Menlo Park, and Chi-Hung Wang, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 19, 1991, Ser. No. 732,843

Int. Cl.⁶ G06F 15/60

U.S. Cl. 364—491

13 Claims



1. A circuit chip comprising:

5,379,235

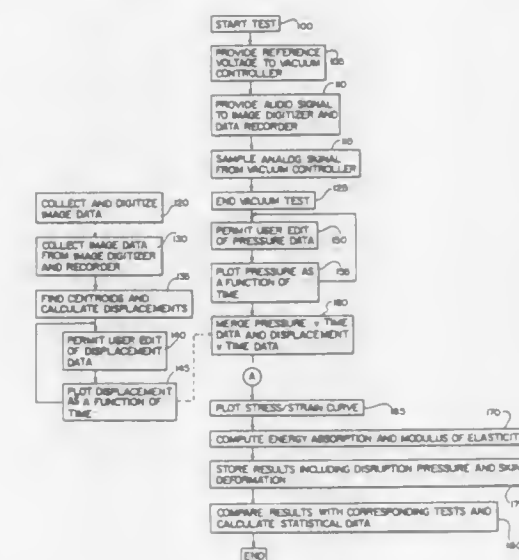
SYSTEM AND METHOD FOR THE MEASUREMENT OF MECHANICAL PROPERTIES OF ELASTIC MATERIALS

Jack Fisher, 5884 Fredricksburg Dr., Nashville, Tenn. 37215; G. Patrick Maxwell, 4416 Gerald Pl., Nashville, Tenn. 37205, and Larry Perry, 3333 Country Ridge Dr., Antioch, Tenn. 37013

Continuation of Ser. No. 64,334, May 19, 1993, Pat. No. 5,278,776, which is a continuation of Ser. No. 703,398, May 21, 1991, abandoned. This application Jan. 5, 1994, Ser. No. 177,430 The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.⁶ G06F 15/00; A61B 5/103
U.S. Cl. 364—508

18 Claims



13. A method of measuring the mechanical properties of an elastic material, comprising the steps of:
a) marking such material with indicia facilitating tracking of any expansion of such material during application of a force to such material;
b) applying an increasing force over time to an area of such material having such indicia to cause such material to expand over time;
c) measuring the force applied to such area as a function of time;
d) obtaining a sequence of views of such area over time;
e) generating a digital representation of each of such views; and
f) determining a strain value from each of such digital representation and correlating each such strain value with a force measurement corresponding to the same point in time to provide a stress-strain relationship.

5,379,236

MOVING OBJECT TRACKING METHOD

Makoto Yamamoto, Tokyo, Japan, assignor to Yozan Inc., Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,846

Claims priority, application Japan, May 23, 1991, 3-147832
Int. Cl.⁶ G06F 15/00

U.S. Cl. 364—516

4 Claims

1. A method for determining whether a moving object is accelerating or decelerating comprising the steps of:
i) sequentially inputting images of a predetermined area,
ii) extracting a moving object from said images based on the differences in said images,
iii) for each said image, calculating a representative point of each moving object and the expected range of the representative point for that object in a subsequent image,

a semiconductor wafer;
a working line formed on said semiconductor wafer for electrically connecting circuit elements thereon;
one or more floating lines that are formed on said semiconductor wafer and positioned adjacent said working line; wherein said one or more floating lines and said working line together have a surface area of metallization at least equal to a predetermined amount.

5,379,234

COMPUTER-AIDED CHEMICAL ILLUSTRATION SYSTEM

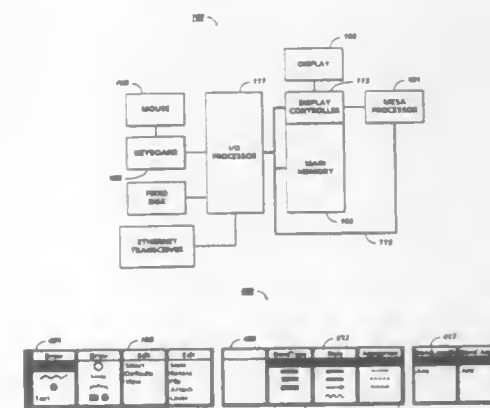
James S. Wilson, Long Beach; William R. Mullgren; Janina M. Donaldson, both of Portola Valley, all of Calif.; Samuel Kaplan, Walworth, and John S. Faci, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 498,566, Mar. 23, 1990, Pat. No. 5,249,137. This application Apr. 30, 1993, Ser. No. 56,709

Int. Cl.⁶ G06F 15/20

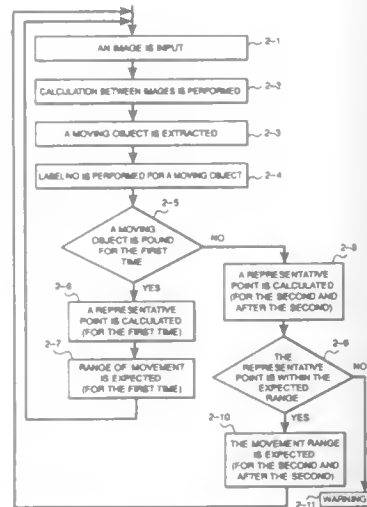
U.S. Cl. 364—496

15 Claims



1. A computer-aided chemical illustrating method for ring detection, which comprises the steps of:
selecting an object;
determining a size for said object;
determining a type for said object;
checking said size;
checking said type;
determining a form for said object;
checking said form for a plurality of bonds;
determining a bond count from said bonds;
ordering said bonds into a ring array;
checking whether said ring array forms a closed ring;
checking whether said ring array forms a double ring;
adjusting said ring array so that a bond of said ring array that is closest to 185 is positioned first;
defining a ring style;
creating a plurality of ring style arrays, each specifying one ring style;
creating a ring style table to index said plurality of ring style arrays;
matching said ring array with said ring style table, thereby specifying one ring style;
matching said ring array with said one ring style;
rotating said ring array if ring array does not match with one ring style;
repeating said ring style matching step and rotating step until ring array matches one ring style,
or said ring style is exhausted; and
accepting a ring style which matches said ring array, or accepting a last ring style if ring array does not match to ring style.

- iv) for each said moving object, determining that said moving object is accelerating or decelerating when the loca-



tion of the representative point for the object is outside of the expected range in said subsequent image.

5,379,237

AUTOMATED SYSTEM FOR CONTROLLING THE QUALITY OF REGULARLY-SHAPED PRODUCTS DURING THEIR MANUFACTURE

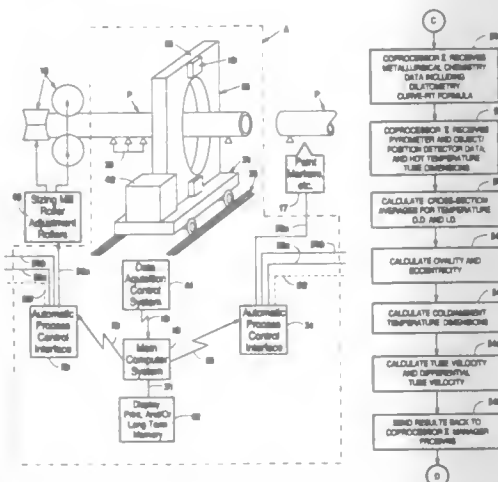
Ira L. Morgan; Robert H. Rice; Joseph E. Bolger, all of Austin, Tex., and Donald G. Schindler, Pittsburgh, Pa., assignors to Integrated Diagnostic Measurement Corporation, Austin, Tex.

Filed May 31, 1990, Ser. No. 531,454

Int. Cl.⁶ G01B 15/00; G05B 13/04

U.S. Cl. 364—578

5 Claims



1. A method for obtaining nondestructive measurements of regularly-shaped objects, comprising:

- scanning an object with a plurality of penetrating radiation sources along a plurality of paths through a cross-section of the object;
- generating signals representative of the radiation attenuation along each of the plurality of paths;
- converting the attenuation signals to signals representative of the density/length of the object along each of the plurality of paths;
- processing the density/length signals to determine, by use of a computer model of the object to be examined, dimen-

sional measurements of the cross-section of the object scanned;

- measuring the temperature at the cross-section of the object as it is being scanned and generating temperature signal representative of the temperature at the scanned cross-section of the object; and
- predicting the dimensional measurements of the scanned cross-section at a desired temperature from the temperature signal and dimensional measurements obtained at the existing temperature of the scanned cross-section using dilatometry data specific to the dimension measured.

5,379,238

SIGNAL PROCESSING METHOD AND APPARATUS

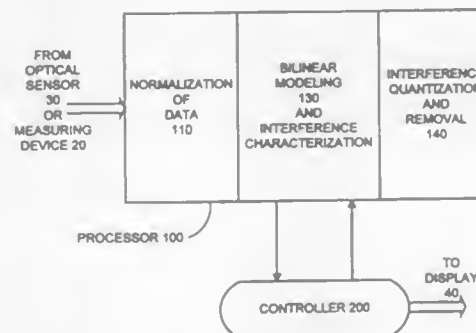
Edward W. Stark, 160 W. End Ave., Suite 3M, New York, N.Y. 10023.

Continuation of Ser. No. 815,640, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 319,450, Mar. 3, 1989, abandoned. This application Jul. 30, 1992, Ser. No. 923,029

Int. Cl.⁶ A61B 5/00; G06G 7/48; G06F 15/42

U.S. Cl. 364—578

2 Claims



1. In a method for determining analyte levels for displaying glucose levels in blood using near infrared techniques including the steps of:

measuring glucose levels of a parameter related to blood using near infra-red optical techniques to provide a set of signals representing spectral data, said spectral data including spectral components resulting from physical properties of an environment in which measurement takes place which components interfere with the measured data; and

processing said spectra-representing signals having said interfering spectral components by:

removing the effect of constant analyte contribution by subtracting signals representing average spectra of replicate groups of said spectral data to form signals representing modified spectra representing variable interference information;

determining signals representing component spectra of said modified spectral signals by bilinear model analysis; determining signals representing the magnitude of each said component spectra contained in each original spectrum and applying these signals representing magnitudes to signals representing component spectra to develop signals representing interference spectra; and

removing said signals representing the resulting interference spectra from said signals representing said original spectra for producing corrected spectral signals representing said spectral data of glucose blood levels with said interference components removed.

5,379,239

WAVEFORM DISPLAY DEVICE

Rintaro Nakatani, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

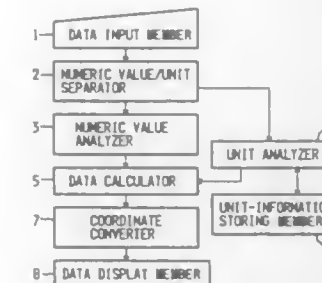
Filed Nov. 27, 1991, Ser. No. 799,834

Claims priority, application Japan, Nov. 28, 1990, 2-331021

Int. Cl.⁶ G06F 7/00

U.S. Cl. 364—715.05

3 Claims



1. A waveform display device comprising:

a data input member for inputting data composed of numerical values and an indication of the measuring units to which the numerical values relate;

a numerical value/unit separator connected to said data input member for separating the data inputted to said data input member into a numerical value portion and a unit portion;

a unit-information storing member for storing unit information including a unit title and conversion information for a unit to be used in a waveform displaying operation;

a unit analyzer connected to said separator and to said unit-information storing member for analyzing the unit portion separated in said separator on the basis of the unit information stored in said unit-information storing member, and outputting the corresponding conversion information for the unit which is to be used in the waveform displaying operation;

a numerical value analyzer connected to said separator for converting the numerical value portion separated in said separator into internal data;

a data calculator connected to said numerical value analyzer and to said unit analyzer for converting the internal data from said numerical value analyzer, using the conversion information from said unit analyzer, into post-conversion internal data in terms of the unit to be used in the waveform displaying operation and outputting the post-conversion internal data;

a coordinate converter connected to said data calculator for converting the post-conversion internal data into corresponding coordinate data; and

a display member connected to said coordinate converter for displaying a waveform in accordance with the coordinate data.

5,379,240

SHIFTER/ROTATOR WITH PRECONDITIONED DATA

Jeffrey S. Byrne, Plano, Tex., assignor to Cyrix Corporation, Richardson, Tex.

Filed Mar. 8, 1993, Ser. No. 27,342

Int. Cl.⁶ G06F 7/38

U.S. Cl. 364—715.08

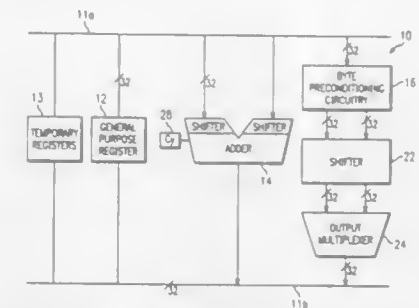
17 Claims

1. In a data processing system that processes words of n bytes where operand size is from one to n bytes, rotation circuitry for rotating the bits of an operand by a number of bits corresponding to a rotation count, said rotating circuitry comprising:

preconditioning circuitry that receives an input operand and generates a preconditioned word responsive to the size of the operand to be rotated;

the preconditioning circuitry including duplication circuitry

that duplicates the operand a predetermined number of times responsive to operand size; and



shifting circuitry, coupled to the preconditioning circuitry, that, in response to the rotation count, shifts the preconditioned word by a selected number of bits.

5,379,241

METHOD AND APPARATUS FOR QUADRATIC INTERPOLATION

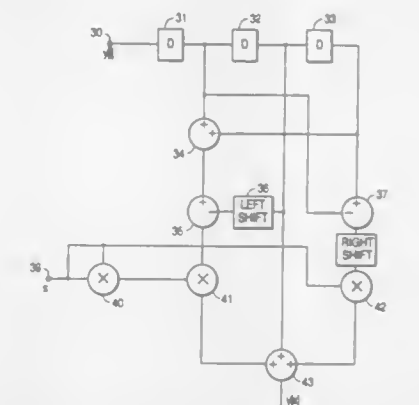
Lance Greggain, Woodbridge, Canada, assignor to Genesis Microchip, Inc., Ontario, Canada

Filed Dec. 23, 1993, Ser. No. 172,065

Int. Cl.⁶ G06F 7/38

U.S. Cl. 364—723

3 Claims



1. A quadratic interpolator for generating an output signal sample $y(x)$ for each one of a plurality of reference values x intermediate three known signal samples $y(-1)$, $y(0)$ and $y(1)$, wherein said three known signal samples are spaced apart a predetermined equal amount, and wherein $y(x)$ is generated for x in a range of one-half said predetermined equal amount on either side of respective ones of said three known signal samples, comprising:

a) means for adding said signal samples $y(-1)$ and $y(1)$ and in response generating a first sum signal sample $y(-1) + y(1)$;

b) means for doubling said signal sample $y(0)$ and in response generating a first doubled signal sample $2y(0)$;

c) means for subtracting said first doubled signal sample $2y(0)$ from said first sum signal sample $y(-1) + y(1)$ and in response generating a first difference signal sample $a = y(-1) + y(1) - 2y(0)$;

d) means for subtracting said signal sample $y(-1)$ from said signal sample $y(1)$ and in response generating a second difference signal $y(1) - y(-1)$;

e) means for halving said second difference signal $y(1) - y(-1)$ and in response generating a first halved signal $b = (y(1) - y(-1))/2$;

f) means for squaring said each one of said plurality of reference values x and in response generating a respective squared reference value x^2 ;

- g) means for multiplying said first difference signal sample a by each said respective squared reference value x^2 and in response generating a respective first product signal sample ax^2 ;
- h) means for multiplying said first halved signal b by said each one of said plurality of reference values x and in response generating a respective second product signal sample bx ; and
- i) means for adding each respective first product signal sample ax^2 and second product signal sample bx and said known signal sample $y(0)$ and in response generating said output signal sample $y(x)$.

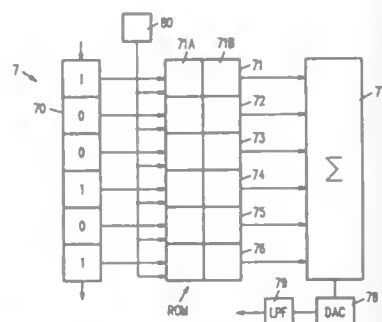
5,379,242 ROM FILTER

Dennis M. Rose, and Daniel E. Fague, both of Sunnyvale, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 1, 1993, Ser. No. 115,491
Int. Cl.⁶ G06F 15/31

U.S. Cl. 364—724.01

19 Claims



1. A ROM filter comprising:

- a register having a plurality of register stages, each of said stages capable of being placed into any one of a plurality of states;
 - a plurality of ROMs, an input of each of said ROMs being connected to an output of one of said register stages, each of said ROMs comprising a plurality of sections, the number of said sections in each of said ROMs being equal to the number of said states of the register stage to which said ROM is connected, each of said sections being programmed to hold data which represent a portion of a pulse response curve;
 - an oversample clock pulse generator connected to each of said ROMs; and
 - an adder, an output of each of said ROMs being connected to an input of said adder;
- wherein said oversample clock pulse generator is adapted to deliver a sequence of oversample clock pulses to each of said ROMs so as to cause the data held in a particular section within each of said ROMs to be delivered in sequence to said adder.

5,379,243 METHOD AND APPARATUS FOR PERFORMING FINITE FIELD DIVISION

Haim Greenberger, Kiryat Tivon, Israel; Yoav Hebron, and Sreenivasa A. Raghavan, both of San Diego, Calif., assignors to Comstream Corporation, San Diego, Calif.

Filed Aug. 31, 1992, Ser. No. 938,109
Int. Cl.⁶ G06F 7/52

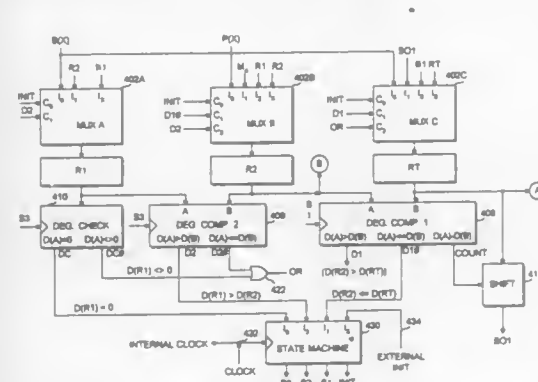
U.S. Cl. 364—746.1

21 Claims

1. A division circuit comprising:

- a first reference memory element, for holding a first reference value;
- a second reference memory element, for holding a second reference value;

- a third reference memory element, for holding a third reference value;
- a first divisor memory element, for holding a first value;
- a second divisor memory element, for holding a second value;
- a third divisor memory element, for holding a third value;
- an initialization circuit which loads a divisor element from a divisor input of the division circuit into said first reference memory element and said third reference memory element, loads a primitive polynomial at a primitive polynomial input of the division circuit into said second reference memory element, loads a dividend element at a dividend input of the division circuit into said first divisor memory element and said third divisor memory element, and loads a zero value into said second divisor memory element, wherein said dividend element and said divisor element are elements of a finite field and are defined by said primitive polynomial;
- a polynomial shifter, coupled to said second and third reference memory elements and said third divisor memory element, for shifting said third reference memory element contents and said third divisor memory element contents by an equal number of degrees until said third reference memory element and said second reference memory element contain polynomials of equal degree, shifting of contents of said third divisor memory element being performed modulo the primitive polynomial;
- a manipulating circuit, coupled to said second and third



reference memory elements, said second and third divisor memory elements, and said polynomial shifter, for loading said second reference memory element with a value equal to a first value subtracted from a second value, said first value being equal to a highest degree coefficient of said second reference value multiplied by said third reference value and said second value being equal to a highest degree coefficient of said third reference value multiplied by said second reference value, and said manipulating circuit for loading said second divisor memory element with a value equal to a third value subtracted from a fourth value, said third value being equal to a highest degree coefficient of said second reference value multiplied by said third divisor value and said fourth value being equal to a highest degree coefficient of said third reference value multiplied by said second divisor value;

swapping means, coupled to said first and second reference memory elements and said first and second divisor memory elements for swapping contents of said first and second reference memory elements when said second reference memory element contains a polynomial of degree less than said first reference value, wherein said swapping means also swaps contents of said first and second divisor memory elements when said first and second reference memory element contents are swapped;

loading means, coupled to said first and third reference memory elements and said first and third divisor memory elements, for loading said first reference value into said third reference memory element, wherein said loading

means loads said first divisor value into said third divisor memory element when said loading means loads said first reference value into said third reference memory element; decision means, coupled to said first reference memory element, for determining if said first reference value is a constant; and

output means, coupled to said decision means and said first divisor memory element, for outputting said first divisor value upon said decision means indicating that said first reference value is a constant, said first divisor value being equal to a quotient element which is an element of said finite field and a quotient of said dividend element divided by said divisor element over said finite field.

5,379,244

SMALL-SIZED, LOW POWER CONSUMPTION MULTIPLICATION PROCESSING DEVICE WITH A ROUNDING RECODING CIRCUIT FOR PERFORMING HIGH SPEED ITERATIVE MULTIPLICATION

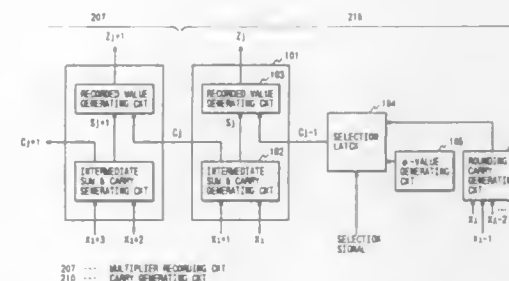
Akira Miyoshi, and Takashi Taniguchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 741,876, Aug. 7, 1991, Pat. No. 5,289,398. This application Sep. 23, 1993, Ser. No. 102,335
Claims priority, application Japan, Aug. 7, 1990, 2-210903

Int. Cl.⁶ G06F 7/52

U.S. Cl. 364—754

15 Claims



1. A multiplication processing device having a first latch for inputting a multiplier, and a partial product generating and adding circuit, the multiplication processing device comprising:

- a carry generating circuit connected to said first latch, said carry generating circuit having selection circuit means for selecting one of a constant number and a variable number and for outputting the number selected thereby, wherein said constant number and said variable number have a same format;
 - a multiplier recoding circuit connected to said first latch, to said carry generating circuit and to said partial product generating and adding circuit, said multiplier recoding circuit having:
- first means for receiving signed digit data, the radix of which is 2, from said first latch and for dividing the received signed digit data into 2-digit sets and for calculating an intermediate sum S_i and an intermediate carry C_i from a value Z_{gi} of an i th set wherein Z_{gi} is given by

$$Z_{gi} = 4 \times C_i + S_i$$

(where i represents natural numbers equal to or greater than a predetermined number L), and calculating a secondary intermediate sum R_i and a secondary intermediate carry B_i corresponding to the i th set given by

$$R_i = S_i + Q_{i-1}$$

and

$$B_i = C_i + Q_i$$

by using a signal Q_i representing the information indicating whether a value at a higher-order digit of the i th set is 1, by inputting a signal Q_{L-1} corresponding to an $(L-1)$ th set from said selection circuit means and by also using another signal Q_{i-1} corresponding to an $(i-1)$ th set; and second means for calculating a recoded value Z_i given by

$$Z_i = C_{i-1} + S_i = B_{i-1} + R_i - 1$$

by using the secondary intermediate sum R_i , by inputting the selected number from said selection circuit means as the secondary intermediate carry B_{L-1} corresponding to the $(L-1)$ th set and using the secondary intermediate carry B_{i-1} corresponding to the $(i-1)$ th set.

5,379,245

DECIMAL MULTIPLYING ASSEMBLY AND MULTIPLY MODULE

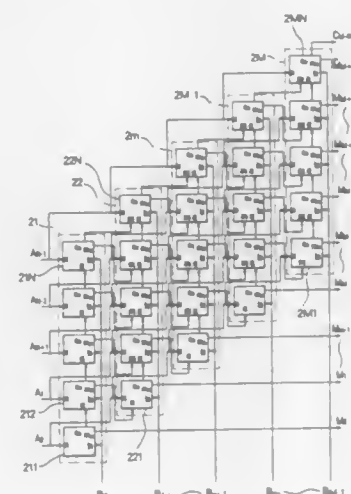
Tsuguo Ueda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 6, 1993, Ser. No. 1,079

Claims priority, application Japan, Jan. 13, 1992, 4-3444
Int. Cl.⁶ G06F 7/52

U.S. Cl. 364—756

15 Claims



13. A multiplying assembly for multiplying first and second operands, each of which is a binary-coded decimal multi-digit number comprising:

- (a) a first multiplication module group disposed for a low-order digit B_0 of said second operand comprising:
 - a first multiplication module including first multiplication table means having first decimal data representing a product of a low-order digit A_0 of said first operand by a low-order digit B_0 of said second operand for each possible digit thereof, first retrieving means for retrieving said first decimal data from said first multiplication table means, and first output means for separately outputting high-order and low-order decimal digits of said first decimal data retrieved by said first retrieving means as first carry and first product components, respectively; and
- a plurality of second multiplication modules each being disposed correspondingly to a respective digit A_n except for said low-order digit A_0 of said first operand and each of said modules including second multiplication table means having second decimal data representing a sum of a product of said respective digit A_n of said first operand by said low-order digit B_0 of said second operand and a first input carry, second retrieving means for retrieving said second decimal data from said second

multiplication table means and second output means for outputting separately high-order and low-order decimal digits of said second decimal data retrieved by said second retrieving means as second carry and second product components, respectively;

- (b) a plurality of second multiplication module groups each being disposed for a respective digit B_m except for said low-order digit B_0 of said second operand comprising;
- a third multiplication module including third multiplication table means having third decimal data representing a sum of a product of said low-order digit A_0 of said first operand by said respective digit B_m of said second operand and said second input carry for each possible digit thereof, third retrieving means for retrieving said third decimal data from said third multiplication table means, and third output means for separately outputting high-order and low-order decimal digits of said third decimal data retrieved by said third retrieving means as third carry and third product components, respectively; and

- a plurality of fourth multiplication modules each being disposed for another respective digit A_m except said low-order digit A_0 of said first operand and each including fourth multiplication table means having fourth decimal data representing a sum of a product of said another respective digit A_m of said first operand by said respective digit B_m of said second operand and a third input carry and said fourth input carry for each possible digit thereof, fourth retrieving means for retrieving said fourth decimal data from said fourth multiplication table means, and fourth output means for separately outputting high-order and low-order decimal digits said fourth decimal data retrieved by said fourth retrieving means as fourth carry and fourth product components, respectively;

- (c) said multiply modules being cascaded in each of said multiplication module groups so that said carry component is transferred between two modules corresponding to adjacent order digits of the first operand disposed in the same module group; and said multiplication module groups being cascaded to each other so that each of said product components except said product component from said first or third module and said carry component from said module of a high-order digit A_{n-1} are transferred between two of said module groups corresponding to adjacent order digits of said second operands for generating a final output product of said first operand by said second operand.

5,379,246

SEMICONDUCTOR MEMORY DEVICE HAVING LOOP CONFIGURATION

Kazutaka Nogami, Palo Alto, Calif., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

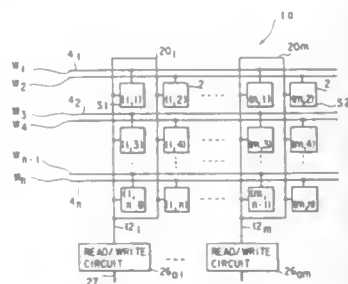
Filed Sep. 20, 1993, Ser. No. 123,224

Claims priority, application Japan, Sep. 21, 1992, 4-251393

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—51

18 Claims



1. A semiconductor memory device comprising:

- a plurality of memory cells each specified by selecting one of rows and one of columns;
- a plurality of word lines to each of which said memory cells associated with selected one of the rows are connected in a branch form; and
- a plurality of bit lines to each of which said memory cells associated with selected one of the columns are connected in a branch form;
- wherein wiring of said bit lines constitutes part of at least one closed circuit.

5,379,247

SEMICONDUCTOR MEMORY DEVICE INCLUDING MEMORY CELLS CONNECTED TO A GROUND LINE

Hirofada Kuriyama, and Yoshio Kohno, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

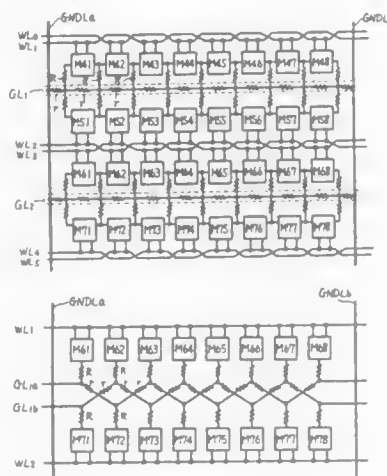
Filed Sep. 27, 1993, Ser. No. 126,765

Claims priority, application Japan, Sep. 28, 1992, 4-257840

Int. Cl.⁶ G11C 5/06

U.S. Cl. 365—63

18 Claims



1. A semiconductor memory device, comprising:
- a semiconductor substrate;
- a memory cell array including a plurality of memory cells disposed in rows and columns on said substrate, each said memory cell including a field effect transistor on said substrate and being bounded by first and second ground lines in the column direction;
- a third ground line formed on the substrate in the row direction and connected to said memory cells; and
- a word line formed on said substrate in the row direction and connected to said memory cells,
- plural pairs of successive memory cells connected to said word line being positioned alternately in neighboring rows.

5,379,248

SEMICONDUCTOR MEMORY DEVICE

Tomohisa Wada; Kenji Anami, and Shuji Murakami, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 725,782, Jul. 9, 1991, Pat. No. 5,280,441.

This application Jan. 13, 1994, Ser. No. 181,524

Claims priority, application Japan, Jul. 10, 1990, 2-183572; Jun. 15, 1991, 3-143707

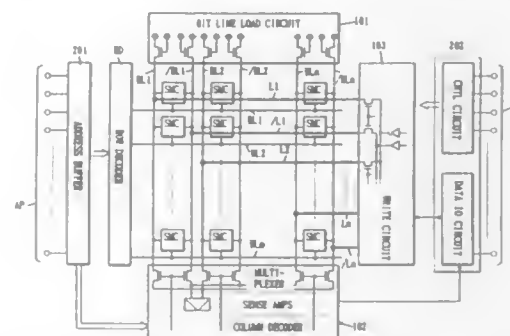
Int. Cl.⁶ G11C 5/06

U.S. Cl. 365—63

25 Claims

1. A semiconductor memory device comprising:
- a plurality of first bit lines arranged in a first direction, each

- of said plurality of first bit lines being connected to a plurality of memory cells;
- a plurality of second bit lines respectively provided corresponding to said plurality of first bit lines and arranged in a second direction perpendicular to said first direction, said plurality of second bit lines being connected to respective said first bit lines through common connection nodes;



- bit line charging means which is provided on at least one end side of said plurality of first bit lines, for precharging said first bit lines and said second bit lines to a predetermined potential; and

- read out means which is arranged on at least one end side of said plurality of second bit lines, for receiving data from said memory cells through said first bit lines and said second bit lines, and for outputting the data.

5,379,249

UPROM PROGRAMMING PROTECT CIRCUIT

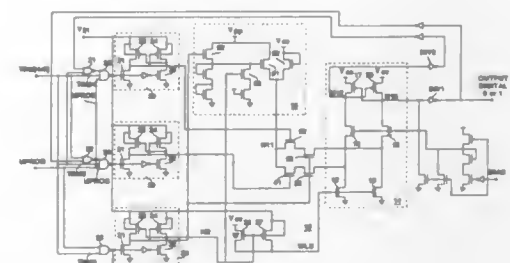
Joseph H. Salmon, Placerville, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 940,545, Sep. 4, 1992, abandoned. This application May 25, 1994, Ser. No. 249,055

Int. Cl.⁶ G11C 17/00

U.S. Cl. 365—104

3 Claims



1. A UPROM circuit comprising:
- a pair of UPROM devices arranged to provide a first output level when one of the pair of UPROM devices is programmed and a second output level when another of the UPROM devices is programmed;
- circuitry for selectively providing programming voltages to each of the UPROM devices; and
- circuitry for sensing a condition of the UPROM devices to disable the circuitry for selectively providing programming voltages to each of the UPROM devices whenever one of the UPROM devices is programmed, wherein the circuitry for sensing a condition of the UPROM devices comprises:

- first and second switching circuits, each of the switching circuits being connected to disable a portion of the circuitry for selectively providing programming voltages to each of the UPROM devices; and
- circuitry for activating the first switching circuit when one of the UPROM devices is programmed and the second

- switching circuit when another of the UPROM devices is programmed.

5,379,250

ZENER PROGRAMMABLE READ ONLY MEMORY

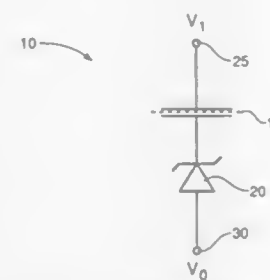
Steven T. Harshfield, Emmett, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Aug. 20, 1993, Ser. No. 110,026

Int. Cl.⁶ G11C 17/06; H01L 29/90

U.S. Cl. 365—105

15 Claims



1. An integrated circuit comprising:
- a. a programmable memory cell comprising:
- (1) a diode for conducting a reverse current when reverse biased and for conducting a forward current when forward biased; and
- (2) an antifuse coupled in series with the diode, the antifuse being programmed by the reverse current; and
- b. reading means coupled to the cell, the reading means in operation forward biasing the diode so that operation of the integrated circuit is responsive to a portion of the forward current flowing through the antifuse.

5,379,251

METHOD AND APPARATUS FOR STATIC RAM

Minoru Takeda, and Michio Negishi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

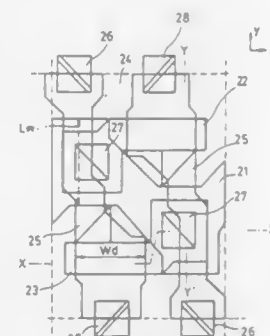
Filed May 13, 1993, Ser. No. 60,544

Claims priority, application Japan, May 15, 1992, 4-148437; Jul. 30, 1992, 4-223392

Int. Cl.⁶ G11C 11/34; H01L 27/01

U.S. Cl. 365—174

5 Claims



1. An SRAM memory cell structure in which a word line is disposed near the center of a cell and each one of driver transistors is disposed on both sides thereof substantially in parallel with each other, wherein
- a contact portion for a gate electrode of said driver transistor is formed being laminated on a word transistor formed together with said word line.

5,379,252

MEMORY DEVICE

Makoto Yamamoto, Tokyo, Japan, assignor to Yozen Inc., Tokyo, Japan

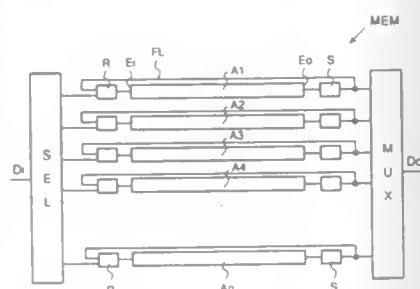
Filed Apr. 6, 1993, Ser. No. 43,540

Claims priority, application Japan, Apr. 7, 1992, 4-113956

Int. Cl.⁶ G11C 11/34; H01L 29/68

U.S. Cl. 365—183

4 Claims



2. A two-dimensional memory device comprising:
a plurality of CCD arrays operating independently from each other and arranged in parallel, wherein each of said CCD arrays is composed of a plurality of CCD's arranged linearly;
means for selecting and inputting data into a selected one of said plurality of CCD arrays;
means for propagating data through each of said plurality of CCD arrays; and
means for selecting and outputting data from a selected one of said plurality of CCD arrays.

5,379,253

HIGH DENSITY EPROM CELL ARRAY WITH NOVEL PROGRAMMING SCHEME AND METHOD OF MANUFACTURE

Albert Bergemont, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

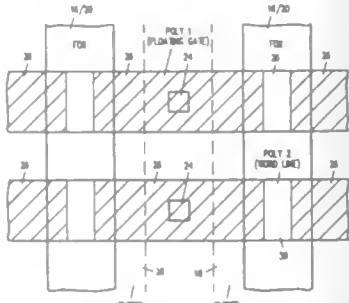
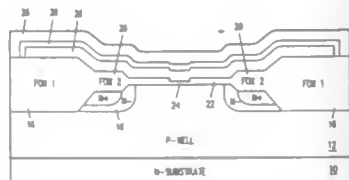
Filed Jun. 1, 1992, Ser. No. 891,705

The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.

Int. Cl.⁶ H01L 29/68

U.S. Cl. 365—185

18 Claims



1. A method of fabricating an electrically-erasable programmable read only memory (EEPROM) cell in semiconductor material of P-type conductivity, wherein the P-type semiconductor material is a well of P-type conductivity formed in a

silicon substrate of N-type conductivity, the method comprising:

forming first and second spaced-apart first field oxide (FOX1) regions in the P-type semiconductor material to define a P-type active device region therebetween;
forming first and second spaced-apart bit lines of N-type conductivity in the P-type semiconductor material adjacent to the first and second FOX1 regions, respectively, such that the first and second bit lines define a P-type channel region therebetween;
forming first and second spaced-apart second field oxide (FOX2) regions adjacent to the first and second FOX1 regions, respectively, and overlying the first and second bit lines, respectively;
forming a layer of gate dielectric material on the P-type semiconductor material between the first and second FOX2 regions;
defining a window of tunnel dielectric material in the gate dielectric material over the P-type semiconductor material such that the thickness of the tunnel dielectric material is less than the thickness of the gate dielectric material;
forming a layer of first conductive material over the gate dielectric material, and extending into the tunnel window over the tunnel dielectric material, to define a floating gate of the EEPROM cell;
forming a layer of intermediate dielectric material over the floating gate; and
forming a layer of second conductive material over the layer of intermediate dielectric material to define a control gate of the EEPROM cell.

5,379,254

ASYMMETRICAL ALTERNATE METAL VIRTUAL GROUND EPROM ARRAY

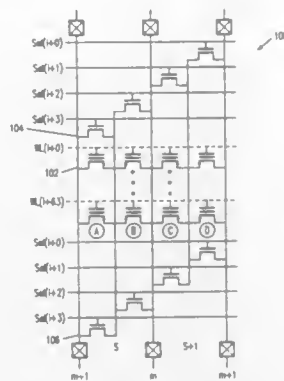
Ming-Bing Chang, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 20, 1992, Ser. No. 963,985

Int. Cl.⁶ G11C 5/06

U.S. Cl. 365—185

4 Claims



1. A method of programming a selected EPROM cell in an asymmetrical alternate metal virtual ground (AAMG) EPROM array that includes a plurality of EPROM cells wherein the AAMG EPROM array includes a layer of first insulating material formed on the silicon substrate p-type conductivity, a plurality of spaced-apart, parallel strips of second insulating material and underlying first conductive material formed on the first insulating material, the first conductive material defining floating gates of the EPROM cells, a plurality of bit lines formed in the silicon substrate between the parallel strips of second insulating material and underlying first conductive material to define substrate channel regions therebetween, alternate bit lines having different dopant diffusion characteristics so as to define alternating source and drain bit lines such that each EPROM cell has asymmetrical source and drain regions and a plurality of spaced-apart parallel word lines

5,379,256

ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY WITH WRITE/VERIFY CONTROLLER

Tomoharu Tanaka, Yokohama; Yoshiyuki Tanaka, Tokyo; Kazunori Ohuchi, Yokohama; Masaki Momodomi, Yokohama; Yoshihisa Iwata, Yokohama; Koji Sakui, Tokyo; Shinji Saito, Yokohama, and Hideki Sumihara, Oita, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 834,200, Feb. 12, 1992, abandoned.

This application Apr. 5, 1994, Ser. No. 223,307

Claims priority, application Japan, Feb. 19, 1991, 3-024769; Mar. 29, 1991, 3-091469

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—185

20 Claims

of second conductive material formed perpendicular to the strips of second insulating material and underlying first conductive material such that the word lines are separated from the floating gates by the second insulating material, and wherein the drain bit lines are contacted by contact conductive material while non-contacted source bit lines are segmented into a length sufficient to form the source region for a preselected plurality of EPROM cells, and the source bit lines are connectable to ground via select transistors thereby defining the AAMG array, the programming method comprising:

maintaining the word line of the selected cell at a programming voltage level;
maintaining the select lines connected to the gates of the select transistors that are connected to the source bit line of the selected cell and to the drain bit line of the selected cell at the programming voltage while maintaining remaining select lines at ground; and
maintaining the drain bit line and the source bit line of the selected cell at a high voltage and ground, respectively, while allowing remaining drain bit lines to float whereby electrons channel from said drain bit line to the floating gate of the selected cell;
and whereby the asymmetry of the cell and a high select line bias voltage eliminate the unintentional write issue at the neighboring cell.

5,379,255

THREE DIMENSIONAL FAMOS MEMORY DEVICES AND METHODS OF FABRICATING

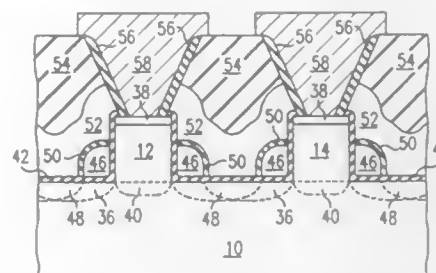
Pradeep L. Shah, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 14, 1992, Ser. No. 990,564

Int. Cl.⁶ H01L 29/78, 27/10

U.S. Cl. 365—185

5 Claims



1. A method of forming a memory cell at a semiconductor layer of a first conductivity type, comprising the steps of:
etching the semiconductor layer to form an elongate column structure, the elongate column structure having a base at a face of the semiconductor layer and further having sidewalls;
implanting a source region into the face with a dopant to be of a second conductivity type opposite the first conductivity type;
implanting a drain region into the elongate column structure with a dopant to be of a second conductivity type opposite the first conductivity type to define a channel area extending between the source and drain regions and within the elongate column structure;
forming a floating gate on a portion of one of the sidewalls of the elongate column structure, the floating gate insulatively disposed over at least a part of the channel area; and
forming a control gate insulatively disposed adjacent the floating gate.

1. A non-volatile semiconductor memory system comprising:

a memory cell array including rows and columns of electrically erasable and programmable memory cell transistors;
write means for selecting from said memory cell transistors a first sub-array of memory cell transistors corresponding to one page, and for programming the first sub-array;
write-verify means for verifying the electrical written state of the selected memory cell transistors by checking their threshold values for variations, and for, when any insufficiently written cell transistor remains among them, repeating a rewrite operation using a predetermined voltage for a predetermined period of time so that the written state comes closer to a satisfiable state; and
said write-verify means comprising means for counting repetitions of the rewrite operation performed on said first sub-array of memory cell transistors until said written state is sufficiently close to said satisfiable state, producing a count value corresponding to the number of times that said rewrite operation is repeated until said satisfiable state is attained, and employing said count value in executing a write operation for a second sub-array of memory cell transistors corresponding to a second page such that the write operation executed for said second sub-array is automatically repeated a fixed number of times corresponding to said count value.

5,379,257

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A MEMORY AND AN OPERATIONAL UNIT INTEGRATED THEREIN

Tetsuya Matsumura; Hiroshi Segawa; Kazuya Ishihara; Shinichi Uramoto, and Masahiko Yoshimoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

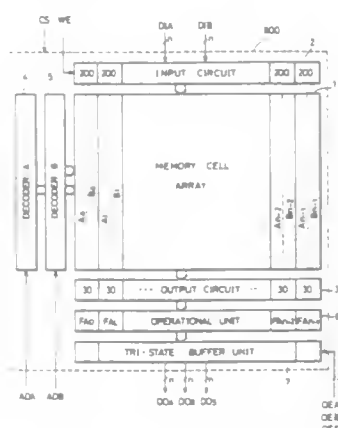
Filed Sep. 30, 1991, Ser. No. 767,767

Claims priority, application Japan, Nov. 16, 1990, 2-311973

Int. Cl.⁶ G11C 13/00

U.S. Cl. 365—189.01

38 Claims



1. A semiconductor integrated circuit device comprising:
 - a memory cell array including a plurality of memory cell groups, each of said memory cell groups including a plurality of bit arrays each having memory cells arranged in a matrix form of at least one column and a plurality of rows, the memory cells of each of said plurality of bit arrays of said plurality of memory cell groups being arranged adjacent to the memory cells of a bit array of another memory cell group;
 - a plurality of selecting means provided corresponding to said plurality of memory cell groups in said memory cell array, respectively, and responsive to address signals applied independently for said groups for selecting memory cells designated by said address signals from corresponding memory cell groups; and
 - operational means, responsive to a stored information read out from the memory cells in at least one memory cell group for performing a predetermined operation.

5,379,258

CIRCUIT FOR REPAIRING DEFECTIVE BIT IN SEMICONDUCTOR MEMORY DEVICE AND REPAIRING METHOD

Shuji Murakami; Tomohisa Wada, and Kenji Anami, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 500,965, Mar. 29, 1990, Pat. No. 5,134,585. This application Jan. 30, 1992, Ser. No. 828,254 Claims priority, application Japan, Jun. 5, 1989, 1-142450 The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.⁶ G11C 7/00, 29/00

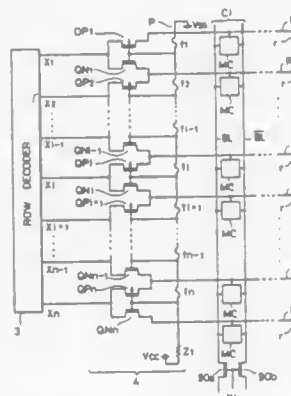
U.S. Cl. 365—200

21 Claims

1. A method for repairing a defective memory cell in a semiconductor memory device comprising a plurality of memory cells arranged in a matrix of rows and columns, at least (N+1) row lines each connected to one row of said plurality of memory cells wherein N is an integer, at least (M+1) column lines each connected to one column of said plurality of memory cells, row decoder means responsive to an externally applied address signal for selecting a corresponding row of said at least (N+1) row lines and having N output lines, and column decoder means responsive to said externally applied address

signal for selecting a corresponding column of said at least (M+1) column lines and having M output lines, a plurality of connecting means, provided respectively to said M output lines of said column decoder means, each for selectively connecting an output signal line of the column decoder means to one column of a set of a predetermined number of column lines in said at least (M+1) column lines, and means for defining a manner of connection of each said plurality of connecting means consisting of a single voltage to many spaces supply path M fusible elements connected in series between a first potential supply and a second potential supply, each said M fusible elements having one end connected to a control input of an associated switching element, said M fusible elements provided corresponding to said M output lines of said column decoder means, comprising the steps of:

connecting said N output lines of said row decoder means to successively adjacent N row lines of said at least (N+1) row lines in one to one correspondence when no defective



- memory cell is connected to said successively adjacent N row lines;
- connecting said M output lines of said column decoder means in one to one correspondence to successively adjacent M column lines of said at least (M+1) column lines when no defective memory cell is connected to said successively adjacent M column lines;
- if a defective memory cell is connected to a row line in said at least (N+1) row lines, connecting said N output lines of row decoder means respectively to N row lines successively adjacent to each other excluding the row line having connected thereto the defective memory cell in said at least (N+1) row lines, and
- if a defective memory cell is connected to a column line in said at least (M+1) column lines, connecting said M output lines of said column decoder means respectively to M column lines successively adjacent to each other excluding the column line having connected thereto the defective memory cell in said at least (M+1) column lines.

5,379,259

SEMICONDUCTOR MEMORY DEVICE

Koreaki Fujita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,141

Claims priority, application Japan, Feb. 28, 1992, 4-042567

Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—200

23 Claims

1. A semiconductor memory device, comprising:
 - a plurality of memory cell array blocks each including memory cells arranged in rows and columns;
 - at least one redundant memory cells arranged in a plurality of rows and columns;
 - address coincidence detecting means storing address signals indicating at least two adjacent columns, one at least of which is defective, in at least one memory cell array block

5,379,261

METHOD AND CIRCUIT FOR IMPROVED TIMING AND NOISE MARGIN IN A DRAM

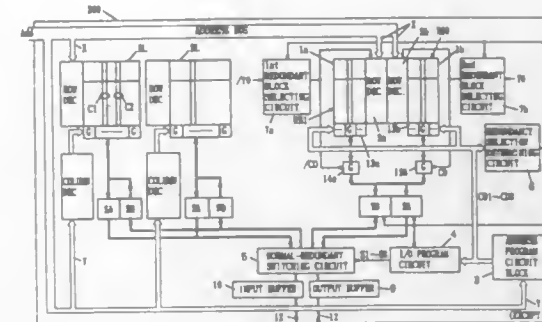
Oscar F. Jones, Jr., Colorado Springs, Colo., assignor to United Memories, Inc., Colorado Springs, Colo. and Nippon Steel Semiconductor Corporation, Chiba, Japan

Filed Mar. 26, 1993, Ser. No. 37,288

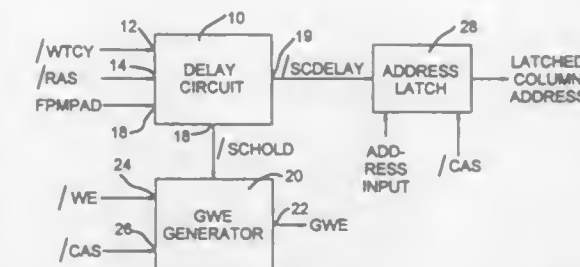
Int. Cl.⁶ G11C 8/00, 7/00

U.S. Cl. 365—230.01

23 Claims



- a memory cell array of said memory cell array blocks and a redundant memory cell array of said redundant memory cell array block being selected simultaneously to activate a word line of each of the selected arrays for reading data stored in said memory cell array and redundant memory cell array before replacement of said at least two adjacent columns.



22. A method for extending a valid write time in a DRAM configured in a static column mode so that the valid write time is longer than an active state of a first control signal used in generating an internal write enable signal of the DRAM, comprising the steps of:

generating an internal write enable signal having active and inactive states, including changing from the inactive state to the active state of the internal write enable signal based on operating on one or more control signals received by the DRAM including said first control signal; when operating the DRAM in the static column mode, changing the internal write enable signal from the active state to the inactive state at a time that is substantially independent of timing of said first control signal; and controlling an address latch to preserve address information for a predetermined time.

5,379,260

MEMORY CELL HAVING A SUPER SUPPLY VOLTAGE

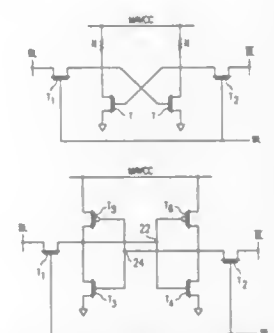
David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 30, 1993, Ser. No. 128,895

Int. Cl.⁶ G11C 29/00

U.S. Cl. 365—201

31 Claims



1. A static random access memory (SRAM), comprising:
 - a plurality of memory cells, with each memory cell having a plurality of resistive load elements;
 - control, interface, and periphery circuitry that provides control signals to the memory cells;
 - a first power supply that supplies a nominal voltage level to the control, interface, and periphery circuitry; and
 - a second power supply that is connected to the resistive load elements of each memory cell and is controlled to selectively be set to the nominal voltage level for normal operating conditions or to a super voltage level suitable for testing the memory cells, wherein the magnitude of the super voltage level is greater than the magnitude of the nominal voltage level.

5,379,262

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Yutaka Okamoto, Kawasaki, and Yoshiyuki Tanaka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 1, 1993, Ser. No. 84,477

Claims priority, application Japan, Jul. 1, 1992, 4-174232

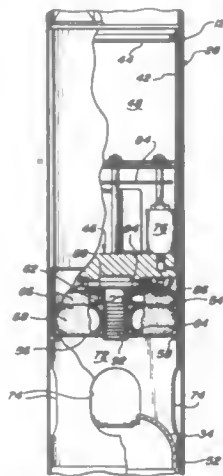
Int. Cl.⁶ G11C 11/40, 13/00

U.S. Cl. 365—230.01

12 Claims

1. A nonvolatile semiconductor memory device comprising:
 - memory means having a plurality of storage areas divided in a capacity serving as a management unit;
 - first managing means for, when data is to be written in said storage areas, circularly arranging said plurality of storage areas such that said plurality of storage areas physically or logically arranged, and managing said storage areas such that said plurality of storage areas are used in accordance with an order of an arrangement of said plurality of storage areas;
 - second managing means for managing whether data recorded in said plurality of storage areas is changed after a predetermined timing; and
 - control means for, when data is written in said storage area and a predetermined condition is satisfied, selecting a storage area having data which is not changed after a timing when said second managing means is initialized.

descent threshold velocity values being non-zero at least some depths within the body of water,

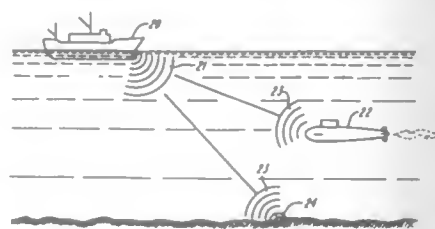


and changing the velocity of said vehicle by adjusting the buoyancy of said vehicle to bring the velocity of said vehicle within said range of velocities.

5,379,268
MULTI-DIMENSIONAL SIGNAL PROCESSING AND DISPLAY
William H. Hutson, 47 Grange Ave., P.O. Box 0221, Little Compton, R.I. 02837
Continuation of Ser. No. 978,245, Nov. 18, 1992, Pat. No. 5,245,587, which is a continuation-in-part of Ser. No. 628,337, Dec. 14, 1990, Pat. No. 5,175,710. This application Sep. 10, 1993, Ser. No. 119,362
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.⁶ G01S 15/00

U.S. Cl. 367—100

40 Claims



1. A method for processing information signals representative of data describing at least predetermined events occurring in a predetermined three-dimensional space, comprising the steps of:

- generating a matrix from the information signals and each matrix entry is representative of a scaled value associated with a location in the three-dimensional space, with the matrix being representative of at least a selected two-dimensions of the three-dimensions of the predetermined three-dimensional space;
- compressing the matrix entries to form compressed signals;
- (1) selectively modifying the compressed signals to enhance certain predetermined compressed signals and suppress certain other compressed signals, with the modified compressed signals being representative of the matrix entries that have been at least enhanced and suppressed.

5,379,269
POSITION DETERMINING APPARATUS
Seymour J. Slindeband, Pound Ridge, N.Y., and Thomas L. Stone, Beacon Falls, Conn., assignors to Science Accessories Corp., Stratford, Conn.
Filed Jan. 13, 1993, Ser. No. 3,786
Int. Cl.⁶ G08C 21/00

U.S. Cl. 367—127

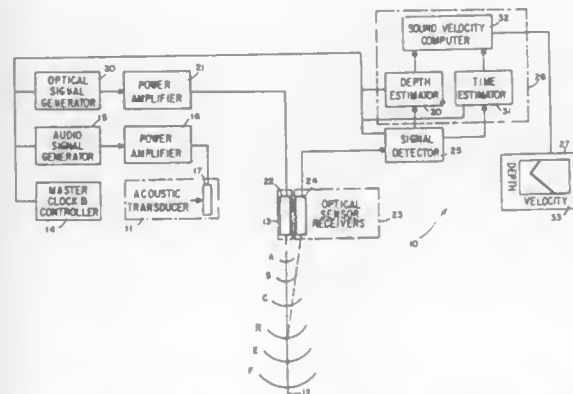
21 Claims

1. In an apparatus for determining the position of a moveable element over the top surface of a solid medium tablet, which operates by transmitting ultrasonic energy between locations on the solid medium and determining the transit time of said ultrasonic energy in travelling between locations, the improvement comprising a solid medium tablet having a top surface and an edge pattern with a multiplicity of teeth formed therein.

5,379,270
ACOUSTIC-OPTIC SOUND VELOCITY PROFILER
George C. Connolly, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 25, 1994, Ser. No. 217,816
Int. Cl.⁶ G01S 3/80, 3/78

U.S. Cl. 367—128

18 Claims



1. Apparatus for determining a characteristic property as a function of position along an axis of a fluid medium, said apparatus comprising:

- acoustic energy generating means for transmitting a wave of acoustic energy in a given bandwidth along the axis thereby to produce a disturbance in the fluid medium;
- laser generator means for transmitting a light pulse substantially along the axis for passing through the disturbance;
- detector means for receiving backscattered light from the interaction of the light pulse and the disturbance caused by the wave of acoustic energy, the backscattered light being in a bandwidth that includes the given bandwidth of the acoustic energy;
- processing means responsive to said detector means for determining a distance traveled and time of travel for the acoustic wave through the fluid medium; and
- control means for synchronizing the operations of said acoustic energy generating means, said laser generator means, said detector means and said processing means.

5,379,271
CHRONOGLOBE
Philip C. Moedt, 1032 N. Harvey, Oak Park, Ill. 60302
Filed Dec. 2, 1993, Ser. No. 161,154
Int. Cl.⁶ G04B 19/22

U.S. Cl. 368—24

1 Claim

1. A celestial body astronomical system, visual manifestation, calendar, and chronometric data display device comprising:
a movable sphere within a movable sphere; one said sphere providing a celestial body representation, the other said

sphere providing a sunlight, shadow, terminator representation; one said spheres taking the inner position, the other said sphere taking the outer position,
a time scale presentation by means of ecliptic plane time marks located around the circumference of the sunlight, shadow, terminator sphere with said ecliptic plane perpendicular to the plane of the sunlight, shadow terminator presentation,
a simultaneous visual manifestation of the celestial body representation, sunlight, shadow, terminator representation, and time marks with incident, external, internal illuminations by means of appropriate degrees of transparency, translucency, opaqueness, clearness, reflectivity, color, and surface renderings of both inner and outer spheres,
a proper alignment of both spheres in relation to one another by means of setting the celestial body sphere rotational axis at proper inclination to the sunlight, shadow, terminator sphere rotational axis,
a outer sphere support means of conventional base structures and mounting approaches; and a inner sphere support means that enables free rotation and movement of the inner sphere, said means being spherical segment, low friction material pads, bearing arms, or a liquid placed between the inner and outer sphere; said pads, arm, or

or set apart from said means of control, to external appropriate data presentations; said means being a pairing of inner sphere fastened magnets to external magnets of opposite polarity.

5,379,272
MOSLEM CALENDAR
Michel Parmigiani, 14, rue de Buttes, 2114 Fleurier, Switzerland
Filed Dec. 22, 1993, Ser. No. 173,661
Claims priority, application Switzerland, Jan. 13, 1993, 00078/93

Int. Cl.⁶ G04B 19/24
U.S. Cl. 368—37

8 Claims



1. A Moslem calendar comprising:
an analog timepiece movement including a rotary part;
a date indicator displaying dates 1 through 30 in thirty consecutive positions;
day driving means driven by said rotary part of said analog timepiece movement and for consecutively moving said date indicator to a next of said thirty consecutive positions at an end of each day;
month driving means driven by said day driving means and for moving said date indicator by two of said thirty consecutive positions at an end of even months, said month driving means moving said date indicator from displaying 29 to displaying 1 at said end of said even months;
embolism year means driven by said day driving means and said month driving means, and for only blocking said month driving means from moving said date indicator by said two of said thirty consecutive positions at an end of embolismic years defined by a 30-year correction cycle, said embolismic year means causing said date indicator to display 30 on a last day of a twelfth month of the Moslem calendar during said embolismic years.

5,379,273
ALARM CLOCK SYSTEM
Kevin D. Horinek, 1311 Summertime, Lewisville, Tex. 75067
Filed Apr. 13, 1994, Ser. No. 226,882
Int. Cl.⁶ G04C 21/00; G04B 23/00

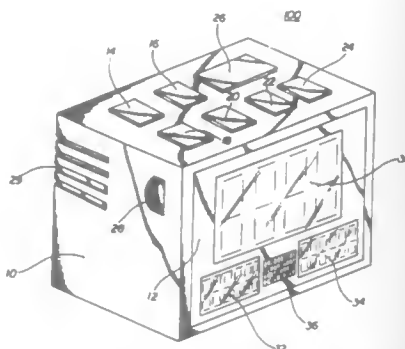
U.S. Cl. 368—73

20 Claims

1. An alarm clock system, comprising:
an alarm clock base unit including: an audible alarm; first means for setting the current time; first means for displaying the current time; means for setting at least a preferred alarm time; means for displaying said at least a preferred alarm time; means for enabling the audible alarm such that it is activated at said at least a preferred alarm time; means for disabling the audible alarm, means for delaying continued operation of the audible alarm after it is activated, such that the audible alarm ceases operation and remains inoperative during a preset delay period, after which period the audible alarm resumes operation; said delaying means being responsive to an electronic alarm delay signal; means for receiving and transforming a remote alarm delay signal into the electronic alarm delay signal; and

liquid having no direct physical connection through the outer sphere to external control members,
a magnetic means to inner sphere position, rotation, movement control having no direct physical connection between the outer controlling system and the inner sphere; said means being a pairing of inner sphere fastened magnets to outer control magnets of opposite polarity,
a presentation of proper visual, calendar and chronometric characteristics of a astronomical system by means of coordinated position, rotation, movement control of both spheres in conjunction with appropriate data displays,
a coordinated position, rotation, movement control of both spheres by means of manual, mechanical, magnetic, electronic, electrical devices, used either singularly or in concert,
a visual time translation means to read time on the celestial body sphere directly from ecliptic plane time marks presented on the sunlight, shadow, terminator sphere; said means being the use of tips of time marks, extending above and below the ecliptic plane, to establish the celestial body sphere meridian of corresponding time,
a magnetic means to achieve transfer of pertinent inner sphere position, movement, time, calendar information through the outer sphere, either through the magnetic inner sphere position, rotation, movement control means

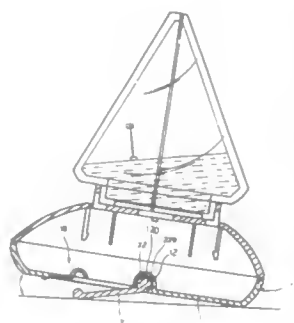
first power source means for energizing the various electronic components of the alarm clock base unit; and a remote alarm controller physically independent from the



alarm clock base unit and including means for generating and transmitting said remote alarm delay signal, and second power source means for energizing the various electronic components of the remote alarm controller.

5,379,274
INCLINATION ADJUSTING MEANS FOR A
LIQUID-ORNAMENTAL DESK CLOCK
Vincent K. W. Lee, No. 44, Lane 458, Sheh Chung Street, Taipei,
Taiwan, Prov. of China
Filed May 4, 1994, Ser. No. 237,928
Int. Cl.⁶ G04B 37/00; A47G 29/00
U.S. Cl. 368—317

3 Claims



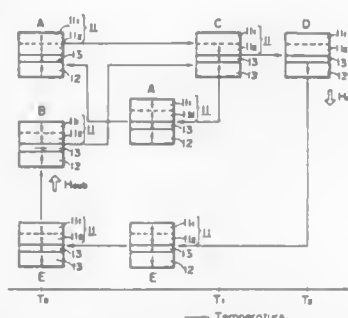
1. An inclination adjusting means for a liquid-ornamental desk clock which mainly includes a base defining a lower power-supply compartment, and a transparent liquid container disposed above and fixedly attached to said base; said inclination adjusting means comprising a movable cover plate suitable for closing an access hole formed on a bottom floor of said base, and a receiving portion provided on said bottom floor of said base near a rear side of said access hole; said movable cover plate having two slightly springy arms backward extended from a rear edge thereof to hold an integrally injection molded horizontal rack therebetween; and said receiving portion being substantially semi-circular in its cross section to fitly receive said springy arms and said horizontal rack therein, allowing said movable cover plate to be pivotally swung relative to said receiving portion.

5,379,275
THERMOMAGNETIC RECORDING METHOD USING A
RECORDING LIGHT POWER MODULATED
ACCORDING TO THE SIGNAL TO BE MODULATED
Masahiko Kaneko, Kanagawa; Katsuhisa Aratani, and Yoshihiro Muto, both of Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 377,944, Jul. 10, 1989, abandoned. This application Oct. 5, 1993, Ser. No. 131,854
Claims priority, application Japan, Jul. 13, 1988, 63-174695; Oct. 28, 1988, 3-272400; Jan. 13, 1989, 1-6453; Jan. 13, 1989, 1-6454

Int. Cl.⁶ G11B 13/04

U.S. Cl. 369—13

4 Claims



1. A thermomagnetic recording method comprising the steps of: selecting a thermomagnetic recording medium including a laminated film consisting of a first magnetic thin film and a second magnetic thin film having perpendicular magnetic anisotropy and a third magnetic thin film interposed therebetween, said films being laminated and magnetically coupled with each other, said third magnetic thin film reducing the magnetic wall energy between said first and second magnetic thin films, said third magnetic thin film being made of a rare earth rich metallic film, said third magnetic thin film having an anisotropy in the range extending from longitudinal anisotropy, parallel to the film surface, to a small perpendicular anisotropy, which is a smaller perpendicular magnetic anisotropy than of said first and second magnetic thin films at room temperature and has a temperature characteristic of the effective anisotropy constant K being convex upward or linear, and having its saturation magnetization M_s being from 0 to 450 emu/cm³ at room temperature, of:

modulating laser light in accordance with an information signal to be recorded to produce a first heating condition to heat said medium to a temperature T_1 which is virtually above the Curie temperature T_{C1} of said first magnetic thin film and not causing reversal of the magnetic moment in said second magnetic thin film, and a second heating condition to heat the same to a temperature T_2 which is above said temperature T_{C1} and sufficient to cause reversal of the magnetic moment in said second magnetic thin film; and cooling the medium from the heated states so that record magnetization is formed in said thermomagnetic recording medium.

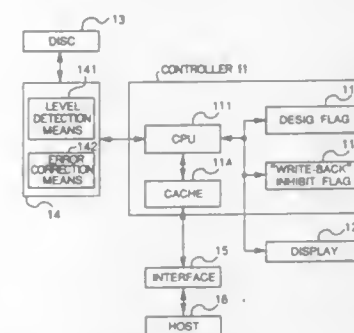
5,379,276
DATA INFORMATION RECORDING/REPRODUCING
APPARATUS WHICH MINIMIZES RECORD FAILURES
Eiichi Igami, Takatsuki; Syunji Kagamibashi, Neyagawa; Shoji Hasegawa, Hirakata, and Isao Obata, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 30, 1993, Ser. No. 159,150
Claims priority, application Japan, Dec. 7, 1992, 4-326607; Nov. 19, 1993, 5-290821
Int. Cl.⁶ G11B 17/22, 5/09
U.S. Cl. 369—32

13 Claims

1. An information recording/reproducing apparatus opera-

ble with a recording medium having at least one data area and at least one substitute area defined therein, each of said data area and said substitute area having a plurality of sectors defined therein, said information recording/reproducing apparatus being operatively connected with a host apparatus and comprising:

an interface for operatively connecting said information recording/reproducing apparatus and said host apparatus; a temporary storage means for temporarily storing therein data transmitted from said host apparatus via said interface; a recording/reproducing means for recording data stored in said temporary storage means on said recording medium or reproducing data recorded on said recording medium; a control means for controlling recording or reproduction by said recording/reproducing means; a designation means, operatively connected with said con-



trol means, for designating one of a first mode, at which said host apparatus is informed of an end of execution of a record instruction issued from said host apparatus to said recording medium at the time of termination of data transfer to said temporary storage means, and a second mode at which said host apparatus is informed of the end of execution of the record instruction at the time of termination of actual recording on said recording medium; and a switching means, operatively connected with said control means, for switching an operation mode between the first mode and the second mode; wherein, when a portion of the data stored in said temporary storage means is not correctly recorded on a specific sector of the data area, one of the sectors of the substitute area is substituted for the specific sector of the data area, and wherein a maximum number of substitutions allowed at the first mode differs from that allowed at the second mode.

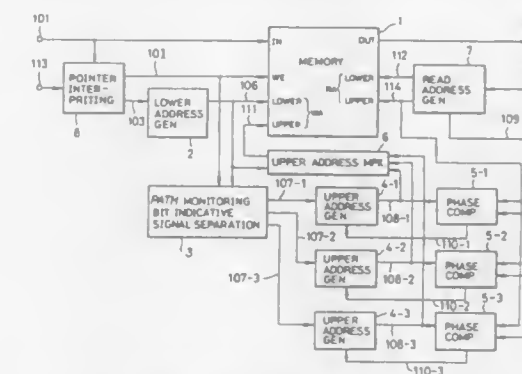
5,379,277
PATH MONITORING BIT EXTRACTION DEVICE
Hiroshi Yamashita, Tokyo, and Toshiyuki Ojima, Miyagi, both of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 11, 1993, Ser. No. 75,105
Claims priority, application Japan, Jun. 17, 1992, 4-157190
Int. Cl.⁶ H04J 3/14
U.S. Cl. 370—14

7 Claims

1. A path monitoring bit extraction device in a transmission communication system for dividing an information transmission frame into a plurality of blocks including a path monitoring bit and assigning time slots in said blocks to data of a plurality of paths respectively for transmission in a time division multiplexing manner, comprising:

a readable and writable memory; detection means for detecting multiplexing positions of said path monitoring bits and a block start position in said information transmission frame, wherein said detection means includes means for detecting the multiplexing position of said path monitoring bit and said block start position on the basis of a frame pulse of said information transmission frame and transmitted information; write enabling means for enabling writing in said memory in

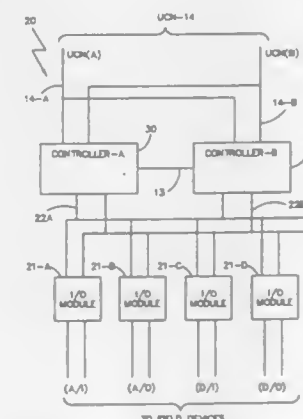
response to detection timing of the multiplexing position of said path monitoring bit by said detection means; write address generating means responsive to detection of said block start position by said detection means for generating a write address for said memory to vary the value from an initial value in sequence; read address generating means responsive to a frame pulse for generating a read address for said memory with to vary the value from an initial value in sequence, wherein said write address generating means comprises:



lower address generating means responsive to the detection timing of said block start position for generating a lower address of said write address to vary the value from an initial value in sequence; means for generating a path monitoring bit indicative of the position of the path monitoring bit for each path on the basis of the lower address corresponding to the path and the multiplexing position of said path monitoring bit; and reversing means provided for reversing a condition value in response to a corresponding path monitoring bit, and said condition value being an upper address.

5,379,278
METHOD OF AUTOMATIC COMMUNICATIONS
RECOVERY
Reem B. Safadi, Horsham, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 16, 1993, Ser. No. 93,115
Int. Cl.⁶ H04L 1/22
U.S. Cl. 370—16

5 Claims



1. In a local area network system having redundant communication media, a plurality of nodes, each node connected to the redundant communication media, wherein each node is capable of communicating with each other node in accordance with a predetermined protocol via the redundant communication media, and further wherein each node is capable of disconnecting from the redundant communication media when an

error in communications is detected, a method of automatically reconnecting the node to the redundant communication media after the node disconnects from the redundant communication media comprising the steps of:

- a) detecting a faulty communication condition;
- b) disconnecting the node from the redundant communication media;
- c) attending to any outstanding transmit/receive tasks;
- d) performing internal testing of the node;
- e) if the internal testing passes,
 - i) attempting to reconnect the node to the redundant communication media; and
 - ii) proceeding to step (f); otherwise
 - iii) proceeding to step (d);
- f) if the attempted reconnect is unsuccessful,
 - i) waiting a first predetermined period of time; and then
 - ii) proceeding to step (d);
- g) if the attempted reconnect is successful, resuming normal communications by the node over the redundant communication media.

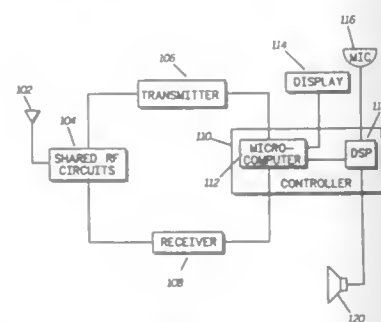
5,379,279

COMMUNICATION DEVICE WITH TIME ASSIGNED DUPLEX OPERATION

Charles A. Backof, Coral Springs, and David L. Muri, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 6, 1993, Ser. No. 86,071
Int. Cl.⁶ H04B 1/56

U.S. Cl. 370—24

9 Claims



8. A method for providing a first simplex communication device with full duplex operation at a fixed rate of transmission on a channel, comprising the step of:

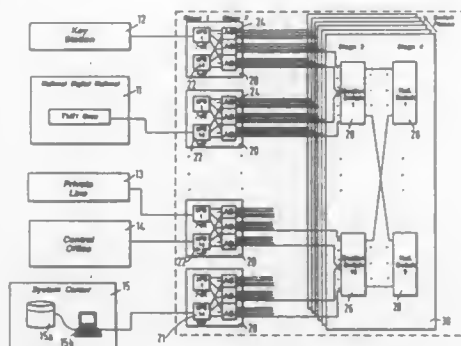
- transmitting an information signal generated by a user and having a maximum voice coding rate to a second communication device;
- periodically interrupting transmission;
- receiving a request to transmit signal from the second communication device on the channel during the periodic interruptions;
- dropping the voice coding rate to a first reduced voice coding rate to allow the transmission of the information signal to take less time on the channel;
- transmitting at the first reduced voice coding rate on the channel;
- simultaneously receiving at the first reduced voice coding rate on the channel for full duplex operation;
- determining when no additional information is generated by the user; and
- stopping transmission at the first communication device and receiving information at the maximum voice coding rate from the second communication device.

5,379,280

CONFERRING SYSTEM FOR DISTRIBUTED SWITCHING NETWORK

John M. Cotton, East Norwalk; Neil C. Olsen, Milford; Alex T. Wissink, Woodbridge; Gary V. Pieper, Wallingford; William A. Oswald, Oxford, all of Conn.; Nicholas Necula, Mount Vernon, N.Y.; Enrique Abreu, Huntington, Conn.; Maurice J. Mascarenhas, Stamford, Conn., and Rudy De Bruyn, Derby, Conn., assignors to IPC Information Systems, Inc., Stamford, Conn.

Filed Sep. 26, 1991, Ser. No. 766,649
Int. Cl.⁶ H04Q 11/04; H04M 3/42, 3/00
U.S. Cl. 370—62 47 Claims



1. A conferencing system for providing conference calls among groups of terminals in a digital telephone switching system, said conferencing system comprising:

- a plurality of switch elements in a multistage arrangements each switch element having a summing device for interconnecting said terminals via communication links which link said switch elements;
- a predetermined number of said switch elements each having a bridge port;
- means for setting a plurality of first paths for carrying speech data via one or more of said predetermined number of switch elements from each one of said terminals in a group toward a designated bridge port;
- means for enabling the summing device in a switch element wherein two or more first paths from said terminals towards said designated bridge port intersect in said switch element, said summing device summing the data carried in said first paths towards said bridge port such data, in the switch element having said bridge port the sum of all speech data corresponding to terminals in conference call is available; and
- means for selectively assigning a second path for carrying data from said bridge port towards each of said terminals said second path capable of routing the sum of all speech data.

5,379,281

ANALOG TIMEPIECE INCLUDING MEANS FOR SIGNALLING A CHANGE OF MODE

Daniel Koch, Crémieux, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Granges, Switzerland

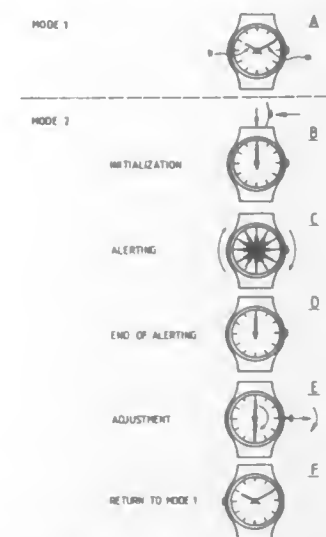
Filed Sep. 13, 1993, Ser. No. 119,587
Claims priority, application Switzerland, Sep. 25, 1992, 03003/92-9

U.S. Cl. 368—72

5 Claims

1. A timepiece having an analog display exhibiting at least two selectable operating modes, a first retorted to as time mode and a second referred to as non-time mode, and comprising at least one hours hand and one minutes hand capable of being independently actuated by motor means, electronic management means for said modes of operation and a control organ capable of operating said management means, and including visual means for signalling entry into the non-time mode of

operation and acting at least upon entry into this mode of operation, wherein said visual signalling means are formed by



said hours and minutes hands and by their concomitant displacement said displacement being made for a complete rotation of both hands in a same angular direction.

5,379,282

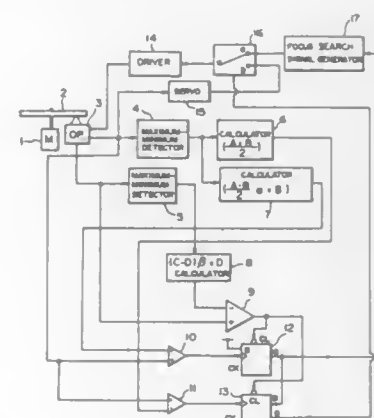
SYSTEM FOR CALCULATING FOCUS SERVO CONTROL SIGNAL USING FOCUS ERROR SIGNAL AND REPRODUCED RF SIGNAL

Shigeaki Wachi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,675
Claims priority, application Japan, Sep. 24, 1991, 3-272073
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—44.35

3 Claims



1. A focus servo device for use in an optical disk apparatus, comprising:

- reproducer means for irradiating a light beam emitted from a light source to the optical disk through an objective lens movable relative to the optical disk, and detecting an RF signal and a focus error signal on the basis of a return light beam reflected from said optical disk;
- RF signal maximum-minimum detector means for detecting a maximum and a minimum of the RF signal obtained from said reproducer means; and
- control signal generator means for generating a focus servo control signal in conformity with the focus error signal obtained from said reproducer means and also with the maximum and the minimum of the RF signal detected by said maximum-minimum detector means, wherein said control signal generator means includes focus error signal

maximum-minimum detector means for detecting a maximum and a minimum of the focus error signal; calculator means for executing predetermined calculations on the maximum and the minimum of the focus error signal from said focus error signal maximum-minimum detector means; and comparator means for comparing an output signal of said calculator means with the focus error signal, and wherein said calculator means includes a first calculator for calculating an average of the maximum and the minimum of the focus error signal obtained from said focus error signal maximum-minimum detector means, and a second calculator for multiplying, by a predetermined coefficient, one-half of a difference between the maximum and the minimum of the focus error signal obtained from said focus error signal maximum-minimum detector means, and adding the minimum to a result of the multiplication.

5,379,283

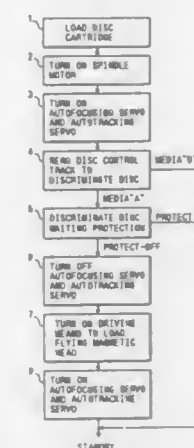
MAGNETO-OPTICAL RECORDING/REPRODUCING METHOD WITH OPTICAL HEAD SERVO INHIBITED DURING MAGNETIC HEAD LOADING

Yoshikazu Miyajima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1994, Ser. No. 207,211
Claims priority, application Japan, Mar. 15, 1993, 5-078638
Int. Cl.⁶ G11B 7/095

U.S. Cl. 369—44.29

3 Claims



1. A magneto-optical recording/reproducing method for recording information on a magneto-optical disk by radiating a laser beam from an optical head onto the magneto-optical disk, and applying a magnetic field modulated according to information from a flying magnetic head, comprising the steps of: loading said flying magnetic head onto a disk surface; and inhibiting servo control of said optical head during execution of the loading step.

5,379,284

COMPACT DISK PLAYER HAVING AN INTERMEDIATE MEMORY STORAGE DEVICE

Dong G. Kim, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyounggi-do, Rep. of Korea

Filed Oct. 7, 1993, Ser. No. 132,884
Claims priority, application Rep. of Korea, Oct. 12, 1992, 92-18682

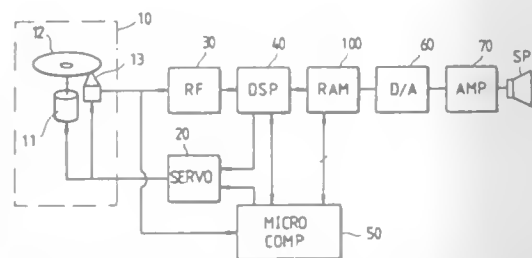
U.S. Cl. 369—44.32

4 Claims

1. A compact disk player comprising a pickup for reading data on a compact disk, a servo control device for controlling the pickup and a digital signal processing unit for processing the data on the compact disk read by said pickup in a digital

form and generating a predetermined clock, wherein the improvement comprises:

control means for generating first and second clocks, a plurality of addresses and a plurality of clock enable signals and controlling said servo control device upon sensing a focus error from said pickup, the first clock being active high under a normal condition, the second clock being active high upon sensing the focus error from said pickup; clock generation means for generating a reference clock; clock selection means for selecting one of the clocks from said digital signal processing unit and said clock generation means in response to the first and second clocks from said control means, said clock selection means selecting



the predetermined clock from said digital signal processing unit under the normal condition and selecting the reference clock from said clock generation means when no data is outputted from said digital signal processing unit due to the focus error from said pickup; memory means for, alternately, storing data from said digital signal processing unit and outputting the stored data in response to the addresses and the clock enable signals from said control means and the selected clock from said clock selection means; and digital/analog conversion means connected to said control means for converting the data from said memory means into an analog signal under the control of said control means.

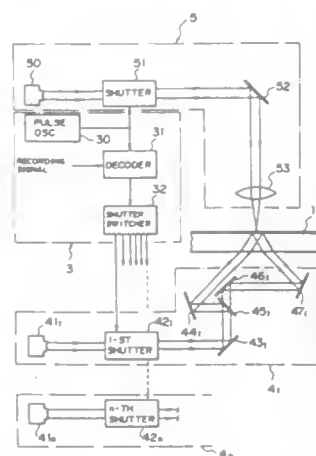
5,379,285 RECORDING MEDIUM AND INFORMATION RECORDING AND REPRODUCING APPARATUS THEREFOR

Satoshi Sugiura, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Division of Ser. No. 4,252, Jan. 14, 1993, Pat. No. 5,331,626.

This application Mar. 25, 1994, Ser. No. 217,562
Claims priority, application Japan, Jan. 20, 1992, 4-7837
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—100

4 Claims



1. An information recording apparatus for recording infor-

mation on an information recording medium as information pits corresponding to said information, said recorded information being read out by irradiating a read-out light onto said recording medium, said apparatus comprising:

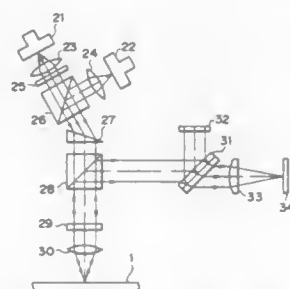
reference light emitting means for emitting two coherent rays of reference lights on a lighting region of said recording medium in a manner that said two coherent rays overlap with each other so as to form an interference fringe having direction corresponding to information to be recorded, said lighting region being broader than a pit region where an information pit is formed; bias light emitting means for emitting a bias light incoherent with respect to said rays of reference lights on a region of said recording medium substantially equal to said pit region in a manner that said bias light is superimposed on said rays of reference lights; and information pit forming means for forming information pits of fine diffraction gratings on said pit region by exposure of said interference fringe, said information pit forming means forming the information pits on an area in said pit region where total light intensity of said reference lights and said bias light exceeds a recording threshold intensity of said recording medium.

5,379,286 OPTICAL INFORMATION RECORDING-REPRODUCING APPARATUS HAVING A PRISM

Moritoshi Miyamoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 113,524, Aug. 30, 1993, abandoned, which is a continuation of Ser. No. 729,443, Jul. 12, 1991, abandoned. This application Apr. 25, 1994, Ser. No. 232,580
Claims priority, application Japan, Jul. 24, 1990, 2-194026; Jul. 24, 1990, 2-194027; Sep. 7, 1990, 2-235897
Int. Cl.⁶ G11B 7/12

U.S. Cl. 369—112

20 Claims

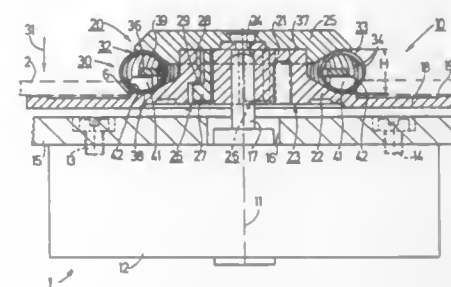


1. An optical information recording reproducing apparatus comprising:

a light source producing a recording light beam;
a light source producing a reproducing light beam differing in wavelength from said recording light beam;
a detecting optical system for detecting a light reflected by a recording medium; and
a beam shaping prism for shaping the light beams of said two light sources into predetermined intensity distributions, said beam shaping prism being constructed of a division prism comprising at least three prisms cemented together, a polarization dividing surface for transmitting the light beams from said light sources therethrough and reflecting the reflected light from said recording medium, said polarization dividing surface being formed on at least one of a plurality of dividing surfaces of said division prism, and a wavelength dividing surface for directing the reproducing light beam of the reflected light from said recording medium to a detection optical system being formed on at least one other dividing surface.

5,379,287 DISC RETAINING DEVICE FOR A DISC PLAYER Norbert Heinrich, Vienna, Austria, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed May 10, 1993, Ser. No. 59,487
Claims priority, application Austria, Jun. 10, 1992, 1187/92
Int. Cl.⁶ G11B 25/04
U.S. Cl. 369—270 22 Claims



1. An apparatus for recording and/or reading information, comprising a turntable and means for mounting said turntable for rotation about a turntable axis,

said turntable comprising a supporting member, and a positioning member for positioning a disc-shaped record carrier having a central positioning hole, placed on the supporting member, said positioning member being substantially symmetrical about said axis and being engageable in said positioning hole,

said positioning member having an annular recess coaxial with said axis and open in a radially outward direction, and a coil spring arranged in said recess for pressing said record carrier in an axial direction onto the turntable; said coil spring having a spring axis which is substantially concentric with, and lies in a plane which is substantially perpendicular to, said turntable axis, and turns which project radially from said recess to engage said record carrier adjacent said position hole, in a no-load condition of said spring before it is mounted in said recess said spring having a given outer diameter, and said turns having an unloaded inclination relative to said spring axis, characterized in that said annular recess has a maximum height, in a direction parallel to said turntable axis, smaller than said given outer diameter, and said turns of the coil spring are held in an operational inclination, in a direction parallel to said turntable axis and relative to said spring axis, less steep than said unloaded inclination.

5,379,288 OPTICAL INFORMATION RECORDING MEDIUM AND A REPRODUCING APPARATUS FOR THE RECORDING MEDIUM

Takanori Maeda, and Noriaki Murao, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,644
Claims priority, application Japan, Apr. 13, 1992, 4-092700
Int. Cl.⁶ G11B 7/26, 11/18

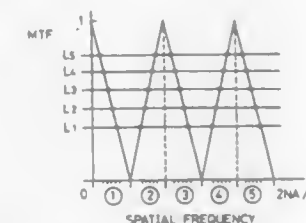
U.S. Cl. 369—275.4

9 Claims

1. An apparatus for recording information on an optical information recording medium used in a reproducing system by placing at least one pit having a pit length on the optical information recording medium wherein the pit length is one of a plurality of allowed pit lengths, comprising:

means for determining a spatial frequency transfer characteristic of the reproducing system;
means for dividing the spatial frequency transfer characteristic below a cut-off frequency into a plurality of bands;

means for allocating a spatial frequency to each of said plurality of bands; and



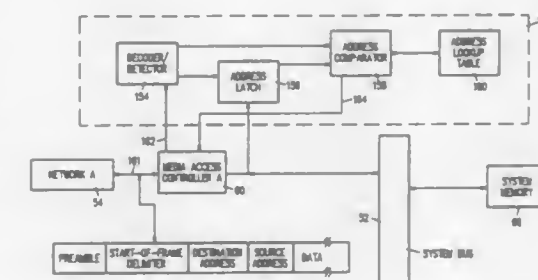
means for assigning an allowed pit length to each of said plurality of allocated spatial frequencies.

5,379,289 MEDIA ACCESS CONTROLLER Edwin Z. DeSouza, San Jose, and Daniel J. Cimino, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 459,439, Jan. 2, 1990, abandoned. This application Jnl. 16, 1993, Ser. No. 93,458
Int. Cl.⁶ H04L 12/46; H04J 3/26

U.S. Cl. 370—85.13

24 Claims



1. A media access controller for transferring digital data between a digital system and a digital network, said media access controller comprising:

digital data reception means for receiving incoming digital data including corresponding data destination addresses from a digital network, and for transferring a first portion of said received incoming digital data to at least one of a plurality of data destination units within a digital system, and further for selectively transferring a second portion of said received incoming digital data to said at least one of said plurality of data destination units within said digital system;

digital data transmission means for receiving outgoing digital data from said digital system and for transmitting said received outgoing digital data into said digital network; and

off-line address filtering means for capturing said received data destination addresses, wherein said off-line address filtering means selectively inhibits said transferring of said second portion of said received incoming digital data to said at least one of said plurality of data destination units within said digital system in accordance with said captured data destination addresses after said first portion of said received incoming digital data has been transferred.

5,379,290

WIRELESS LOCAL AREA NETWORK TRANSMISSION SYSTEM

Theodoor A. Kleijne, Leersum, Netherlands, assignor to NCR Corporation, Dayton, Ohio

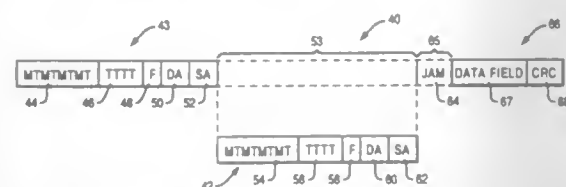
Filed Jan. 25, 1993, Ser. No. 9,482

Claims priority, application United Kingdom, Aug. 14, 1992, 9217374

Int. Cl.⁶ H04J 3/16, 3/26

U.S. Cl. 370—85.2

8 Claims



1. In a wireless local area network, hereinafter referred to as LAN, including a plurality of stations operating on a single wireless communication channel, hereinafter referred to as WCC, a method of controlling the operation of said wireless LAN comprising the steps of:

- transmitting in a first time interval over said single WCC an initial message portion of a message to be transmitted by a first (transmitting) station of said plurality of stations to a second (destination) station of said plurality of stations, said initial message portion containing a destination address of said second station and a sending address of said first station;
- said second station, in response to receiving said initial message portion, transmitting in a second time interval following said first time interval a response message over said single WCC, said response message containing said destination address of said second station and said sending address of said first station;
- said first station transmitting over said single WCC a jam pattern in a third time interval following said second time interval if said response message is not received by said first station; and
- said first station remaining in a receive mode during said third time interval if said response message is identical to said initial message portion, enabling said first station to detect a jam pattern transmitted by other stations in said plurality of stations during said third time interval.

5,379,291

APPARATUS FOR FIBER DISTRIBUTED DATA INTERFACE DYNAMIC STATION BYPASS VIA SKIPPING AND HOPPING

Louis P. Herzberg, Monsey, Antonio Ruiz, Yorktown Heights, and Marc H. Willebeek-LeMair, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1992, Ser. No. 997,798

Int. Cl.⁶ H04L 12/42

U.S. Cl. 370—85.5

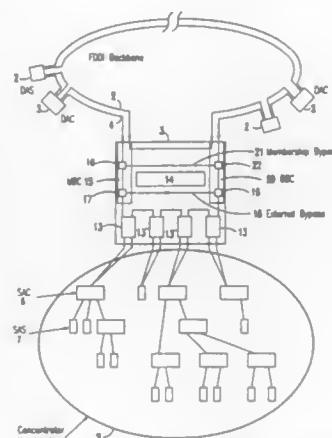
4 Claims

1. In a local area network conforming to a ring-of-trees topology and a token-based protocol governing communication, said ring-of-trees topology having a plurality of tree nodes, each tree node comprising:

- a front end and a back end, said front end having an 'A' port for input and a 'B' port for output, said back end having a plurality of 'M' ports for attachment of standard and non-standard network elements supporting said token-based protocol governing communication;
- a plurality of network elements, each 'M' port being itself connected to a network element, said 'M' ports within each tree node being serially connected so that all network elements in said network are serially connected to form a topological ring;
- said token-based protocol governing communication be-

tween network elements through packets transmitted around said ring; and

a rights controlling concentrator within said tree node to provide minimum path routing of packets, said rights controlling concentrator including means for separating "rights of receiving" from "rights of transmitting" of network elements connected to said 'M' ports and control-



ling these rights independently, said means being in conformance with said token-based protocol governing communication, wherein each said packet traversing said tree node is shunted by said means to bypass said front end, said back end or one or more of said 'M' ports of said back end if none of the network elements avoided by said shunting are supportive of a communication objective of said packet.

5,379,292

APPARATUS HAVING PRIORITY ORDER STORAGE FOR RECOVERY FROM FAILURE OF MULTIPLEX DATA TRANSMISSION

Yasuhiko Kurata, Higashihiroshima, and Osamu Michihira, Hiroshima, both of Japan, assignors to Naldec Corporation and Mazda Motor Corporation, both of Hiroshima, Japan

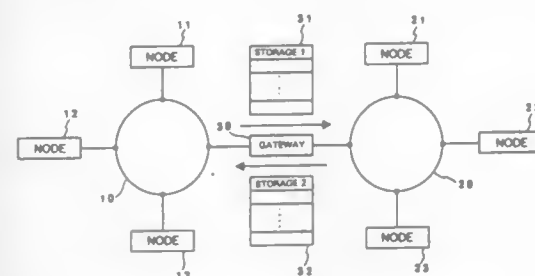
Filed Jul. 7, 1992, Ser. No. 909,662

Claims priority, application Japan, Jul. 8, 1991, 3-167115; Sep. 30, 1991, 3-278383

Int. Cl.⁶ H04J 3/02

U.S. Cl. 370—85.6

6 Claims



1. A multiplex transmission apparatus, comprising:

- a first multiplex transmission path having a first transmission rate and a second multiplex transmission path having a second transmission rate lower than the first transmission rate and to each of which a plurality of communication nodes are connected;
- a gateway node, interposed between said first and second multiplex transmission paths, for controlling data transfer therebetween;
- means, in said gateway node, for detecting a failure in a data transfer between said first and second multiplex transmission paths;

storage means, in said gateway node, for, when said failure is detected, temporarily storing transfer data on the basis of a priority order of the transfer data, said storage means including,

- a first storage means arranged in correspondence with data transfer from the first multiplex transmission path to the second multiplex transmission path; and,
- a second storage means arranged in correspondence with data transfer from the second multiplex transmission path to the first multiplex transmission path; and
- transfer means for, when said failure is recovered, transferring said stored transfer data according to said priority order.

5,379,293

VOICE PACKET ASSEMBLING/DISASSEMBLING APPARATUS

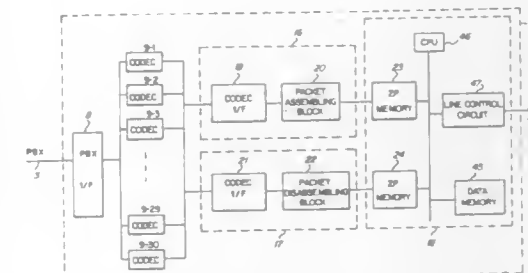
Shin Kanno, 4-4-4 Sakai, Musashino-shi, Tokyo; Tsukasa Tsujimura, 459-7-401 Inumakata, Urawa-shi, Saitama-ken; Masatsugu Yano, Tsushin Shisutemu Kenkyusho, 1-1 Ohfuna 5-chome, Kamakura-shi, Kanagawa 247; Hidenori Aoyagi, Tsushin Shisutemu Kenkyusho, 1-1 Ohfuna 5-chome, Kamakura-shi, Kanagawa 247, and Hiroshi Kawawata, Tsushin Shisutemu Kenkyusho 1-1 Ohfuna 5-chome, Kamakura-shi, Kanagawa 247, all of Japan

Continuation of Ser. No. 740,431, Aug. 5, 1991, Pat. No. 5,249,185. This application Mar. 29, 1993, Ser. No. 40,142 Claims priority, application Japan, Aug. 3, 1990, 2-207388 The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.⁶ H04J 3/24

U.S. Cl. 370—94.1

14 Claims



1. A voice packet assembling/disassembling apparatus for a voice communication system having a voice terminal of a plurality of channels, the apparatus comprising:

- a plurality of CODECs each having a first terminal connected to a different channel of the voice terminal and a second terminal wherein input voice signals received from the voice terminal are coded for each channel;
- a packet assembler, having one input connected to the second terminal of each of the plurality of CODECs, for receiving said coded voice signals from the plurality of CODECs and for assembling said coded voice signals into voice packets, and including means for rearranging bits in an information part of a voice packet so as to enable abandonment of part of the coded voice data, and for providing voice packets to a packet multiplexer;
- a packet disassembler for receiving input voice packets through the packet multiplexer and for disassembling said received input voice packets into coded voice signals and including means for rearranging bits in the information part of a received input voice packet to obtain the corresponding coded voice signal and having one output connected to the second terminal of each of the plurality of CODECs; and
- said plurality of CODECs decoding said coded voice signals into voice signals for each channel and for providing said voice signals to the voice terminal.

5,379,294

MULTIPURPOSE ANALOG FRONT-END CIRCUIT

Hisao Ohtake, Seiji Okamoto, and Shoji Fujii, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

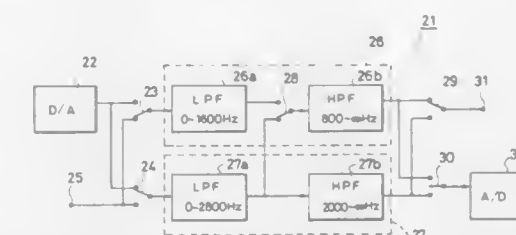
Filed Mar. 28, 1991, Ser. No. 676,820

Claims priority, application Japan, Mar. 30, 1990, 2-83163

Int. Cl.⁶ H04L 5/14; H04B 1/54

U.S. Cl. 370—30

26 Claims



1. A front-end circuit for bandpass-filtering a first analog signal and a second analog signal, having a first mode of operation and a second mode of operation, comprising:

- a low-group bandpass filter having a low-group high-pass filter and a low-group low-pass filter connected in series, said low-group bandpass filter used in said first mode of operation for receiving and bandpass-filtering said first analog input signal, thereby generating a first analog output signal;
- a high-group bandpass filter having high-group high-pass filter and a high-group low-pass filter connected in series, said high-group bandpass filter used simultaneously in said first mode of operation for receiving and bandpass-filtering said second analog input signal, thereby generating a second analog output signal; and
- a switching circuit for connecting said low-group high-pass filter and said high-group low-pass filter in series in said second mode of operation, thereby forming a filter for receiving and bandpass-filtering said first analog input signal at one time and said second analog input signal at another time, thus generating both said first analog output signal and said second analog output signal at different times.

5,379,295

CROSS-CONNECT SYSTEM FOR ASYNCHRONOUS TRANSFER MODE

Akifumi Yonehara, Tokyo, Japan, assignor to NEC Corporation, Japan

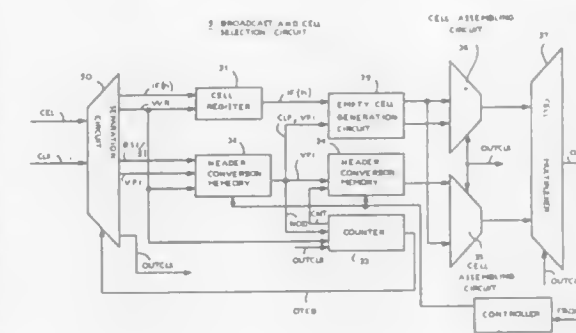
Filed Jul. 31, 1991, Ser. No. 738,843

Claims priority, application Japan, Jul. 31, 1990, 2-202699; Jul. 31, 1990, 2-202700

Int. Cl.⁶ H04L 12/56

U.S. Cl. 370—60

10 Claims



1. A cross-connect system for an asynchronous transfer mode (ATM) communication network, wherein information is transmitted comprising ATM cells, the system comprising: first means for separating from each other;

a first identifier contained in a multi-bit header of an ATM cell of a predetermined number of bits for identifying a broadcast destination of said ATM cell having said header and an information region;
a single-bit binary broadcast identifier contained in said header and having a first state and a second state indicative of need and lack of need for broadcasting, respectively; and
data in said information region and associated with header information other than said first identifier and said broadcast identifier;

second identifier for obtaining a number of communication nodes to be broadcast and a new destination to which a broadcast is to be made in a position dependent on said first identifier when said broadcast identifier is in said first state and preliminarily storing a new third identifier in said position dependent on said first identifier when said broadcast identifier is in said second state;

third means for providing a count value corresponding to the number of communication nodes stored in said second means;

fourth means for preliminarily and consecutively storing a fourth identifier corresponding to the broadcast destination to be made in a position dependent on said second identifier from said second means and said count value from said third means;

fifth means for assembling a cell to be broadcast from said data from information region and said fourth identifier from said fourth means;

sixth means for assembling a cell not to be broadcast from said data from said information region and said third identifier from said second means; and

seventh means for selectively providing the cell to be broadcast and the cell not to be broadcast from said fifth and sixth means as to a self-routing switch.

5,379,296

METHOD AND APPARATUS FOR INTERFACING A WORKSTATION TO A PLURALITY OF COMPUTER PLATFORMS

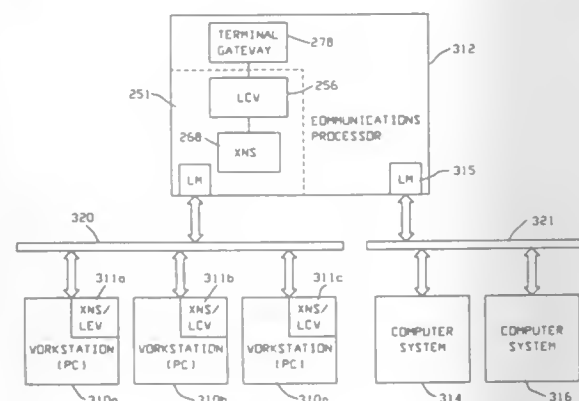
Robert A. Johnson, Pottstown; Sarah K. Haughey, Downingtown, and Jonathan Skilton, Norristown, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 31, 1992, Ser. No. 999,113

Int. Cl.⁶ H04J 3/24

U.S. Cl. 370—60

4 Claims



1. A method for enabling a workstation to communicate with a plurality of computer systems compatible with respective network architectures having at least a data link layer and a client layer at least a level above the data link layer, wherein said workstation is coupled to an interface processor and said interface processor is coupled to said plurality of computer systems, comprising the steps of:

a) sending data, having a specific data structure corresponding to a respective network architecture, from said workstation to said interface processor destined for one of said

computer systems, said specific data structure being unknown to said interface processor;

b) examining, at said interface processor, said data and identifying the data link layer of the respective network architecture corresponding with the specific data structure of said data;

c) determining a destination for said data, based on the identification made in step b); and

d) delivering said data to a process associated with the client layer of the respective network architecture servicing the destination determined in step c).

5,379,297

CONCURRENT MULTI-CHANNEL SEGMENTATION AND REASSEMBLY PROCESSORS FOR ASYNCHRONOUS TRANSFER MODE

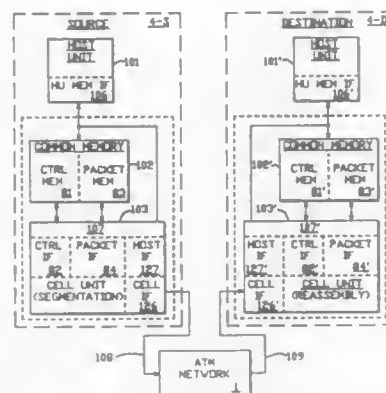
Willie T. Glover; Gururaj Singh, both of San Jose; Amar Gupta, Cupertino, and Peter Newman, Mountain View, all of Calif., assignors to Network Equipment Technologies, Inc., Redwood City, Calif.

Filed Apr. 9, 1992, Ser. No. 866,317

Int. Cl.⁶ H04L 12/56; H04J 3/16

U.S. Cl. 370—60.1

68 Claims



64. A communication system having one or more channels each having reactive control where said system includes, one or more multiple issue rate sources, a plurality of destinations, one or more nodes forming a network connecting sources to destinations, each node including, a path for transfer of information through the network, control signal generating means for generating control signals for one or more signals for one or more channels in response to congestion,

for one or more channels in the network, one of said sources linked to one of said plurality of destinations through said network by paths linking one or more nodes,

said one or more multiple issue rate sources including for each source,

a modifiable issue rate unit having means to transmit forward information signals at different transmission rates in response to said control signals, said issue rate unit having an output for transmitting, for each of one or more channels, at a maximum-channel-peak-cell-rate or at a rate below the maximum-channel-peak-cell-rate as a function of the control signals for each channel.

5,379,298

MULTIMEDIA MULTIPLEXER DEVICE HAVING AUTOMATIC PARAMETER RECOGNIZING AND SETTING FUNCTION, AND COMMUNICATIONS SYSTEMS INCLUDING MULTIMEDIA MULTIPLEXER DEVICES

Koichi Saiki, and Toshihiko Tanegashima, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

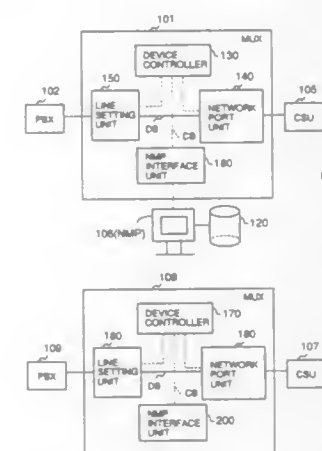
Filed Mar. 24, 1993, Ser. No. 36,429

Claims priority, application Japan, Mar. 25, 1992, 4-066540

Int. Cl.⁶ H04J 3/22, 9/00

U.S. Cl. 370—79

12 Claims



6. A communications system comprising: a plurality of multimedia multiplexer devices; network means for coupling the plurality of multimedia multiplexer devices via line terminating units; and a plurality of communications devices connected to the plurality of multimedia multiplexer devices, each of said multimedia multiplexer devices including: a plurality of line setting units respectively provided for the plurality of communications devices; a port unit connected to said line setting units; said port unit and each of said line setting units including first means for providing a plurality of predetermined interfaces suitable for the communications devices and a corresponding one of the line terminating units; second means for receiving control signals from corresponding communications devices among the plurality of communications devices and said corresponding one of the line terminating units and for identifying parameter information concerning suitable interfaces from the control signals; and third means, coupled to said first means and said second means, for selecting the suitable interfaces from the plurality of predetermined interfaces in accordance with the parameter information identified by said second means and for making the first means provide the suitable interfaces from the plurality of predetermined interfaces.

5,379,299

HIGH SPEED PROPAGATION DELAY COMPENSATION NETWORK

Paul D. Schwartz, Thurmont, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 869,581, Apr. 16, 1992,

abandoned. This application Jun. 14, 1993, Ser. No. 76,082

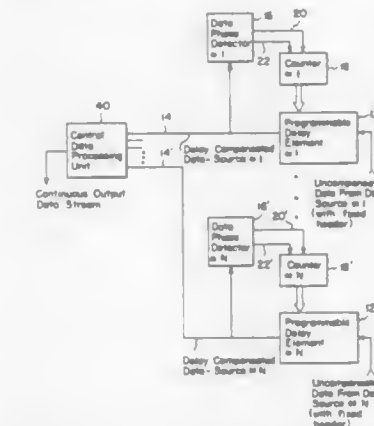
Int. Cl.⁶ H04L 7/033

U.S. Cl. 370—108

5 Claims

4. A method for compensating for different amounts of propagation delay present when gathering streams of digital data from a plurality of different data sources each of which has an inherent path delay, the method comprising:

detecting the inherent path delay delay for each of said plurality of different data sources; delaying the leading edge of the digital data from each of said plurality of different data sources by imparting a delay in an amount based upon the difference between the inherent path delay for each of said plurality of different data sources and a predetermined reference delay;



multiplexing high rate serial data from said plurality of different data sources into a single contiguous data stream read sequentially into a central data processing unit, and separating the end of one stream of digital data from each of said plurality of different data sources and the first bit in the stream of digital data from the following one of said plurality of different data sources by a time no more, and no less than, one clock cycle.

5,379,300

TEST SIGNAL OUTPUT CIRCUIT FOR LSI

Hitoshi Yamahata, and Masahiro Kusuda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

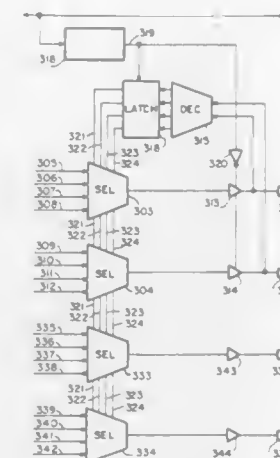
Filed Mar. 27, 1992, Ser. No. 858,614

Claims priority, application Japan, Mar. 27, 1991, 3-62292

Int. Cl.⁶ G01R 31/28; H04B 17/00

U.S. Cl. 371—15.1

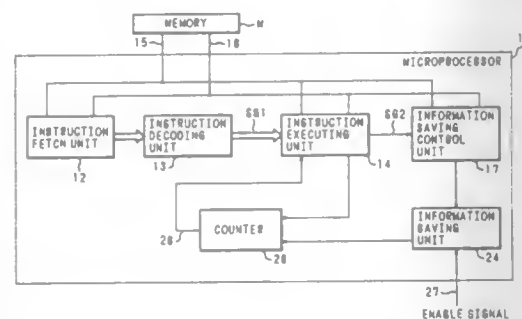
3 Claims



1. A test signal output circuit for LSI, comprising a least one test signal output terminal, at least one test-mode signal input terminal, a decoder for decoding a signal from said test-mode signal input terminal, and at least one selector for passing, in response to the output of said decoder, at least one of a plurality of internal signals in said LSI to said test signal output terminals, wherein the number of said test signal output terminals is n, the number of said test-mode signal input terminals is m, said decoder is of m-input and 2^m-output, and the number of

said selectors, each being of 2^m -input, is $n \cdot 2^m \times n$ ones of said internal signals being produced at said test signal output terminals.

5,379,301
MICROPROCESSOR FOR DEBUGGING PROGRAMS
 Koji Sato, Koji Hirano, and Kazunori Saitoh, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Nov. 12, 1993, Ser. No. 151,246
 Claims priority, application Japan, Nov. 20, 1992, 4-311636
 Int. Cl.⁶ G06F 11/00, 11/28
 U.S. Cl. 371-19 8 Claims



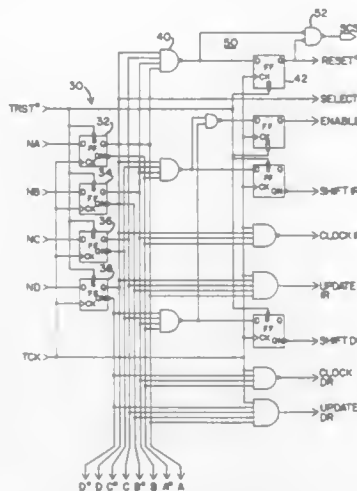
1. A microprocessor, comprising:
 instruction fetching means for fetching respective instruction of an instruction set including a subroutine call instruction and a trap instruction from external storing means;
 instruction decoding means for decoding the instruction fetched into said instruction fetching means, and outputting an internal signal responding to a decoded result;
 instruction executing means for executing the instruction according to the internal signal outputted from said instruction decoding means; and
 mode setting means for setting either a first mode in which the trap instruction is not executed, or a second mode in which the trap instruction can be executed;
 wherein said instruction decoding means,
 in case where said first mode is set in said mode setting means, outputs the internal signal directing execution of a subroutine call to said instruction executing means when decoding the subroutine call instruction, and
 in case where said second mode is set in said mode setting means, outputs the internal signal directing execution of a trap to said instruction executing means when decoding the subroutine call instruction.

5,379,302
ECL TEST ACCESS PORT WITH LOW POWER CONTROL

John R. Andrews, Saco, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.
 Filed Apr. 2, 1993, Ser. No. 42,127
 Int. Cl.⁶ G06F 11/00

U.S. Cl. 371-22.3 19 Claims
 1. An integrated circuit device ECL test access port (TAP) having a plurality of test data registers including a boundary scan register for performing boundary scan testing, a bypass register for providing a minimum path, and optional design specific test data registers and a TAP controller comprising an n state finite machine of a plurality of flip flops whose outputs determine the state of the TAP controller, said TAP controller having a test logic reset state in which the test access port is inactive and a plurality of test mode states when the test access port is active, said registers and TAP controller of the ECL

test access port comprising ECL gates with respective ECL current sinks, the improvement comprising:
 said TAP controller comprising a switch control signal (SCS) logic circuit incorporated in the TAP controller for generating a current sink switch control signal (SCS) according to the state of the TAP controller, said TAP controller being constructed so that the outputs of the flip flops comprising the TAP controller n state finite machine are at specified logic potential levels during the test logic reset state of the TAP controller, said SCS logic circuit for generating the current sink switch control signal SCS



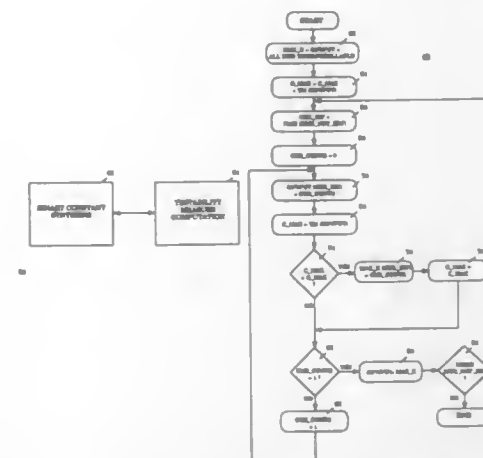
comprising a first logic gate having inputs coupled to the outputs of the TAP controller n state finite machine flip flops;
 a current sink switch circuit coupled to respective current sinks of ECL gates incorporated in the boundary scan register and design specific TAP data registers, said current sink switch circuit having an input coupled to the SCS logic circuit to receive the current sink switch control signal SCS and being constructed to turn off said respective current sinks in response to a first SCS signal to reduce power dissipation when the TAP controller is in the inactive test logic reset state.

5,379,303
MAXIMIZING IMPROVEMENT TO FAULT COVERAGE OF SYSTEM LOGIC OF AN INTEGRATED CIRCUIT WITH EMBEDDED MEMORY ARRAYS

Marc E. Levitt, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.
 Filed Jun. 19, 1991, Ser. No. 717,615
 Int. Cl.⁶ G01R 31/28

U.S. Cl. 371-27 26 Claims
 9. A method for deriving a binary constant for use in testing system logic of an integrated circuit, said method comprising the steps of:
 generating test patterns for testing said system logic;
 determining a set of test inputs to said system logic corresponding to said test patterns, each of said inputs including a plurality of bits;
 deriving a composite input having a plurality of bits from said set of inputs by heuristically reducing each of said bits of said composite input from corresponding bits of said test inputs by
 a) selecting a bit to be set of said composite input;
 b) setting said bit of said composite input to be equal to corresponding bits of said test inputs, if said corresponding bits of said assigned inputs are equal;
 c) setting said bit of said composite input to be equal to a 1-bit, if there are more 1-bits than 0-bits in corresponding bits of said test inputs;

d) setting said bit of said composite input to be equal to a 0-bit, if there are more 0-bits than 1-bits in corresponding bits of said test inputs;
 e) setting said bit of said composite output to be equal to said 1-bit or said 0-bit arbitrarily, if there are equal

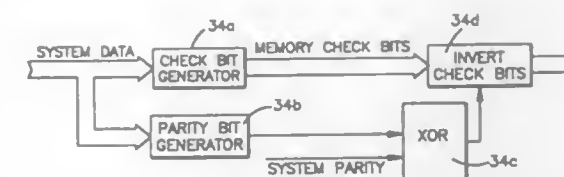


numbers of 1-bits and 0-bits in corresponding bits of said test inputs; and
 f) repeating steps b) through e) for all remaining bits to be set within said composite input; and
 setting said binary constant to be equal to said composite input.

5,379,304
METHOD AND STRUCTURE FOR PROVIDING ERROR CORRECTION CODE AND PARITY FOR EACH BYTE ON SIMM'S

Timothy J. Dell, Colchester, Vt., and Scott Washabaugh, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1994, Ser. No. 187,859
 Int. Cl.⁵ G06F 11/10
 U.S. Cl. 371-40.1 9 Claims

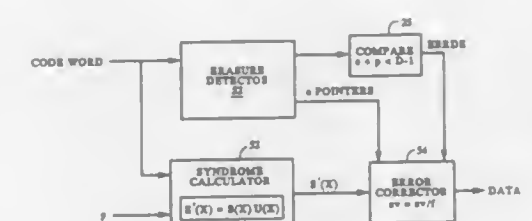


9. A method of providing error correction and parity check on SIMM memory added as add-on memory to a computer system which system writes eight-bit bytes of data together with a parity bit; and wherein said SIMM is configured to operate at a given speed for read and write operations, comprising the steps of:
 generating on said SIMM at least four check bits from the eight bits of each data byte written and a parity bit, comparing the parity of the generated parity bit with the system parity bit and manipulating said check bits to show uncorrectable error responsive to bad parity; storing said generated four check bits with each data byte in DRAMs on said SIMM without introducing a wait state in the computer system;
 reading each data byte and associated check bits from the DRAM and generating new check bits and comparing the newly-generated check bits with the stored check bits to correct and output all single-bit errors and detect some multi-bit errors and bad parity in the read data;
 selecting said DRAM chips to operate at a speed of at least about 10 nanoseconds faster than the speed of operation of

the SIMM; said method including delaying the write function to the DRAM after valid data appears for a time sufficient to generate said check bits.

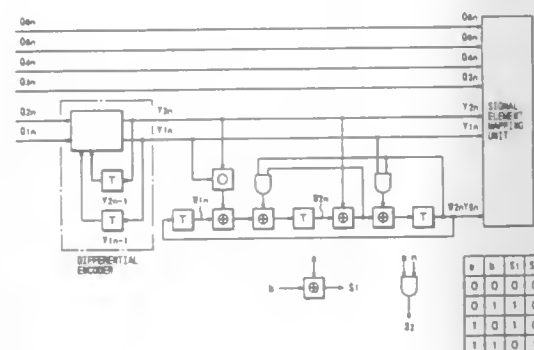
5,379,305
ERROR CORRECTION SYSTEM WITH SELECTABLE ERROR CORRECTION CAPABILITIES
 Lih-Jyh Weng, Shrewsbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
 Filed Jul. 20, 1992, Ser. No. 918,208
 Int. Cl.⁶ H03M 13/00

U.S. Cl. 371-41 15 Claims



1. An error correction system comprising:
 an encoder for encoding k data symbols in accordance with a distance D (n,k) Reed-Solomon error correction code and producing r=n-k redundancy symbols;
 selection means for selecting an error correction level, the selection means setting an associated value p, $0 \leq p \leq r-2$; means for deleting p of the r redundancy symbols;
 code word means for forming an (n-p)-symbol code word, the code word means appending r-p redundancy symbols to the k data symbols;
 an erasure detector maintaining an erasure count and erasure pointers, the erasure count being incremented and a corresponding erasure pointer being stored for each of said p deleted redundancy symbols, each stored erasure pointer pointing to the symbol position occupied by the corresponding deleted redundancy symbol;
 means for filling with predetermined symbols the code word locations corresponding to the p deleted redundancy symbols and producing an n-symbol code word having k retrieved data symbols, r-p retrieved redundancy symbols, and p filled redundancy symbols;
 a syndrome calculator for calculating error syndromes for the n-symbol code word;
 compare means for comparing said erasure count and D, the compare means asserting an error signal if said erasure count is greater than D-1; and
 error correction means for manipulating the error syndromes and the erasure pointers to determine error locations and error and erasure values, and for correcting errors and erasures in the code word by combining the determined error and erasure values with the code word symbols in the corresponding locations if the compare means has not asserted the error signal, the error correction means responding to an asserted error signal by labeling the code word data as erroneous and refraining from so manipulating and correcting.

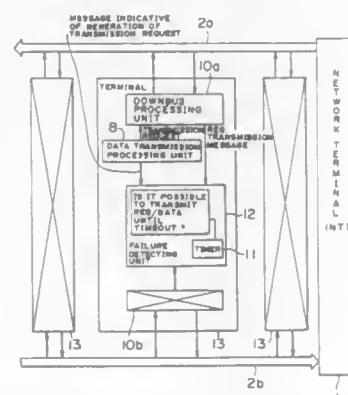
5,379,306
VITERBI DECODING METHOD
 Nobuhiko Noma, Yokohama; Mikio Mizutani; Tsukasa Sakai, both of Tokyo; Kazuo Kurita, Tokushima; Osamu Noguchi, Tokyo; Hiroyuki Nemoto, Tokyo, and Keiichi Tomita, Tokyo, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan
 Filed Aug. 27, 1992, Ser. No. 935,936
 Claims priority, application Japan, Aug. 28, 1991, 3-217495
 Int. Cl.⁵ G06F 11/00
 U.S. Cl. 371—43 6 Claims



1. A Viterbi decoding method comprising the steps of: receiving a signal representing a string of data at an nth time instant (where n is a positive integer), the string of data comprising a plurality of serial divisions each of which has a predetermined number of consecutive input data bits; transforming the received signal into a plurality of division signals representing respective serial divisions of consecutive input data bits; using a Trellis encoder for converting the division signal representing the input data bits of each division into a code signal representing consecutive Trellis code bits at the nth time instant; generating a branch metric signal representing a minimum Euclidean distance between a reception signal point corresponding to the received signal including a noise component and each of a plurality of signal points in a signal space diagram, which correspond to the code signals representing Trellis codes, at the nth time instant corresponding to each of first to eighth states represented by three bits obtained in the Trellis encoder and also generating a reception-signal-point signal representing the reception signal point; generating a branch metric sum signal representing a sum of the minimum Euclidean distances corresponding to the first to eighth states, respectively, each of which is multiplied by a parameter, at the nth time instant and also generating a path metric signal representing a corresponding path metric at an (n-1)th time instant as a sum of the minimum Euclidean distances corresponding to a first time instant to the (n-1)th time instant, respectively; generating a signal representing a sum of the minimum Euclidean distance at the nth time instant and the path metric at the (n-1)th time instant correspondingly to each of the first to eighth states as a path metric signal representing the path metric corresponding to each of the first to eighth states at the nth time instant; determining the path metric signal representing a minimum one of the path metrics respectively corresponding to the first to eighth states at the nth time instant as an nth surviving path signal representing a part of a surviving path, which part corresponds to the nth time instant and similarly generating (n-1)th to first surviving path signals in that order; generating a signal representing a signal point at the first time instant from the first surviving path signal; and restoring a signal representing input data bits received at the

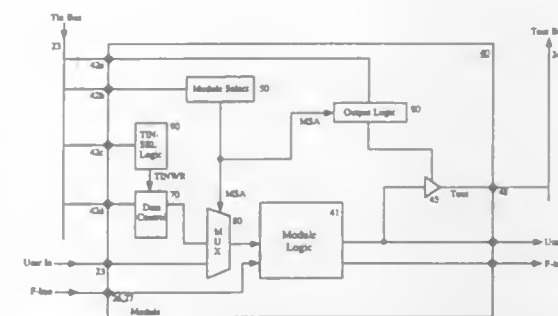
first time instant from the signal representing the signal point at the first time, wherein the step of generating the branch metric signal and the reception-signal-point signal further comprises the sub-steps of: classifying the signals corresponding to the signal points according to the three bits into eight groups; employing a signal of one of the eight groups as the signal of a reference group; storing data used to obtain from the signal of the reference group the signals of groups other than the reference group; and generating seven tables representing the signal points of the other groups on the basis of a reference table which represents the signal points of the reference group.

5,379,307
SYSTEM FOR DETECTING FAILURE IN DUAL BUS USER NETWORK
 Ryoichi Ishibashi; Tetsuo Tachibana, and Hisakazu Ohmori, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
 Filed Jul. 6, 1992, Ser. No. 909,035
 Claims priority, application Japan, Jul. 5, 1991, 3-165365
 Int. Cl.⁶ H04J 3/12
 U.S. Cl. 371—62 5 Claims



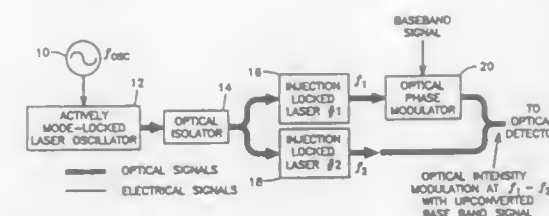
1. A system for detecting failures in a user network which transmits and receives information in cell form, said system comprising: network terminal means; dual bus means comprising a downbus and an upbus, both connected to said network terminal means, said dual bus means adapted for transmitting a cell comprising a header field and an information field, said header field being indicative of whether a data transmission request message or information has been stored in such cell, said information field being adapted to store data therein; and a plurality of terminals connected to said dual bus means, said terminals comprising data transmission processing means for issuing a data transmission request, downbus processing means for bringing said cell from said downbus for processing the cell in accordance with a desired process and returning said cell to said downbus, a timer, and failure detecting means for activating said timer for counting a given time interval in response to a data transmission request being issued from said data transmission processing means and for detecting a transmission failure when the transmission of the information registered in said information field of said cell is disallowed before said timer expires.

5,379,308
APPARATUS FOR A BUS-BASED INTEGRATED CIRCUIT TEST ARCHITECTURE
 Hang T. T. Nguyen, Mesa, and Srinivas Raman, Phoenix, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.
 Filed Apr. 20, 1992, Ser. No. 870,877
 Int. Cl.⁶ H04B 17/00
 U.S. Cl. 371—22.6 10 Claims



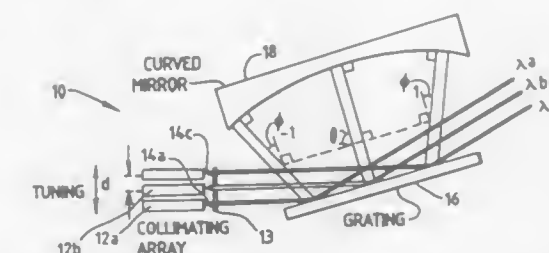
1. An integrated circuit implemented on a chip comprising: a plurality of chip inputs coupled to the integrated circuit for routing signals into circuitry embedded on the chip; a plurality of chip outputs coupled to the integrated circuit for routing signals out of the chip; a first circuit module incorporated on said chip, said first circuit module including: module logic incorporated within said first circuit module; module system inputs coupled to said first circuit module for routing system signals to said module logic; test signal inputs coupled to said first circuit module for routing test signals to said module logic; module system outputs coupled to said first circuit module for routing system signals out of said first module; and test signal outputs coupled to said first circuit module for routing test signals out of said first module; a test input bus coupled to said first circuit module at said test signal inputs and selectively coupled to at least one of said plurality of chip input for transmitting test control signals to control said integrated circuit when said integrated circuit is being tested; a test output bus coupled to said first circuit module at said test signal outputs and selectively coupled to at least one of said plurality of chip outputs for transmitting a test result signal from said first circuit module out of said integrated circuit; a test module select logic coupled within said first circuit module and to said test input bus for generating a module select active signal internal to said first circuit module responsive to signals from said test input bus identifying said first circuit module as a module under test when said first circuit module is selected to be tested; a test input logic coupled within said first circuit module and coupled to said test input bus through said test signal inputs and coupled to said module system inputs for receiving both test input signals and user mode input signals, said test input logic being further coupled to said module logic and to said test module select logic for controlling which signals are passed by said test input logic to said module logic; and a test output logic coupled within said first circuit module to said test module select logic, to said test output bus through said test signal outputs and to said module logic, said test output logic for controlling the transmission of said test result signal onto said test output bus when said first circuit module is being tested.

5,379,309
HIGH FREQUENCY SOURCE HAVING HETERODYNE LASER OSCILLATORS INJECTION-LOCKED TO A MODE-LOCKED LASER
 Ronald T. Logan, Jr., S. Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
 Filed Aug. 16, 1993, Ser. No. 106,445
 Int. Cl.⁶ H01S 3/098
 U.S. Cl. 372—18 20 Claims



1. A signal generator, comprising: an actively mode-locking modulation signal source having a frequency harmonically related to a desired output frequency; a laser coupled to said actively mode-locking modulation signal source and having plural optical modes actively mode-locked by said actively mode-locking modulation signal source and characterized by respective mode frequencies, whereby said laser is an actively mode-locked laser; plural tuned lasers, each of said plural tuned lasers being tuned to a respective optical frequency, corresponding to respective ones of said mode frequencies, wherein a difference in the optical frequencies of different ones of said plural tuned lasers corresponds to a desired output frequency; means for injection-locking said plural tuned lasers to corresponding ones of said plural optical modes of said mode-locked laser; and means for combining the optical outputs of said plural tuned lasers whereby to generate at least an output signal having an output frequency equal to said difference in the optical frequencies of different ones of said plural tuned lasers and corresponding to said desired output frequency.

5,379,310
EXTERNAL CAVITY, MULTIPLE WAVELENGTH LASER TRANSMITTER
 George C. Papen, Urbana; G. Matthew Murphy, and David Brady, both of Champaign, Ill., assignors to Board of Trustees of the University of Illinois, Champaign, Ill.
 Filed May 6, 1993, Ser. No. 58,565
 Int. Cl.⁶ H01S 3/10
 U.S. Cl. 372—23 26 Claims



a grating disposed with said plurality of light beams incident thereon; and
a reflective surface displaced from said grating wherein one of said grating and said surface is planar and the other is curved and wherein said surface and said grating are oriented to reflect a portion of each said beam back into a said respective source thereby causing each said source to lase at a different wavelength than at least some of said other sources of said plurality and capable of generating at least a plurality of spaced output beams corresponding to said lasing wavelengths.

5,379,311

WAVELENGTH CONVERSION WAVEGUIDE

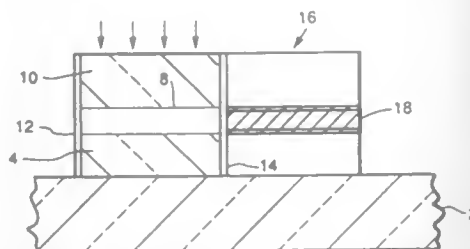
Ross A. McFarlane, and Mark Lui, both of Thousand Oaks, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 153,713, Nov. 16, 1993, abandoned, which is a division of Ser. No. 942,868, Sep. 10, 1992, Pat. No. 5,290,730. This application Mar. 25, 1994, Ser. No. 218,201

Int. Cl.⁶ H01S 3/16

U.S. Cl. 372-41

28 Claims



1. A radiation wavelength conversion device that is operable at room temperature, comprising:
a single crystal halide-based waveguide cladding layer, and
a halide-based waveguide active layer on said cladding layer, including a dopant that causes said active layer to respond to input radiation at one wavelength by emitting radiation at a different wavelength, said doped active layer having a refractive index that is greater than the cladding layer's refractive index and being approximately lattice matched with said cladding layer.

5,379,312

SEMICONDUCTOR LASER WITH TENSILE-STRAINED ETCH-STOP LAYER

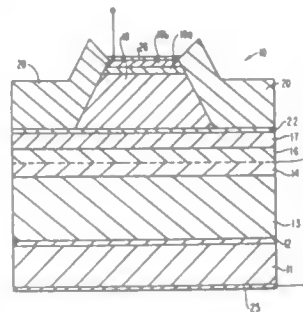
David P. Bour, Cupertino, and David W. Treat, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1993, Ser. No. 142,742

Int. Cl.⁶ H01S 3/19

U.S. Cl. 372-45

14 Claims



1. In a semiconductor laser generating radiation at given wavelengths and having a body comprising a substrate and epitaxially deposited over the substrate an active layer with one or more quantum wells, an optical confinement layer over the active layer, and a cladding layer, and forming a P-N junction between the cladding layer and the substrate and with

an etch-stop layer located in or adjacent the cladding layer, the improvement comprising:

(a) said etch-stop layer having a composition such that a strained layer results that is substantially transparent to the wavelengths of radiation generated by the laser.

5,379,313

SEMICONDUCTIVE DEVICES UTILIZING MGTE, MGSE, ZNSE, ZNTE AND ALLOYS THEREOF

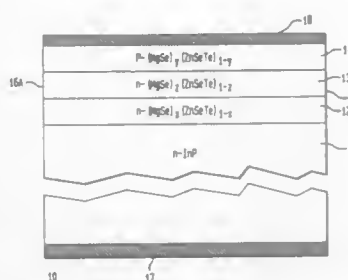
James D. Chadl, Princeton, N.J., and Tohru Zuzuki, Tsukuba, Japan, assignors to NEC Research Institute, Inc., Princeton, N.J. and NEC Corporation, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 115,306

Int. Cl.⁶ H01S 3/19

U.S. Cl. 372-45

9 Claims



1. A semiconductor device comprising a monocrystalline multilayer structure that comprises
an ordered substrate of zinc blende crystal structure having a specific lattice constant within the range of 5.90 Angstroms and 5.85 Angstroms
a first semiconductor layer overlying said substrate and lattice matched thereto comprising $(\text{MgSe})_{x_1}[(\text{ZnSeTe})_{1-x_1}]$, where x_1 has positive values less than one, and a dopant for making the layer semiconducting of one conductivity type,
a second semiconductor layer overlying said first layer and lattice matched thereto comprising A,B or an AB alloy where A is $(\text{MgSe})_{x_2}[(\text{ZnSeTe})_{1-x_2}]$ where x_2 has positive values less than one, and B is CdS,
and a third layer overlying said second layer and lattice matched thereto comprising $(\text{MgSe})_{x_3}[(\text{ZnSeTe})_{1-x_3}]$, where x_3 has positive values less than one, and a dopant for making the layer of the conductivity type opposite that of the first layer, further characterized in that
the band gap of the second layer is narrower than the band gap of each of the first and third layers, and all the layers are lattice matched to the substrate.

5,379,314

SEMICONDUCTOR LASER AND METHOD OF MANUFACTURING SEMICONDUCTOR LASER

Kazuhiko Nemoto, Toyoharu Ohata, and Masamichi Ogawa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1993, Ser. No. 138,429

Claims priority, application Japan, Oct. 20, 1992, 4-281729

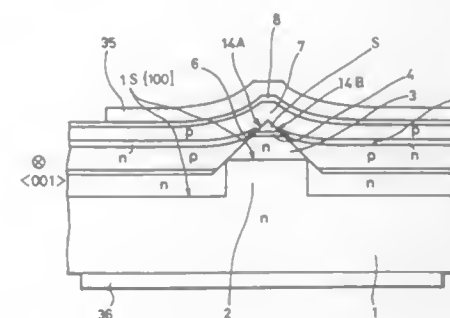
Int. Cl.⁶ H01S 3/19

U.S. Cl. 372-46

14 Claims

1. A light emitting element comprising:
a substrate having a {100} crystal face having a ridge extending in a <001> crystal axis direction;
a first cladding layer formed on said ridge;
an active layer formed on said first cladding layer;
a second cladding layer formed on said active layer;

a first electrode being electrically connected to said substrate; and



a second electrode being electrically connected to said second cladding layer.

5,379,315

SEMICONDUCTOR LASER PUMPED MULTIPLE MOLECULAR GAS LASERS

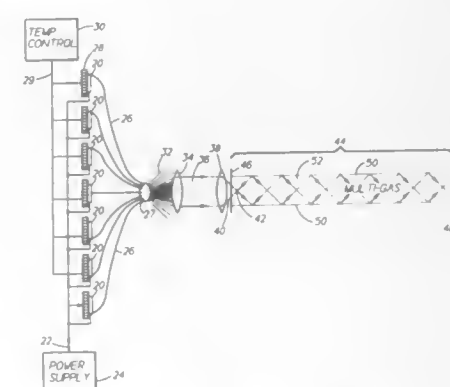
Richard A. Meinzer, Glastonbury, assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 23, 1992, Ser. No. 980,020

Int. Cl.⁶ H01S 3/22, 3/223

U.S. Cl. 372-55

22 Claims



1. A semiconductor laser pumped multiple molecular gas laser, comprising:
a plurality of semiconductor lasers each emitting pumping light having a pumping wavelength;
a first molecular gas having an absorption frequency band;
a second molecular gas having predetermined lasing wavelengths;
said pumping wavelength of said semiconductor lasers being within said absorption frequency band of said first gas and being capable of pumping said first gas molecules from the ground state to an excited state;
gas laser cavity means, disposed in the path of said pumping light from said plurality of semiconductor lasers, for housing said first and said second molecular gases, for allowing said pumping wavelength into said cavity, and for providing an output laser light having a lasing wavelength corresponding to said second gas;
said pumping light being injected relatively uniformly into said gas lasing cavity means to provide a substantially homogeneous excited medium and the pathlength of said pumping light being sufficient to allow absorption of said pumping light by said first gas;
said first gas being pumped to a first energy level close in value to a second energy level of said second gas; and
whereby said first energy level of said first gas transfers to said second energy level of said second gas, thereby exciting said second gas to allow lasing thereof.

5,379,316

LASER DISCHARGE TUBE

Norio Karube, Machida; Yoshiki Fujioke, Minamitsuru, and Mitsuo Manabe, Hachioji, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP92/00750, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO93/03520, PCT Pub. Date Feb. 18, 1993

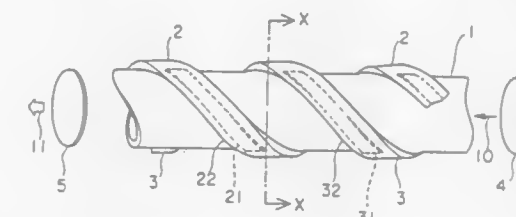
PCT Filed Jun. 11, 1992, Ser. No. 30,418

Claims priority, application Japan, Jul. 29, 1991, 3-187968

Int. Cl.⁶ H01S 3/03, 3/097

U.S. Cl. 372-61

16 Claims



1. A laser discharge tube, containing a laser gas, for inducing a discharge in response to a high-frequency voltage applied thereto to excite the laser gas, said laser discharge tube comprising:
electrodes disposed on an outside periphery of the laser discharge tube; and
dielectric layers deposited on said electrodes, said dielectric layers being ceramic-deposited layers comprising a ceramic material having one of a low coefficient of thermal expansion and a negative coefficient of thermal expansion, and a binder which is a low melting point glass.

5,379,317

MICROWAVE-EXCITED SLAB WAVEGUIDE LASER WITH ALL METAL SEALED CAVITY

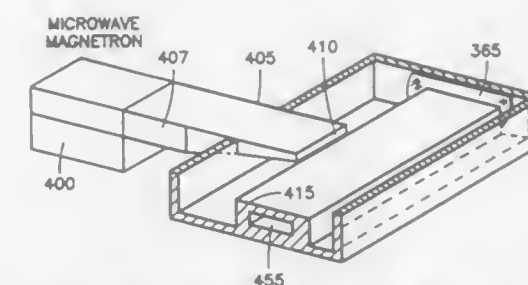
William B. Bridges, and Yongfang Zhang, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 28, 1993, Ser. No. 68,853

Int. Cl.⁶ H01S 3/032

U.S. Cl. 372-64

17 Claims



1. A microwave-pumped waveguide gas laser, comprising:
a microwave waveguide comprising,
(a) a vacuum envelope capable of containing laser gas of said laser,
(b) first and second optical waveguide surfaces extending at least partially across a width of said waveguide and extending along a length of said waveguide, said optical waveguide surfaces facing one another as an optical waveguide of said laser and defining a longitudinal optically active region therebetween, and wherein at least one of said optical waveguide surfaces is supported on a ridge of said microwave waveguide,
(c) a pair of vertical side walls facing said optically active region and displaced therefrom by a sufficient distance whereby said optically active region opens out into

remaining portions of said waveguide along either side of said ridge and an electric field in said optically active region is virtually uniform across the lateral width thereof, and,

- (d) a pair of end-walls wherein respective ends of said ridge are separated from said end-walls by a gap creating a short-circuit boundary for longitudinally confining electromagnetic fields within the waveguide; a pair of reflecting mirrors at each end of said optically active region; and means for coupling electromagnetic energy to said waveguide.

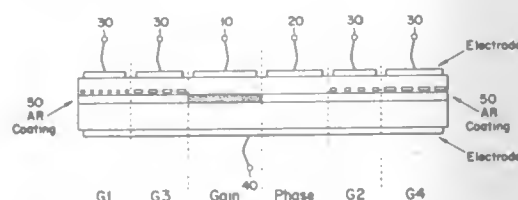
5,379,318

ALTERNATING GRATING TUNABLE DBR LASER
Jean-Pierre Weber, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 31, 1994, Ser. No. 188,770
Int. Cl.⁶ H01S 3/08

U.S. Cl. 372—96

8 Claims



1. A semiconductor laser comprising:

a cavity;
a gain section disposed substantially centrally in said cavity, thereby dividing said cavity into a first and second area;
a phase control section disposed adjacent said gain control section;
first, second, third and fourth grating sections, two each disposed in said first and second areas, and each having a reflection spectrum having a central wavelength, wherein said first grating section has a lowest central wavelength, said second grating section has a second lowest central wavelength, said third grating section has a third lowest central wavelength and said fourth grating section has a highest central wavelength; wherein said first and third grating sections are disposed in said first area and said second and fourth grating sections are disposed in said second area, and
means for changing an effective refractive index in each of said grating sections independently.

5,379,319

TELEPHONE APPARATUS

Masaharu Satoh, Sagami-hara, and Akira Tajima, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

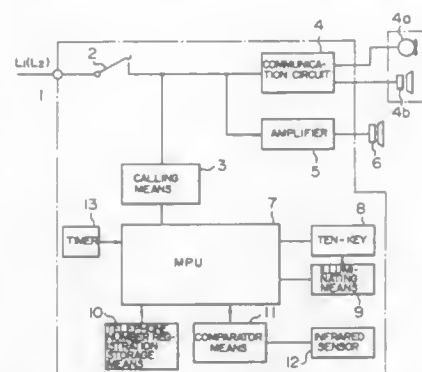
Filed Nov. 5, 1991, Ser. No. 788,241
Claims priority, application Japan, Nov. 9, 1990, 2-305132
Int. Cl.⁶ H04M 1/00

U.S. Cl. 379—387

2 Claims

1. A telephone apparatus, comprising:
a ten-key device for enabling entry of a code and a telephone number;
telephone number registration means for storing telephone numbers therein;
calling means for transmitting one of the telephone numbers registered and stored in said telephone number registration storage means;
human body approach sensing means for producing a signal when approached by a human body;
a comparing means for comparing a value of said signal from said human body approach sensing means with a predetermined value, said comparing means delivering an approach signal when said value of said signal from said

human body approach sensing means exceeds said predetermined value; and
control means receiving said approach signal from said



comparing means, for activating said telephone number registration means when said approach signal is delivered thereto, and for activating said calling means when said ten-key device is operated.

5,379,320

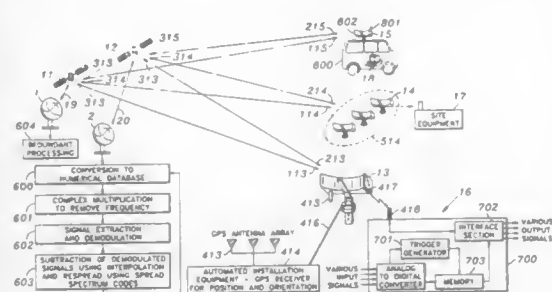
HITLESS ULTRA SMALL APERTURE TERMINAL SATELLITE COMMUNICATION NETWORK

Roosevelt A. Fernandes, Chino Hills, Calif., and Kurt P. Krabbe, Bountiful, Utah, assignors to Southern California Edison Company, Rosemead, Calif.

Filed Mar. 11, 1993, Ser. No. 29,897
Int. Cl.⁶ H04L 9/00

U.S. Cl. 375—1

117 Claims



1. A communication system using satellite repeaters comprising

- (a) at least two satellite repeaters,
(b) at least one hub terminal including antenna means for communicating with each satellite repeater,
(c) multiple remote terminals including respective antenna means having sufficient beamwidth for illuminating the at least two satellite repeaters simultaneously with multiple signals, the signals representing information in relation to the remote terminals, the remote terminals having respective communication means, and the communications means being nonoperable when the information is not being communicated,
(d) the signals being spread spectrum encoded thereby to reduce peak power spectral density, and
(e) the hub terminal and the multiple remote terminals communicating signals simultaneously through the at least two satellites.

5,379,321

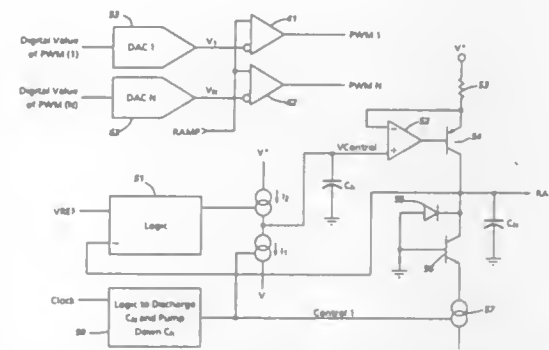
HIGH SPEED PWM WITHOUT LINEARITY COMPROMISE AT EXTREME DUTY CYCLES

Girmay K. Girmay, Mirada, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 1, 1993, Ser. No. 966,912
Int. Cl.⁶ H03K 9/08

U.S. Cl. 375—22

1 Claim



1. A pulse width modulation pulse generator comprising:
A clock generator for generating a series of clock pulses,
threshold means for generating a threshold voltage of any value between a low voltage and a high voltage within a voltage range,
ramp means responsive to said series of clock pulses for generating a ramp having a slope, amplitude and duration, said ramp amplitude exceeding said high voltage in said range by a predetermined amount, said ramp duration being an amount less than the time between the rising edges of said clock pulses,
a comparator for producing an output of one state immediately before the crossover of said ramp and threshold voltage, and for producing an output of the other state for the remainder of the time between the rising edges of said clock pulses, and
means responsive to the time between clock pulses for increasing or decreasing the slope of said ramp as the time between the rising edges of said clock pulses decreases or increases, respectively, to maintain a constant output pulse duty cycle as the time between the rising edges of said clock pulses varies.

5,379,322

BASEBAND SIGNAL GENERATOR FOR DIGITAL MODULATOR

Akio Kosaka, Gifu; Mitsufumi Yoshimoto, Nara; Mitsuji Hama, Osaka, and Toshinori Iinuma, Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of Japan

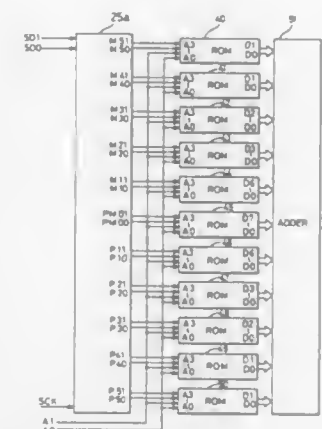
Filed Oct. 30, 1992, Ser. No. 969,947
Claims priority, application Japan, Jan. 7, 1992, 4-000835; Jan. 7, 1992, 4-000836; Jan. 7, 1992, 4-000837
Int. Cl.⁶ H04L 27/10

U.S. Cl. 375—60

6 Claims

1. The baseband signal generator for a digital modulator, comprising:
means for supplying a digital baseband signal,
means for performing a differential encoding processing and a mapping processing for said digital baseband signal to convert the signal into a plurality of symbol mapping data of different phases,
a plurality of digital filtering means for limiting respective bandwidths of said plurality of symbol mapping data, means for designating burst transmission, each of said plurality of digital filtering means including:
means for accumulating said symbol mapping data by the amount corresponding to a plurality of symbol sections, a plurality of read only memory means provided corre-

sponding to said plurality of symbol sections for storing symbol data read out corresponding to a predetermined filter waveform,
output masking means for selectively rendering said symbol data read out from said plurality of read only memory means to "0",
mask controlling means responsive to a designation of



change of an eye pattern of the output of the A-D converter;
 a data delay unit for delaying the output of the A-D converter by a time equivalent to one time slot according to a clock signal synchronized with the baseband signal and having a frequency equal to the symbol rate frequency;
 an operation unit for generating signals I and Q from the output of the A-D converter and a one-time-slot-before output of the A-D converter delayed by the data delay unit according to a clock signal synchronized with the baseband signal and having a frequency equal to the symbol rate frequency; and
 a judging unit for demodulating an in-phase component signal and orthogonal component signal from the signals I and Q and performing parallel-serial conversion to output data.

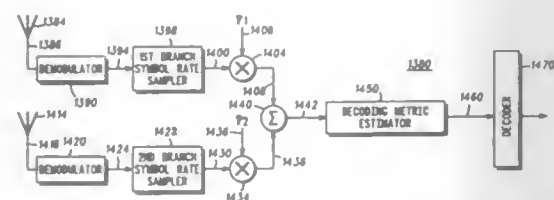
5,379,324

SYSTEM AND METHOD FOR CALCULATING CHANNEL GAIN AND NOISE VARIANCE OF A COMMUNICATION CHANNEL

Bruce D. Mueller, Palatine; Kevin L. Baum, Hoffman Estates; David E. Borth, Palatine; Phillip D. Rasky, Buffalo Grove, and Eric H. Winter, Oakpark, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
 Division of Ser. No. 724,663, Jul. 2, 1991, Pat. No. 5,214,675.
 This application Jan. 25, 1993, Ser. No. 8,249
 Int. Cl.⁶ H04L 27/06

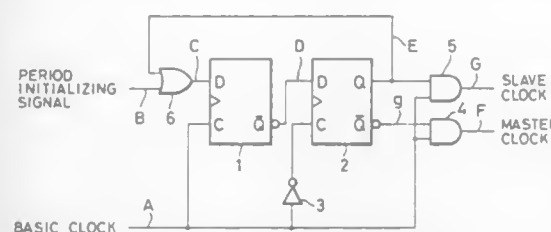
U.S. Cl. 375—94

4 Claims



1. A receiver for receiving and decoding a differentially-encoded, communication signal transmitted thereto over a communication channel, said receiver comprising:
 means for demodulating the differentially-encoded, communication signal transmitted over the communication channel to form a demodulated, received signal thereby;
 means for sampling values of at least portions of the demodulated, received signal and for generating a sampled signal indicative thereof;
 means forming a decoding metric estimator coupled to receive the sampled signal wherein the decoding metric estimator includes a delay element coupled to receive the sampled signal generated by said means for sampling and operative to generate a delayed signal, a complex conjugate converter coupled to receive a signal representative of the delayed signal and operative to generate a complex conjugate signal, and a mixer coupled to receive the sampled signal and the complex conjugate signal and operative to mix the sampled signal and the complex conjugate signal theretogether to form thereby a mixed signal which comprises a metric estimation signal; and
 means forming a soft decision decoder for receiving the metric estimation signal generated by the decoding metric estimator, and for decoding the metric estimation signal when received thereat.

5,379,325
 CLOCK GENERATING APPARATUS, DATA TRANSMITTING/RECEIVING APPARATUS AND DATA TRANSMITTING/RECEIVING METHOD
 Toshiyuki Katayama, Hitachi; Norihiko Sugimoto, Katsuta; Shunji Inada, and Seiji Kamada, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of Japan
 Filed Sep. 30, 1991, Ser. No. 767,878
 Claims priority, application Japan, Sep. 28, 1990, 2-259998
 Int. Cl.⁶ H04L 7/00; H03L 7/00
 U.S. Cl. 375—106 9 Claims

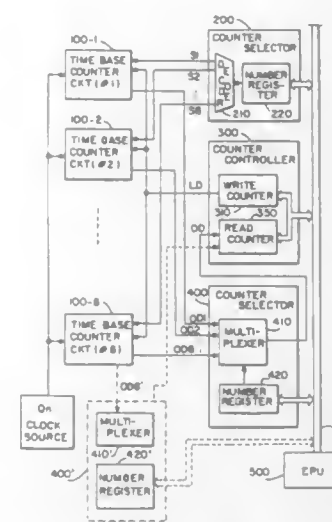


5. A clock generating apparatus, comprising:
 2-phase clock signal generating means for generating, upon receiving an input signal and a basic clock signal, 2-phase clock signals having a frequency which is one-half that of said basic clock signal and which differ in phase from each other by one-half the period of said basic clock signal;
 master clock signal generating means for generating a master clock signal representing a logical product of one signal of said 2-phase clock signals and said basic clock signal;
 slave clock signal generating means for generating a slave clock signal representing a logical product of another signal of said 2-phase clock signals and said basic clock signal, the phase of said slave clock signal differing from the phase of said master clock signal by an amount equal to the period of said basic clock signal;
 period initializing signal generating means for generating a period initializing signal synchronized with said basic clock signal upon detection of a specific bit pattern of serial data input through a data transmission line; and
 logical means for receiving said period initializing signal and one of said 2-phase clock signals, and for generating a gate signal as the input signal to said 2-phase clock signal generating means.

5,379,326
 SYNCHRONIZATION CONTROL CIRCUIT FOR TDMA CELLULAR COMMUNICATION SYSTEM
 Kenji Nakahara, and Hiroyuki Kaneda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
 Filed Apr. 27, 1992, Ser. No. 873,830
 Claims priority, application Japan, Apr. 27, 1991, 3-124765
 Int. Cl.⁶ H04L 7/00
 U.S. Cl. 375—106 10 Claims

1. A synchronization control circuit for a mobile station which is included in a TDMA (Time Division Multiple Access) cellular digital mobile communication system for selectively interchanging digital signals with a number of mobile stations located in cells each being defined by one of a plurality of base stations which share a plurality of radio frequency carrier waves different in frequency and time base from one another on a time division basis, said circuit comprising:
 a plurality of time base counter circuits each being assigned to a respective one of said plurality of radio frequency carrier waves for generating various timing signals necessary for said mobile station in response to clock pulses which are generated by a clock pulse source built in said mobile station;
 a control signal source for generating counter circuit control signals for causing each of said plurality of time base

counter circuits to perform at least one of start counting, stop counting, and reading counts thereof; and
 single counter controller means connected to and shared by

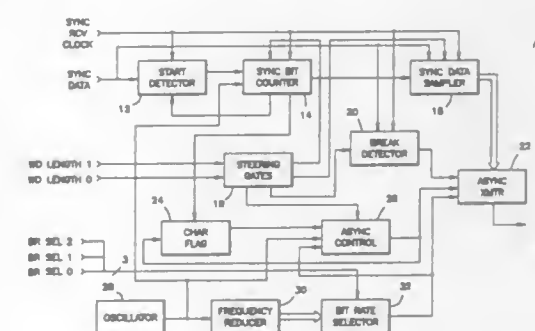


said plurality of time base counter circuits and responsive to said control signals for selectively producing count outputs of one of said plurality of time base counter circuits as a time base signal of said mobile station.

5,379,327
 SYNCHRONOUS-TO-ASYNCHRONOUS CONVERTER
 Raghu Sharma, North Oaks, and Greg Johnson, Fridley, both of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.
 Filed Jul. 13, 1993, Ser. No. 91,305
 Int. Cl.⁶ H04L 23/00

U.S. Cl. 375—121

5 Claims



1. An apparatus for converting characters having a programmable length from synchronous to asynchronous form, comprising:

input means for receiving and passing serial synchronous data characters, wherein each of the serial synchronous data characters includes at least a start bit, a programmed number of synchronous data bits followed by at least one stop bit for every two characters;
 synchronous clock input means for receiving and passing a serial synchronous clock signal associated with the serial synchronous data characters;
 word length input means for inputting and passing a bit code indicating the number of synchronous data bits in each of the serial synchronous data characters;
 bit rate input means for inputting and passing a rate code for selecting an asynchronous transmission rate;
 clock means for providing a clock signal at the asynchro-

nous transmission rate selected in response to the rate code;

start detector means connected for receiving the serial synchronous data characters from the input means, for receiving the serial synchronous clock signal from the synchronous clock input means, and operable for synchronous start bit recognition on each serial synchronous data character and further operable for producing a start indicator in response thereto;

synchronous bit counter means connected for receiving the serial synchronous data characters, connected to the synchronous clock input means for receiving the serial synchronous clock signal, connected to the start detector means for receiving the start indicator, connected to the clock means for receiving the clock signal, and connected to the word length input means for receiving the bit code, and operable for counting each bit of the serial synchronous data character and for producing a reset signal when all the data bits of a complete serial synchronous data character are counted;

synchronous data sampler means connected for receiving the synchronous data bits of the serial synchronous data characters, connected to the synchronous clock input means for receiving the serial synchronous clock signal, connected to the synchronous bit counter means for receiving the reset signal and connected to the word length input means for receiving the bit code, and operable for latching each bit of the synchronous data bits of the serial synchronous data character, for storing the synchronous data bits of the serial synchronous data character and for outputting the synchronous data bits;

character flag means connected to the synchronous bit counter means for providing a character ready flag when the synchronous data sampler means has stored a complete serial synchronous data character;

asynchronous control means connected to the character flag means for receiving the character ready flag and connected to the word length input means for receiving the bit code, and for providing a transfer command signal in response thereto;

asynchronous transmitter means connected to the synchronous data sampler means and connected to the asynchronous control means, for receiving the synchronous data bits upon receipt of the transfer command signal and for asynchronously transmitting the synchronous data bits thereby converting the serial synchronous data into serial asynchronous data; and

break detector means connected to the asynchronous transmitter means, connected to the synchronous clock input means for receiving the serial synchronous clock signal, and connected to the word length input mean for receiving the bit code, and operable for detecting a break signal in the serial synchronous data characters and for stopping transmission of serial asynchronous data in response thereto.

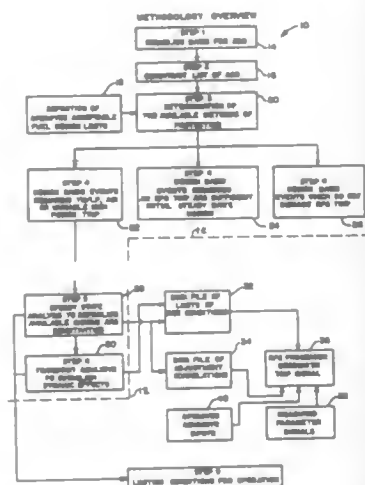
5,379,328
 NUCLEAR CORE TRIP SETPOINTS
 Rolando Perez, Enfield, and Mehran Golbabai, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
 Continuation of Ser. No. 984,536, Dec. 2, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,382
 Int. Cl.⁶ G21C 7/36

U.S. Cl. 376—217

19 Claims

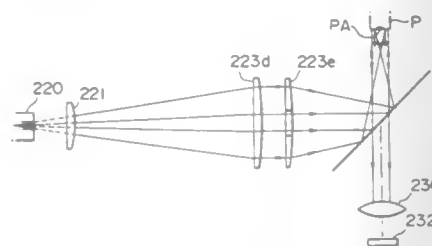
1. A method for generating a nuclear reactor on-line trip signal when a measured one (p1) of a plurality of at least three nuclear plant operating parameters (p1, p2, p3, . . . pN) which define a limit surface on a multidimensional reactor operating space, exceeds a limit value (*p1) on the limit surface, comprising:

- (a) storing in an array having at least three dimensions, a set of discrete limit surface values *p1(r) of parameter p1 in ordered triplets, under reference conditions in which parameters p2 and p3 vary discretely and parameters p4 . . . pN are deemed constant;
- (b) while operating the reactor, measuring the on-line values p1', p2', p3' of the parameters p1, p2 and p3;
- (c) selecting from the array, at least four of the triplets which have the closest relation of the triplet values p2(r) and p3(r) to the measured values p2' and p3';



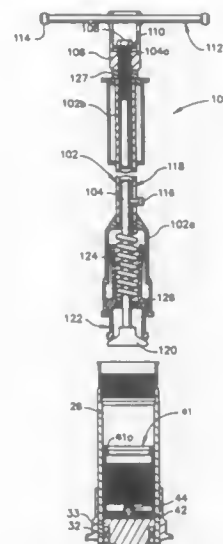
- (d) interpolating among the selected triplets to obtain an estimate *p1' of the surface limit value corresponding to the measured values of p2' and p3';
- (e) delivering a trip parameter limit signal *p1 having the estimated value *p1' to a trip signal generator; and
- (f) comparing the measured value p1' with the value *p1' of the trip parameter limit signal *p1 in the trip signal generator and generating a trip signal if the measured value p1' exceeds the limit signal *p1.

5,379,329
METHOD AND APPARATUS FOR INSPECTING END FACE OF PELLET
 Yoshitaka Yaginuma, Naka, and Yoshihiro Inoue, Tokyo, both of Japan, assignors to Mitsubishi Nuclear Fuel Co. and Mitsubishi Materials Corporation, both of Tokyo, Japan
 Filed Feb. 25, 1994, Ser. No. 202,169
 Claims priority, application Japan, Feb. 25, 1993, 5-037109
 Int. Cl.⁵ G21C 17/00
 U.S. Cl. 376—248 5 Claims



1. A method for inspecting a dished end face of a nuclear fuel pellet, comprising the steps of:
 emitting a focused beam of light to a dish of said end face of said nuclear fuel pellet while emitting a parallel beam of light to the entire end face thereof; and
 picking-up an image of said end face of the nuclear fuel pellet and judging quality of the pellet based on the picked-up image.

5,379,330
INNER FILTER REMOVAL TOOL
 Robert K. Lovell; Robert S. Tsukida; Frank Ortega, and Thomas W. White, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.
 Filed Oct. 12, 1993, Ser. No. 135,779
 Int. Cl.⁶ G21C 19/00
 U.S. Cl. 376—260 20 Claims

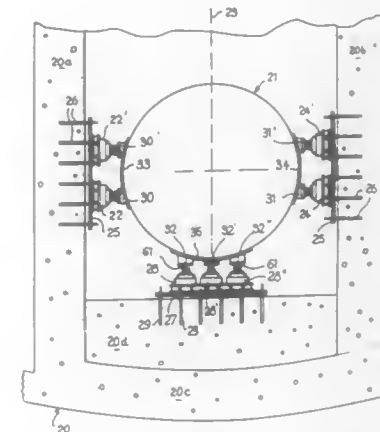


1. A tool for removing an inner filter having a ring flange from a control rod drive, said ring flange defining a radial plane, comprising:
 latching means comprising a plurality of radially flexible latching members integrally connected to and extending from a cylindrical support means, each of said radially flexible latching members comprising a flexible rib and a radially outwardly projecting arcuate latching lip supported by said rib;
 means for retaining said latching means, said latching means being movable between extended and retracted positions inside said retaining means;
 first camming means for radially inwardly flexing said latching means in said extended position as said latching means moves from said retracted position to said extended position;
 second camming means for radially outwardly flexing said latching means and pushing said latching means from said extended position to said retracted position during retraction of said second camming means relative to said retaining means along an axis;
 an actuating element which is rotatable about said axis; and
 means for retracting said second camming means relative to said retaining means in response to rotation of said actuating element,
 wherein said latching means is clamped to latch onto said inner filter when said retaining means abuts said ring flange and said second camming means is retracted relative to said retaining means.

5,379,331
TRANSVERSE HOLDING DEVICE FOR A STEAM GENERATOR OF A PRESSURIZED WATER NUCLEAR REACTOR, AND FOR ITS ADJUSTMENT
 Serge Brouttelande, Ermont, France, assignor to Framatome, Courbevoie, France
 Filed Mar. 24, 1993, Ser. No. 36,245
 Claims priority, application France, Mar. 31, 1992, 92 03897
 Int. Cl.⁵ G21C 13/024
 U.S. Cl. 376—285 9 Claims

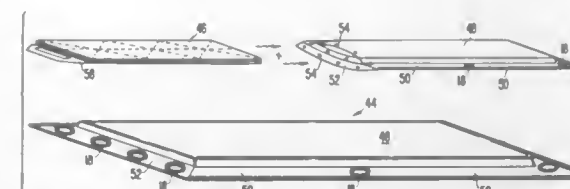
1. Transverse holding device for a component of a steam

generator of a pressurized-water nuclear reactor, arranged in a stationary concrete structure having vertical walls surrounding the component, comprising at least one base plate fixed on one wall of the concrete structure and a bearing element carried by the base plate and adapted to be arranged in contact with or in the vicinity of a bearing surface of the component, wherein said transverse holding device comprises an assembly for adjusting and positioning the bearing element constituted by:



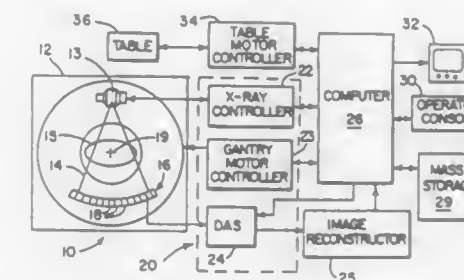
- (a) a nut having an axis carried by the base plate traversed by a tapped orifice directed along the axis of the nut;
 (b) a screw-jack engaged with the nut and arranged in the axial direction of the nut; and
 (c) means for blocking the screw-jack with respect to the nut, in a specified position of the screw-jack in the axial direction,
 the bearing element being constituted by a pad carried by one end of the screw-jack directed towards the bearing surface of the component.

5,379,332
LAUNDERABLE AND REPLACEABLE LEAD BLANKET COVER SYSTEM
 Earl B. Jacobson, 510 S. Shore Dr., Crystal Lake, Ill. 60014
 Filed Apr. 28, 1992, Ser. No. 874,806
 Int. Cl.⁶ G21F 3/00
 U.S. Cl. 376—287 16 Claims



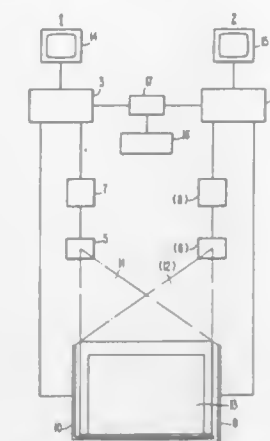
4. A lead blanket cover system, comprising:
 an inner lead blanket; and
 an outer cover secured to said inner blanket, said outer cover including a sealed portion on at least three sides of a periphery of said outer cover, said outer cover being separately replaceable, said inner lead blanket having securing strips secured to at least one side thereof and said replaceable outer cover having mating securing strips secured to the inside thereof and mating with said inner lead blanket securing strips.

5,379,333
VARIABLE DOSE APPLICATION BY MODULATION OF X-RAY TUBE CURRENT DURING CT SCANNING
 Thomas L. Toth, Brookfield, Wis., assignor to General Electric Company, Milwaukee, Wis.
 Filed Nov. 19, 1993, Ser. No. 155,037
 Int. Cl.⁶ A61B 6/00
 U.S. Cl. 378—16 9 Claims



1. A method for reducing the dose of an x-ray beam applied to a patient by an x-ray CT system during the acquisition of attenuation data from a single slice as a gantry rotates around the patient, the steps comprising:
 acquiring patient projection data from the slice which indicates patient attenuation of the x-ray beam at two substantially orthogonal gantry angles;
 calculating a modulation profile using information derived from the acquired patient projection data, the modulation profile indicating the x-ray dose to be applied to the patient as a function of gantry angle; and
 acquiring the attenuation data for the single slice by rotating the gantry around the patient and modulating the applied x-ray dose as indicated by the modulation profile.

5,379,334
OBJECT TESTING SYSTEM
 Manfred Zimmer, Mainz; Rainer Henkel, Wiesbaden, and Rainer Bernbach, Mainz, all of Germany, assignors to Heilmann Systems GmbH & Co. KG, Wiesbaden, Germany
 Continuation of Ser. No. 94,387, Jul. 20, 1993. This application Sep. 7, 1993, Ser. No. 116,607
 Claims priority, application European Pat. Off., Jul. 20, 1992, 92112381
 Int. Cl.⁶ G01N 23/04
 U.S. Cl. 378—98.2 19 Claims



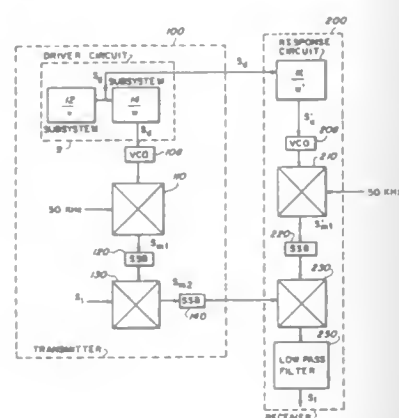
10. An object testing system for producing images of an object, comprising:
 a first imaging system including a first processor, a first radiation transmitter coupled to the first processor for transmitting radiation at the object, a first radiation receiver coupled to the first processor for receiving radiation from the object, and a first radiation detector coupled to the first processor for detecting radiation from the object.

a first step of previously storing in combination an extension number and a phone number of said handset unit in a memory unit of said same radio telephone system, said extension number being used for calling said handset unit through an extension line of the same radio telephone system and said phone number being used for calling said handset unit through another radio telephone system which is connected to said same radio telephone system via the communication network;

a second step of performing a key operation for designating the extension number of said handset unit stored in said memory unit of the same radio telephone system to calling said handset unit through the extension line of said same radio telephone system; and

a third step of outputting to said communication network the phone number of said handset unit which is previously stored, in combination with the extension number of said handset unit, in said memory unit of the same radio tele-

5,379,346
CASCADING SYNCHRONIZED CHAOTIC SYSTEMS
 Louis M. Pecora, and Thomas L. Carroll, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
 Filed Sep. 30, 1993, Ser. No. 129,495
 Int. Cl.⁶ H03B 29/00; G06F 1/02
 U.S. Cl. 380—48 36 Claims

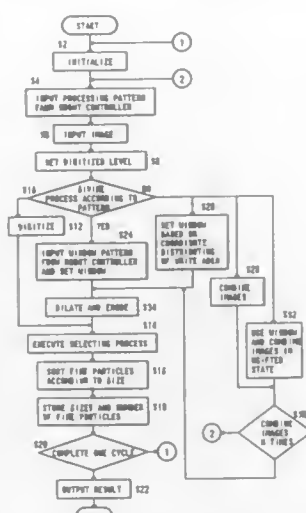


18. A synchronized electrical system, comprising:
 a nonlinear dynamic drive system for producing a dynamic drive signal and having at least a first and a second interdependent and stable subsystem for producing a first signal to be synchronized; and
 a nonlinear dynamic driven system coupled to said drive system and receiving the drive signal, said driven system comprising:
 a first driven subsystem comprising a duplicate of said first subsystem of said drive system, said first driven subsystem being interdependent to synchronize and reproduce the first signal; and
 a second subsystem comprising a duplicate of said second subsystem of said drive system, said second driven subsystem being connected to the first driven subsystem and being responsive thereto to receive the reproduced signal and being interdependent to synchronize and reproduce the drive signal.

5,379,347
METHOD OF INSPECTING THE SURFACE OF A WORKPIECE
 Norihide Kato; Tomohide Shimizu, and Kenichiro Mori, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Dec. 9, 1992, Ser. No. 988,420
 Claims priority, application Japan, Dec. 13, 1991, 3-329383; Dec. 13, 1991, 3-329384; Dec. 17, 1991, 3-333404; Dec. 19, 1991, 3-337263

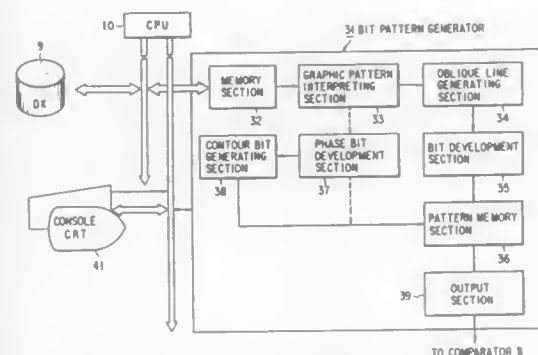
- Int. Cl.⁶ G06K 9/20 7 Claims
 U.S. Cl. 382—8
 1. A method of inspecting a surface of a workpiece by using a surface inspecting apparatus provided with lighting means for illuminating the workpiece surface to be inspected with detection light, detecting means for receiving and detecting the light reflected from the workpiece surface, and an optical system for causing said reflected light to converge on a light-receiving surface of said detecting means, comprising the following steps of:
 successively displacing said surface inspecting apparatus along the workpiece surface;
 obtaining an image of the workpiece surface to be inspected by receiving and detecting said reflected light by said detecting means;
 holding said image;
 binary digitizing said held image;

determining whether or not the workpiece surface to be inspected is planar;
 processing the digitized image for dilation and erosion only when the workpiece surface to be inspected is non-planar;



extracting isolated dark areas from said digitized image; and
 determining whether each of said isolated dark areas represents dust, based on the size of each of said isolated dark areas.

5,379,348
PATTERN DEFECTS INSPECTION SYSTEM
 Toshiyuki Watanabe; Hideo Tsuchiya, both of Yokohama; Toru Tojo, Kanagawa, and Tomohide Watanabe, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Mar. 31, 1993, Ser. No. 40,852
 Claims priority, application Japan, Mar. 31, 1992, 4-105673
 Int. Cl.⁶ G06K 9/00; H04N 7/00; G01N 21/00
 U.S. Cl. 382—8 18 Claims



1. A pattern defects inspection system comprising:
 conversion means for radiating light on an object to be inspected on which a pattern is formed, said pattern having a light-shielding pattern and a phase shift pattern receiving an optical image of the pattern, and photoelectrically converting the image;
 means for generating measurement pattern data corresponding to the pattern on the basis of a signal obtained from said conversion means;
 storage means for storing pattern design data used to form the pattern on the object;
 bit pattern generating means for developing the pattern design data in said storage means into bit pattern data; and
 determining means for determining a presence or absence of

defects in the pattern formed on the object by comparing the measurement pattern data with data obtained by performing predetermined filtering processing with respect to the bit pattern data developed by said bit pattern generating means,
 wherein said bit pattern generating means further comprising:
 graphic pattern interpreting means for recognizing and separating light-shielding pattern design data used to form the light-shielding pattern and phase shift design data used to form the phase shift pattern;
 bit pattern development means for developing a corresponding bit pattern of said light-shielding pattern design data and said phase shift design data;
 pattern memory means for storing the developed bit pattern data temporarily; and
 output means for synthesizing and reading out the bit pattern data to said determining means.

5,379,349
METHOD OF OCR TEMPLATE ENHANCEMENT BY PIXEL WEIGHTING
 Hadar Avi-Itzhak, Mountain View, Calif., assignor to Canon Research Center America, Inc., Palo Alto, Calif.
 Filed Sep. 1, 1992, Ser. No. 937,732
 Int. Cl.⁶ G06K 9/62, 9/46, 9/50
 U.S. Cl. 382—15 28 Claims

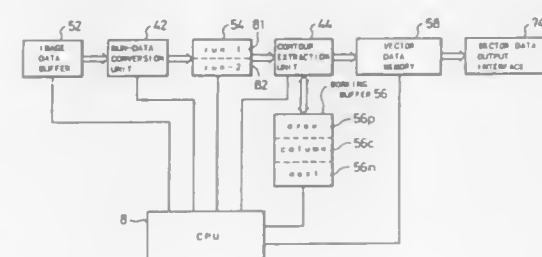
Providing the Library of L unenhanced Pixel Images
 Providing the Group of G Pixel Symbols
 Comparing the Input Symbols with the L Images to obtain G_L Comparisons
 Identifying the Primary Comparison C*
 Identifying the Secondary Comparison C**
 Determining the Recognition Margins
 Selecting the Pair of Comparisons C* and C** having the Smallest Margin M
 Identifying the Pair of Underlying Images I* and I**
 Weighting Certain Pixels of Image I* or Image I** or Both
 Iterating the Steps Until the Pixel Images Become Pixel Templates

1. The method of matching an unknown input pixel symbol with a library of enhanced pixel templates by recognition enhancement of a library of L unenhanced pixel images (I₁ I₂ I₃ . . . I_L) with respect to a pre-existing group of G unknown input pixel symbols (S₁ S₂ S₃ . . . S_G) for providing a library of G recognition enhanced pixel templates (T₁ T₂ T₃ . . . T_G) of the G pixel symbols, comprising the steps of:

- providing a library of L unenhanced pixel images (I₁ I₂ I₃ . . . I_L) to be enhanced to provide a library of G recognition enhanced pixel templates (T₁ T₂ T₃ . . . T_G);
 providing a pre-existing group of G unknown input pixel symbols (S₁ S₂ S₃ . . . S_G);
 comparing each of the G unknown input pixel symbols with each of the L pixel images to obtain G×L comparisons forming G sets of L comparisons (C₁ C₂ C₃ . . . C_L), one set of L comparisons for each unknown input pixel symbol S_i of the G pixel symbols, each set of comparisons having a comparison C_i for each pixel image I_j;
 identifying the primary comparison C* from the L comparisons within each of the G sets of comparisons having the closest comparison with the unknown input pixel symbol S_i for that set of comparisons forming a collection of G primary comparisons C* (C₁* C₂* C₃* . . . C_L*);
 identifying the secondary comparison C** from the L-1 remaining comparisons within each of the G sets of com-

parisons having the next closest comparison with the unknown input pixel symbol S_i for that set of comparisons forming a collection of G secondary comparisons C** (C₁** C₂** C₃** . . . C_L**), to provide G pairs of identified comparisons C* and C**, one pair from each of the G sets of comparisons;
 determining G recognition margins (M₁ M₂ M₃ . . . M_G), one recognition margin between each pair of identified comparisons C* and C**;
 selecting the single pair of identified comparisons C* and C** having the smallest recognition margin M* of all of the G pairs of identified comparisons from the G sets of comparisons;
 identifying the single pair of pixel images I* and I** corresponding to the pair of identified comparisons C* and C**;
 weighting certain pixels of the closest pixel image I* and the next closest pixel image I** corresponding to the selected pair of identified comparisons C* and C** in order to incrementally increase the recognition margin M* there-between causing the pixel images to become the closest pixel template T* or the next closest pixel template T** or both;
 iterating the comparing, identifying, determining, selecting, and weighting steps until the library of pixel images has become a library of enhanced symbol templates (T₁ T₂ T₃ . . . T_G) which have been recognition enhanced with respect to the pre-existing group of G unknown input pixel symbols (S₁ S₂ S₃ . . . S_G), at least some templates of which have weighted pixel aberrations not present in the corresponding pixel symbol of the pre-existing group of G unknown input pixel symbols; and
 matching an unknown input pixel symbol of the group of G pixel symbols (S₁ S₂ S₃ . . . S_G) with the library of enhanced templates (T₁ T₂ T₃ . . . T_G) by comparing the unknown pixel symbol with each of the enhanced pixel templates in the library of enhanced templates and selecting the enhanced template with the closest comparison.

5,379,350
METHOD AND APPARATUS FOR EXTRACTING A CONTOUR OF AN IMAGE
 Shigeaki Shimazu, Kyoto; Tetsuo Asano, Toyonaka; Nobuaki Usui, Tokyo, and Kazuhiro Nakai, Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
 Filed Feb. 18, 1993, Ser. No. 19,374
 Claims priority, application Japan, Feb. 27, 1992, 4-076369
 Int. Cl.⁶ G06K 9/48 8 Claims
 U.S. Cl. 382—22



5. A contour extracting apparatus for extracting a closed-loop contour of an image part in a binary image including a plurality of pixels, said closed-loop contour being expressed by a vector sequence including a plurality of contour vectors each connecting vertices of said closed-loop contour, each said vertex being defined by boundary coordinates (X_b, Y_b) indicating a position at a boundary between pixels, said apparatus comprising:

5,379,351

VIDEO COMPRESSION/DECOMPRESSION
PROCESSING AND PROCESSORS

Jan Fandrianto, Los Gatos; Chi S. Wang, Los Altos; Sehat Sutardja, Cupertino; Hedley K. J. Rainnie, and Bryan R. Martin, both of Santa Clara, all of Calif., assignors to Integrated Information Technology, Inc., Santa Clara, Calif.

Filed Feb. 19, 1992, Ser. No. 838,382

Int. Cl.⁶ G06K 9/36

U.S. Cl. 382—41

9 Claims

a binary image memory for storing binary image data representing said binary image;
run-data conversion means for selecting two adjacent scanning lines parallel to an axis of the boundary coordinate Xb, converting said binary image data for said selected two adjacent scanning lines into two sets of run-data, each said run-data expressing boundary positions at which the binary level of said binary image data changes, each said boundary position being expressed by said boundary coordinate Xb;

a run-data memory for storing said two sets of a vector data memory;

contour extraction means comprising:

means for comparing said two sets of run-data with each other to detect a first Xb-vector, said first Xb-vector being one of said plurality of contour vectors and extending along the axis of said boundary coordinate Xb between said selected two adjacent scanning lines;

means for writing coordinate data of a start point and an end point of said first Xb-vector in said vector data memory;

means for detecting a Yb-vector extending in the axis of said boundary coordinate Yb as a result of said comparison, said Yb-vector being one of said plurality of contour vectors and connecting said first Xb-vector with a second detected Xb-vector to thereby write coordinate data representing a start point and an end point of said Yb-vector in said vector data memory, and generating link data indicating connection among said Yb-vector, said first Xb-vector, and said second Xb-vector to form a vector sequence; and writing said link data in said vector data memory; and

means for detecting a closed-loop contour represented by said vector sequence; and producing closed-loop vector data representing said closed-loop contour, and a data register,

wherein said contour extraction means comprises:

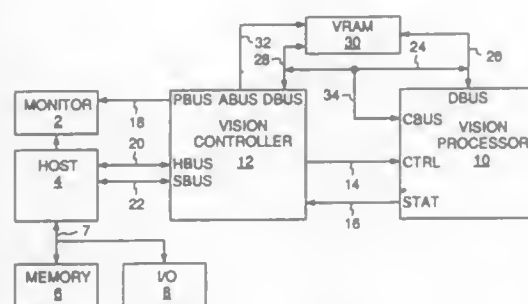
first means for producing correspondence data representing a positional relationship between a starting point and a terminal point of said vector sequence, to store said correspondence data in said data register; and

second means for identifying said vector sequence as that representing a closed-loop contour when said correspondence data of said vector sequence indicates that said starting point and said terminal point of said vector sequence are identical with each other,

wherein said data register comprises:

a first register for storing a first address value of said vector data memory, at which said coordinate data of said starting point of said vector sequence is stored, at a position in said first register corresponding to the boundary coordinate value Xb of said starting point, and a second address value of said vector data memory, at which said coordinate data for said terminal point of said vector sequence is stored, at a position in said first register corresponding to the boundary coordinate value Xb of said terminal point;
a second register for storing the boundary coordinate value Xb of said starting point of said vector sequence at a position in said second register corresponding to the boundary coordinate value Xb of said terminal point of said vector sequence; and

a third register for storing the boundary coordinate value Xb of said terminal point of said vector sequence at a position in said third register corresponding to the boundary coordinate value Xb of said starting point of said vector sequence.



1. A vision processor, comprising:
 - an image memory having two read ports and a write port;
 - a block prediction error memory having two read ports and a write port;
 - a discrete cosine transform ("DCT") memory configurable as a two read, two write port memory and as a four read, four write port memory;
 - a shifter having an input coupled to a read port of said search memory, and an output;
 - a shifter/transposer having an input selectively coupled to one of the other read port of said search memory and to two read ports of said DCT memory configured as a two read, two write port memory;
 - an arithmetic logic unit having:
 - a first input selectively coupled to one of the two read ports of said frame memory, to the output of said shifter, and to two read ports of said DCT memory configured as a four read, four write port memory, and
 - a second input selectively coupled to one of the outputs of said shifter and said shifter/transposer, to the output of said shifter/transposer, and to the other two read ports of said DCT memory configured as a four read, four write port memory; and
 - an output selectively configurable as an average of operandi and a difference of operandi coupled to the write ports of said image memory and block/prediction error memory;
 - an output configured as an absolute difference of operandi; and
 - an output configured as a sum of operandi and a difference of operandi coupled to the write ports of said DCT memory;

- a tree adder having an input coupled to the absolute difference output of said arithmetic logic unit; and
- a multiplier-accumulator having an input coupled to the four read ports of said DCT memory configured as a four read, four write port memory.

5,379,352

METHOD OF PROCESSING SIGNAL DATA ON THE
BASIS OF PRINCIPAL COMPONENT TRANSFORM,
APPARATUS FOR PERFORMING THE METHOD

Jacques A. Sirat, Versailles, and Didier E. Zwierski, Saint-Maur-Des-Fosses, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 677,703, Mar. 29, 1991, abandoned.

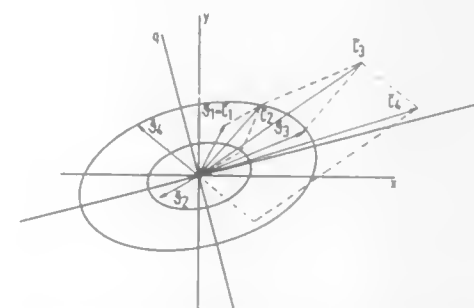
This application May 24, 1993, Ser. No. 66,406

Claims priority, application European Pat. Off., Mar. 30, 1990, 90400875

Int. Cl.⁶ G06K 9/36

U.S. Cl. 382—41

10 Claims



1. Apparatus for processing electrical signal data representing an image in a digital data processing device according to a Principal Component Transform for purposes of providing a revised representation of the image-representing electrical data signals for use in compressing the electrical data signals, or for extracting features of the electrical data signals, or for modifying the electrical data signals to pre present a rotation of the image, the apparatus comprising:

- hardware input means for providing signals representing an initial vector as a current estimate of a statistically most significant eigenvector of a covariance matrix representation of said signal data, said signal data being represented as vectors in a vector space;
- hardware means for storing and providing signals representing a next vector;
- an inner product hardware means for calculating an inner product of the current estimate and the next vector;
- hardware multiplication means for multiplying said next vector by a weight determined by said inner product;
- hardware adding means for adding the next vector multiplied by said weight to the current estimate for enhancing an adding result in a direction of the current estimate; and
- an output hardware memory for storing and providing the adding result as signals representing a produced approximation of an eigenvector, which is a transformation of the signal data, for further processing as a revised representation of the image-representing electrical data signals.

5,379,353

APPARATUS AND METHOD FOR CONTROLLING A
MOVING VEHICLE UTILIZING A DIGITAL
DIFFERENTIAL ANALYSIS CIRCUIT

Hiroshi Hasegawa, and Okada Yshushi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 898,188, Jun. 12, 1992, abandoned, which is a continuation of Ser. No. 349,536, May 9, 1989, abandoned. This application Sep. 22, 1993, Ser. No. 125,350

Claims priority, application Japan, May 9, 1988, 63-112241; May 9, 1988, 63-112242; May 9, 1988, 63-112243

Int. Cl.⁶ G06K 9/20, 9/36

U.S. Cl. 382—41

12 Claims

1. A device for detecting a boundary of a roadway upon which a vehicle travels, the device comprising:
 - camera means for generating electronic signals representing an image of the roadway, the image comprising a view of

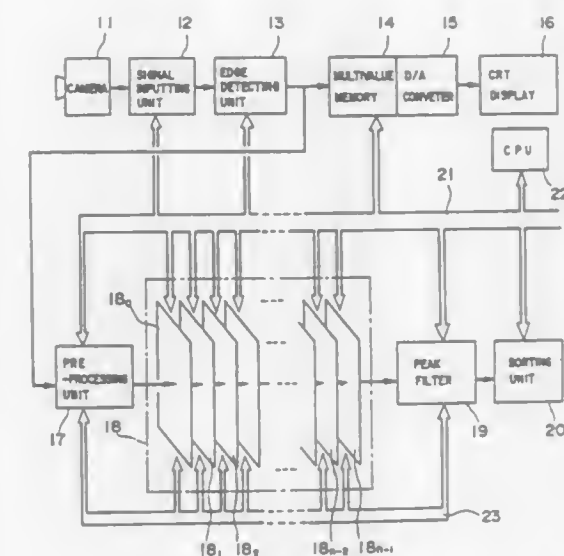
the roadway extending in a direction of travel of the vehicle;

a signal inputting unit for digitizing the signals representing the image of the roadway;

an edge detecting unit for processing the digitized signals to produce edged picture element signals differentiated with respect to pixel to pixel brightness variations;

a preprocessing unit for receiving the edged picture element signals from the edge detecting unit and storing in a multi-value memory circuit edged picture data corresponding to the edged picture element signals, the edged picture data corresponding to each edged picture element signal comprising an address in an X-Y coordinate system and an edged brightness value;

digital differential analysis computing means including a plurality of digital differential analysis computing circuits which are serially connected, each for converting the addresses of the edged picture data from the X-Y coordinate system to an α - β coordinate system and computing a rotary motion recurrence formula to generate a plurality of approximate HOUGH curves in a ρ - θ coordinate sys-



tem, the approximate HOUGH curves intersecting at a plurality of points in the ρ - θ coordinate system, and said rotary motion recurrence formula comprising the equation

$$\alpha_{i+1} = \alpha_i - 2^{-m} \beta_i$$

and

$$\beta_{i+1} = 2^{-m} \alpha_{i+1} + \beta_i$$

wherein an angle of rotation comprises

$$\epsilon = 2^{-m} (\text{rad}) \quad (m=0, 1, 2, \dots);$$

a histogram memory circuit for storing address data corresponding to the intersection points between the generated approximate HOUGH curves; and

a processor for generating a signal representing the boundary of the roadway based on the stored address data corresponding to the intersection points of the approximate HOUGH curves.

5,379,354

INTENSITY DIVIDING MULTIMODE WAVE GUIDE DEVICE FOR PRODUCING INTENSITY DISTRIBUTION MAXIMA

Richard M. Jenkins, Worcester, United Kingdom, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland, United Kingdom

PCT No. PCT/GB91/02131, § 371 Date May 20, 1993, § 102(e) Date May 20, 1993, PCT Pub. No. WO92/11554, PCT Pub. Date Jul. 9, 1992

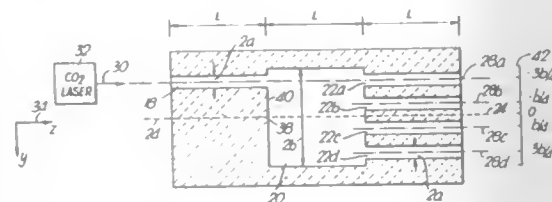
PCT Filed Dec. 2, 1991, Ser. No. 64,043

Claims priority, application United Kingdom, Dec. 20, 1990, 9027658

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—46

9 Claims



1. An intensity dividing device wherein:

(A) the device includes:

- (a) a multimode waveguide,
- (b) at least one input port for relaying input radiation of a single wavelength and for exciting both symmetric and antisymmetric modes of the multimode waveguide, and
- (c) a set of output ports which are spaced apart across a transverse section of the multimode waveguide; and

(B) the multimode waveguide and the input and output ports have geometries and a spatial relationship therebetween which in combination comprise a means for propagating input radiation as a fundamental mode to the multimode waveguide and, due to modal dispersion, for producing intensity distribution maxima of differing magnitude at respective output ports, each maximum being substantially a reproduction of the input radiation fundamental mode.

5,379,355

DATA ENCODING USING ONE OR MORE ADAPTIVE DECISION TREES

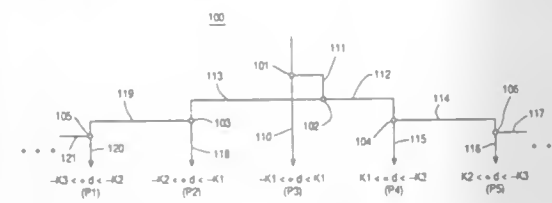
James D. Allen, Castro Valley, Calif., assignor to Ricoh Corporation, Menlo Park, Calif. and Ricoh Company Ltd., Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 934,764

Int. Cl.⁶ G06K 9/36; H04B 1/66

U.S. Cl. 382—56

29 Claims



1. A method for compressing a plurality of data at a predetermined compression ratio comprising the steps of: providing a first class set having a first plurality of error value ranges, wherein each error range covers a sequential set of error values and is identified by a class code representing the sequential set of error values associated with said each range, and further wherein a class code encompassing error values having a greater frequency of occurrence employs a lesser number of bits than a class code for

a class encompassing error values having a lesser frequency of occurrence; quantizing said data using said at least one class set, wherein the step of quantizing includes generating for each data value an error value representing a difference between said data value and a predicted data value, identifying one of the plurality of error value ranges encompassing the error value, and assigning class codes to each data value, such that each data value is associated with a class code; generating an output representative of the class code as part of an output data stream; and varying said first class set after a predetermined number of class codes have been represented as part of the data stream, wherein the step of varying includes adjusting the first class set to provide a second class set having a second plurality of error value ranges different in size from the first plurality of error value ranges, such that error value ranges are adapted to maintain the compressed data stream in the proximity of the predetermined compression ratio.

5,379,356

DECOMPRESSION PROCESSOR FOR VIDEO APPLICATIONS

Stephen C. Purcell, Mountain View; David E. Galbl, Santa Clara; Frank H. Liao, Sunnyvale, and Yvonne C. Tse, Fremont, all of Calif., assignors to C-Cube Microsystems, Milpitas, Calif.

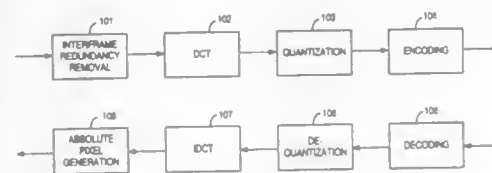
Continuation of Ser. No. 669,818, Mar. 15, 1991, abandoned.

This application Apr. 13, 1993, Ser. No. 46,474

Int. Cl.⁶ G06K 9/36, 9/46; H04N 7/12

U.S. Cl. 382—56

13 Claims



1. An apparatus for decompressing coded compressed video signal, comprising:

- a bus;
 - a memory coupled to said bus, said bus being used for providing read and write accesses to said memory;
 - a first-in-first-out (FIFO) buffer for receiving from said memory via said bus compressed video signals that are interframe or intraframe coded, said compressed video signals being represented by variable-length codes;
 - a decoding circuit, coupled to said FIFO buffer, for decoding the variable-length codes of said intraframe coded compressed video signals received from said FIFO buffer;
 - an inverse discrete cosine transform (IDCT) circuit, receiving said decoded video signals, for performing an inverse discrete cosine transform on said decoded video signals;
 - a motion compensation circuit, coupled to receive said transformed video signals from said inverse discrete cosine transform circuit and coupled to receive over said bus reference frames from said memory, said motion compensation circuit reconstructs video signals using said reference frames to further decode said transformed video signals, and storing said reconstructed video signals in said memory via said bus; and
 - a memory controller, coupled to said memory, said FIFO, said IDCT circuit, and said motion compensation circuit, for controlling memory access by said FIFO, said IDCT circuit, in accordance with a predetermined priority scheme;
- wherein said variable length codes are embedded in a bit stream, each said variable length code being of one of a plurality of code types, said apparatus further comprising:

means for extruding from said bit stream a string of bits; a plurality of logic circuits each associated with one code type for receiving said string of bits, for decoding a variable length code from said string of bits, and for providing the length of said variable length code decoded and a decoded datum; means for identifying a code type in accordance with a syntax state machine; means for selecting one datum from said decoded data in accordance with said code type identified; and means for advancing the bit stream the number of bits equal to the length of the variable code decoded.

5,379,357

METHOD AND APPARATUS FOR POLARIZED OPTICAL TELECOMMUNICATIONS USING ULTRASONIC MODULATION MEANS

Shintaro Sentsui, Chiba; Akira Fujisaki, Ichikawa; Haruki Ogo-shi, Yokohama; Morinobu Mizutani, and Mitsuo Miyazaki, both of Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd. and The Tokyo Electric Power Company, Incorporated, both of Tokyo, Japan

Division of Ser. No. 487,045, Mar. 2, 1990, Pat. No. 5,202,746.

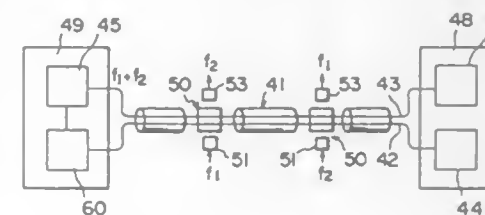
This application Apr. 1, 1993, Ser. No. 41,720

Claims priority, application Japan, Mar. 2, 1989, 1-50680; Mar. 2, 1989, 1-50681; Nov. 16, 1989, 1-298595; Nov. 16, 1989, 1-298596

Int. Cl.⁶ G02B 6/10

U.S. Cl. 385—11

4 Claims



1. A method for the optical telecommunication, comprising the steps of:

- introducing a laser beam emitted from a light source at a first station into an optical fiber;
 - providing to the optical fiber an ultrasonic wave obtained by modulating a voice signal by a signal-applying device at a work section;
 - modulating a polarized light passing through the optical fiber in amplitude and frequency;
 - receiving the polarized light with a shifted wave plane at a light-receiving section in a second station;
 - detecting at the light-receiving section in the second station the polarized light which has been modulated by the signal-applying device in the work section; and
 - demodulating the polarized light to obtain a voice signal.
2. An apparatus for optical telecommunication, comprising a plurality of work sections located along a longitudinal direction of an optical fiber cable with a space provided between any two adjacent work sections, a signal applying device and a light receiving device being provided at each work section, wherein bidirectional communication is established between a plurality of stations or one of the stations and any of the work sections by allocating different frequencies to the work sections so that each of the ultrasonic waves to be applied to the optical fiber by a signal applying devices is identified through a difference in frequency and wherein two work sections communicate with each other by receiving a signal from one of the work sections at the light-receiving section of a predetermined station and demodulating the signal into a voice signal, and receiving the voice signal at another one of the work sections.

5,379,358

OPTICAL SWITCH HAVING SPATIAL LIGHT MODULATORS

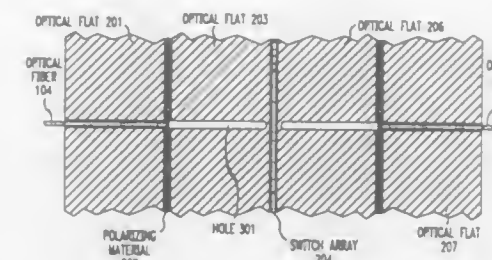
Lee L. Blyler, Jr., Basking Ridge; Richard J. Coyle, Jr., Lawrenceville, both of N.J.; Gary J. Grimes, Thornton, Colo., and Anthony J. Serafino, Cranbury, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 21, 1993, Ser. No. 171,505

Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—16

12 Claims



1. An optical switching array for switching optical signals from a first plurality of optical fibers to a plurality of second optical fibers, comprising:

- an array of spatial light modulators;
- a first and second optical flats each positioned on an individual side of the array of spatial light modulators and each of the first and second optical flats having an array of partial holes that are aligned with similar partial holes of the other one of the optical flats and the array of spatial light modulators and each of the partial holes is to a depth such that a remaining thickness of material of the optical flat is approximately equal to the smallest diameter of any one of the optical fibers of the first and second pluralities of optical fibers where the diameter includes the core and cladding; and
- each of the first plurality of optical fibers positioned in an individual partial hole of the first optical flat and each of the second plurality of optical fibers positioned in an individual partial hole of the second optical flat whereby one of array of spatial light modulators may communicate or block the optical signals from one of the first plurality of optical fibers aligned with the one of the array of spatial light modulators to one of the second plurality optical fibers also aligned with the one of array of spatial light modulators.

5,379,359

LASER DIODE COUPLING TO WAVEGUIDE AND METHOD OF MAKING SAME USING SUBSTRATE ETCHING

Mool C. Gupta, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1992, Ser. No. 953,459

Int. Cl.⁶ G02B 6/12; H01L 21/70

U.S. Cl. 385—49

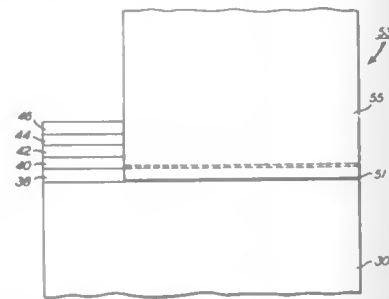
16 Claims

1. A method of making an optical device including a semiconductor laser and a crystalline, planar waveguide formed on a substrate, the waveguide being optically coupled to the semiconductor laser comprising:

- providing a substrate formed from a material on which a semiconductor laser can be created;
- sequentially creating a plurality of layers of relatively different impurity types and concentrations on the substrate to form a layered laser structured region;
- forming a first mirror at one edge of the laser structural region;
- removing a portion of the laser structured region opposite the one edge to form a planar surface at a preselected depth selected so that a wave guide mounted on the planar

surface of the substrate is vertically aligned with a light emitting portion of the laser structured region; and forming a second mirror on an edge of the laser structured region opposite the first edge and adjacent the planar surface so that a planar crystalline waveguide on a substrate disposed in a waveguide down orientation on the planar surface adjacent the second mirror is aligned with the light emitting portion of the laser.

10. An optical structure comprising:
a semiconductor substrate having a first surface;
a multilayer laser diode formed on the surface and extending



upwardly therefrom and including a first mirrored surface;

a waveguide receiving recess formed in the multilayered laser diode structure adjacent to the first mirrored surface and forming a planar mounting surface;
a second mirrored surface formed adjacent the recess; and
a planar, crystalline, optical waveguide formed on a substrate and mechanically attached to the mounting surface, substrate up in the recess adjacent the second mirrored surface, the waveguide being vertically aligned with a light emitting layer of the multilayer semiconductor laser diode structure by the depth of the recess.

5,379,360

OPTICAL FIBER CONNECTOR AND METHOD OF MANUFACTURING THE SAME

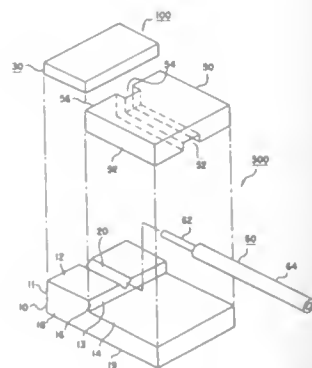
Takashi Ota, Kasugai, and Masashi Fukuyama, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Jun. 2, 1993, Ser. No. 70,619

Claims priority, application Japan, Jun. 3, 1992, 4-142682; Sep. 29, 1992, 4-259891; Sep. 29, 1992, 4-259892; Oct. 7, 1992, 4-268674; Mar. 25, 1993, 5-66657

Int. Cl.⁶ G02B 6/38

U.S. Cl. 385—59

6 Claims



1. An optical fiber holder for coupling at least one optical fiber to an external optical element, said connector comprising:
a lower plate having a first upper flat surface, a second upper flat surface being lower than said first upper flat surface, and a stepped portion interposed between said first and

second upper flat surfaces and having a transversely-extending side surface;

a first upper plate having a flat bottom surface, at least one longitudinally-extending V-groove, formed in one of said first upper flat surface of said lower plate and said bottom surface of said first upper plate said V-groove having at least one longitudinally extending side wall for receiving therein respective corresponding optical fibers with each of said fibers being stripped of a fiber covering, said first upper plate being positioned on said first upper flat surface to press said each optical fiber against said at least one side wall of said respective V-grooves; and
a second upper plate provided with a flat bottom face and a receiving groove formed in said bottom face and having an opening at each end thereof, for tightly holding therein said optical fibers covered with said fiber coverings, said second upper plate having an end surface and being positionable on said second upper flat surface of said lower plate so that said optical fibers are insertable straight into respective said V-grooves through said receiving groove and said end surface contacts said side surface of said stepped portion.

5,379,361

OPTICAL FIBER CONNECTOR INCLUDING L-SHAPED POSITIONING STANDARD SURFACES AND METHOD OF MANUFACTURING THE SAME

Koichiro Maekawa, Ichinomiya, Takashi Ota, Kasugai, Masashi Fukuyama, Nagoya, and Shinji Nagasawa, Mito, all of Japan, assignors to NGK Insulators, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Japan

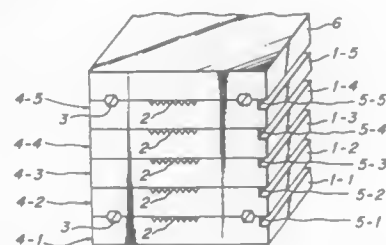
Filed Mar. 25, 1993, Ser. No. 36,871

Claims priority, application Japan, Mar. 30, 1992, 4-74391

Int. Cl.⁶ G02B 6/38, 6/40

U.S. Cl. 385—65

10 Claims



1. An optical fiber connector for receiving optical fibers in V-grooves, comprising:

a plurality of substrates including a first and a second substrate, said first and second substrates each including top and bottom opposite major surfaces, a plurality of V-grooves extending parallel to each other and along said top surface, and positioning standard surfaces in side surfaces of said substrates formed by positioning the substrates in a right-angled support member and grinding the substrates to form said L-shaped positioning standard surface, said L-shaped positioning standard surface extending parallel to respective V-grooves, such that a distance between said L-shaped positioning standard surface and said respective V-grooves of each substrate is equal, wherein said second substrate is stacked on said first substrate such that the bottom surface of said second substrate contacts the top surface of said first substrate along a horizontal plane, said bottom surface of said second substrate having a portion thereof which rests on and is superposed over said V-grooves of the first substrate, said portion being planar and being co-planar with said horizontal plane.

5,379,362

OPTICAL FIBER CONNECTOR

Shigeto Kawamura, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

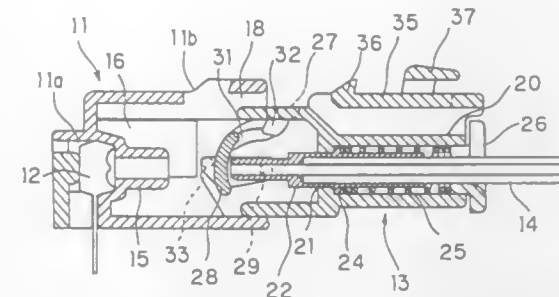
Filed Feb. 23, 1994, Ser. No. 200,208

Claims priority, application Japan, Feb. 24, 1993, 5-060907

Int. Cl.⁶ G02B 6/36

U.S. Cl. 385—92

9 Claims U.S. Cl. 385—114



1. An optical fiber connector including a module housing and an optical fiber housing, said module housing having a storage recess formed therein at its first end for housing a photoelectric element, said module housing further including a first opening at its second end, said optical fiber housing including a second opening at its first end, said optical fiber housing receiving at its second end an optical fiber so that a tip of said optical fiber is introduced generally to said second opening, said module housing further including a coupling portion at its second end, said optical fiber housing further including a coupling portion at its first end, said coupling portions of the module housing and optical fiber housing being connected to each other to bring an end surface of the tip of said optical fiber into contact with said photoelectric element, said optical fiber connector comprising:

an opening effector and a closing effector formed in different positions inside of said coupling portion of said module housing;

a pushing piece formed on an upper inner side of said coupling portion of said module housing;

a cylindrical introducer formed inside of said coupling portion of said module housing for introducing the tip of said optical fiber, the inside of said coupling portion of said module housing communicating with said storage recess through said cylindrical introducer;

a locking piece formed integrally with an upper portion of said coupling portion of said optical fiber housing;

a hood body rotatably mounted in said coupling portion of said optical fiber housing for covering and exposing the end surface of the tip of said optical fiber;

an elastic element formed integrally with said hood body and extending upwardly on a side surface of said hood body;

a locking element formed integrally with said elastic element at its upper end and abutting against said locking piece, said locking element being pushed downwardly of said locking piece by slidable contact of said pushing piece when said housings are connected to each other; and

a guide pin formed integrally with said hood body at its lower side end and moving upwardly by slidable contact of said opening effector to rotate said hood body in a direction to expose said end surface of the tip of said optical fiber when said housings are connected to each other, said guide pin moving downwardly by slidable contact of said closing effector to rotate said hood body in a direction to cover said end surface of the tip of said optical fiber when said housings are separated from each other.

5,379,363

TAPE OF INDIVIDUALIZED OPTICAL FIBERS

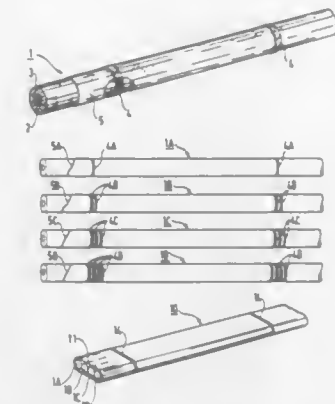
Jean-Pierre Bonicel, Lyons, and Pierre Giraud, Caluire, both of France, assignors to Alcatel Cable, Clichy Cedex, France

Filed Jul. 30, 1993, Ser. No. 99,551

Claims priority, application France, Jul. 31, 1992, 92 09541

Int. Cl.⁶ G02B 6/44

2 Claims



1. A ribbon of individualized optical fibers in which the protected and individualized fibers are encapsulated side by side in a common outside covering; wherein said protected fibers carry sets of annular ink marks on their outside surfaces; said sets of marks being identical to one another on a given protected fiber but differing from one protected fiber to another, being representative of the rank of each fiber in question within the ribbon, and serving to individualize said fibers; wherein the fibers marked in this way further include a transparent film containing an anti-adhesive agent and coating each of the fibers, the common outside covering being received on said film; wherein said film coating each marked fiber is made of a UV-polymerizable resin that is thin, being about 5 microns thick; and wherein said common outside covering is made of a transparent UV-polymerizable resin.

5,379,364

VITREOUS SILICA PRODUCT MANUFACTURED VIA A SOL-GEL PROCESS USING A POLYMER ADDITIVE

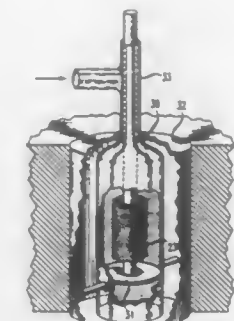
Edwin A. Chandross, Murray Hill; Debra A. Fleming, Lake Hiawatha; David W. Johnson, Jr., Bedminster; John B. MacChesney, Lebanon, and Frederick W. Walz, Jr., Plainfield, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Division of Ser. No. 930,125, Aug. 14, 1992, Pat. No. 5,240,488. This application Aug. 31, 1993, Ser. No. 115,485

Int. Cl.⁶ G02B 6/00; C03B 19/06

U.S. Cl. 385—143

15 Claims



1. An article at least in part composed of high silica glass produced by a method including the steps of fabricating a high-silica body by a method comprising gelling a sol, the sol comprising a suspension of colloidal

silica particles in a suspension medium, so resulting in a gel,
drying the gel so as to substantially remove the suspension medium, and
firing such gel to produce a high-silica glass body,
and carrying out any further processing necessary to yield the article,
characterized in that the said sol, during a substantial part of the gelling, contains additive including a first additive consisting essentially of at least one organic polymer, the polymer being characterized as:

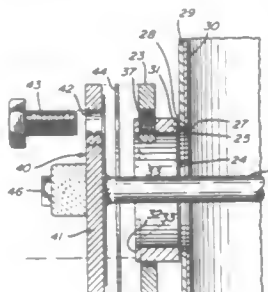
- (1) of amount sufficient to monomolecularly coat from 5% to 50% of the total free surface of the colloidal silica particles,
- (2) of solubility as to result in substantially complete solution in said sol prior to gelation,
- (3) of such nature as to wet the said silica particles,
- (4) of such composition as to thermally decompose primarily to gaseous decomposition product so that the high silica glass body is substantially free of the polymer as well as of decomposition product constituting a meaningful contaminant deleteriously affecting performance of the article.

5,379,365
REPLACEABLE ADAPTOR FOR A HOT WATER TANK
RESISTIVE HEATING ELEMENT

Claude Lesage, Pointe-Claire, Canada, assignor to Giant Factories Inc., Montreal, Canada

Filed Jan. 29, 1993, Ser. No. 10,856

Int. Cl.⁶ F24H 1/20; H05B 3/82
U.S. Cl. 392—455

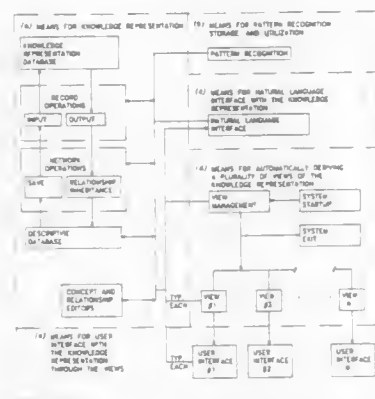


1. An adaptor assembly for securing a resistive electric heating element to a hot water heating tank, said adaptor assembly comprising a cylindrical hollow hub having an outer connecting face sealingly securable about a hole in a hot water tank outer wall with a connecting portion of said hub extending outwardly of said outer wall and spaced from an outer wall of said tank, said connecting portion having at least two opposed connecting flanges extending outwardly of an outer side wall of said hub adjacent said outer connecting face, said connecting flanges being formed integral with said hub and extending from said outer side wall of said hub, said retention members being releasably engaged by an adaptor plate, said adaptor plate having a circular hole therein for close fit with said hub outer side wall, and opposed recesses in an inner side edge of said circular hole to receive said connecting flanges in alignment therethrough so that said adaptor plate can be slid over said connecting flanges and connected to said hub by rotational displacement of said adaptor plate about said hub outer side wall rearwardly of said connecting flanges to align said flange in interference fit with said adaptor plate, said adaptor plate having connection means to receive connectors associated with a resistive heating element bracket to secure same to said plate with a resistive element extending in said tank through said hub, and sealing means retainable between said bracket and said hub.

5,379,366
METHOD FOR REPRESENTATION OF KNOWLEDGE IN
A COMPUTER AS A NETWORK DATABASE SYSTEM
Dallas B. Noyes, 502 Cottonwood Dr., Richland, Wash. 99352

Dallas B. Noyes, 502 Cottonwood Dr., Richland, Wash. 99352
Filed Jan. 29, 1993, Ser. No. 11,355
Int. Cl.⁶ G06F 9/44

U.S. Cl. 395—54 53 Claims
MICROFICHE APPENDIX INCLUDED
(13 Microfiche, 732 Pages)



1. A method for representing information in a computer system, comprising the steps of:
 - establishing in said computer system a knowledge representation database made up of individual records, wherein each record is associated with a unique reference number (URN) which identifies each record and wherein each record stores at least one relationship comprised of a characterization and a value,
 - the characterization of said relationship being a URN of a second record which defines [the] a nature of said relationship, and
 - the value of said relationship being a complex data representation composed of at least one internal value, external value, or mixed value which define an object of said relationship,
 - internal values storing only URNs of other records,
 - external values storing external data such as character strings, integers, and real numbers, and
 - mixed values storing a combination of internal and external values;
 - establishing an index to said knowledge representation database made up of the name of each record together with the associated URN of said record, wherein the name of the record is an external value of a relationship stored therein which designates that external value as a character string description of a concept represented by said record;
 - establishing, for each record in said knowledge representation database, fundamental relationships between said record and other records in said database, said fundamental relationships being comprised of
 - intrastratum relationships which store URNs of other records on the same strata or level of abstraction designated as separate libraries within the knowledge representation system, said intrastratum relationships being designated as parent and children relationships which identify the record in which said parent and children relationships are stored as a member of the same library as the records identified by the URNs stored in said intrastratum relationships, and
 - interstrata relationships which store URNs of other records in different strata or libraries, said interstrata relationships being designated as Type record relationships which identify the record in which said Type record relationships are stored as a particular instance of records in another stratum or library;
 - designating certain records as system concepts by storing the

ELECTRICAL

JANUARY 3, 1995

URNs of said certain records in a system concept index to said database reserved for records which represent system concepts of said knowledge representation database, system concept records being records which are used as termination points of networks of said fundamental relationships and which are recognized by the system by determining whether the URN or the name of a particular record is in said system concept index, wherein

system concept records designating strata or libraries (such as System library, Attribute library, Component library, and Project library) are the termination of parent fundamental relationships,

system concept records designating attribute classes (such as Assignment, Connection, Non-Binding, Rules, and External) are the termination of parent fundamental relationships for records which are descendants thereof and which store the URN of the Attribute library system concept as a parent relationship, and

system concept records designating attribute properties (such as Name, Data Type, Field Length, and Prompt) are the termination of relationship characterization networks.

said system concepts being required to store only fundamental relationships;

storing within each record comprising said Attribute library at least one relationship which is characterized by a URN of an attribute property system concept record, wherein said at least one relationship stores the value of the name of the concept represented by the record in which said attribute property System record URN is stored;

storing within each record comprising said Component library at least one relationship which is characterized by a URN of an Attribute library record, wherein said at least one relationship stores the value of the name of the concept represented by the record in which said Attribute library record URN is stored;

storing within each record comprising said Project library at least one relationship which is characterized by a URN of a Component library record, wherein said at least one relationship stores the value of the name of the concept represented by the record in which said Component library record URN is stored:

establishing in said computer system at least one editor for modifying the records and relationships stored in said database, including means for recognizing patterns in the relationships stored in said records;

storing said recognized patterns as relationships in the records associated with the recognized patterns;

establishing an additional class of system concept records to identify relationships storing values that define said recognized patterns, wherein each of said additional class system concept records represent particular types of patterns in said relationships;

operating on said stored patterns in the operation of said at least one editor by reading relationships storing patterns predetermined to be relevant to said at least one editor and using the values of said relationships in limiting the operation of said editor, said relationships storing patterns relevant to said editor being identified by the characterization of said relationships as system concepts identified by the system as being relevant to said editor;

establishing in said computer a descriptive database for describing an active concept record designated by a user comprised of a plurality of records each of which stores a single relationship having an associated URN for said active concept record, and an associated URN for a source record in which said relationship is stored, the URN for said active concept being the URN of the record in said knowledge representation database for which the description in the descriptive database is assembled, and

the URN for said source record being the URN of that

record in said knowledge representation database in which said relationship is stored;

reading a descriptive network for said active concept by reading all records in said knowledge representation database forming a network of related records through the fundamental relationships of parent and type, combining the relationship lists from said read records, and storing said relationships from said read records in said descriptive database, said relationship lists being combined by applying Taxonomy, Type, Composition and User inheritance rules, said relationships being stored in said descriptive database together with the URN of said active concept and the URN of said source record;

selecting a view, class and type of display for said active concept and deriving the selected type of display by assigning icons to the records representing concepts in said descriptive database according to the type of display selected, organizing and locating said icons in a display space of said computer according to the selected class, and creating connection icons for interconnections between concept icons located in said display space according to the selected view; and

interacting with said knowledge representation database through interaction with said icons in said display space and evaluation of said icon interaction through the use of decision trees for evaluation of the view, command history, system flags, and icon association for identification of appropriate responses to said icon interaction.

5,379,367
**LINEAR INTERPOLATING METHOD FOR ROBOT
CONTROL**

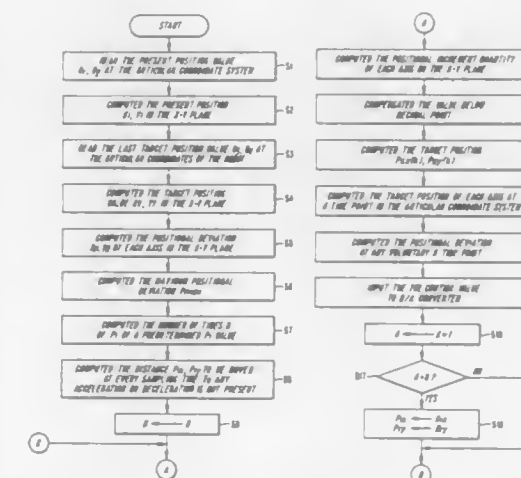
Jin-Il Song, Inchon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1991, Ser. No. 813,925

Claims priority, application Rep. of Korea, Dec. 28, 1990,
90-22320

Int. Cl.⁶ G05B 19/415; B25J 9/16, 13/00

U.S. Cl. 395-87 6 Claims



1. A linear interpolating method for movement control of a robot, said method comprising the steps of:

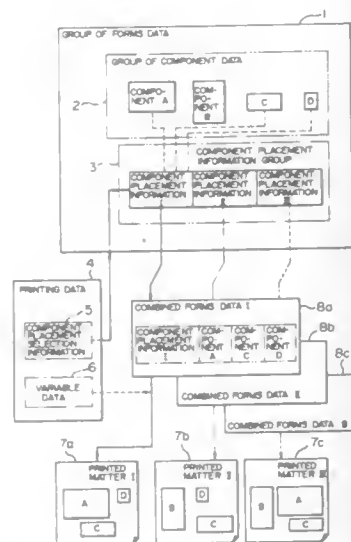
- obtaining a present position of at least a part of said robot in a coordinate system;
- obtaining a target position of said at least part of said robot in a coordinate system;
- determining moving quantities, sampling times and number of sampling times during which said robot will move said at least part of said robot by said moving quantity along each axis to reach said target position, where no acceleration exists;

computing a positional increment quantity to execute a linear acceleration where acceleration exists;
 computing a value of a moving pulse based on said positional increment quantity where acceleration exists and moving quantities where acceleration does not exist;
 compensating for a decimal value of the positional increment quantity;
 computing a positional deviation by detecting the present position of said at least part of said robot and executing a proportional integral and differential control of said positional deviation; and
 moving said robot based on said positional deviation.

5,379,368
PRINTING CONTROL METHOD AND APPARATUS
 Tuneso Imai, Ebina; Nobumitsu Kembo; Toshiyuki Yamada, both of Hadano, and Takashi Wakabayashi, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Engineering Co., Hadano, both of Japan
 Filed Nov. 25, 1991, Ser. No. 797,318
 Claims priority, application Japan, Nov. 30, 1990, 2-335550
 Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—117

12 Claims

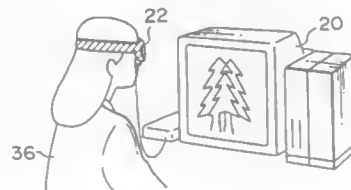


1. A printing control method combining print data and form data and outputting the thus combined data, the method comprising the steps of:

- dividing the form data into respective component data which are unit elements constituting the form data;
- storing said respective component data thus divided in a memory;
- storing in said memory form data generating information, which includes component identification data and component allocation information for each page, said component identification information being information for identifying one or more component data to be used as form data for a page and said component allocation information being information for indicating where said component data are to be allocated or placed onto the page;
- reading from memory, in response to a designation by form data generating information, component data indicated by component identification information, contained in said form data generating information;
- generating form data for one page by allocating or placing said component data onto said one page in accordance with component allocation information contained in said form data generating information; and
- combining said form data generated and said printing data, together and outputting the combined data.

5,379,369
APPARATUS FOR GENERATING STEREOSCOPIC IMAGE AND METHOD THEREFOR
 Tetsuko Komma, Osaka; Kenji Kimura, Hyogo; Yoshimi Asal, and Shiro Suzuki, both of Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
 Filed Mar. 2, 1992, Ser. No. 843,065
 Claims priority, application Japan, Mar. 4, 1991, 3-037150; Feb. 25, 1992, 4-037791
 Int. Cl.⁶ G06F 15/00
 U.S. Cl. 395—119

17 Claims

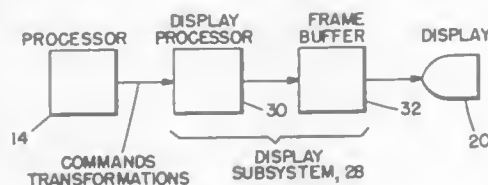


16. A method for generating a stereoscopic image including an image for the left eye to be viewed from the visual point thereof and another image for the right eye to be viewed from the visual point thereof, said method comprising the steps of:
 generating two-dimensional image information representing the image of an object;
 separating the depth at each position in said image of the object, which is based on said two-dimensional image information, into a plurality of classes and generating depth information representing the depth of each pixel in said two-dimensional image information;
 finding the parallax of a pixel in left eye-image information for displaying the image for the left eye and that of a corresponding pixel in right eye-image information for displaying the another image for the right eye, based on said depth information;
 generating stereoscopic image information including said image information for the left eye and said image information for the right eye, based on the parallax found and said two-dimensional image information; and
 displaying said image for the left eye which is based on said left eye-image information and said another image for the right eye which is based on said right eye-image information alternately at predetermined regular time intervals.

5,379,370
METHOD AND APPARATUS FOR DRAWING LINES, CURVES, AND POINTS COINCIDENT WITH A SURFACE
 John E. Allain, Ossining, and Bruce D. Lucas, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Jul. 17, 1992, Ser. No. 916,323
 Int. Cl.⁶ G06F 15/72

U.S. Cl. 395—122

19 Claims



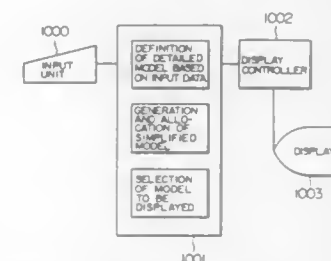
1. A method for execution by a graphics processing system for rendering, for display to a viewer upon display means having a plurality of display pixels, a surface having a surface marking coincident therewith, comprising the steps of:
 moving the surface marking towards the viewer or, alternatively, moving the surface away from the viewer, by an

amount that is function of a parameter (S) and also a scale factor (K) that expresses a relationship between viewer eye coordinate units and display pixel units, wherein the parameter (S) determines a maximum slope for the surface, relative to a viewing plane, such that the step of moving will not cause a portion of the surface marking to be obscured by the surface; and
 wherein the step of moving includes a step of applying a predetermined transformation (T_e) from a viewer eye coordinate system to a modified viewer eye coordinate system, wherein the predetermined transformation T_e is selected as a function of a selected type of projection of the surface and the surface marking upon a viewing plane.

5,379,371
DISPLAYING METHOD AND APPARATUS FOR THREE-DIMENSIONAL COMPUTER GRAPHICS
 Yoshiaki Usami, Hitachi; Kenichi Anjyo, Hitachilota, and Yoshimi Oota, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Continuation of Ser. No. 631,889, Dec. 21, 1991, abandoned, which is a continuation of Ser. No. 256,393, Oct. 7, 1990, Pat. No. 4,994,989. This application Jan. 4, 1993, Ser. No. 525
 Claims priority, application Japan, Oct. 9, 1987, 62-253681
 The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
 Int. Cl.⁶ G06F 15/72

U.S. Cl. 395—128

24 Claims



1. An apparatus for displaying a three dimensional model comprising:

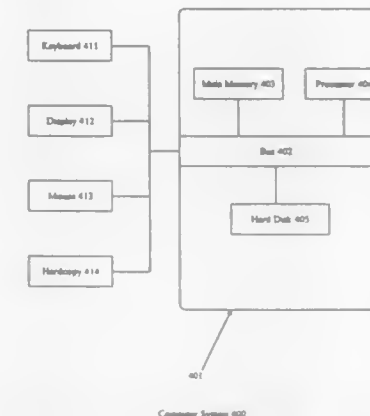
- a first memory adapted to store detailed three dimensional model information including at least one of
 - a number of dimensions, and
 - a number of parameters and quantities of said parameters;
- a processor, said processor
 - adapted to access said first memory, and
 - adapted to compute simplified three dimensional model information based on said detailed three dimensional model information stored in said first memory;
- a display screen having a display area;
- a display processor adapted to display three dimensional models on said display screen at points on the display screen at which a line between the three dimensional model to be displayed and an external viewing point located in three dimensional space intersect said display screen, whereby said displayed models occupy a certain percentage of said area of said display screen; and
- a selector adapted to select which of said detailed three dimensional model and said simplified three dimensional model is to be displayed by said display processor on said display screen based on a predetermined visual perceptibility threshold.

5,379,372
APPARATUS AND METHOD FOR DESIGNING A FORM STRUCTURE USING COLUMN AND ROW RULES
 William C. Wu, 1180 Lochinvar Ave., #46, Sunnyvale, Calif. 94087

Filed Sep. 13, 1990, Ser. No. 581,816
 Int. Cl.⁶ G06F 15/62

U.S. Cl. 395—148

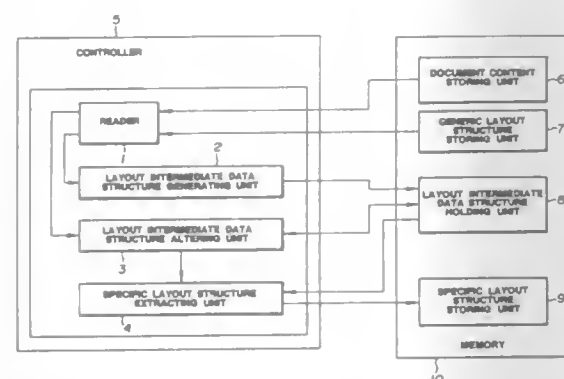
34 Claims



1. In a computer, a system for designing a form system, said system executing a set of commands for creating and modifying said form system and displaying said form system ill a peripheral device of the computer on a 2-dimensional plane having x- and y-coordinates, said system comprising:

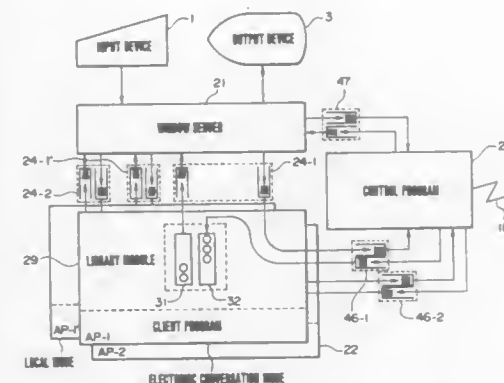
- means for creating a plurality of column rules, each column rule having first and second end points of the same x-coordinate;
- means for creating a plurality of row rules, each row rule having first and second end points of the same y-coordinate, each of said first and second end points of each row rule having the same x-coordinate as the x-coordinate of an end point of at least one column rule within said plurality of column rules, and each of said first and second end points of each column rule having the same y-coordinate of an end point of at least one row rule within said plurality of row rules;
- means for creating one or more cells in said form structure, each cell bordered by column and row rules of said pluralities of column and row rules;
- means for modifying said plurality of row rules, said plurality of column rules, and said one or more cells in accordance with said set of commands;
- means for displaying said form system on said 2-dimensional plane, in accordance with said set of commands;
- means for creating one or more row rule groups, each row rule group including one or more row rules of said plurality of row rules, each row rule in each row rule group having the same y-coordinate, and each row rule within said plurality of row rules being included in one and only one row rule group;
- means for creating one or more column rule groups each column rule group including one or more column rules of said plurality of column rules, each column rule in each column rule group having the same x-coordinate, and each column rule within said plurality of column rules being included in one and only one column rule group;
- means for receiving an x-coordinate and a y-coordinate, said x-coordinate and said y-coordinate defining a location on said 2-dimensional plane; and
- means for identifying a rule group using said location, wherein if said location is within a predetermined distance of a rule, the rule group which included said rule is identified, and if said location is not within a predetermined distance of a rule, a new rule group is created and identified.

5,379,373
DOCUMENT LAYOUT PROCESSING METHOD AND DEVICE FOR CARRYING OUT THE SAME
 Naoki Hayashi, and Kazuo Saito, both of Tokyo, Japan, assignors to Fujii Xerox Co., Ltd., Japan
 Filed Jun. 12, 1991, Ser. No. 714,264
 Claims priority, application Japan, Jun. 15, 1990, 2-157068
 Int. Cl.⁶ G06F 15/20
 U.S. Cl. 395—148 9 Claims



2. A document layout processing device in which a suitable layout structure is selected from a layout template specifying attributes for generating layout structures in accordance with a document content and a layout structure in which the document content is laid out is generated, the system comprising: intermediate data structure generating means for generating an intermediate data structure in the form of a tree structure, said tree structure having a plurality of nodes including an immediately subordinate node, said tree structure representing simultaneously both the attributes specified in the layout template and a layout structure being generated; intermediate data structure holding means for holding the intermediate data structure generated by the intermediate data structure generating means; intermediate data structure altering means for altering the intermediate data structure held in the intermediate data structure holding means, based on the document content and the attributes represented by the intermediate data structure held in the intermediate data structure holding means; specific layout structure extracting means for extracting a layout structure in which the document content is laid out, from a newest intermediate data structure held in the intermediate data structure holding means; the constraints specified in the layout template being represented by generation rules of grammar from which hierarchical structures are derived; non-terminal symbols and terminal symbols including operators, which appear on the generation rules of grammar, are made to correspond with the nodes of the tree structure; operator type information indicative of an operator type and manipulation history information indicative of a history of addition or deletion of an immediately subordinate node to or from a node being generated are held in the node being generated among the plurality of nodes in association with the operator included in the generation rules of grammar; and a node is added or deleted to or from the tree structure based on the operator type information and the manipulation history information.

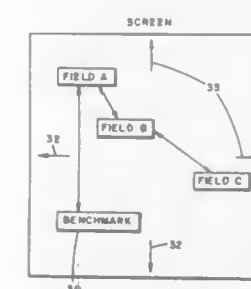
5,379,374
COLLABORATIVE INFORMATION PROCESSING SYSTEM AND WORKSTATION
 Takeshi Ishizaki, Kawasaki; Yoshiyuki Nakayama, Yokohama; Kenjiro Mori, Machida; Fumio Nakamura, Kawasaki, and Tadashi Yamamitsu, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Nov. 21, 1991, Ser. No. 795,828
 Claims priority, application Japan, Nov. 21, 1990, 2-313986
 Int. Cl.⁶ G06F 3/14, 15/16
 U.S. Cl. 395—155 6 Claims



1. A workstation for performing a collaborative information processing in cooperation with at least one remote workstation connected thereto via a communication network, comprising: input means for inputting data and commands; display means, having a display screen, for presenting thereon a plurality of windows; execution means for executing programs and modules; memory means for storing programs and modules to be executed by said execution means; and communication means for performing communication with said remote workstation via said communication network; said memory means storing: (i) a conversation control program for communicating with a conversation control program in said remote workstation via said communication means to perform collaborative information processing with said remote workstation; (ii) a plurality of client programs each defining an information processing to be executed in accordance with a logical input event supplied thereto and for issuing an output request in accordance with a result of said information processing; (iii) a plurality of window library modules provided respectively in association with respective ones of said client programs; and (iv) a window server program for converting input data or a command, inputted by said input means to one of said windows, into a logical input event, for distributing the logical input event to one of said plurality of window library modules which is associated with a client program which defines an information processing to be executed in accordance with said logical input event, and for updating a display content of said one window as presented on said display screen in accordance with an output request issued from said client program and received via said one window library module; wherein at least one of said plural window library modules has a function to supply logical input events received from said window server program to said conversation control program, a function to deliver logical input events received from said conversation control program to the client program associated therewith, and function to transfer output requests issued from said client program to said window server program; and wherein said conversation control program has a function to

transmit logical input events received from said window library modules to said conversation control program in said remote workstation via said communication means and to selectively distribute logical input events received from each of said window library modules, as well as logical input events received from said conversation control workstation, to other window library modules.

5,379,375
AUTOMATIC LOCATION OF SCREEN OBJECTS THROUGH THE USE OF RELATIONAL POSITION DATA
 Vinh D. Dao, Cupertino, and Sasha Ostojic, Sunnyvale, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
 Continuation of Ser. No. 750,673, Aug. 27, 1991, abandoned.
 This application Feb. 7, 1994, Ser. No. 192,773
 Int. Cl.⁶ G06F 15/62
 U.S. Cl. 395—155 9 Claims



1. In a system including a processing unit and a computer that communicates with said processing unit by transmission of display screens, which display screens are stored by said processing unit, a method for enabling said processing unit to determine without user interaction a location of an object in a received, stored display screen, said processing unit performing the method comprising: a. assigning to a first display object in a stored reference display screen, a relative positional offset from a benchmark object, said first display object and benchmark object moved together upon a scrolling action of said reference display screen, said benchmark object providing a reference from which positions of display objects are determined; b. receiving a new display screen from said computer that matches said stored reference display screen; and c. locating a requested display object on said new display screen, said new display object corresponding to said first display object, by finding a location of said benchmark object on said new display screen and determining, without user interaction, a location of said requested display object on said new display screen by reference to said first display object's relative positional offset assigned in step (a).

5,379,376
BI-DIRECTIONAL GRAPHICS ATTRIBUTE CONVERSION PROFILE
 Allan L. Bednowitz, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
 Filed Jun. 4, 1990, Ser. No. 533,198
 Int. Cl.⁶ G06F 15/62
 U.S. Cl. 395—162 6 Claims

1. In a computer system, the combination comprising: a first computer which utilizes a first graphics format for transmitting and receiving graphics information; a second computer which utilizes a second graphics format, which is different than said first graphics format, for transmitting and receiving graphics information; and bi-directional graphic format conversion means for convert-

ing said first graphics format to said second graphics format and for converting said second graphics format to said first graphics format, for transmission of graphics information from said first computer to said second computer and for transmission of graphics information from said second computer to said first computer, wherein said bi-directional format conversion means comprises: an attribute profile for at least two graphic formats, with said attribute profile including for each of a plurality of attributes for each of said at least two graphic formats: a prefix indicative of the graphic format, a keyword indicative of the attribute, and an index of a plurality of



attribute parameters associated with the keyword, with each such attribute parameter of a first graphic format being paired with an attribute parameter of a second graphics format; means for selecting a predetermined attribute parameter of said first graphics format for conversion to said second graphics format; means for scanning said attribute parameters of said first graphics format until the predetermined attribute selected for conversion is found; and means for selecting the attribute parameter of said second graphics format that is paired with the predetermined attribute selected for conversion to said second graphics format, as a converted attribute.

5,379,377
DISPLAY SYSTEM PROVIDING A RASTER IMAGE OF A PHYSICAL SYSTEM WITH ITS CHANGEABLE OPERATING PARAMETERS DISPLAYED IN RELATED LOCATIONS ADJACENT TO THE IMAGE OF THE PHYSICAL SYSTEM
 Anil K. Gowda, Eden Prairie, and Jeffrey C. Randall, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
 Filed Dec. 29, 1992, Ser. No. 998,192
 Int. Cl.⁶ G06F 15/20
 U.S. Cl. 395—162 14 Claims

1. An information display system for displaying information pertaining to at least one of a plurality of conditions associated with a physical system, said physical system having a pictorial representation, wherein each condition has a status specified by a status value encoded in a status signal provided by a status source associated with the physical system, said information display system including i) a processing unit providing a status request signal to the status source including at least a first condition code specifying a first condition, and receiving from the status source in response a status signal encoding a first status value specifying the status of the first condition; ii) a processor memory recording data provided by the processing unit and supplying previously recorded data to the processing unit; iii) a raster display unit comprising a raster memory having data storage locations in which the processing unit records and alters a raster image, said raster image comprised of individual pixels whose positions in the raster image are designated by coordinate values which also designate the data storage

wherein each of said plurality of memory means includes (a) a memory means management storage area for storing attribute data of a respective input/output device, a respective input/output means and a respective memory means, (b) a plurality of block storage areas each having a same memory capacity for storing digital information transferred among said plurality of memory means by said bus means, each block storage area including an unused memory area and a plurality of record memory areas each having a same memory capacity, (c) a plurality of block management storage areas for respectively storing condition information with respect to said plurality of block storage areas, and (d) a block management register storage

area for effecting access synchronization to said master control means and said memory means of said respective input/output means.

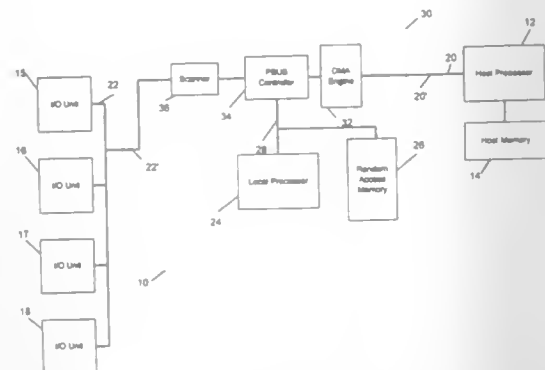
5,379,381
SYSTEM USING SEPARATE TRANSFER CIRCUITS FOR PERFORMING DIFFERENT TRANSFER OPERATIONS RESPECTIVELY AND SCANNING I/O DEVICES STATUS UPON ABSENCE OF BOTH OPERATIONS
 Joseph M. Lamb, Hopedale, Mass., assignor to Stratus Computer, Inc., Marlboro, Mass.

Filed Aug. 12, 1991, Ser. No. 743,992

Int. Cl.⁶ G06F 13/00, 13/28

U.S. Cl. 395—275

15 Claims



1. An output/output (I/O) controller, for connection with an I/O bus and with a host processor bus, for transfer of data between one or more I/O devices connected with said I/O bus and a host processor having a host storage unit and connected to the host processor bus, said I/O controller having a local processor operating with a local storage unit, said I/O controller comprising:

- A. means for storing a list of candidate DMA instructions, along with one or more codes indicating whether one or more of those instructions are ready for execution,
- B. first data transfer means for executing, upon being selected, data move operations of a direct memory (DMA) transfer instruction, for transferring multiple bytes of data between the I/O bus and the host bus,
- said first data transfer means including means for accessing information from said list of candidate DMA instructions upon receipt of a pointer generated by said local processor,
- C. second data transfer means for executing, upon being selected, a controller instruction for transferring bytes of data between the local processor and the I/O bus,
- D. scan means for scanning, when selected, the status of said one or more I/O devices connected to the I/O bus,
- E. logic circuitry for selecting said first data transfer means for executing the data move operations of a first DMA transfer instruction when said second data transfer means is not selected,

said logic circuitry being responsive to a request for execution of a controller instruction, during selection of said first data transfer means and execution thereby of data move operations of a first DMA transfer instruction, for successively

- i) de-selecting said first data transfer means to idle execution of said data move operations of said first DMA transfer instruction thereby,
 - ii) selecting said second data transfer means for executing the requested said controller instruction to transfer bytes of data between the local processor and the I/O bus,
 - iii) re-selecting said first data transfer means for execution of further said data move operations of said first DMA transfer instruction, re-commencing as of a status thereof at the time of being de-selected, and
- said logic circuitry including means for selecting said scan

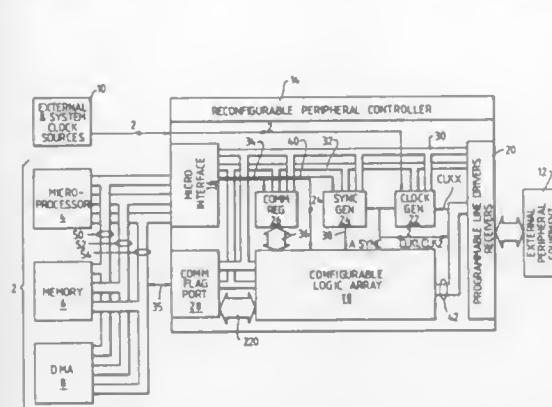
means in the absence of both a request for said controller instruction and for a DMA transfer instruction.

5,379,382
UNI AND BI-DIRECTIONAL SIGNAL TRANSFER MODES IN PERIPHERAL CONTROLLER AND METHOD OF OPERATING SAME
 Gordon S. Work, Warrington; Gareth J. Jones, Manchester, and Peter A. Albiez, Cheshire, all of United Kingdom, assignors to Pilkington Micro-Electronics Limited, United Kingdom
 Filed Apr. 21, 1992, Ser. No. 871,518
 Claims priority, application United Kingdom, Apr. 22, 1991, 9108599

U.S. Cl. 395—275

Int. Cl.⁶ G06F 13/00

18 Claims



1. A peripheral controller suitable for connecting a selected one of a plurality of peripheral devices to a computer system comprising a processor, a memory and a direct memory access controller interconnected by a system control bus, the peripheral controller comprising a plurality of programmable line driver/receiver devices each capable of operating selectively in a unidirectional signal transfer mode in which the transfer of signals between the computer system and the selected peripheral device is in a selected one of input and output directions and in a bidirectional signal transfer mode when the transfer of said data is in both said input and output directions; and a re-configurable logic array adapted to be configured to implement a particular interface required for the selected peripheral device under the control of configuration control data generated by the processor and communicated to the peripheral controller, said configuration control data also being useable to place at least one of the programmable line driver/receiver devices into an appropriate one of said signal transfer modes whereby the peripheral controller is capable of implementing transfer of signals between the computer system and the selected peripheral device under the control of the processor.

5,379,383
COMMUNICATION SERVICE CONTROL SYSTEM IN AN INTELLIGENT NETWORK PROVIDING CONTROLLERS FOR CONTROLLING DIFFERENT SERVICES

Hideo Yunoki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 15, 1991, Ser. No. 745,388

Claims priority, application Japan, Aug. 15, 1990, 2-215499

Int. Cl.⁶ G06F 13/00; H04M 3/00

U.S. Cl. 395—325

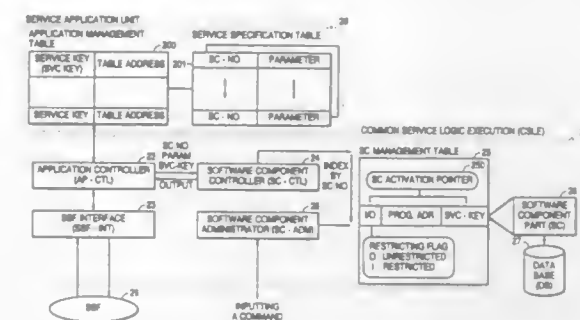
9 Claims

1. A communication service control system in an intelligent network having a service switching function (SSF), said communication service control system comprising:

- a service applicator storing specification data including a software component number indicating a type of service;
- SSF interface means for providing an interface between said

service switching function and the communication service control system, the SSF interface means being connected to the service switching function through a communication line;

application control means for obtaining, according to a service request received from the service switching function via said SSF interface means, the specification data including the software component number from said ser-



vice applicator storing the specification data indicating the type of service; and
 software component control means for obtaining software component data, using the specification data obtained by said application control means, from a software component part connected to said software component control means, and then returning said software component data to said application control means.

5,379,384
CONFIGURATION DATA LOOPBACK IN A BUS BRIDGE CIRCUIT

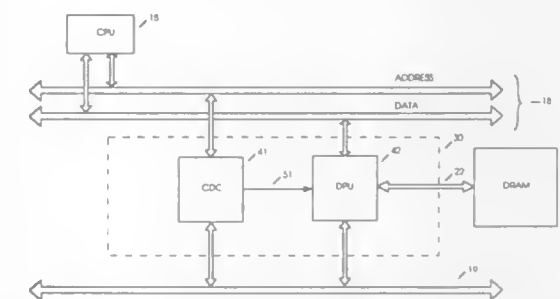
Gary Solomon, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 894,108, Jun. 5, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 126,111

Int. Cl.⁶ G06F 13/38

U.S. Cl. 395—325

24 Claims



1. A method for writing a configuration register in a bus bridge circuit, comprising the steps of:

- sensing an access cycle on a first bus, and receiving an address over the first bus;
- bridging the access cycle sensed on the first bus to an access cycle on a second bus by initiating the access cycle on the second bus and transmitting the address received over the first bus over the second bus without decoding the address received over the first bus;
- sensing the access cycle on the second bus, and decoding the address present on the second bus;
- receiving a data value over the first bus, the data value corresponding to the access cycle sensed on the first bus;
- bridging the data value to the access cycle on the second bus by transmitting the data value received over the first bus over the second bus;
- if the address decoded on the second bus selects the configu-

ration register in the bus bridge circuit, then receiving the data value present on the second bus and storing the data value in the configuration register.

5,379,385
METHOD AND MEANS FOR EFFECTUATING RULE BASED I/O DATA TRANSFER ADDRESS CONTROL VIA ADDRESS CONTROL WORDS

Robert W. Shomler, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

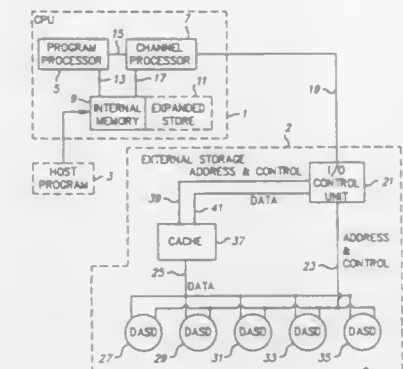
Continuation of Ser. No. 542,854, Jun. 22, 1990, abandoned.

This application Nov. 18, 1992, Ser. No. 978,051

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—325

5 Claims



4. A method for transferring data between locations in the internal memory of a CPU and an array of N direct access storage devices (DASD's) over a path including a CPU resident channel and an array control means,

said channel constituting a virtual processor for establishing access and a physical path connection between said CPU internal memory and the array control means, each DASD including a capacity of K track recording medium, each track having a storage capacity of K blocks, said array control means securing synchronous access to selectable ones of the N DASDs,

said CPU including an operating system (OS) for initiating a transfer responsive to an access request from a process executing on said CPU, the initiation causing control to be relinquished to the channel, the channel in turn generating a series of commands, ones of said series of commands being sent to the array control means for execution and including commands four selecting and accessing the array of N DASD's and effectuating the data transfer, wherein the method comprising the steps of:

- (a) storing at least one address modification rule in internal memory responsive to said access request from said process executing on said CPU;
- (b) transferring at least one rule by said OS from said CPU internal memory to said channel, said rule defining one or more internal memory address computations according to at least a first one of said series of commands, said rule specifying an internal memory address stride of K modulo MN, M being a parameter lying in the closed integer interval $1 < M < K$, said stride being maintained during a data transfer, stride being an address interval over which contiguity and order of data in the memory or storage subsystem being accessed is preserved, said stride being maintained in that the number of locations within its bounds remains constant during any subsequent processing utilizing the rule to which it is a counterpart; and
- (c) responsive to said rule, generating internal memory address arguments by the channel, and responsive to any access command in the series, and causing any data transferred to the DASD array or received from the array to

be accessed at internal memory locations specified by the generated address arguments.

5,379,386

MICRO CHANNEL INTERFACE CONTROLLER

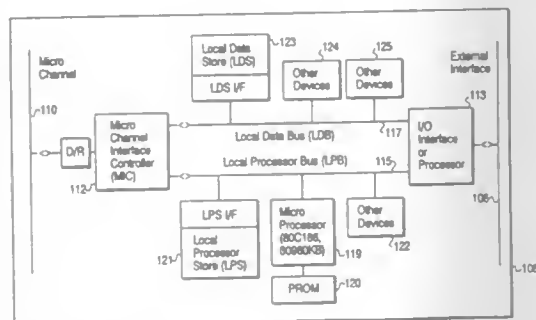
Jeffery L. Swarts, Falls Church; James S. Fields, Jr., Centreville; Guy L. Guthrie, and Denis A. Smetana, Jr., both of Manassas, all of Va., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 755,477, Sep. 5, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 101,793

Int. Cl.⁶ G06F 3/00

U.S. Cl. 395—325

7 Claims



1. A controller for high speed communication of information between a Micro Channel bus, a general purpose local processor bus and a dedicated local data bus comprising:

- a first interface means for transceiving information between said Micro Channel bus and said controller said interface means transceiving data and memory address information from said Micro Channel bus;
 - a second interface means for transceiving memory address information between a local processor bus and said first interface means;
 - a third interface means for transceiving data information between a local data bus and said first interface means;
 - an output buffer connected between said third interface means and said first interface means for handling data exchanges between the dedicated data bus and the Micro Channel bus; and
 - an input buffer connected between said second interface means and said first interface means for handling control information between the Micro Channel bus and the local processor bus;
- and means for operating the controller as a master device for bilateral movement of data between the Micro Channel bus and the dedicated local data bus;
- whereby said controller processes multiple master and/or slave packets of information concurrently.

5,379,387

ARITHMETIC UNIT FOR STRUCTURE ARITHMETIC

L. Gunnar Carlstedt, Partille, Sweden, assignor to Carlstedt Elektronik AB, Goteborg, Sweden

Filed Aug. 2, 1991, Ser. No. 739,532

Claims priority, application Sweden, Aug. 2, 1990, 9002558-6

Int. Cl.⁶ G06F 9/44, 15/82

U.S. Cl. 395—375

53 Claims

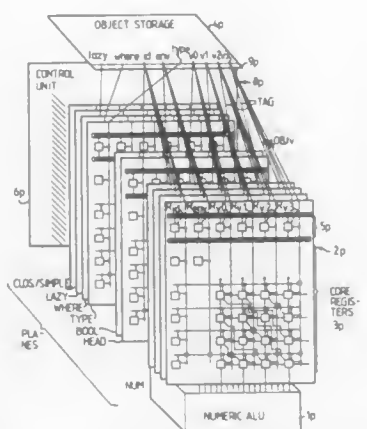
20. An arithmetic unit for structural arithmetic processing, comprising:

- a) at least one input/output means (v0, v1, v2, v3, id, env) for input and output of data lists,
 - b) several registers (S0,0 to S3,3, F0 to F3, ID, ENV) each being adapted to store a data word, said data words being arranged in said lists,
- each data word having a mark part and an information part,

said mark part including a mark specifying if a register containing said data word is in use or not,

each said data lists being storable in a predetermined number of said registers,

said mark part of each said register among said registers being marked in use indicating that one of said lists has at least a part stored in said register, said list having a part stored in said register includes a list instruction denoting which kind of list it is, said list parts stored in said registers being arranged as a tree of list parts, of which one of the list parts is a root list part, a relation between said list parts being apparent from an arrangement of said list parts in said registers,



- c) control means (6p) for controlling said registers and for making use of said list instructions belonging to list parts stored in said registers to rearrange said lists among said registers and for performing input/output operations of register content in accordance with said list instructions, forming an array of said registers (S0,0 to S3,3) having a predefined register (S0,0 to S3,0) for storing said root list part and a predefined set of registers for storing sublist parts, said array being automatically controlled by said control means (6p) to make a structure reduction of data objects placed in said registers in a rewrite operation performed in one register transfer cycle.

5,379,388

DIGITAL SIGNAL PROCESSING APPARATUS WITH SEQUENCER DESIGNATING PROGRAM ROUTINES

Safdar M. Asghar, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 8, 1992, Ser. No. 910,699

Int. Cl.⁶ G06F 9/00, 9/06

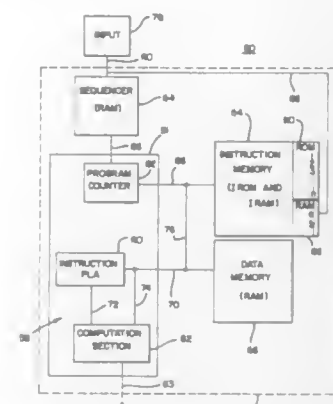
U.S. Cl. 395—375

8 Claims

6. A digital signal processing apparatus for executing a program, the apparatus comprising:

- an instruction memory means for storing a plurality of predetermined instructions, each respective instruction of said plurality of instructions being uniquely retrievable;
- a plurality of sequence designating means responsive to user inputs for designating stored sequences, said plurality of sequence designating means being hierarchically arranged in sets of sequence designating means from a lowest-order set to a highest-order set, said plurality of sequence designating means being operatively connected with said instruction memory means; each respective sequence designating means of a given set of sequence designating means containing in its respective stored sequence a stored respective hierarchical sequence, each said respective hierarchical sequence being configured to designate any lower-order respective sequence designating means as a designated lower-order sequence designating means, said respective stored sequence of each said designated lower-

order sequence designating means being included in said program, each said respective hierarchical sequence also being configured to designate selected instructions of said plurality of instructions as program instructions, said program instructions being included in said program; and an executing means operatively connected with said instruction memory means for executing said program, said instruction memory means providing said program to said executing means for execution as directed by said plurality of sequence designating means,



wherein said instruction memory means includes a first instruction memory for storing instructions in a read only memory structure and a second instruction memory for storing instructions in a random access memory structure, said second memory being responsive to said user inputs to receive user-generated instructions for storage, said user-generated instructions being included in said plurality of instructions.

5,379,389

METHOD FOR TRANSMITTING COMMANDS EXCLUDED FROM A PREDEFINED COMMAND SET

John W. Whisler, Raleigh, N.C., assignor to Alphatronix Inc., Research Triangle Park, N.C.

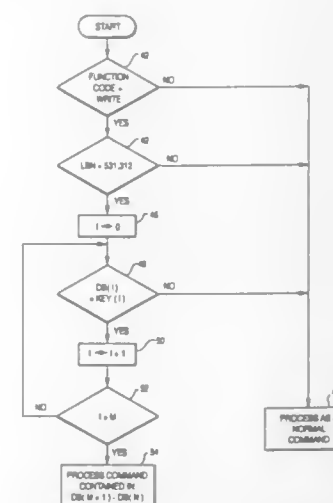
Continuation of Ser. No. 816,542, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 361,306, Jun. 5, 1989,

abandoned. This application Jan. 19, 1994, Ser. No. 183,257

Int. Cl.⁶ G06F 3/06, 13/10, 13/12

U.S. Cl. 395—375

20 Claims



1. A method of processing instructions in a data processing apparatus, each instruction having a command area including an address area, and a data area, the instructions including first and second sets of commands, the first set of commands identi-

fied by codes in the command area, said method comprising the steps of:

- (a) detecting one of the second set of commands in the data area of one of the instructions without reference to the command area of the instruction;
- (b) identifying and executing the one of the second set of commands, detected in step (a), in the data processing apparatus without the codes in the command area having any effect on said executing; and
- (c) executing one of the first set of commands as identified by the command area when an instruction is received and step (a) does not detect any of the second set of commands.

5,379,390

RATE/RATIO DETERMINING APPARATUS

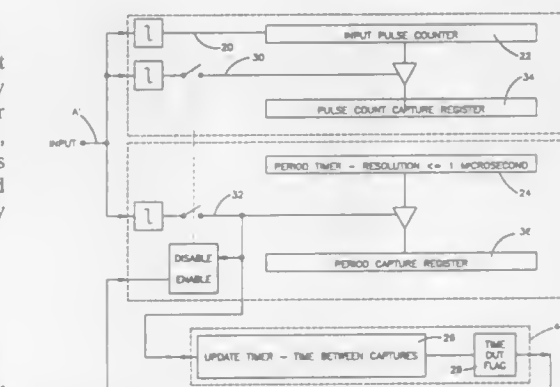
Lawrence G. Searing, Nashotah, and Richard L. Toye, Brookfield, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 117,637, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 571,918, Aug. 22, 1990, abandoned. This application Mar. 28, 1994, Ser. No. 219,817

Int. Cl.⁶ G06F 9/46

U.S. Cl. 395—375

6 Claims



I. A computer-implemented method for determining the frequency of a time varying signal including a series of pulses, comprising the steps of:

- a) providing an input for receiving said time varying signal;
- b) providing a free running period timer by which starting and ending times of a sample period are determined;
- c) providing an update timer for signaling that a predetermined sample period has been completed;
- d) storing the state of said free running period timer in a storage element at the commencement of a sample period;
- e) providing a high priority interrupt control routine that is at least partially executed upon generation of a high priority interrupt;
- f) generating a high priority interrupt upon the receipt of one of said signal pulses at said input;
- g) upon generation of said high priority interrupt, executing said high priority routine to determine whether said predetermined sample period has been completed by said update timer;
- h) in response to said predetermined sample period having not been completed, incrementing a pulse counter and thereupon exiting said high priority interrupt routine;
- i) in response to said predetermined sample period having been completed, executing a capture sequence, comprising the steps of:
 - i) transferring a state of said free running period time to a period capture register;
 - ii) generating a first low priority interrupt and thereupon exiting said high priority routine;
 - j) executing a secondary capture routine in response to generation of said first low priority interrupt so long as

said high priority control routine is not being executed, said secondary capture routine including the steps of:

- subtracting the state of the free running period timer stored in the storage element from the state of the free running period timer stored in the period capture register to provide a precise sample period time interval; and
- providing the total pulses received in said pulse counter during said precise sample period to a count register; and
- calculating the frequency of said signal using said sample period time interval and said total pulses.

5,379,391

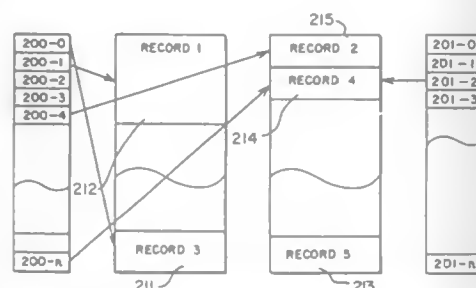
METHOD AND APPARATUS TO ACCESS DATA RECORDS IN A CACHE MEMORY BY MULTIPLE VIRTUAL ADDRESSES

Jay S. Belsan, Nederland, and John T. O'Brien, Louisville, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 1, 1991, Ser. No. 663,099
Int. Cl.⁶ G06F 12/00, 12/16, 13/00

U.S. Cl. 395—400

8 Claims



1. In a virtual memory data storage subsystem that contains a plurality of data storage elements connected to a host processor through a cache memory for storing a plurality of data records therein and a number of data record pointers stored in a mapping table, each data record pointer identifying a physical memory location in said data storage elements containing an associated data record, a method of maintaining data integrity for a first data record stored in a one of said physical memory locations which is addressable by said processor via a plurality of data record pointers, comprising the steps of:

- determining, in response to receipt of a data record write request from said processor which identifies said first data record by a first data record pointer, whether said requested first data record resides in said cache memory;
- determining, in response to said requested first data record residing in said cache memory, whether said requested first data record is identified by more than said first data record pointer;
- creating, in response to said requested first data record being identified by more than said first data record pointer, a second data record in said cache memory which second data record is a copy of said requested first data record in said cache memory; and
- assigning said first data record pointer to said second data record.

5,379,392

METHOD OF AND APPARATUS FOR RAPIDLY LOADING ADDRESSING REGISTERS

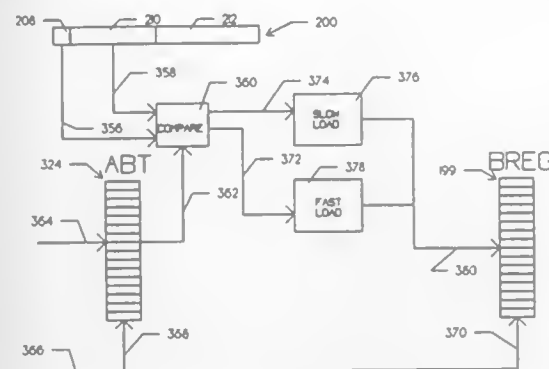
Merwin H. Alferness, New Brighton, and John Z. Nguyen, Roseville, both of Minn., assignors to Unisys Corporation, Allentown, Pa.

Filed Dec. 17, 1991, Ser. No. 809,386

Int. Cl.⁶ G06F 12/06, 9/35

U.S. Cl. 395—400

22 Claims



1. A method for updating the contents of a base register from a previous absolute address to a new absolute address wherein said previous absolute address corresponds to a previous virtual address having a previous bank descriptor index and a previous offset and wherein said new absolute address corresponds to a new virtual address having a new bank descriptor index and a new offset comprising:

- comparing said new bank descriptor index to said previous bank descriptor index;
- subtracting said new offset from said previous offset and providing a net difference;
- adding said net difference to said previous offset and provide the result to said base register if step (a) determines equality.

5,379,393

CACHE MEMORY SYSTEM FOR VECTOR PROCESSING

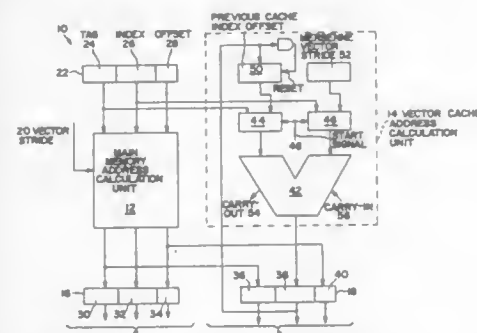
Qing Yang, Wakefield, R.I., assignor to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Filed May 14, 1992, Ser. No. 882,857

Int. Cl.⁶ G06F 12/02, 12/16

U.S. Cl. 395—400

14 Claims



1. A cache memory system for use during vector processing in a processor, said processor having a central processing unit (CPU) and a main memory, said system comprising:

- a vector cache memory;
- a first address register which stores a first address associated with an instruction executed by said CPU;
- main memory address calculation means coupled to said first address register for calculating a second address utilizing

said first address and vector stride data associated with said executed instruction, said second address being utilized to access said main memory; and

cache address calculation means coupled to both said first address register and said main memory address calculation unit for calculating a third address utilizing portions of said first address and portions of said second address, said third address being utilized to access said vector cache memory.

5,379,394

MICROPROCESSOR WITH TWO GROUPS OF INTERNAL BUSES

Harutaka Goto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

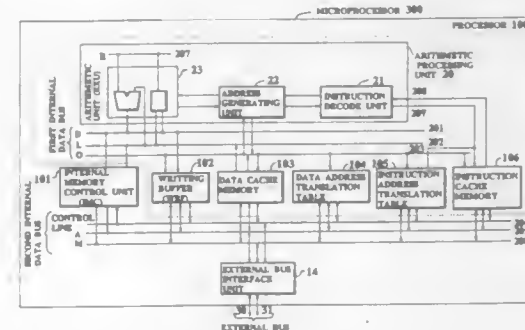
Filed Jul. 13, 1990, Ser. No. 552,086

Claims priority, application Japan, Jul. 13, 1989, 1-179066

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—425

11 Claims



1. A microprocessor comprising:

- an arithmetic processing unit;
- a group of internal memories comprising address translation table means for storing information for translating logic addresses into physical addresses, and cache memory means for storing information for translating logic addresses into physical addresses;
- internal memory control means for controlling a data input/output operation between external memories and said group of internal memories;
- a first group of internal buses for connecting said arithmetic processing unit, said group of internal memories and said internal memory control means, and for transferring logical addresses and data between said arithmetic processing unit and said group of internal memories; and
- a second group of internal buses for connecting said group of internal memories, said internal memory control means and external bus control means, and for transferring physical addresses and data among said group of internal memories and said external memories,

each element in said group of internal memories and said internal memory control means being connected to said first group of internal buses and to said second group of internal buses in parallel, and

said internal memory control means controlling use of said second group of internal buses, a data input/output operation to said cache memory means, and updating operation of said address translation table means, wherein said internal memory control means is connected between said first group of internal buses and said second group of internal buses and wherein the use of said first group of internal buses is controlled by said arithmetic processing unit, and the use of said second group of internal buses is controlled by said internal memory control means, both of said arithmetic processing unit and said internal memory control means being executed independently.

5,379,395

SEMICONDUCTOR INTEGRATED CIRCUIT FOR CENTRAL PROCESSOR INTERFACING WHICH ENABLES RANDOM AND SERIAL ACCESS TO SINGLE PORT MEMORIES

Takeo Nakabayashi, and Harufusa Kondoh, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

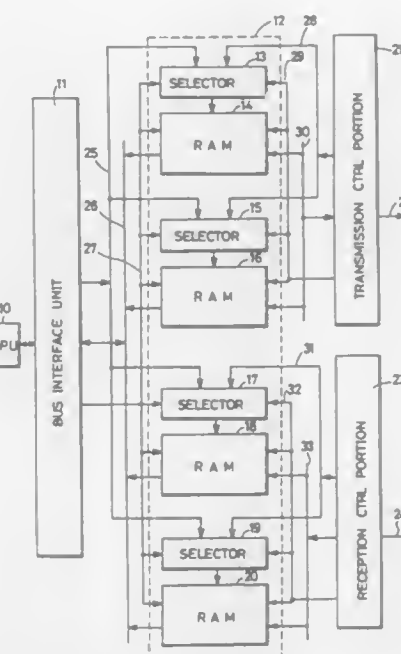
Filed Jul. 2, 1991, Ser. No. 724,668

Claims priority, application Japan, Jul. 11, 1990, 2-185090

Int. Cl.⁶ G06F 3/00

U.S. Cl. 395—425

9 Claims

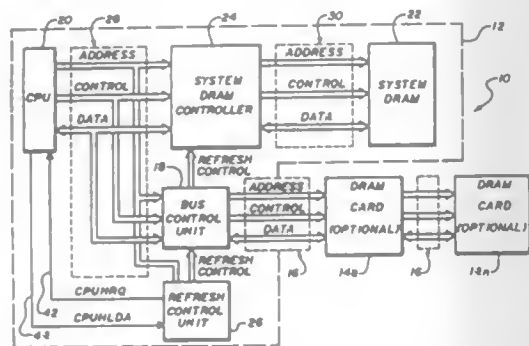


9. A semiconductor integrated circuit serving as an interface between a central processing means and a data communications means for carrying out communication between systems, comprising:

- a first plurality of single port memories provided for reading data written by said central processing means and outputting said data to said data communications means, having storage capacity for storing data exchanged between said central processing means and the data communications means, being randomly accessible from said central processing means and accessible on a first in first out basis from the data communications means;
- a second plurality of single port memories provided for writing data received from said data communications means, transferring the same to said central processing means, having storage capacity for storing data exchanged between said central processing means and the data communications means, being randomly accessible from said central processing means and accessible on a first in first out basis from the data communications means;
- random access means responsive to an instruction from said central processing means for randomly accessing said first and second plurality of single port memories for writing or reading data;
- first serial access means responsive to an instruction from said data communication means for serially accessing said first plurality of single port memories for reading data; and
- second serial access means responsive to an instruction from said data communications means for serially accessing said second plurality of single port memory for writing data.

1. A computer system, comprising:
a system dynamic random access memory and a dynamic random access memory controller connected thereto by a memory bus, said system memory capable of being refreshed during a first access period;
a central processing unit connected to said dynamic random access memory controller by a local processor bus;
a bus control unit for monitoring and controlling activity on said local processor bus and on an input/output bus, said local processor, I/O and memory buses forming a system bus;

circuitry for detecting if at least one input/output device having expansion dynamic random access memory incorporated therein is connected to said bus control unit by said input/output bus, said expansion dynamic random access memory requiring a second access period in which to be refreshed, said second access period being of a longer duration than said first access period; and

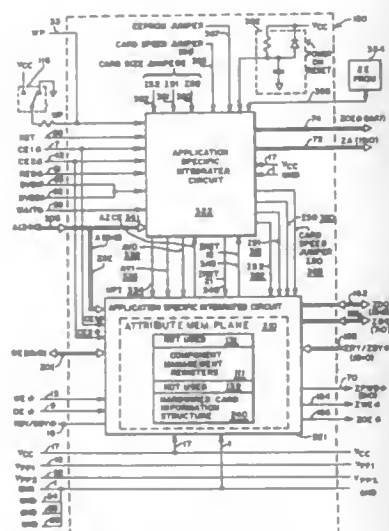


a refresh control unit incorporating control logic for alternatively executing either (i) a first refresh cycle if no expansion dynamic random access memory is detected in the system or (ii) a second refresh cycle if expansion dynamic random access memory is detected in the system, said first refresh cycle being a faster process than said second refresh cycle.

5,379,401 FLASH MEMORY CARD INCLUDING CIRCUITRY FOR SELECTIVELY PROVIDING MASKED AND UNMASKED READY/BUSY OUTPUT SIGNALS

Kurt B. Robinson, Newcastle; Russell D. Eslick, Placerville; Markus A. Levy, Citrus Heights; David M. Brown, Fair Oaks; Lily C. Pao, Orangevale, and Brian L. Dipert, Sacramento, all of Calif., assignors to Intel Corporation, Santa Clara, Calif. Division of Ser. No. 861,013, Mar. 31, 1992. This application Feb. 16, 1994, Ser. No. 198,134

Int. Cl.⁶ G06F 13/00; G06K 19/06; G11C 16/06
U.S. Cl. 395—425 3 Claims



1. A flash memory card, comprising:

- (A) a first flash memory with an unmasked first output that enters a first state if the first flash memory is ready and a second state if the first flash memory is busy;
- (B) a second flash memory with an unmasked second output that enters the first state if the second flash memory is

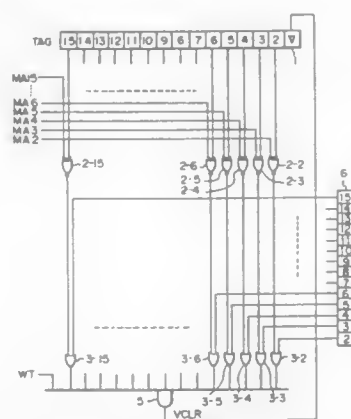
ready and the second state if the second flash memory is busy;

- (C) circuitry for providing a selectable (1) masked first output, (2) the unmasked first output, (3) a masked second output, and (4) the unmasked second output;
- (D) circuitry for providing a first ready output signal for the flash memory card, wherein the first ready output signal indicates a first transition from the second state to the first state by one of the unmasked first output of the first flash memory and the unmasked second output of the second flash memory.

5,379,402 DATA PROCESSING DEVICE FOR PREVENTING INCONSISTENCY OF DATA STORED IN MAIN MEMORY AND CACHE MEMORY

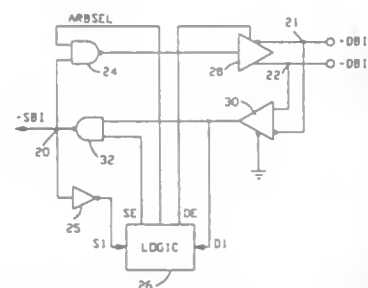
Atsushi Fujiwara, and Takeshi Kitahara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 553,300, Jul. 17, 1990, abandoned. This application Aug. 19, 1993, Ser. No. 108,284
Claims priority, application Japan, Jul. 18, 1989, 1-183642
Int. Cl.⁶ G06F 12/00, 12/04, 12/12

U.S. Cl. 395—425 19 Claims



ing the presence of a differential signal, said apparatus comprising:

- a. a first binary cell having an output coupled to an enable input terminal of said driver/receiver;
- b. a second binary cell having an output coupled to an enable input terminal of said transceiver;
- c. first gating means responsive to both said single-ended signal and said differential signal for setting/resetting said first binary cell, said first gating means having an input terminal disposed for receiving an overriding signal for forcing conversion from a differential to a single-ended signal format and further including: first circuit means responsive to said single-ended signal and being adapted to set said first binary cell when a single-ended signal is detected by said driver/receiver, and
- second circuit means responsive to said single-ended signal and being adapted to reset said second binary cell when a single-ended signal is detected by said driver/receiver means;



- d. second gating means responsive to both said single-ended signal and said differential signal for setting/resetting said second binary cell, said second gating means having an input terminal disposed for receiving an overriding signal for forcing conversion from a single-ended to differential signal format and further including: third circuit means responsive to said differential signal and being adapted to reset said first binary cell when a differential signal is detected by said transceiver means, and
- fourth circuit means responsive to said differential signal and being adapted to reset said first binary cell when a single-ended signal is detected by said driver/receiver means; and,
- e. a first time delay means disposed between the output of said first binary cell and an input of said second gating means and a second time delay means disposed between the output of said second binary cell and an input of said first gating means, said first and second time delay means being disposed for preventing a race condition to occur during the transition from converting from one signal format to another.

5,379,406

PERFORMANCE AND MEASUREMENT SYSTEM WHICH LOGS REDUCED DATA PERTAINING TO GROUPS OF PROCESSES

Gerald T. Wade, Auburn, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

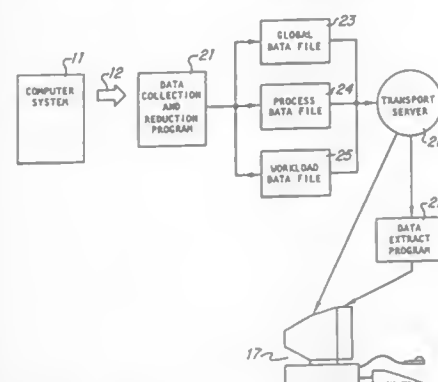
Continuation of Ser. No. 793,740, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 229,573, Aug. 5, 1988, Pat. No. 5,067,107. This application Jan. 7, 1994, Ser. No. 178,485 Int. Cl.⁶ G06F 11/34

U.S. Cl. 395—500

8 Claims

1. A performance and measurement system for a multi-process computing system, the performance and measurement system measuring performance of the computing system, and the performance and measurement system comprising: performance data production means embedded within an operating system of the computing system for producing

performance data about individual processes running on the computing system; at least one data file; and data collection and reduction means, coupled to the performance data production means and to the at least one data file, for receiving the performance data, reducing the



performance data by combining selected data from the performance data pertaining to the individual processes into standardized metrics to produce reduced data which pertains to groups of the individual processes, discarding the performance data and logging the reduced data into the at least one data file, wherein the performance data is never logged.

5,379,407

ERROR HANDLING IN A STATE-FREE SYSTEM

Stephen J. P. Todd, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

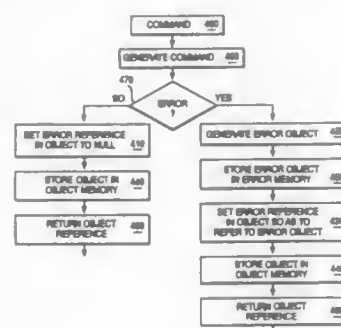
Filed Jan. 15, 1993, Ser. No. 4,001

Claims priority, application United Kingdom, Jun. 16, 1992, 9212775

Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—575

9 Claims



1. In a digital data processing system operable in a state-free manner, of a type having an output generator (90) for generating an output manifestation (100) of a model manipulated by the digital data processing system, an object generator (30) for generating objects (250) describing the model, and an object memory (60) for storing the objects (250), an improvement comprising:

means for generating a field within a given object (250) for storage of an error reference (260); an error generator means for generating an error object (300) containing error details for that object (250) and storing the error object (300) in an error memory (70); means for providing the error reference (260) to the object generator (30), the error reference (260) providing identifying information for the error object (300); and

mean for storing a null reference (270) in the field of a generated object if no error occurs during the generation of the object.

5,379,408

COLOR PALETTE TIMING AND CONTROL WITH CIRCUITRY FOR PRODUCING AN ADDITIONAL CLOCK CYCLE DURING A CLOCK DISABLED TIME PERIOD

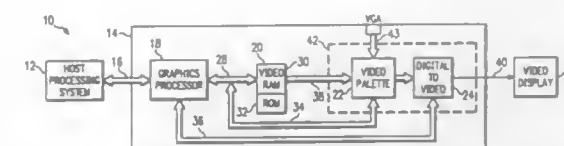
Louis J. Izzi, Plano, and William R. Krenik, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 8, 1991, Ser. No. 789,725

Int. Cl.⁶ C06F 1/00, 1/04

U.S. Cl. 395—550

25 Claims



1. A clock control circuit comprising: circuitry for selecting a master clock from among at least two input clocks provided to said clock control circuit, said selection made in response to master clock selection control signals received by said clock control circuit; circuitry coupled to said circuitry for selecting said master clock for providing at least first and second divided down clocks, each said first and second clocks being of a different divide ratio of said master clock; circuitry coupled to said circuitry for providing divided down clocks for selecting an output clock from between at least said first and second divided down clocks in response to output clock selection control signals received by said clock control circuit; circuitry coupled to said circuitry for selecting an output clock for selectively controlling said output clock, said circuitry for selectively controlling said output clock enabling said output clock in response to a first output clock output control signal received by said clock control circuit and disabling said output clock in response to a second output clock output control signal received by said clock control circuit; and circuitry coupled to said circuitry for selectively controlling for selectively outputting an additional output clock cycle in response to a control signal during a period when said circuitry for selectively controlling has disabled said output clock.

5,379,409

APPARATUS FOR REMOTELY OPERATING COMPUTER SYSTEM

Kazuhiko Ishikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1991, Ser. No. 675,808

Claims priority, application Japan, Mar. 27, 1990, 2-75403

Int. Cl.⁶ G06F 3/04

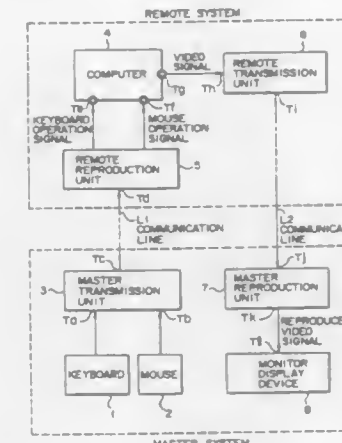
U.S. Cl. 395—575

11 Claims

1. An apparatus for remotely controlling a remote computer system installed at a remote location using a local master apparatus, wherein:

(a) said master apparatus comprises, a master input device for producing an operation signal, master transmission means, connected to said master input device, for encoding the operation signal from the master input device, and transmitting the encoded operation signal to said remote computer system via a first communication line, a master computer which can perform a test operation corre-

sponding to said encoded operation signal transmitted to said remote computer, decoding means, connected to said master transmission means, for decoding an encoded operation signal from said master transmission means, means, connected to said decoding means, for supplying a decoded operation signal from said decoding means to said master computer, said master computer performing said test operation in response to said decoded operation signal and producing a data processing result, and a first display device for displaying the data processing result of said master computer; and (b) said remote computer system comprises, a remote computer for receiving the encoded operation signal transmitted from said master apparatus through said first communication line, for decoding the encoded operation signal into the operation signal, and for performing a data processing operation corresponding to the test operation performed by the master computer in response to the



operation signal and outputting a video signal as a product of said processing; wherein said apparatus for remotely controlling further comprises: remote transmission means, connected to said remote computer, for encoding the video signal output from said remote computer, and transmitting the encoded video signal to said master apparatus through a second communication line; master reproduction means for receiving the encoded video signal transmitted from said remote transmission means through said second communication lines, and decoding the encoded video signal to the original video signal; and a second display device, connected to said master reproduction means, for displaying an image in response to the video signal decoded by said master reproduction means so that an operator can compare the data processing result displayed by said first display device with said image displayed by said second display device to confirm a correspondence therebetween.

5,379,410

DATA GENERATING APPARATUS GENERATING CONSECUTIVE DATA AND HAVING A DATA SKIP SCHEME AND A METHOD OF OPERATING THE SAME

Keisuke Okada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 709,857

Claims priority, application Japan, Jun. 6, 1990, 2-148931

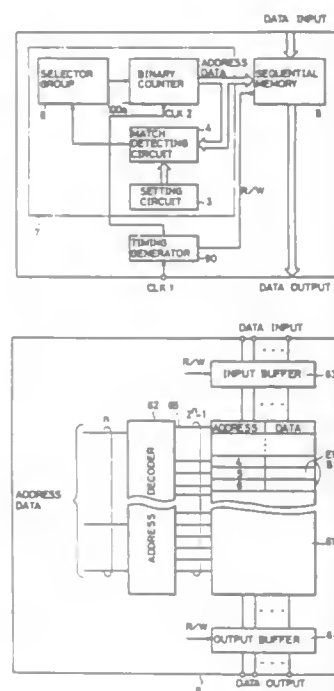
Int. Cl.⁶ G06F 12/02

U.S. Cl. 395—575

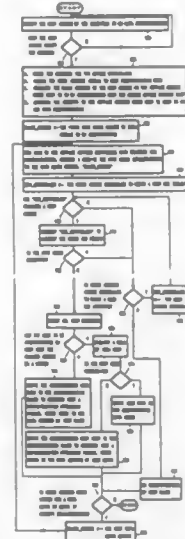
26 Claims

1. A data generating apparatus sequentially generating data, the apparatus comprising:

data generating means responsive to a clock signal for sequentially generating data, each data being a plurality of bits;
 setting means for designating a first data having a constant relationship to a second data;
 detecting means for detecting one of match and mismatch between one of said data generated by said data generating means and said first data of said setting means and generating one of match and mismatch signals;
 selecting means for selecting a first value in response to said mismatch signal and selecting a second value in response to said match signal, said selecting means having a plurality of selectors, each selector corresponding to one of said plurality of bits and having first and second input terminals for receiving data of one of logic 1 and logic 0, for outputting the data received at said first input terminal in response to said mismatch signal and for outputting the data received at said second input terminal in response to said match signal; and
 adding means for altering the data generated from said data



5,379,411
FAULT INDICATION IN A STORAGE DEVICE ARRAY
 Lisa A. Morgan, Longmont, and Marty Parrish, Lafayette, both of Colo., assignors to Fujitsu Limited, Kawasaki, Japan
 Filed Nov. 15, 1991, Ser. No. 792,702
 Int. Cl.⁶ G06F 11/00
 U.S. Cl. 395—575 2 Claims



1. A method for indicating a fault in an array storage system, comprising:
 providing code means including a plurality of code bits;
 attempting to read data located in a data portion of a first data block, said data in said data portion to be involved in a data reconstruction using a number of reconstruction devices;
 determining that said data involved in said data reconstruction was not successfully read;
 attempting to read data to be involved in said data reconstruction, after said determining step, using a storage device different from said reconstruction devices;
 ascertaining that said data involved in said data reconstruction was not successfully read using said storage device;
 indicating a fault relating to said data reconstruction, said step of indicating including writing at least a first predetermined code bit in said code means to indicate that said data reconstruction failed, said step of indicating further including storing predetermined bits in said data portion of said first data block indicative of the failure of said data reconstruction; and
 accessing said code means for use in taking corrective action.

5,379,412
METHOD AND SYSTEM FOR DYNAMIC ALLOCATION OF BUFFER STORAGE SPACE DURING BACKUP COPYING

Lawrence E. Eastridge, and James M. Ratliff, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1992, Ser. No. 871,373

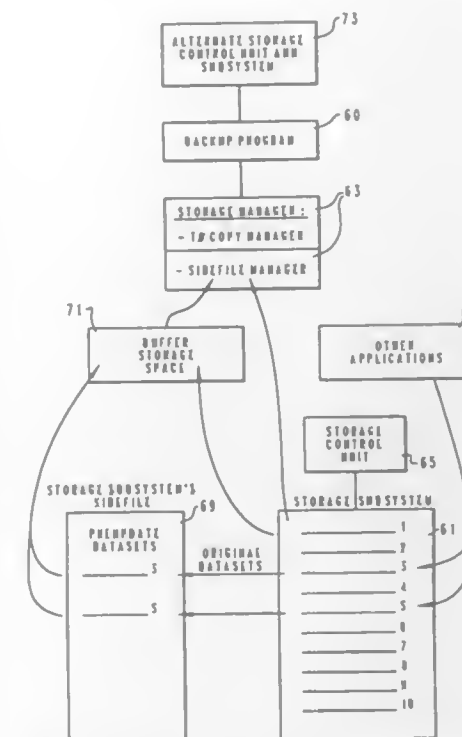
Int. Cl.⁶ G06F 11/00

U.S. Cl. 395—575 8 Claims

1. A method in a data processing system for backup copying of a plurality of designated datasets stored within one or more storage subsystems coupled to said data processing system during application execution within said data processing system, said method comprising the data processing system implemented steps of:

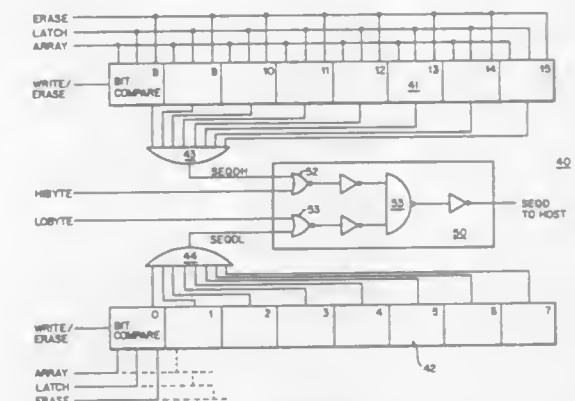
suspending said application execution within said data processing system, forming a dataset logical-to-physical stor-

age system address concordance for said plurality of designated datasets and resuming said application execution thereafter;
 establishing a buffer storage space within said data processing system, wherein said buffer storage space includes a plurality of areas;
 determining a number of all of said plurality of designated datasets to be utilized for backup copying and dynamically allocating a particular one of said plurality of areas of said buffer storage space for each of said number of all of said plurality of designated datasets;
 physically backing up said plurality of designated datasets within said one or more storage subsystems on a scheduled or opportunistic basis utilizing said dataset logical-to-physical storage system address concordance by copying each of said plurality of designated datasets from said one or more storage subsystems to a particular one of said plurality of areas and indexing each of said copied plurality of designated datasets;



processing at said one or more storage subsystems any updates initiated by said application to uncopied datasets among said plurality of designated datasets by temporary buffering said updates within said storage subsystem, writing as sidefiles said plurality of designated datasets or portions thereof affected by said updates within said storage subsystem, and writing said buffered updates to said one or more storage subsystems;
 copying each of said plurality of designated datasets affected by said updates from said sidefiles to a particular one of said plurality of areas of said buffer storage space and indexing each of said copied plurality of designated datasets affected by said updates;
 copying all of said plurality of designated datasets from all of said plurality of areas to an alternate storage subsystem location; and
 releasing said buffer storage space in response to all of said plurality of designated datasets being copied from all of said plurality of areas to said alternate storage subsystem location.

5,379,413
USER SELECTABLE WORD/BYTE INPUT ARCHITECTURE FOR FLASH EEPROM MEMORY WRITE AND ERASE OPERATIONS
 Peter K. Hazen, Sacramento; Sanjay S. Talreja, Citrus Heights, and Rodney R. Rozman, Placerville, all of Calif., assignors to INTEL Corporation, Santa Clara, Calif.
 Filed Jun. 19, 1992, Ser. No. 901,396
 Int. Cl.⁶ G06F 11/00
 U.S. Cl. 395—575 29 Claims

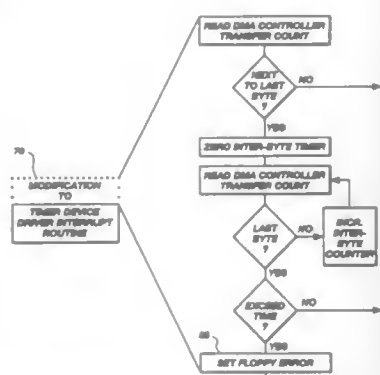


multiplexors to output the first portion of data, and when said first control signal indicates that a portion of data is to be transferred and the second control signal indicates that the second portion of data is to be transferred, said control logic generating select signals to the second portion of first multiplexors to output the first portion of data.

5,379,414
SYSTEMS AND METHODS FOR FDC ERROR DETECTION AND PREVENTION
 Phillip M. Adams, 1466 Chandler Dr., Salt Lake City, Utah 84103

Filed Jul. 10, 1992, Ser. No. 911,409
 Int. Cl.⁶ G06F 11/34; H04L 1/18
 U.S. Cl. 395—575

7 Claims



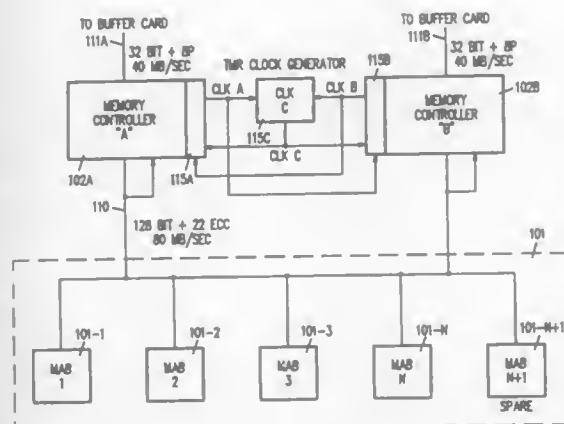
1. A method for detecting and preventing floppy diskette controller data transfer errors in computer systems having:
 a central processing unit (CPU);
 a system interrupt timer;
 a floppy diskette, the floppy diskette having at least one sector for receiving multiple data bytes;
 a floppy diskette controller (FDC) for controlling the transfer of data to the floppy diskette;
 means associated with the FDC for providing a data request (DREQ) signal and a data acknowledge (DACK) signal, the DREQ signal being provided when data transfer is requested and the DACK signal being provided when data transfer is permitted; and
 means for counting data bytes transferred to the floppy diskette, said counting means providing a data transfer byte count,
 the method comprising the steps of:
 determining if a requested computer system operation is a floppy diskette write operation;
 reading the data transfer byte count provided by said counting means;
 monitoring data byte transfers to the floppy diskette so as to determine when a last data byte is being transferred to a sector of the floppy diskette;
 measuring time between the data request (DREQ) and data acknowledge (DACK) signals for said last data byte transfer to a sector of the floppy diskette; and
 forcing an error condition if the measured time between said DREQ and DACK signals exceeds a specified value.

5,379,415
FAULT TOLERANT MEMORY SYSTEM
 Robert L. Papenberg; Runchan D. Yang; David H. Wotring; Mohammad F. Rydhan; Paul Voloshin, all of San Jose, and Mohamed M. Talaat, Mountain View, all of Calif., assignors to Zitel Corporation, Fremont, Calif.

Filed Sep. 29, 1992, Ser. No. 954,169
 Int. Cl.⁶ G06F 11/08

U.S. Cl. 395—575

7 Claims

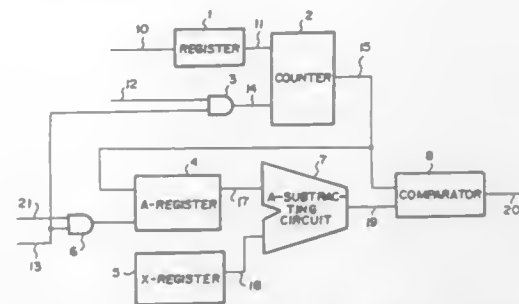


1. A memory system comprising:
 a memory storage unit;
 a first memory controller having a first port for communicating with an accessing device, a second port for accessing said memory storage unit, and a first clock providing a first clock signal;
 a second memory controller having a first port for communicating with an accessing device, a second port for accessing said memory storage unit, and a second clock providing a second clock signal;
 a third clock providing a third clock signal;
 means for causing said first, second, and third clocks to synchronize; and
 means for selecting one of said first, second, and third clocks for use by said first and second memory controllers to control access of said memory storage unit,
 wherein each of said clocks comprise:
 a plurality of input leads for receiving a plurality of clock signals comprising said first, second, and third clock signals from said first, second, and third clocks;
 a voter for selecting one of a plurality of matching ones of said plurality of clock signals;
 an oscillation circuit comprising:
 an input lead coupled to receive said selected one of said plurality of clock signals;
 an output lead for providing a clock signal output;
 a first inverter having an input lead serving as said input lead of said oscillation circuit, and an output lead;
 a crystal having a first lead coupled to said output lead of said first inverter, and having an output lead;
 a second inverter having an input lead coupled to said output lead of said crystal, and having an output lead serving as an output lead of said oscillation circuit;
 a voltage divider having its center tap coupled to said input lead of said second inverter, thereby providing said second inverter with a known voltage level in the absence of oscillation; and
 a resistor coupled in series between said output lead of said crystal and said input lead of said second inverter to establish a desired duty cycle of said clock signal.

5,379,416
STATE TRACER SYSTEM
 Tohru Takishima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,255
 Claims priority, application Japan, Nov. 22, 1991, 3-332738
 Int. Cl.⁶ G06F 11/34; G11C 29/00
 U.S. Cl. 395—575

3 Claims

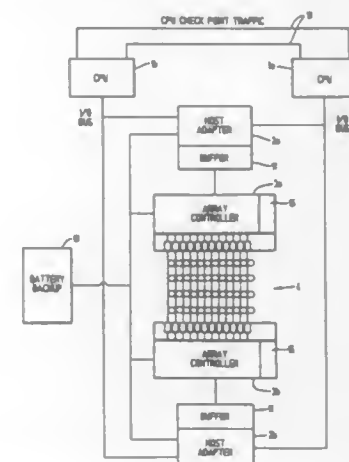


1. A state tracer system incorporated within a storage unit for tracing various signals present therein, having a stop condition circuit and comprising:
 a register for holding a first request signal received from said storage unit;
 a counter provided to receive an output signal from said register to perform counting for each clock when there is no error within said storage unit, and to stop counting when there is any error within said storage unit;
 an A-register for holding a time (A) from the first request signal to an occurrence of the error;
 an X-register for setting a desired time (X) to be traced preceding the occurrence of the error;
 a subtracting circuit for calculating a time (A - X) to start tracing;
 a comparator for comparing outputs of said subtracting circuit and the counter; and
 means for entering the output from said comparator to a stop condition circuit of said state tracer.

5,379,417
SYSTEM AND METHOD FOR ENSURING WRITE DATA INTEGRITY IN A REDUNDANT ARRAY DATA STORAGE SYSTEM
 Albert Lui, San Jose, and Mark S. Walker, Los Gatos, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Nov. 25, 1991, Ser. No. 797,470
 Int. Cl.⁶ G06F 11/20, 11/18
 U.S. Cl. 395—575

21 Claims



1. A system for ensuring the completion and integrity of data

modification operations to a redundant data storage array subsystem, comprising:

- a first host processor configured to initiate data modification operations for data records and to generate host check point information about said data modification operations;
- a second host processor, coupled to the first host processor, to receive the host check point information and assume control of initiated data modification operations if the first host processor fails;
- first and second buffers, coupled to the first and second host processors, each buffer having sufficient capacity for receiving and storing entire generated data modification operations from the first or second host processor, whereby subsequent failure of either host processor does not affect the received data modification operations;
- a redundant array of data storage devices coupled to both the first and second buffers for storing data records as indicated by said data modification operations originating from either host processor;
- a first array processor, coupled to the first buffer and to the redundant array of data storage devices to receive data modification operations transmitted to the controller from the first buffer, the array processor being configured to control the completion of the data modification operations to the redundant array of data storage devices, and to generate array check point information about said data modification operations; and
- a second array processor, coupled to the second buffer, to the redundant array of data storage devices, and to the first array processor, the second array processor being configured to receive data modification operations from the second buffer, the array check point information generated by the first array processor, and to assume control of the completion of the data modification operations to the redundant array of data storage devices if the first array processor fails.

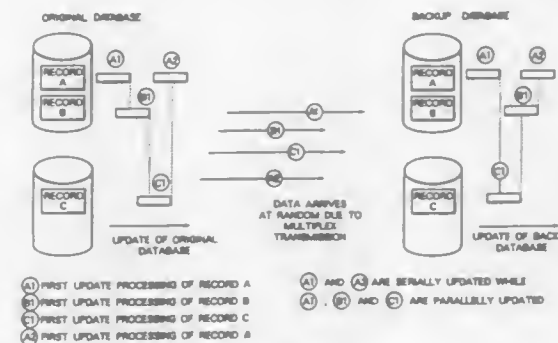
5,379,418
HIGHLY RELIABLE ONLINE SYSTEM
 Hiroyuki Shimazaki, Tokyo; Masamichi Mizoguchi, Yokohama; Hajime Yamasaki, Kawasaki; Kazuaki Ogawa, Osaka; Shinji Tanaka, Tokyo; Tatsushi Yano, Abiko; Takatoshi Shimizu, Kawasaki; Yukio Kouguchi, Tokyo; Tetsuo Yamashita, Matsudo; Satoshi Murabayashi, Yokohama; Nobuyuki Suzuki, Yokohama; Yoshikuni Watanabe, Yokohama; Koichi Nakagawa, Yokohama; Daisuke Fukagawa, Kashiwa, and Kouji Ogino, Ichihara, all of Japan, assignors to Hitachi, Ltd. and The Sanwa Bank Limited, Tokyo, Japan

Continuation of Ser. No. 660,633, Feb. 25, 1991. This application
 Sep. 30, 1993, Ser. No. 129,960
 Claims priority, application Japan, Feb. 28, 1990, 2-045443;
 Mar. 7, 1990, 2-053695; Mar. 7, 1990, 2-053696; Mar. 7, 1990, 2-053697

Int. Cl.⁶ G06F 15/21

U.S. Cl. 395—575

7 Claims



1. A highly reliable online system comprising:

an original computer center for i) updating ones of a plurality of first records in an original database on the basis of preselected first transactions inputted from terminals connected to the original computer center, the first transactions affecting the contents of said original database, and ii) multiplexedly delivering update information on updates performed to said ones of the plurality of first records in said original database, the update information including an update sequence number for each of said ones of said plurality of first records updated, the update sequence number for each of said ones of said plurality of first records updated being incremented for each update to corresponding ones of said plurality of first records by said original computer center; and

a backup computer center, coupled to said original computer center, for multiplexedly receiving said update information for updating ones of a plurality of second records related to said ones of said plurality of first records, in a backup database connected to the backup computer center and corresponding to said original database on the basis of said update information, the backup computer center including means for updating each of the ones of said plurality of second records corresponding to said ones of the plurality of first records updated, in parallel, according to said update sequence number for each of said ones of said plurality of first records updated.

5,379,419 METHODS AND APPARATUS FOR ACCESSING NON-RELATIONAL DATA FILES USING RELATIONAL QUERIES

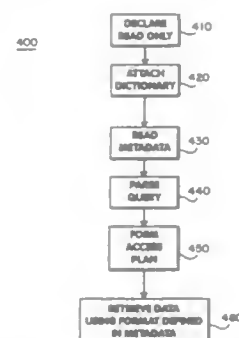
John S. Heffernan, Acton, Mass.; Peter L. Savage, Mont Vernon, N.H.; Steven J. Pittman, Arlington, Mass., and Ramu V. Sunkara, Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 7, 1990, Ser. No. 623,762

Int. Cl.⁶ G06F 15/40

U.S. Cl. 395—600

25 Claims



1. A method for providing relational access to data stored in non-relational data files in response to queries for accessing a relational database, the relational database of the type composed of tables comprising the steps, executed by a data processor, of:

- maintaining metadata corresponding to each of the non-relational data files, the metadata defining the data organization in a corresponding non-relational data file;
- accessing the metadata from the dictionary means; decoding the queries, according to the metadata, into a subset of data access commands, the subset of data access commands selected from a set of data access commands common to the non-relational files; and
- accessing the data in the non-relational data files specified by each of the subset of data access commands received from the data engine means according to the metadata.

5,379,420 HIGH-SPEED DATA SEARCHING APPARATUS AND METHOD CAPABLE OF OPERATION IN RETROSPECTIVE AND DISSEMINATION MODES

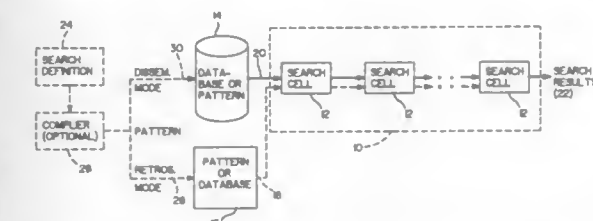
Michael K. Ullner, Pasadena, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 26, 1991, Ser. No. 813,636

Int. Cl.⁶ G06F 15/40

U.S. Cl. 395—600

48 Claims



1. High speed data searching apparatus capable of operation in retrospective and dissemination modes, the apparatus comprising:

- a plurality of functionally identical search cells, wherein each search cell includes a plurality of registers;
- means for connecting corresponding registers in each cell together to form a number of serially connected pipelines of registers through which data can be passed;
- means for inputting into the apparatus a first data stream from a database to be searched; and
- means for inputting into the apparatus a second data stream defining a pattern to be searched for in the database;

wherein each search cell includes means for comparing a database character with a pattern character and means for controlling further operation of the cell in response to the result of each such comparison; and wherein some of the registers in each cell are designated to hold a database character and associated data, and others of the registers are designated to hold a pattern character and associated data; and wherein either one of the data streams is first stored in the designated registers of the search cells, and then the other of the data streams is streamed through the search cells to perform the search, whereby the search may be performed in either a retrospective mode in which pattern characters are first stored in and database characters are then streamed through the apparatus, or in a dissemination mode in which database characters are first stored in and pattern characters are then streamed through the apparatus;

and wherein the first data stream includes a sequence of database characters and parallel sequences of associated data, one of the parallel sequences being a sequence of character marks, and wherein a character mark of a particular state indicates that the corresponding database character is to be compared with a pattern character in any cell in which both characters are present.

5,379,421 INTERACTIVE TERMINAL FOR THE ACCESS OF REMOTE DATABASE INFORMATION

Michael A. Palazzi, III, 17 Maple Way, Mountain Lakes, N.J. 07046, and Frank A. Epps, III, 20 Bow St., East Greenwich, R.I. 02818

Division of Ser. No. 619,412, Nov. 29, 1990, Pat. No. 5,327,554.

This application May 6, 1994, Ser. No. 239,359

Int. Cl.⁶ G06F 3/00

U.S. Cl. 395—600

22 Claims

8. A method of accessing information by a telecommunications device, the telecommunications device creating an interactive terminal for accessing information from a remote computerized database using a communication exchange, wherein said interactive terminal is coupled to a television receiver for

displaying information retrieved from said computerized database, said television receiver having an input port, said method comprising the following steps:

employing a telephone keypad having a plurality of keys for generating output signals corresponding to said keys when selected;

coupling said interface means to an interface means and to said communication exchange for communicating and receiving communication signals including carrier based signals over said communication exchange, said interface means responsive to receiving said output signals generated by said keypad means for selectively uncoupling said keypad from said communication exchange and allowing a user to manipulate said information after it is retrieved from said database;

coupling said interface means to a modem means for retrieving and converting said carrier based signals corresponding to said information from said remote database into digitally encoded data signals, and for converting digitally encoded data signals into carrier based signals for transmission via said communication exchange to said database; coupling said modem means to control means for operating said telecommunications device, said control means hav-

5,379,422 SIMPLE RANDOM SAMPLING ON PSEUDO-RANKED HIERARCHICAL DATA STRUCTURES IN A DATA PROCESSING SYSTEM

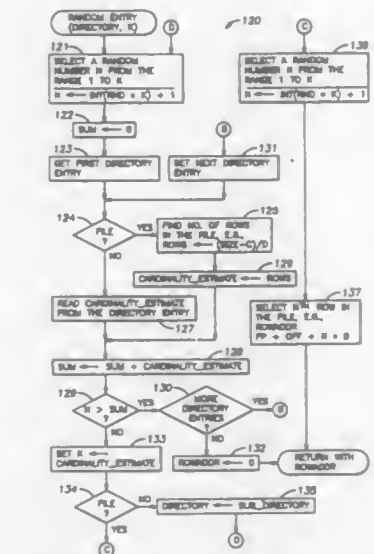
Gennady Antoshenkov, Amherst, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 16, 1992, Ser. No. 822,056

Int. Cl.⁶ G06F 15/40, 7/02

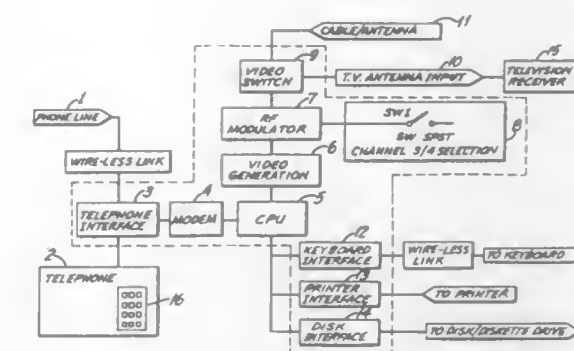
U.S. Cl. 395—600

27 Claims



1. A computer-implemented method of random sampling of nodes of a hierarchical data structure in memory of a digital computer, said hierarchical data structure defining a plurality of nodes including intermediate nodes and leaf nodes, each of said intermediate nodes being defined by said hierarchical data structure as a child of another one of said plurality of nodes, and each of said intermediate nodes being defined as a parent of another one of said plurality of nodes, each of said leaf nodes being defined as a child of another one of said plurality of nodes, and each of said leaf nodes having an assigned weight; said method comprising the steps of:

- a) said digital computer assigning a weight to each of said intermediate nodes such that the weight assigned to each intermediate node is not less than a sum of the weights assigned to the children of said each intermediate node, and at least some of said intermediate nodes have a weight that is greater than the sum of the weights assigned to the children of said each intermediate node; and then
- b) said digital computer selecting one of said intermediate nodes, the selection of said one of said intermediate nodes being based on the weight of said one of said intermediate nodes such that selecting said one of said intermediate nodes has a probability proportional to the weight of said one of said intermediate nodes; and then
- c) said digital computer performing a random acceptance/rejection selection of a node which is a selected child of the node selected in the previous step, said random acceptance/rejection being weighted proportional to the weight of the selected child of the node selected in the previous step, and said random acceptance/rejection being weighted inversely proportional to the weight of the node selected in the previous step; and then
- d) said digital computer repeating said step c) until a leaf node is selected by said random acceptance/rejection selection in said step c); and then
- e) said digital computer retrieving, from said memory, a data item that is indexed by the selected leaf node, whereby a random selection of a selected leaf node and an indexed data item is obtained and the random selection of the selected leaf node and the indexed data item is weighted by the assigned weight of the selected leaf node.



ing a plurality of peripheral interfaces for supporting input/output devices, said control means responsive to said digitally encoded data signals;

coupling said control means to programmable memory means for storing said digitally encoded signals;

coupling said control means to video signal processing means for converting said digitally encoded data signals into corresponding video data signals including character generation;

coupling said video processing means to radio frequency modulating means for receiving and modulating said video data signals over a carrier frequency, said radio frequency modulating means having a tuning circuit for tuning said modulating video signal across various frequencies; and

coupling said telecommunications device to a switching means, to a broadcast/cable exchange, to said input port of said television receiver and to said radio frequency modulating means, wherein said switching means is controlled by said control means and is responsive to said modulated video signal for transmitting to said television receiver said modulated video signal or broadcast signals received from said broadcast/cable exchange.

5,379,428
HARDWARE PROCESS SCHEDULER AND PROCESSOR INTERRUPTER FOR PARALLEL PROCESSING COMPUTER SYSTEMS

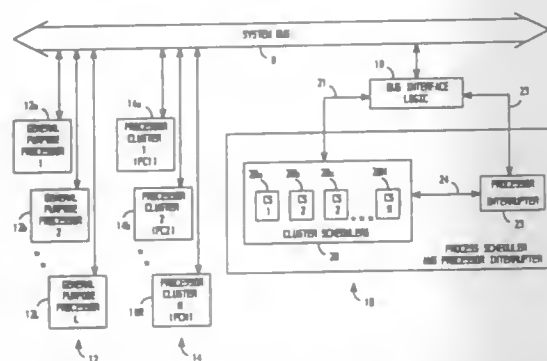
David G. Belo, Lake Forest, Calif., assignor to Belobox Systems, Inc., Irvine, Calif.

Filed Feb. 1, 1993, Ser. No. 12,505

Int. Cl.⁶ G06F 9/46

U.S. Cl. 395—650

9 Claims



1. A general-purpose hardware process scheduler for scheduling a process for execution by a processor in a parallel processing data processing system, the process having a processing priority number indicative of system processing significance, comprising:

- storage means for storing a priority number associated with each process requesting execution by the processor;
- means, connected to the storage means, for selecting a process priority number having the greatest system processing significance from among the priority numbers stored in the storage means;
- means, connected to the storage means and responsive to the selecting means, for reading the selected process priority number from the storage means; and
- means, responsive to the selecting means, for indicating to the data processing system that the selecting means has selected a process priority number.

5,379,429
METHOD OF RESOURCE MANAGEMENT FOR VERSION-UP IN A COMPUTER SYSTEM AND SYSTEMS THEREFOR

Shigeki Hirasawa, Sagami, Japan; Kinji Mori, Machida; Masayuki Orimo, Kawasaki; Masayuki Takenchi, Fujisawa; Hiroshi Fujise, Yokohama; Hitoshi Suzuki, Owariasahi, and Ichitaro Koi, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

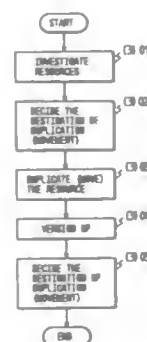
Filed Sep. 14, 1992, Ser. No. 944,848

Claims priority, application Japan, Sep. 20, 1991, 3-241100

Int. Cl.⁶ G06F 15/00

U.S. Cl. 395—700

14 Claims



1. A resource management method in a multiprocessor system

tem having a plurality of processors connected in a communication network, comprising:

- a step performed in one of the processors to be made version-up, of investigating data of resources under control by the one processor for deciding selected data resources to be managed by at least one of movement and duplication from the processor during the version-up;
- a step performed by said one processor of sending the selected data to at least another processor;
- a step of receiving the selected data in said another processor;
- a step performed in said another processor of searching whether data necessary to said one processor for deciding a destination processor exists in the another processor, based upon the selected data resources;
- a step of sending the necessary data from said another processor, when data exists to said one processor;
- a step of receiving the necessary data in said one processor;
- a step performed in said one processor, of deciding a destination processor to which at least one of the movement and duplication is to be performed, based upon the received necessary data;
- a step of performing the at least one of the movement and duplication, to the decided destination processor; and,
- a step of executing version-up of said one processor.

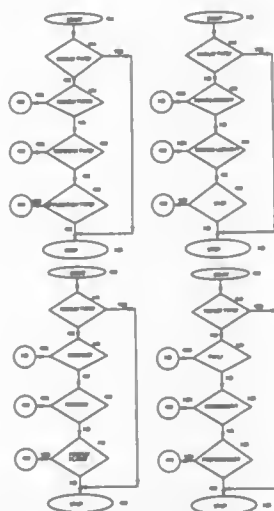
5,379,430
OBJECT-ORIENTED SYSTEM LOCATOR SYSTEM
 Frank T. Nguyen, Campbell, Calif., assignor to Taligent, Inc., Cupertino, Calif.

Filed Aug. 4, 1993, Ser. No. 102,080

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—700

23 Claims



1. A computer implemented method for dynamically adding support for hardware or software components with one or more properties to an operating system active on a computer with a memory, comprising the steps of:

- (a) specifying a target hardware or software component search criteria including one or more properties;
- (b) querying the operating system to identify one or more hardware or software components that meet the target hardware or software component search criteria;
- (c) returning hardware or software components meeting the target hardware or software component search criteria; and
- (d) adding support for the hardware and software components to the operating system without rebooting the operating system.

5,379,431
BOOT FRAMEWORK ARCHITECTURE FOR DYNAMIC STAGED INITIAL PROGRAM LOAD

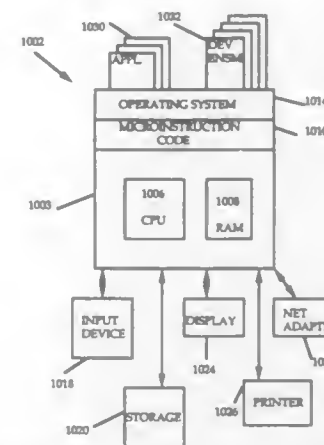
Steven P. Lemon, Los Gatos, and Patrick D. Roes, Sunnyvale, both of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Dec. 21, 1993, Ser. No. 171,541

Int. Cl.⁶ B06F 9/445

U.S. Cl. 395—700

33 Claims



1. An apparatus for initializing a computer system in response to a boot command, comprising:

- (a) a processor;
- (b) a main volatile storage attached to and under control of said processor;
- (c) a non-volatile external storage attached to and under control of said processor, said external storage containing a copy of an operating system and a copy of a booting program;
- (d) means responsive to said boot command for loading said booting program from said external storage into said main volatile storage;
- (e) means operable after said booting program has been loaded into said main volatile storage for starting said booting program, said booting program thereupon controlling said processor; and
- (f) means controlled by said booting program for configuring said computer system and for loading portions of said operating system based on said configuring said computer system into said main volatile storage.

5,379,432
OBJECT-ORIENTED INTERFACE FOR A PROCEDURAL OPERATING SYSTEM

Debra L. Orton, San Jose; Eugene L. Bolton, Sunnyvale; Daniel F. Chernikoff, Palo Alto; David B. Goldsmith, Los Gatos, and Christopher P. Moeller, Los Altos, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Jul. 19, 1993, Ser. No. 94,675

Int. Cl.⁶ G06F 9/40

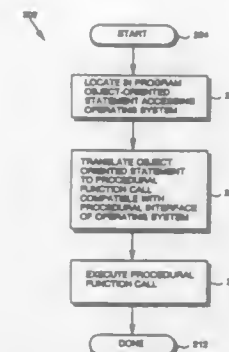
U.S. Cl. 395—700

4 Claims

1. A computer implemented method for enabling an object-oriented application to interface to a procedural operating system including procedural functions which are called to access services provided by said procedural operating system during run-time execution of said object-oriented application in a computer having a memory component, said computer implemented method comprising the steps of:

- (a) locating in said object-oriented application an object-oriented statement which accesses a service provided by said procedural operating system;
- (b) translating said object-oriented statement to a procedural function call compatible with said procedural functions which are called to access services provided by said pro-

cedural operating system and corresponding to said object-oriented statement; and
 (c) executing in the computer said procedural function call compatible with said procedural functions which are



called to access services provided by said procedural operating system to thereby cause said procedural operating system to provide the service on behalf of said object-oriented application.

5,379,433
PROTECTION AGAINST UNAUTHORIZED USE OF SOFTWARE RECORDED ON RECORDING MEDIUM
 Toru Yamagishi, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

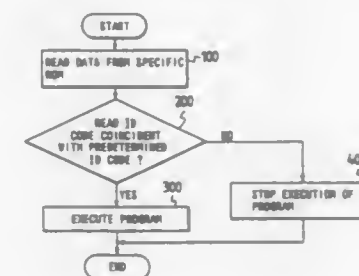
Continuation of Ser. No. 520,016, May 7, 1990, abandoned. This application Mar. 16, 1993, Ser. No. 32,561

Claims priority, application Japan, May 8, 1989, 1-114755

Int. Cl.⁶ G06F 12/14; H04L 9/00

U.S. Cl. 395—725

17 Claims



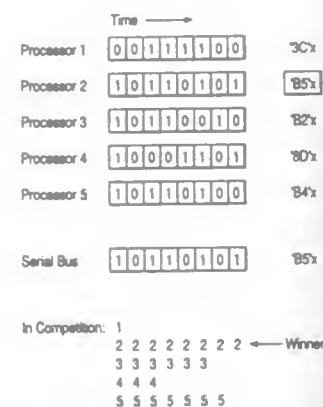
1. A system for permitting execution of a recorded program only from an authorized recording medium, comprising:

- a recording medium including a first recording area in which data including a program are recorded and further including a second recording area at a specific position thereof, said second recording area comprising a geometrically embossed read-only-memory (ROM) area in which data including a specific identification code are geometrically embossed so as not to be rewritable by a user;
- said recording medium further including a predetermined identification code recorded thereon; and
- control means for executing said program recorded in said first recording area of said recording medium, said control means reading out said specific identification code geometrically embossed in said ROM area and said predetermined identification code recorded on said recording medium,
- said control means stopping the execution of said program when the specific identification code read out from said rom area does not correspond to said predetermined identification (ID) code read out from said recording medium, thereby executing said program only from an authorized

recording medium including a specific identification code in said ROM area thereof corresponding to said predetermined identification code recorded thereon.

5,379,434
APPARATUS AND METHOD FOR MANAGING INTERRUPTS IN A MULTIPROCESSOR SYSTEM
 Michael T. DiBrino, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
 Continuation of Ser. No. 993,173, Dec. 18, 1992, abandoned.
 This application Jun. 10, 1994, Ser. No. 258,127
 Int. Cl.⁵ G06F 13/26
 U.S. Cl. 395—725

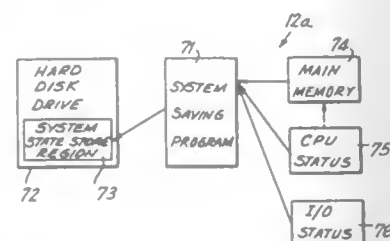
12 Claims



6. A method of selecting a processor for servicing interrupts in a system having a plurality of processors with individualized interrupt priority information, comprising the steps of:
 bit serially comparing interrupt priority information among the processors, the comparison being done in repeated succession using bits of corresponding significance, connected to the plurality of processors; and
 selecting a processor of the plurality of processors to service an interrupt using priority results obtained from the bit serial comparison.

5,379,435
APPARATUS FOR PROVIDING CONTINUITY OF OPERATION IN A COMPUTER
 Masaaki Hanaoka, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
 Continuation of Ser. No. 403,639, Sep. 6, 1989, abandoned. This application Nov. 17, 1992, Ser. No. 978,296
 Claims priority, application Japan, Sep. 6, 1988, 63-222743
 Int. Cl.⁶ G06F 1/30; G11C 14/00
 U.S. Cl. 395—750

26 Claims

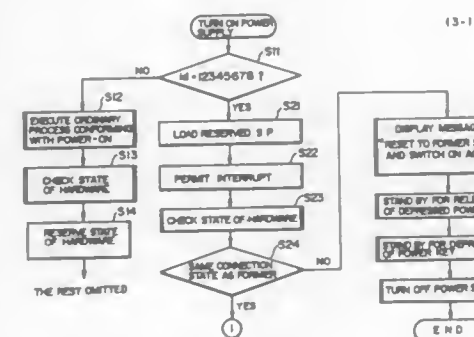


1. An apparatus for providing continuity of operation in a system which exhibits a system condition and which performs a process, the system including a CPU having a status, at least one input/output device having a status, a main memory for storing data and a power supply for supplying power to said system, said apparatus for providing continuity comprising:

save process start detecting means for detecting a demand to begin a save process and producing a demand signal;
 external storage means for storing data representing the condition of said system, said external storage means including a fixedly reserved system state store region within said external storage means;
 system state saving means coupled to said save process start detecting means for receiving said demand signal and to said CPU, input/output device and main memory for receiving a CPU status corresponding to the status of said CPU at the time of said demand, an I/O status corresponding to the status of said input/output device at the time of said demand and the data in said memory at the time of said demand, the CPU status, I/O status and data representing a condition of said system at an occurrence of said demand and being further coupled to said external storage means for transferring said system condition to said external storage means in response to said demand signal, said system state saving means including storing means for storing said system condition in said fixedly reserved system state store region of said external storage means;
 post-save processing means coupled to said system state saving means and power supply for performing processing after said system state saving means has completely output said system condition to said external storage means.

5,379,436
APPARATUS AND METHOD FOR RESPONDING TO ABNORMAL MANIPULATIONS OF AN INFORMATION PROCESSING SYSTEM
 Hidekazu Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
 Filed Apr. 30, 1992, Ser. No. 876,348
 Claims priority, application Japan, May 1, 1991, 3-128352
 Int. Cl.⁶ G06F 1/30
 U.S. Cl. 395—750

6 Claims

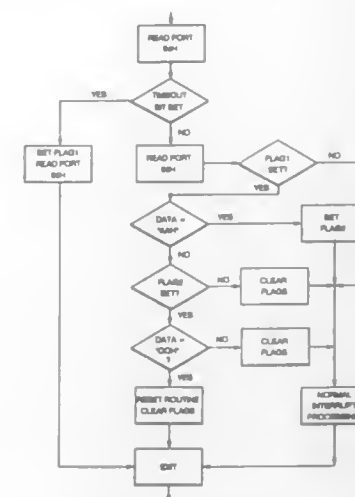


1. An information processing apparatus comprising:
 detecting means for detecting an abnormal manipulation performed by an operator to a system;
 memory means for storing a status of a calculating unit in response to an output signal of said detecting means;
 a power supply so controlled as to be turned off in response to the output signal of said detecting means;
 means for detecting connection states of a peripheral device;
 means for outputting a message in response to a detection that a connection state of said peripheral device when said power supply is turned on again after the turn-off thereof is not the same as a connection state of said peripheral device immediately before the turn-off of said power supply, said message instructing the operator to connect said peripheral device in the connection state of said peripheral device immediately before said turn off; and
 control means for resuming a predetermined posterior process with regard to said abnormal manipulation in response to a detection that said peripheral device has been

connected in the connection state of said peripheral device immediately before the turn-off of the power supply.

5,379,437
RESET OF PERIPHERAL PRINTING DEVICES AFTER A HOT PLUG STATE
 Joseph Cell, Jr., Boynton Beach, and Gordon D. Webster, Boca Raton, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.
 Filed Nov. 16, 1992, Ser. No. 976,629
 Int. Cl.⁶ G06F 13/10, 1/30
 U.S. Cl. 395—750

4 Claims



1. In a computer system functioning with an operating system and a software device driver for handling communications with a peripheral pointing device which pointing device can experience a Hot Plug state as a result of a loss and resumption of power either as from a power down and power up sequence, or from a physical disconnection and reconnection, said software device driver having a pointing device reset routine, the method of returning said pointing device to working state, comprising the steps of:

detecting that said Hot Plug state was entered into by said pointing device, and
 causing said device driver to respond to said detecting step by activating said reset routine when said Hot Plug state is detected, thus reenabling said pointing device into said working state independently of said operating system.

5,379,438
TRANSFERRING A PROCESSING UNIT'S DATA BETWEEN SUBSTRATES IN A PARALLEL PROCESSOR
 Alan G. Bell, Palo Alto, and John Lamping, Los Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
 Filed Dec. 14, 1990, Ser. No. 629,732
 Int. Cl.⁶ G06F 15/16
 U.S. Cl. 395—800

11 Claims

1. A method of operating a processor to perform a value assignment search for two or more variables, each variable having a respective set of possible values, the value assignment search seeking combinations of values of the variables that are consistent with a set of constraints, each combination of values including at most one of the respective possible values of each of the variables; the processor including:
 first and second substrates;
 respective external connecting circuitry on each of the first and second substrates, the respective external connecting circuitry of the first and second substrates being connected to each other; and
 respective parallel processing circuitry on each of the first

and second substrates; the respective parallel processing circuitry of each substrate comprising:

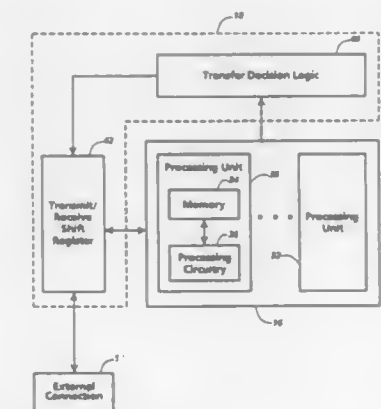
a respective set of two or more processing units; each processing unit comprising respective memory for storing respective data and respective processing circuitry connected for accessing the respective memory; the respective processing circuitry being for performing operations on data such that the respective processing circuitry of the processing units can perform operations on data in parallel; and

respective external transfer circuitry for transferring data between any of the respective set of processing units and the respective external connecting circuitry for transfer to the other of the first and second substrates;

the method comprising steps of:

storing respective data in the respective memory of each of a first subset of processing units on the first substrate and in the respective memory of each of a second subset of processing units on the second substrate; the respective data of the each processing unit in the first and second subsets indicating a respective combination of possible values of the variables; each respective combination including at most one of the respective possible values of each of the variables;

operating the respective parallel processing circuitry of each of the substrates to perform value assignment search oper-



ations; the step of operating the parallel processing circuitry comprising substeps of:

operating the respective processing circuitry of each of the first and second subsets of processing units to perform a first value assignment search operation on the respective data of each processing unit; the first value assignment search operation determining, for each processing unit, whether the respective combination of values indicated by the respective data is consistent with a constraint; and

operating the respective parallel processing circuitry of each of the first and second substrates to perform a second value assignment search operation that modifies the first and second subsets of processing units so that the first subset of processing units includes a first processing unit on the first substrate and the processing units on the second substrate include a second processing unit that is not in the second subset of processing units;

operating the respective external transfer circuitry of the first substrate and the second substrate to transfer the respective data of the first processing unit to the respective memory of the second processing unit on the second substrate through the respective external connecting circuitry of the first and second substrates, so that the first processing unit is removed from the first subset of processing units and the second processing unit is added to the second subset of processing units.

5,379,439 FIXED DISK DRIVE MOUNTED TO PRINTED CIRCUIT BOARD

Joel N. Harrison, Monte Sereno; William G. Moon, Sunnyvale, and Randolph H. Graham, Fremont, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

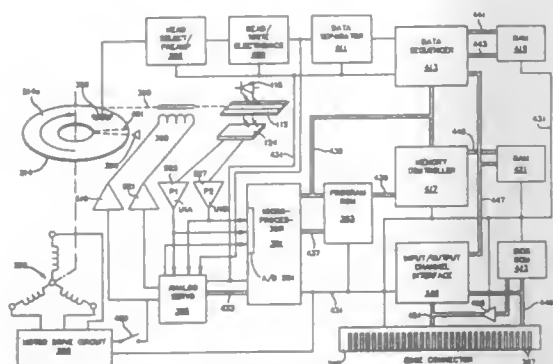
Continuation of Ser. No. 697,726, May 3, 1991, abandoned, which is a continuation of Ser. No. 395,910, Aug. 18, 1989, abandoned, which is a continuation of Ser. No. 277,024, Nov. 28, 1988, Pat. No. 4,860,194, which is a continuation of Ser. No. 926,627, Nov. 3, 1986, abandoned, which is a continuation of Ser. No. 741,175, Jun. 4, 1985, Pat. No. 4,639,863. This application Oct. 24, 1991, Ser. No. 782,376

The portion of the term of this patent subsequent to Jan. 27, 2004, has been disclaimed.

Int. Cl.⁶ G06C 1/16

U.S. Cl. 395—800

9 Claims



1. A fixed disk memory subsystem for electrical connection to digital address, data and control signal buses and a power supply of a host computer, comprising:

printed circuit board means for physical attachment of the fixed disk memory subsystem to the host computer and forming a mounting and electrical interconnection substrate for interconnecting elements comprising a head and disk assembly means and comprising disk drive electronics, and including an interface connection means for electrically connecting the fixed disk memory subsystem with the host computer,

the head and disk assembly means including a housing mounted directly to the printed circuit board means and electrically connected thereto by plug and jack connection means, at least one rotating data storage disk having a diameter not substantially greater than 95 millimeters and defining a multiplicity of concentric data storage tracks, a radially positionable head transducer for flying in close proximity to the data storage surface of the rotating data storage disk, read preamplifier/write driver circuit means connected to the head transducer and to the disk drive electronics via the plug and jack connection means for reading data from, and for writing data to, each selected data track and for reading embedded head position servo information, rotary voice coil actuator means for positioning the data transducer at concentric data tracks defined on said surface in accordance with control values supplied by the disk electronics via the plug and jack connection means, and DC brushless spindle motor means for rotating the data storage disk at a predetermined rotational velocity,

the disk drive electronics including:

a data head transducer position servo control means for controlling operation of the rotary voice coil actuator means in relation to the concentric data tracks in response to servo information including the embedded head position servo information during track seeking operations when the data head transducer is moved radially from a departure track location to a destination track location, and during track following operations when the data head

transducer is held in alignment with a centerline of a said data track being followed during data reading and writing, read/write electronics means connected to the read preamplifier/write driver for processing data signals to and from the disk during data writing and reading,

disk user data sequencer means connected to the read/write electronics means and to disk buffer memory means for controlling the formatting, storage and retrieval of blocks of user data to and from the concentric data storage tracks,

the disk user data buffer memory means for temporarily storing at least one data block of user data in transit between the disk and said host computer,

buffer memory controller means connected to the disk user data sequencer means for controlling addressing of said disk user data buffer memory means as user data is transferred between the disk and the disk user data buffer memory means, and to an interface means for controlling addressing of said disk user data buffer memory means as user data is being transferred between the disk user data buffer memory means and the host computer,

interface circuit means connected to the address, data and control signal buses of said host computer via said interface connection means and to said disk user data buffer memory means and to said buffer memory controller means, for obtaining digital control signals and digital data blocks from the host computer for storage in predetermined ones of said data tracks via said disk buffer memory means, and for supplying digital status signals and digital data blocks retrieved from predetermined ones of said data tracks to the host computer, and

programmed digital microcontroller means connected to the interface circuit means for receiving, decoding and executing digital control values from the host computer and for thereupon controlling operations of said data head transducer position servo control means during track seeking operations and track following operations, and said disk user data sequencer means, said buffer memory controller means and said interface circuit means during data reading and writing.

5,379,440 PARALLEL PROCESSOR WITH ARRAY OF CLUSTERED PROCESSING ELEMENTS HAVING INPUTS SEPARATE FROM OUTPUTS AND OUTPUTS LIMITED TO A MAXIMUM OF TWO PER DIMENSION

Thomas Kelly; Lewis M. Mackenzie, and Robert J. Sutherland, all of Glasgow, United Kingdom, assignors to Motorola Inc., Schaumburg, Ill.

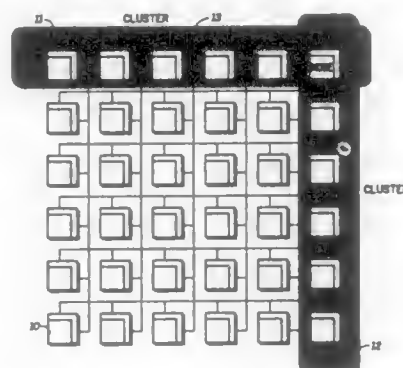
Filed Dec. 17, 1991, Ser. No. 808,838

Claims priority, application United Kingdom, Dec. 20, 1990, 9027663

Int. Cl.⁶ G06F 13/00, 15/16

U.S. Cl. 395—800

17 Claims



1. A processor comprising:

a plurality of processing elements arranged in an array of D dimensions, where D is a positive integer greater than one, for parallel processing,

each of said processing elements of the array having at least one and no more than two outputs per dimension and a plurality of inputs per dimension, separate from said outputs,

said processing elements being divided into a plurality of clusters extending across all D dimensions, each processing element being a member of a cluster in each of the D dimensions, whereby each processing element of the array is a member of D different orthogonal clusters;

each cluster comprising a bidirectional bus connected to all the processing elements in that respective cluster, said bus being connected to said at least one and no more than two outputs of each processing element in said cluster and to said plurality of inputs of each processing element in said cluster for communicating messages from any processing element in said cluster to all other processing elements in said cluster.

5,379,441 HOMEBUS SYSTEM FOR PERMITTING HOMEBUS EQUIPMENT AND ISDN BASIC INTERFACE EQUIPMENT TO USE SAME TWISTED PAIR LINE HOMEBUS

Kazuhiro Watanabe, Katano; Naofumi Nakatani, Takatsuki, and Masao Ikezaki, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

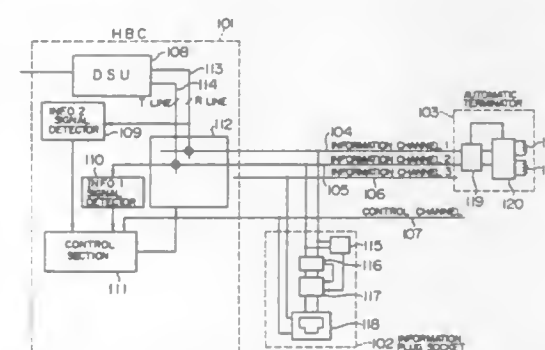
Filed Jun. 8, 1990, Ser. No. 535,055

Claims priority, application Japan, Jun. 14, 1989, 1-151796

Int. Cl.⁵ G06F 13/00

U.S. Cl. 395—800

4 Claims



1. A homebus controller for controlling a twisted pair line homebus and homebus equipment attached to said twisted pair line homebus and for selectively permitting communication between a digital network and digital network interface equipment attached to said twisted pair line homebus, said twisted pair line homebus having a control channel and a plurality of information channels including at least a first information channel and a second information channel, said homebus controller comprising:

a digital service unit for communicating with said digital network, said digital service unit having an R line for outputting digital data to said digital network interface equipment and a T line for inputting digital data from said digital network interface equipment;

a cross point for selectively connecting said R line and said T line of said digital service unit to said first and second information channels of said twisted pair line homebus respectively, thereby selectively permitting said communication between said digital network and said digital network interface equipment through said digital service unit and said first and second information channels of said twisted pair line homebus;

an INFO 1 signal detector for detecting an INFO 1 signal from said R line of said digital service unit; and

a control section for detecting, through said control channel, whether or not each of said first and second information channels of said twisted pair line homebus is used by said homebus equipment attached to said twisted pair line homebus, for controlling said cross point to connect said R line and said T line of said digital service unit to said first and second information channels of said twisted pair line homebus respectively when at least one of said INFO 1 signal detector and said INFO 2 signal detector detects one of said INFO 1 signal and said INFO 2 signal and neither said first information channel nor said second information channel is used by said homebus equipment, and for controlling said cross point to disconnect said R line and said T line of said digital service unit from said first and second information channels of said twisted pair line homebus otherwise.

from said second information channel of said twisted pair line homebus;

an INFO 2 signal detector for detecting an INFO 2 signal from said R line of said digital service unit; and

a control section for detecting, through said control channel, whether or not each of said first and second information channels of said twisted pair line homebus is used by said homebus equipment attached to said twisted pair line homebus, for controlling said cross point to connect said R line and said T line of said digital service unit to said first and second information channels of said twisted pair line homebus respectively when at least one of said INFO 1 signal detector and said INFO 2 signal detector detects one of said INFO 1 signal and said INFO 2 signal and neither said first information channel nor said second information channel is used by said homebus equipment, and for controlling said cross point to disconnect said R line and said T line of said digital service unit from said first and second information channels of said twisted pair line homebus otherwise.

5,379,442 FAST PRIMARY AND FEEDBACK PATH IN A PROGRAMMABLE LOGIC CIRCUIT

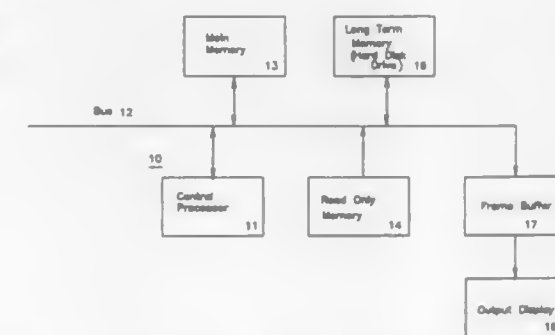
Michael J. Allen, Rescue, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1993, Ser. No. 42,081

Int. Cl.⁶ G06F 9/32, 9/46, 13/18, 13/38

U.S. Cl. 395—800

11 Claims



1. A programmable logic circuit comprising

a plurality of input terminals for receiving input signals of first and second values,

a plurality of output terminals for transmitting output signals of first and second values, and

a plurality of programmable circuits joining the input terminals to the output terminals for controlling a value of an output signal produced in response to an input signal, each of the programmable circuits comprising

a first multiplexor joining an input terminal to a first node,

a second multiplexor joining an output terminal to the first node,

a source of signals of the first value,

first means coupled to the first and second multiplexors and the source of signals of the first value for selecting to transfer signals either from the first and second multiplexors or from the source of signals of the first value to the first node,

second means for selecting to transfer signals either from the first multiplexor or the second multiplexor to the first node,

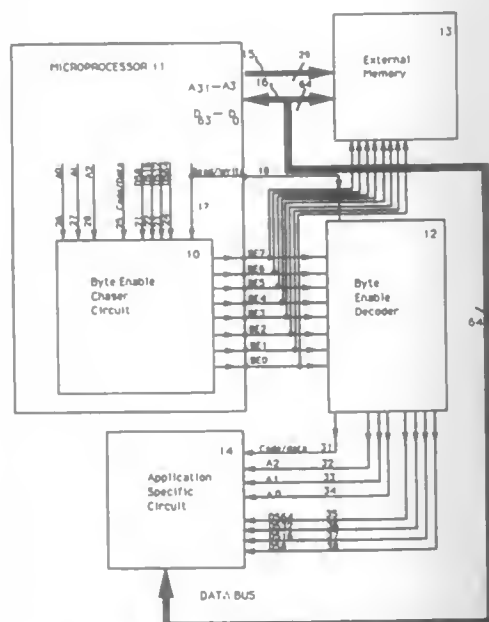
a third multiplexor joining the first node to the output terminal, and

third means for causing the third multiplexor to select either the signal at the first node for transfer to the output terminal or an inverse of the signal at the first node for transfer to the output terminal.

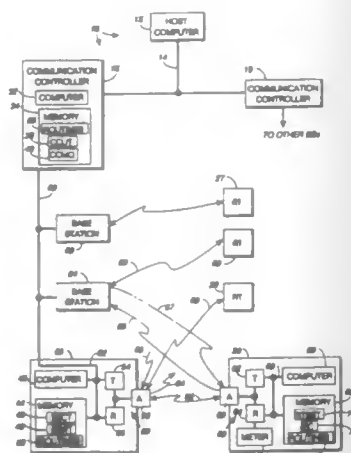
5,379,443
MICROPROCESSOR PROVIDING ENCODED INFORMATION ON BYTE ENABLE LINES INDICATING WHETHER READING CODE OR DATA, LOCATION OF CODE/DATA ON DATA LINES, AND BIT WIDTH OF CODE/DATA

Neal Margulis, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.
 Continuation of Ser. No. 942,380, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 477,644, Feb. 9, 1990, abandoned. This application Oct. 8, 1993, Ser. No. 133,771
 Int. Cl.⁶ G06F 15/76, 12/00
 U.S. Cl. 395—800

8 Claims



a digital BS processor connected to said BS transceiver for controlling operation thereof,
 and a digital BS storage connected to said BS processor for storing BS tables including a base station weight table (BSWT) listing a weight value for at least a portion of said plurality of said BSs and BS routines to be executed by said BS processor;
 each RT comprising
 a radio RT transceiver,
 a field strength meter connected to said RT transceiver for measuring field strengths of messages received by said RT transceiver from BSs within whose domains said RT is located,
 a digital RT processor connected to said transceiver for controlling operation thereof,



and an RT digital storage connected to said RT processor for storing an RT table and RT routines to be executed by said RT processor;
 each RT being operative to monitor messages from BSs, store within said RT table a list of BSs and signal strengths of messages received therefrom, and transmit to the one of said BSs having the strongest signal strength in said RT table a sign-on message including at least a portion of said RT table list;
 each BS comprising decision making means responsive to a sign-on message directed thereto to decide which BS in said portion of said RT table list has the lowest weight value in said BSWT and thus should be attached to an RT transmitting said sign-on message.

5,379,449

AUTOMOTIVE RADIO EMPLOYING MULTIPATH CORRECTION STRATEGY BASED ON VEHICLE SPEED
 Sylvester P. Porambo, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 23, 1992, Ser. No. 979,955

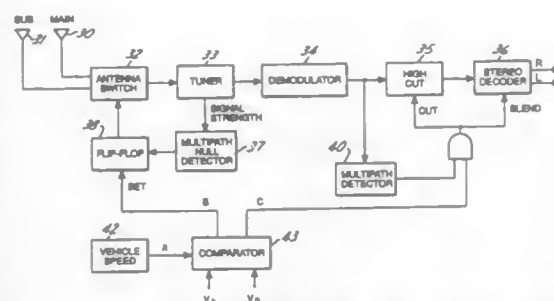
Int. Cl.⁶ H04B 7/08, 1/12; H04H 5/00

U.S. Cl. 455—52.3

9 Claims

1. A method for controlling a radio receiver in a vehicle comprising the steps of:
 generating a speed signal proportional to the speed at which said vehicle moves;
 receiving a radio signal at said radio receiver;
 generating a multipath signal upon detection of the presence of multipath distortion in said radio signal; and
 selecting a corrective action within said radio receiver in response to said multipath signal and said speed signal,

wherein said radio receiver includes diversity antennas and wherein said corrective action includes switching



between diversity antennas if said speed signal indicates the vehicle speed is less than a first predetermined speed.

5,379,450

RADIO LOUDSPEAKER TELEPHONE DEVICE CAPABLE OF AUTOMATICALLY PREVENTING HOWLING ON EXECUTION OF CALLING OPERATION
 Naoki Hirasawa, Tokyo, and Yukio Murata, Saitama, both of Japan, assignors to NEC Corporation, Tokyo, Japan

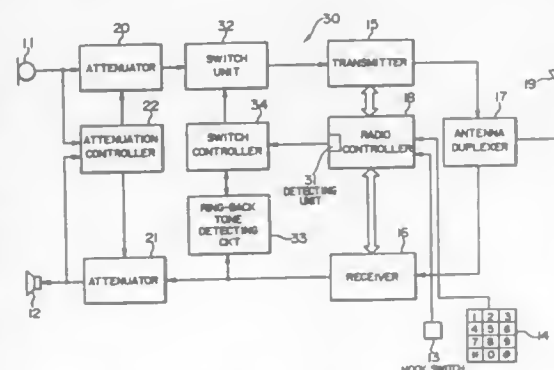
Filed Oct. 28, 1992, Ser. No. 967,377

Claims priority, application Japan, Oct. 28, 1991, 3-281687

Int. Cl.⁶ H04B 7/015; H04M 9/08

U.S. Cl. 455—54.2

2 Claims



1. A radio loudspeaker telephone device for use in a mobile radio telephone system comprising a radio channel, said radio loudspeaker telephone device including:

- a microphone for producing a microphone output speech signal;
- a loudspeaker for responding to a loudspeaker input speech signal;
- a hook switch for producing an off-hook state signal indicating that said device is put in an off-hook state;
- a dialing unit for generating a dial signal representative of a designation subscriber telephone set;
- a radio transmitter;
- a radio receiver; and
- a radio controller connected to said hook switch and said dialing unit for controlling said radio transmitter and said radio receiver in response to said off-hook state signal so that said radio transmitter transmits said dial signal to said radio channel and that said radio receiver receives a response signal from said radio channel and delivers said response signal to said radio controller, said response signal indicating that said destination subscriber telephone set is not busy, said radio controller being for controlling said radio transmitter and said radio receiver in response to said response signal so that said radio transmitter transmits said microphone output speech signal to said radio

channel and that said radio receiver receives a ring-back tone signal from said radio channel and delivers said ring-back tone signal to said loudspeaker as said loudspeaker input speech signal, said ring-back tone signal indicating that said destination subscriber telephone set is called by said device with said destination subscriber telephone set kept in an on-hook state;

wherein:

said radio controller is for detecting a first time instant at which said radio controller receives said response signal from said radio receiver, said radio controller producing a timing signal representative of said first time instant;

said device comprising:

a switch unit located between said microphone and said radio transmitter and having an on state and an off state for connecting said microphone to said radio transmitter at said on state to supply said microphone output speech signal to said radio transmitter and for disconnecting from said microphone said radio transmitter at said off state to stop supply of said microphone output speech signal to said radio transmitter;

a ring-back tone detecting circuit connected to said radio receiver for detecting said ring-back tone signal to produce a ring-back tone detection signal while said ring-back tone detecting circuit detects said ring-back tone signal; and

a switch controller connected to said radio controller and said ring-back tone detecting circuit for controlling said switch unit so that said switch unit is put in said off state a time duration from said first time instant of said timing signal up to a second time instant at which said ring-back tone detection signal disappears, said switch controller being for controlling said switch unit so that said switch unit is put in said on state at any time except said time duration;

said ring-back tone detecting circuit comprises:

- a band-pass filter connected to said radio receiver for selectively outputting a frequency band including a fundamental frequency of said ring-back tone signal;
- a rectifier connected to said band-pass filter for converting an output signal of said band-pass filter into a DC voltage;
- an integrator connected to said rectifier for integrating said DC voltage to produce a smoothed voltage; and
- a comparator connected to said integrator for comparing said smoothed voltage with a predetermined level to produce a digital waveform signal of a logic "1" level and a logic "0" level as said ring-back tone detection signal.

5,379,451

MOBILE COMMUNICATION SYSTEM AND LOCATION REGISTRATION METHOD IN MOBILE COMMUNICATION SYSTEM

Arata Nakagoshi, Kokubunji; Hideya Suzuki, Hachioji; Yoshihito Yamamoto, Fujisawa; Isao Shimbo; Tsuneo Furuya, both of Yokohama, and Hiroshi Kawahara, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Kokusai Electric Co., Ltd., both of Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,547

Claims priority, application Japan, Nov. 8, 1991, 3-292689

Int. Cl.⁶ H04B 7/00

U.S. Cl. 455—54.2

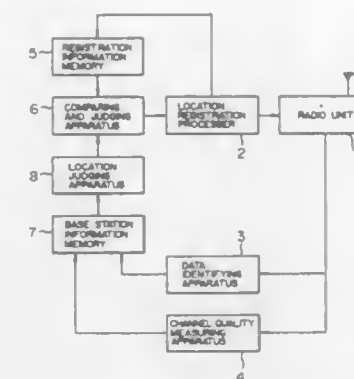
4 Claims

1. A portable radio telephone suitable for a portable radio telephone system composed of a plurality of base stations forming a plurality of zones adjacent to each other in a service area, each of said base stations communicating via a plurality of radio channels with a plurality of portable radio telephones each moving in the service area, comprising:

- a radio unit, having an antenna, for receiving control signals, each control signal includes an identification code of a base station that transmitted the control signal, from said plurality of base stations at a predetermined cycle via said antenna and for transmitting a location registration signal issued from the portable radio telephone to one of said plurality of base stations via said antenna to request regis-

tration of location information of the portable radio telephone at a memory unit for a call control;

means coupled to said radio unit for repeatedly measuring channel quality of said radio channels between the portable radio telephone and said plurality of base stations based on said control signals received by said radio unit and for producing a base station information list every measuring cycle, said base station information list including identification codes of a predetermined number of base stations selected among said plurality of base stations based on a result of the measured channel quality, said identification codes being arranged in sequential order of base stations having better channel quality;



a memory unit for storing a set of said base station information lists obtained through a predetermined number of measuring cycles; and

a judging unit for judging a location of the portable radio telephone in said service area and for determining whether said location registration signal is to be transmitted or not by referring to said memory unit when said set of said base station information lists are prepared in said memory unit so that, if the order of said identification codes varies with each of said set of said base station information lists above a predetermined extent, then the transmission of the location registration signal is inhibited regardless of the location of the portable radio telephone.

5,379,452

ACTIVE FREQUENCY SEPARATING CIRCUIT

Hans-Joachim Raddant, Berlin, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

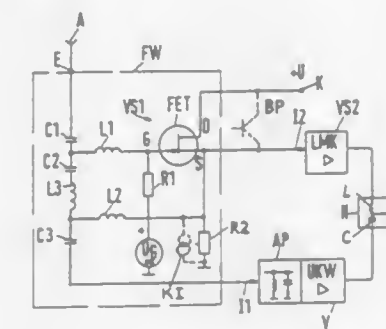
Filed Dec. 23, 1992, Ser. No. 997,286

Claims priority, application Germany, Mar. 13, 1992, 4208062

Int. Cl.⁶ H04B 1/18; H03H 7/46

U.S. Cl. 455—143

5 Claims



1. An active frequency separating circuit, for separating signals received on a receiving antenna (A) into a band of

higher frequency signals and a band of lower frequency signals, comprising

- first amplifier means (V) for amplifying said signals of said higher frequency band;
- adaptor circuit means (AP) connected between said antenna (A) and an input of said first amplifier means (V);
- first, second and third series-connected capacitor means (C1, C2, C3) for connecting said adaptor circuit means (AP) to said antenna (A);
- second amplifier means (VS1) for amplifying said signals of said lower frequency band and comprising a transistor including a gate electrode (G) and a source electrode (S);
- first inductance means (L1) series-connected to said first capacitor means (C1) and connecting said antenna (A) to said gate electrode (G);
- third amplifier means (VS2) for amplifying signals of said lower frequency band after amplification by said second amplifier means (VS1);
- second inductance means (L2) series-connected to said first and second capacitor means (C1, C2) and connecting said antenna (A) to said source electrode (S) and to an input of said third amplifier means (VS2);
- wherein, in order to displace a high-voltage point of the separating circuit away from an input terminal of said second inductance means (L2) and thereby reduce high-frequency losses,
- a third inductance (L3) is provided, connected between said second capacitor means (C2) and said third capacitor means (C3);
- said input terminal of said second inductance means, remote from said source electrode (S), is connected between said third inductance (L3) and said third capacitor means (C3); and
- said adaptor circuit means (AP) is formed without a serial inductance therein.

5,379,453

REMOTE CONTROL SYSTEM

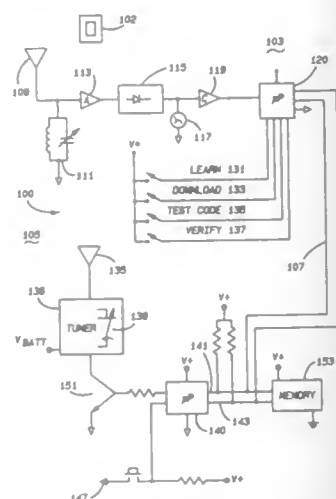
David C. Tigwell, Spring, Tex., assignor to Colorado Meadowlark Corporation, Littleton, Colo.

Continuation of Ser. No. 950,927, Sep. 24, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 183,225

Int. Cl.⁶ H04B 14/04

U.S. Cl. 455—151.2

14 Claims



1. A system for transferring a frequency and modulation pattern of an encoded modulated template transmitter, which functions to actuate a device remote therefrom, to a universal transmitter such that said universal transmitter is thereby programmed to transmit the frequency and modulation pattern of said template transmitter and such that said universal transmitter

ter thereby functions to actuate said remote device, the system comprising:

- said universal transmitter including:
- means for transmitting a first signal to a programming unit, means, coupled to said means for transmitting, for tuning a frequency of the first signal to be transmitted, memory means for storing said modulation pattern to be transmitted, means, coupled to said memory means for storing, for modulating the first signal such that said modulation pattern stored in said memory means is transmitted by said universal transmitter when said universal transmitter is actuated, and means, coupled to said means for modulating, for directly actuating transmission of said modulated first signal by said universal transmitter; and
- said programming unit separate from said universal transmitter including:
- means for receiving a modulated second signal, means, coupled to said means for receiving, for detecting a frequency of the second signal from said template transmitter, means, coupled to said means for detecting, for determining a modulation pattern of the second signal and means, coupled to said means for determining, for transferring the modulation pattern determined by said means for determining to said memory means in said universal transmitter, wherein said tuning means of said universal transmitter, said means for detecting said frequency of said second signal, and said means for determining said modulation pattern function together to match the modulation pattern and frequency of the first and second signals, and
- wherein said programming unit further including means, coupled to said means for determining, for verifying that said universal transmitter, programmed by said programming unit, transmits said modulation pattern of said template transmitter by analyzing said modulation pattern generated by said programmed universal transmitter.

5,379,454

STATION SELECTION DEVICE IN TUNER FOR AUTOMATIC SELECTION ACCORDING TO INPUT INFORMATION

Tomohiro Takegawa; Akira Tasaki, and Hiroshi Kolnuma, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

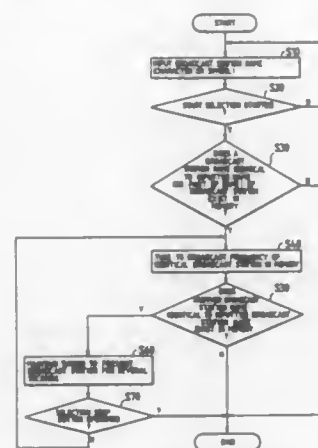
Continuation of Ser. No. 639,441, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 310,568, Feb. 15, 1989, Pat. No. 5,023,938. This application Mar. 2, 1992, Ser. No. 841,768

Claims priority, application Japan, Jun. 3, 1988, 63-135670; Jun. 3, 1988, 63-135671

Int. Cl.⁶ H04B 17/02

U.S. Cl. 455—158.5

3 Claims



1. A tuner having a programmable frequency divider which selects a broadcast station in accordance with a frequency division number, the tuner comprising:

input means for inputting information representing at least one character of a broadcast station name, said input means including means operable for successively inputting a plurality of characters of the broadcast station name; memory means for storing character information representing a plurality of broadcast station names and for storing frequency division numbers respectively corresponding to the stored information representing the plurality of broadcast station names; and

control means, coupled to said input means, for reading from said memory means a stored frequency division number in accordance with the information inputted by said input means and for supplying the read frequency division number to the programmable frequency divider so that the programmable frequency divider will select a broadcast station in accordance with the supplied frequency division number, wherein said control means includes stop means for stopping said control means from supplying a stored frequency division number to the programmable frequency divider, and wherein said memory means stores a plurality of broadcast station names corresponding to the information inputted by said input means, said control means successively reads the stored frequency division number corresponding to the inputted information and successively supplies the read frequency division number to the programmable frequency divider unless said stop means is activated.

5,379,455

MODULAR DISTRIBUTED ANTENNA SYSTEM

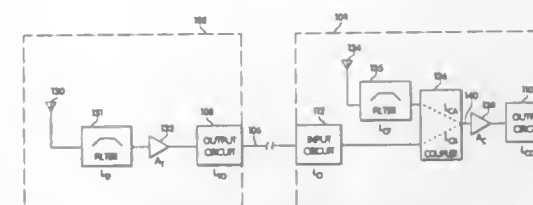
Drew G. Koschek, Ashland, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 662,278, Feb. 28, 1991, abandoned. This application May 10, 1993, Ser. No. 60,499

Int. Cl.⁶ H04B 7/08, 3/50

U.S. Cl. 455—273

20 Claims



1. A distributed antenna system comprising:
- at least two antennas for receiving broadcast signals; and
- a separate compensating amplifier means corresponding to each of the least two antennas and connected to receive a signal related to an output from the corresponding antenna;
- at least selected ones of said at least two antennas and said compensating amplifier means being arranged to form at least one connecting stage, each said connecting stage including one of said at least two antennas, the amplifier means corresponding to said one of said at least two antennas, input means for receiving as an input signal an output of an amplifier means other than the amplifying means for said stage, means for coupling broadcast signals received by said antenna with said input signal received by said input means, a combined signal appearing at the coupling means output, said amplifier means for said stage amplifying said combined signal, and output means for outputting the amplified signal, the elements included in said connecting stage located in close proximity to each other.

5,379,456
MULTIPLYING SAW PHASE SHIFT ENVELOPE DETECTOR

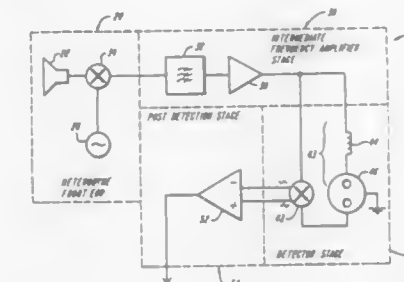
Costas Papadopoulos, Acton, Mass., assignor to Whistler Corporation, Westford, Mass.

Filed Feb. 5, 1991, Ser. No. 650,950

Int. Cl.⁶ H04B 1/08

U.S. Cl. 455—318

13 Claims



1. A radio-frequency detection apparatus comprising:
- a signal input for providing an input signal;
- a phase shifter having a first connection and a second connection, said phase shifter comprising:
- a SAW device having a first electrical connection and a second electrical connection, the SAW first electrical connection coupled to said phase shifter first connection and said SAW second electrical connection coupled to said phase shifter second connection, said SAW device being coupled to said phase shifter first connection through at least one reactive element; and
- a multiplier having a multiplier first input connection, a multiplier second input connection and at least one multiplier output connection, said multiplier first input connection being coupled to said signal input and said phase shifter first connection and said multiplier second input connection being coupled to said phase shifter second connection, said phase shifter adapted for introducing approximately a 90 degree phase shift into said input signal at approximately the frequency of minimum insertion loss.

5,379,457

LOW NOISE ACTIVE MIXER

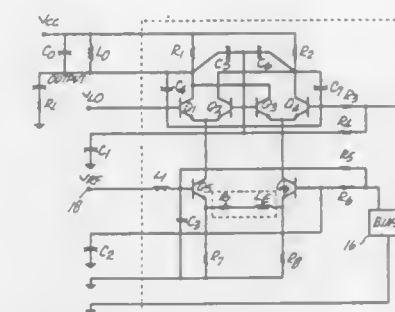
Nhat M. Nguyen, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 28, 1993, Ser. No. 83,449

Int. Cl.⁶ H04B 1/28; G06G 7/02

U.S. Cl. 455—323

18 Claims



7. An active mixer circuit comprising:
- a first local oscillator matched pair of bipolar transistors;
- a second local oscillator matched pair of bipolar transistors having operating characteristics approximately the same as the operating characteristics of the first local oscillator matched pair;

a radio frequency matched pair of bipolar transistors;
 means for coupling the emitters of the first local oscillator pair to the collector of one of the transistors of the radio frequency pair;
 means for coupling the emitters of the second local oscillator pair to the collector of the other transistor of the radio frequency pair;
 means for inductively coupling the emitters of the two transistors of the radio frequency pair;
 a local oscillator input coupled to the bases of the local oscillator matched pairs; and
 a radio frequency input coupled to the bases of the radio frequency matched pair.

5,379,458

TRANSFORMERLESS DIODE MIXER

Risto Väisänen, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Dec. 11, 1992, Ser. No. 989,076

Claims priority, application Finland, Dec. 19, 1991, 91 6006

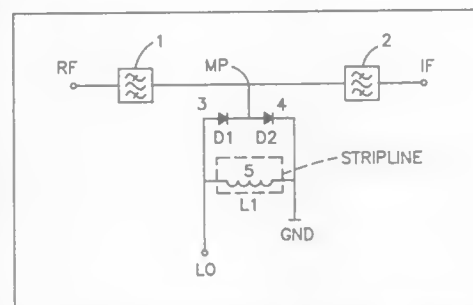
Int. Cl.⁶ H04B 1/26; H03B 19/18, 19/20

U.S. Cl. 455-330

9 Claims

1. A transformerless diode mixer comprising:
 a series circuit of two diodes connected in series between a first terminal and a second terminal of said series circuit, wherein a cathode of a first of said diodes is connected via a junction to an anode of a second of said diodes, said junction serving as a mixing point of said mixer;
 first filter means for capacitively coupling an r.f. signal

between a first external point and said junction, said r.f. signal being an input signal to said mixer;
 second filter means for capacitively coupling an i.f. signal between said junction and a second external point, said i.f. signal being an output signal of said mixer;
 transformerless signal means for applying an oscillatory signal to said series circuit, said signal means being con-



nected between said first and said second terminals of said series circuit;
 wherein said transformerless signal means includes potential means in parallel with said series circuit for maintaining a nearly zero d.c. voltage across said series circuit by inhibiting rectification of the r.f. signal and build-up of a d.c. voltage at terminals of said diodes.

DESIGN PATENTS

GRANTED JAN. 3, 1995

ERRATA

For CLASS	See PATENT NO.
D11-090	D 345,014
D11-200	D 344,030
D08-373	D 344,079
D22-150	D 354,095

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DESIGNS

JANUARY 3, 1995

353,932

CHILD SAFETY BELT

Bruce C. New, 4775 Apartment Blvd Apt E12, North Charleston, S.C. 29418

Filed Dec. 11, 1992, Ser. No. 2,388

Term of patent 14 years

U.S. Cl. D2—627



353,933

PAIR OF UNDERWEAR

Cynthia L. Michels, 103 Pine View Cir., Altamonte Springs, Fla. 32714

Continuation-in-part of Ser. No. 807,553, Dec. 16, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 15,620

Term of patent 14 years

U.S. Cl. D2—712



353,934

ADJUSTABLE FLY FOR TROUSERS

Diane Yallanardo, 27440 Torchev Way, Pueblo, Colo. 81006

Filed Oct. 23, 1991, Ser. No. 781,273

Term of patent 14 years

U.S. Cl. D2—742



353,935

ATHLETIC SHOE

Peggy L. Pollack, Los Angeles, Calif., assignor to Angel-Etts of California, Los Angeles, Calif.

Filed Sep. 7, 1993, Ser. No. 12,639

Term of patent 14 years

U.S. Cl. D2—902



353,936

ORTHOTIC INSERT

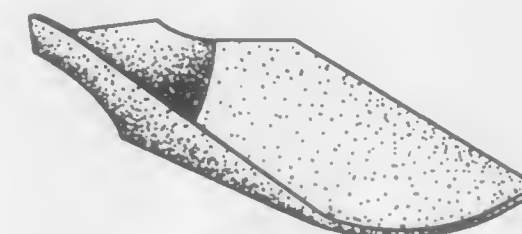
Phillip J. Vasyli, Kirrawee, Australia, assignor to AOL International Pty. Ltd., New South Wales, Australia

Filed Jun. 22, 1993, Ser. No. 9,828

Claims priority, application Australia, Jan. 12, 1993, 71/93

Term of patent 14 years

U.S. Cl. D2—961



353,937

SHOE UPPER

Steve F. Smith, Taunton, Mass., assignor to Reebok International Ltd., Stoughton, Mass.

Filed Dec. 10, 1993, Ser. No. 16,198

Term of patent 14 years

U.S. Cl. D2—969



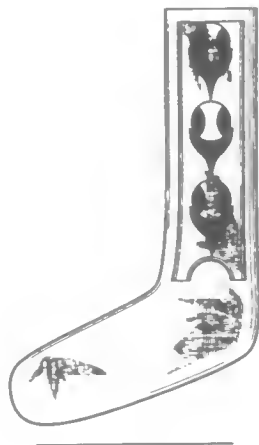
353,938

ATHLETIC SLIDING SOCK

Michael S. Lucas, Jr., 96 Valley View Rd., Milford, Conn. 06460
Filed Jan. 25, 1993, Ser. No. 4,062

Term of patent 14 years

U.S. Cl. D2—994



353,939

TOOTHBRUSH

John P. Curtis, Bloomsbury; Kedar N. Rustogi, Kendall Park, both of N.J.; John C. Crawford, Lake Mahopac, N.Y.; James H. Kemp, North Brunswick, N.J.; Thomas E. Mintel, Rahway, N.J.; Bert D. Heinzelman, North Bergen, N.J.; Adam Sherman, Brooklyn, N.Y.; Robert Moskovich, East Brunswick, N.J.; James Petronio, New York, N.Y.; Donald R. Lamond, Lynbrook, N.Y., and Laura H. Edelman, New York, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

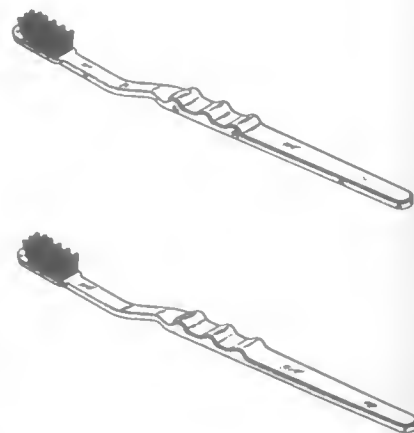
Continuation-in-part of Ser. No. 807,375, Dec. 13, 1991, Pat. No. Des. 342,162, which is a continuation of Ser. No. 636,802, Jan. 2, 1991, abandoned, which is a continuation-in-part of Ser. No.

501,992, Mar. 29, 1990, Pat. No. 5,335,389, and a continuation-in-part of Ser. No. 501,627, Mar. 29, 1990, Pat. No. Des. 334,472, and a continuation-in-part of Ser. No. 501,626, Mar. 29, 1990, Pat. No. Des. 330,286, and a continuation-in-part of Ser. No. 502,135, Mar. 29, 1990, Pat. No. Des. 330,116. This application Oct. 5, 1992, Ser. No. 38

The portion of the term of this patent subsequent to Apr. 6, 2007, has been disclaimed.

Term of patent 14 years

U.S. Cl. D4—104



353,940

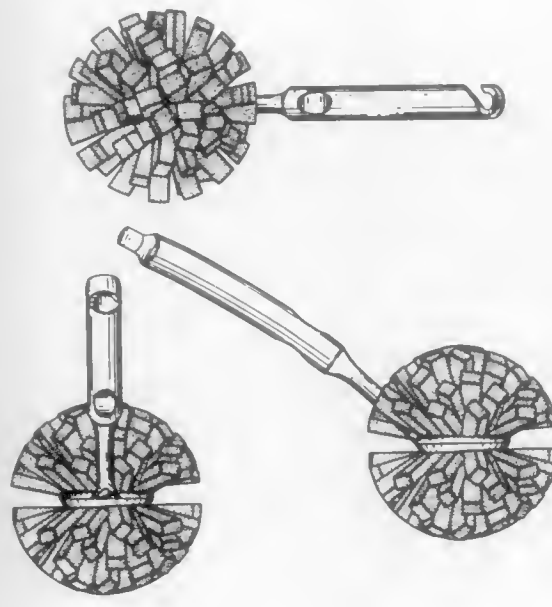
SPONGE BRUSH

David B. Joyner, Winterville, and Paul A. Ricciarelli, Ayden, both of N.C., assignors to Empire Brushes, Inc., Greenville, N.C.

Filed Sep. 7, 1993, Ser. No. 12,629

Term of patent 14 years

U.S. Cl. D4—120



353,941

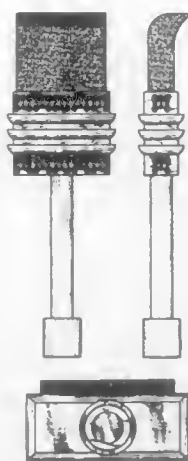
SPONGE BRUSH WITH COUPLING FOR ATTACHMENT TO AN EXTENSION HANDLE

William M. O'Hearn, 4702 Rocks Rd., Street, Md. 21154

Filed Mar. 1, 1993, Ser. No. 5,527

Term of patent 14 years

U.S. Cl. D4—137



353,942

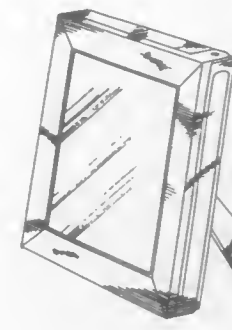
PHOTOVIEWER

Canice K. Lo; Chin-Hun Tsang, both of Hong Kong, Hong Kong, and John W. Ng, Ontario, Canada, assignors to Sunson Limited, Wongchukhang, Hong Kong

Filed Jan. 26, 1993, Ser. No. 4,148

Term of patent 14 years

U.S. Cl. D6—310



353,943

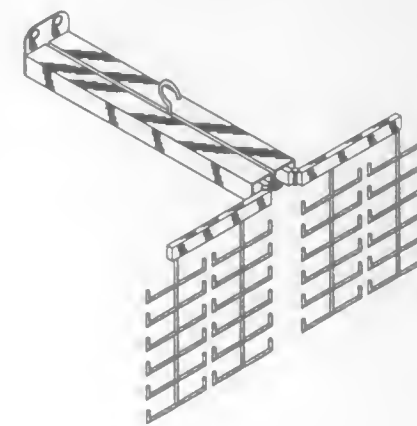
TIE RACK

Robert D. Varin, 6135 Verner Ave., Sacramento, Calif. 95841

Filed Jan. 15, 1993, Ser. No. 3,722

Term of patent 14 years

U.S. Cl. D6—317



353,944

CLOTHES HANGER

Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Steven E. Greenhut, 6368 NW. 23rd Way, Boca Raton, Fla. 33496

Filed Aug. 18, 1993, Ser. No. 11,966

Term of patent 14 years

U.S. Cl. D6—317



353,945

GARMENT HANGER

Henry J. Louw, Dreyersdal Road, Bergvliet 7800, South Africa
Filed Jul. 22, 1993, Ser. No. 10,997

Claims priority, application South Africa, Jan. 29, 1993, 93/0057

Term of patent 14 years

U.S. Cl. D6—326



353,946

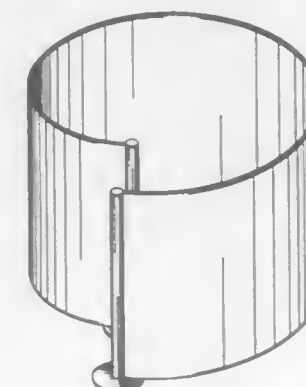
PORTABLE PRIVACY STATION

Roy K. Fischer, 7641 E. Gray Rd., Scottsdale, Ariz. 85260; Phillip J. Kolo, 3556 E. Gelding, Phoenix, Ariz. 85032; Michael H. Lamb, 1638 N. Longmore St., Chandler, Ariz. 85224, and Randall R. Toltzman, 13372 N. 102nd Pl., Scottsdale, Ariz. 85260

Filed May 12, 1993, Ser. No. 8,235

Term of patent 14 years

U.S. Cl. D6—332



353,947

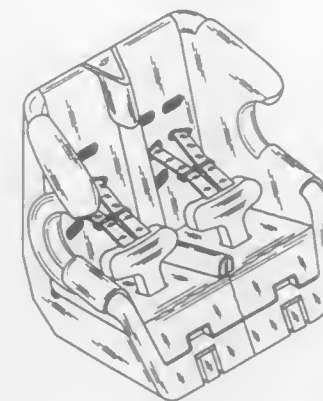
DUAL CHILD RESTRAINT SEAT

Robert L. Gain, 1701 Rocksprings Dr., Apt. 2138, Las Vegas, Nev. 89128

Filed Jan. 30, 1992, Ser. No. 828,461

Term of patent 14 years

U.S. Cl. D6—333

VOL
1170ISS
1JA
3

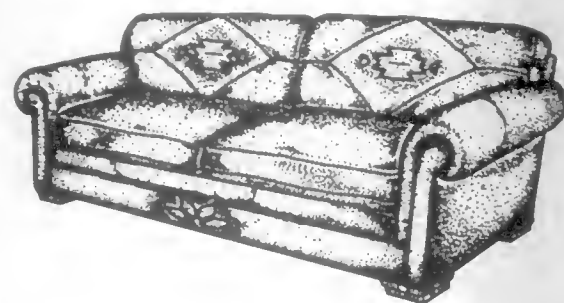
1995

UM I

353,948
SOFA

Darrell G. Lowman, Hickory, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Jun. 11, 1993, Ser. No. 9,448
Term of patent 14 years

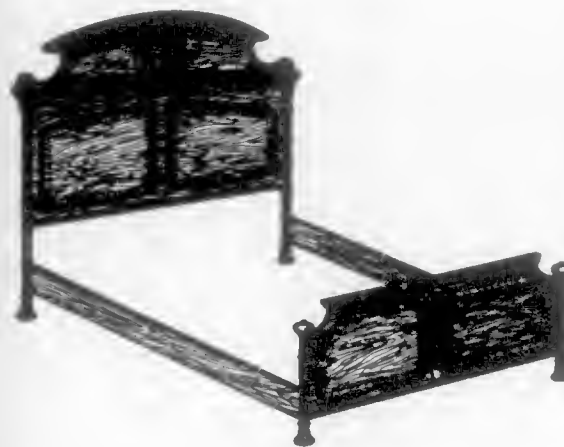
U.S. Cl. D6—381



353,950
BED

Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 19, 1992, Ser. No. 885,409
Term of patent 14 years

U.S. Cl. D6—393



353,951
BED

Darrell C. Ferguson, Charleston, S.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed May 18, 1992, Ser. No. 885,386
Term of patent 14 years

U.S. Cl. D6—395



353,949
BED

Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 18, 1992, Ser. No. 885,392
Term of patent 14 years

U.S. Cl. D6—389



353,952
BED

Richard A. Schroeder, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Mar. 11, 1993, Ser. No. 5,753
Term of patent 14 years

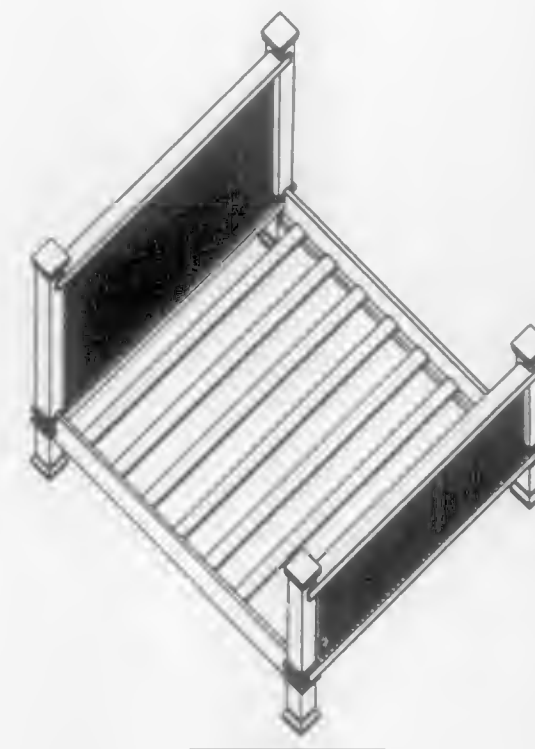
U.S. Cl. D6—395



353,954
BED

Laurence Bowman, 1402 Lincoln, Evanston, Ill. 60201
Filed Sep. 9, 1993, Ser. No. 12,773
Term of patent 14 years

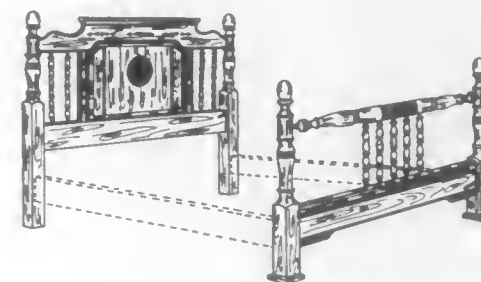
U.S. Cl. D6—395



353,953
BED

H. Thomas Keller, High Point, N.C., assignor to Vaughan Furniture Company, Inc., Galax, Va.
Division of Ser. No. 867,806, Apr. 10, 1992. This application
Apr. 27, 1993, Ser. No. 7,613
Term of patent 14 years

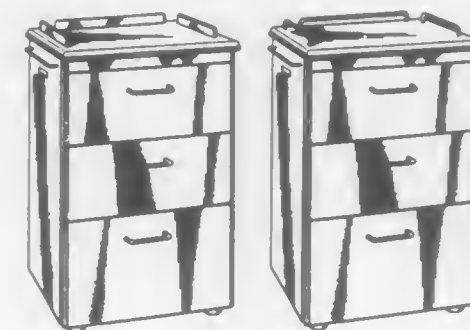
U.S. Cl. D6—395



353,955
BEDSIDE TABLE

Colin E. Stewart, Guelph, Canada, assignor to Krug Furniture Inc., Kitchener, Canada
Filed Nov. 12, 1992, Ser. No. 1,338
Claims priority, application Canada, Sep. 16, 1992, 1609924
Term of patent 14 years

U.S. Cl. D6—446



VOL
1170

ISS

1

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3

1995

UMI

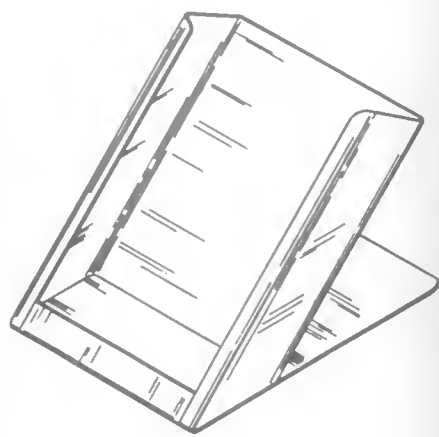
353,956

REMOTE CONTROL HOLDER

Klaus N. Schmidt, 525 N. Airlite, Elgin, Ill. 60123
Filed Sep. 3, 1993, Ser. No. 12,664

Term of patent 14 years

U.S. Cl. D6-449



353,957

RACK FOR A TELEVISION RECEIVER

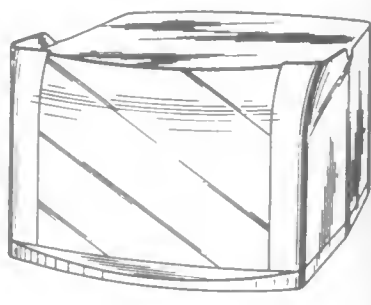
Toru Higashibata, Osaka, and Eiichiro Naito, Hyogo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 6, 1994, Ser. No. 17,177

Claims priority, application Japan, Jul. 7, 1993, 5-21001

Term of patent 14 years

U.S. Cl. D6-451



353,958

EMPTY DISPLAY RACK FOR BRACELETS OR WATCH STRAPS

Hermann Hirsch, Klagenfurt, Austria, assignor to Hirsch Holding AG, Pfäffikon, Switzerland

Filed Nov. 27, 1992, Ser. No. 1,986

Claims priority, application Austria, May 27, 1992, 1844/92

Term of patent 14 years

U.S. Cl. D6-468



353,959

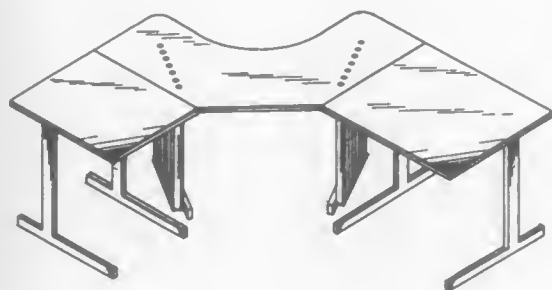
MULTIPLE TABLE UNIT

Nebojsa Kovacevic, Plymouth, Minn., assignor to N.K. Biotechnical Engineering Company, Minneapolis, Minn.

Filed Sep. 30, 1992, Ser. No. 954,755

Term of patent 14 years

U.S. Cl. D6-482



353,960

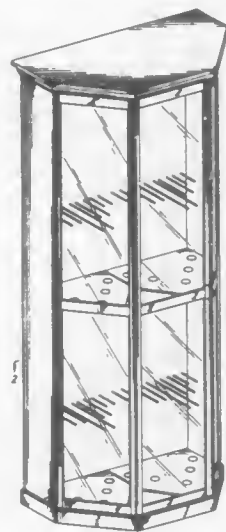
BAT DISPLAY CASE

Jesse Barfield, Houston, Tex., assignor to Sports Designs By Jesse Barfield, Inc., Houston, Tex.

Filed Aug. 25, 1992, Ser. No. 934,968

Term of patent 14 years

U.S. Cl. D6-470



353,961

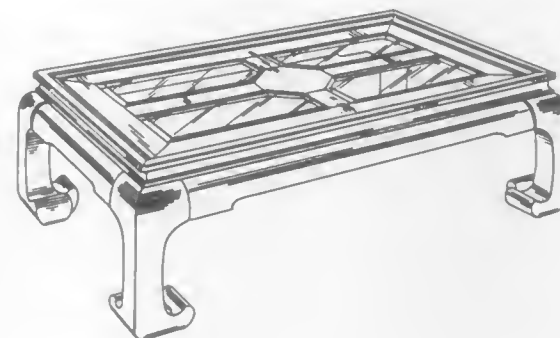
COCKTAIL TABLE

Hector Deluca, Woodland Hills, Calif., assignor to Schnadig Corporation, Chicago, Ill.

Filed Feb. 4, 1993, Ser. No. 4,409

Term of patent 14 years

U.S. Cl. D6-484



353,962

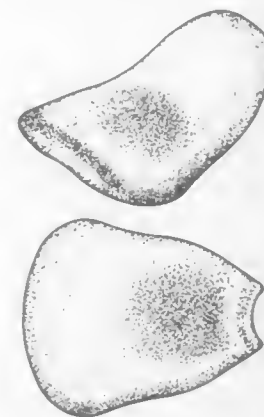
SEAT

Mary F. Gale, Collaroy, Australia, assignor to A. F. Bambach Pty. Ltd., Australia

Filed Jun. 22, 1993, Ser. No. 9,695

Term of patent 14 years

U.S. Cl. D6-500



353,964

COMBINED BACKREST AND HEADREST

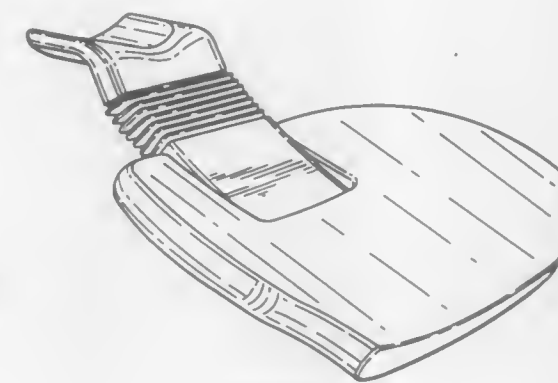
Tilman Phleps, Lorsch, and Klaus Stoeckl, Bensheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 20, 1993, Ser. No. 7,255

Claims priority, application Hague Agreement, Nov. 4, 1992, DM/001939

Term of patent 14 years

U.S. Cl. D6-502



353,965

PORTABLE ROLLED TISSUE DISPENSER

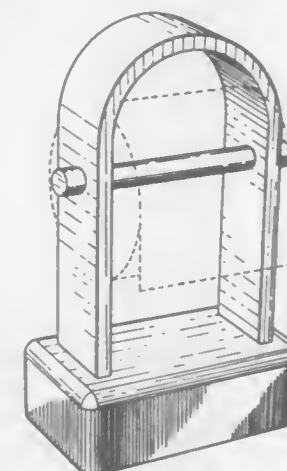
John F. Winebrenner, 9401 Roberts Dr., NW, #25-C, Dunwoody, Ga. 30350

Continuation-in-part of Ser. No. 773,689, Oct. 8, 1991, Pat. No. Des. 335,597. This application Apr. 14, 1993, Ser. No. 7,067

The portion of the term of this patent subsequent to May 18, 2007, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6-518



353,963

ATTACHMENT FOR A CHILD'S BICYCLE SEAT

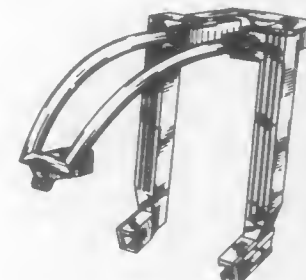
Wolfram Peters, Lelden, Netherlands, assignor to Hamax AS, Norway

Filed Oct. 6, 1992, Ser. No. 184

Claims priority, application Germany, Jul. 15, 1992, 9205340

Term of patent 14 years

U.S. Cl. D6-502

VOL
1170

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1

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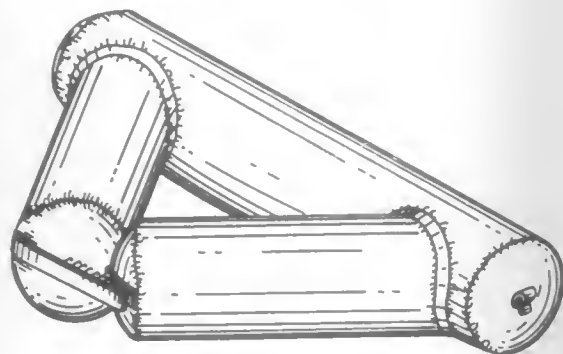
353,966

NECK CUSHION

Sydney M. Rogers, 16 N. Chatsworth Ave., Larchmont, N.Y. 10538

Filed Nov. 17, 1993, Ser. No. 15,456
Term of patent 14 years

U.S. Cl. D6—601



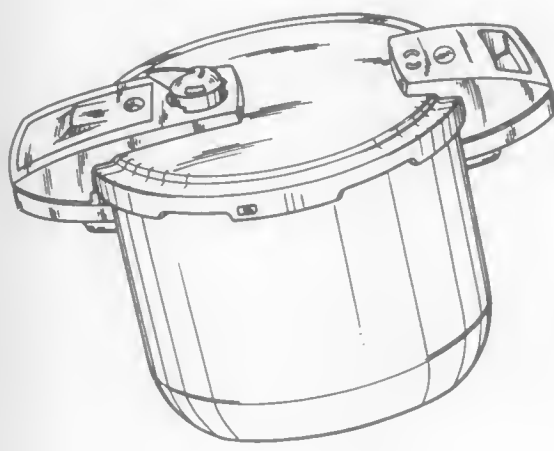
353,969

PRESSURE COOKER

Yves Savinel, Paris, France, assignor to SEB, Selongey, France
Filed Jun. 24, 1993, Ser. No. 9,810

Claims priority, application France, Dec. 24, 1992, 92 7799
Term of patent 14 years

U.S. Cl. D7—358



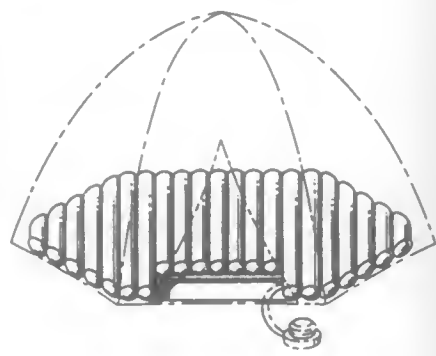
353,967

AIR MATTRESS FOR A TENT

Bret S. Moore, 59 Valencia Ave., San Rafael, Calif. 94901
Filed Jul. 9, 1993, Ser. No. 10,536

Term of patent 14 years

U.S. Cl. D6—604



353,970

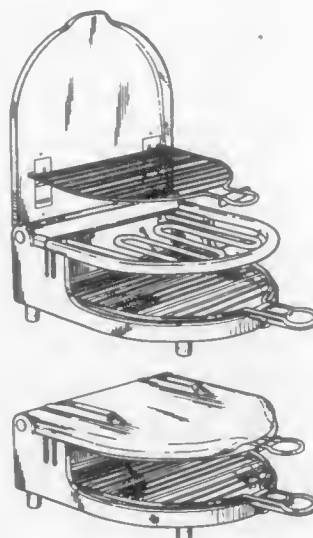
BURGER COOKER

Francis R. Bannigan, Victoria, Australia, assignor to Gondal Pty. Ltd., Australia

Filed Sep. 22, 1992, Ser. No. 949,083

Term of patent 14 years

U.S. Cl. D7—365



353,968

COOKING UTENSIL

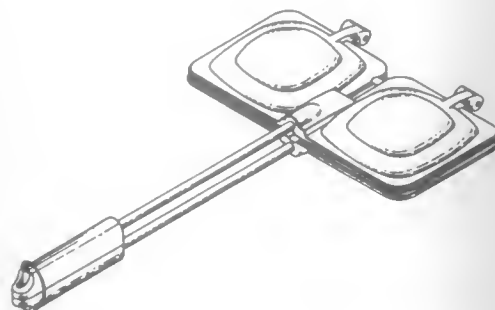
John E. Cock, New Farm, Australia, assignor to Lenard Anthony Warren Sharman, Noosaville, Australia

Filed Jan. 15, 1993, Ser. No. 3,805

Claims priority, application Australia, Jul. 20, 1992, 1898/92

Term of patent 14 years

U.S. Cl. D7—352



353,971

TORCH

Isao Inoue, Shizuoka, Japan, assignor to Tokai Corporation, Kanagawa, Japan

Filed Feb. 9, 1993, Ser. No. 4,625

Claims priority, application Japan, Aug. 10, 1992, 4-23973

Term of patent 14 years

U.S. Cl. D7—416



353,972

DRINKING CUP

Brent D. Robling, Durham, and Matthew R. Dunaj, III, Bahama, both of N.C., assignors to Kidworks, Inc., Raleigh, N.C.

Filed Sep. 29, 1993, Ser. No. 13,665

Term of patent 14 years

U.S. Cl. D7—510



353,973

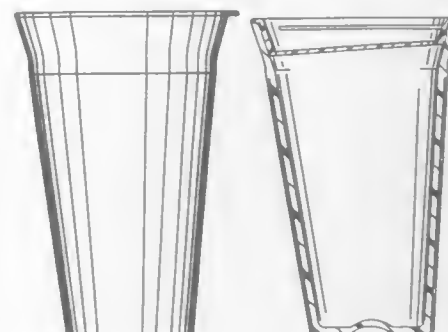
DRINKING RECEPTACLE

John G. Adado, Grand Rapids, Mich., assignor to AMG, Inc., Grand Rapids, Mich.

Filed Jun. 23, 1992, Ser. No. 903,545

Term of patent 14 years

U.S. Cl. D7—511



353,974

DISH FOR ENCOURAGING DIETS

Shirley Durling, 1500 Worcester Rd., #517, Framingham, Mass. 01701

Filed May 5, 1993, Ser. No. 7,950

Term of patent 14 years

U.S. Cl. D7—579



353,975

INSULATING BEVERAGE CAN SHEATH

Philip L. Gooch, 9919 Pale Star, Houston, Tex. 77064

Filed Oct. 23, 1992, Ser. No. 799

Term of patent 14 years

U.S. Cl. D7—624



353,976

SHUCKING UTENSIL

Dallas Perkins, 4711 N. 48th Dr., Phoenix, Ariz. 85031

Filed Sep. 13, 1993, Ser. No. 12,838

Term of patent 14 years

U.S. Cl. D7—693

VOL
1170ISS
1JA
3

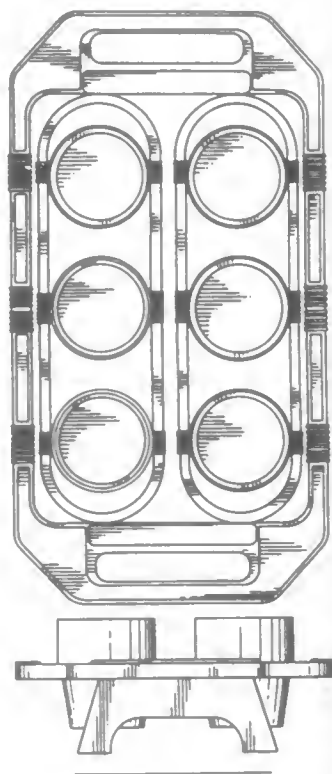
1995

UM I

353,977

COMBINED GIMBAL TRAY AND CUPS THEREFOR
William G. Muschett, Rte., Box 198, Vilas, N.C. 28692
Filed Oct. 21, 1993, Ser. No. 14,444
Term of patent 14 years

U.S. Cl. D7-708

353,979
RAKE

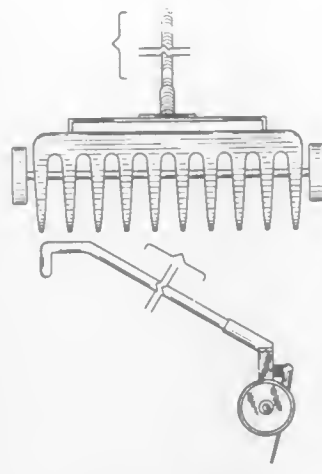
Joyce A. Sargeant, 3808 W. Moreno St., Pensacola, Fla. 32505
Filed Mar. 14, 1994, Ser. No. 19,949
Term of patent 14 years

U.S. Cl. D8-13

353,980
RAKE

Edward M. Johnson, 4105D 57th A Avenue, Lloydminster, Alberta, Canada T9V 1V1
Filed Apr. 5, 1994, Ser. No. 20,956
Term of patent 14 years

U.S. Cl. D8-13



353,981

HOOKED SAFETY IMPLEMENT

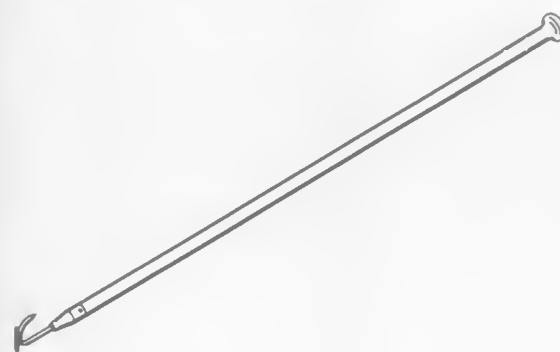
Joyce A. Sargeant, 3808 W. Moreno St., Pensacola, Fla. 32505
Filed Mar. 14, 1994, Ser. No. 19,950
Term of patent 14 years

U.S. Cl. D8-10



Danny L. Harbaugh, Jr., and Daniel L. Harbaugh, Sr., both of R.D. 2 Box 212A, New Paris, Pa. 15554
Filed Mar. 15, 1993, Ser. No. 5,906
Term of patent 14 years

U.S. Cl. D8-14



353,982

COMBINED FLUID DISPENSER AND MIXER

Crispin B. Dean, Neu Anspach, Germany, assignor to Supermix Systems Limited, England
Filed May 11, 1993, Ser. No. 8,230
Claims priority, application United Kingdom, Nov. 13, 1992, 2027056

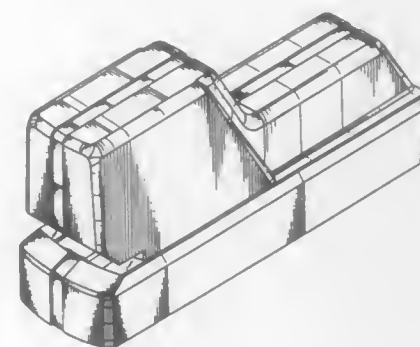
Term of patent 14 years

U.S. Cl. D8-14.1

353,983
STAPLER

Lars-Göran Rosenblad, Huskvarna, Sweden, assignor to Isaberg AB, Hestra, Sweden
Filed Jul. 14, 1993, Ser. No. 10,648
Claims priority, application Sweden, Jan. 25, 1993, 930162
Term of patent 14 years

U.S. Cl. D8-49

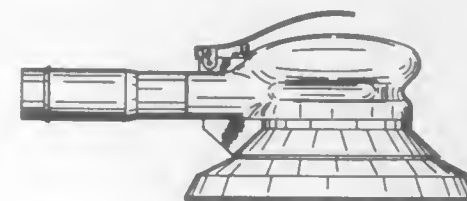


353,984

ORBITAL SANDER

Osamu Izumisawa, Tokyo, Japan, assignor to Shinano Pneumatic Industries, Inc., Nagano, Japan
Filed Sep. 14, 1993, Ser. No. 12,937
Term of patent 14 years

U.S. Cl. D8-62

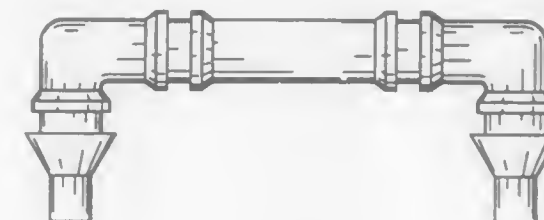


353,985

CARBURETOR SUPPORT FOR A MOTOR SAW

Vinko Hanzek, Sparvgatan, Sweden, assignor to Aktiebolaget Electrolux, Sweden
Filed Jun. 29, 1993, Ser. No. 10,174
Claims priority, application Sweden, Jan. 8, 1993, 93-0029
Term of patent 14 years

U.S. Cl. D8-65

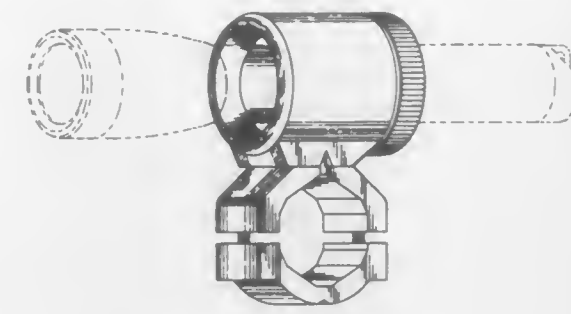


353,986

CLAMP ASSEMBLY

Anthony Maglica, Anaheim, Calif., assignor to MAG Instrument, Inc., Ontario, Calif.
Filed Aug. 13, 1993, Ser. No. 11,807
Term of patent 14 years

U.S. Cl. D8-72

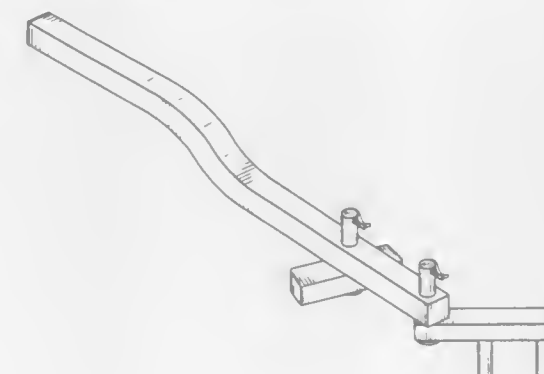


353,987

TOOL FOR INSTALLING WOODEN PLANKS

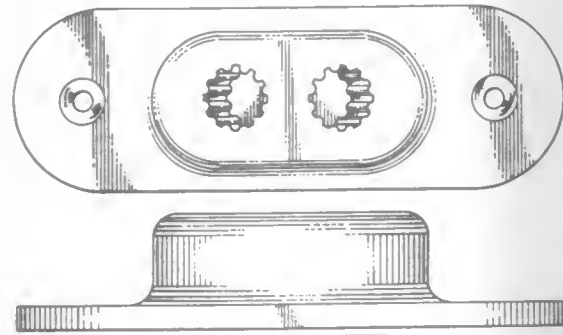
Cris E. Pasto, 244 Van Etten Rd., Spencer, N.Y. 14883
Filed Nov. 4, 1992, Ser. No. 1,116
Term of patent 14 years

U.S. Cl. D8-88



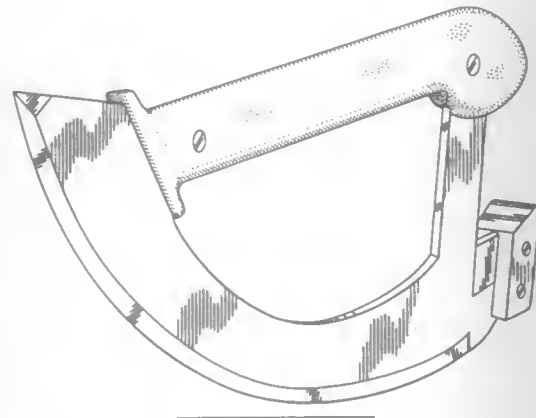
353,988
STAND FOR KNIFE SHARPENING STONES
 Louis Glesser, P.O. Box 800, Golden, Colo. 80402-0800
 Filed Apr. 12, 1993, Ser. No. 6,894
 Term of patent 14 years

U.S. Cl. D8—93



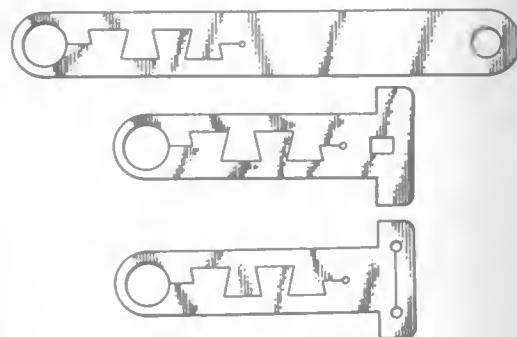
353,989
COMBINED DRESSING AND SKINNING KNIFE
 Wilbert e. Watson, 9315 Meade St., Westminster, Colo. 80030-6462
 Filed Jul. 2, 1993, Ser. No. 10,318
 Term of patent 14 years

U.S. Cl. D8—98



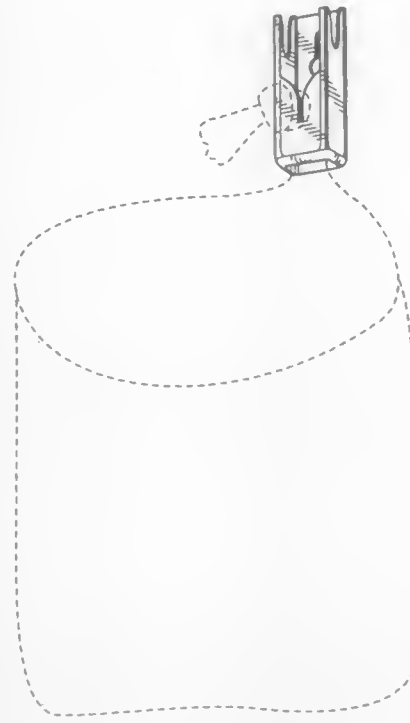
353,990
POWER CABLE RETAINER
 Kim L. Alfreds, 8921 Desert Bay Dr., Las Vegas, Nev. 89117
 Filed Oct. 18, 1993, Ser. No. 14,266
 Term of patent 14 years

U.S. Cl. D8—356



353,991
HANGER FOR A FLEXIBLE CONTAINER
 Preston C. Anderson, P.O. Box 193, Emery, Utah 84522
 Filed May 14, 1993, Ser. No. 8,362
 Term of patent 14 years

U.S. Cl. D8—373



353,992
DOOR MOUNTED SEASONAL DECORATION HANGER
 Walter Dombrowski, and Thomas Herrick, both of Alpharetta, Ga., assigns to H & D Designs, Inc., Alpharetta, Ga.
 Filed Jul. 23, 1993, Ser. No. 11,019
 Term of patent 14 years

U.S. Cl. D8—373



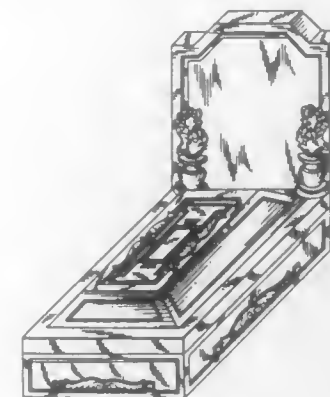
353,993
PUMP BOTTLE
 Stephan Weiss, 211 E. 70th St., New York, N.Y. 10021, and David Seldler, 69-10 108th St., Forest Hills, N.Y. 11375
 Filed Aug. 27, 1992, Ser. No. 936,253
 Term of patent 14 years

U.S. Cl. D9—300



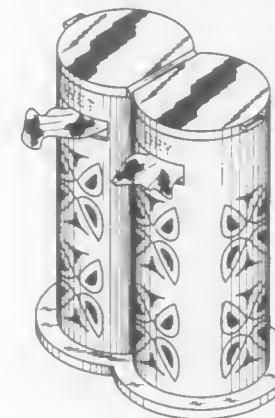
353,994
CONTAINER
 Karl W. Kohler, 40 Shore Blvd., Brooklyn, N.Y. 11235
 Filed Jan. 27, 1993, Ser. No. 4,048
 Term of patent 14 years

U.S. Cl. D9—307



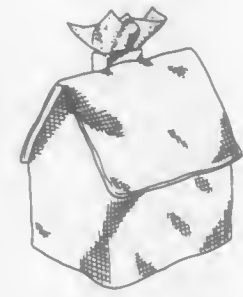
353,995
DUAL COMPARTMENT DISPENSER
 Anna Foster, 5025 W. 106th St., Inglewood, Calif. 90304
 Filed Jul. 1, 1993, Ser. No. 10,135
 Term of patent 14 years

U.S. Cl. D9—339



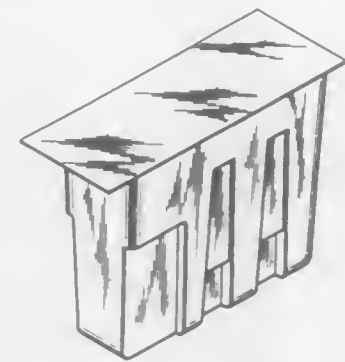
353,996
COVER FOR A TISSUE BOX
 Thomas J. Boysen, 1516 N. Orleans, Chicago, Ill. 60610
 Filed Jul. 6, 1993, Ser. No. 10,340
 Term of patent 14 years

U.S. Cl. D9—322



353,997
CONTAINER
 Toshio Kashino, Chigasaki, and Hiroki Tajima, Kawasaki, both of Japan, assigns to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Sep. 14, 1993, Ser. No. 12,900
 Claims priority, application Japan, Mar. 17, 1993, 5-7584
 Term of patent 14 years

U.S. Cl. D9—425



353,998
FRAGRANCE BOTTLE
 Bernard Kotyuk, Jr., New York, N.Y., assignor to Cosmair, Inc., New York, N.Y.
 Filed Nov. 19, 1993, Ser. No. 15,545
 Term of patent 14 years

U.S. Cl. D9—503



353,999
DISPENSER

Ib Hansen, Herlev, and Steve McGugan, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Jun. 5, 1992, Ser. No. 894,718

Claims priority, application Denmark, Dec. 5, 1991, MA 1243 1991

Term of patent 14 years

U.S. Cl. D9—520

354,001
COSMETIC CONTAINER

Jin H. Park, Seoul, Rep. of Korea, assignor to Lucky, Ltd., Seoul, Rep. of Korea

Filed Mar. 13, 1992, Ser. No. 862,287

Claims priority, application Rep. of Korea, Oct. 1, 1991, 91-14445

Term of patent 14 years

U.S. Cl. D9—544

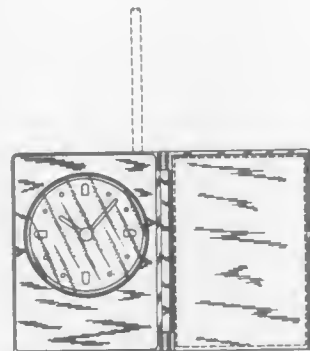
354,002
COMBINED CLOCK AND PICTURE FRAME

Tsunemi Kawashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Sep. 28, 1992, Ser. No. 954,051

Term of patent 14 years

U.S. Cl. D10—2

354,000
BOTTLE

Earl Hoyt, Franklin Lakes, N.J., assignor to Benckiser Consumer Products, Inc., Danbury, Conn.

Filed May 17, 1993, Ser. No. 8,440

Term of patent 14 years

U.S. Cl. D9—543

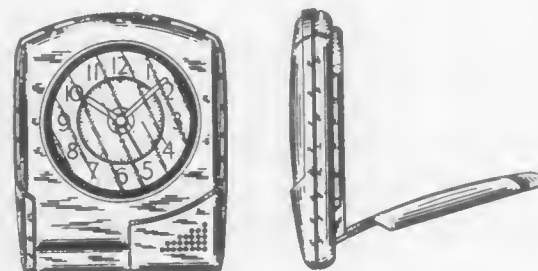
354,003
TRAVEL ALARM CLOCK

Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Oct. 14, 1992, Ser. No. 416

Term of patent 14 years

U.S. Cl. D10—18

354,004
TABLE CLOCK

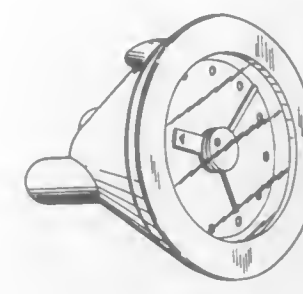
Julian F. Brown, 27 George Street, Berkhamsted, Herts HP4 4EG, England

Filed Nov. 12, 1992, Ser. No. 1,380

Claims priority, application Italy, May 20, 1992, MI9200000329

Term of patent 14 years

U.S. Cl. D10—23

354,007
CLOCK

Mitsuo Wada, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Sep. 1, 1992, Ser. No. 939,359

Term of patent 14 years

U.S. Cl. D10—26

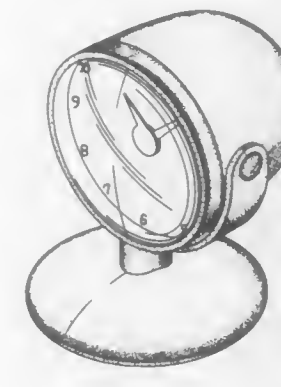
354,005
DESK CLOCK

Ming-Jenq Wang, Tainan Hsien, Taiwan, Prov. of China, assignor to Compal Electronics, Inc., Taipei, Taiwan, Prov. of China

Filed Apr. 29, 1993, Ser. No. 7,659

Term of patent 14 years

U.S. Cl. D10—23

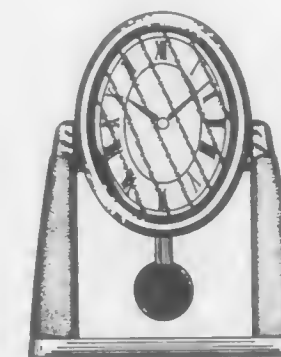
354,008
CLOCK

Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Mar. 25, 1992, Ser. No. 857,596

Term of patent 14 years

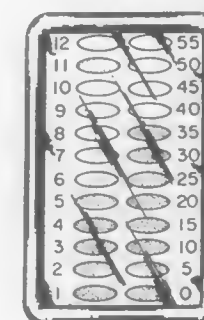
U.S. Cl. D10—28

354,006
CLOCK

Donald D. Braisted, 5611 S.E. Lamay Dr., Stuart, Fla. 34997 Division of Ser. No. 569,704, Aug. 20, 1990, Pat. No. Des. 337,531. This application Jul. 19, 1993, Ser. No. 10,806

Term of patent 14 years

U.S. Cl. D10—24

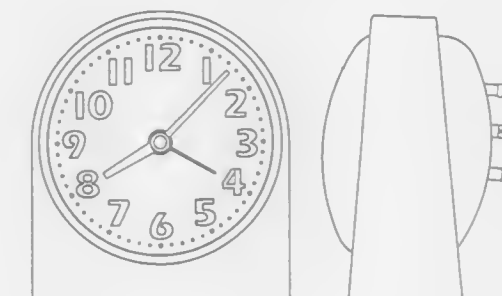
354,009
CLOCK

Roddie Pistilli, Duluth, Ga., assignor to GTC Properties, Inc., Wilmington, Del.

Filed Nov. 13, 1992, Ser. No. 1,434

Term of patent 14 years

U.S. Cl. D10—28

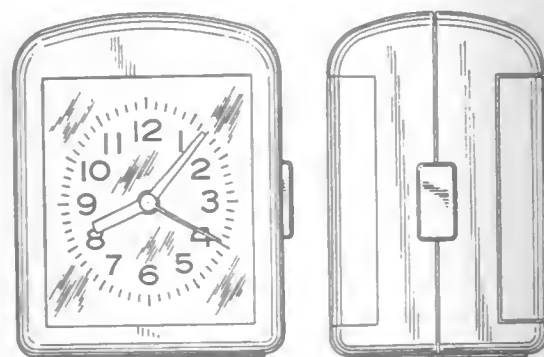


354,010
CLOCK

Roddie M. Pistilli, Duiuth, Ga., assignor to GTC Properties, Inc., Wilmington, Del.

Filed Nov. 13, 1992, Ser. No. 1,469
Term of patent 14 years

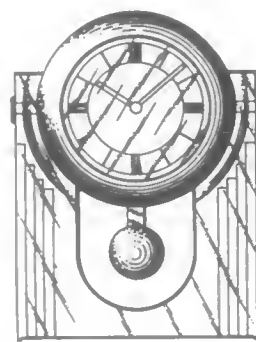
U.S. Cl. D10—28

354,011
CLOCK

Katsumi Shimamura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Dec. 23, 1992, Ser. No. 2,940
Term of patent 14 years

U.S. Cl. D10—28

354,012
WRISTWATCH

Giardiello Barbara, Naples, Italy, assignor to Artime S.A., Neuchatel, Switzerland

Filed Jun. 2, 1992, Ser. No. 892,372

Claims priority, application Hague Agreement, Dec. 19, 1991, DM/021472

The portion of the term of this patent subsequent to Nov. 8, 2008, has been disclaimed.

Term of patent 14 years

U.S. Cl. D10—39



354,013

LIQUID CHROMATOGRAPH ANALYZER

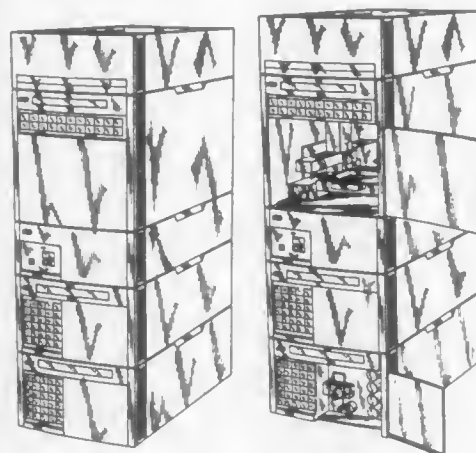
Atsushi Ninomiya; Seiji Kamimura; Isamu Takekoshi, all of Tokyo; Hiroonori Kaji, Katsuta; Hideo Seki, Ibaraki, and Kaoru Hagiya, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 6,835

Claims priority, application Japan, Oct. 21, 1992, 4-30603

Term of patent 14 years

U.S. Cl. D10—81

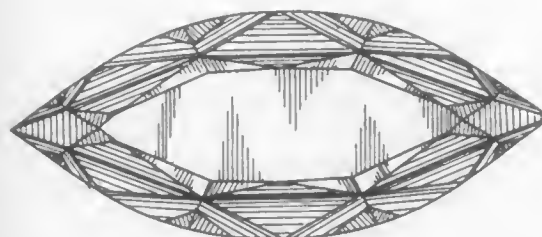
354,014
DIAMOND

Shlomo Cohen, 32 Ben Yehuda Street, Netanya, Israel

Filed Apr. 1, 1993, Ser. No. 6,577

Term of patent 14 years

U.S. Cl. D11—90



354,015

SMOKE DETECTOR

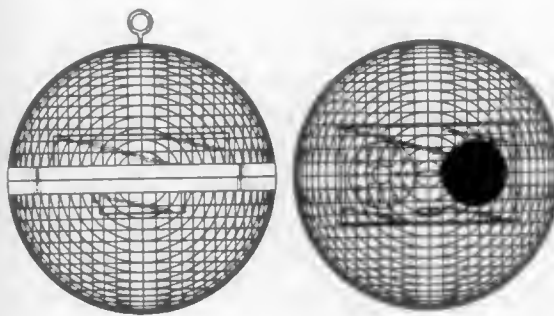
Paul Sims, 902 Penn Pines Blvd., Clifton Heights, Pa. 19018, and

John Gilroy, 2242 Manor Ave., Upper Darby, Pa. 19082

Filed Apr. 5, 1994, Ser. No. 20,903

Term of patent 14 years

U.S. Cl. D10—106

354,016
EARRING

Thomas Schubert, Pforzheim, Germany, assignor to Breuning Schmuckwarenfabrik, Pforzheim, Germany

Filed Aug. 19, 1991, Ser. No. 747,233

Term of patent 14 years

U.S. Cl. D11—42



354,017

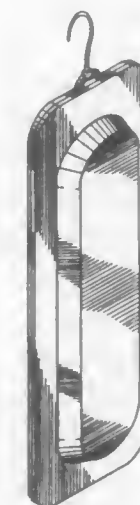
CONDOM CONTAINER PENDANT

Claudia B. Brown, 208 W 151 St #A60, New York, N.Y. 10039, and Terry L. Johnson, 202 Monroe St., Hoboken, N.J. 07307

Filed Aug. 5, 1993, Ser. No. 11,466

Term of patent 14 years

U.S. Cl. D11—43



354,018

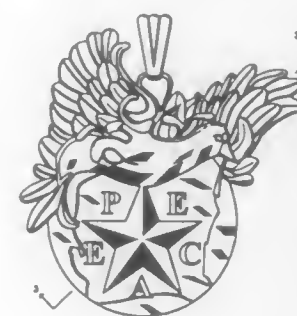
MEDALLION

Claire A. Martin, 80 Douglas La., 6-B, Prescott, Ariz. 86301

Filed Aug. 2, 1993, Ser. No. 11,277

Term of patent 14 years

U.S. Cl. D11—107

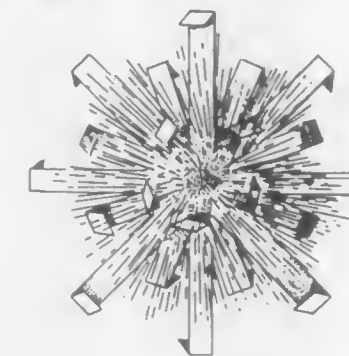
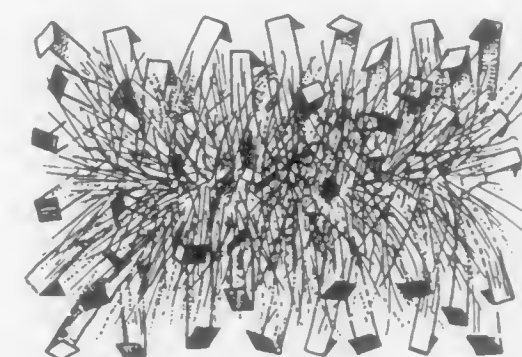
354,019
GARLAND

Kevin Young, Bensalem, Pa., assignor to F. C. Young & Co., Inc., Yardley, Pa.

Filed Apr. 29, 1994, Ser. No. 22,085

Term of patent 14 years

U.S. Cl. D11—119



354,020

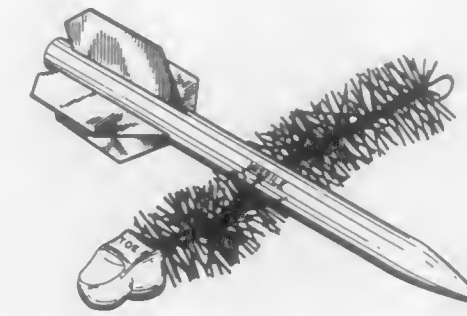
CHRISTMAS ORNAMENT

Andrew J. Lewis, 1419 Sunrise St., Elmont, N.Y. 11003

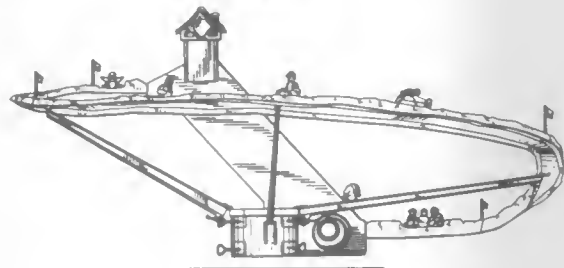
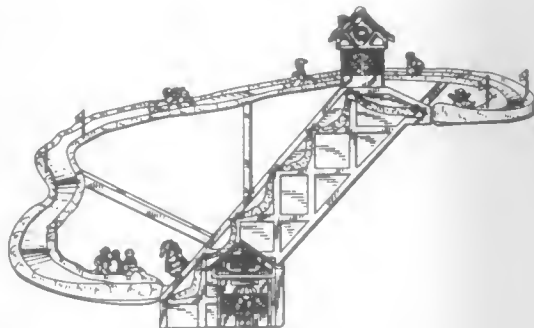
Filed Sep. 9, 1993, Ser. No. 12,761

Term of patent 14 years

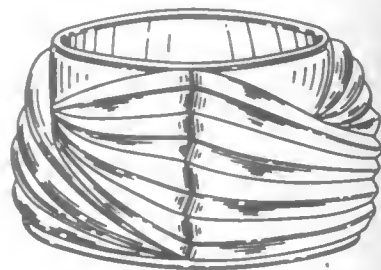
U.S. Cl. D11—125



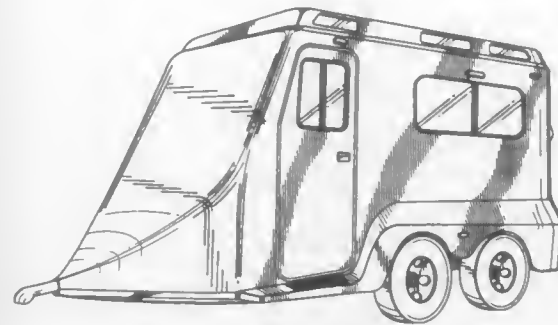
354,021
**COMBINED CHRISTMAS TREE STAND AND HOLIDAY
 ACTION DISPLAY**
 Karen T. Kielbasa, Hong Kong, Hong Kong, assignor to Mr.
 Christmas, Inc., New York, N.Y.
 Filed Dec. 7, 1992, Ser. No. 2,330
 Term of patent 14 years
 U.S. Cl. D11—130.1



354,022
**SUPPORT BASE FOR ORNAMENTAL DISPLAY
 HOUSING**
 Jack Hon, Taipei, assignor to Giftex Ltd., Chantilly, Va.
 Filed Dec. 9, 1993, Ser. No. 16,167
 Term of patent 14 years
 U.S. Cl. D11—164



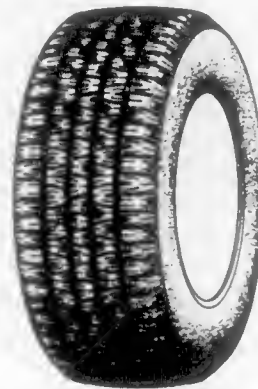
354,023
SMALL HORSE TRAILER
 R. Bruce Romesburg, 11 Apple Hill, Sandy, Utah 84092
 Filed Nov. 16, 1992, Ser. No. 1,483
 Term of patent 14 years
 U.S. Cl. D12—102



354,024
**BICYCLE CONNECTOR PORTION FOR CONNECTING
 TO TUBULAR MEMBERS**
 Edward H. Giard, Jr., 2960 Dorothy Rd., Aurora, Ill. 60504
 Filed Apr. 19, 1993, Ser. No. 7,328
 Term of patent 14 years
 U.S. Cl. D12—117



354,025
TIRE
 Eileen A. McKisson, Akron, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
 Filed Aug. 27, 1993, Ser. No. 12,311
 Term of patent 14 years
 U.S. Cl. D12—146



354,026
TIRE
 Eileen A. McKisson, Akron, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
 Filed Aug. 27, 1993, Ser. No. 12,313
 Term of patent 14 years
 U.S. Cl. D12—146



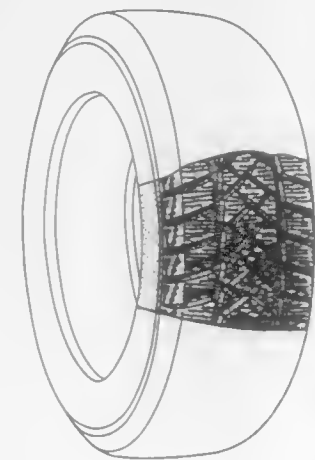
354,028
TIRE
 John A. Hutz, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
 Filed Oct. 22, 1993, Ser. No. 14,552
 Term of patent 14 years
 U.S. Cl. D12—146



354,027
TIRE
 Paul P. Grosskopf, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
 Filed Sep. 30, 1993, Ser. No. 13,740
 Term of patent 14 years
 U.S. Cl. D12—146



354,029
VEHICLE TIRE
 Karl G. Voigt, Rodenbach, and Dieter Krenz, Linsengericht, both of Germany, assignors to SP Reifenwerke GmbH, Hanau am Main, Germany
 Filed Jun. 8, 1993, Ser. No. 9,354
 Claims priority, application Germany, Dec. 9, 1922, 9209102
 Term of patent 14 years
 U.S. Cl. D12—147



354,030

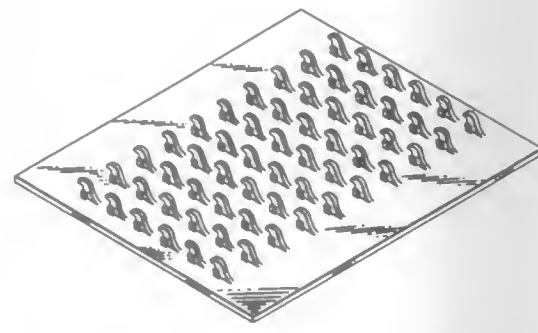
MALE TAPE FOR SURFACE FASTENER

Ryuichi Murasaki, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 7,156

Term of patent 14 years

U.S. Cl. D8—382

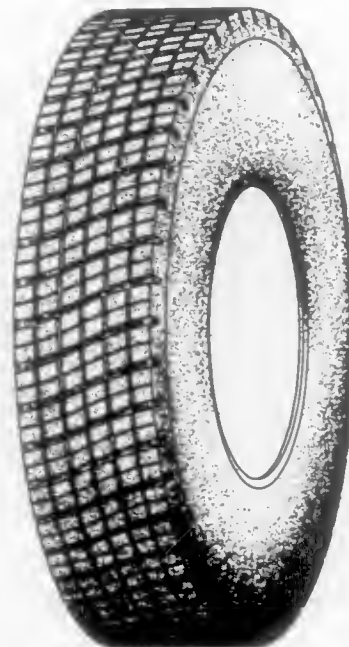
354,032
TIRE

Paul P. Grosskopf, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Sep. 30, 1993, Ser. No. 13,737

Term of patent 14 years

U.S. Cl. D12—147

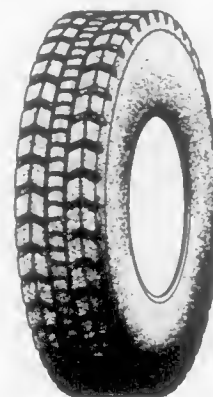
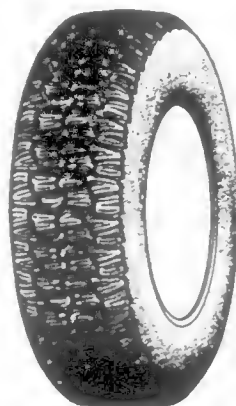
354,033
TIRE

Paul P. Grosskopf, and Patrick Lurois, both of Greenville, S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Oct. 13, 1993, Ser. No. 14,127

Term of patent 14 years

U.S. Cl. D12—147

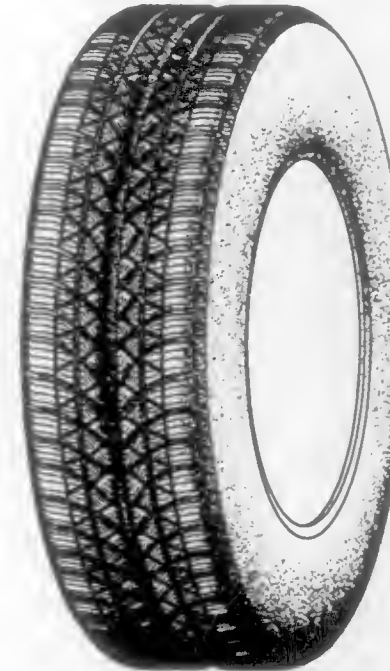
354,034
TIRE

Eileen A. McKisson, Akron, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Dec. 6, 1993, Ser. No. 16,047

Term of patent 14 years

U.S. Cl. D12—147

354,036
TIRE

Eileen A. McKisson, Richfield, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Aug. 27, 1993, Ser. No. 12,310

Term of patent 14 years

U.S. Cl. D12—148

354,035
TIRE

Eileen A. McKisson, Akron, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Dec. 6, 1993, Ser. No. 16,046

Term of patent 14 years

U.S. Cl. D12—147



354,037

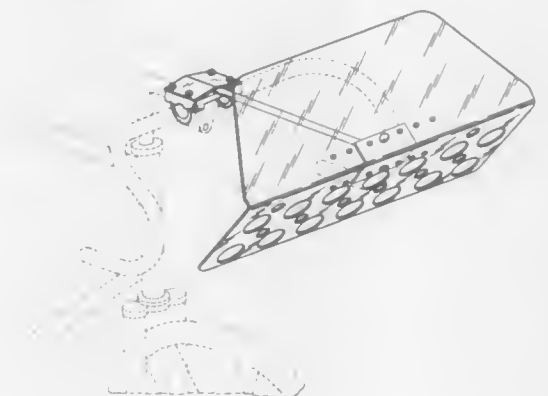
BICYCLE FAIRING

Martin L. Skirzynski, 7355 Bock Ave., Stanton, Calif. 90680

Filed Dec. 22, 1992, Ser. No. 2,914

Term of patent 14 years

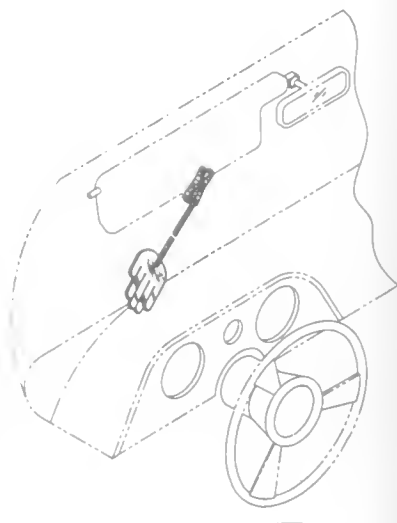
U.S. Cl. D12—182

VOL
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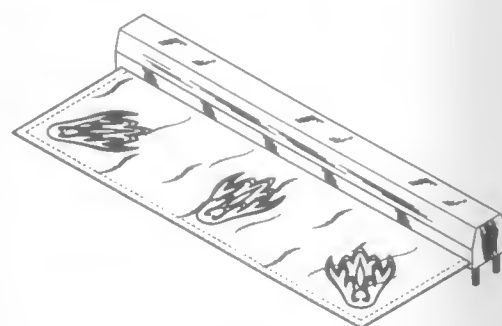
1995

UMI

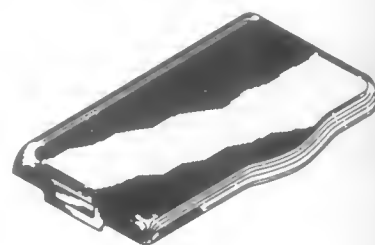
354,038
PORTABLE SUN AND GLARE SHIELD
 Jim Redhawk, P.O. Box 587, Fairplay, Colo. 80440
 Filed Nov. 15, 1993, Ser. No. 15,297
 Term of patent 14 years
 U.S. Cl. D12—191



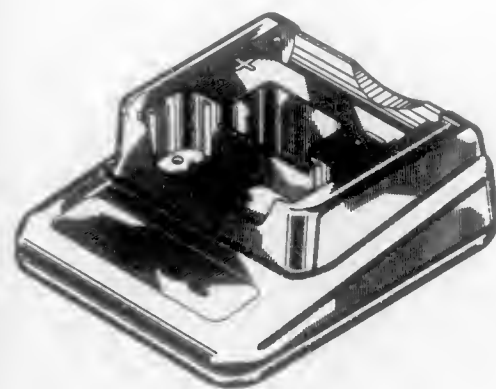
354,039
RETRACTABLE TRUCK COVER
 Tero T. Kuoppala, #5 Pengertie, 17200 Vaaksy Finland, Canada
 Filed Jan. 28, 1993, Ser. No. 4,167
 Term of patent 14 years
 U.S. Cl. D12—401



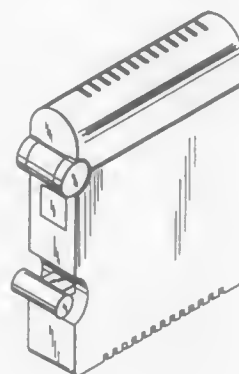
354,040
BATTERY FOR A PORTABLE COMMUNICATION DEVICE
 Craig F. Siddoway, Davie; Scott H. Richards, Plantation; Douglas D. Peebles, and Christian Schneider, both of Fort Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
 Filed Dec. 30, 1992, Ser. No. 3,053
 Term of patent 14 years
 U.S. Cl. D13—103



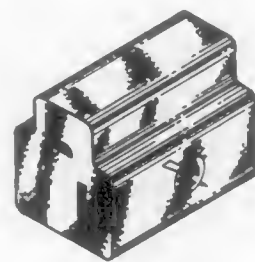
354,041
MULTI-FUNCTION RADIO PAGER CHARGER
 William J. Scheid, Coral Springs, and Robert Kurchart, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
 Filed Sep. 8, 1992, Ser. No. 941,632
 Term of patent 14 years
 U.S. Cl. D13—108



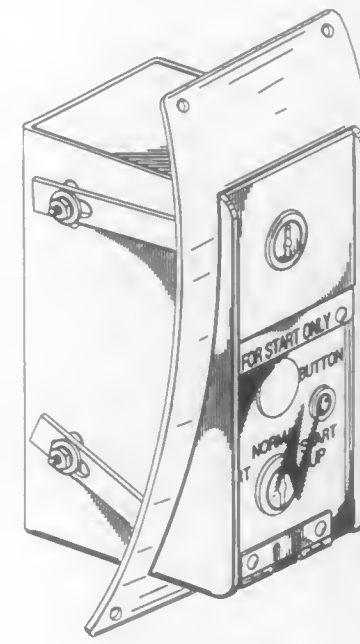
354,042
HOUSING FOR A PLUG-IN PRINTED CIRCUIT BOARD
 David A. Nogas, Ottawa, Canada, assignor to Mitel Corporation, Ontario, Canada
 Filed Feb. 2, 1993, Ser. No. 4,343
 Claims priority, application Canada, Aug. 5, 1992, 05-08-92-5
 Term of patent 14 years
 U.S. Cl. D13—162



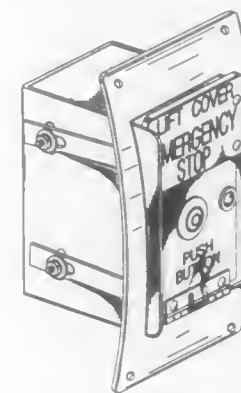
354,043
PLUG LOCK
 Bruce Noland, 2441 Old Bay Rd., Biloxi, Miss. 39531
 Filed Feb. 5, 1993, Ser. No. 4,486
 Term of patent 14 years
 U.S. Cl. D13—156



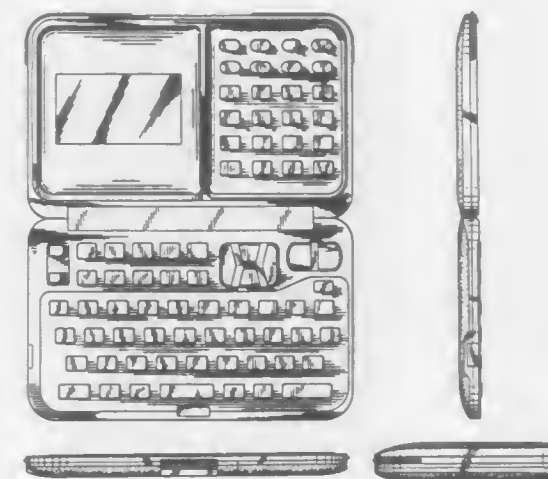
354,044
ESCALATOR SWITCH PANEL
 Robert M. Coronato, and Robert M. Coronato, Jr., both of Toccoa, Ga., assignors to PTL Equipment Manufacturing Co., Inc., Toccoa, Ga.
 Division of Ser. No. 3,811, Jan. 15, 1993, Pat. No. D. 348,623.
 This application Apr. 11, 1994, Ser. No. 21,159
 Term of patent 14 years
 U.S. Cl. D13—158



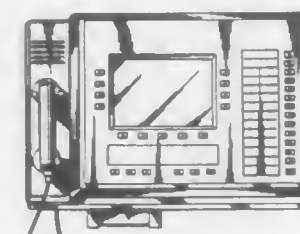
354,045
ESCALATOR SWITCH PANEL
 Robert M. Coronato, and Robert M. Coronato, Jr., both of Toccoa, Ga., assignors to PTL Equipment Manufacturing Co., Inc., Toccoa, Ga.
 Division of Ser. No. 3,811, Jan. 15, 1993, Pat. No. Des. 348,623.
 This application Apr. 11, 1994, Ser. No. 21,181
 Term of patent 14 years
 U.S. Cl. D13—158



354,046
ELECTRONIC ORGANIZER
 Hiroshi Sakaguchi, Kyoto; Shinsaku Hino, and Koji Nishida, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
 Filed Jun. 29, 1993, Ser. No. 10,075
 Claims priority, application Japan, Dec. 29, 1992, 4-39012
 Term of patent 14 years
 U.S. Cl. D14—100



354,047
INTERACTIVE DISPLAY TERMINAL
 William Leggate, Richmond, and Michael Sirols, Ottawa, both of Canada, assignors to Concourse Technologies Corporation, Richmond, Canada
 Filed Jul. 19, 1993, Ser. No. 11,161
 Term of patent 14 years
 U.S. Cl. D14—101



354,048

NOTEBOOK PERSONAL COMPUTER

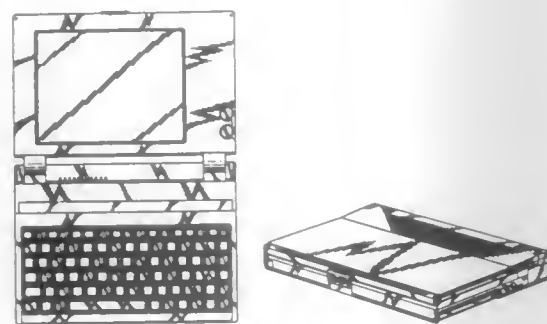
Koji Kimura; Yoshihiro Ueda; Takeshi Ichimaru, and Yukihiro Oashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 12, 1993, Ser. No. 6,883

Claims priority, application Japan, Nov. 19, 1992, 4-34154

Term of patent 14 years

U.S. Cl. D14—106



354,050

IMAGE SCANNER

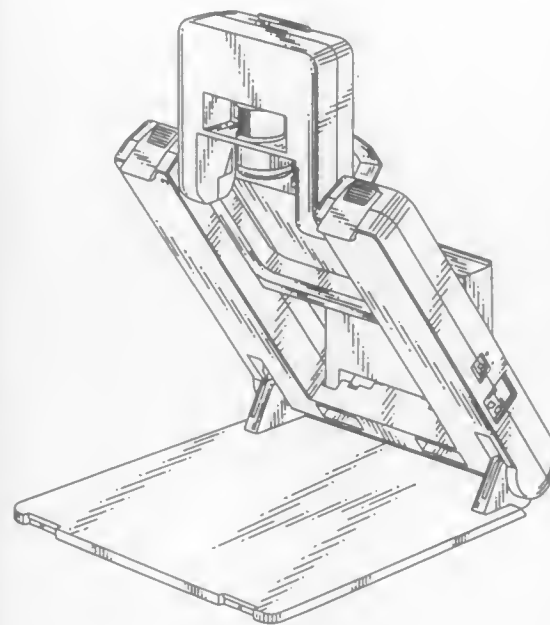
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company Ltd., Japan

Filed Sep. 29, 1992, Ser. No. 953,147

Claims priority, application Japan, Apr. 3, 1992, 4-9972

Term of patent 14 years

U.S. Cl. D14—107



354,049

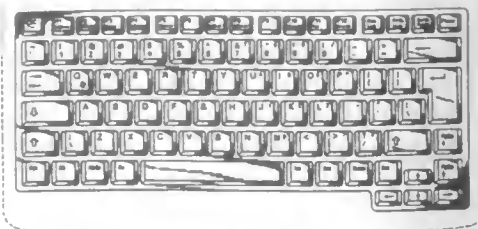
KEYBOARD FOR A PERSONAL NOTEBOOK COMPUTER

Robert Baitinger, Paderborn, and Franz Wandinger, München, both of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany

Filed Sep. 9, 1992, Ser. No. 942,069

Term of patent 14 years

U.S. Cl. D14—115



354,051

IMAGE SCANNER

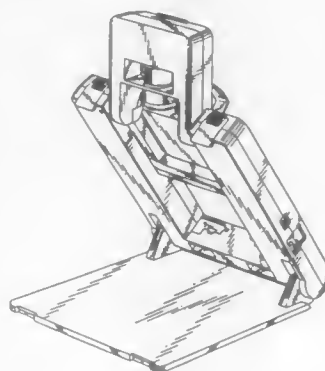
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company, Limited, Japan

Filed Sep. 29, 1992, Ser. No. 953,148

Claims priority, application Japan, Apr. 3, 1992, 4-9971

Term of patent 14 years

U.S. Cl. D14—107



354,052

VIDEO DISPLAY

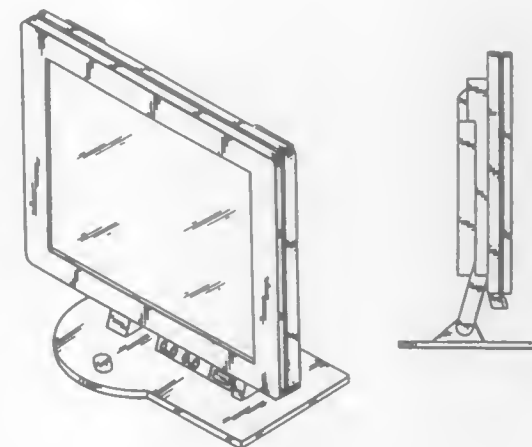
Toshitaka Imai, Sagami-hara, Japan, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 25, 1993, Ser. No. 10,070

Claims priority, application Japan, Dec. 25, 1992, 4-37998

Term of patent 14 years

U.S. Cl. D14—113



354,054

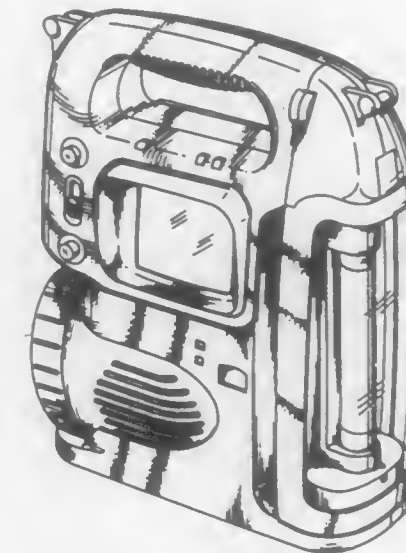
LIQUID CRYSTAL TELEVISION COMBINED WITH FLUORESCENT LANTERN, RADIO, SEARCHLIGHT AND EMERGENCY SIREN

Junji Shitama, Suite 305, Kamishiro Housing Corporation, No. 14, 4 chome 23 banchi, Nishitsutsujigaoka, Chohn-shi, Tokyo, Japan

Filed Nov. 8, 1993, Ser. No. 15,124

Term of patent 14 years

U.S. Cl. D14—129



354,055

TELEPHONE HANDSET HOUSING PANEL

Albert L. Nagele, Wilmette, and Nicholas Mischenko, Mt. Prospect, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill. Continuation-in-part of Ser. No. 732,322, Jul. 18, 1991, Pat. No. Des. 344,087. This application Mar. 27, 1992, Ser. No. 858,761. The portion of the term of this patent subsequent to Nov. 9, 2007, has been disclaimed.

Term of patent 14 years

U.S. Cl. D14—138



354,053

KEYBOARD

Chih-Tseng Kao, Taipei Hsien, Taiwan, Prov. of China, assignor to Monterey International Corp., Taipei Hsien, Taiwan, Prov. of China

Filed Apr. 28, 1993, Ser. No. 7,629

Term of patent 14 years

U.S. Cl. D14—115

VOL
1170ISS
1JA
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1995

UMI

354,056

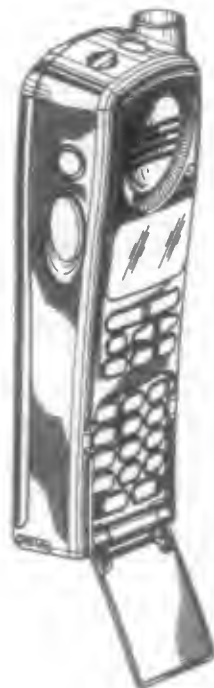
HOUSING FOR A PORTABLE RADIO/PHONE

Bruce A. Claxton, Coral Springs; Scott H. Richards, and Frank Tyneski, both of Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1993, Ser. No. 13,876

Term of patent 14 years

U.S. Cl. D14—138



354,058

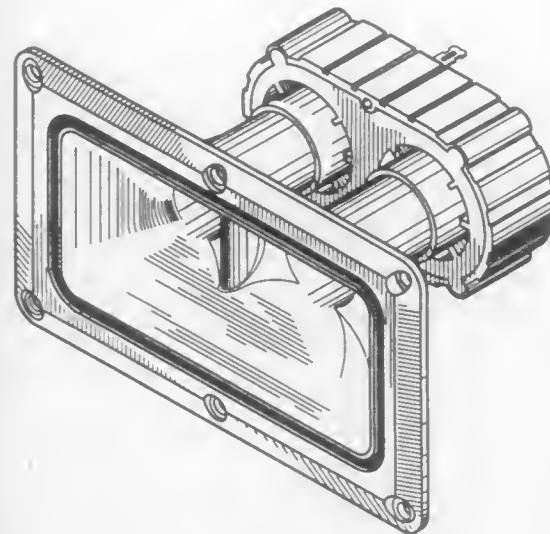
DUAL-DRIVER SPEAKER

Jerry L. Bohannon; Richard G. Foster, and Thomas H. Tichy, all of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 19, 1992, Ser. No. 932,043

Term of patent 14 years

U.S. Cl. D14—204



354,057

TELEPHONE BASE

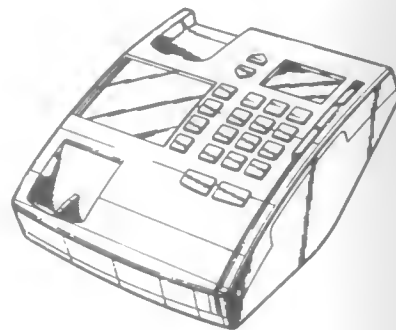
Graham Allen, Cheshire, England, assignor to British Telecommunications public limited company, London, England

Filed Dec. 23, 1993, Ser. No. 16,737

Claims priority, application United Kingdom, Jun. 29, 1993, 2032082

Term of patent 14 years

U.S. Cl. D14—151



354,059

REMOTE CONTROL UNIT

John S. Hendricks, Potomac, Md., assignor to Discovery Communications, Inc., Bethesda, Md.

Filed Dec. 3, 1992, Ser. No. 2,322

Term of patent 14 years

U.S. Cl. D14—218



354,060

ANTENNA PEDESTAL

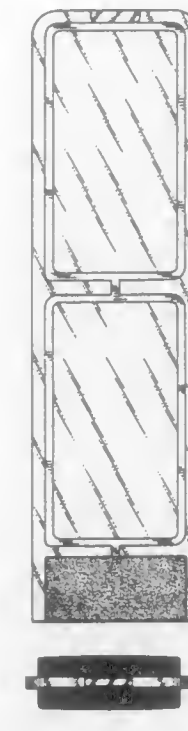
Hans Witzky, Pompano Beach, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Oct. 7, 1992, Ser. No. 205

The portion of the term of this patent subsequent to Sep. 27, 2011, has been disclaimed.

Term of patent 14 years

U.S. Cl. D14—230



354,062

MOBILE RADIOTELEPHONE HANDSET

Daniel L. Williams, Vernon Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1993, Ser. No. 8,542

Term of patent 14 years

U.S. Cl. D14—248



354,061

TELEPHONE HANDSET

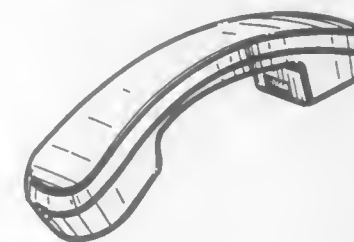
Guy E. Desbarats, London, United Kingdom, assignor to British Telecommunications plc, London, England

Filed Jan. 21, 1992, Ser. No. 823,429

Claims priority, application United Kingdom, Jul. 18, 1991, 2016076

Term of patent 14 years

U.S. Cl. D14—248



354,063

CHUTE CONNECTION TO A PULP PUMP

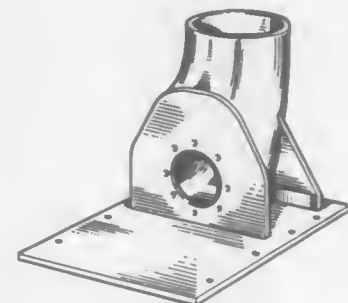
Rolf Ekholm, and Ulf Jansson, both of Karlstad, Sweden, assignors to Kamyr Aktiebolag, Karlstad, Sweden

Filed Nov. 1, 1993, Ser. No. 14,746

Claims priority, application Sweden, May 13, 1993, 931174

Term of patent 14 years

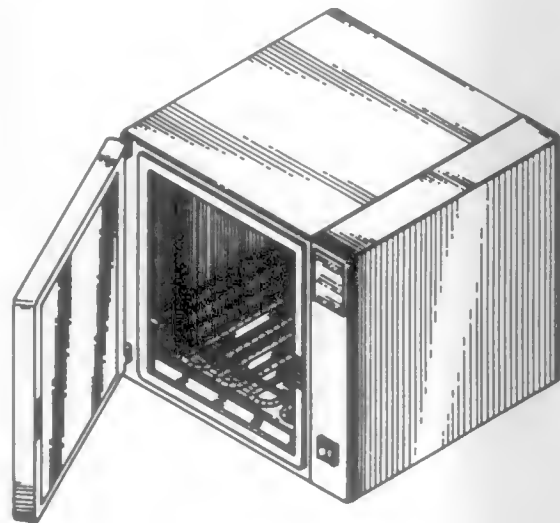
U.S. Cl. D15—7

VOL
1170ISS
1JA
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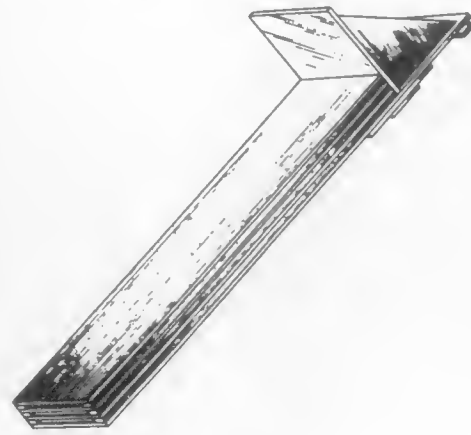
1995

UMI

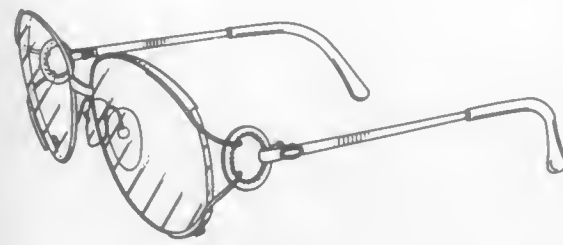
354,064
DEVICE FOR CHILLING LIQUID CONTAINERS
 William A. Sims, P.O. Box 1053, Hawthorne, Nev. 89415
 Filed May 12, 1993, Ser. No. 8,159
 Term of patent 14 years
 U.S. Cl. D15—88



354,066
SPECIFIC GRAVITY METAL SEPARATOR
 Frederick W. Young, 122 Wilder St., Niceville, Fla. 32578
 Filed Dec. 2, 1991, Ser. No. 801,083
 Term of patent 14 years
 U.S. Cl. D15—147



354,067
EYEGLASSES
 Adolf Lüzlbauer, München, Germany, assignor to Carrera Eye-
 wear Corporation, Norwood, N.J.
 Filed Nov. 20, 1992, Ser. No. 1,801
 Claims priority, application Germany, May 22, 1992,
 M9203824
 Term of patent 14 years
 U.S. Cl. D16—315



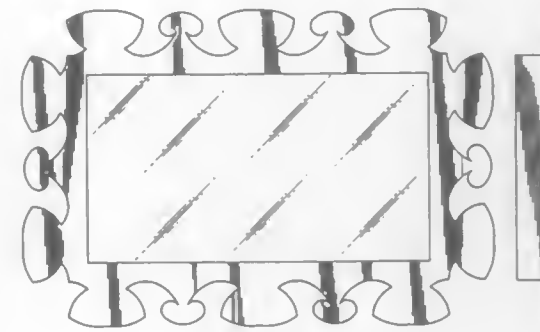
354,065
**ANGLED SEVERING HEAD WITH TAPERED
 CENTRALIZING ASSEMBLY**
 Wayne B. Hatcher, P.O. Box 305, Harvey, La. 70059
 Filed Sep. 27, 1993, Ser. No. 13,563
 Term of patent 14 years
 U.S. Cl. D15—139



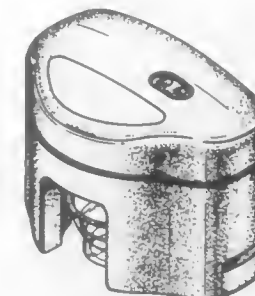
354,068
EYEGLASSES
 Richard W. Canavan, East Woodstock, Conn., and James D.
 Hall, Lincoln, R.I., assignors to Uvex Safety, LLC, Smith-
 field, R.I.
 Filed Oct. 30, 1992, Ser. No. 956
 Term of patent 14 years
 U.S. Cl. D16—313



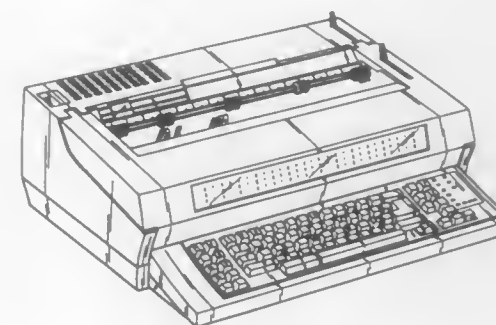
354,069
ILLUMINATED PHOTOGRAPHIC VIEWER
 Mark E. Bytner, 69 Denrose Dr., Amherst, N.Y. 14228
 Filed Nov. 23, 1992, Ser. No. 1,778
 Term of patent 14 years
 U.S. Cl. D16—225



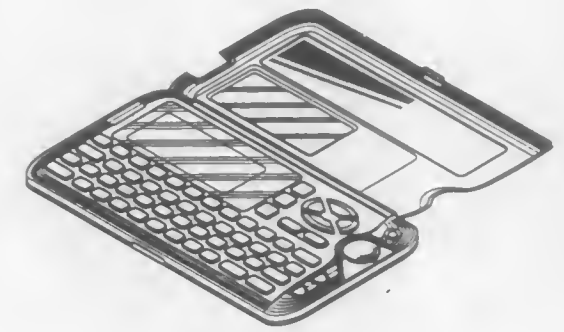
354,070
CONTACT LENS CLEANER
 Ching-Shih Chen, No. 20, Shuang-Hsi St., Sheh-Lin Dist., Tai-
 pei, Taiwan, Prov. of China
 Filed Jul. 26, 1993, Ser. No. 11,067
 Term of patent 14 years
 U.S. Cl. D16—331



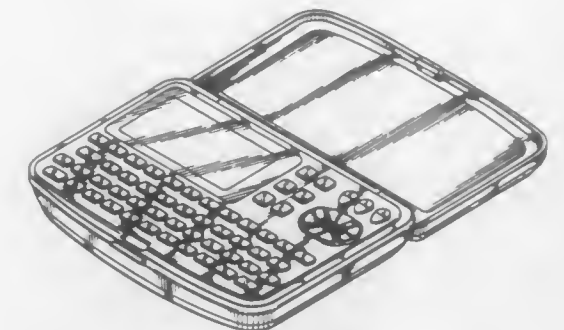
354,071
TYPEWRITER
 Freddie M. Lawson, Mt. Sterling; Peter J. Mendel, and Steven
 A. Silverstein, both of Lexington, all of Ky., assignors to
 Lexmark International, Inc., Greenwich, Conn.
 Filed Apr. 29, 1993, Ser. No. 7,748
 Term of patent 14 years
 U.S. Cl. D18—1



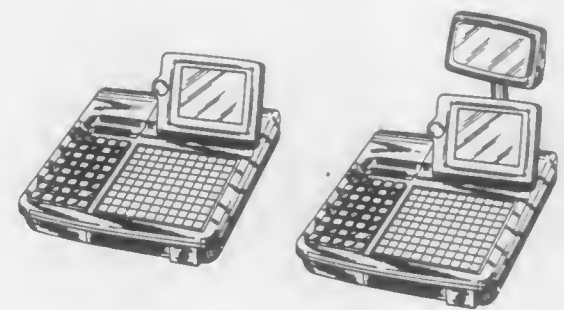
354,072
**ELECTRONIC CALCULATOR HAVING THE
 FUNCTIONS OF TELEPHONE BOOK, ADDRESS BOOK,
 CALENDAR, SCHEDULE BOOK AND MEMO BOOK
 WITH SPHYGMOMANOMETER**
 Takashi Yatabe, Higashimurayama, Japan, assignor to Casio
 Computer Co., Ltd., Tokyo, Japan
 Filed Jul. 19, 1993, Ser. No. 10,845
 Term of patent 14 years
 U.S. Cl. D18—2



354,073
**ELECTRONIC CALCULATOR HAVING THE
 FUNCTIONS OF TELEPHONE BOOK, ADDRESS BOOK,
 CALENDAR, SCHEDULE BOOK AND MEMO BOOK**
 Atsushi Shigemura, Tokyo, Japan, assignor to Casio Computer
 Co., Ltd., Tokyo, Japan
 Filed Oct. 26, 1993, Ser. No. 14,653
 Term of patent 14 years
 U.S. Cl. D18—2



354,074
ELECTRONIC CASH REGISTER
 Junichi Ono, and Atsushi Shigemura, both of Tokyo, Japan,
 assignors to Casio Computer Co., Ltd., Tokyo, Japan
 Filed Dec. 15, 1992, Ser. No. 2,560
 Term of patent 14 years
 U.S. Cl. D18—4



354,075

ELECTRONIC CALCULATOR

Kenji Takahata, Hino, and Junichi Ono, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 8, 1993, Ser. No. 10,466

Term of patent 14 years

U.S. Cl. D18—7



354,077

ELECTRONIC COPYING MACHINE

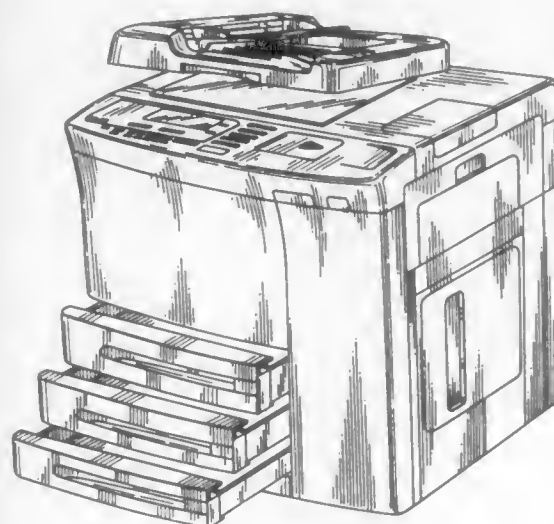
Shin-ichi Hiroki, Tokyo; Masahiko Kashiwabara, Yokohama, and Toru Okuyama, Isehara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 4, 1993, Ser. No. 5,418

Claims priority, application Japan, Sep. 4, 1992, 4-26040

Term of patent 14 years

U.S. Cl. D18—39

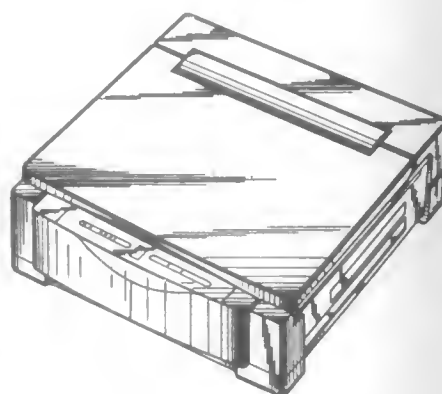
354,076
COPIER

Kouki Fukuda, and Naohiko Kamigaki, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 27, 1993, Ser. No. 12,901

Term of patent 14 years

U.S. Cl. D18—36



354,078

DOCUMENT FEEDER FOR AN ELECTRONIC COPYING MACHINE

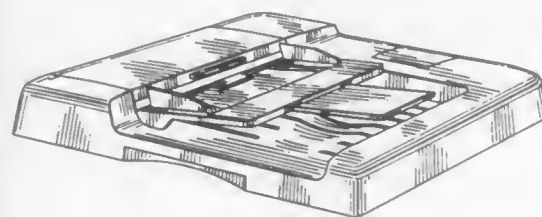
Shin-ichi Hiroki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1993, Ser. No. 4,240

Claims priority, application Japan, Jul. 31, 1992, 4-22763

Term of patent 14 years

U.S. Cl. D18—49



354,079

HANGER FOR A PARTITION WALL

Aaron L. Shapiro, 1514 Jaques Dr., Lebanon, Ind. 46052, assignor to Aaron L. Shapiro, Lebanon, Ind.

Filed Jul. 20, 1992, Ser. No. 917,479

The portion of the term of this patent subsequent to Mar. 15, 2008, has been disclaimed.

Term of patent 14 years

U.S. Cl. D8—373



354,081

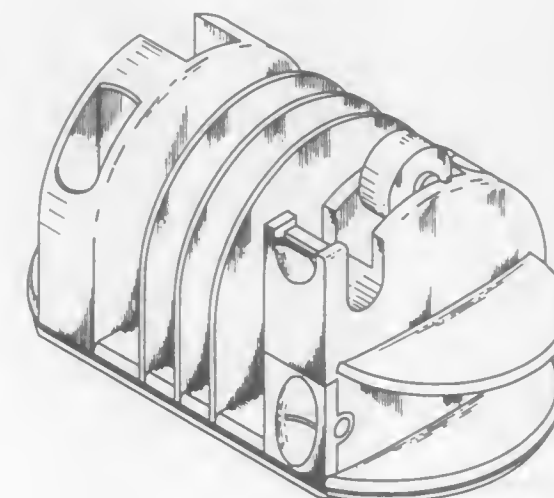
DESKTOP ORGANIZER

Bruce Ancona; Jane Ancona, both of 21 E. 22nd St., Apt. 6K, New York City, New York County, N.Y. 10010, and Jose Padron, 528 E. 85th St., New York, N.Y. 10028

Filed Jul. 27, 1993, Ser. No. 10,802

Term of patent 14 years

U.S. Cl. D19—78



354,080

WRITING INSTRUMENT

Jean F. Chevalier, Paris, France, assignor to BIC Corporation, Milford, Conn.

Filed Sep. 10, 1993, Ser. No. 12,818

Term of patent 14 years

U.S. Cl. D19—51



354,082

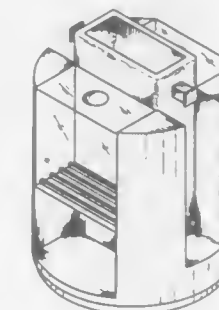
STATIONERY ORGANIZER

Bruce Ancona; Jane Ancona, both of 21 E. 22nd St., Apt. 6K, New York City, New York County, N.Y. 10010, and Jose Padron, 528 E. 85th St., New York, N.Y. 10028

Filed Jul. 27, 1993, Ser. No. 10,803

Term of patent 14 years

U.S. Cl. D19—78

VOL
1170

ISS

1

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3

1995

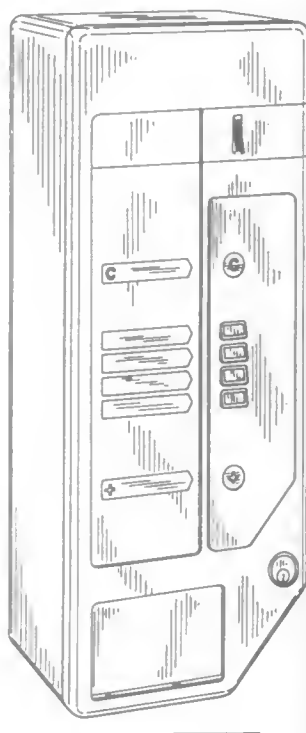
UMI

354,083

VENDING MACHINE

Georg Bergmann, and Peter von Maydell, both of 1000 Berlin 10
Fritschestrasse 22, Germany
Filed May 24, 1993, Ser. No. 5,257
Term of patent 14 years

U.S. Cl. D20—2

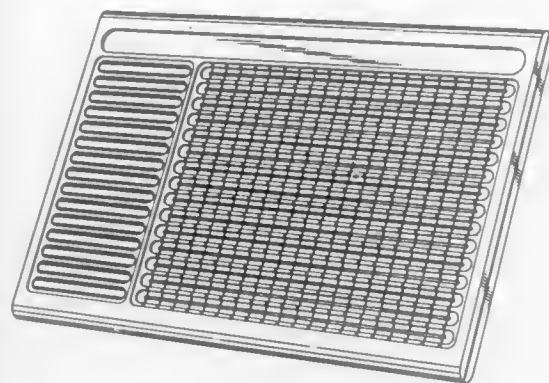


354,085

INDICATOR BOARD

James Hofman, 669 Garfield Ave., Lake Bluff, Ill. 60066
Continuation of Ser. No. 622,801, Dec. 5, 1990, abandoned. This
application Jun. 1, 1992, Ser. No. 892,422
Term of patent 14 years

U.S. Cl. D20—18

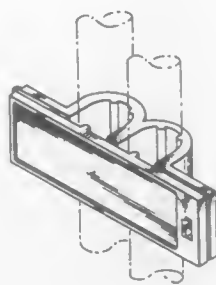


354,086

STETHESCOPE NAME TAG

Richard Rashman, Los Angeles, Calif., assignor to Prestige
Medical Corporation, Northridge, Calif.
Filed Apr. 14, 1994, Ser. No. 21,287
Term of patent 14 years

U.S. Cl. D20—22



354,087

FRAME FOR MESSAGE BOARD

Thomas Dunlap, Addison, and James Hofman, Bloomingdale,
both of Ill., assignors to Rubbermaid Office Products Inc.,
Maryville, Tenn.
Filed Apr. 15, 1994, Ser. No. 21,379
Term of patent 14 years

U.S. Cl. D20—42



354,084

ADDRESS SIGN

Joseph T. Leighton, 135 Monarch Bay, Dana Point, Calif. 92629
Filed Apr. 1, 1994, Ser. No. 20,782
Term of patent 14 years

U.S. Cl. D20—17

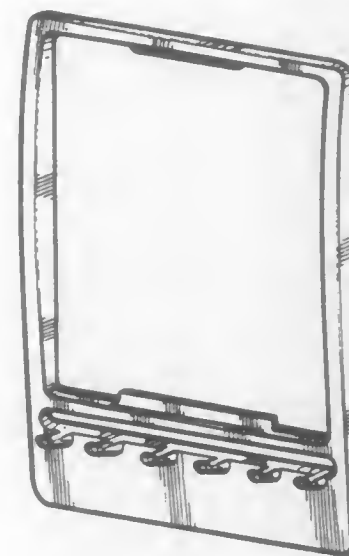


354,088

COMBINED KEYHOLDER AND MESSAGE HOLDER

Thomas Dunlap, Addison, and James Hofman, Bloomingdale,
both of Ill., assignors to Rubbermaid Office Products Inc.,
Maryville, Tenn.
Filed Apr. 15, 1994, Ser. No. 21,383
Term of patent 14 years

U.S. Cl. D20—42

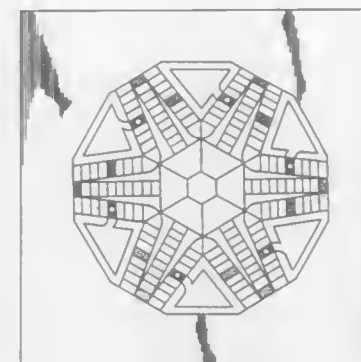


354,090

GAME BOARD

Steven D. Baunach, M.P. 0.23-L Mathews Rd., Washougal,
Wash. 98671
Filed Nov. 8, 1993, Ser. No. 15,102
Term of patent 14 years

U.S. Cl. D21—34

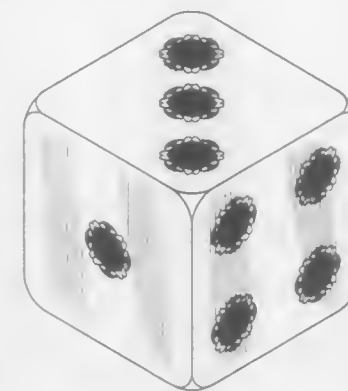


354,091

GAME DIE

Loretta Constance, 230 W. Midway Blvd., Broomfield, Colo.
80020
Filed Sep. 3, 1993, Ser. No. 12,470
Term of patent 14 years

U.S. Cl. D21—41

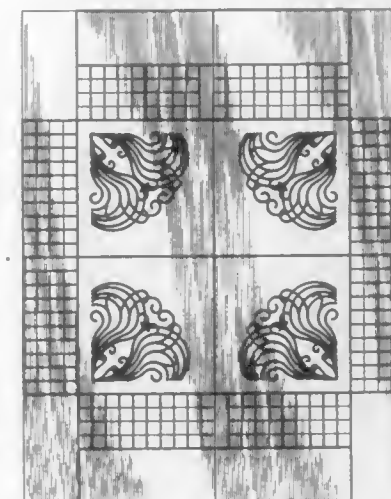


354,089

GAME BOARD

Gregory O. Rodriguez, and Patricia E. Rodriguez, both of Rte.
6, 1002 Vernon St., Waynesville, Mo. 65583
Filed Jun. 15, 1993, Ser. No. 9,492
Term of patent 14 years

U.S. Cl. D21—34



354,092

JOYSTICK

Patrick T. Ho, Kwai Chung, Hong Kong, assignor to STD Elec-
tronic International Ltd., Hong Kong, Hong Kong
Filed Oct. 20, 1993, Ser. No. 14,395
Term of patent 14 years

U.S. Cl. D21—48



354,093

WATER SQUIRTING TOY

John Hamlin, Redondo Beach, Calif., assignor to Namkung Promotions Inc., Costa Mesa, Calif.

Filed Aug. 9, 1993, Ser. No. 11,538

Term of patent 14 years

U.S. Cl. D21—59



354,095

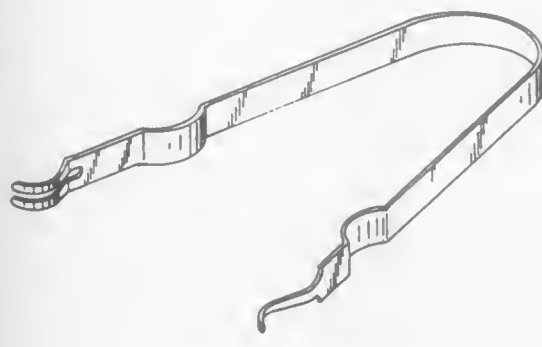
FISH MOUTH SPREADING TOOL

David M. Aspinwall, P.O. Box 143, Garrison, Minn. 56450

Filed Oct. 8, 1993, Ser. No. 13,972

Term of patent 14 years

U.S. Cl. D22—150



354,094

PUZZLE

Gary M. Klein, 5400 New Castle Ave. 43, Encino, Calif. 91316

Filed Jun. 4, 1993, Ser. No. 9,103

Term of patent 14 years

U.S. Cl. D21—104



354,096

DOLL

Alice M. Mackey, 9972 Imlay City Rd., Avoca, Mich. 48006-9641

Filed May 17, 1993, Ser. No. 8,381

Term of patent 14 years

U.S. Cl. D21—168



354,097

BODY FOR A DOLL

Alcina A. Dye, 4152-A Elm St., SW., Tacoma, Wash. 98439

Filed Jun. 28, 1993, Ser. No. 10,050

Term of patent 14 years

U.S. Cl. D21—171



354,099

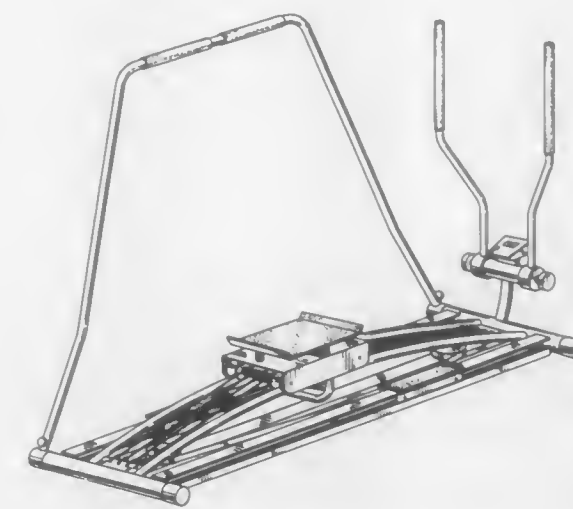
COMBINED CROSS-COUNTRY AND SLALOM EXERCISING MACHINE

Kevin Gerschevske; Rick Byrd, both of Springfield, and Chuck Brazeal, Mansfield, all of Mo., assignors to Stamina Products, Inc., Springfield, Mo.

Filed May 6, 1993, Ser. No. 8,020

Term of patent 14 years

U.S. Cl. D21—191



354,098

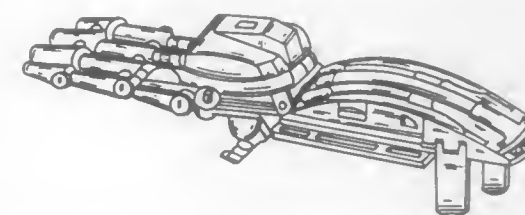
COMBINED TOY MECHANICAL GRIPPING ARM AND DETACHABLE CLAW UNIT

James S. W. Lee, Long Island, N.Y., and Chiu K. Kwan, Kowloon, Hong Kong, assignors to C. J. Associates, Ltd., Hung Hom, Hong Kong

Filed Jul. 22, 1992, Ser. No. 919,107

Term of patent 14 years

U.S. Cl. D21—189



354,100

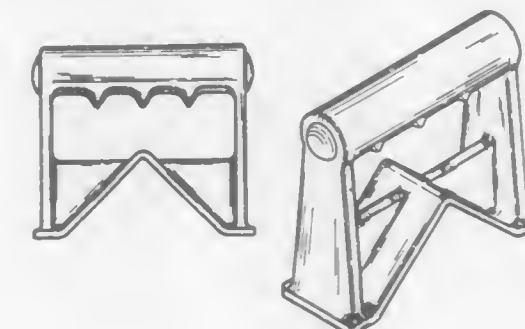
PUSHUP EXERCISE STAND

Fwu Tsay, and Shiun-Fang Zhang, both of No. 120-1, Lane 734, Sec 3, Sha Tyan Road, Dah Du Hsiang, Taichung, Taiwan, Prov. of China

Filed Jul. 26, 1993, Ser. No. 11,163

Term of patent 14 years

U.S. Cl. D21—198

VOL
1170

ISS

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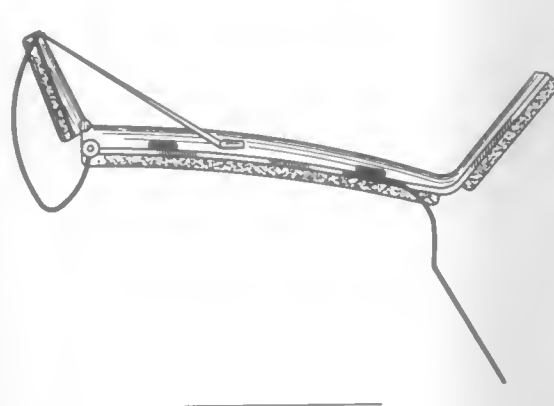
JA

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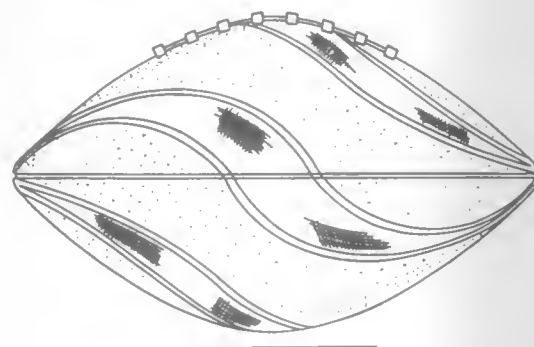
1995

UMI

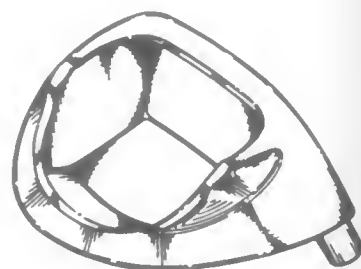
354,101
BASKETBALL TRAINING AID
Wardell Smith, III, 3409 Lenoir Ave., Louisville, Ky. 40216
Filed Jun. 1, 1993, Ser. No. 8,948
Term of patent 14 years
U.S. Cl. D21—201



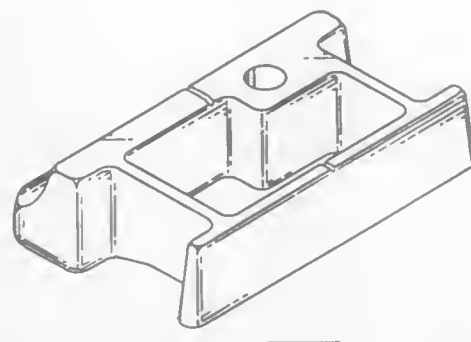
354,102
FOOTBALL
Warren R. Lehman, Victor, N.Y., assignor to Voit Sports Inc., Fairport, N.Y.
Filed Dec. 14, 1993, Ser. No. 16,357
Term of patent 14 years
U.S. Cl. D21—204



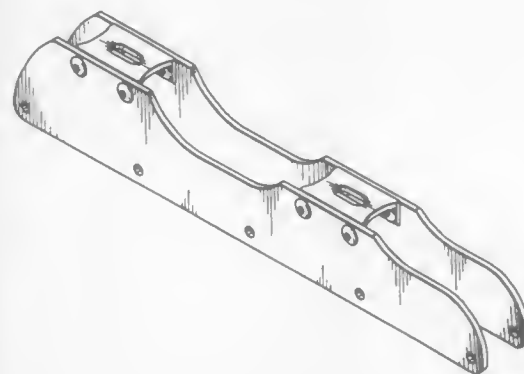
354,103
GOLF CLUB HEAD
Dillis V. Allen, Elgin, Ill., assignor to Vardon Golf Company, Inc., Elk Grove Village, Ill.
Filed Aug. 6, 1993, Ser. No. 11,507
Term of patent 14 years
U.S. Cl. D21—214



354,104
PUTTER CLUB HEAD
John L. Hardy, R.D. 1 Pine St., Rensselaer, N.Y. 12144
Filed Jan. 7, 1993, Ser. No. 4,838
Term of patent 14 years
U.S. Cl. D21—219



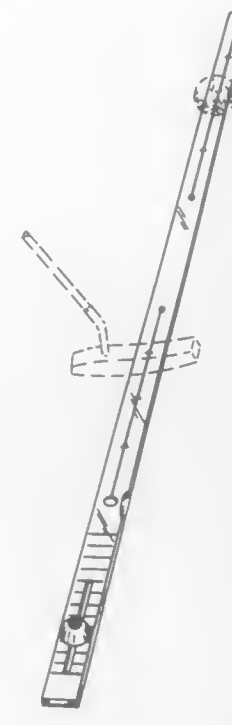
354,105
IN-LINE ROLLER SKATE FRAME
Antonin A. Meibock, Cleveland, Ohio, and John E. Svensson, Seattle, Wash., assignors to K-2 Corporation, Vashon, Wash.
Continuation-in-part of Ser. No. 94,576, Jul. 19, 1993, and a continuation-in-part of Ser. No. 100,745, Aug. 2, 1993, and a continuation-in-part of Ser. No. 120,629, Sep. 13, 1993. This application Jan. 11, 1994, Ser. No. 17,352
Term of patent 14 years
U.S. Cl. D21—226



354,106
POOL CUE SUPPORT GUIDE
Eugene R. Thompson, P.O. Box 10, Lone Rock, Iowa 50599
Filed Jul. 7, 1993, Ser. No. 10,449
Term of patent 14 years
U.S. Cl. D21—232



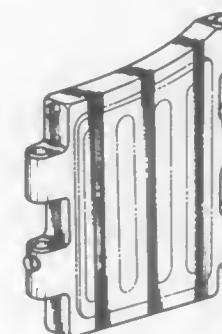
354,107
PUTTING AID
Jeffrey S. Kueng, and Cynthia M. Kneng, both of 2731 Mackubin St. 17, Roseville, Minn. 55113
Filed Jan. 21, 1993, Ser. No. 3,892
Term of patent 14 years
U.S. Cl. D21—234



354,109
REFLECTIVE SHEET UNIT FOR ARCHERY BOW LIMBS
Terry G. Martin, Walla Walla, Wash., assignor to Martin Archery, Inc., Walla Walla, Wash.
Filed Dec. 30, 1992, Ser. No. 3,222
Term of patent 14 years
U.S. Cl. D22—107



354,108
CURVED RECTANGULAR PANEL FOR PLAYGROUND STRUCTURE
Robert L. Houry, and Keith D. Ratliff, both of Farmington, Mo., assignors to The Little Tikes Company, Hudson, Ohio
Filed Nov. 8, 1993, Ser. No. 14,993
Term of patent 14 years
U.S. Cl. D21—240



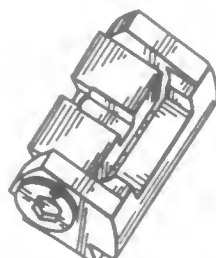
354,110
RUBBER GRIP FOR HANDGUN
Barry R. Scott, 41162 Montelima Ct., Murrieta, Calif. 92562, and Richard D. Wade, 9018 Ahmann Ave., Whittier, Calif. 90603
Filed Jun. 7, 1993, Ser. No. 9,115
The portion of the term of this patent subsequent to Oct. 18, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D22—108

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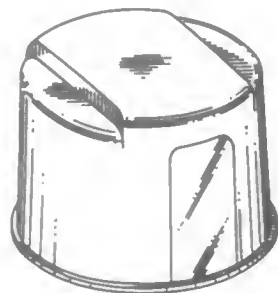
354,111
ADJUSTABLE REAR SIGHT FOR GUN
Sampo Karppinen, Lahnakuja 2, Fin-90550 Oulu, Finland
Filed Dec. 17, 1993, Ser. No. 16,454
Term of patent 14 years
U.S. Cl. D22—109



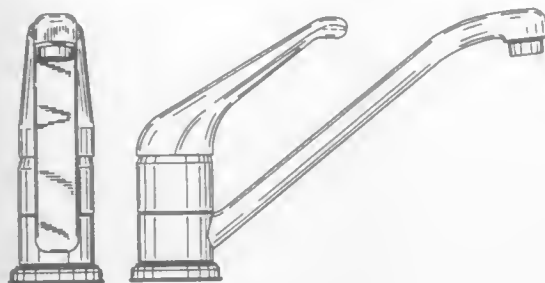
354,112
FISHING ROD HAND WARMER
Alfred J. Paggi, 608 Goodreau La., Glide, Oreg. 97443
Filed Feb. 11, 1993, Ser. No. 4,705
Term of patent 14 years
U.S. Cl. D22—139



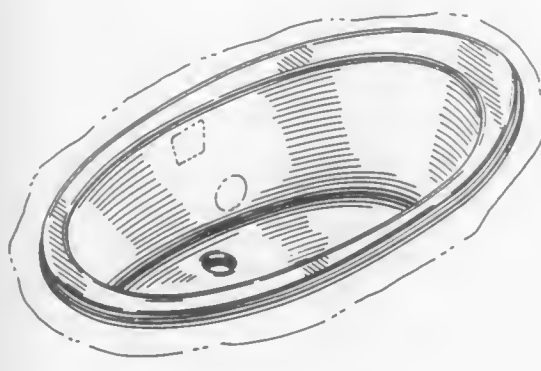
354,113
FLUSH VALVE COVER
Richard Nortier, Brookfield, and John F. Whiteside, Franklin Park, both of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.
Filed Jul. 22, 1992, Ser. No. 917,609
Term of patent 14 years
U.S. Cl. D23—233



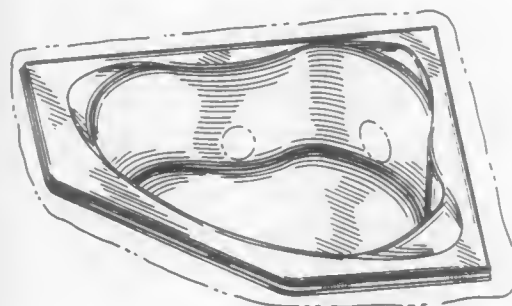
354,114
KITCHEN FAUCET
Darren M. Mark, Castaic, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 16, 1992, Ser. No. 914,066
Term of patent 14 years
U.S. Cl. D23—238



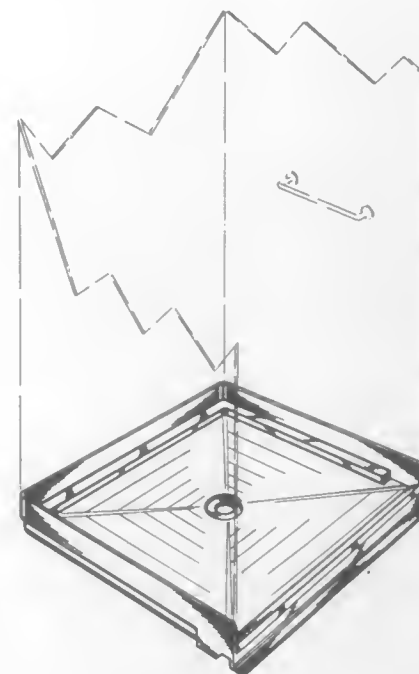
354,115
TUB FOR BATHING
William C. McKeone, Sheboygan Falls, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 9, 1993, Ser. No. 16,174
Term of patent 14 years
U.S. Cl. D23—277



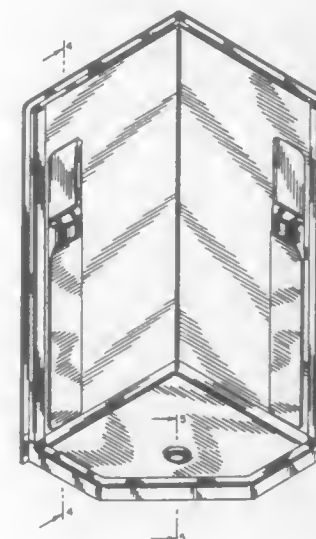
354,116
TUB FOR BATHING
William C. McKeone, Sheboygan Falls, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 9, 1993, Ser. No. 16,175
Term of patent 14 years
U.S. Cl. D23—277



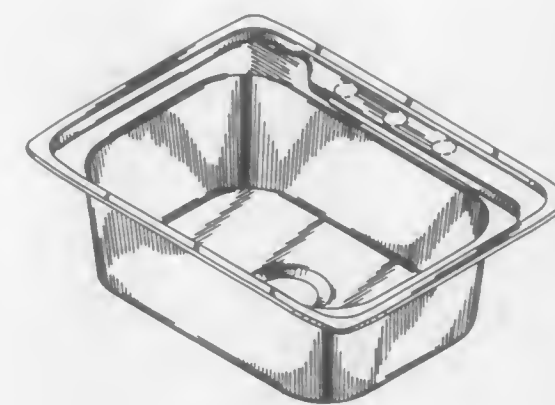
354,117
HANDICAP SHOWER BASE
Howard Nations, 1047 Thomas Rd., Crystal Springs, Miss. 39059
Filed Sep. 3, 1993, Ser. No. 12,526
Term of patent 14 years
U.S. Cl. D23—283



354,118
SHOWER ENCLOSURE
Alan D. Bengtson, Shorewood, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 23, 1993, Ser. No. 16,782
Term of patent 14 years
U.S. Cl. D23—283



354,119
SINK
Jon W. Hauser, II, Geneva, Ill., assignor to Elkay Manufacturing Company, Oak Brook, Ill.
Filed Aug. 7, 1992, Ser. No. 926,821
The portion of the term of this patent subsequent to Dec. 27, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—284



354,120
FURNITURE UNIT WITH WASH BASIN, MIRROR AND LATERAL DRAWERS
Max Pajetta, Milan, Italy, assignor to Ideal Standard S.p.A., Milan, Italy
Filed Oct. 29, 1993, Ser. No. 14,721
Claims priority, application Italy, May 4, 1993, RE930000011
Term of patent 14 years
U.S. Cl. D23—286



354,121
COMBINED TOILET, TOILET SEAT AND TOILET SEAT COVER

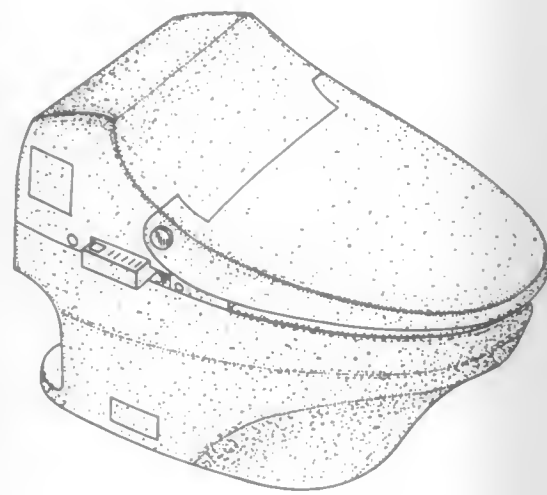
Seijiro Kawamura, and Noriko Yoshii, both of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka, Japan

Filed Oct. 30, 1992, Ser. No. 1,004

Claims priority, application Japan, May 1, 1992, 4-13066

Term of patent 14 years

U.S. Cl. D23—295

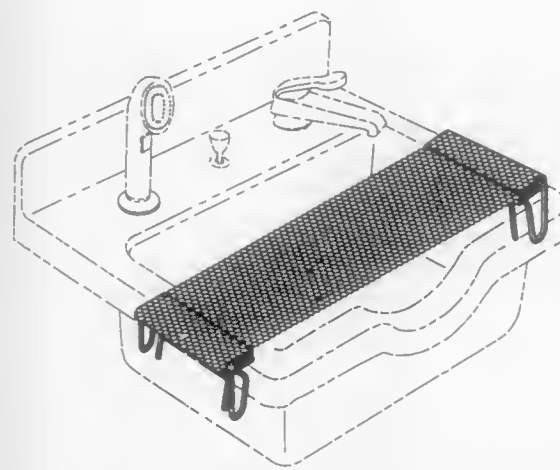


354,123
HEADREST
Cheryl T. Cope, 4441 Old Poole Rd., Lot #8, Raleigh, N.C. 27610

Filed Mar. 11, 1993, Ser. No. 5,802

Term of patent 14 years

U.S. Cl. D23—308



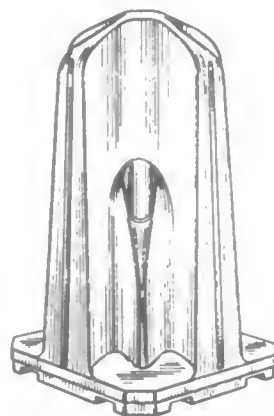
354,122
MOBILE URINAL UNIT
Joseph F. M. Carlier, Laren, Netherlands, assignor to Supercross B.A., Laren, Netherlands

Filed Jun. 30, 1993, Ser. No. 10,263

Claims priority, application Hague Agreement, Feb. 23, 1993, 23304

Term of patent 14 years

U.S. Cl. D23—302



354,124
TOILET BOWL DEFLECTOR
Arnold L. DeJonge, 1614 NW. 8th Ave., Homestead, Fla. 33030, and

Filed Oct. 7, 1992, Ser. No. 181

Term of patent 14 years

U.S. Cl. D23—310



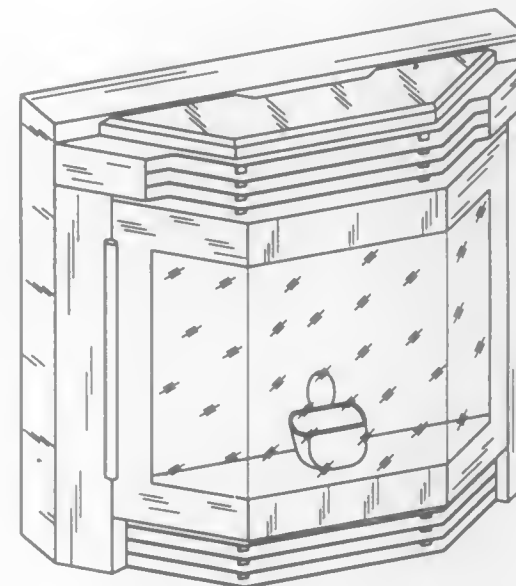
354,125
OVEN IN THE SHAPE OF A FIREPLACE
Karl S. Riener, Micheldorf, Austria, assignor to RIKKA Metallwareengesellschaft m.b.H., Micheldorf, Austria

Filed Oct. 7, 1991, Ser. No. 771,955

Claims priority, application Austria, Apr. 5, 1991, MU830/91; Apr. 5, 1991, MU831/91; Apr. 5, 1991, MU832/91; Apr. 5, 1991, MU833/91; Apr. 5, 1991, MU834/91; Apr. 5, 1991, MU835/91; Apr. 5, 1991, MU836/91; Apr. 5, 1991, MU837/91

Term of patent 14 years

U.S. Cl. D23—343

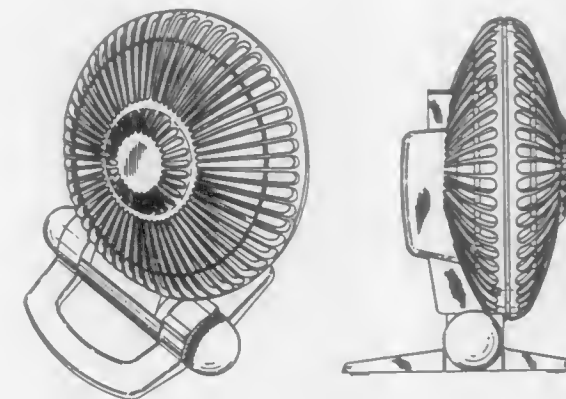


354,127
PORTABLE ELECTRIC FAN
Joseph M. Cunning, Cohasset, Mass., assignor to Holmes Products Corp., Milford, Mass.

Filed Jan. 3, 1994, Ser. No. 17,077

Term of patent 14 years

U.S. Cl. D23—382



354,126
HUMIDIFIER MANIFOLD FOR A VENTILATOR
BREATHING CIRCUIT

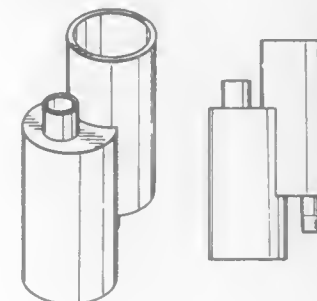
Burrell E. Clawson, 2425 Sunset Dr., and James Weigl, 18815 Hermosa St., both of Riverside, Calif. 92506

Filed Jun. 29, 1993, Ser. No. 10,127

The portion of the term of this patent subsequent to Nov. 1, 2008, has been disclaimed.

Term of patent 14 years

U.S. Cl. D23—358



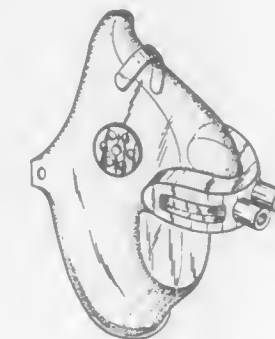
354,128
COMBINATION MASK AND BREATHING APPARATUS ADAPTOR

Laney T. Rinehart, P.O. Box 4706, Panama City, Fla. 32401

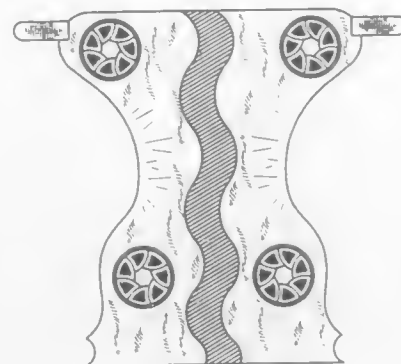
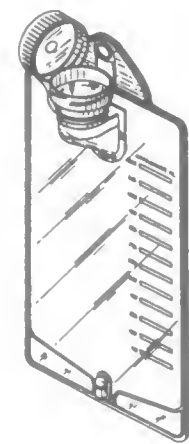
Filed Jan. 21, 1993, Ser. No. 3,894

Term of patent 14 years

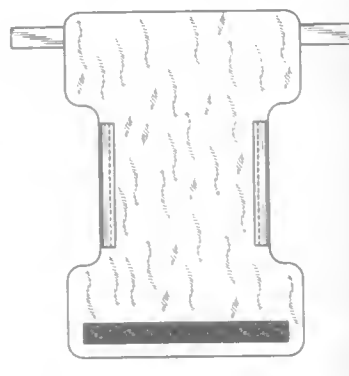
U.S. Cl. D24—110.1



- 354,129
ENTERAL FEEDING BAG
Lawrence A. Salvadori, San Diego, Calif., assignor to The Jon K. Minor, 1691 Stokes St. Apt. 3, San Jose, Calif. 95126
Kendall Company, Mansfield, Mass.
Filed Oct. 15, 1992, Ser. No. 494
Term of patent 14 years
U.S. Cl. D24—118
- 354,132
DIAPER WITH WETNESS INDICATOR
Filed Jul. 26, 1993, Ser. No. 11,083
Term of patent 14 years
U.S. Cl. D24—126



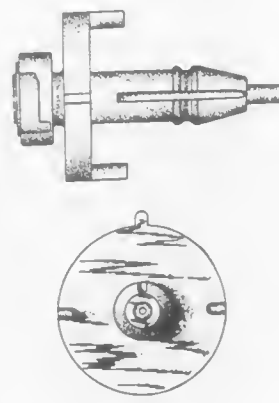
- 354,130
FORM FITTING CLOTH DIAPER
Antoinette M. Johnson, Rte. 5 Box 32A, Little Falls, Minn. 56345
Filed May 13, 1993, Ser. No. 8,249
Term of patent 14 years
U.S. Cl. D24—126



- 354,131
DIAPER
Lindsay M. Bates, 204 NW. 47th, Kansas City, Mo. 64116
Filed Jun. 24, 1993, Ser. No. 9,780
Term of patent 14 years
U.S. Cl. D24—126



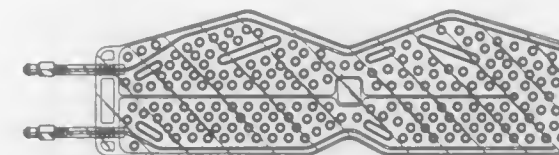
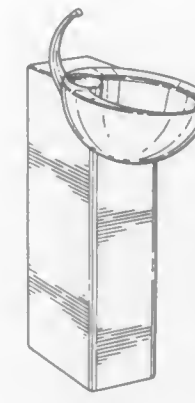
- 354,133
MEDICAL FLUID COUPLER
John A. Scavitto, Mendon, and David T. Healey, Reading, both of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.
Filed Dec. 9, 1993, Ser. No. 16,183
Term of patent 14 years
U.S. Cl. D24—129



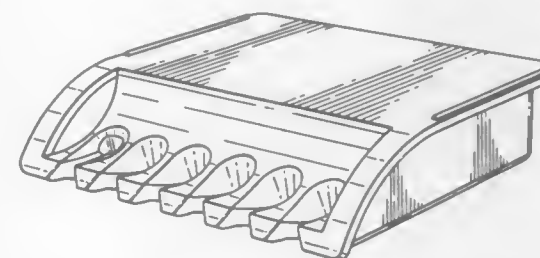
- 354,134
PINCETTE FOR AN OCULAR LENS
Toyoyasu Tanaka, Nagoya, Japan, assignor to Menicon Co., Ltd., Nagoya, Japan
Continuation-in-part of Ser. No. 816,255, Jan. 3, 1992, abandoned. This application Apr. 13, 1993, Ser. No. 6,997
Term of patent 14 years
U.S. Cl. D24—143



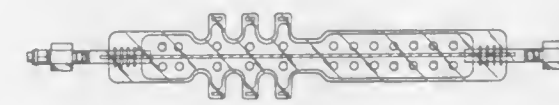
- 354,135
DENTAL EXPECTORANT BASIN
Tilman Phieps, Lorsch, and Klaus Stoeckl, Bensheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 20, 1993, Ser. No. 7,254
Claims priority, application Hague Agreement, Nov. 4, 1992, DM/001938
Term of patent 14 years
U.S. Cl. D24—177
- 354,138
HAND PAD FOR USE WITH A THERMAL THERAPY UNIT
Kevin A. Kelly, Galloway, Ohio, assignor to Danninger Medical Technology, Inc., Columbus, Ohio
Filed May 18, 1993, Ser. No. 8,493
Term of patent 14 years
U.S. Cl. D24—206



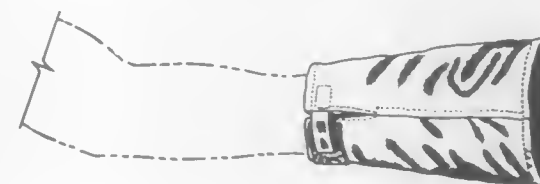
- 354,136
DENTAL INSTRUMENT TABLE
Tilman Phelps, Lorsch, and Klaus Stoeckl, Bensheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed May 4, 1993, Ser. No. 7,826
Claims priority, application WIPO, Nov. 4, 1992, DM/001940
Term of patent 14 years
U.S. Cl. D24—177



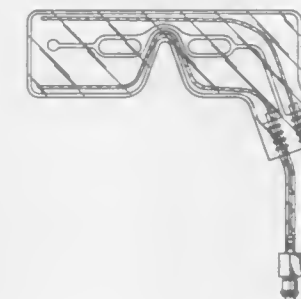
- 354,139
FINGER PAD FOR USE WITH A THERMAL THERAPY UNIT
Kevin A. Kelly, Galloway, Ohio, assignor to Danninger Medical Technology, Inc., Columbus, Ohio
Filed May 18, 1993, Ser. No. 8,581
Term of patent 14 years
U.S. Cl. D24—206



- 354,137
COMBINED PATIENT HAND AND WRIST RESTRAINT
Carol A. Neal, 1804 Heriford Rd., Columbia, Mo. 65202
Filed Nov. 5, 1993, Ser. No. 14,944
Term of patent 14 years
U.S. Cl. D24—190



- 354,140
EYE MASK PAD FOR USE WITH A THERMAL THERAPY UNIT
Kevin A. Kelly, Galloway, Ohio, assignor to Danninger Medical Technology, Inc., Columbus, Ohio
Filed May 18, 1993, Ser. No. 8,489
Term of patent 14 years
U.S. Cl. D24—207

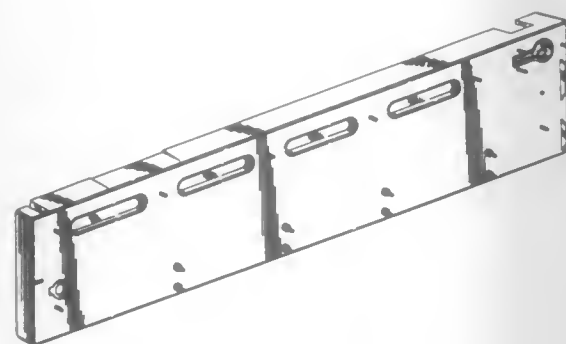


354,141
TEST TRAY

Ernest Bate, Great Chart; Philip Missing, Egerton; David Robinson, Folkestone, all of England; Donald E. Mahan, Grafton, Mass.; Kevin R. Kearney, Worcester, Mass., and Thomas M. Shimel, Franklin, Mass., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 22, 1993, Ser. No. 13,330
Term of patent 14 years

U.S. Cl. D24—227

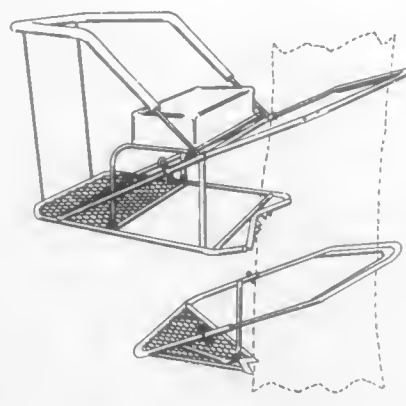


354,143
HUNTER'S TREE STAND

Claude A. Floyd, Jr., Rte. 2, Box 405-2, Norwood, N.C. 28128
Filed Jan. 27, 1993, Ser. No. 4,150

Term of patent 14 years

U.S. Cl. D25—62



354,144

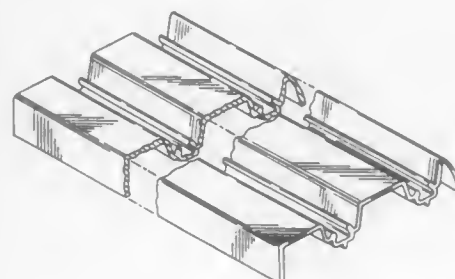
BYPASSING DOOR TRACK

Donald Kain, Woodland Hills, Calif., and Stephen J. Jaspersen, Fort Wayne, Ind., assignors to The Stanley Works, New Britain, Conn.

Filed Apr. 22, 1993, Ser. No. 7,454

Term of patent 14 years

U.S. Cl. D25—125



354,142

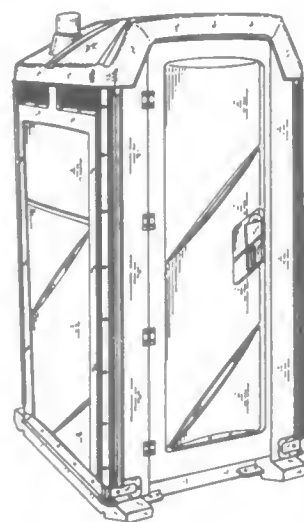
PORTABLE RESTROOM

George E. McNamara, Minneapolis; Ronald J. Holmstadt, Eden Prairie; Phillip R. Juare, Brooklyn Center; Douglas W. Hart, Long Lake; Douglas E. Loebertmann, Shakopee, and John E. Paul, Elk River, all of Minn., assignors to Satellite Industries, Inc., Plymouth, Minn.

Filed Jan. 22, 1993, Ser. No. 3,959

Term of patent 14 years

U.S. Cl. D25—16



354,145

FLUORESCENT LAMP

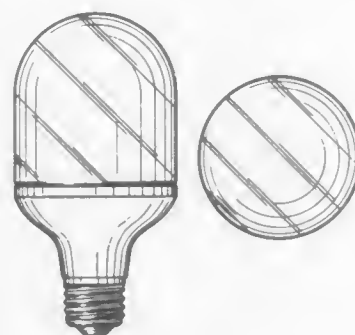
Takeshi Matsumura, and Shiro Iida, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Oct. 7, 1993, Ser. No. 13,953

Claims priority, application Japan, Apr. 8, 1993, 5-10619

Term of patent 14 years

U.S. Cl. D26—3



354,146

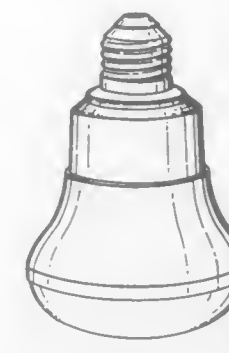
FLUORESCENT REFLECTOR LAMP

Leon F. Chamberlain, Mentor, Ohio, and Calogero Di Gesu, Stanmore, England, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1993, Ser. No. 16,444

Term of patent 14 years

U.S. Cl. D26—3



354,147

DUAL HEADLAMP FOR BICYCLE

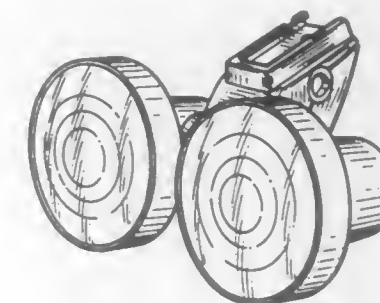
Takashi Ueda, Izumi, Japan, assignor to Cateye Co., Ltd., Osaka, Japan

Filed Feb. 8, 1994, Ser. No. 18,503

Claims priority, application Japan, Aug. 11, 1993, 5-24726

Term of patent 14 years

U.S. Cl. D26—28



354,149

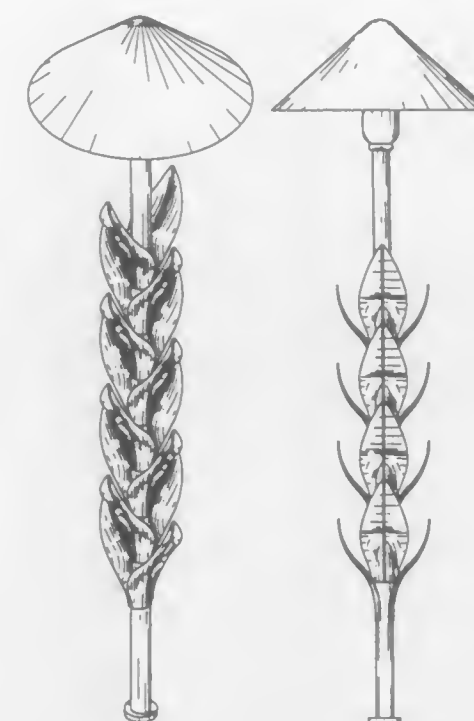
LANDSCAPE LIGHTING FIXTURE

Melissa S. Kay, Cleveland Heights, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio

Filed Mar. 8, 1993, Ser. No. 5,600

Term of patent 14 years

U.S. Cl. D26—68



354,150

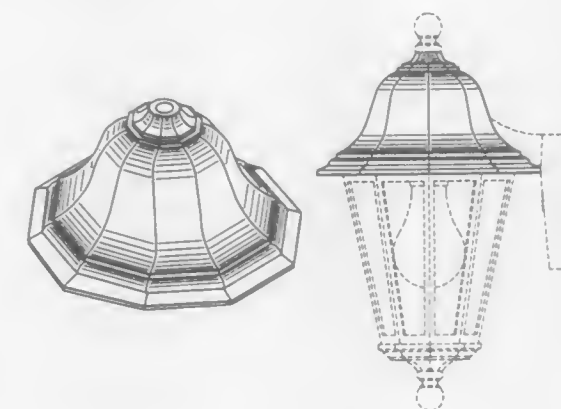
LIGHTING FIXTURE ROOF

David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio

Filed Mar. 22, 1994, Ser. No. 20,247

Term of patent 14 years

U.S. Cl. D26—113



354,148

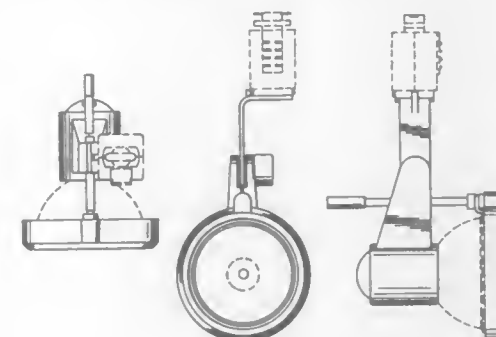
ADJUSTABLE TRACK LIGHTING FIXTURE WITH ADJUSTABLE LAMP RING

Scott L. Roos, Glenview, Ill., assignor to Juno Lighting, Inc., Des Plaines, Ill.

Filed Sep. 2, 1993, Ser. No. 12,493

Term of patent 14 years

U.S. Cl. D26—63



354,151

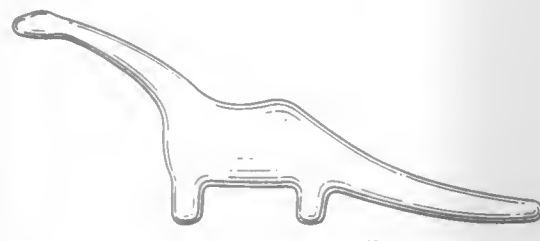
BATH BEAD

William D. Stone, West Hills, Calif., assignor to Banner Gelatin Products Corp., Chatsworth, Calif.

Filed Jan. 28, 1993, Ser. No. 4,163

Term of patent 14 years

U.S. Cl. D28—4



354,152

BLOW DRYER ATTACHMENT

David A. Mathews, 5112 Auckland Ave., North Hollywood, Calif. 91601

Filed Aug. 14, 1990, Ser. No. 567,342

Term of patent 14 years

U.S. Cl. D28—18



354,153

HAIRBAND

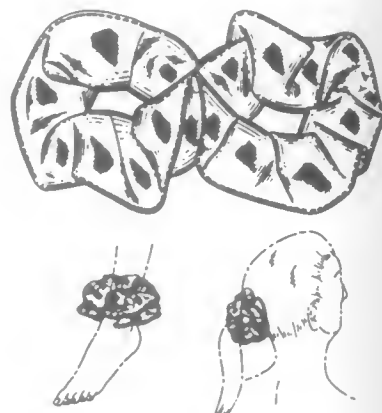
Maureen Marrese, New York, N.Y., assignor to Rapparama, Inc., New York, N.Y.

Division of Ser. No. Des. 1,370, Nov. 12, 1992, Pat. No. Des.

348,330. This application May 4, 1994, Ser. No. 22,397

Term of patent 14 years

U.S. Cl. D28—41



354,154

COMBINED DENTAL FLOSS APPLICATOR AND DISPENSER

Roy J. Topelko, 310 Christopher Drive, Unit 7, Cambridge, Ontario, Canada N1P 1B4

Filed Mar. 16, 1993, Ser. No. 5,981

Claims priority, application Canada, Oct. 13, 1992, 13-10-92-3

Term of patent 14 years

U.S. Cl. D28—64



354,155

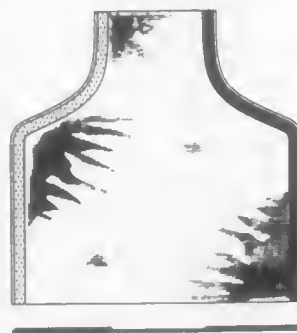
EXPLOSION SAFETY BOTTLE BLANKET

Eric I. Hrycyna, 6970 Giusti Rd. Box 833, Forestville, Calif. 95436

Filed May 3, 1993, Ser. No. 7,770

Term of patent 14 years

U.S. Cl. D29—100



354,156

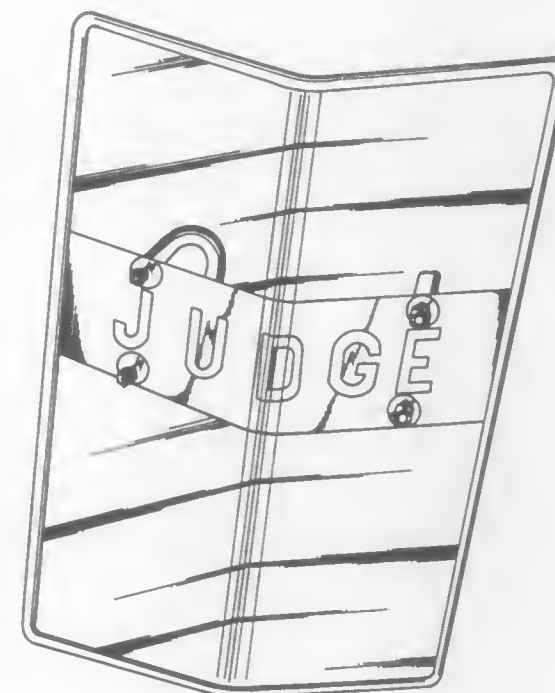
PAINT BALL JUDGE SHIELD

Rafael G. Tapia, 3206 Cullen Lake Shore Dr., Orlando, Fla. 32812

Filed Sep. 14, 1992, Ser. No. 948,754

Term of patent 14 years

U.S. Cl. D29—100



354,157

SADDLE ATTACHMENT FOR PROTECTING LEG AND CALF

Virginia C. Majewski, 32 Treasure Ave., Kensington, Conn. 06037

Filed Mar. 26, 1993, Ser. No. 6,430

Term of patent 14 years

U.S. Cl. D30—134



354,158

DOG LEASH

Stephen F. Trudeau, 1470 Grand Ave., Ste. D, San Diego, Calif. 92109

Filed Dec. 16, 1993, Ser. No. 16,401

Term of patent 14 years

U.S. Cl. D30—153

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LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF JANUARY, 1995

NOTE —Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A. Ahlstrom Corporation: *See—*
Engstrom, Folke; Hupa, Mikko; Lundqvist, Ragnar G.; and Lee, Yam Y., 5,378,443, Cl. 423-239.100.
- A. E. Staley Manufacturing Co.: *See—*
Chiou, Ruth G.; Brown, Cheryl C.; Little, Jeanette A.; Young, Austin H.; Schanefelt, Robert V.; Harris, Donald W.; Stanley, Keith D.; Coontz, Helen D.; Hamdan, Carolyn J.; Wolf-Rueff, Jody A.; Slowinski, Lori A.; Anderson, Kent R.; Lehnhardt, William F.; and Witczak, Zbigniew J., 5,378,286, Cl. 127-36.000.
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Taig, Alistair G., 5,378,120, Cl. 417-322.000.

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Langon, Bernard; Duval, Christian; and Vanacker, Alain, 5,378,338, Cl. 204-243.00R.

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O'Neill, Gary A.; and Goyak, George M., 5,378,367, Cl. 210-669.000.

Wei, Maurice W.; and Biresaw, Girma, 5,378,264, Cl. 95-154.000.

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Lee, Eun S.; and Yum, Su Il, 5,378,730, Cl. 514-535.000.

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Atwood, Harold; and Atwood, Thomas A., 5,378,133, Cl. 425-136.000.

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Kuhn, David G.; and Kameswaran, Venkataraman, 5,378,839, Cl. 540-544.000.

Strong, Henry L., 5,378,843, Cl. 544-215.000.

Todd, Martin; Haxell, Mark A.; and Lawrence, Gordon C., 5,378,617, Cl. 435-119.000.

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Meadows, Vernon; Thomas, George; and Anani, Anaba A., 5,378,551, Cl. 429-66.000.

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Hacker, Terry F., 5,377,859, Cl. 220-287.000.

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Yasuda, Kenji; Aoki, Masami; and Yokokura, Takefumi, 5,378,635, Cl. 436-111.000.

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Akiyama, Reiko; Suzuki, Chiaki; Eguchi, Atuhiko; and Aoki, Takayoshi, 5,378,572, Cl. 430-110.000.

Aoto, Jun; and Hirano, Yasuo, to Ricoh Company, Ltd. Development apparatus for developing latent electrostatic images. 5,379,097, Cl. 355-259.000.

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Aoyagi, Osamu: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ipppei; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

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Christie, Nick J.; and Jones, Samuel G., 5,378,242, Cl. 8-137.000.

Apple Computer, Inc.: See—
Othmer, Konstantin; and Leak, Bruce A., 5,379,129, Cl. 358-450.000.

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Ngan, Kenny K.; and Ong, Edith, 5,378,660, Cl. 437-247.000.

Vierny, Oskar U.; and Salzman, Philip M., 5,378,107, Cl. 414-786.000.

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Stobbs, Thomas J.; and Ward, James R., 5,377,720, Cl. 137-625.650.

APT, Inc.: See—
Zigler, Ane, 5,379,103, Cl. 356-73.000.

Ara, Masayasu; and Katoh, Akira, to Nihon Parkerizing Co., Ltd. Coating composition for metal. 5,378,291, Cl. 148-251.000.

Arad, Avi, to Toy Biz, Inc. Projectile-propelling toy and kit therefor. 5,377,655, Cl. 124-65.000.

Arahara, Kohzoh, to Canon Kabushiki Kaisha. Thin type optical memory medium and method for preparing the same. 5,378,516, Cl. 428-64.000.

Arai, Fumiaki: See—
Koike, Masahiro; Ueda, Hitoshi; Tateishi, Hiroshi; Shimota, Naohito; and Arai, Fumiaki, 5,378,739, Cl. 523-161.000.

Arai, Hiroshi: See—
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Yui, Tomoyuki; Watanabe, Toshio; Arai, Yoshihisa; and Johno, Masahiro, 5,378,396, Cl. 252-299.650.

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Arbuckle, Steven R.; Grant, Michael E.; Riedel, Richard; and Hammer, Roger L., to Boehringer Mannheim Corporation. Method for reading the concentration of a medically significant component of a biological fluid from a test strip. 5,379,214, Cl. 364-413.010.

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Argus Technologies, Ltd.: See—
Davidson, Christopher D., 5,379,206, Cl. 363-55.000.

Arima, Hideaki: See—
Ajika, Natsuo; and Arima, Hideaki, 5,378,643, Cl. 437-43.000.

Arimatsu, Seiji; Hase, Takakazu; and Ichinose, Yoshifumi, to Nippon Paint Co., Ltd. Photopolymerizable composition and photosensitive lithographic printing plate. 5,378,579, Cl. 430-281.000.

Arimoto, Kunio; Yoshida, Nobuo; Ohtani, Haruo; and Ikkaku, Yasuhiko, to Ishihara Chemical Co., Ltd.; and Ikkaku Industry Co., Ltd. Tire polishing and protective composition. 5,378,271, Cl. 106-236.000.

Arizona Board of Regents, The: See—
Bonjouklian, Rosanne; Vlahos, Chris J.; and Powis, Garth, 5,378,725, Cl. 514-453.000.

Arnaud, Roger: See—
Detaint, Jacques; Schwartzel, Jacques; Toudic, Yves; Philippot, Etienne; Cappelle, Bernard; Zarka, Albert; Goiffon, Aline; and Arnaud, Roger, 5,377,615, Cl. 117-1.000.

Arney, Michelle: See—
Peters, Jeffrey J.; Vidlund, Robert M.; and Arney, Michelle, 5,378,238, Cl. 604-99.000.

Arnold, Adolf: See—
Keunecke, Gerhard; Arnold, Adolf; and Butzke, Sabine, 5,378,827, Cl. 536-30.000.

Arnold, William C.; and Bealkowski, Richard, to International Business Machines Corp. Method and apparatus for providing enhanced data verification in a computer system. 5,379,342, Cl. 380-2.000.

Arnstein, Donald S.; and Lee, Jong W., to Comsat. Automatic gain control for reducing effects of jamming. 5,379,445, Cl. 455-13.400.

Aronsson, Tore; and Donnerdal, Ove, to Aktiebolaget Electrolux. Cutting or sawing machine. 5,377,632, Cl. 123-198.00E.

Arrighi, Silvana; Norelli, Francesco; Borri, Maria G.; and Bucci, Enzo, to Scavo S.p.A.; and Aima-Derivati S.p.A. Process for the isolation of highly purified factors IX, X and II from prothrombin complex or human plasma. 5,378,365, Cl. 210-635.000.

Arterbury, Bryant A.; Restarick, Henry L.; and Spangler, James E., to Halliburton Company. Sand screen completion. 5,377,750, Cl. 166-205.000.

Arturo Salice S.p.A.: See—
Salice, Luciano, 5,378,090, Cl. 408-42.000.

Arvanigian, Gregory: See—
Speese, Scott; and Arvanigian, Gregory, 5,377,600, Cl. 108-51.300.

Arvco Container Corporation: See—
Speese, Scott; and Arvanigian, Gregory, 5,377,600, Cl. 108-51.300.

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Cole, Jerald D.; Aryaeinejad, Rahmat; and Greenwood, Reginald C., 5,378,895, Cl. 250-390.040.

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Vetter, Helmut; Ruppenthal, Gerhard; and Steinbach, Klaus, 5,377,815, Cl. 198-476.100.

Asada, Hajime: See—
Yoshioka, Hideki; Asada, Hajime; and Fujita, Shinji, 5,378,611, Cl. 435-58.000.

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Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Akabane, Takeaki, 5,378,489, Cl. 426-602.000.

Asahi, Goro: See—
Ito, Makoto; Kashiwagi, Yoichiro; and Asahi, Goro, 5,379,021, Cl. 336-83.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: See—
Iki, Makoto; Matsuo, Hirofumi; Oono, Masahiro; and Noguchi, Masato, 5,379,105, Cl. 356-359.000.

Tani, Nobuhiro, 5,379,069, Cl. 348-333.000.

Asai, Yoshimi: See—
Komma, Tetsuko; Kimura, Kenji; Asai, Yoshimi; and Suzuki, Shiro, 5,379,369, Cl. 395-119.000.

Asaka, Kazuo: See—
Sakai, Takashi; Jinbo, Kishio; Makiyama, Koichi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, 5,378,576, Cl. 430-126.000.

Asakawa, Stuart D.; McClelland, Paul H.; Tappan, Ellen R.; Vandepoll, Richard R.; Trueba, Kenneth E.; and Chen, Chien-Hua, to Hewlett-Packard Company. Mask design for forming tapered inkjet nozzles. 5,378,137, Cl. 425-174.400.

Asano, Kazuo; and Takai, Toshihiro, to Tsukishima Kikai Co., Ltd. Mold clamping apparatus. 5,378,140, Cl. 425-451.200.

Asano, Keiichi: See—
Sugishima, Yoshio; Ine, Youichirou; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouichirou; Asano, Keiichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Asano, Teruo; Nobukawa, Shunji; Taniguchi, Etsuo; and Yokota, Tetsuro, to Daifuku Co., Ltd. Rack assembly. 5,377,851, Cl. 211-191.000.

Asano, Tetsuo: See—
Shimazu, Shigeaki; Asano, Tetsuo; Usui, Nobuaki; and Nakai, Kazuhiro, 5,379,350, Cl. 382-22.000.

ASCII Corporation: See—
Tanaka, Shinya; and Ito, Yoshiyuki, 5,379,054, Cl. 345-163.000.

Asghar, Salfard N., to Advanced Micro Devices, Inc. Digital signal processing apparatus with sequencer designating program routines. 5,379,388, Cl. 395-375.000.

Ash Grove Cement Company: See—
Reese, Theodore J.; Hansen, Eric R.; and Benoit, Michel R., 5,377,603, Cl. 110-346.000.

Ashiru, Olawotoyin A.; and Blunden, Stephen J. Electroplating. 5,378,346, Cl. 205-244.000.

Ashton, Paul: See—
Smith, Thomas J.; Ashton, Paul; and Pearson, Paul A., 5,378,475, Cl. 424-473.000.

Askew, Terry, to Western Wire Works, Inc. Particle screening system. 5,377,846, Cl. 209-405.000.

Asplund, Mark D., to Allied Signal Inc. Inertial measurement and navigation system using digital signal processing techniques. 5,379,223, Cl. 364-434.000.

Astec Industries, Inc.: See—
Brock, J. Don; Mize, Erbie G.; and Swanson, Malcom L., 5,378,060, Cl. 366-25.000.

Brock, J. Donald, 5,378,059, Cl. 366-7.000.

Swanson, Malcom L., 5,378,083, Cl. 405-128.000.

Asulab, S.A.: See—
Gratzel, Michael; Fraser, David; Zakeeruddin, Shaik M.; Randin, Jean-Paul; and Frenkel, Erik J., 5,378,628, Cl. 435-288.000.

AT&T Corp.: See—
Becker, Philippe C.; Bruce, Allan J.; DiGiovanni, David J.; and Lambrecht, Vincent G., Jr., 5,378,664, Cl. 501-40.000.

Bergmann, Ernest E., 5,377,900, Cl. 228-124.100.

Blyler, Lee L., Jr.; Coyle, Richard J., Jr.; Grimes, Gary J.; and Serafino, Anthony J., 5,379,358, Cl. 385-16.000.

Chandross, Edwin A.; Fleming, Debra A.; Johnson, David W., Jr.; MacChesney, John B.; and Walz, Frederick W., Jr., 5,379,364, Cl. 385-143.000.

Lopata, Thomas P., 5,377,896, Cl. 228-49.500.

ATL Corporation: See—
Kirk, Ronald L., 5,379,133, Cl. 359-15.000.

Atlantic Scientific: See—
Bird, Anthony O., 5,379,177, Cl. 361-118.000.

Atobe, Hiroshi: See—
Seto, Kaoru; and Atobe, Hiroshi, 5,379,126, Cl. 358-456.000.

Atwood, Harold; and Atwood, Thomas A., to AM Manufacturing Company. Dough extruding feeder. 5,378,133, Cl. 425-136.000.

Atwood, Thomas A.: See—
Atwood, Harold; and Atwood, Thomas A., 5,378,133, Cl. 425-136.000.

Audet, Yvonne. Method of playing a board game utilizing playing cards and tokens. 5,377,992, Cl. 273-271.000.

Augereau, Joel: See—
Blot, Philippe; Augereau, Joel; Bretagne, Joel; and Dittberner, Jean-Jacques, 5,378,134, Cl. 425-149.000.

Autobacs Seven Co., Ltd.: See—
Sumino, Kozo; and Toya, Masaaki, 5,377,889, Cl. 224-315.000.

Autoclave Engineers, Inc.: See—
Smith, Charles W., Jr.; Rosio, Larry R.; Shore, Stephen H.; and Karle, James A., 5,377,705, Cl. 134-95.300.

Autoflug GmbH & Co. Fahrzeugtechnik: See—
Reulein, Hermann; Liensdorf, Alfred; Lacher, Bernd; Eckmann, Peter; and Kock, Hans-Otto, 5,377,554, Cl. 74-2.000.

Automobile Association Limited, The: See—
Russell, Stephen R., 5,378,157, Cl. 434-379.000.

Auweter, Helmut: See—
Jachow, Harald; Schwab, Ekkehard; Koerner, Reinhard; Mueller, Norbert; Lehnert, Rudi; Ohlinger, Manfred; Auweter, Helmut; Jakusch, Helmut; Veitich, Ronald J.; and Bobrich, Michael, 5,378,383, Cl. 252-62.560.

Avi-Itzhak, Hadar, to Canon Research Center America, Inc. Method of OCR template enhancement by pixel weighting. 5,379,349, Cl. 382-15.000.

Aviv, Jonathan E.; and Martin, John H., to Columbia University in the City of New York. The Trustees of. Apparatus and method to objectively measure sensory discrimination thresholds in the upper aero digestive tract. 5,377,688, Cl. 128-747.000.

Awai, Takashi: See—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

Ayres, George E.; Black, Gary D.; Bowen, Larry; Brackmann, Warren A.; Keaveney, Benedict; and Kilpatrick, John D., to Rothmans, Benson & Hedges, Inc. Cigarette extinguishing storage device. 5,377,826, Cl. 206-246.000.

Azkoyen Industrial, S.A.: See—
Ibarrola, Jesus E., 5,377,809, Cl. 194-317.000.

Azuma, Toshiro; and Okada, Hideaki, to Kanzaki Kokyukoku Mfg. Co., Ltd. Axle driving apparatus having offset output shaft. 5,377,487, Cl. 60-487.000.

Baba, Hideki: See—
Minamikawa, Yoriko; and Baba, Hideki, 5,378,481, Cl. 426-99.000.

Baba, Masahiko: See—
Hirano, Yoshihiro; and Baba, Masahiko, 5,378,900, Cl. 117-201.000.

Babacz, Robert J.: See—
Thomas, H. Ronald; Babacz, Robert J.; and Newton, Robert R., 5,378,510, Cl. 427-563.000.

Babbitt, Richard W.: See—
Cummings, Michael; Cadotte, Roland, Jr.; Rachlin, Adam; and Babbitt, Richard W., 5,378,949, Cl. 327-113.000.

Babcock & Wilcox Company, The: See—
Daum, Edward D.; and Rowley, Daniel R., 5,378,253, Cl. 55-269.000.

Babel, Reiner: See—
Deeg, Rolf; Maurer, Eberhard; Klose, Sigmar; Kopfer, Bernhard; and Babel, Reiner, 5,378,638, Cl. 436-518.000.

Bach, David F.; and Hofman, William K., to Westinghouse Electric Corporation. Metal case. 5,378,057, Cl. 312-257.100.

Bache, John C., to Jones & Attwood Limited. Apparatus and method of washing screenings. 5,378,375, Cl. 210-772.000.

Bachelard, Roland; and Disson, Jean-Pierre, to Elf Atochem S.A. Production of whisker-free Si₃N₄ particulates by carbonitriding SiO₂. 5,378,666, Cl. 501-97.000.

Backof, Charles A.; and Muri, David L., to Motorola, Inc. Communication device with time assigned duplex operation. 5,379,279, Cl. 370-24.000.

Bacon, Glade B.; and Farnsworth, Heber P., to Fluke Corporation. Thermistor device with extended operating range. 5,379,022, Cl. 338-20.000.

Bacon, Glade B.; and Farnsworth, Heber P., to John Fluke Mfg. Co., Inc. Protective input circuit for an instrument. 5,379,176, Cl. 361-106.000.

Baebel, Ronald G., to Ultra Polymer Sciences, Inc. Mechanical donut and assembly. 5,378,203, Cl. 474-96.000.

Baekstrum, Peter. Axially adjustable chromatography column. 5,378,361, Cl. 210-198.200.

Baensch, Michael, to Mannesmann Aktiengesellschaft. Process for cold pilger rolling of thin-walled pipes. 5,377,515, Cl. 72-13.000.

Baer, Scott D.; and Woycheshin, Douglas W., to Kaspar Wire Works, Inc. Motor driven door release latch. 5,377,808, Cl. 194-216.000.

Baerenwald, Philip M.: See—
Bro, Jay M.; and Baerenwald, Philip M., 5,378,184, Cl. 446-99.000.

Bagchi, Pranab; Stermann, Melvin D.; and Cohen, Jacob I., to Eastman Kodak Company. Use of acid processed ossein gelatin and chain-

extended acid processed ossein gelatin as peptizers in the preparation of photographic emulsions. 5,378,598, Cl. 430-569.000.

Bagnulo, Luigi, to Ecoline Anticorrosion S.R.L. Inert anode for dissipation of continuous current. 5,378,336, Cl. 204-196.000.

Bahl, Ronald J. Football display case. 5,377,829, Cl. 206-315.900.

Bailey, F. Wally: See—
Benham, Elizabeth A.; Bailey, F. Wally; Wehmeyer, John D.; and McDaniel, Max P., 5,378,764, Cl. 525-240.000.

Baird, John: See—
Anderson, Samuel J.; Baird, John; and Kalfus, Martin A., 5,378,928, Cl. 257-787.000.

Bajwa, Joginder S.: See—
Nadelson, Jeffrey; Simpson, William R. J.; Anderson, Robert C.; and Bajwa, Joginder S., 5,378,728, Cl. 514-507.000.

Baker, Dwight. Gate valve. 5,377,955, Cl. 251-327.000.

Baker Hughes Incorporated: See—
Tibbitts, Gordon A., 5,377,773, Cl. 175-397.000.

Welling, Bruce L., 5,378,364, Cl. 210-512.100.

Bakker, Age: See—
Koerts, Kees; Bakker, Age; and Vianen, Gerardus M., 5,378,834, Cl. 536-127.000.

Baldur, Roman, to Forensic Technology WA1, Inc. Method and apparatus for monitoring and adjusting the position of an article under optical observation. 5,379,106, Cl. 356-375.000.

Balduzzi, Henry B.: See—
Otto, Nancy M.; Clough, Warren R.; and Balduzzi, Henry B., 5,377,496, Cl. 62-129.000.

Baldwin, Donald D.: See—
Pearce, Robert G.; and Baldwin, Donald D., 5,377,763, Cl. 166-367.000.

Baliu, Enrique F.: See—
Lawlis, Virgil B., Jr.; Heinsohn, Henry G.; and Baliu, Enrique F., 5,378,621, Cl. 435-183.000.

Balkovec, James M.; Black, Regina M.; and Bouffard, Frances A., to Merck & Co., Inc. Aza cyclohexapeptide compounds. 5,378,804, Cl. 530-317.000.

Balland, Jean, to Manufacture de Produits Chimiques Protex. Process of dyeing using reactive dyes with preliminary bleaching. 5,378,245, Cl. 8-543.000.

Ballivy, Gerard, to Universite de Sherbrooke. Method of instrumenting an already erected concrete structure and the so-instrumented structure. 5,377,548, Cl. 73-768.000.

Baltazar, Varujan; and Cromwell, John L., to Noranda Inc. Process for the electrochemical recovery of bismuth from an ion exchange eluent. 5,378,328, Cl. 204-105.00R.

Ban, Shichiro, to Book Loan Publishing Co., Ltd. Building blocks. 5,378,185, Cl. 446-124.000.

Ban, Shigeru: See—
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Bane, John C.: See—
Boreali, Jeffrey J.; and Bane, John C., 5,378,301, Cl. 156-344.000.

Bankert, Charles S.; Hahn, Soonkap; and Hui, Henry K., to Puritan-Bennett Corporation. Optical fiber pH microsensor and method of manufacture. 5,378,432, Cl. 422-82.070.

Banks, Stewart; Roders, George W.; Jamison, Mark D.; and Williamson, Nicholas, to Marlingford Holdings Limited. Dispenser having roller for dispensing fluid from a collapsible bag. 5,377,871, Cl. 222-41.000.

Barakat, Edmond H.; and Haig, Robert B., to International Business Machines Corp. Method and system for determining memory refresh rate. 5,379,400, Cl. 395-425.000.

Baravalle, Ugo, to FAPA S.p.A. Carrier apparatus for the transport of articles on the roof of a motor vehicle. 5,377,888, Cl. 224-309.000.

Barbee, Phil. Apparatus for setting hydraulic packers and for placing a gravel pack in a downhole oil and gas well. 5,377,749, Cl. 166-120.000.

Barber, William D.; Roemer, Peter B.; and Rohling, Kenneth W., to General Electric Company. Open gradient coils for magnetic resonance imaging. 5,378,989, Cl. 324-318.000.

Bard, Steven L.; Bendz, Gerald A.; Canestaro, Michael J.; Chapura, John R.; Frankoski, Edward J.; Horan, Michael S.; Jones, Jeffrey D.; Kamperman, James S.; Kjeldgaard, John R., Jr.; and McCreary, Jack M., to International Business Machines Corporation. Fluid treatment apparatus. 5,378,307, Cl. 156-639.000.

Bard-Wyers Company: See—
Wyers, Philip W., 5,377,885, Cl. 224-42.03R.

Bareiss, Alexander: See—
Merklein, Dieter; Ott, Harald; Schwind-Grellmann, Barbara; Siegel, Heinz; and Bareiss, Alexander, 5,377,580, Cl. 92-248.000.

Bark, Jeffrey E., to Little Rapids Corporation. Fitment system for attaching fluid collection devices to surgical drapes. 5,377,694, Cl. 128-849.000.

Barken, Israel. Ultrasound-laser surgery apparatus and method. 5,377,683, Cl. 128-660.030.

Barlow, George J.: See—
Peters, Arthur; Zelle, Richard C.; Carroll, Elmer W.; Barlow, George J.; Nibby, Chester M., Jr.; and Keeley, James W., 5,379,378, Cl. 395-200.000.

Barnavol, Charles. Locking clip for partition wall plates. 5,377,467, Cl. 52-238.100.

Barnavol, Charles, to A. Raymond & CIE. Sheet metal nut for blind fastening. 5,378,097, Cl. 411-38.000.

Barnes, Michael S.: See—
Toogood, Graham J.; and Barnes, Michael S., 5,377,717, Cl. 137-101.000.

Barnett, Dennis B.: See—
Sykes, Philip K.; and Barnett, Dennis B., 5,377,825, Cl. 206-232.000.

Barnett, Rebecca A.: See—
Salmon, Dennis J.; Barnette, D. Wayne; and Barnett, Rebecca A., 5,378,445, Cl. 423-301.000.

Barnette, D. Wayne: See—
Salmon, Dennis J.; Barnette, D. Wayne; and Barnett, Rebecca A., 5,378,445, Cl. 423-301.000.

Barr, Morton L.: See—
Suffis, Robert; Barr, Morton L.; Ishida, Kenya; Sawano, Kiyohito; Sato, Toshiya; and van Loveren, Augustinus G., 5,378,468, Cl. 424-401.000.

Barraza, Steven; Feldmeyer, Mark; Black, William; and Hassur, Thomas, to Unisys Corporation. Pry-in/pry-out disk drive receptacle. 5,379,184, Cl. 361-685.000.

Barre, Guy: See—
Guichard, Philippe; Grandvallet, Pierre; Barre, Guy; Hoek, Arend; and Boon, Andries Q. M., 5,378,351, Cl. 208-143.000.

Barten, Michael; and Toutaoui, Mustapha, to Otis Elevator Company. Automatic setting of the parameters of a profile generator for a high performance elevator door system. 5,378,861, Cl. 187-316.000.

Barth, Wolfgang: See—
Biewald, Joachim; Scheub, Volker; Holler, Holge; Fenkl, Karl; Hugel, Stefan; Rothaupt, Jorg; Schneider, Peter; Barth, Wolfgang; Moll, Hermann; and Pollmann, Horst, 5,377,788, Cl. 187-374.000.

Bartholomew, John J.: See—
Hart, Charles M.; Rogers, James D.; King, Harry L.; and Bartholomew, John J., 5,378,219, Cl. 492-48.000.

Barthmann, Ekkehard: See—
Weber, Georg; Pohl, Ludwig; Hittich, Reinhard; Plach, Herbert; Scheuble, Bernhard; Oyama, Takamasa; Rieger, Bernhard; Kurmeier, Hans A.; and Barthmann, Ekkehard, 5,378,395, Cl. 252-299.630.

BASF Aktiengesellschaft: See—
Besenke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,378,765, Cl. 525-330.500.

Fauth, Karl-Heinz; and Isbarn, Gunther, 5,378,779, Cl. 526-209.000.

Hagen, Helmut; Raatz, Peter; Walter, Helmut; and Landes, Andreas, 5,378,677, Cl. 504-104.000.

Mayer, Udo; and Degen, Hans-Juergen, 5,378,818, Cl. 534-758.000.

Maywald, Volker; Dietrich, Klaus; Kuekenhoefer, Thomas; Hamprecht, Gerhard; Feund, Wolfgang; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, 5,378,680, Cl. 504-270.000.

Nuebling, Christoph; von Deyn, Wolfgang; Theobald, Hans; Westphalen, Karl-Otto; Kardorff, Uwe; Walter, Helmut; Kappe, Thomas; and Gerber, Matthias, 5,378,679, Cl. 504-246.000.

Schuetz, Franz; Kuekenhoefer, Thomas; Wild, Jochen; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Gisela, 5,378,711, Cl. 514-311.000.

Sterzel, Hans-Josef, 5,378,792, Cl. 521-138.000.

BASF Corporation: See—
Czornij, Zenon P.; Carpenter, Clint; and DePue, Jeffrey, 5,378,762, Cl. 525-187.000.

BASF Lacke + Farben Aktiengesellschaft: See—
Hoppe-Hoffler, Monika; Strauss, Udo; and Volkmann, Bernd-Rudiger, 5,378,335, Cl. 204-181.700.

BASF Magnetics GmbH: See—
Jachow, Harald; Schwab, Ekkehard; Koerner, Reinhard; Mueller, Norbert; Lehnert, Rudi; Ohlinger, Manfred; Auweter, Helmut; Jakusch, Helmut; Veitich, Ronald J.; and Bobrich, Michael, 5,378,383, Cl. 252-62.560.

Bashir-Hashemi, Abdollah, to United States of America, Army. Halogenated polycarboxycubanes. 5,378,333, Cl. 204-157.650.

Bass, Mark: See—
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Bonice, Jean-Pierre; and Giraud, Pierre, to Alcatel Cable. Tape of individualized optical fibers. 5,379,363, Cl. 385-114.000.

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Bonta, Jeffrey D.; and Menich, Barry J., to Motorola, Inc. Method of selecting a handoff target in a cellular communication system. 5,379,447, Cl. 455-33.200.

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Ban, Shichiro, 5,378,185, Cl. 446-124.000.

Book, Steven C. Foldable cover with easel option. 5,377,794, Cl. 190-1.000.

Boon, Andries Q. M.: See—
Guichard, Philippe; Grandvallet, Pierre; Barre, Guy; Hoek, Arend; and Boon, Andries Q. M., 5,378,351, Cl. 208-143.000.

Boothe, Richard E.; and Hutchens, Dale E., to Thiokol Corporation. Interpenetrating network combination of ultraviolet and thermally cured rocket motor liner composition and method. 5,377,593, Cl. 102-289.000.

Bootz, Konrad; and Herd, Karl-Josef, to Bayer Aktiengesellschaft. Reactive dyestuffs for dyeing and printing materials containing OH groups or amide groups. 5,378,817, Cl. 534-618.000.

Boreali, Jeffrey J.; and Bane, John C., to Moore Business Forms, Inc. Linerless label dispensing. 5,378,301, Cl. 156-344.000.

Bores, Frederick M.; and Plaven, Thomas G., to Windsor Industries, Inc. Floor cleaning machine including squeegee assembly. 5,377,382, Cl. 15-340.100.

Borri, Maria G.: See—
Arrighi, Silvana; Norelli, Francesco; Borri, Maria G.; and Bucci, Enzo, 5,378,365, Cl. 210-635.000.

Borries, John A., to Rotor Tool Company, The. Torque control system. 5,377,578, Cl. 91-47.000.

Borth, David E.: See—
Mueller, Bruce D.; Baum, Kevin L.; Borth, David E.; Rasky, Phillip D.; and Winter, Eric H., 5,379,324, Cl. 375-94.000.

Bortnick, Newman M.: See—
Amici, Robert M.; Bortnick, Newman M.; Graham, Roger K.; LaFleur, Edward E.; and Work, William J., 5,378,758, Cl. 525-57.000.

Bottka, Nicholas: See—
Gaskill, D. Kurt; Bottka, Nicholas; and Berry, Alok K., 5,379,109, Cl. 356-445.000.

Bouffard, Frances A.: See—
Balkovec, James M.; Black, Regina M.; and Bouffard, Frances A., 5,378,804, Cl. 530-317.000.

Boukongo, Bouakeo; Fernandez, Joseph F.; and North, Oliver L., to Guardian Technologies International. Ballistic shield. 5,377,577, Cl. 89-36.050.

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Bourns, Inc.: See—
Yumibe, George; Gratzinger, Paul; Nguyen, Thanh; and Wisner, Duane, 5,378,160, Cl. 439-66.000.

Boussignac, Georges; and Labrune, Jean-Claude, to Laboratoire Nycomed Ingenop SA. Dilatation catheter for perfusion. 5,378,237, Cl. 604-96.000.

Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., to G. D. Searle & Co. Substituted bicyclic heterocyclic compounds useful as platelet aggregation inhibitors. 5,378,727, Cl. 514-465.000.

Bowen, James H., to Product Engineering & Mfg., Inc. Environmentally safe touch typing keyboard. 5,378,069, Cl. 400-477.000.

Bowen, Larry: See—
Ayres, George E.; Black, Gary D.; Bowen, Larry; Brackmann, Warren A.; Keaveney, Benedict; and Kilpatrick, John D., 5,377,826, Cl. 206-246.000.

Bowne, Arlyce T.: See—
Ford, Frederick E.; Bowne, Arlyce T.; and Kotlarchik, Carl, Jr., 5,378,590, Cl. 430-504.000.

Boxleitner, Heinz: See—
Dingfelder, Heinz; and Boxleitner, Heinz, 5,378,860, Cl. 177-25.190.

Boyce, Lawrence J.: See—
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Boyd, Douglas E.; and Burton, Charles A., to American Metal Door Company, Inc. Door positioning system. 5,377,448, Cl. 49-360.000.

Boyd, Gussie B.: See—
Boyd, Kenneth; and Boyd, Gussie B., 5,377,366, Cl. 4-561.100.

Boyd, Kenneth; and Boyd, Gussie B. Fluid operated bathtub chair. 5,377,366, Cl. 4-561.100.

Boyd, Mark A. Leak detecting device, and method of constructing and utilizing same. 5,377,529, Cl. 73-40.000.

Boyer, Bradley P.; Contestable, Paul B.; and Snyder, Brian A., to Eastman Kodak Company. Wash composition for determination of microorganisms associated with periodontal diseases. 5,378,629, Cl. 436-17.000.

Boyle, Ronald C.: See—
Lewinski, David P.; and Boyle, Ronald C., 5,377,656, Cl. 124-65.000.

Boys, William E.: See—
Waters, John E.; Harris, Brent A.; Gresley, Ross A.; Boys, William E.; and Brouns, Daniel R., 5,378,555, Cl. 429-97.000.

BP Chemicals Limited: See—
Lancaster, Michael; Moreton, David J.; and Psaila, Alexander F., 5,378,791, Cl. 528-137.000.

Orpin, Murray R., 5,378,793, Cl. 528-158.000.

Brace, Dan G.: See—
Haberman, John P.; Delestadius, Mark; and Brace, Dan G., 5,377,753, Cl. 166-249.000.

Brackett, Stephen E.; and Houle, Dennis E., to Siemens Electric Limited. Adaptive manifold tuning. 5,377,629, Cl. 123-184.560.

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Brady, David: See—
Papen, George C.; Murphy, G. Matthew; and Brady, David, 5,379,310, Cl. 372-23.000.

Bramhall, Peter: See—
Odaka, Kentaro; Ozaki, Shinya; Inazawa, Yoshizumi; Yamada, Masaki; and Bramhall, Peter, 5,379,152, Cl. 360-48.000.

Brane, Earl P.; and Cornell, Boyd J., to Wm. R. Hague, Inc. Water treatment tank. 5,378,370, Cl. 210-678.000.

Brannon, Roland. Live bait dispenser. 5,377,445, Cl. 43-55.000.

Brauer, Oke: See—
Hoppe, Lutz; Haase, Bernd; Brauer, Oke; and Szablowski, Klaus, 5,378,826, Cl. 536-35.000.

Bredall, William A.; and Simms, Graham J., to Gillette Canada Inc. Interproximal brush. 5,377,377, Cl. 15-167.100.

Breen, Michael T.: See—
Slicker, James; Mazur, Joseph S.; and Breen, Michael T., 5,378,211, Cl. 477-175.000.

Bretagne, Joel: See—
Blot, Philippe; Augereau, Joel; Bretagne, Joel; and Dittberner, Jean-Jacques, 5,378,134, Cl. 425-149.000.

Brewer, Richard G.; Devoe, Ralph G.; Foster, Kenneth L.; Hoffnagle, John A.; and Kallenbach, Reinald, to International Business Machines Corporation. Atomic clock employing ion trap of mono- or multi-planar geometry. 5,379,000, Cl. 331-3.000.

Breytman, Alex: See—
Gong, Frank; Gofman, Yuri; and Breytman, Alex, 5,378,882, Cl. 235-472.000.

Brezee, Victor L.: See—
Sperduti, David; Adler, Randy W.; and Brezee, Victor L., 5,377,800, Cl. 192-85.0CA.

Bridges, William B.; and Zhang, Yongfang, to California Institute of Technology. Microwave-excited slab waveguide laser with all metal sealed cavity. 5,379,317, Cl. 372-64.000.

Brierton, Dennis M. Air cargo security vault. 5,377,856, Cl. 220-1.500.

Briggs, Rick A. Waterslide play apparatus. 5,378,197, Cl. 472-128.000.

Briggs, Roger R. Hole digger. 5,377,767, Cl. 173-28.000.

Brigitte, Ketterer: See—
Ketterer, Dieter, deceased; Brigitte, Ketterer; Friez, Raimund; Seeger, Heinz; Conzelmann, Ralf; Schumacher, Michael; and Moeller, Tilo, 5,378,018, Cl. 280-737.000.

Bristol Myers Squibb Co.: See—
Schroeder, Daniel R.; Lam, Kin S.; and Veitch, Jacqueline M., 5,378,463, Cl. 424-121.000.

Siadak, Anthony W.; and Rosok, Mae J., 5,378,812, Cl. 530-388.400.

Stein, Philip D.; Hunt, John T.; and Murugesan, Natesan, 5,378,715, Cl. 514-329.000.

British Nuclear Fuels Plc: See—
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British Telecommunications public limited company: See—
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Brock, J. Don; Mize, Erbie G.; and Swanson, Malcom L., to Astec Industries, Inc. Combustion chamber having reduced NOx emissions. 5,378,060, Cl. 366-25.000.

Brock, J. Donald, to Astec Industries, Inc. Combined asphalt plant and soil remediation system. 5,378,059, Cl. 366-7.000.

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Brooke, John; Furlong, Arnold; and Lebans, Geoff, to Canada, Her Majesty in right of, as represented by the Minister of Fisheries of Oceans. System for handling a remotely operated vessel. 5,378,851, Cl. 114-259.000.

Brooks, Frank W., Sr.; and Spinks, Gerald R., to General Motors Corporation. Snap-in park brake cable. 5,377,789, Cl. 188-20.000.

Brooktree Corporation: See—
Jack, Keith A.; Moran, Douglas D.; and Wicker, David J., 5,379,077, Cl. 348-708.000.

Bros, David E.; and Notthakun, Sawang, to Carbonair Environmental Services, Inc. Apparatus for air stripping contaminants from water. 5,378,267, Cl. 96-168.000.

Brosious, Sandra L.: See—
Geibel, Stephen A.; Hurley, John L.; and Brosious, Sandra L., 5,378,426, Cl. 419-2.000.

Brossi, Arnold; He, Xiao-shu; and Greig, Nigel H., to United States of America, Health and Human Services. Carbamate analogs of thiaphosvenine and method for inhibiting cholinesterases. 5,378,723, Cl. 514-411.000.

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Sonobe, Katsuyoshi; and Iwase, Morikazu, 5,377,572, Cl. 83-583.000.

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Brown, Alison K.; and Sturza, Mark A., to NAVSYS Corporation. GPS tracking system. 5,379,224, Cl. 364-449.000.

Brown, Cheryl C.: See—
Chiou, Ruth G.; Brown, Cheryl C.; Little, Jeanette A.; Young, Austin H.; Schanefelt, Robert V.; Harris, Donald W.; Stanley, Keith D.; Coontz, Helen D.; Hamdan, Carolyn J.; Wolf-Rueff, Jody A.; Slowinski, Lori A.; Anderson, Kent R.; Lehnhardt, William F.; and Witczak, Zbigniew J., 5,378,286, Cl. 127-36.000.

Brown, Dale M.; and Ghezzi, Mario, to General Electric Company. Method of making a silicon carbide junction field effect transistor device for high temperature applications. 5,378,642, Cl. 437-40.000.

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Robinson, Kurt B.; Eslick, Russell D.; Levy, Markus A.; Brown, David M.; Pao, Lily C.; and Dipert, Brian L., 5,379,401, Cl. 395-425.000.

Brown, Donald W., to Brown, John G. Single portion liquid dispenser. 5,377,874, Cl. 222-82.000.

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Ehmsen, Ronald J.; Ekinaka, Michael H.; Brown, Jeffery O.; and Cordero, Mario, 5,377,668, Cl. 128-4.000.

Brown, John G.: See—
Brown, Donald W., 5,377,874, Cl. 222-82.000.

Brown, Michael S.; Goldstein, Joseph L.; Russell, David W.; Sudhof, Thomas C.; and Martin, David W., Jr., to Board of Regents, The University of Texas System. Method and composition for identifying

substances which activate transcription of the LDL receptor gene. 5,378,603, Cl. 435-6.000.

Brown, Paul E.; and Socier, Timothy R., to Liquid Molding Systems, Inc. Dispensing valve for packaging. 5,377,877, Cl. 222-105.000.

Brown Printing Company, A Division of Gruner & Jahr Printing and Publishing Co.: See—
McVenes, Timothy D., 5,379,211, Cl. 364-167.010.

Brown, Stephen C., to Alcan International Ltd. Alumina hydrates. 5,378,753, Cl. 524-430.000.

Brown & Williamson Tobacco Corporation: See—
Litzinger, Elmer F.; Chakraborty, Band B.; and Conway, William R., 5,377,698, Cl. 131-370.000.

Brownlie, Alan W.; Dueterhoeft, Scott S.; Robertson, James W.; and Shay, Francis J., to Whitaker Corporation, The. Enclosure for variety of terminal blocks. 5,378,174, Cl. 439-709.000.

Bruce, Allan J.: See—
Becker, Philippe C.; Bruce, Allan J.; DiGiovanni, David J., and Lambrecht, Vincent G., Jr., 5,378,664, Cl. 501-40.000.

Bruce, David S.: See—
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Bruckner, Helmut; Kopnick, Siegfried; and Ugrowitzer, Werner, to U.S. Philips Corporation. Two-layer or multilayer printed circuit board. 5,378,858, Cl. 174-255.000.

Bruder, Dave: See—
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Brufani, Mario; Scuri, Romolo; Ceccarelli, Stefano; DeVellis, Patrizia; Giannetti, Patrizia; Paesano, Agnese; and Sergio, Zanarella, to Biomedica Foscama Industria Chimico-Farmaceutica S.p.A. 8-(1-aminocycloalkyl)-1,3-dialkylxanthine derivatives, preparation process and antidepressant, nootropic and psychostimulant composition thereof. 5,378,844, Cl. 544-272.000.

Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; Singh, Jai P.; and Smith, Colin W., to Lilly Industries Limited; and Eli Lilly and Company. Methods of using dihydropyrans. 5,378,699, Cl. 514-312.000.

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Wood, David; and Brunn, Randy, 5,377,376, Cl. 15-83.000.

Brunner, Harald; Kolodziej, Klaus; and Lumpe, Karl-Heinz, to Gebr. Happpich GmbH. Roof rack for vehicles. 5,377,890, Cl. 224-321.000.

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Bryant, Robert G., to United States of America, National Aeronautics and Space Administration. Polyazomethines containing trifluoromethylbenzene units. 5,378,795, Cl. 528-244.000.

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BS&B Safety Systems, Inc.: See—
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BTR plc: See—
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Bucci, Enzo: See—
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Buchanan, Eric P.: See—
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Buckingham, Charles O.: See—
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Buddendeck, Gerald A.: See—
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Bui, Canh S.: See—
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Bull HN Information Systems Inc.: See—
Peters, Arthur; Zelle, Richard C.; Carroll, Elmer W.; Barlow, George J.; Nibby, Chester M., Jr.; and Keeley, James W., 5,379,378, Cl. 395-200.000.

Bunn, Robert W. Method of constructing reusable yard waste container. 5,378,220, Cl. 493-226.000.

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Van Dell, Peter; and Buonafede, Dennis, 5,377,673, Cl. 128-633.000.

Burd, Wayne D.; and Mills, Charles D., to Koller Enterprises, Inc. Mechanic's creeper. 5,378,003, Cl. 280-32.600.

- Burfeind, Craig: See—
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- Burke, John T., to Lanxide Technology Company, L.P. Method of forming metal matrix composites by use of an immersion casting technique. 5,377,741, Cl. 164-97.000.
- Burkhardt, James F.; Matheson, Ronald R.; Burnham, Daniel R.; and Burnham, David A. Shut off check valve for a welding gun. 5,378,868, Cl. 219-89.000.
- Burlett, Donald J.: See—
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- Burmeister, Frederick H., to John Paul Mitchell Systems. Composition and process for permanent waving. 5,378,454, Cl. 924-70.500.
- Burnham, Daniel R.: See—
Burkhardt, James F.; Matheson, Ronald R.; Burnham, Daniel R.; and Burnham, David A., 5,378,868, Cl. 219-89.000.
- Burnham, David A.: See—
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- Burns, Donald J.: See—
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- Burnside, Robert R.: See—
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- Burton, Charles A.: See—
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- Butzke, Sabine: See—
Keunecke, Gerhard; Arnold, Adolf; and Butzke, Sabine, 5,378,827, Cl. 536-30.000.
- Buzzi, Valentin; and Sereinig, Ferdinand, to U.S. Philips Corporation. Shaving apparatus having a foil-like upper cutter and a foil-like lower cutter. 5,377,414, Cl. 30-346.510.
- Byrne, Jeffrey S., to Cynx Corporation. Shifter/rotator with preconditioned data. 5,379,240, Cl. 364-715.080.
- Byrnes, John L., to Teleflex Incorporated. Core element tension mechanism having length adjust. 5,377,556, Cl. 74-502.600.
- C-Cube Microsystems: See—
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- C. Hausahn GmbH & Co.: See—
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- C. R. Bard, Inc.: See—
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- Seifert, C. Vaughn, 5,378,236, Cl. 604-96.000.
- Cabanel, Regis; Garry, Guy; Schuhl, Alain; and Ghyselen, Bruno, to Thomson-CSF. Josephson junction structure. 5,378,683, Cl. 505-190.000.
- Cabe, Carlton L.; and Hill, Andrew T., to Bell Helicopter Textron Inc. Self-restraining loop clamp. 5,377,940, Cl. 248-74.300.
- Cabrera, Jorge. Portable toilet assembly. 5,377,364, Cl. 4-483.000.
- Cadence Environmental Energy, Inc.: See—
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- Cadotte, Roland, Jr.: See—
Cummings, Michael; Cadotte, Roland, Jr.; Rachlin, Adam; and Babbitt, Richard W., 5,378,949, Cl. 327-113.000.
- Cai, Liming, legal representative: See—
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- Caldwell, Lynn. Apparatus for compressing gas. 5,378,113, Cl. 417-236.000.
- Calgon Corporation: See—
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- California Institute of Technology: See—
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- Logan, Ronald T., Jr., 5,379,309, Cl. 372-18.000.
- California Lightwave Laboratories, Inc.: See—
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- Calmettes, Lionel; and Detable, Pascal, to Etablissements Caillau. Clamping spring collar. 5,377,389, Cl. 24-20.00R.
- Calverley, Martin J.; Hansen, Kai; and Binderup, Lise, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). Vitamin D analogues. 5,378,695, Cl. 514-167.000.
- Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Garavaglia, Carlo; and Mirenna, Luigi, to Ministero Dell' Universita' E Della Ricerca Scientifica e Tecnologica. Aryl-propyl-amines endowed with antifungal activity. 5,378,707, Cl. 514-239.500.
- Camm, Samuel A. Hygienic animal feeder. 5,377,621, Cl. 119-61.000.
- Campbell, Albert E., Jr.; and Stevenson, Charles F. Systems to exterminate and control subterranean termites and other subterranean pests. 5,378,086, Cl. 405-229.000.
- Campbell, Jack E.: See—
Morrow, John A.; and Campbell, Jack E., 5,377,642, Cl. 123-182.100.
- Campbell, Jerry D. Electrical coffee pot positionable in a vehicle and operable from a cigarette lighter receptacle. 5,377,581, Cl. 99-295.000.
- Campbell Mfg. Inc.: See—
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- Camps, Ivo G. J.: See—
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- Canada, Her Majesty in right of, as represented by the Minister of Fisheries of Oceans: See—
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- Canada, Her Majesty the Queen in right of, as represented by the Minister of the Environment: See—
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- Canadian Liquid Air Ltd./Air Liquide Canada LTEE: See—
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- Cannon Equipment Company: See—
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- Cannon, Gregory L.: See—
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- Canon Kabushiki Kaisha: See—
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- Handa, Yuichi, 5,379,142, Cl. 359-129.000.
- Kataoka, Junnosuke, 5,379,123, Cl. 358-427.000.
- Kikuchi, Toshihiro; Miyazaki, Hajime; and Nakano, Takashi, 5,378,519, Cl. 428-690.000.
- Kikuchi, Yutaka, 5,377,970, Cl. 271-121.000.
- Kosugi, Masato; and Sakaegi, Yuji, 5,379,073, Cl. 348-513.000.
- Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Yoshinaga, Yoko; Kishi, Hiroyoshi; and Kushibiki, Nobuo, 5,379,132, Cl. 359-13.000.
- Miyajima, Yoshikazu, 5,379,283, Cl. 369-44.290.
- Miyamoto, Montoshi, 5,379,286, Cl. 369-112.000.
- Murata, Jun, 5,378,526, Cl. 128-214.000.
- Nose, Noriyuki; and Abe, Naoto, 5,379,108, Cl. 356-400.000.
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Otto, Nancy M.; Clough, Warren R.; and Balduzzi, Henry B., 5,377,496, Cl. 62-129.000.

Clough, William A.; Ouellette, Daneil; and Sablonniere, Serge De La, to Microslate, Inc. Portable computer with touch screen and computer system employing same. 5,379,057, Cl. 345-173.000.

Clusserath, Ludwig, to Seitz Enzinger Noll Maschinenbau Aktien-gesellschaft. Arrangement for filling bottles or similar containers. 5,377,726, Cl. 141-39.000.

CMK Corporation: See—
Matsumoto, Masuo; Yoshida, Naohiro; and Kojima, Masaru, 5,377,406, Cl. 29-846.000.

Cobe Laboratories, Inc.: See—
O'Riordan, John F.; and Antwiler, Glen D., 5,378,227, Cl. 604-4.000.

Coburn Optical Industries, Inc.: See—
Dixon, William L., 5,377,456, Cl. 451-364.000.

Cogefar-Impresit Costruzioni Generali S.p.A.: See—
DeGrada, Bruno; and Orolani, Guido, 5,377,461, Cl. 52-126.400.

Cohen, Jacob I.: See—
Bagchi, Pranab; Serman, Melvin D.; and Cohen, Jacob I., 5,378,598, Cl. 430-569.000.

Cohen, Michael: See—
Scheinfeld, Naftali; and Cohen, Michael, 5,377,438, Cl. 42-96.000.

Cohn, Oded; Hartung, Michael H.; McCauley, John N., Jr.; Micka, William F.; Mikkelsen, Claus W.; Nagin, Kenneth M.; Novick, Yoram; and Winokur, Alexander, to International Business Machines Corporation. Method and system for concurrent access during backup copying of data. 5,379,398, Cl. 395-425.000.

Colburn, Howard E. Cement compositions for temporary structures. 5,378,278, Cl. 106-709.000.

Cole, Arthur W.; Hamlyn, Franklin A.; Dougherty, James D.; and O'Sullivan, John M., to Wheelabrator Environmental Systems, Inc. Grate combustion system. 5,377,663, Cl. 126-152.00B.

Cole, Jerald D.; Aryaenejad, Rahmat; and Greenwood, Reginald C., to EG&G Idaho, Inc. Gamma neutron assay method and apparatus. 5,378,895, Cl. 250-390.040.

Coley, Christopher D.: See—
Walck, Jeffrey A.; Coley, Christopher D.; and Kugler, Donald W., Jr., 5,379,052, Cl. 345-185.000.

Collins, Harold O.; Hennessy, James J.; and Mancillas, Gilbert. Ripening controlling chamber apparatus. 5,377,502, Cl. 62-304.000.

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Kramer, Gordon; Wolfe, Douglas W.; Worley, Stuart; and Collins, Timothy C., 5,379,336, Cl. 378-98.800.

Colorado Meadowlark Corporation: See—
Tigwell, David C., 5,379,453, Cl. 455-151.200.

Colorado State University Research Foundation: See—
Nett, Torrance M.; and Glode, Leonard M., 5,378,688, Cl. 514-15.000.

Columbia University in the City of New York, The Trustees of: See—
Aviv, Jonathan E.; and Martin, John H., 5,377,688, Cl. 128-747.000.

Erlich, Ron, 5,377,564, Cl. 81-9.440.

Combustion Engineering, Inc.: See—
Allen, Bruce F.; DePeau, Alfred D.; and Crick, David L., 5,377,530, Cl. 73-49.500.

Perez, Rolando; and Golbabai, Mehran, 5,379,328, Cl. 376-217.000.

Comerci, Joseph D.; Data, Mark M.; and DeRoss, Robert, to Molex Incorporated. Plug detection electrical receptacle. 5,378,165, Cl. 439-188.000.

Commonwealth of Australia, The: See—
Solly, Richard K.; Power, Alan J.; Beranek, Ludek A.; Marshman, Shiela J.; Pedley, Joanna F.; and Hiley, Robin W., 5,378,632, Cl. 436-60.000.

Communications Research Laboratory, Ministry of Posts and Telecom-munications: See—
Matsui, Toshiaki; and Araki, Kenichi, 5,379,110, Cl. 356-445.000.

Communications Test Design, Inc.: See—
Parsons, Donald F.; Gress, Kyle; Dempsey, James M.; Ross, Joseph; Parsons, William; and Parsons, Stephen, 5,379,229, Cl. 364-478.000.

Comsat: See—
Armstein, Donald S.; and Lee, Jong W., 5,379,445, Cl. 455-13.400.

Comstream Corporation: See—
Greenberger, Haim; Hebron, Yoav; and Raghavan, Sreenivasa A., 5,379,243, Cl. 364-746.100.

Connolly, George C., to United States of America, Navy. Acoustic-optic sound velocity profiler. 5,379,270, Cl. 367-128.000.

Conroy, Michel. Enhanced cement mixed with selected aggregates. 5,378,279, Cl. 106-719.000.

Consel National de Recherche Scientifique: See—
Krsmanovic, Velibor; Durkin, Jon P.; Bhasin, Jagmohan L.; Bi-quard, Jean-Michel; Macdonald, Phillip A.; and Whitfield, James F., 5,378,815, Cl. 530-405.000.

Consilium Bulk Babcock Oy: See—
Jokinen, Mikko; and Kurki, Timo, 5,377,848, Cl. 209-673.000.

Consolidated Industries Corp.: See—
Kirkpatrick, Michael E., 5,377,909, Cl. 236-11.000.

Contestable, Paul B.: See—
Boyer, Bradley P.; Contestable, Paul B.; and Snyder, Brian A., 5,378,629, Cl. 436-17.000.

Conway-Jones, David C.; and Smith, Peter M., to International Business Machines Corporation. FIFO memory controller for a digital video communications channel having a detector, comparator, and threshold select logic circuit. 5,379,399, Cl. 395-425.000.

Conway, William R.: See—
Litzinger, Elmer F.; Chakraborty, Barid B.; and Conway, William R., 5,377,698, Cl. 131-370.000.

Conyers (Gpmrr) Enterprises, Inc.: See—
Conyers, Philip C.; and Conyers, Maxine E., 5,379,197, Cl. 362-72.000.

Conyers, Maxine E.: See—
Conyers, Philip C.; and Conyers, Maxine E., 5,379,197, Cl. 362-72.000.

Conyers, Philip C.; and Conyers, Maxine E., to Conyers (Gpmrr) Enterprises, Inc. Lighted bicycle safety device. 5,379,197, Cl. 362-72.000.

Conzelmann, Ralf: See—
Ketterer, Dieter, deceased; Brigitte, Ketterer; Fritz, Raimund; Seeger, Heinz; Conzelmann, Ralf; Schumacher, Michael; and Moeller, Tilo, 5,378,018, Cl. 280-737.000.

Cook Composites and Polymers Co.: See—
Short, Sidney M.; and Laven, Jeffrey J., 5,378,386, Cl. 252-162.000.

Cook, Gary, to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland, The. Dye laser amplifiers. 5,379,147, Cl. 359-334.000.

Cook, Harold T., Jr.; Fielding, Mimi S.; and Furlong, Donn B., to Marco Seattle, Inc. Tray for freezing seafood. 5,377,855, Cl. 220-4.230.

Cook, Jeffrey A.: See—
LoRusso, Julian A.; Cook, Jeffrey A.; Szpak, Peter S.; and Grizzle, Jessy W., 5,377,654, Cl. 123-673.000.

Cook, Philip D.; and Sanghvi, Yogesh S., to ISIS Pharmaceuticals, Inc. Backbone modified oligonucleotide analogs. 5,378,825, Cl. 536-25.340.

Coontz, Helen D.: See—
Chiou, Ruth G.; Brown, Cheryl C.; Little, Jeanette A.; Young, Austin H.; Schanefelt, Robert V.; Harris, Donald W.; Stanley, Keith D.; Coontz, Helen D.; Hamdan, Carolyn J.; Wolf-Rueff, Jody A.; Slowinski, Lori A.; Anderson, Kent R.; Lehnhardt, William F.; and Witczak, Zbigniew J., 5,378,286, Cl. 127-36.000.

Cooper, George A., to Alseure Limited. Shutter assemblies and laths for them. 5,377,738, Cl. 160-133.000.

Cooper Industries, Inc.: See—
Turner, Edwin C., 5,377,762, Cl. 166-339.000.

Cooper, John F.: See—
Romagosa, Enrique E.; Cooper, John F.; Nuzzolo, Michael; and Lane, Michael, 5,378,272, Cl. 106-273.100.

Cooper, Robert, to Davidson Textron Inc. Dual door arrangement for air bag deployment. 5,378,014, Cl. 280-728.00B.

Cooperative Vereniging Suiker Unie U.A.: See—
Koerts, Kees; Bakker, Age; and Vianen, Gerardus M., 5,378,834, Cl. 536-127.000.

Cope, Dennis: See—
McGrath, John; Cope, Dennis; Harris, Scott; and Becker, Charles, 5,378,299, Cl. 156-290.000.

Copeland Corporation: See—
Dunaevsky, Valery; and Bass, Mark, 5,378,129, Cl. 418-55.500.

Corbier, Claude, to Corbiere S.A.; and Teintureries de la Turdine. Process for the warp printing of a design onto a cloth and apparatus for carrying out this process. 5,377,509, Cl. 68-5.00D.

Corbiere S.A.: See—
Corbiere, Claude, 5,377,509, Cl. 68-5.00D.

Cordero, Mario: See—
Ehmsen, Ronald J.; Ekinaka, Michael H.; Brown, Jeffery O.; and Cordero, Mario, 5,377,668, Cl. 128-4.000.

Cordis Corporation: See—
Layer, James; and Slater, Andrea, 5,378,229, Cl. 604-31.000.

Cornelissen, Herman L.; and Peeters, Dirk, to AGFA-Gevaert N V. Reclosable film package. 5,377,835, Cl. 206-455.000.

Cornell, Boyd J.: See—
Brane, Earl P.; and Cornell, Boyd J., 5,378,370, Cl. 210-678.000.

Cornell Research Foundation, Inc.: See—
Harman, Gary E.; Tronsmo, Arne; Hayes, Christopher K.; and Lorto, Matteo, 5,378,821, Cl. 536-23.200.

Cornett, Kenneth D.: See—
Bockelman, David E.; Stengel, Robert E.; and Cornett, Kenneth D., 5,379,008, Cl. 333-174.000.

Cornut, Philippe: See—
Delobel, Olivier; Louise, Jean; and Cornut, Philippe, 5,378,439, Cl. 423-210.000.

Corrugated Gear & Sprocket, Inc.: See—
Lauderbaugh, David; and Jenkins, Gene A., 5,378,221, Cl. 493-367.000.

Cosco, Inc.: See—
Pinch, Daniel R., and Turner, Dennis M., 5,378,196, Cl. 472-119.000.

Cotton, John M.; Olsen, Neil C.; Wissink, Alex T.; Pieper, Gary V.; Oswald, William A.; Necula, Nicholas; Abreu, Enrique; Mascarenhas, Maurice J.; and De Bruyn, Rudy, to IPC Information Systems, Inc. Conferencing system for distributed switching network. 5,379,280, Cl. 370-62.000.

Coudert, Patrick; to Gerin, Merlin. Molded case circuit breaker with interchangeable trip units. 5,379,013, Cl. 335-17.000.

Cowan, Stanley W.: See—
Krishnamurthy, Sundaram; and Cowan, Stanley W., 5,378,587, Cl. 430-386.000.

Cox, James H.; Fruehan, Richard J.; and Elliott, John F., deceased (by Elliott, Frances P., executrix), to United States of America, Energy. Two-zone countercurrent smelter system and process. 5,378,260, Cl. 75-500.000.

Coyle, Richard J., Jr.: See—
Blyler, Lee L., Jr.; Coyle, Richard J., Jr.; Grimes, Gary J.; and Serafino, Anthony J., 5,379,358, Cl. 385-16.000.

Craig, Richard K.; and Beede, Benjamin E., to Cultured Abalone Incorporated, The. Abalone farming system. 5,377,624, Cl. 119-234.000.

Crawford, George H., Jr.: See—
Hanzlik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., 5,378,542, Cl. 428-483.000.

Cress, Steven B. Method and apparatus for temperature uniformity and repeatable temperature and location specific emission control of kilns. 5,378,144, Cl. 432-120.000.

Crews, David; and Wibbels, Thane, to Reproductive Sciences, Inc. Method for preferential production of ratites of a desired sex. 5,377,618, Cl. 514-182.000.

Crick, David L.: See—
Allen, Bruce F.; DePeau, Alfred D.; and Crick, David L., 5,377,530, Cl. 73-49.500.

Critten, Donald D.: See—
Stuart, John W.; and Critten, Donald D., 5,378,006, Cl. 280-149.200.

Crocher, Melvin D.: See—
Winnik, Françoise M.; Keoshkerian, Barkev; Wong, Raymond W.; Drappel, Stephan; Crocher, Melvin D.; Mayo, James D.; and Hofstra, Peter G., 5,378,574, Cl. 430-115.000.

Cromwell, John L.: See—
Baltazar, Varujan; and Cromwell, John L., 5,378,328, Cl. 204-105.00R.

Crookham, Joe P.; and Rogers, Jeffrey A., to Musco Corporation. Means and method for charitable donation promotion. 5,377,611, Cl. 116-173.000.

Crooks, David M., to Westvaco Corporation. Core or tube plug and roll assembly therewith. 5,377,831, Cl. 206-394.000.

Cross, Malcolm G.; and Lines, Robert, to Raychem Limited. Polymer compositions. 5,378,402, Cl. 252-500.000.

Cruze, John A., to Phillips Petroleum Company. Composition comprising leonardite, clay and lime and process therewith. 5,378,280, Cl. 106-793.000.

Culler, Scott R.; Berg, Gregory A.; Pieper, Jon R.; and Olson, Richard M., to Minnesota Mining and Manufacturing Company. Abrasive articles and methods of making and using same. 5,378,251, Cl. 51-295.000.

Culross, Claude C.: See—
Reynolds, Stephen D.; and Culross, Claude C., 5,378,673, Cl. 502-174.000.

Cultured Abalone Incorporated, The: See—
Craig, Richard K.; and Beede, Benjamin E., 5,377,624, Cl. 119-234.000.

Cummings, Michael; Cadotte, Roland, Jr.; Rachlin, Adam; and Babbitt, Richard W., to United States of America, Army. Signal mixing device utilizing a superconducting strip line with superconducting weak links and two control lines. 5,378,949, Cl. 327-113.000.

Cummins Engine Company, Inc.: See—
Rix, David M.; Wilson, Harry L.; Wilson, Rodney C.; and Muntean, George L., 5,377,636, Cl. 123-446.000.

Cunningham, Earl A.; and Hanson, Bradley E., to International Business Machines Corporation. Customized data recovery procedures selected responsive to readback errors and transducer head and disk parameters. 5,379,162, Cl. 360-53.000.

Cur, Nihat O.; Kuehl, Steven J.; and LeClear, Douglas D., to Whirlpool Corporation. Multi-temperature evaporator refrigeration system with variable speed compressor. 5,377,498, Cl. 62-187.000.

Curcru, Kevin H.: See—
Becker, Robert D.; Schwartz, Martin J.; Curcru, Kevin H.; and Eng, Kenneth J., 5,379,379, Cl. 395-250.000.

Curie, Napoleon; and Mason, David N. Syringe with retractable needle mount. 5,378,240, Cl. 604-110.000.

Curtis, Leroy F., to Georgia-Pacific Corporation. Oriented strand board product detecting apparatus using proximity sensor. 5,379,027, Cl. 340-676.000.

Cusack, Robert, to International Technidyne Corp. Stopper apparatus for a test tube or similar article. 5,377,854, Cl. 215-364.000.

Custom Machinery Design, Inc.: See—
Gietman, Peter J., Jr.; and Saindon, Stephen A., 5,377,929, Cl. 242-521.000.

Cutler, Barry L. Dry cleaning pad. 5,377,378, Cl. 15-230.000.

Cutts, James A., to United States of America, National Aeronautics and Space Administration. Programmable hyperspectral image mapper with on-array processing. 5,379,065, Cl. 348-269.000.

Cygnus Therapeutic Systems: See—
Sharma, Kuldeepak; and Dunbar, Darth M., 5,378,473, Cl. 424-449.000.

Cyrix Corporation: See—
Byrne, Jeffrey S., 5,379,240, Cl. 364-715.080.

Czechanski, James G.: See—
Larrija, Rene F.; Nelson, Anne; M.; Czechanski, James G.; and Poff, Ray E., 5,377,935, Cl. 244-121.000.

Czerlanis, John A., to Intermatic, Inc. Electrical cable connector. 5,378,171, Cl. 439-425.000.

Czornij, Zenon P.; Carpenter, Clint; and DePue, Jeffrey, to BASF Corporation. Polymeric pigment dispersants for use in coating compositions. 5,378,762, Cl. 525-187.000.

D&D Gaming Patents, Inc.: See—
Jones, Daniel A.; and Duron, Mark W., 5,377,973, Cl. 273-856.00P.

Jones, Daniel A., 5,377,994, Cl. 273-309.000.

D.G. International S.A.: See—
Garcia Pastor, Daniel; and Garcia Pastor, Francisco, 5,377,918, Cl. 241-46.170.

Dadoo, Rajeev; Lee, Thomas T.; and Zare, Richard N., to Leland Stanford Junior University, The Board of Trustees of the. System for measuring and controlling electroosmosis in separation techniques. 5,378,334, Cl. 204-180.100.

Daewoo Electronics, Co. Ltd.: See—
Kim, Jun-Bae; and Nam, Seong-Woo, 5,379,081, Cl. 353-99.000.

Dai Nippon Printing Co., Ltd.: See—
Obata, Hiroyuki; Utsumi, Minoru; Iijima, Masayuki; Okabe, Masato; and Kamiyama, Hironori, 5,378,565, Cl. 430-50.000.

Yamazaki, Satoshi, 5,379,131, Cl. 359-2.000.

Daiel Chemical Industries, Ltd.: See—
Fujiwa, Takaaki; Watanabe, Shoji; Takemoto, Shin; and Harano, Yoshiyuki, 5,378,736, Cl. 522-170.000.

Daifuku Co., Ltd.: See—
Asano, Teruo; Nobukawa, Shunji; Taniguchi, Etsuo; and Yokota, Tetsuro, 5,377,851, Cl. 211-191.000.

Daigle, Regis G. Temperature controlled thermal jacket for transferring refrigerant. 5,377,495, Cl. 62-125.000.

Daimaru, Koji; Takata, Koichi; Yoshizawa, Kenichi; and Shoji, Masahiro, to Kabushiki Kaisha Komatsu Seisakusho. NC-machining controller. 5,378,218, Cl. 483-9.000.

Daimon, Katsumi: See—
Nukada, Katsumi; Daimon, Katsumi; Iijima, Masakazu; Sakaguchi, Yasuo; Nukada, Hidemi; and Tokida, Akihiko, 5,378,569, Cl. 430-58.000.

Dainippon Screen Mfg. Co., Ltd.: See—
Shimazu, Shigeaki; Asano, Tetsuo; Usui, Nobuaki; and Nakai, Kazuhiro, 5,379,350, Cl. 382-22.000.

Daiwa Seiko, Inc.: See—
Miyazaki, Takeo, 5,377,925, Cl. 242-312.000.

Takeuchi, Shinji, 5,377,924, Cl. 242-238.000.

Dakin, James T.; Speaker, Lawrence W.; Duffy, Mark E.; and Heindl, Raymond A., to General Electric Company. Luminaire including an electrodeless discharge lamp as a light source. 5,378,965, Cl. 315-248.000.

Dalton, Eldon L. Display device and method for mature ears of seed and field corn. 5,377,435, Cl. 40-645.000.

Dalton, Paul W., to Volumatic Limited. Alarm system. 5,379,023, Cl. 340-568.000.

D'Amelia, Ronald P.: See—
Wheeler, Edward L.; D'Amelia, Ronald P.; Leveille, Gilbert A.; Otterburn, Michael S.; Klemann, Lawrence P.; Finley, John W.; Roden, Allan D.; Chrysam, Michael M.; Pellos, Turiddu A.; and Given, Peter S., Jr., 5,378,490, Cl. 426-606.000.

Dan, Shigeyuki: See—
Nakayama, Takao; Dan, Shigeyuki; and Sera, Hidefumi, 5,378,564, Cl. 430-49.000.

D'Andrea, Alan; Wong, Gordon G.; and Jones, Simon S., to Genetics Institute, Inc. Recombinant erythropoietin receptor protein. 5,378,808, Cl. 530-350.000.

D'Andrea, Ermanno, to D'Andrea S.p.A. Device for the precise coupling of two cylindrical parts, especially to form compound tools. 5,378,076, Cl. 403-379.000.

D'Andrea S.p.A.: See—
D'Andrea, Ermanno, 5,378,076, Cl. 403-379.000.

Daneshvar, Yousef. Balloons and head wraps for a seated user. 5,378,042, Cl. 297-393.000.

Daniel, Jack H.: See—
Risley, Kevin S.; and Daniel, Jack H., 5,378,106, Cl. 414-608.000.

Danieli, Diego; and Mason, Angelo, to Diadora S.p.A. Device for fixing a shoe to a bicycle pedal. 5,377,561, Cl. 74-594.600.

Dao, Vinh D.; and Ostojic, Sasha, to International Business Machines Corporation. Automatic location of screen objects through the use of relational position data. 5,379,375, Cl. 395-155.000.

Darmante, Dale T. Custom-fit front-opening brassiere. 5,378,192, Cl. 156-58.000.

Darr, Steven T.: See—
Servati, Hamid B.; Darr, Steven T.; and Furness, Mary B., 5,377,486, Cl. 60-288.000.

Darrow, Robert D.: See—
Dumoulin, Charles L.; Darrow, Robert D.; Schenck, John F.; and Roemer, Peter B., 5,377,678, Cl. 128-653.100.

Dart, Charles R., II: See—
Bauer, Tibor L.; Cavaliere, William A.; Dart, Charles R., II; Freebern, Timothy H.; Linnell, David C.; Miller, James M.; and Wu, Jin J., 5,377,911, Cl. 239-135.000.

Das, Paritosh K.: See—
Willcox, Kenneth W.; and Das, Paritosh K., 5,378,747, Cl. 524-120.000.

Dastolfo, Leroy E., Jr.; and LaCamera, ALfred F., to Aluminum Company of America. Process for low temperature electrolysis of metals in a chloride salt bath. 5,378,325, Cl. 204-66.000.

Data, Mark M.: See—
Comerci, Joseph D.; Data, Mark M.; and DeRoss, Robert, 5,378,165, Cl. 439-188.000.

DataCard Corporation: See—
Lundstrom, Robert W.; and Miller, Steven A., 5,378,884, Cl. 235-441.000.

Severson, Verne L.; and Hardy, John D., Jr., 5,378,067, Cl. 395-800.000.

Daum, Edward D.; and Rowley, Daniel R., to Babcock & Wilcox Company, The. Water/steam-cooled U-beam impact type article separator. 5,378,253, Cl. 55-269.000.

Daun, Daniel, to Noma International, Inc. Outdoor animated holiday light display. 5,379,202, Cl. 362-252.000.

Dauvergne, Jean, to Valeo Thermique Habitacle. Measuring device for measuring parameters in an air stream to be introduced into the cabin of a motor vehicle. 5,377,528, Cl. 73-31.010.

David Bruce: See—
Staffin, Kenneth H.; and Bruce, David S., 5,378,434, Cl. 422-141.000.

David, Wolfgang: See—
Richter, Wolfgang-Dieter; David, Wolfgang; Weeger, Engelbert; and Hartmann, Bernhard, 5,377,597, Cl. 105-4.100.

Davidson, Christopher D., to Argus Technologies, Ltd. Low loss snubber circuit with active recovery switch. 5,379,206, Cl. 363-55.000.

Davidson Textron Inc.: See—
Cooper, Robert, 5,378,014, Cl. 280-728.00B.

Davies, Andrew C., to Smiths Industries Public Limited Company. Current measurement circuits. 5,378,998, Cl. 330-288.000.

Davis, Gary C.: See—
Raleigh, William J.; Johnson, Donald S.; Lucarelli, Michael A.; Davis, Gary C.; and Hoover, James F., 5,378,789, Cl. 528-29.000.

Davis, Joann: See—
Wyman, David B.; and Davis, Joann, 5,377,613, Cl. 114-332.000.

Davis, Leo: See—
Marino, Robert L.; Burns, Donald J.; and Davis, Leo, 5,378,010, Cl. 280-723.000.

Davis, Stephen M.; and Ryan, Daniel F., to Exxon Research and Engineering Company. Distillate fuel production from fischer-tropsch wax. 5,378,348, Cl. 208-27.000.

Deak, Frederick R.: See—
Volz, Keith L.; Irlbeck, Robert D.; Renn, Robert M.; Johnson, David C.; and Deak, Frederick R., 5,378,169, Cl. 439-376.000.

Dean, Thomas R.; Chen, Hwang-Hsing; and May, Jesse A., to Alcon Laboratories, Inc. Sulfonamides useful as carbonic anhydrase inhibitors. 5,378,703, Cl. 514-222.800.

deBellefeuille, Jean O. W., Jr.: See—
McConnell, Allen D.; Monroe, Hanford D.; and deBellefeuille, Jean O. W., Jr., 5,377,542, Cl. 73-462.000.

DeBever, Bruce J., to Decor Concepts, Inc. Safety cap. 5,377,388, Cl. 24-16.0PB.

De Bruyn, Rudy: See—
Cotton, John M.; Olsen, Neil C.; Wissink, Alex T.; Pieper, Gary V.; Oswald, William A.; Necula, Nicholas; Abreu, Enrique; Mascarenhas, Maurice J.; and De Bruyn, Rudy, 5,379,280, Cl. 370-62.000.

Decidour, Jean-Claude: See—
Metivaud, Guy; Decidour, Jean-Claude; and Vignollet, Michel, 5,378,530, Cl. 428-246.000.

Decisions Team, Inc.: See—
Dempster, William F., 5,377,458, Cl. 52-1.000.

Decker, Gary T.; Gornowicz, Gerald A.; and Tobukuro, Kuniaki, to Dow Corning Corporation. Epoxy resin/aminofunctional polysiloxane fiber-reinforced composite. 5,378,532, Cl. 428-272.000.

Decker, Joseph A., Jr.: See—
Pham, Ninh G.; Decker, Joseph A., Jr.; and Bui, Canh S., 5,377,882, Cl. 222-479.000.

Deckers, Andreas: See—
Besecke, Siegmund; Deckers, Andreas; and Lauke, Harald, 5,378,765, Cl. 525-330.500.

Decor Concepts, Inc.: See—
DeBever, Bruce J., 5,377,388, Cl. 24-16.0PB.

Deeg, Rolf; Maurer, Eberhard; Klose, Sigmar; Kopfer, Bernhard; and Babel, Reiner, to Boehringer Mannheim GmbH. Analysis element and process for its manufacture. 5,378,638, Cl. 436-518.000.

Deere & Company: See—
Schick, Jeffrey C.; and Lodico, James I., 5,377,867, Cl. 221-217.000.

Defendini, Francis, to Saint-Gobain Vitre International. Electrochromic pane. 5,379,146, Cl. 395-275.000.

Defieuw, Geert; Verdonck, Emiel; and Sneyers, Hendrik, to AGFA-Gevaert, N.V. Heat-resistant layer of dye-donor element. 5,378,676, Cl. 503-227.000.

Degen, Hans-Juergen: See—
Mayer, Udo; and Degen, Hans-Juergen, 5,378,818, Cl. 534-758.000.

Degnan, Thomas F.; and Shih, Stuart S., to Mobil Oil Corporation. Hydrocarbon upgrading process. 5,378,352, Cl. 208-217.000.

Degouveia, Victor J.: See—
Marquez, Marco A.; Gonzalez, Jose C.; Degouveia, Victor J.; Bolivar, Carmelo; Leal, Orlando; and Yanez, Francisco, 5,378,250, Cl. 44-447.000.

DeGrada, Bruno; and Ortolani, Guido, to Cogefar-Impretit Costruzioni Generali S.p.A.; and Omasa S.r.l. Structure for the creation of room dividing walls particularly for operating theatres and the like. 5,377,461, Cl. 52-126.400.

DeGryse, Erich: See—
Martal, Jacques; DeGryse, Erich; Gaye, Pierre; Charlier, Madia; Charpigny, Gilles; Reinaud, Pierrette; and Chaouat, Gerard, 5,378,823, Cl. 536-23.520.

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De Jong, Feike: See—
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De Kleine, Paul C.: See—
Suman, Danny L.; Rumsey, Wayne J.; and De Kleine, Paul C., 5,377,948, Cl. 248-549.000.

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Olson, James R., 5,378,540, Cl. 428-394.000.

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Hart, John M., Jr.; and Matly, John M., 5,377,403, Cl. 29-827.000.

Owen, Marvin L.; and Miller, Mark J., 5,378,158, Cl. 439-57.000.

Delcourt, Thomas R., to Kamy, Inc. Varying annular fluidization zone for increased mixing efficiency in a medium consistency mixer. 5,378,321, Cl. 162-57.000.

Delestatus, Mark: See—
Haberman, John P.; Delestatus, Mark; and Brace, Dan G., 5,377,753, Cl. 166-249.000.

Deligi, Mario; and Derbinsky, Senia, to Materials Research Corp. Spiral magnetic linear translating mechanism. 5,377,816, Cl. 198-619.000.

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Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; Singh, Jai P.; and Smith, Colin W., 5,378,699, Cl. 514-312.000.

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De Lucia, Vito: See—
Bassetti, Martino; and De Lucia, Vito, 5,378,259, Cl. 71-59.000.

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Reig, Patrice; Demazeau, Gerard; and Naslain, Roger, 5,378,661, Cl. 501-2.000.

Demorest, Robert E. Calf sucker bottle holder. 5,377,852, Cl. 215-11.100.

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Parsons, Donald F.; Gress, Kyle; Dempsey, James M.; Ross, Joseph; Parsons, William; and Parsons, Stephen, 5,379,229, Cl. 364-478.000.

Dempster, William F., to Decisions Team, Inc. Pressure balancing a closed ecological system. 5,377,458, Cl. 52-1.000.

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Elia, James P., 5,378,152, Cl. 433-173.000.

DePeau, Alfred D.: See—
Allen, Bruce F.; DePeau, Alfred D.; and Crick, David L., 5,377,530, Cl. 73-49.500.

DePue, Jeffrey: See—
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Derham, James J.; Lubitsky, Joseph E.; and Flanagan, William C., to Klenzoid, Inc. Preparation of zinc polyphosphate in high PH solution. 5,378,401, Cl. 252-387.000.

Derkach, William J., to Recot, Inc. Method of forming packaging compositions. 5,378,414, Cl. 264-22.000.

Derks, Harry G., to Fleetwood Furniture Company, Inc. Test scoring system and method. 5,379,213, Cl. 364-411.000.

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Comerci, Joseph D.; Data, Mark M.; and DeRoss, Robert, 5,378,165, Cl. 439-188.000.

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Hlasta, Dennis J.; Ackerman, James H.; Mura, Albert J.; and Desai, Ranjit C., 5,378,720, Cl. 514-373.000.

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Vacquer, Benoit, 5,377,551, Cl. 73-864.450.

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Calmettes, Lionel; and Detable, Pascal, 5,377,389, Cl. 24-20.00R.

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Deutsch, Lance J.; Park, Pamela D.; and Trail, George, to Hoechst Celanese Corporation. Cigarette filter test apparatus and associated method for measuring filter hot collapse and tobacco consumption. 5,377,697, Cl. 131-330.000.

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Klausing, Helmut, 5,379,041, Cl. 342-25.000.

Deutsche Aerospace Airbus GmbH: See—
Kirma, Safa, 5,377,939, Cl. 248-68.100.

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Gleim, Gunter; and Chauvin, Jacques, 5,379,062, Cl. 348-184.000.

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Dexter Corporation, The: See—
Ng, Yiu-to D., 5,378,740, Cl. 523-414.000.

Dextran Products Limited: See—
Usher, Thomas C.; Patel, Natu; and Tele, Chhagan G., 5,378,828, Cl. 536-59.000.

Diadora S.p.A.: See—
Danieli, Diego; and Mason, Angelo, 5,377,561, Cl. 74-594.600.

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DiBriano, Michael T., to International Business Machines Corporation. Apparatus and method for managing interrupts in a multiprocessor system. 5,379,434, Cl. 395-725.000.

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Zuckerman, Bert M.; Dicklow, M. Bess; and Marban-Mendoza, Nahum, 5,378,460, Cl. 424-93.461.

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Dickson, Wayne E., 5,378,080, Cl. 404-90.000.

Dickson, Wayne E., to Dickson Industries, Inc. Road surface treating apparatus. 5,378,080, Cl. 404-90.000.

Didier, Robert G., to BIW Connector Systems, Inc. Environmentally safe wellhead. 5,377,747, Cl. 166-65.100.

Diekmann, Bruno; and Dube, Lawrence H., to Racine Flame Spray Inc. Traction analyzer. 5,377,526, Cl. 73-9.000.

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Hopstock, David M.; Roden, John S.; Dierssen, Gunther H.; and Sapiesko, Ronald S., 5,378,384, Cl. 252-62.620.

Diessner, Bernhard: See—
Kammerer, Karl; and Diessner, Bernhard, 5,378,050, Cl. 299-91.000.

Dieter, William M.: See—
Hatfield, Tinker L.; and Dieter, William M., 5,377,430, Cl. 36-51.000.

Different Dimensions Inc.: See—
Zuckerman, Andrew M., 5,377,884, Cl. 223-85.000.

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Robbins, Richard C.; Oliveri, Andrew L.; and DiGiambattista, Mary P., 5,377,514, Cl. 70-452.000.

DiGiovanni, David J.: See—
Becker, Philippe C.; Bruce, Allan J.; DiGiovanni, David J.; and Lambrecht, Vincent G., Jr., 5,378,664, Cl. 501-40.000.

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Heffernan, John S.; Savage, Peter L.; Pittman, Steven J.; and Sunkara, Ramu V., 5,379,419, Cl. 395-600.000.

Partovi, Hamid, 5,378,945, Cl. 326-68.000.

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Blouin, Joseph D.; Leu, Keith A.; and Diller, Larry K., 5,378,074, Cl. 403-284.000.

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Jones, Frank N.; Chen, Der-Shyang; Dimian, Adel F.; and Wang, Daozhang, 5,378,546, Cl. 428-1.000.

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Larsson, Stig B.; Hoffmann, Christoph T.; and Dimond, Phillip C., 5,379,344, Cl. 380-23.000.

Dinges, Warren L., to United States of America, Air Force. Formation of basic hydrogen peroxide. 5,378,449, Cl. 423-579.000.

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Deibig, Heinrich; and Dinkelaker, Albrecht, 5,378,751, Cl. 524-414.000.

Diodato, David V.: See—
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Director, Bruce A.: See—
von Behrens, Wieland E.; Haiflich, Sherry; Glazier, John; Roche, John M.; and Director, Bruce A., 5,378,633, Cl. 436-63.000.

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Dowd, Edward; O'Neill, Joseph; DiSabito, David M.; Hubbard, James R.; and Eichelberger, Cleatis A., 5,377,677, Cl. 128-642.000.

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Bachelard, Roland; and Disson, Jean-Pierre, 5,378,666, Cl. 501-97.000.

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Dittberner, Jean-Jacques: See—
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Schwartz, Dennis E.; Kanemoto, Roy H.; Watanabe, Susan M.; and Dix, Kim, 5,378,604, Cl. 435-6.000.

Dixon, Alfred R., Jr. Modular battery system comprising individual interconnected modules. 5,378,552, Cl. 429-91.000.

Dixon, William L., to Coburn Optical Industries, Inc. Eyeglass frame measuring cradle. 5,377,456, Cl. 451-364.000.

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Modic, Michael J.; Gelles, Richard; and Djiauw, Lie K., 5,378,760, Cl. 525-71.000.

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Jacobi, Stefan; and Berkefeld, Volker, 5,379,218, Cl. 364-424.010.

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Dodge, James L. Portable space heater. 5,377,664, Cl. 126-204.000.

Dogat, Vincent, to Salomon S.A. Ski binding. 5,378,009, Cl. 280-630.000.

Dohms, John E.: See—
Keeler, Calvin L.; and Dohms, John E., 5,378,820, Cl. 536-23.100.

Dolwick, Kristin M.: See—
Bradfield, Christopher A.; Dolwick, Kristin M.; and Poland, Alan, 5,378,822, Cl. 536-23.500.

Domanski, Ronald S.: See—
Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., 5,377,857, Cl. 220-4.330.

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Gyllinder, Lars, deceased; Gyllinder, Anne Marie, legal representative, heir; Gyllinder, Britt, legal representative, heir; and Blomquist, Lena H., legal representative, heir, 5,377,719, Cl. 137-625.630.

Donaldson, Jansia M.: See—
Wilson, James S.; Mallgren, William R.; Donaldson, Jansia M.; Kaplan, Samuel; and Facci, John S., 5,379,234, Cl. 364-496.000.

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Donnerdal, Ove: See—
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Dopp, Robert B.: See—
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Dorfel, Gerhard W.; and Treutner, Jurgen, to Beloit Technologies, Inc. Apparatus for reeling a wound web reel. 5,377,931, Cl. 242-530.000.

Dorman, Mark D.: See—
Rode, Kenneth A.; Pallanck, Robert G.; Dorman, Mark D.; and Michna, Richard J., 5,377,592, Cl. 102-210.000.

Dorsman, Adrian K., to Rockwell International Corporation. Ring laser gyro scale factor enhancement circuit. 5,379,114, Cl. 356-350.000.

DOrta, Frank A. Hand held exercise device providing desirable air resistance. 5,378,217, Cl. 482-111.000.

Dougherty, James D.: See—
Cole, Arthur W.; Hamlyn, Franklin A.; Dougherty, James D.; and O'Sullivan, John M., 5,377,663, Cl. 126-152.00B.

Dow B. Hickam, Inc.: See—
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Dow Corning Corporation: See—
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Drane, Walter E., to University of Florida. Method of diagnosing impaired blood flow. 5,377,681, Cl. 128-653.400.

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Winnik, Françoise M.; Keoshkerian, Barkev; Wong, Raymond W.; Drappel, Stephan; Crocher, Melvin D.; Mayo, James D.; and Hofstra, Peter G., 5,378,574, Cl. 430-115.000.

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Drum Workshop, Inc.: See—
Good, John J.; and Lombardi, Donald G., 5,377,576, Cl. 84-411.00R.

Drum, Joseph E., III; Lett, Renee M.; and Stevenson, Thomas M., to Du Pont de Nemours & Co. Insecticidal, acaricidal and fungicidal aminopyrimidines. 5,378,708, Cl. 514-256.000.

Drustar, Inc.: See—
Relyea, Christopher M.; Relyea, Mark A.; and Relyea, Michael S., 5,377,839, Cl. 206-531.000.

Drzewinski, Michael A., to Enichem S.P.A. Miscible blends of polysulfones and aromatic alkyl methacrylate polymers. 5,378,763, Cl. 525-189.000.

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Duan, Ling-Xun: See—
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Dubal, Hans-Rolf; Escher, Claus; Harada, Takamasa; Hemmerling, Wolfgang; Illian, Gerhard; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, to Hoechst Aktiengesellschaft. Ferroelectric liquid-crystalline mixtures. 5,378,394, Cl. 252-299.610.

Dube, Lawrence H.: See—
Diekmann, Bruno; and Dube, Lawrence H., 5,377,526, Cl. 73-9.000.

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Dunkley, James A.: See—
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Carroll, Alan F.; and Hang, Kenneth W., 5,378,408, Cl. 252-514.000.

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Schmidt, Walter; and Martinelli, Marco, 5,378,314, Cl. 156-644.000.

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E L Hatton Sales, Co.: See—
Hatton, Richard J., 5,378,515, Cl. 428-40.000.

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Takeuchi, Masaaki, 5,379,102, Cl. 356-30.000.

E.R. Squibb & Sons, Inc.: See—
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Eakin, Oscar, Jr.: See—
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Blount, William W., Jr.; and Kuo, Thauming, 5,378,757, Cl. 524-608.000.

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Eastridge, Lawrence E.; and Ratliff, James M., to International Business Machines Corporation. Method and system for dynamic allocation.

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- Searing, Lawrence G.; and Toye, Richard L., 5,379,390, Cl. 395-375.000.
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- Ebara Corporation: See—
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- Yanagisawa, Kiyoshi, 5,378,128, Cl. 418-9.000.
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Beuke, Brigitte; Herwig, Jens; Neeb, Ernst-Friedrich; and Paris, Nikolaus, 5,378,668, Cl. 502-20.000.
- Echard, Terry P. Portable electric lantern apparatus. 5,379,200, Cl. 362-186.000.
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- Ecogen, Inc.: See—
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- Ecoline Anticorrosion S.R.L.: See—
Bagnulo, Luigi, 5,378,336, Cl. 204-196.000.
- Edison Polymer Innovation Corporation: See—
Harris, Frank W.; and Cheng, Stephen Z. D., 5,378,420, Cl. 264-184.000.
- Edwards, Michael L.: See—
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- EG&G Idaho, Inc.: See—
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- Egawa, Saku: See—
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- Egretier, Jean-Michel. Dejuicing press for different products. 5,377,584, Cl. 100-110.000.
- Eguchi, Atuhiko: See—
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- Ehrlich, Martin L., to Shell Oil Company. Composition and process for coating metallic substrates. 5,378,798, Cl. 528-310.000.
- Eichelberger, Cleatis A.: See—
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- Eichhorn, Jurg: See—
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- Eisenbraun, Kenneth D., to United Industrial Trading Corporation. Blister card display package. 5,377,836, Cl. 206-461.000.
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- Eldridge, Morton T., to Teledyne, Inc. Combat training system and method including jamming. 5,378,155, Cl. 434-11.000.
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- Electro-Mechanics Company, The: See—
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- Elephant Holding B.V.: See—
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- Elf Atochem North America, Inc.: See—
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- Elf Atochem S.A.: See—
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- Bonjouklian, Rosanne; Vlahos, Chris J.; and Powis, Garth, 5,378,725, Cl. 514-453.000.
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- Eller, Martin; and Peters, Odd, to Beru Ruprecht GmbH & Co. KG. Flame starting unit for a combustion device. 5,377,440, Cl. 431-11.000.
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- Elliott, Phillip L.: See—
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- Ellis, Robert P., to TRW Vehicle Safety Systems Inc. Seat belt buckle. 5,377,393, Cl. 24-637.000.
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- Engineered Data Products, Inc.: See—
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- Enichem S.P.A.: See—
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- Ensign-Bickford Company, The: See—
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- Enviro Pac International, Ltd.: See—
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- Environmental Products Amalgamated Pty Ltd.: See—
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- Epstein, J. Michael, to RMS Lighting, Inc. Lighting fixture. 5,379,195, Cl. 362-20.000.
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- Erhardt & Leimer GmbH: See—
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- Erhardt, Manfred: See—
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- Erlich, Ron, to Columbia University in the City of New York, The Trustees of. Tool for stripping sheath from fiber optic conductor. 5,377,564, Cl. 81-9.440.
- Ernst Stadelmann Gesellschaft mbH, Firma: See—
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- Etablissements Caillau: See—
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- Excel Precision: See—
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- Farrara, Robert N., to Campbell Mfg. Inc. Guard device. 5,377,752, Cl. 166-241.600.
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- Fernandes, Roosevelt A.; and Krabbe, Kurt P., to Southern California Edison Company. Hitless ultra small aperture terminal satellite communication network. 5,379,320, Cl. 375-1.000.
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- Schierling, Bernhard; and Sudau, Jorg, 5,377,560, Cl. 74-574.000.
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Forbes, John R. H.; Maryanski, Peter A.; and Matus, Barry, to Franklin Mint Company: Doll stand, 5,378,187, Cl. 446-268.000.

Ford, Frederick E.; Bowne, Arlyce T.; and Kottlarch, Carl, Jr., to Eastman Kodak Company: Color photographic reversal element with improved color reproduction, 5,378,590, Cl. 430-504.000.

Ford Motor Company: See—
James, John V., 5,377,537, Cl. 73-117.300.

LoRusso, Julian A.; Cook, Jeffrey A.; Szpak, Peter S.; and Grizzle, Jessy W., 5,377,654, Cl. 123-673.000.

Porambo, Sylvester P., 5,379,449, Cl. 455-52.300.

Schlechter, Michael M., 5,377,631, Cl. 123-198.00F.

Servati, Hamid B.; Darr, Steven T.; and Furness, Mary B., 5,377,486, Cl. 60-288.000.

Tang, Sing C.; and Carnes, James C., 5,379,227, Cl. 364-472.000.

Warner, Larry R., 5,378,013, Cl. 280-728.00B.

Forensic Technology WAI, Inc.: See—
Baldur, Roman, 5,379,106, Cl. 356-375.000.

Forestry and Forest Products Research Institute: See—
Fujii, Tsuyoshi; and Miyatake, Atsushi, 5,377,732, Cl. 144-347.000.

Forner, Charles K.: See—
Scuderi, Carmelo J.; and Forner, Charles K., 5,378,123, Cl. 417-415.000.

Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, to Sun Microsystems, Inc.: Method and apparatus for object oriented interprocess message switching, 5,379,426, Cl. 395-650.000.

Foster, Clark B.: See—
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,378,233, Cl. 604-83.000.

Foster, Curtis C.: See—
Foster, Gary D.; and Foster, Curtis C., 5,377,657, Cl. 124-86.000.

Foster, Gary D.; and Foster, Curtis C.: Archery bow holder, 5,377,657, Cl. 124-86.000.

Foster, Jewett E.; Lind, Theodore; Mooney, Charles W.; and Holden, Irving H., to Motorola, Inc.: Impulse transducer enunciator, 5,379,032, Cl. 340-825.460.

Foster, Kenneth L.: See—
Brewer, Richard G.; Devoe, Ralph G.; Foster, Kenneth L.; Hoffnagle, John A.; and Kallenbach, Reinald, 5,379,000, Cl. 331-3.000.

Foster, L. Dale; and Reeder, Ryan A., to Hill-Rom Company, Inc.: Hospital bed with collapsing wing, 5,377,370, Cl. 5-620.000.

Foster, L. Dale, to Hill-Rom Company, Inc.: Hospital bed with pivoting headboard, 5,377,371, Cl. 5-503.100.

Foster, Robert F.; and Hillman, Joseph T.: Method for chemical vapor deposition of titanium nitride films at low temperatures, 5,378,501, Cl. 427-255.200.

Foster, Wilbur A.: Bed covering retaining device, 5,377,391, Cl. 24-72.500.

Fowler, Gary F.: See—
Walter, Graham D.; Fowler, Gary F.; and Johansen, John H., 5,379,056, Cl. 346-76.0PH.

Foxboro Company, The: See—
Vernon, Robert D., 5,378,581, Cl. 430-313.000.

Framatome: See—
Broutellande, Serge, 5,379,331, Cl. 376-285.000.

Framatome Connectors International: See—
Ollivier, Jean-Francois; Lalaouna, Said; and Penha, Manuel, 5,379,112, Cl. 356-150.000.

France Telecom: See—
Detaint, Jacques; Schwartzel, Jacquie; Toudic, Yves; Philippot, Etienne; Cappelle, Bernard; Zarka, Albert; Goiffon, Aline; and Arnaud, Roger, 5,377,615, Cl. 117-1.000.

Francis, Richard T.; and Ohlmeier, Jerry A., to Gray Automotive Products Company: Swing arm short-rise vehicle lift, 5,377,782, Cl. 187-219.000.

Frank, Kurt; Schmid, Werner; Strohl, Willi; Thoenissen, Jochen; and Ungerer, Martin, to Robert Bosch GmbH: Device for supplying fuel from supply tank to internal combustion engine of motor vehicle, 5,378,125, Cl. 417-423.300.

Frank, Lee F.: See—
Devaney, Mark J.; Lercher, John S.; Frank, Lee F.; Wagner, Paul W.; and Helfer, Jeffrey L., 5,379,087, Cl. 354-331.000.

Frank, Hans-George; and Prince, Eric T., to Eastman Kodak Company: High durability mask for dry etch processing of GaAs, 5,378,316, Cl. 156-659.100.

Frankiewicz, Theodore C.; and Juengst, Clifford D., to Union Oil Company of California: Method to scavenge hydrogen sulfide from natural gas, 5,378,441, Cl. 423-220.000.

Franklin Mint Company: See—
Forbes, John R. H.; Maryanski, Peter A.; and Matus, Barry, 5,378,187, Cl. 446-268.000.

Franklin, Ralph: See—
Castro, Anthony J.; Van Dwyne, Richard P.; Sheng, King C.; Bianchini, Robert J.; Parr, William J.; Franklin, Ralph; and Natan, Michael J., 5,378,508, Cl. 427-556.000.

Frankoski, Edward J.: See—
Bard, Steven L.; Bendz, Gerald A.; Canestaro, Michael J.; Chapura, John R.; Frankoski, Edward J.; Horan, Michael S.; Jones, Jeffrey D.; Kamperman, James S.; Kjellaard, John R., Jr.; and McCreary, Jack M., 5,378,307, Cl. 156-639.000.

Fransham, Peter; Rasmussen, John; and Ainslie, Stan, to Worthing Industries, Inc.: Thermolysis of pentachlorophenol treated poles, 5,378,323, Cl. 201-8.000.

Franz, Klaus-Dieter: See—
Parusel, Manfred; Ambrosius, Klaus; Franz, Klaus-Dieter; Hechler, Wolfgang; and Schraml-Marth, Matthias, 5,378,400, Cl. 252-315.010.

Fraser, David: See—
Gratzel, Michael; Fraser, David; Zakeeruddin, Shaik M.; Randin, Jean-Paul; and Frenkel, Erik J., 5,378,628, Cl. 435-288.000.

Frass, Hans W.; Hackmann, Ernst-August; Joerg, Klaus; Koenneke, Dietmar; Neubauer, Rudolf; and Elsaesser, Andreas, to Hoechst Aktiengesellschaft: Radiation-sensitive recording material with a positive-working, radiation-sensitive layer having a rough surface containing a surfactant having polysiloxane units, 5,378,584, Cl. 430-165.000.

Fredriksson, Lars-Berno; and Fritzon, Joachim, to IRO AB: Sensing and/or analysis system for thread feeder, 5,377,922, Cl. 242-47.010.

Freebern, Timothy H.: See—
Bauer, Tibor L.; Cavaliere, William A.; Dart, Charles R., II; Freebern, Timothy H.; Linnell, David C.; Miller, James M.; and Wu, Jin J., 5,377,911, Cl. 239-135.000.

Freed, Anna B.: Two-way adjustable tie, 5,377,387, Cl. 24-16.0PB.

Freese, Donald T.: See—
Carey, William S.; Solov, Andrew; Freese, Donald T.; and Perez, Libardo A., 5,378,372, Cl. 210-697.000.

Perez, Libardo A.; Freese, Donald T.; Rockett, Judith B.; and Carey, William S., 5,378,390, Cl. 252-180.000.

Freiborg, Bennie: Ridge cover and shingle and method of making and using the same, 5,377,459, Cl. 52-57.000.

Freidinger, Roger M.: See—
Bergman, Jeffrey M.; Freidinger, Roger M.; and Bock, Mark G., 5,378,838, Cl. 540-509.000.

Freitas, Michael S.: See—
Oakes, Shawn A.; Steichen, Richard T.; Freitas, Michael S.; Toma, Joseph G., Jr.; and Gray, Daryl J., 5,377,862, Cl. 220-513.000.

Freitas, Michael W.: See—
Smith, Barry W.; and Freitas, Michael W., 5,377,814, Cl. 198-465.400.

French, Diana J.; and Oda, Charlotte M.: Pouch for paper notebooks, 5,378,022, Cl. 281-31.000.

Frenkel, Erik J.: See—
Gratzel, Michael; Fraser, David; Zakeeruddin, Shaik M.; Randin, Jean-Paul; and Frenkel, Erik J., 5,378,628, Cl. 435-288.000.

Fricke, Andreas; and Ganter, Udo, to Heidelberger Druckmaschinen AG: Delivery for a sheet-fed printing press, 5,377,588, Cl. 101-240.000.

Friederich, Kilian; Michell, Winfried; and von Behr, Diedrich, to Cerasiv GmbH: Innovative Keramik-Engineering: Valve, 5,377,713, Cl. 137-1.000.

Friedland, Anthony E., to Thermo King Corporation: Method and apparatus for evacuating and charging a refrigeration unit, 5,377,493, Cl. 62-77.000.

Friedman, Arthur S.: Portable light for laptop computer, 5,379,201, Cl. 362-191.000.

Friedmann, Oswald; and Jackel, Johann, to Luk Lamellen und Kupplungsbau GmbH: Apparatus for transmitting force between rotary driving and driven units, 5,377,796, Cl. 192-3.290.

Friedrich Grohe Aktiengesellschaft: See—
Bischoff, Bernd, 5,377,367, Cl. 4-605.000.

Fritch, John R.: Landscape edging apparatus and method, 5,377,447, Cl. 47-33.000.

Fritsch, Antoine: See—
Salmon, John K.; and Fritsch, Antoine, 5,377,783, Cl. 187-325.000.

Fritz, Raimund: See—
Ketterer, Dieter, deceased; Brigitte, Ketterer; Fritz, Raimund; Seeger, Heinz; Conzelmann, Ralf; Schumacher, Michael; and Moeller, Tilo, 5,378,018, Cl. 280-737.000.

Fritzson, Joachim: See—
Fredriksson, Lars-Berno; and Fritzon, Joachim, 5,377,922, Cl. 242-47.010.

Frueberg, Paul; and Johannson, Goeran, to Siemens-Elema AB: Device for affixing an electrode cable to an apparatus, 5,378,177, Cl. 439-836.000.

Fruehan, Richard J.: See—
Cox, James H.; Fruehan, Richard J.; and Elliott, John F., deceased, 5,378,260, Cl. 75-500.000.

Frye, Rick J., to MIM Industries, Inc.: Dual clamping system, 5,377,605, Cl. 112-114.000.

Fuchs, Charles R.; Lindsay, Peter; and Nicholas, Henry S., to GEC-Marconi Electronic Systems Corp.: Low profile angular rate sensor assembly, 5,377,543, Cl. 73-504.000.

Fuhrmann, Castor: See—
Knopp, Axel; Binder, Andreas; Hosan, Hans-Josef; and Fuhrmann, Castor, 5,377,942, Cl. 248-161.000.

Fuji Electric Co., Ltd.: See—
Otsuki, Masahito; and Ueno, Katsunori, 5,378,903, Cl. 257-133.000.

Sasaki, Toshiaki; and Shimizu, Hitoshi, 5,378,639, Cl. 437-4.000.

Fuji Oil Company, Limited: See—
Minamikawa, Yoriko; and Baba, Hideki, 5,378,481, Cl. 426-99.000.

Fuji Photo Film Co., Ltd.: See—
Hoshimiya, Takashi; Ezoe, Toshihide; and Katoh, Kazunobu, 5,378,578, Cl. 430-264.000.

Ito, Wataru, 5,378,563, Cl. 430-30.000.

Kashiwaya, Makoto, 5,378,496, Cl. 427-128.000.

Matsuda, Shinichi; and Ikeda, Jun, 5,379,085, Cl. 354-319.000.

Nakanishi, Ken; Takehana, Tadashi; Tamaki, Hiroyuki; and Nishikawa, Sumio, 5,378,592, Cl. 430-533.000.

Nakayama, Takao; Dan, Shigeyuki; and Sera, Hidefumi, 5,378,564, Cl. 430-49.000.

Naruse, Hideaki; and Suzuki, Makoto, 5,378,596, Cl. 430-549.000.

Ogawa, Masazumi, 5,377,399, Cl. 29-407.000.

Okazaki, Kentaro; Oshima, Masao; and Takada, Kiyoto, 5,378,594, Cl. 430-545.000.

Sakai, Takashi; Jinbo, Kishio; Makiyama, Koichi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, 5,378,576, Cl. 430-126.000.

Suzuki, Hideki, 5,378,897, Cl. 250-484.400.

Takizawa, Hiroo; and Makota, Toshiyuki, 5,378,595, Cl. 430-546.000.

Tomiyama, Hideki, 5,378,560, Cl. 429-217.000.

Fuji Xerox Co., Ltd.: See—
Akiyama, Reiko; Suzuki, Chiaki; Eguchi, Atuhiko; and Aoki, Takayoshi, 5,378,572, Cl. 430-110.000.

Hayashi, Naoki; and Saito, Kazuo, 5,379,373, Cl. 395-148.000.

Ikegaya, Tadahiko; Maei, Yoshihiro; Matsui, Tsunehiro; Sakayama, Takashi; and Kamiyama, Yasuhiro, 5,379,124, Cl. 358-440.000.

Kobayashi, Tomoo; and Sato, Katsuhiro, 5,378,570, Cl. 430-58.000.

Nukada, Katsumi; Daimon, Katsumi; Iijima, Masakazu; Sakaguchi, Yasuo; Nukada, Hidemi; and Tokida, Akihiko, 5,378,569, Cl. 430-58.000.

Sakai, Takashi; Jinbo, Kishio; Makiyama, Koichi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, 5,378,576, Cl. 430-126.000.

Fujihara, Atsushi; and Kitahara, Takeshi, to Fujitsu Limited: Data processing device for preventing inconsistency of data stored in main memory and cache memory, 5,379,402, Cl. 395-425.000.

Fujii, Eiji: See—
Torii, Hideo; Fujii, Eiji; Hattori, Masumi; Aoki, Masaki; and Kuribayashi, Kiyoshi, 5,378,548, Cl. 428-694.0TS.

Fujii Kinzoku Kako Co., Ltd.: See—
Ota, Takashi, 5,378,533, Cl. 428-304.400.

Fujii, Masumi; Suda, Taichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimono, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Tsuru; and Mitsuoka, Shigeaki, to Kansai Electric Power Co., Inc., The; and Mitsubishi Jukogyo Kabushiki Kaisha: Method for treating combustion exhaust gas, 5,378,442, Cl. 423-228.000.

Fujii, Shohei; and Suitsu, Katsumi, to Alps Electric Co., Ltd: Remote control device, 5,379,033, Cl. 340-825.690.

Fujii, Shoji: See—
Ohtake, Hisao; Okamoto, Seiji; and Fujii, Shoji, 5,379,294, Cl. 370-30.000.

Fujii, Toshiro; Inukai, Hitoshi; and Iwama, Kazuaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: Swash plate type compressor, 5,378,115, Cl. 417-269.000.

Fujii, Tsuyoshi; and Miyatake, Atsushi, to Forestry and Forest Products Research Institute: Wood joining structure and method thereof, 5,377,732, Cl. 144-347.000.

Fujikura, Takashi: See—
Tanaka, Akihiro; Fujikura, Takashi; Tsuzuki, Ryuji; Yokota, Masaki; and Yatsu, Takeyuki, 5,378,849, Cl. 546-114.000.

Fujimori, Hideaki; Ishikawa, Tetsu; Tamura, Yoshihisa; and Imaizumi, Minoru, to NEC Corporation; and Sanyo Electric Co., Ltd: Hinged display panel with outer cover and display panel unit separately connected to an inner cover and information machine including the same, 5,379,182, Cl. 361-681.000.

Fujimoto, George: See—
Lee, Sang S.; and Fujimoto, George, 5,379,187, Cl. 361-707.000.

Fujimoto, Masahisa: See—
Furukawa, Nobuhiro; Fujimoto, Masahisa; Yoshinaga, Noriyuki; and Ueno, Koji, 5,378,561, Cl. 429-218.000.

Fujinami, Kazuo: See—
Inoue, Yoshiaki; Murabayashi, Shigeru; Fujinami, Kazuo; Yoshino, Isamu; Kawakami, Takamasa; Makinose, Satoru; and Naito, Akira, 5,378,428, Cl. 422-9.000.

Fujio, Miko: See—
Marui, Yoji; Hayashi, Chozo; Ito, Shigeki; Fujio, Miko; Tanaka, Hiroki; Nagasaki, Toshihide; Soda, Yasuji; and Kaneta, Hitoshi, 5,378,608, Cl. 435-7.500.

Fujioka, Yoshiki: See—
Karube, Norio; Fujioka, Yoshiki; and Manabe, Mitsuo, 5,379,316, Cl. 372-61.000.

Fujisaki, Akira: See—
Sentsui, Shintaro; Fujisaki, Akira; Ogoshi, Haruki; Mizutani, Morinobu; and Miyazaki, Mitsuo, 5,379,357, Cl. 385-11.000.

Fujise, Hiroshi: See—
Hirasawa, Shigeki; Mori, Kinji; Orimo, Masayuki; Takeuchi, Masuyuki; Fujise, Hiroshi; Suzuki, Hitoshi; and Koai, Ichitaro, 5,379,429, Cl. 395-700.000.

Fujita, Kazuhiro: See—
Isoai, Masaru; Harada, Toshiharu; Kurata, Tokihiro; Fujita, Kazuhiro; Takama, Kazushi; and Jikuhara, Shigekazu, 5,378,380, Cl. 252-62.560.

Fujita, Koreaki, to Mitsubishi Denki Kabushiki Kaisha: Semiconductor memory device, 5,379,259, Cl. 365-200.000.

Fujita, Shinji: See—
Yoshioka, Hideki; Asada, Hajime; and Fujita, Shinji, 5,378,611, Cl. 435-58.000.

Fujita, Shuji, to Juki Corporation: Thread tensioning device for sewing machine, 5,377,606, Cl. 112-254.000.

Fujita, Tetsuya: See—
Ohira, Yoji; and Fujita, Tetsuya, 5,378,794, Cl. 528-167.000.

Fujitsu Limited: See—
Fujihara, Atsushi; and Kitahara, Takeshi, 5,379,402, Cl. 395-425.000.

Higuchi, Toshiro; Egawa, Saku; Hiyan, Masao; and Natori, Katsuhide, 5,378,954, Cl. 310-309.000.

Ishibashi, Ryoichi; Tachibana, Tetsuo; and Ohmori, Hisakazu, 5,379,307, Cl. 371-62.000.

Kobayashi, Kazuya; Miyasaka, Kiyoshi; and Ogawa, Junji, 5,379,264, Cl. 365-230.060.

Masaki, Satoru, 5,379,175, Cl. 361-56.000.

Morgan, Lisa A.; and Parrish, Marty, 5,379,411, Cl. 395-575.000.

Ono, Yoshinobu; Watanabe, Yoshio; and Tanida, Shinjiro, 5,377,596, Cl. 104-284.000.

Saiki, Koichi; and Tanegashima, Toshihiko, 5,379,298, Cl. 370-79.000.

Sato, Kazuaki; and Iida, Kenji, 5,378,310, Cl. 156-643.000.

Shirasaki, Masataka, 5,379,144, Cl. 359-181.000.

- Toyoda, Osamu; and Betsui, Kenichi, 5,378,658, Cl. 437-228.000.
Yunoki, Hideo, 5,379,383, Cl. 395-325.000.
- Fujiwara, Takaaki; Watanabe, Shoji; Takemoto, Shin; and Harano, Yoshiyuki, to Daicel Chemical Industries, Ltd. Composition comprising novel alicyclic compound, process for preparation thereof, curable composition, and photo-polymerizable composition. 5,378,736, Cl. 522-170.000.
- Fujiwara, Makoto; and Amano, Tadashi, to Shin-Etsu Chemical Co., Ltd. Process for producing high-quality vinyl chloride polymers using a perester or percarbonate and 1-cyclohexyl-1-methylethyl peroxyneodecanoate. 5,378,781, Cl. 526-228.000.
- Fukagawa, Daisuke: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-375.000.
- Fukumochi, Yasuaki: See—
Uenishi, Akio; and Fukumochi, Yasuaki, 5,379,089, Cl. 354-416.000.
- Fukunaga, Yasuyuki: See—
Nakakuma, Akira; and Fukunaga, Yasuyuki, 5,379,096, Cl. 355-245.000.
- Fukuyama, Masashi: See—
Mackawa, Kiachiro; Ota, Takashi; Fukuyama, Masashi; and Nagasawa, Shinji, 5,379,361, Cl. 385-65.000.
Ota, Takashi; and Fukuyama, Masashi, 5,379,360, Cl. 385-59.000.
- Fullerton, Robert L. Method and apparatus for rapidly engaging and disengaging threaded coupling members. 5,378,100, Cl. 411-267.000.
- Funai Electric Co., Ltd.: See—
Kitagawa, Yuichi, 5,378,876, Cl. 219-710.000.
- Fung, Shun C., to Exxon Research and Engineering Company. Method for treating a catalyst. 5,378,669, Cl. 502-37.000.
- Furay, David M.: See—
Morehouse, James H.; Furay, David M.; Alt, Robert A.; Emo, Bruce D.; and Dunckley, James A., 5,379,171, Cl. 360-10.500.
- Furlong, Arnold: See—
Brooke, John; Furlong, Arnold; and Lebars, Geoff, 5,378,851, Cl. 114-259.000.
- Furlong, Donn B.: See—
Cook, Harold T., Jr.; Fielding, Mimi S.; and Furlong, Donn B., 5,377,855, Cl. 220-4.230.
- Furness, Mary B.: See—
Servati, Hamid B.; Darr, Steven T.; and Furness, Mary B., 5,377,486, Cl. 60-288.000.
- Furukawa Electric Co., Ltd.: See—
Green, Mino; Syms, R. R. A.; Holmes, Andrew S.; Ueki, Ken; and Yanagawa, Hisaharu, 5,378,256, Cl. 65-395.000.
- Sentsui, Shintaro; Fujisaki, Akira; Ogoshi, Haruki; Mizutani, Morinobu; and Miyazaki, Mitsuo, 5,379,357, Cl. 385-11.000.
- Furukawa, Nobuhiro; Fujimoto, Masahisa; Yoshinaga, Noriyuki; and Ueno, Koji, to Sanyo Electric Co., Ltd. Secondary cell. 5,378,561, Cl. 429-218.000.
- Furuya, Tsuneo: See—
Nakagoshi, Arata; Suzuki, Hideya; Yamamoto, Yoshinobu; Shimbo, Isao; Furuya, Tsuneo; and Kuwahara, Hiroshi, 5,379,451, Cl. 455-54.200.
- G. D. Searle & Co.: See—
Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,378,727, Cl. 514-465.000.
- Lee, Albert C.; Hallinan, E. Ann; Hagen, Timothy J.; Husa, Robert K.; Tsymbalov, Sofya; and Van Hoeck, Jean-Pierre, 5,378,840, Cl. 540-547.000.
- Gailus, Paul H.: See—
Charaska, Joseph A.; Gannon, Mark A.; and Gailus, Paul H., 5,379,039, Cl. 341-143.000.
- Galbi, David E.: See—
Purcell, Stephen C.; Galbi, David E.; Liao, Frank H.; and Tse, Yvonne C., 5,379,356, Cl. 382-56.000.
- Galgon, William P.: See—
Hirshenorn, Steven J.; Reisbord, Steven T.; and Galgon, William P., 5,379,199, Cl. 362-147.000.
- Galileo Electro-Optics Corporation: See—
Tasker, G. William; and Horton, Jerry R., 5,378,960, Cl. 313-103.0CM.
- Gall, Thomas P.; and Loomis, James R., to International Business Machines Corporation. Parallel processor structure and package. 5,379,193, Cl. 361-784.000.
- Gallagher, Peter T.: See—
Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; Singh, Jai P.; and Smith, Colin W., 5,378,699, Cl. 514-312.000.
Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; and Smith, Colin W., 5,378,717, Cl. 514-337.000.
- Gallagher, Robert E., Sr., to Whitaker Corporation, The. Case and cable assembly. 5,378,166, Cl. 439-214.000.
- Gallo, Frank; and Vicard, Jean-Francois, to Belco Technologies Corp. System for controlling an electrostatic precipitator using digital signal processing. 5,378,978, Cl. 323-241.000.
- Galperin, Grigori: See—
Aizatulov, Rafik; Kustov, Boris; Galperin, Grigori; Grenader, Iakov; and Gitman, Gregory, 5,378,261, Cl. 75-528.000.
- Gannon, Mark A.: See—
Charaska, Joseph A.; Gannon, Mark A.; and Gailus, Paul H., 5,379,039, Cl. 341-143.000.
- Gante, Joachim: See—
Raddatz, Peter; Gante, Joachim; Sombroek, Johannes; Schmitges, Claus J.; and Minck, Klaus-Otto, 5,378,691, Cl. 514-18.000.
- Ganter, Udo, to Heidelberger Druckmaschinen AG. Air-flow generating device for a sheet delivery of a sheet-fed printing machine. 5,377,971, Cl. 271-207.000.
- Ganter, Udo: See—
Fricke, Andreas; and Ganter, Udo, 5,377,588, Cl. 101-240.000.
- Garavaglia, Carlo: See—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Garavaglia, Carlo; and Mirena, Luigi, 5,378,707, Cl. 514-239.500.
- Garcia, Lawrence. Multi-purpose luggage convertible from a backpack to a handbag. 5,377,887, Cl. 224-153.000.
- Garcia Pastor, Daniel; and Garcia Pastor, Francisco, to D.G. International S.A. Pulpers for disintegrating cellulose pulp. 5,377,918, Cl. 241-46.170.
- Garcia Pastor, Francisco: See—
Garcia Pastor, Daniel; and Garcia Pastor, Francisco, 5,377,918, Cl. 241-46.170.
- Gardiner, Charles M.: See—
Wing, Joseph M.; Benedict, Lawrence R.; Parks, Bruce J.; Pictor, Robert A.; Head, John D.; Whipple, John W.; and Gardiner, Charles M., 5,379,094, Cl. 355-215.000.
- Gariglio, Barry. Bait rigging system. 5,377,442, Cl. 43-44.400.
- Garry, Guy: See—
Cabanel, Regis; Garry, Guy; Schuhl, Alain; and Ghyselen, Bruno, 5,378,683, Cl. 505-190.000.
- Gaskill, D. Kurt; Bottka, Nicholas; and Berry, Alok K., to United States of America, Navy. Method and apparatus for non-destructively measuring local resistivity of semiconductors. 5,379,109, Cl. 356-445.000.
- Gauron, Richard F. Inset panel fastener with shoulder-engaging floating member. 5,378,099, Cl. 411-82.000.
- Gavoni, Albino, to Gavoni B. G. M. Silenziatori Di Albino Gavoni & C. S.a.s. Silencer combined with catalytic converter for internal combustion engines and modular diaphragm elements for said silencer. 5,378,435, Cl. 422-177.000.
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- Gebruder Muller Apparatebau GmbH & Co. KG: See—
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- GIA Gem Instruments Corporation: See—
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- Giant Factories Inc.: See—
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- Givon, Menachem: See—
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- Glazer, Bradley M. Reminder device for pill containers. 5,377,614, Cl. 116-308.000.
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von Behrens, Wieland E.; Haiflich, Sherry; Glazier, John; Roche, John M.; and Director, Bruce A., 5,378,633, Cl. 436-63.000.
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- Glode, Leonard M.: See—
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- Glover, J. Howard, to AlliedSignal Inc. Wind shear detector with slow shear bias, 5,379,035, Cl. 340-968.000.
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- Gochman, Simcha; Kazachinsky, Itamar; and Kagan, Michael, to Intel Corporation. Write ordering for microprocessor depending on cache hit and write buffer content, 5,379,396, Cl. 395-425.000.
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- Goertzen, Dennis D. Air compressor having ventilated housing and motor/compressor pulley adjustment, 5,378,119, Cl. 417-313.000.
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- Goetz, Richard J.: See—
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- Gohl, Edmund W.: See—
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- Goiffon, Aline: See—
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- Goldberg, Ronald L., to Ciba Corning Diagnostics Corp. Method for measuring hyaluronic acid, 5,378,637, Cl. 436-501.000.
- Goldner Associates Ltd.: See—
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- Goldstar Co., Ltd.: See—
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- Song, Ki H., 5,379,076, Cl. 348-699.000.
- Goldstar Electron Co., Ltd.: See—
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- Gordon, Robert L.; Naugle, George H.; and Stier, David E., to International Paper Company. Reduced warp paperboard tray, 5,377,903, Cl. 229-116.100.
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- Gordy, Lee S.: See—
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- Gorman Company, Inc.: See—
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- Gorman, G. W., to Gorman Company, Inc. Guided split packing ring, 5,377,999, Cl. 277-9.000.
- Gorman, William G.; and Carroll, Fred A., III, to Dow B. Hickam, Inc. Topical medicinal pressurized aerosol compositions and method of preparation, method of use and article of manufacture thereof, 5,378,451, Cl. 424-47.000.
- Gornowicz, Gerald A.: See—
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- Goto, Tsuyoshi: See—
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- Gotoh, Morikazu: See—
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- Goyak, George M.: See—
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- Graf, Felix, to Rieter Machine Works, Ltd. Process and apparatus for removing liquid from fast moving threads, 5,378,377, Cl. 210-787.000.
- Graf, Herbert; Schwenger, Juergen; Zimmermann, Werner; Wichert, Bernd; and Bielech, Thomas, to Robert Bosch GmbH. Method and device for triggering an electromagnetic consumer, 5,379,178, Cl. 361-152.000.
- Grafotec Kottler GmbH: See—
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- Graham, Martin H.: See—
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- Graham, Randolph H.: See—
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- Graham, Roger K.: See—
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- Grahn, Eva E.; and Holm, Stig E. F. Pharmaceutical preparation in the treatment of tonsillitis, 5,378,459, Cl. 424-93.440.
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- Grant, Michael E.: See—
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- Graper, Jane C.: See—
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- Graphic Controls Corporation: See—
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- Graves, David A. Locking container for hand weapon, 5,379,179, Cl. 361-232.000.
- Gray Automotive Products Company: See—
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- Gray, Daryl J.: See—
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- Gray, Henry F.; and Price, Ronald R., to United States of America, Navy. Method and apparatus for a high resolution, flat panel cathodoluminescent display device, 5,378,962, Cl. 313-495.000.
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- Greber, Johanna, Peter Greber, heirs: See—
Greber, Gerhard, deceased; Gruber, Heinrich; and Sychra, Marcel, 5,378,799, Cl. 528-342.000.
- Greczyn, Wendy R., to Church & Dwight Co., Inc. Process for manufacture of antiperspirant cosmetic stick products, 5,378,452, Cl. 424-65.000.
- Green, Mino; Syms, R. R. A.; Holmes, Andrew S.; Ueki, Ken; and Yanagawa, Hisaharu, to Furukawa Electric Co., Ltd. The Method of manufacturing silica waveguide optical components, 5,378,256, Cl. 65-395.000.
- Green, William J. Turf and garden tool, 5,377,374, Cl. 7-114.000.
- Greenberg, Burton L., to Radio Audit Systems, Inc. Method and apparatus for the processing of encoded data in conjunction with an audio broadcast, 5,379,345, Cl. 380-23.000.
- Greenberg, Michael J., to Wm. Wrigley Jr. Company, The. Chewing gum with dental health benefits employing calcium glycerophosphate, 5,378,131, Cl. 424-440.000.
- Greenberger, Haim; Hebron, Yoav; and Raghavan, Sreenivasa A., to Comstream Corporation. Method and apparatus for performing finite field division, 5,379,243, Cl. 364-746.100.
- Greenbrier Innovations, Inc.: See—
Wade, Steven E., 5,378,066, Cl. 383-205.000.
- Greenwood, Reginald C.: See—
Cole, Jerald D.; Aryaiejad, Rahmat; and Greenwood, Reginald C., 5,378,895, Cl. 250-390.040.
- Gregg, Lance, to Genesis Microchip, Inc. Method and apparatus for quadratic interpolation, 5,379,241, Cl. 364-723.000.
- Gregory, Ralf: See—
Pai, Klaus; and Gregory, Ralf, 5,378,996, Cl. 330-129.000.
- Greig, Nigel H.: See—
Brossi, Arnold; He, Xiao-shu; and Greig, Nigel H., 5,378,723, Cl. 514-41.100.
- Grenader, Iakov: See—
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- Gresley, Ross A.: See—
Waters, John E.; Harris, Brent A.; Gresley, Ross A.; Boys, William E.; and Brouns, Daniel R., 5,378,555, Cl. 429-97.000.
- Gress, Kyle: See—
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- Griesbach, Michael: See—
Thies, Uwe; Griesbach, Michael; Schwindt, Jurgen; and Mazanek, Jan, 5,378,756, Cl. 524-591.000.
- Griesmer, Jerome J.; and Krebs, Lynn W., to Picker International, Inc. Automatic grid oscillation control for radiographic imaging systems, 5,379,335, Cl. 378-155.000.
- Griffin, Curtis; Siomkos, John R.; and Tan, Geroncio, to Motorola, Inc. Leadless surface mountable assembly, 5,379,185, Cl. 361-709.000.
- Griffin, Steven F., to United States of America, Air Force. Vibration damping system, 5,378,974, Cl. 318-649.000.
- Griffith, Richard R., to Sturges Manufacturing Company, Inc. Quick-release disconnect for a harness, 5,377,386, Cl. 24-3.00B.
- Grim, Tracy E.; and Iglesias, Joseph M., to Royce Medical Company. Orthopedic support pad and method for providing semi-permanent relief zones, 5,378,223, Cl. 602-6.000.
- Grimes, Gary J.: See—
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- Grimme, Hans, to Hans Lingl GmbH & Co. KG. Method and apparatus for notching and cutting a clay column slug into bricks, 5,378,423, Cl. 264-293.000.
- Griner, Ward J. Apparatus for cutting a hole in a pipe liner, 5,378,092, Cl. 409-143.000.
- Grizzle, Jessy W.: See—
LoRusso, Julian A.; Cook, Jeffrey A.; Szpak, Peter S.; and Grizzle, Jessy W., 5,377,654, Cl. 123-673.000.
- Gronvald, Frederik C.: See—
Hansen, John B.; Jeppesen, Lone; and Gronvald, Frederik C., 5,378,714, Cl. 514-321.000.
- Grootaert, Werner M., to Minnesota Mining and Manufacturing Company. Fluorine-containing polymers and preparation and use thereof, 5,378,782, Cl. 526-255.000.
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Kemp, Paul D.; Carr, Robert M., Jr.; Maresh, John G.; Cavallaro, John; and Gross, Jerome, 5,378,469, Cl. 424-423.000.
- Gross, Richard A.; McCarthy, Stephen P.; and Shah, Devang T., to University of Massachusetts at Lowell. Gamma-poly(glutamic acid) esters, 5,378,807, Cl. 530-350.000.
- Grube, Gary W.; and Markison, Timothy W., to Motorola, Inc. Detection of unauthorized use of software applications in communication units, 5,379,343, Cl. 380-4.000.
- Gruber, Heinrich: See—
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- Gruetzmacher, Detlev A.: See—
Agnello, Paul D.; Gruetzmacher, Detlev A.; Kuan, Tung-Sheng; and Sedgwick, Thomas O., 5,378,651, Cl. 437-106.000.
- Grujic, Ljubomir T.; and Mounfield, William P., Jr., to M&M Software Products, Inc. Natural tracking controller, 5,379,210, Cl. 364-148.000.
- Grumman Aerospace Corporation: See—
Arcas, Noe; Kay, Shepard G.; and Parente, Charles A., 5,377,546, Cl. 73-589.000.
- Grundfest, Warren S.: See—
Vari, Sandor G.; and Grundfest, Warren S., 5,377,676, Cl. 128-634.000.
- Gruppo Lepetit S.p.A.: See—
Panzone, Gianbattista; and Gianantonio, Anacleto, 5,378,837, Cl. 540-456.000.
- Gruver, William A.: See—
Guo, Gongliang; Qian, Xikang; and Gruver, William A., 5,378,033, Cl. 294-116.000.
- GTE Products Corporation: See—
Kasenga, Anthony F.; Lenox, Joseph J.; and Tulk, John S., 5,378,398, Cl. 252-301.40R.
- Guard, Paul P. Assembly for housing multiple waste receptacles, 5,377,907, Cl. 232-43.200.
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Boukang, Bouakeo; Fernandez, Joseph F.; and North, Oliver L., 5,377,577, Cl. 89-36.050.
- Guckel, Henry; Christenson, Todd R.; and Skrobis, Kenneth, to Wisconsin Alumni Research Foundation. Formation of microstructures using a preformed photoresist sheet, 5,378,583, Cl. 430-325.000.
- Guest, Gordon T.: See—
Kosar, Keith M.; Gilchrist, H. Glen; Guest, Gordon T.; and Leach, Bryan, 5,377,761, Cl. 166-308.000.
- Guichard, Philippe; Grandvallet, Pierre; Barre, Guy; Hoek, Arend; and Boon, Andries Q. M., to Shell Oil Company. Process for the preparation of lubricating base oils, 5,378,351, Cl. 208-143.000.
- Gundersen, Ernest M., to Fargo Electronics, Inc. Transfer materials supplier, 5,378,072, Cl. 400-692.000.
- Gunjima, Tomoki: See—
Hirai, Yoshimori; Niiyama, Satoshi; and Gunjima, Tomoki, 5,379,137, Cl. 359-51.000.
- Gunlock, Danny E.; Rawlings, C. Craig; and McGee, Ed J., to Prodx Company, The. Device for removing brake drum and hub assembly, 5,378,004, Cl. 280-47.200.
- Guntermann, Hans J.: See—
Besch, Gordon O.; Kachik, Robert H.; Swartz, Mark A.; Kuster, Frank K.; and Guntermann, Hans J., 5,377,959, Cl. 266-167.000.
- Guo, Gongliang; Qian, Xikang; and Gruver, William A., to University of Kentucky Research Foundation. Multi-function mechanical hand with shape adaptation, 5,378,033, Cl. 294-116.000.
- Guo, Jianhui: See—
Feitelson, Mark; Duan, Ling-Xun; and Guo, Jianhui, 5,378,605, Cl. 435-5.000.
- Guo, Yanping: See—
Hu, Shouxiang; and Guo, Yanping, 5,379,136, Cl. 359-47.000.
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Glover, Willie T.; Singh, Gururaj; Gupta, Amar; and Newman, Peter, 5,379,297, Cl. 370-60.100.
- Gupta, Mool C., to Eastman Kodak Company. Laser diode coupling to waveguide and method of making same using substrate etching, 5,379,359, Cl. 385-49.000.
- Gurley, Sally, to Allegro Natural Dyes, Inc. Indigo dye process, 5,378,246, Cl. 8-625.000.
- Gusmeroli, Marilena: See—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Garavaglia, Carlo; and Mirena, Luigi, 5,378,707, Cl. 514-239.500.
- Guthrie, Guy L.: See—
Swarts, Jeffery L.; Fields, James S., Jr.; Guthrie, Guy L.; and Smetana, Denis A., Jr., 5,379,386, Cl. 395-325.000.
- Gutman, Gustav; and Goetz, Richard J., to Minnesota Mining and Manufacturing Company. Conductive microparticles and pressure-sensitive adhesive tapes made therefrom, 5,378,405, Cl. 252-62.000.
- Guzman, Javier I.: See—
Jones, Robert E., Jr.; Kryder, Mark H.; Mounfield, Keith R.; and Guzman, Javier I., 5,378,885, Cl. 235-449.000.
- Gyllinder, Anne Marie, legal representative, heir: See—
Gyllinder, Lars, deceased; Gyllinder, Anne Marie, legal representative, heir; Gyllinder, Britt, legal representative, heir; and Blomquist, Lena H., legal representative, heir, 5,377,719, Cl. 137-625.630.
- Gyllinder, Britt, legal representative, heir: See—
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- Gyllinder, Lars, deceased; by Gyllinder, Anne Marie, legal representative, heir; by Gyllinder, Britt, legal representative, heir; and by Blomquist, Lena H., legal representative, heir, to Dominator Maskin AB. Pneumatic valve, particularly for control of compressed-air-operated membrane pumps, 5,377,719, Cl. 137-625.630.

Haas, Wilhelm: See—
Schallner, Otto; Haas, Wilhelm; Linker, Karl-Heinz; Findeisen, Kurt; König, Klaus; Marhold, Albrecht; Santel, Hans-Joachim; and Schmidt, Robert R., 5,378,681, Cl. 504-273.000.

Haase, Bernd: See—
Hoppe, Lutz; Haase, Bernd; Brauer, Oke; and Szablikowski, Klaus, 5,378,826, Cl. 536-35.000.

Haber, Terry M.; Foster, Clark B.; and Smedley, William H., to Habley Medical Technology Corporation. Selected dose pharmaceutical dispenser, 5,378,233, Cl. 604-83.000.

Haberman, John P.; Delestius, Mark; and Brace, Dan G., to Texaco Inc. Method and apparatus to improve the displacement of drilling fluid by cement slurries during primary and remedial cementing operations, to improve cement bond logs and to reduce or eliminate gas migration problems, 5,377,753, Cl. 166-249.000.

Haberstroh, James A.; and Pearson, Timothy B., to Signode Corporation. Method and apparatus for a power strapping machine, 5,377,477, Cl. 53-399.000.

Habley Medical Technology Corporation: See—
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,378,233, Cl. 604-83.000.

Hacker, Terry F., to Anchor Hocking Corporation. Cover for pan having variable conventional widths, 5,377,859, Cl. 220-287.000.

Hackett, William F. Pump with fluid bearing, 5,378,121, Cl. 417-363.000.

Hackmann, Ernst-August: See—
Frass, Hans W.; Hackmann, Ernst-August; Joerg, Klaus; Koenneke, Dietmar; Neubauer, Rudolf; and Elsaesser, Andreas, 5,378,584, Cl. 430-165.000.

Hadjimitsos, Panos: See—
Blechl, Joseph; Hadjimitsos, Panos; Kurtz, James R.; Shimizu, Hiroyasu; and Haraguchi, Manabu, 5,377,864, Cl. 221-2.000.

Hadsell, William C.: See—
Musiel, D. James; Hadsell, William C.; and Oestreich, Craig R., 5,378,422, Cl. 264-238.000.

Hadvary, Paul: See—
Alig, Leo; Hadvary, Paul; Hutzler, Marianne; Müller, Marcel; Steiner, Beat; and Weller, Thomas, 5,378,712, Cl. 514-315.000.

Hagen, Helmut; Raatz, Peter; Walter, Helmut; and Landes, Andreas, to BASF Aktiengesellschaft. Thiochromenone derivatives as antidotes, and herbicides containing them, 5,378,677, Cl. 504-104.000.

Hagen, Timothy J.: See—
Lee, Albert C.; Hallinan, E. Ann; Hagen, Timothy J.; Husa, Robert K.; Tsybalov, Sofya; and Van Hoeck, Jean-Pierre, 5,378,840, Cl. 540-547.000.

Hahn, Ortwin: See—
Goetschmann, Norbert; and Hahn, Ortwin, 5,379,155, Cl. 359-820.000.

Hahn, Soonkap: See—
Bankert, Charles S.; Hahn, Soonkap; and Hui, Henry K., 5,378,432, Cl. 422-82.070.

Haiflich, Sherry: See—
von Behrens, Wieland E.; Haiflich, Sherry; Glazier, John; Roche, John M.; and Director, Bruce A., 5,378,633, Cl. 436-63.000.

Haig, Robert B.: See—
Barakat, Edmond H.; and Haig, Robert B., 5,379,400, Cl. 395-425.000.

Haikawa, Yuji, to Honda Giken Kogyo Kabushiki Kaisha. Navigation control system for mobile robot, 5,378,969, Cl. 318-568.120.

Haindl, Hans. Anesthesia instrument, 5,378,241, Cl. 604-164.000.

Hair, James A.; and Vande Haar, Evan R., to Maytag Corporation. Apparatus and method for providing dual washing capacity, 5,377,508, Cl. 68-4.000.

Hakim, Shaharazad H. Neck support for beauty salon hair washing sinks, 5,377,365, Cl. 4-523.000.

Hale, William M.: See—
Drehman, Alvin J., and Hale, William M., 5,378,341, Cl. 204-298.180.

Halikas, James A.: See—
Seredinin, Sergey B.; Voronina, Tatiana A.; Likhoshervostov, Arkady M.; Peresada, Vitaly P.; Molodavkin, Gennady M.; and Halikas, James A., 5,378,846, Cl. 544-349.000.

Hall, Arthur, III, to General Motors Corporation. Reversing assembly for multi-speed transmission, 5,378,208, Cl. 475-276.000.

Hall, William F.: See—
De Wames, Roger E.; Goldberg, Ira B.; Morgan, Peter E. D.; Ratto, Joseph J.; Marshall, David B.; and Hall, William F., 5,379,018, Cl. 505-211.000.

Haller, Ralf, to Heidelberg Druckmaschinen AG. Device for cutting a web into sections, 5,377,964, Cl. 270-21.100.

Halley, Michael A.; and Neuhart, John M. Storage apparatus for cards, 5,377,733, Cl. 150-147.000.

Halliburton Company: See—
Arterbury, Bryant A.; Restarick, Henry L.; and Spangler, James E., 5,377,750, Cl. 166-205.000.

Hallinan, E. Ann: See—
Lee, Albert C.; Hallinan, E. Ann; Hagen, Timothy J.; Husa, Robert K.; Tsybalov, Sofya; and Van Hoeck, Jean-Pierre, 5,378,840, Cl. 540-547.000.

Hama, Mitsuji: See—
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Inuma, Toshinori, 5,379,322, Cl. 375-60.000.

Hamada, Hisanori: See—
Ueda, Michio; Iuchi, Tetsuya; Miki, Takao; and Hamada, Hisanori, 5,377,727, Cl. 141-178.000.

Hamada, Junichi: See—
Kudo, Tomoo; Hamada, Junichi; and Sato, Toshiya, 5,379,100, Cl. 355-299.000.

Hamada, Kazuya; and Murata, Shigemi, to Mitsubishi Denki Kabushiki Kaisha. Internal-combustion-engine ignition device, 5,377,653, Cl. 123-655.000.

Hamada, Yuichi; Nagata, Yoshihiko; Kashida, Meguru; and Kubota, Yoshihiro, to Shin-Etsu Chemical Co., Ltd. Frame-supported pellicle for photolithography, 5,378,514, Cl. 428-14.000.

Hamamoto, Takayoshi: See—
Nakashima, Kazuyuki; Mimaki, Izumi; Hamamoto, Takayoshi; and Masuda, Kenichi, 5,378,612, Cl. 435-69.600.

Haman, David F., to Outboard Marine Corporation. Tiller arm and steering bracket assembly, 5,378,178, Cl. 440-53.000.

Hamanaka, Nobuyuki; Takahashi, Kanji; and Tokumoto, Hidekado, to Ono Pharmaceutical Co., Ltd. Pyrazol-1-yl phenoxyacetic acid compounds which have useful pharmaceutical utility, 5,378,716, Cl. 514-333.000.

Hamasaki, Masaharu, to Sony Corporation. Solid state imaging devices for producing normal and mirror image signals with the use of a reversible shift register, 5,379,068, Cl. 348-322.000.

Hamdan, Carolyn J.: See—
Chiou, Ruth G.; Brown, Cheryl C.; Little, Jeanette A.; Young, Austin H.; Schanefelt, Robert V.; Harris, Donald W.; Stanley, Keith D.; Coontz, Helen D.; Hamdan, Carolyn J.; Wolf-Rueff, Jody A.; Slowinski, Lori A.; Anderson, Kent R.; Lehnhardt, William F.; and Witczak, Zbigniew J., 5,378,286, Cl. 127-36.000.

Hamen, Ilkka O.; and Lindgren, Eskil, to Sala International AB. Method of separating pulp containing magnetic constituents in a wet-magnetic, low-intensity concurrent separator and apparatus therefor, 5,377,845, Cl. 209-223.200.

Hamer, John C.: See—
Hutchinson, John M.; and Hamer, John C., 5,377,525, Cl. 73-9.000.

Hamilton, Douglas D., to Logging Development Corporation. Apparatus to stabilize a cut tree in the vertical position during movement by a feller-buncher, 5,377,730, Cl. 144-3.00D.

Hamlin, Inc.: See—
Reneau, Daniel R., 5,378,865, Cl. 200-61.45R.

Hamlyn, Franklin A.: See—
Cole, Arthur W.; Hamlyn, Franklin A.; Dougherty, James D.; and O'Sullivan, John M., 5,377,663, Cl. 126-152.00B.

Hammer, Roger L.: See—
Arbuckle, Steven R.; Grant, Michael E.; Riedel, Richard; and Hammer, Roger L., 5,379,214, Cl. 364-413.010.

Hammerslag, Gary R.; Merritt, John; and Nielsen, Mark, to Pilot Cardiovascular Systems, Inc. Coil polymer composite, 5,378,234, Cl. 604-95.000.

Hammersmark, Dan J.; Wood, Timothy J.; and Solar, Matthew S., to Spectranetics Corporation. The fiber optic catheter with twistable tip, 5,378,235, Cl. 604-95.000.

Hammonds, Amy G.: See—
Krishnan, Venkatarani; and Hammonds, Amy G., 5,378,755, Cl. 524-555.000.

Hamprecht, Gerhard: See—
Maywald, Volker; Dittrich, Klaus; Kuckenhoehner, Thomas; Hamprecht, Gerhard; Feund, Wolfgang; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, 5,378,680, Cl. 504-270.000.

Han, Chien-Chung; and Shacklette, Lawrence W., to AlliedSignal Inc. Process for forming dispersions or solutions of electrically conductive conjugated polymers in a polymeric or liquid phase, 5,378,404, Cl. 252-500.000.

Hanabata, Makoto: See—
Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; and Oi, Fumio, 5,378,586, Cl. 430-192.000.

Hanamura, Toshihiro; and Sakai, Kaoru, to Rohm Co., Ltd. Chip-type composite electronic part and manufacturing method therefor, 5,379,190, Cl. 361-766.000.

Hanaoka, Masaaki, to Seiko Epson Corporation. Apparatus for providing continuity of operation in a computer, 5,379,435, Cl. 395-750.000.

Hancock, Michael T., to Torrington Company, The. Steering column clamping mechanism, 5,377,555, Cl. 74-493.000.

Handa, Yuichi, to Canon Kabushiki Kaisha. Demultiplexing apparatus and optical communication system using the demultiplexing apparatus, 5,379,142, Cl. 359-129.000.

Hang, Kenneth W.: See—
Carroll, Alan F.; and Hang, Kenneth W., 5,378,408, Cl. 252-514.000.

Hanifi, Paul H.; Ponsi, Lawrence G.; and Posey, John, to Sage Products, Inc. Swab impregnating and dispensing system, 5,378,226, Cl. 604-3.000.

Hanna, Marie R.: See—
Sprecker, Mark A.; Belko, Robert P.; and Hanna, Marie R., 5,378,685, Cl. 512-11.000.

Hannon, Richard H.; and Schmidt, Jacob H., Jr., to Plop Golf Company. Golf club with lockable head-to-shaft angle adjustment, 5,377,980, Cl. 273-80.200.

Hanover Architectural Products, Inc.: See—
Repasky, John, 5,377,468, Cl. 52-302.400.

Hans Lingl GmbH & Co. KG: See—
Grimme, Hans, 5,378,423, Cl. 264-293.000.

Hansen, Eric R.: See—
Reese, Theodore J.; Hansen, Eric R.; and Benoit, Michel R., 5,377,603, Cl. 110-346.000.

Hansen, John B.; Jeppesen, Lone; and Gronvald, Frederik C., to Novo Nordisk A/S. Antipsychotic piperidine derivatives, 5,378,714, Cl. 514-321.000.

Hansen, Kai: See—
Calverley, Martin J.; Hansen, Kai; and Binderup, Lise, 5,378,695, Cl. 514-167.000.

Hansen, Philip E.: See—
Morgan, Barry A.; Gordon, Thomas D.; Hansen, Philip E.; and Singh, Jasbir, 5,378,803, Cl. 530-317.000.

Hanson, Bradley E.: See—
Cunningham, Earl A.; and Hanson, Bradley E., 5,379,162, Cl. 360-53.000.

Hanssen, Adalbert; and Hof, Albrecht, to Carl-Zeiss-Stiftung. Process and apparatus for the measurement of object topographies by means of projected fringe patterns, 5,379,107, Cl. 356-376.000.

Hanzalik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., to Minnesota Mining and Manufacturing Company. Process for simultaneously coating multiple layers of thermoreversible organogels and coated articles produced thereby, 5,378,542, Cl. 428-483.000.

Har, Michael; and Stinson, John, to Har, Michael. Support frame for sink waste bags, 5,377,941, Cl. 248-101.000.

Hara, Kiyoshi, to Kabushiki Kaisha Toshiba. Ultrasonic doppler diagnosis apparatus, 5,377,684, Cl. 128-661.090.

Harada, Hiroshi: See—
Yamamoto, Teruo; Harada, Hiroshi; Sakai, Katsunori; Iwaki, Kazumi; and Matsunaga, Kazuki, 5,378,698, Cl. 514-211.000.

Harada, Takamasa: See—
Dubal, Hans-Rolf; Escher, Claus; Harada, Takamasa; Hemmerling, Wolfgang; Illian, Gerhard; Müller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,378,394, Cl. 252-299.610.

Harada, Toshiharu: See—
Isoai, Masaru; Harada, Toshiharu; Kurata, Tokihiro; Fujita, Kazuhiro; Takama, Kazushi; and Jikuhara, Shigekazu, 5,378,380, Cl. 252-62.560.

Haraguchi, Manabu: See—
Blechl, Joseph; Hadjimitsos, Panos; Kurtz, James R.; Shimizu, Hiroyasu; and Haraguchi, Manabu, 5,377,864, Cl. 221-2.000.

Harano, Yoshiyuki: See—
Fujiwara, Takaaki; Watanabe, Shoji; Takemoto, Shin; and Harano, Yoshiyuki, 5,378,736, Cl. 522-170.000.

Hardy, John D., Jr.: See—
Severson, Verne L.; and Hardy, John D., Jr., 5,378,067, Cl. 395-800.000.

Hare, Dwight F.: See—
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,379,426, Cl. 395-650.000.

Harel, Haim: See—
Yokev, Hanoch; and Harel, Haim, 5,379,047, Cl. 342-457.000.

Harkins, Robert L. Rehabilitation apparatus for ambulatory patients, 5,378,215, Cl. 482-67.000.

Harman, Gary E.; Tronsmo, Arne; Hayes, Christopher K.; and Lorito, Matteo, to Cornell Research Foundation, Inc. Gene encoding for endochitinase, 5,378,821, Cl. 536-23.200.

Harmischfeger Corporation: See—
Kallenberger, Harvey J.; and Tossenberger, Emeric G., 5,377,408, Cl. 29-898.070.

Harper, William H., Jr. Asymmetric pontoons for a water craft, 5,377,608, Cl. 114-61.000.

Harrel, Stephen K. Methods and apparatus for controlling the aerosol envelope generated by ultrasonic devices, 5,378,150, Cl. 433-91.000.

Harring, Russell W.: See—
Smith, David L.; Wilson, Alan C.; and Harring, Russell W., 5,378,412, Cl. 264-2.100.

Harris, Bradley D.: See—
Smith, Bradley W.; and Harris, Bradley D., 5,378,019, Cl. 280-743.00R.

Harris, Brent A.: See—
Waters, John E.; Harris, Brent A.; Gresley, Ross A.; Boys, William E.; and Brouns, Daniel R., 5,378,555, Cl. 429-97.000.

Harris, Dimitri. Protective device for covering brackets on motorcycle handlebars, 5,377,558, Cl. 74-551.800.

Harris, Donald W.: See—
Chiou, Ruth G.; Brown, Cheryl C.; Little, Jeanette A.; Young, Austin H.; Schanefelt, Robert V.; Harris, Donald W.; Stanley, Keith D.; Coontz, Helen D.; Hamdan, Carolyn J.; Wolf-Rueff, Jody A.; Slowinski, Lori A.; Anderson, Kent R.; Lehnhardt, William F.; and Witczak, Zbigniew J., 5,378,286, Cl. 127-36.000.

Stanley, Keith D.; and Harris, Donald W., 5,378,491, Cl. 426-661.000.

Harris, Frank W.; and Cheng, Stephen Z. D., to Edison Polymer Innovation Corporation. Process for preparing aromatic polyimide fibers, 5,378,420, Cl. 264-184.000.

Harris, Ilise H. Eyelash curler, 5,377,700, Cl. 132-217.000.

Harris, Scott: See—
McGrath, John; Cope, Dennis; Harris, Scott; and Becker, Charles, 5,378,299, Cl. 156-290.000.

Harrison, Clarence; Marik, Mark D.; and Posthumus, Roger L., to International Business Machines Corporation. Apparatus for decoding degraded data signals, 5,379,037, Cl. 341-71.000.

Harrison, Howard E.: See—
Martin, Merrill D.; Johnston, Roger B.; and Harrison, Howard E., 5,378,499, Cl. 427-242.000.

Harrison, Joel N.; Moon, William G.; and Graham, Randolph H., to Quantum Corporation. Fixed disk drive mounted to printed circuit board, 5,379,439, Cl. 395-800.000.

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Haworth, Richard G.: See—
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Kipphan, Helmut; and Tessmann, Uwe, 5,377,585, Cl. 101-181.000.

Kobler, Eckhard, 5,377,587, Cl. 101-233.000.

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Sobotta, Peter; and Maxeiner, Isolde, 5,377,968, Cl. 271-11.000.

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Dakin, James T.; Speaker, Lawrence W.; Duffy, Mark E.; and Heindl, Raymond A., 5,378,965, Cl. 315-248.000.

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Schulz, Dieter, 5,377,669, Cl. 128-6.000.

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Bershas, James P., 5,378,379, Cl. 252-49.300.

Miller, Robert W.; and Petschel, Michael, 5,378,292, Cl. 148-259.000.

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Mahler, Ulrike; Westfechtel, Alfred; Sladek, Hans-Juergen; and Kielmann, Sylke, 5,378,485, Cl. 426-329.000.

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Hennessey, James J.: See—
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Herbst, Joseph A.; Kresge, Charles T.; Olson, David H.; Schmitt, Kirk D.; Vartuli, James C.; and Wang, Daniel I. C., to Mobil Oil Corp. Method for separation of substances. 5,378,440, Cl. 423-210.000.

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Asakawa, Stuart D.; McClelland, Paul H.; Tappon, Ellen R.; Vandepoll, Richard R.; Trueba, Kenneth E.; and Chen, Chien-Hua, 5,378,137, Cl. 425-174.400.

Koschek, Drew G., 5,379,455, Cl. 455-273.000.

Nguyen, Nhat M., 5,379,457, Cl. 455-323.000.

Wade, Gerald T., 5,379,406, Cl. 395-500.000.

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Hilbig, David W.: See—
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Hiley, Robin W.: See—
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Hill, Jamie R. Helicopter conversion. 5,377,934, Cl. 244-17.110.

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Foster, L. Dale, 5,377,371, Cl. 5-503.100.

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Uku, Kyoji; Ueda, Masahiro; Murakami, Tetsuya; and Hirokawa, Norio, 5,378,786, Cl. 526-344.200.

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Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; Morishita, Yoshii; Katayose, Mitsuo; Okamoto, Tadashi; and Hayashi, Nobuyuki, 5,378,589, Cl. 430-495.000.

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Mutoh, Hideo; Moki, Keiji; and Shibayama, Takehiko, 5,379,423, Cl. 395-600.000.

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Anzai, Mitsutoshi; Matsuura, Yuji; Mukudai, Osamu; Kanno, Miki; and Watanabe, Kayoko, 5,378,573, Cl. 430-110.000.

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Dubal, Hans-Rolf; Escher, Claus; Harada, Takamasa; Hemmerling, Wolfgang; Illian, Gerhard; Muller, Ingrid; Murakami, Miki; Ohlendorf, Dieter; and Wingen, Rainer, 5,378,394, Cl. 252-299.610.

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Henning, Jurgen; Klein, Norbert; and Huckle, Heinrich, 5,378,136, Cl. 425-188.000.

Macholdt, Hans-Tobias; and Nagl, Gert, 5,378,571, Cl. 430-110.000.

Schwarz, Martin; Kullmer, Iris; and Bock, Joachim, 5,378,682, Cl. 505-490.000.

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Deutsch, Lance J.; Park, Pamela D.; and Trail, George, 5,377,697, Cl. 131-330.000.

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Urabe, Miki; Tanaka, Satoshi; and Tsumura, Kenichiro, 5,378,687, Cl. 514-12.000.

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George, Scott E.; and Hoffman, Douglas C., 5,378,796, Cl. 528-279.000.

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Larsson, Stig B.; Hoffmann, Christoph T.; and Dimond, Phillip C., 5,379,344, Cl. 380-23.000.

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Alig, Leo; Hadvary, Paul; Hurzeler, Marianne; Muller, Marcel; Steiner, Beat; and Weller, Thomas, 5,378,712, Cl. 514-315.000.

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Klaus, Michael; Mohr, Peter; and Weiss, Ekkehard, 5,378,705, Cl. 544-227.500.

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Brewer, Richard G.; Devoe, Ralph G.; Foster, Kenneth L.; Hoffnagle, John A.; and Kallenbach, Reinald, 5,379,000, Cl. 331-3.000.

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Bach, David F.; and Hofman, William K., 5,378,057, Cl. 312-257.100.

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Winnik, Francoise M.; Keoshkerian, Barkev; Wong, Raymond W.; Drappel, Stephan; Crocher, Melvin D.; Mayo, James D.; and Hofstra, Peter G., 5,378,574, Cl. 430-115.000.

Hogikyan, Robert M.: See—
Leclerc, Denys F.; and Hogikyan, Robert M., 5,378,320, Cl. 162-49.000.

Holden, Irving H.: See—
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Hollander, Orin, to Betz Laboratories, Inc. Transport and deposit inhibition of copper in boiler systems. 5,378,373, Cl. 210-698.000.

Holler, Holge: See—
Biewald, Joachim; Scheub, Volker; Holler, Holge; Fenkl, Karl; Hugel, Stefan; Rothaupt, Jorg; Schneider, Peter; Barth, Wolf-

gang; Moll, Hermann; and Pollmann, Horst, 5,377,788, Cl. 187-374.000.

Holling, Ronald W.; Glotzbach, Patrick J.; and Huener, Jerome D., to Whirlpool Corporation. Diagnostic method and apparatus for a domestic appliance. 5,378,874, Cl. 219-506.000.

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Grahm, Eva E.; and Holm, Stig E. F., 5,378,459, Cl. 424-93.440.

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Green, Mino; Syms, R. R. A.; Holmes, Andrew S.; Ueki, Ken; and Yanagawa, Hisaharu, 5,378,256, Cl. 65-395.000.

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Maddock, Brian, 5,377,744, Cl. 164-476.000.

Homm, Karl-Georg, to Hewing GmbH. Jointing clamp and method for pressing pipe connections. 5,377,400, Cl. 29-517.000.

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Haikawa, Yuji, 5,378,969, Cl. 318-568.120.

Hasegawa, Hiroshi; and Yshushi, Okada, 5,379,353, Cl. 382-41.000.

Kato, Norihide; Shimizu, Tomohide; and Mori, Kenichiro, 5,379,347, Cl. 382-8.000.

Kawashima, Yoshinori; Tamaki, Kenji; Motodate, Shoji; Nakazawa, Yoshihiro; Toriyama, Masayuki; Maeda, Noriyuki; and Osanai, Yoshimi, 5,377,791, Cl. 188-159.000.

Kitagawa, Hiroshi; and Suzuki, Norio, 5,377,562, Cl. 477-110.000.

Kubota, Toshio; Toyama, Niichi; Arai, Hiroshi; Ishibashi, Ichirou; and Ono, Yukihito, 5,378,505, Cl. 427-484.000.

Saiki, Terunari, 5,377,776, Cl. 180-219.000.

Seiki, Kazuhiro; Yamaguchi, Yukihito; and Kanda, Minoru, 5,378,012, Cl. 280-728.00B.

Takenaka, Toru; and Hirose, Masato, 5,378,972, Cl. 318-568.220.

Honda, Kenichi: See—
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Honda, Kenji, to OCG Microelectronic Materials, Inc. Method for removing impurities from resist components and novolak resins. 5,378,802, Cl. 528-480.000.

Honeywell Inc.: See—
Gowda, Anil K.; and Randall, Jeffrey C., 5,379,377, Cl. 395-162.000.

Safadi, Reem B., 5,379,278, Cl. 370-16.000.

Hong, Gary, to United Microelectronics Corporation. Method of making a bottom gate mask ROM device. 5,378,647, Cl. 437-48.000.

Honjo, Masahiro, to Matsushita Electric Industrial Co., Ltd. Optical disk apparatus for selectively recording and reproducing signals having different bit rates. 5,379,120, Cl. 358-342.000.

Honn, Kenneth V.: See—
Chelladurai, Mohanathan; Honn, Kenneth V.; and Walz, Daniel A., 5,378,607, Cl. 435-7.230.

Hood, Jonathan M.: See—
Wilden, Mark A.; Hood, Jonathan M.; Hughes, Brian K.; Jensen, Jane S.; Scott, Larry L.; and Smith, Christopher F., 5,377,997, Cl. 273-434.000.

Hoover, Daniel M. Electrical outlet box assembly. 5,378,854, Cl. 174-53.000.

Hoover, James F.: See—
Raleigh, William J.; Johnson, Donald S.; Lucarelli, Michael A.; Davis, Gary C.; and Hoover, James F., 5,378,789, Cl. 528-29.000.

Hope, Stephen F. Composite electrolytes for electrochemical devices. 5,378,558, Cl. 429-192.000.

Hopkins, Keith W.: See—
Kovacs, Lloyd; Cherney, Dale M.; and Hopkins, Keith W., 5,377,474, Cl. 53-64.000.

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Hoppe, Lutz; Haase, Bernd; Brauer, Oke; and Szablikowski, Klaus, to Wolff Walsrode AG. Process for the preparation of a storage stable low esterified nitrocellulose moistened with alcohol or water. 5,378,826, Cl. 536-35.000.

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Horan, Ann C., to Schering Corporation. Macrocylic lactone antibacterial antibiotic compounds. 5,378,626, Cl. 435-252.100.

Horan, Michael S.: See—
Bard, Steven L.; Bendz, Gerald A.; Canestaro, Michael J.; Chapura, John R.; Frankoski, Edward J.; Horan, Michael S.; Jones, Jeffrey D.; Kamperman, James S.; Kjellaard, John R., Jr.; and McCreary, Jack M., 5,378,307, Cl. 156-639.000.

Horii, Yoshinori: See—
Masuda, Toyohiko; Miyoshi, Takehiko; and Horii, Yoshinori, 5,378,537, Cl. 428-364.000.

Hornek, Kevin D. Alarm clock system. 5,379,273, Cl. 368-73.000.

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Horiuchi, Masahiro: See—
Mizuno, Keisuke; and Horiuchi, Masahiro, 5,378,389, Cl. 252-180.000.

Horn, Arthur. Stabilized high speed Bi-wheeled vehicle. 5,378,020, Cl. 280-755.000.

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Horton, Jerry R.: See—
Tasker, G. William; and Horton, Jerry R., 5,378,960, Cl. 313-103.0CM.

Horton, Paul L.; and Carbone, John J., to Laitram Corporation. The Conveyor apparatus and method. 5,377,819, Cl. 198-853.000.

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Sakuma, Yasuji; Hasegawa, Masaichi; Kataoka, Kenichiro; Hoshina, Kenji; Yamazaki, Noboru; Kadota, Takashi; and Yamaguchi, Hisao, 5,378,700, Cl. 514-212.000.

Hoshino, Hiroyuki: See—
Kawabe, Satoshi; Hoshino, Hiroyuki; and Matsuzaka, Syoji, 5,378,597, Cl. 430-567.000.

Hoskins, Matthew W.: See—
Boileau, Michel A.; and Hoskins, Matthew W., 5,377,691, Cl. 128-774.000.

Hoskinson, Stephen J.: See—
Markin, Rodney S.; Tackett, Eldon L.; and Hoskinson, Stephen J., 5,377,813, Cl. 198-465.100.

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Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; and Hosoda, Masaaki, 5,378,674, Cl. 503-208.000.

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Schumacher, Georg, 5,377,843, Cl. 209-139.200.

Hosokawa, Noritaka; and Hayama, Kazuhide, to Mitsubishi Petrochemical Company, Ltd. Ultraviolet-curing covering composition with hardwearing properties. 5,378,735, Cl. 522-79.000.

Hotta, Yoshihiko: See—
Obu, Makoto; Hotta, Yoshihiko; Masubuchi, Fumihito; Miyawaki, Katsuki; Takeda, Yusuke; and Kawakubo, Toshio, 5,379,058, Cl. 346-76.0PH.

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Fuji, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimajo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.

Houck, Harold J.: See—
Houck, Randall J.; Houck, Michael H.; and Houck, Harold J., 5,378,357, Cl. 210-170.000.

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Houghton, Mark P.; and Verbarg, Charles C., to Lever Brothers Company, Division of Conopco, Inc. Non-aqueous liquid cleaning products comprising polyalkoxylated derivatives of castor oil ricinoleic acid and analogous fatty alcohols. 5,378,387, Cl. 252-174.210.

Houghton, Michael; Wang, Kang-Sheng; Choo, Qui-Lim; Weiner, Amy J.; and Overby, Lacy R., to Chiron Corporation. Hepatitis delta viral polypeptides. 5,378,814, Cl. 530-350.000.

Houle, Dennis E.: See—
Brackett, Stephen E.; and Houle, Dennis E., 5,377,629, Cl. 123-184.560.

Houston, Rodney A. R.: See—
Schlunke, Christopher K.; Seeber, Kenneth P.; Houston, Rodney A. R.; and Sayer, Christopher N. F., 5,377,630, Cl. 123-184.220.

Howard, Lee J.; and Rowles, Howard C., to Air Products and Chemicals, Inc. Open loop mixed refrigerant cycle for ethylene recovery. 5,377,490, Cl. 62-23.000.

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Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

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Howe, William H. Gaseous fuel injection pump. 5,378,114, Cl. 417-269.000.

Hsia, Mark: See—
Chou, Tien-Fu; and Hsia, Mark, 5,377,703, Cl. 132-311.000.

Hsieh, Hsin M. Cooling device for central processing unit. 5,377,745, Cl. 165-80.300.

Hsu, Simon. Pickpocket protective wallet. 5,379,024, Cl. 340-571.000.

Hsue, Chen-Chin, to United Microelectronics Corporation. Self-aligned contact process. 5,378,654, Cl. 437-195.000.

Hu, Mae W.-L.; Schulkamp, Kirk; Lin, Cheng-I; and Ullman, Edwin F., to Syntex (U.S.A.) Inc. Geminal diphenyl derivatives and their use in immunoassays. 5,378,636, Cl. 436-500.000.

Hu, Shouxiang; and Guo, Yanping. Electron beam addressed electro-optical light valve having input openings. 5,379,136, Cl. 359-47.000.

Hua, Teyh-Fwu. Word processor for generating Chinese characters. 5,378,068, Cl. 400-110.000.

Huang, Heng S., to United Microelectronics Corporation. Process for producing non-volatile memory devices having closely spaced buried bit lines and non-overlapping code implant areas. 5,378,649, Cl. 437-52.000.

Huang, Heng-Sheng; Chen, Kun-Luh; and Wu, Wood, to United Microelectronics Corporation. Process for producing closely spaced conductive lines for integrated circuits. 5,378,646, Cl. 437-47.000.

Huang, Jih-Tung. Garbage collecting device. 5,377,706, Cl. 134-104.100.

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Johnson, Noel L.; Huang, Jyh-Yi T.; and Burnside, Robert R., 5,378,231, Cl. 604-67.000.

Huang, King-Lung: See—
Wang, Te-Mei; Wang, Po-Chih; and Huang, King-Lung, 5,379,130, Cl. 358-462.000.

Huang, Yu-Lin. Adjustable tie chain. 5,377,390, Cl. 24-49.0CF.

Hubbard, James R.: See—
Dowd, Edward; O'Neill, Joseph; DiSabito, David M.; Hubbard, James R.; and Eichelberger, Cleatis A., 5,377,677, Cl. 128-642.000.

Hubbell Incorporated: See—
Thompson, Parke H., III, 5,377,550, Cl. 73-862.322.

Hubbell, Jeffrey A.; and Sawhney, Amarpreet S., to Board of Regents, The University of Texas System, The Biocompatible microcapsules. 5,378,476, Cl. 424-497.000.

Hucke, Heinrich: See—
Henning, Jurgen; Klein, Norbert; and Hucke, Heinrich, 5,378,136, Cl. 425-188.000.

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Hudson, David M.; and Drennen, David B., to General Motors Corporation. Clutch plate with blocking wall for a viscous fluid clutch. 5,377,798, Cl. 192-58.00B.

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Zugibe, Kevin J., 5,377,499, Cl. 62-195.000.

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Holling, Ronald W.; Glotzbach, Patrick J.; and Huener, Jerome D., 5,378,874, Cl. 219-506.000.

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Birdsall, Dwight D.; Linder, Lloyd F.; and Elliott, Phillip L., 5,378,938, Cl. 327-94.000.

Carlson, Robert C.; and Rosen, Robert A., 5,379,044, Cl. 342-90.000.

Chang, Chen-chi P.; and Li, Mei F., 5,378,909, Cl. 257-316.000.

Chi, Tom Y.; and Raymond, Brook D., 5,378,926, Cl. 257-767.000.

Feigenbaum, Haim; Szalay, John S.; and Woith, Blake F., 5,378,982, Cl. 324-770.000.

Kramer, Gordon; Wolfe, Douglas W.; Worley, Stuart; and Collins, Timothy C., 5,379,336, Cl. 378-98.800.

McFarlane, Ross A.; and Lui, Mark, 5,379,311, Cl. 372-41.000.

Mumme, Malcolm A., 5,379,444, Cl. 395-800.000.

Wang, Yaujen, 5,379,157, Cl. 359-861.000.

Hughes, Brian K.: See—
Wilden, Mark A.; Hood, Jonathan M.; Hughes, Brian K.; Jensen, Jane S.; Scott, Larry L.; and Smith, Christopher F., 5,377,997, Cl. 273-434.000.

Hui, Henry K.: See—
Bankert, Charles S.; Hahn, Soonkap; and Hui, Henry K., 5,378,432, Cl. 422-82.070.

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Kruse, Wolfgang A.; and Boeke, Burkhard, 5,378,780, Cl. 526-212.000.

Mugge, Joachim; and Sosna, Friedrich, 5,378,769, Cl. 525-425.000.

Humbert, Daniel: See—
Chantot, Jean-Francois; Gouin D'Ambrières, Solange; Humbert, Daniel; and Teutsch, Jean-Georges, 5,378,697, Cl. 514-210.000.

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Viano, David C.; Neely, Richard J.; and Humer, Mladen, 5,378,043, Cl. 297-408.000.

Hunt, John T.: See—
Stein, Philip D.; Hunt, John T.; and Murugesan, Natesan, 5,378,715, Cl. 514-329.000.

Hunt, Rebecca J.: See—
Kwan, Shing F.; and Hunt, Rebecca J., 5,378,609, Cl. 435-18.000.

Hupa, Mikko: See—
Engstrom, Folke; Hupa, Mikko; Lundqvist, Ragnar G.; and Lee, Yam Y., 5,378,443, Cl. 423-239.100.

Hurley, John L.: See—
Geibel, Stephen A.; Hurley, John L.; and Brosious, Sandra L., 5,378,426, Cl. 419-2.000.

Huron Tech Corp.: See—
Jackson, John R.; Pitzer, Charles L.; and Buckingham, Charles O., 5,378,447, Cl. 423-475.000.

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Loos, Herbert; and Erhardt, Manfred, 5,377,457, Cl. 451-47.000.

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Husa, Robert K.: See—
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Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., to Strategene. Push column and chromatography apparatus, 5,378,360, Cl. 210-198.200.

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Schad, Robert D.; and Schmidt, Harald, 5,378,139, Cl. 425-549.000.

Hutchens, Dale E.: See—
Boothe, Richard E.; and Hutchens, Dale E., 5,377,593, Cl. 102-289.000.

Hutchings, Keith M.; and Whight, Kenneth R., to U.S. Philips Corporation. Method of manufacturing a semiconductor device comprising an insulated gate field effect device, 5,378,655, Cl. 437-203.000.

Hutchinson, John M.; and Hamer, John C. Friction testing apparatus for oscillating at least one specimen in contact with another, 5,377,525, Cl. 73-9.000.

Huth, John T., III. Percussion instrument, 5,377,575, Cl. 84-402.000.

Hutson, William H. Multi-dimensional signal processing and display, 5,379,268, Cl. 367-100.000.

Huvar, Gary S.; and Lobo, Alfred D. Method for removing labels adhered to a diskette and de-labeling means for doing so, 5,378,300, Cl. 156-344.000.

Huvey, Michel, to Institut Francais du Pétrole. Process for manufacturing a metallic tank, 5,377,401, Cl. 29-523.000.

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Bellamy, Norman W., 5,377,485, Cl. 60-398.000.

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Sand, William F., 5,377,718, Cl. 137-625.110.

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Snyder, Edward A., 5,378,951, Cl. 310-17.000.

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Kim, Dong G., 5,379,284, Cl. 369-44.320.

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Stienspetz, Allan; and Kagebeck, Tor, 5,378,886, Cl. 235-449.000.

Ide, Russell D. Friction pad for friction engagement device, 5,377,802, Cl. 192-107.000.

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Omura, Naoki; and Igarashi, Minoru, 5,378,788, Cl. 528-10.000.

Igarashi, Satoshi: See—
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Igarashi, Toshio: See—
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Iglesias, Joseph M.: See—
Grim, Tracy E.; and Iglesias, Joseph M., 5,378,223, Cl. 602-6.000.

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Satoh, Kazuaki; and Iida, Kenji, 5,378,310, Cl. 156-643.000.

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Obata, Hiroyuki; Utsumi, Minoru; Iijima, Masayuki; Okabe, Masato; and Kamiyama, Hironori, 5,378,565, Cl. 430-50.000.

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Yamashita, Hiroyuki; Hoshi, Toshiharu; Horio, Yuma; Tsuchiya, Kazuhiro; Iijima, Takashi; and Nishida, Kikuo, 5,378,295, Cl. 148-654.000.

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Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Takahagi, Hidekuni; Iijima, Yasuteru; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,689, Cl. 514-18.000.

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Iizuka, Tetsuya, to Sony Corporation. Signal processing circuit for solid-state image sensor, 5,379,125, Cl. 358-443.000.

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Kubota, Akinori; Kubota, Yoshiya; Okamoto, Shoji; Ijiri, Masaaki; and Soeda, Koji, 5,378,425, Cl. 264-315.000.

Ikeda, Hiroshi, to Kao Corporation. Magnetic disk jacket, 5,379,173, Cl. 360-133.000.

Ikeda, Jun: See—
Matsuda, Shinichi; and Ikeda, Jun, 5,379,085, Cl. 354-319.000.

Ikeda, Kazuya: See—
Kokubo, Nobuyuki; and Ikeda, Kazuya, 5,378,936, Cl. 327-77.000.

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Ikematsu, Mineo; Sugiyama, Yukihiko; and Iseki, Masahiro, to Sanyo Electric Co., Ltd. Neural modeling device, 5,378,342, Cl. 204-403.000.

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Watanabe, Kazuhiro; Nakatani, Naofumi; and Ikezaki, Masao, 5,379,441, Cl. 395-800.000.

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Ikkaku Industry Co., Ltd.: See—
Arimoto, Kunio; Yoshida, Nobuo; Ohtani, Haruo; and Ikkaku, Yasuhiko, 5,378,271, Cl. 106-236.000.

Ikkaku, Yasuhiko: See—
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Ogawa, Kazufumi; Soga, Mamoru; and Ikuta, Shigeo, 5,378,521, Cl. 428-85.000.

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Dubal, Hans-Rolf; Escher, Claus; Harada, Takamasa; Hemmerling, Wolfgang; Illian, Gerhard; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,378,394, Cl. 252-299.610.

Imai, Nobuhiko; Sekiguchi, Mamoru; Kano, Mitsuru; Krug, Thomas; Steiniger, Gerhard; and Meier, Andreas, to Toppan Printing Co., Ltd.; and Leybold Aktiengesellschaft. Evaporation method of forming transparent barrier film, 5,378,506, Cl. 427-529.000.

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Imazuimi, Minoru: See—
Fujimori, Hideaki; Ishikawa, Tetsu; Tamura, Yoshihisa; and Imazuimi, Minoru, 5,379,182, Cl. 361-681.000.

IMO Industries, Inc.: See—
Riggle, Russell K., 5,378,179, Cl. 440-62.000.

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Chalupka, Alfred; Stengl, Gerhard; and Vonach, Herbert, 5,378,917, Cl. 250-492.210.

Imwinkelried, Rene: See—
Escher, Andre; Previdoli, Felix; and Imwinkelried, Rene, 5,378,845, Cl. 544-319.000.

Inada, Shunji: See—
Katayama, Toshiyuki; Sugimoto, Norihiko; Inada, Shunji; and Kamada, Seiji, 5,379,325, Cl. 375-106.000.

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Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Masuko, Jiro, 5,378,770, Cl. 525-471.000.

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Odaka, Kentaro; Ozaki, Shinya; Inazawa, Yoshizumi; Yamada, Masaki; and Bramhall, Peter, 5,379,152, Cl. 360-48.000.

Inco Limited: See—
Mihaylov, Indje O.; Krause, Eberhard; Laundry, Steve W.; and Luong, Cuong V., 5,378,262, Cl. 75-722.000.

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Eberhardt, Noel H., 5,378,880, Cl. 235-439.000.

Indo, Kenichi: See—
Sakurai, Hiroshi; Onodera, Hitoshi; Indo, Kenichi; and Ohta, Hiroyuki, 5,377,405, Cl. 29-833.000.

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Meschi, Luciano, 5,377,932, Cl. 242-559.000.

Industrial Progress, Inc.: See—
Kaliski, Adam F., 5,378,399, Cl. 252-313.100.

Industrial Technology Research Institute: See—
Liu, David Nan-Chou, 5,378,182, Cl. 445-24.000.

Wang, Te-Mei; Wang, Po-Chih; and Huang, King-Lung, 5,379,130, Cl. 358-462.000.

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Russell, James T., 5,379,266, Cl. 365-234.000.

Ingersoll, David: See—
Doddapaneni, Narayan; and Ingersoll, David, 5,378,550, Cl. 429-13.000.

Ingersoll-Rand Company: See—
Salzmann, David R.; and Purington, James C., 5,378,956, Cl. 313-141.000.

Inoue, Nobuhiko; and Yoshimaru, Masaki, to Oki Electric Industry Co., Ltd. Method of making a semiconductor device with a capacitor, 5,378,645, Cl. 437-47.000.

Inoue, Yoshiaki; Murabayashi, Shigeru; Fujinami, Kazuo; Yoshino, Isamu; Kawakami, Takamasa; Makinose, Satoru; and Naito, Akira, to Mitsubishi Gas Chemical Company, Inc. Method of preserving article with an oxygen absorbent composition, 5,378,428, Cl. 422-9.000.

Inoue, Yoshihiro: See—
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Inpro Companies, Inc.: See—
Orlowski, David C., 5,378,000, Cl. 277-25.000.

Insalaco, Robert W.; and Haworth, Richard G., to Haworth, Inc. Separable post-panel system, 5,377,466, Cl. 52-238.100.

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Giannesini, Jean-Francois; and Levallois, Emile, 5,377,714, Cl. 137-2.000.

Glover, Stephen, 5,377,635, Cl. 123-336.000.

Huvey, Michel, 5,377,401, Cl. 29-523.000.

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Marial, Jacques; DeGryse, Erich; Gaye, Pierre; Charlier, Madia; Charpigny, Gilles; Reinaud, Pierrette; and Chaouat, Gerard, 5,378,823, Cl. 536-23.520.

Integral Peripherals: See—
Morehouse, James H.; Furay, David M.; Alt, Robert A.; Emo, Bruce D.; and Duncley, James A., 5,379,171, Cl. 360-10.500.

Integrated Diagnostic Measurement Corporation: See—
Morgan, Ira L.; Rice, Robert H.; Bolger, Joseph E.; and Schindler, Donald G., 5,379,237, Cl. 364-578.000.

Integrated Information Technology, Inc.: See—
Fandrianto, Jan; Wang, Chi S.; Sutardja, Sehat; Rainnie, Hedley K. J.; and Martin, Bryan R., 5,379,351, Cl. 382-41.000.

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Allen, Michael J., 5,379,442, Cl. 395-800.000.

Gochman, Simcha; Kazachinsky, Itamar; and Kagan, Michael, 5,379,396, Cl. 395-425.000.

Hazer, Peter K.; Talreja, Sanjay S.; and Rozman, Rodney R., 5,379,413, Cl. 395-575.000.

Margulis, Neal, 5,379,443, Cl. 395-800.000.

Nhuyen, Hang T. T.; and Raman, Srinivas, 5,379,308, Cl. 371-22.600.

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Salmon, Joseph H., 5,379,249, Cl. 365-104.000.

Solomon, Gary, 5,379,384, Cl. 395-325.000.

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Inter-Recycling AG: See—
Alavi, Kamal; and Salami, Bahman, 5,377,920, Cl. 241-17.000.

Interferometrics Inc.: See—
Larriva, Rene F.; Nelson, Anne M.; Czechanski, James G.; and Poff, Ray E., 5,377,935, Cl. 244-121.000.

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Werner, F. David, 5,377,549, Cl. 73-860.000.

Interlego AG: See—
Ryaa, Jan, 5,378,191, Cl. 446-424.000.

Intermatic, Inc.: See—
Czerlanis, John A., 5,378,171, Cl. 439-425.000.

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Merrett, Ronald G.; and Eakin, Oscar, Jr., 5,378,047, Cl. 298-17.000.

International Business Machines: See—
Ames, Richard N.; Kludt, Thomas W.; and Moore, Victor S., 5,379,448, Cl. 455-33.400.

International Business Machines Corporation: See—
Agnello, Paul D.; Gruetzmacher, Detlev A.; Kuan, Tung-Sheng; and Sedgewick, Thomas O., 5,378,651, Cl. 437-106.000.

Allain, John E.; and Lucas, Bruce D., 5,379,370, Cl. 395-122.000.

Arnold, William C.; and Bealkowski, Richard, 5,379,342, Cl. 380-2.000.

Barakat, Edmond H.; and Haig, Robert B., 5,379,400, Cl. 395-425.000.

Bard, Steven L.; Bendz, Gerald A.; Canestaro, Michael J.; Chapura, John R.; Frankoski, Edward J.; Horan, Michael S.; Jones, Jeffrey D.; Kamperman, James S.; Kjelgaard, John R., Jr.; and McCreary, Jack M., 5,378,307, Cl. 156-639.000.

Bauer, Tibor L.; Cavaliere, William A.; Dart, Charles R., II; Freebern, Timothy H.; Linnell, David C.; Miller, James M.; and Wu, Jin J., 5,377,911, Cl. 239-135.000.

Bednowitz, Allan L., 5,379,376, Cl. 395-162.000.

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Brewer, Richard G.; Devoe, Ralph G.; Foster, Kenneth L.; Hoffnagle, John A.; and Kallenbach, Reinald, 5,379,000, Cl. 331-3.000.

Cardinali, Thomas J.; and Lin, Burn J., 5,378,511, Cl. 427-600.000.

Celi, Joseph, Jr.; and Webster, Gordon D., 5,379,437, Cl. 395-750.000.

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Cohn, Oded; Hartung, Michael H.; McCauley, John N., Jr.; Micka, William F.; Mikkelsen, Claus W.; Nagin, Kenneth M.; Novick, Yoram; and Winokur, Alexander, 5,379,398, Cl. 395-425.000.

Conway-Jones, David C.; and Smith, Peter M., 5,379,399, Cl. 395-425.000.

Cunningham, Earl A.; and Hanson, Bradley E., 5,379,162, Cl. 360-53.000.

Dao, Vinh D.; and Ostojic, Sasha, 5,379,375, Cl. 395-155.000.

Dell, Timothy J.; and Washbaugh, Scott, 5,379,304, Cl. 371-40.100.

Dennard, Robert H., 5,378,943, Cl. 326-68.000.

DiBrino, Michael T., 5,379,434, Cl. 395-725.000.

Eastridge, Lawrence E.; and Ratliff, James M., 5,379,412, Cl. 395-575.000.

Gall, Thomas P.; and Loomis, James R., 5,379,193, Cl. 361-784.000.

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Harrison, Clarence; Marik, Mark D.; and Posthumus, Roger L., 5,379,037, Cl. 341-71.000.

Herzberg, Louis P.; Ruiz, Antonio; and Willebeek-LeMair, Marc H., 5,379,291, Cl. 370-85.500.

McAllister, Michael F.; McDonald, James A.; Prasad, Keshav; Robbins, Gordon J.; and Swaminathan, Madhavan, 5,378,927, Cl. 257-773.000.

Parikh, Shrikant N.; and Reddy, Hari N., 5,379,071, Cl. 348-409.000.

Quintana, Fernando, 5,379,161, Cl. 360-51.000.

Kenichi; Tajima, Shouchiro; Asano, Keiichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Irlbeck, Robert D.: See—
Volz, Keith L.; Irlbeck, Robert D.; Renn, Robert M.; Johnson, David C.; and Deak, Frederick R., 5,378,169, Cl. 439-376.000.

IRO AB: See—
Fredriksson, Lars-Berno; and Fritzson, Joachim, 5,377,922, Cl. 242-47.010.

Irvin, James H., Jr. Golf putter and method for putting, 5,377,987, Cl. 273-194.00R.

Isaacs, Linda R. F. Measuring spoon, 5,377,879, Cl. 222-205.000.

Isbarn, Gunther: See—
Fauth, Karl-Heinz; and Isbarn, Gunther, 5,378,779, Cl. 526-209.000.

Iseki, Masahiro: See—
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Ish, A. Buell, III; and Youngsman, John M., to Vectra Fitness, Inc. Adjustable system for exercise machines, 5,378,216, Cl. 482-94.000.

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Kubota, Toshio; Toyama, Niichi; Arai, Hiroshi; Ishibashi, Ichirou; and Ono, Yukihiro, 5,378,505, Cl. 427-484.000.

Ishibashi, Ryoichi; Tachibana, Tetsuo; and Ohmori, Hisakazu, to Fujitsu Limited. System for detecting failure in dual bus user network, 5,379,307, Cl. 371-62.000.

Ishibashi, Wataru, to Yazaki Corporation. Vehicle digital movement data recording apparatus, 5,379,219, Cl. 364-424.040.

Ishida, Kenya: See—
Suffis, Robert; Barr, Morton L.; Ishida, Kenya; Sawano, Kiyohito; Sato, Toshiya; and van Loveren, Augustinus G., 5,378,468, Cl. 424-401.000.

Ishida, Tokuji: See—
Ueda, Hiroshi; Ootsuka, Hiroshi; Ishida, Tokuji; and Norita, Toshio, 5,379,088, Cl. 354-402.000.

Ishida, Yasushi: See—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Arai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

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Ishihara Chemical Co., Ltd.: See—
Arimoto, Kunio; Yoshida, Nobuo; Ohtani, Haruo; and Ikkaku, Yasuhiko, 5,378,271, Cl. 106-236.000.

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Matsumura, Tetsuya; Segawa, Hiroshi; Ishihara, Kazuya; Uramoto, Shinichi; and Yoshimoto, Masahiko, 5,379,257, Cl. 365-189.010.

Ishihara, Toshinobu: See—
Mihira, Hiroshi; Shimizu, Tetsuo; Hirahara, Kazuhiro; Ishihara, Toshinobu; and Takaya, Seiki, 5,377,616, Cl. 117-104.000.

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Ishii, Kazuo, to Jelmex Co., Ltd. Smoothing device for a power supply, 5,379,181, Cl. 361-511.000.

Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, to Sony Corporation. Recording and reproducing apparatus having program information, 5,379,153, Cl. 360-27.000.

Ishikawa Gasket Co., Ltd.: See—
Miyaoh, Yoshio, 5,378,001, Cl. 277-235.00B.

Ishikawa, Kazuhiko, to Kabushiki Kaisha Toshiba. Apparatus for remotely operating computer system, 5,379,409, Cl. 395-575.000.

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Kobayashi, Shoji; Hayami, Toshihisa; and Ishikawa, Masaaki, 5,379,196, Cl. 362-61.000.

Ishikawa, Masaharu: See—
Yamamoto, Takafumi; Inubushi, Masaaki; Oinuma, Sumio; Hayaishi, Saburo; Nishijima, Shigeru; and Ishikawa, Masaharu, 5,378,525, Cl. 428-192.000.

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Ishikawa, Motoharu: See—
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Ishikawa, Tetsu: See—
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Ishikawa, Tomoko: See—
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Ishikawa, Youhei; and Hidaka, Seiji, to Murata Manufacturing Co., Ltd. Active-type band-pass filter, 5,379,009, Cl. 333-175.000.

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Matsubara, Hidetsugu; Tanaka, Yasuo; Miyagi, Yoshiyuki; Goto, Tsuyoshi; Hatamura, Koichi; and Takayama, Seishiro, 5,377,649, Cl. 123-559.100.

Ishino, Shuichi: See—
Kurane, Ryuichi; Nohata, Yasuhiro; Shiomi, Michio; Ishino, Shuichi; Yotsuji, Akira; Murata, Hideki; and Sugimoto, Seiji, 5,378,832, Cl. 536-123.100.

Ishiuchi, Yukio: See—
Tomita, Takeshi; Ishiuchi, Yukio; Kawakami, Michiya; and Nagashima, Hiromitsu, 5,378,450, Cl. 423-584.000.

Ishizaki, Takeshi; Nakayama, Yoshiyuki; Mori, Kenjiro; Nakamura, Fumio; and Yamamitsu, Tadashi, to Hitachi, Ltd. Collaborative information processing system and workstation, 5,379,374, Cl. 395-155.000.

Isigaki, Chizuru: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ipepi; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

ISIS Pharmaceuticals, Inc.: See—
Cook, Philip D.; and Sanghvi, Yogesh S., 5,378,825, Cl. 536-25.340.

Isler, David. Centering tool for cylinder gauge, 5,377,421, Cl. 33-542.000.

Isoai, Masaru; Harada, Toshiharu; Kurata, Tokihiro; Fujita, Kazuhiro; Takama, Kazushi; and Jikuhara, Shigekazu, to Toda Kogyo Corp. Process for producing acicular geothite particles and acicular magnetic iron oxide particles, 5,378,380, Cl. 252-62.560.

Isogawa, Atsushi: See—
Nakayama, Manabu; Abe, Kouji; Sohga, Masafumi; and Isogawa, Atsushi, 5,378,180, Cl. 440-89.000.

Isozaki, Yuichi: See—
Ohmori, Shinji; Ogata, Kazumi; Tsuruoka, Hideki; Sakaue, Takahiro; Isozaki, Yuichi; and Umemori, Yasuko, 5,378,692, Cl. 514-19.000.

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Ito, Hiroshi, to Olympus Optical Company Limited. Method for molding a glass optical element with a transporting supporting member, 5,378,255, Cl. 65-64.000.

Ito, Kazutoshi: See—
Kiyohiro, Noriaki; and Ito, Kazutoshi, 5,377,721, Cl. 137-807.000.

Ito, Kenji: See—
Shimizu, Hiroyuki; and Ito, Kenji, 5,379,012, Cl. 333-206.000.

Ito, Koichi: See—
Umemoto, Yuji; Ito, Koichi; and Otsuka, Koki, 5,379,338, Cl. 379-58.000.

Ito, Makoto; Kashiwagi, Yoichi; and Asahi, Goro, to Kabushiki Kaisha Toyota Jidoshokki Seisakusho. Inductive coupler for transferring electrical power, 5,379,021, Cl. 336-83.000.

Ito, Nobuyuki; Okayama, Katsushige; Karasuda, Toshinori; and Miyagawa, Yasumichi, to Tosoh Corporation. Process for the preparation of chlorinated polyolefin and chlorosulfonated polyolefin, 5,378,766, Cl. 525-333.800.

Ito, Shigeki: See—
Marui, Yoji; Hayashi, Chozo; Ito, Shigeki; Fujio, Miko; Tanaka, Hiroki; Nagasaki, Toshihide; Soda, Yasuji; and Kaneta, Hitoshi, 5,378,608, Cl. 435-7.500.

Ito, Wataru, to Fuji Photo Film Co., Ltd. Method for correcting image density in thermo-optic recording, 5,378,563, Cl. 430-30.000.

Ito, Yoshiyuki: See—
Tanaka, Shinya; and Ito, Yoshiyuki, 5,379,054, Cl. 345-163.000.

Itoh, Akira: See—
Okaji, Makoto; and Itoh, Akira, 5,378,568, Cl. 430-58.000.

ITT Corporation: See—
Szabo, George, 5,378,025, Cl. 285-39.000.

Iuchi, Tetsuya: See—
Ueda, Michio; Iuchi, Tetsuya; Miki, Takao; and Hamada, Hisanori, 5,377,727, Cl. 141-178.000.

Iwaki, Kazumi: See—
Yamamoto, Teruo; Harada, Hiroshi; Sakai, Katsunori; Iwaki, Kazumi; and Matsunaga, Kazuki, 5,378,698, Cl. 514-211.000.

Iwaki, Takahiro; and Suda, Michihiro, to Nippon Thermostat Co., Ltd. Automatic choke system for carburetor, 5,378,411, Cl. 261-39.200.

Iwama, Kazuaki: See—
Fujii, Toshiro; Inukai, Hitoshi; and Iwama, Kazuaki, 5,378,115, Cl. 417-269.000.

Iwamatsu, Noboru: See—
Uchida, Hiroyuki; Yamamoto, Tomonaga; Iwamatsu, Noboru; and Oku, Hideaki, 5,378,953, Cl. 310-156.000.

Iwamura, Masahiro: See—
Nishio, Yoji; Masuda, Ikuro; Kato, Kazuo; Kuboki, Shigeo; and Iwamura, Masahiro, 5,378,941, Cl. 307-446.000.

Iwazaki, Goro; Iwamura, Masahiro; Yamamoto, Tetsuya; and Okamura, Yoshio, 5,378,904, Cl. 257-208.000.

Iwase, Morikazu: See—
Sonobe, Katsuyoshi; and Iwase, Morikazu, 5,377,572, Cl. 83-583.000.

Iwata, Hiroshi: See—
Noguchi, Shigeru; Sano, Keiichi; and Iwata, Hiroshi, 5,378,289, Cl. 136-258.000.

Iwata, Keiichi: See—
Akita, Noboru; Hatakeyama, Toshiya; Shimada, Takashi; and Iwata, Keiichi, 5,378,444, Cl. 423-240.00S.

Iwata, Yoshihisa: See—
Tanaka, Tomoharu; Tanaka, Yoshiyuki; Ohuchi, Kazunori; Momodomi, Masaki; Iwata, Yoshihisa; Sakui, Koji; Saito, Shinji; and Sumihara, Hideki, 5,379,256, Cl. 365-185.000.

Iwata, Yoshihiro. Device for purifying fuel, 5,377,648, Cl. 123-538.000.

Izuchi, Syuichi: See—
Murata, Kazuo; Takeuchi, Kenichi; Izuchi, Syuichi; and Kato, Shiro, 5,378,557, Cl. 429-127.000.

Izzi, Louis J.; and Krenik, William R., to Texas Instruments Incorporated. Color palette timing and control with circuitry for producing an additional clock cycle during a clock disabled time period, 5,379,408, Cl. 395-550.000.

Jaala, Erkki, to Tamfelt Oy Ab. Folded spiral seam including longitudinal bonding stitch, 5,377,722, Cl. 139-383.0AA.

Jachow, Harald; Schwab, Ekkehard; Koerner, Reinhard; Mueller, Norbert; Lehnert, Rudi; Ohlinger, Manfred; Auweter, Helmut; Jakusch, Helmut; Veitch, Ronald J.; and Bobrich, Michael, to BASF Magnetics GmbH. Process for preparing modified chromium dioxide, 5,378,383, Cl. 252-62.560.

Jack, Keith A.; Moran, Douglas D.; and Wicker, David J., to Brooktree Corporation. System for and method of, operating upon NTSC and PAL signals, 5,379,077, Cl. 348-708.000.

Jackel, Johann: See—
Friedmann, Oswald; and Jackel, Johann, 5,377,796, Cl. 192-3.290.

Jackson, Ingrid. Combined sink strainer stopper and scrub brush, 5,377,362, Cl. 4-292.000.

Jackson, John R.; Pitzer, Charles L.; and Buckingham, Charles O., to Huron Tech Corp. Method for the preparation of chlorates from waste gas streams obtained from the production of chlorine dioxide, 5,378,447, Cl. 423-475.000.

Jackson, Ted C., Jr.: See—
Williams, Danny L.; Hodge, Dean E.; and Jackson, Ted C., Jr., 5,378,477, Cl. 426-2.000.

Jacobi, Stefan; and Berkefeld, Volker, to Dr. Ing. h.c.F. Porsche AG. Method and apparatus for minimizing effects of cross wind on vehicle handling, 5,379,218, Cl. 364-424.010.

Jacobs, Richard; and Porteous, Don D. Tooth restoration composition, structure and methods, 5,378,737, Cl. 523-116.000.

Jacobson, Earl B. Launderable and replaceable lead blanket cover system, 5,379,332, Cl. 376-287.000.

Jain, Vivek: See—
Weling, Milind; and Jain, Vivek, 5,378,318, Cl. 156-662.000.

Jakusch, Helmut: See—
Jachow, Harald; Schwab, Ekkehard; Koerner, Reinhard; Mueller, Norbert; Lehnert, Rudi; Ohlinger, Manfred; Auweter, Helmut; Jakusch, Helmut; Veitch, Ronald J.; and Bobrich, Michael, 5,378,383, Cl. 252-62.560.

James, John V., to Ford Motor Company. System and method to compensate for torsional disturbances in measured crankshaft velocities for engine misfire detection, 5,377,537, Cl. 73-117.300.

James River Corporation of Virginia: See—
Clark, Ralph C., 5,377,428, Cl. 34-446.000.

Littlejohn, Mark; and Juneau, Michael P., 5,377,860, Cl. 220-306.000.

Jamison, Mark D.: See—
Banks, Stewart; Rodgers, George W.; Jamison, Mark D.; and Williams, Nicholas, 5,377,871, Cl. 222-41.000.

Jang, Sun-Sing. External body of kitchen fume extractor, 5,377,665, Cl. 126-299.00R.

Janky, James M.: See—
Gilbert, Charles; Kersey, Steve; and Janky, James M., 5,379,045, Cl. 342-357.000.

Jansen, Benny: See—
Van de Wyncel, Werner; de Ruijter, Dirk; Jansen, Benny; and Michiels, Frank, 5,378,340, Cl. 204-272.000.

Japan Pionics Co., Ltd.: See—
Akita, Noboru; Hatakeyama, Toshiya; Shimada, Takashi; and Iwata, Keiichi, 5,378,444, Cl. 423-240.00S.

Japan Tobacco Inc.: See—
Oohara, Hiromitsu, 5,377,812, Cl. 198-455.000.

Japanic Corporation: See—
Kishi, Mitsuhiro, 5,377,432, Cl. 37-186.000.

Jaroszewich, Daniel P. Hockey puck display apparatus, 5,377,828, Cl. 206-315.100.

Jarry, Philippe, to Pechiney Recherche. Process for obtaining bimaterial parts by casting an alloy around an insert coated with a metal film, 5,377,742, Cl. 164-100.000.

Jasty, Murali: See—
Schmalzried, Thomas P.; and Jasty, Murali, 5,378,228, Cl. 604-8.000.

Jeannet, Roland; Leutwyler, Robert; and Leutwyler, Werner, to Johnson & Johnson Consumer Products, Inc. Brushhead magazine for toothbrushes, 5,377,830, Cl. 206-362.100.

Jelmex Co., Ltd.: See—
Ishii, Kazuo, 5,379,181, Cl. 361-511.000.

Jenkins, Gene A.: See—
Lauderbaugh, David; and Jenkins, Gene A., 5,378,221, Cl. 493-367.000.

Jenkins, Richard M., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom and Northern Ireland. The intensity dividing multimode wave guide device for producing intensity distribution maxima, 5,379,354, Cl. 385-46.000.

Jennings, Alfred R., Jr., to Mobile Oil Corporation. Means of injecting CO₂ into circulation tubing to facilitate CO₂ gas lift, 5,377,764, Cl. 166-372.000.

Jennings, Alfred R., Jr.: See—
Flier, Eleanor R.; Hen, John; and Jennings, Alfred R., Jr., 5,377,758, Cl. 166-279.000.

Jensen, Jane S.: See—
Wilden, Mark A.; Hood, Jonathan M.; Hughes, Brian K.; Jensen, Jane S.; Scott, Larry L.; and Smith, Christopher F., 5,377,997, Cl. 273-434.000.

Jeppesen, Lone: See—
Hansen, John B.; Jeppesen, Lone; and Gronvald, Frederik C., 5,378,714, Cl. 514-321.000.

Jerry W. Bains and Salee C. Bains: See—
Elia, James P., 5,378,152, Cl. 433-173.000.

Jervis B. Webb Company: See—
Kohl, Robert E., 5,377,817, Cl. 198-781.000.

Jeungst, Clifford D.: See—
Moncur, Marlowe V.; Andrechak, Janet A.; and Jeungst, Clifford D., 5,378,535, Cl. 428-335.000.

Jiang, Curtis T., to QLH USA, Inc. Food spill catching device, 5,377,359, Cl. 2-48.000.

Jikuhara, Shigekazu: See—
Isoai, Masaru; Harada, Toshiharu; Kurata, Tokihiro; Fujita, Kazuhiro; Takama, Kazushi; and Jikuhara, Shigekazu, 5,378,380, Cl. 252-62.560.

Jimbo, Kishio: See—
Sakai, Takashi; Jimbo, Kishio; Makiyama, Koichi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, 5,378,576, Cl. 430-126.000.

Joerg, Klaus: See—
Frass, Hans W.; Hackmann, Ernst-August; Joerg, Klaus; Koenneke, Dietmar; Neubauer, Rudolf; and Elsaesser, Andreas, 5,378,584, Cl. 430-165.000.

Johannson, Goeran: See—
Froberg, Paul; and Johannson, Goeran, 5,378,177, Cl. 439-836.000.

Johansen, John H.: See—
Walter, Graham D.; Fowler, Gary F.; and Johansen, John H., 5,379,056, Cl. 346-76.0PH.

John D. Brush & Co., Inc.: See—
Robbins, Richard C.; Oliveri, Andrew L.; and DiGiambattista, Mary P., 5,377,514, Cl. 70-452.000.

John Fluke Mfg. Co., Inc.: See—
Bacon, Glade B.; and Farnsworth, Heber P., 5,379,176, Cl. 361-106.000.

John Paul Mitchell Systems: See—
Burmeister, Frederick H., 5,378,454, Cl. 924-70.500.

Johno, Masahiro: See—
Yui, Tomoyuki; Watanabe, Toshio; Arai, Yoshihisa; and Johno, Masahiro, 5,378,396, Cl. 252-299.650.

Johns Hopkins University, The: See—
Schwartz, Paul D., 5,379,299, Cl. 370-108.000.

Johnson, David A.: See—
Robertson, Thomas W.; and Johnson, David A., 5,377,492, Cl. 62-63.000.

Johnson, David C.: See—
Volz, Keith L.; Irlbeck, Robert D.; Renn, Robert M.; Johnson, David C.; and Deak, Frederick R., 5,378,169, Cl. 439-376.000.

Johnson, David W., Jr.: See—
Chandross, Edwin A.; Fleming, Debra A.; Johnson, David W., Jr.; MacChesney, John B.; and Walz, Frederick W., Jr., 5,379,364, Cl. 385-143.000.

Johnson, Dean R.; and Maurer, Hans W., to Westvaco Corporation. Method for providing irreversible smoothness in a paper rawstock, 5,378,497, Cl. 427-211.000.

Johnson, Donald S.: See—
Raleigh, William J.; Johnson, Donald S.; Lucarelli, Michael A.; Davis, Gary C.; and Hoover, James F., 5,378,789, Cl. 528-29.000.

Johnson, Greg: See—
Sharma, Raghu; and Johnson, Greg, 5,379,327, Cl. 375-121.000.

Johnson, Jerome. Battery holddown, 5,377,947, Cl. 248-503.000.

Johnson & Johnson Consumer Products, Inc.: See—
Jeannet, Roland; Leutwyler, Robert; and Leutwyler, Werner, 5,377,830, Cl. 206-362.100.

Johnson, Les: See—
Pungor, Erno; Johnson, Les; and Foermer, Monica R., 5,378,816, Cl. 530-412.000.

Johnson, Mack E.; Price, Macy J., Jr.; Drabczyk, Matthew P.; Starkey, Daniel C.; and Pickles, Timothy J., to Engineered Data Products, Inc. Adjustable computer workstation assembly and method therefore, 5,377,951, Cl. 248-639.000.

Johnson, Noel L.; Huang, Jyh-Yi T.; and Burnside, Robert R., to Abbott Laboratories. Automated drug infusion system, 5,378,231, Cl. 604-67.000.

Johnson, Robert A.; Haughey, Sarah K.; and Skilton, Jonathan, to Unisys Corporation. Method and apparatus for interfacing a workstation to a plurality of computer platforms, 5,379,296, Cl. 370-60.000.

Johnston, Douglas M.: See—
Biondi, James W.; Johnston, Douglas M.; and Herman, Stephen J., 5,377,671, Cl. 128-204.230.

Johnston, Roger B.: See—
Martin, Merrill D.; Johnston, Roger B.; and Harrison, Howard E., 5,378,499, Cl. 427-242.000.

Johoji, Hirofumi; Shirashi, Hiroyuki; Sasaki, Toshio; and Kawai, Kiyoshi, to Sumitomo Chemical Company, Limited. Liquid catalyst component, catalyst system containing the same, and process for producing ethylene- α -olefin copolymers using the catalyst system, 5,378,778, Cl. 526-142.000.

Jokinen, Mikko; and Kurki, Timo, to Consilium Bulk Babcock Oy. Roller screen for screening bulk material, especially wood chips, 5,377,848, Cl. 209-673.000.

Jokura, Jun, to NEC Corporation. Frequency synthesizer using intermittently controlled phase locked loop. 5,379,002, Cl. 331-10.000.

Jonas, Rochus; Lues, Ingeborg; Minck, Klaus-Otto; and Klockow, Michael, to Merck Patent Gesellschaft Mit Beschränkter Haftung. Thiazidines. 5,378,702, Cl. 514-222.500.

Jones & Attwood Limited: See—

Bache, John C., 5,378,375, Cl. 210-772.000.

Jones, Daniel A.; and Duron, Mark W., to D&D Gaming Patents, Inc. Methods and apparatus for playing casino card games including a progressive jackpot. 5,377,973, Cl. 273-856.00P.

Jones, Daniel A., to D&D Gaming Patents, Inc. Gaming table apparatus. 5,377,994, Cl. 273-309.000.

Jones, Frank N.; Chen, Der-Shyang; Dimian, Adel F.; and Wang, Daozhang, to North Dakota State University. Polymeric vehicle for coatings. 5,378,546, Cl. 428-1.000.

Jones, Gareth J.: See—

Work, Gordon S.; Jones, Gareth J.; and Albiez, Peter A., 5,379,382, Cl. 395-275.000.

Jones, James M. Fuel blending system for highly compressed gases. 5,377,647, Cl. 123-527.000.

Jones, Jeffrey D.: See—

Bard, Steven L.; Bendz, Gerald A.; Canestaro, Michael J.; Chapura, John R.; Frankoski, Edward J.; Horan, Michael S.; Jones, Jeffrey D.; Kamperman, James S.; Kjellgaard, John R., Jr.; and McCreary, Jack M., 5,378,307, Cl. 156-639.000.

Jones, Oscar F., Jr., to United Memories, Inc., and Nippon Steel Semiconductor Corporation. Method and circuit for improved timing and noise margin in a DRAM. 5,379,261, Cl. 365-230.010.

Jones, Richard R. M.: See—

Fodor, Ludovic; Jones, Richard R. M.; and Weberg, Rolf T., 5,378,842, Cl. 544-139.000.

Jones, Robert E., Jr.; Kryder, Mark H.; Mountfield, Keith R.; and Guzman, Javier J., to Mars Incorporated. Unshielded magnetoresistive head with multiple pairs of sensing elements. 5,378,885, Cl. 235-449.000.

Jones, Samuel G.: See—

Christie, Nick J.; and Jones, Samuel G., 5,378,242, Cl. 8-137.000.

Jones, Simon S.: See—

D'Andrea, Alan; Wong, Gordon G.; and Jones, Simon S., 5,378,808, Cl. 530-350.000.

Jones, Steven M.: See—

Hines, Horace H.; Walsh, Brian J.; Koops, Ronald; and Jones, Steven M., 5,378,915, Cl. 250-369.000.

Jornot, Erich; Wicki, Raphael; and Keller, Urs, to Maschinenfabrik Reiter AG. Draw frame, storage device and coiler, delivery regulation. 5,377,385, Cl. 19-240.000.

Josephs, Harold. Safety guard system for band saws and similar equipment. 5,377,571, Cl. 83-399.000.

Josephs, Ronald H. Wagering game. 5,377,993, Cl. 273-292.000.

Joshi, Ashok V.: See—

Taylor, Dale M.; and Joshi, Ashok V., 5,378,345, Cl. 204-421.000.

Jouillat, Claude, to Societe Technique de Pulverisation S.T.E.P. Fluid pump with secure mounting to receptacle stopper. 5,377,881, Cl. 222-321.000.

Jovanovic, Dragomir. Infrared apparatus for baking pastries and pizzas. 5,378,872, Cl. 219-388.000.

Joyce, Ronald W., to R. H. J. of Mt. Airy, Inc. Trailer hitch uncoupling apparatus and method of use. 5,378,007, Cl. 280-433.000.

Juda, Gary D.: See—

Richards, Paul N.; Hilbert, Harry A.; and Juda, Gary D., 5,377,569, Cl. 83-98.000.

Juengst, Clifford D.: See—

Frankiewicz, Theodore C.; and Juengst, Clifford D., 5,378,441, Cl. 423-220.000.

Juki Corporation: See—

Fujita, Shuji, 5,377,606, Cl. 112-254.000.

Juneau, Michael P.: See—

Littlejohn, Mark; and Juneau, Michael P., 5,377,860, Cl. 220-306.000.

Jung, Michael: See—

Geisler, Michael; Koetter-Faulhaber, Rudolf; and Jung, Michael, 5,378,284, Cl. 118-723.0MR.

Junginger, Bernhard: See—

Heidemann, Rolf; Krimmel, Heinz; and Junginger, Bernhard, 5,378,937, Cl. 327-306.000.

Juridical Foundation The Chemo-Sero-Therapeutic Research Institute: See—

Nakashima, Kazuyuki; Mimaki, Izumi; Hamamoto, Takayoshi; and Masuda, Kenichi, 5,378,612, Cl. 435-69.600.

Kabushiki Kaisha Japan Fitness: See—

Sakurai, Yoshihiro, 5,377,702, Cl. 132-271.000.

Kabushiki Kaisha Kobe Seiko Sho: See—

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Nishikawa, Yutaka; Ogawa, Tsuneshi; Kurokawa, Tsuyoshi; and Maruyama, Toshiharu, 5,378,871, Cl. 219-145.220.

Kabushiki Kaisha Komatsu Seisakusho: See—

Daimaru, Koji; Takata, Koichi; Yoshizawa, Kenichi; and Shoji, Masahiro, 5,378,218, Cl. 483-9.000.

Kabushiki Kaisha Lucent: See—

Sakurai, Yoshihiro, 5,377,702, Cl. 132-271.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: See—

Matsuno, Ryuji, 5,377,586, Cl. 101-228.000.

Kabushiki Kaisha Toshiba: See—

Akai, Yoshimi, 5,378,894, Cl. 250-368.000.

Ando, Takeshi, 5,379,127, Cl. 358-448.000.

Goto, Harutaka, 5,379,394, Cl. 395-425.000.

Hara, Kiyoshi, 5,377,684, Cl. 128-661.090.

Ihara, Hisanori; and Nozaki, Hidetoshi, 5,378,541, Cl. 428-428.000.

Ishihara, Yasutoshi; and Sato, Kozo, 5,378,987, Cl. 324-315.000.

Ishikawa, Kazuhiko, 5,379,409, Cl. 395-575.000.

Kubo, Osamu; Maeda, Tatsumi; Nomura, Tutomu; Kurisu, Shunji; and Ogawa, Etsuji, 5,378,547, Cl. 428-694.0BA.

Machida, Yoshio; Hatanaka, Masahiko; and Kitane, Shinichi, 5,377,679, Cl. 128-653.200.

Matsuno, Ryuji, 5,377,586, Cl. 101-228.000.

Morimoto, Yojiro; Sekiguchi, Koichi; Muranaga, Miho; and Kato, Nobuhiro, 5,379,424, Cl. 395-600.000.

Nakagawa, Akio; and Yasuhara, Norio, 5,378,920, Cl. 257-487.000.

Nakagawa, Toshiaki, 5,377,786, Cl. 187-287.000.

Nogami, Kazutaka, 5,379,246, Cl. 365-51.000.

Okamoto, Yutaka; and Tanaka, Yoshiyuki, 5,379,262, Cl. 365-230.010.

Samata, Shuichi; Mikata, Yuuichi; and Usami, Toshiro, 5,378,652, Cl. 437-189.000.

Sasaki, Masakuni; Shimizu, Yasushi; Yamaguchi, Teruo; and Tanaka, Kiyotaka, 5,378,247, Cl. 29-623.100.

Satoh, Yoshifumi; and Nakamura, Akira, 5,378,064, Cl. 376-230.000.

Seo, Yasutsugu; and Kondo, Masafumi, 5,378,986, Cl. 324-309.000.

Shiro, Yusaku; and Kitahara, Takeshi, 5,378,961, Cl. 313-440.000.

Takahashi, Tomohiko; Matsuoka, Takashi; Nakatomi, Yoshitsugu; and Kagaya, Koji, 5,379,101, Cl. 355-309.000.

Takamoto, Hiroshi; and Etou, Mikio, 5,378,950, Cl. 327-401.000.

Tanaka, Tomoharu; Tanaka, Yoshiyuki; Ohuchi, Kazunori; Momodomi, Masaki; Iwata, Yoshihisa; Sakui, Koji; Saito, Shinji; and Sumihara, Hideki, 5,379,256, Cl. 365-185.000.

Umemoto, Yuji; Ito, Koichi; and Otsuka, Koki, 5,379,338, Cl. 379-58.000.

Watanabe, Toshiyuki; Tsuchiya, Hideo; Tojo, Toru; and Watanabe, Tomohide, 5,379,348, Cl. 382-8.000.

Yoshikawa, Kuniyoshi, 5,378,910, Cl. 257-319.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: See—

Fuji, Toshiro; Inukai, Hitoshi; and Iwama, Kazuaki, 5,378,115, Cl. 417-269.000.

Ito, Makoto; Kashiwagi, Yoichiro; and Asahi, Goro, 5,379,021, Cl. 336-83.000.

Kachik, Robert H.: See—

Besch, Gordon O.; Kachik, Robert H.; Swartz, Mark A.; Kuster, Frank K.; and Guntermann, Hans J., 5,377,959, Cl. 266-167.000.

Kaden, Jeffrey M.; and Mozdzer, Robert L., to General Clutch Corporation. Tape spool assembly machine. 5,377,933, Cl. 242-586.300.

Kadota, Takashi: See—

Sakuma, Yasuji; Hasegawa, Masaichi; Kataoka, Kenichiro; Hoshina, Kenji; Yamazaki, Noboru; Kadota, Takashi; and Yamaguchi, Hisao, 5,378,700, Cl. 514-212.000.

Kafka, Leonard: See—

Noble, Gardiner A.; Kafka, Leonard; and Ciuffetelli, Mark, 5,377,652, Cl. 123-634.000.

Kagamibashi, Syunji: See—

Igami, Eiichi; Kagamibashi, Syunji; Hasegawa, Shoji; and Obata, Isao, 5,379,276, Cl. 369-32.000.

Kagan, Michael: See—

Gochman, Simcha; Kazachinsky, Itamar; and Kagan, Michael, 5,379,396, Cl. 395-425.000.

Kagaya, Koji: See—

Takahashi, Tomohiko; Matsuoka, Takashi; Nakatomi, Yoshitsugu; and Kagaya, Koji, 5,379,101, Cl. 355-309.000.

Kage, Shingo; Toyama, Yasunari; and Yamano, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Tape recorder apparatus. 5,379,168, Cl. 360-96.500.

Kagebeck, Tor: See—

Stienspetz, Allan; and Kagebeck, Tor, 5,378,886, Cl. 235-449.000.

Kai, Susumu; Shindo, Isao; Mutoh, Shigeo; and Yoshida, Kasumi, to Hitachi, Ltd.; and Hitachi Instrument Engineering Co., Ltd. Test strip automatic supply device and analytical instrument using the same. 5,378,630, Cl. 436-43.000.

Kaiser, Herbert. Apparatus for producing granules or pastilles from flowable material. 5,378,132, Cl. 425-6.000.

Kajihara, Yujiro; Suzuki, Kazunari; Tsubosaki, Kunihiro; Suzuki, Hiromichi; Miyaki, Yoshinori; Naito, Takahiro; and Kawai, Sueo, to Hitachi, Ltd.; and Hitachi Microcomputer System Ltd. Leadframe, semiconductor integrated circuit device using the same, and method of and process for fabricating the same. 5,378,656, Cl. 437-217.000.

Kajima Corporation: See—

Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

Kajino, Tadashi; and Kurachi, Mikio, to Nidek Co., Ltd. Lens meter. 5,379,111, Cl. 356-124.000.

Kalfus, Martin A.: See—

Anderson, Samuel J.; Baird, John; and Kalfus, Martin A., 5,378,928, Cl. 257-787.000.

Kali-Chemie Pharma GmbH: See—

Boedecker, Bernd; Henningsen, Friederike; Koelln, Klaus-Juergen; Kuhnnow, Guenther; Peschke, Guenter-Josef; Rehburg, Manfred; Sobe, Alwin; and Stemmler, Berthold, 5,378,462, Cl. 424-94.290.

Kaliski, Adam F., to Industrial Progress, Inc. Functional complex microgels with rapid formation kinetics. 5,378,399, Cl. 252-313.100.

Kallenbach, Reinald: See—

Brewer, Richard G.; Devoe, Ralph G.; Foster, Kenneth L.; Hoffnagle, John A.; and Kallenbach, Reinald, 5,379,000, Cl. 331-3.000.

Kallenberger, Harvey J.; and Tossenberger, Emerig G., to Harnischfeger Corporation. Method for retaining a pin. 5,377,408, Cl. 29-898.070.

Kamada, Seiji: See—

Katayama, Toshiyuki; Sugimoto, Norihiko; Inada, Shunji; and Kamada, Seiji, 5,379,325, Cl. 375-106.000.

Kamata, Yoshiyuki. Pretreating apparatus for adhesion of plastic sheet materials. 5,378,281, Cl. 118-264.000.

Kamei, Yasunori: See—

Hineribara, Takashi; Kamei, Yasunori; and Miura, Ryusuke, 5,377,449, Cl. 49-441.000.

Kameswaran, Venkataraman: See—

Kuhn, David G.; and Kameswaran, Venkataraman, 5,378,839, Cl. 540-544.000.

Kamiunten, Shoji, to Yamatake-Honeywell Co., Ltd. Thermal conductivity measuring device. 5,377,527, Cl. 73-25.030.

Kamiyama, Hironori: See—

Obata, Hiroyuki; Utsumi, Minoru; Iijima, Masayuki; Okabe, Masato; and Kamiyama, Hironori, 5,378,565, Cl. 430-50.000.

Kamiyama, Yasuhiro: See—

Ikegaya, Tadashi; Maei, Yoshihiro; Matsui, Tsunehiro; Sakayama, Takashi; and Kamiyama, Yasuhiro, 5,379,124, Cl. 358-440.000.

Kammerer, Karl; and Diessner, Bernhard, to BETEK Bergbau- und Hartmetalltechnik Karl-Heinz. Cylinder-shaped cutting body for a coal cutting machine. 5,378,050, Cl. 299-91.000.

Kamperman, James S.: See—

Bard, Steven L.; Bendz, Gerald A.; Canestaro, Michael J.; Chapura, John R.; Frankoski, Edward J.; Horan, Michael S.; Jones, Jeffrey D.; Kamperman, James S.; Kjellgaard, John R., Jr.; and McCreary, Jack M., 5,378,307, Cl. 156-639.000.

Kamyr, Inc.: See—

Delcourt, Thomas R., 5,378,321, Cl. 162-57.000.

Kan Electronics Co., Ltd.: See—

Mizoguchi, Kiyoshi; Sato, Ryoetsu; and Gotoh, Morikazu, 5,377,894, Cl. 228-1.100.

Kanai, Fumihiko: See—

Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shihoh; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,378,701, Cl. 514-215.000.

Kanda, Minoru: See—

Seiki, Kazuhiro; Yamaguchi, Yukihiko; and Kanda, Minoru, 5,378,012, Cl. 280-728.00B.

Kaneda, Hiroyuki: See—

Nakahara, Kenji; and Kaneda, Hiroyuki, 5,379,326, Cl. 375-106.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—

Uku, Kyoji; Ueda, Masahiro; Murakami, Tetsuya; and Hirokawa, Norio, 5,378,786, Cl. 526-344.200.

Kaneko, Masahiko; Aratani, Katsuhisa; and Muto, Yoshihiro, to Sony Corporation. Thermomagnetic recording method using a recording light power modulated according to the signal to be modulated. 5,379,275, Cl. 369-13.000.

Kanemoto, Roy H.: See—

Schwartz, Dennis E.; Kanemoto, Roy H.; Watanabe, Susan M.; and Dix, Kim, 5,378,604, Cl. 435-6.000.

Kaneta, Hitoshi: See—

Marui, Yoji; Hayashi, Chozo; Ito, Shigeki; Fujio, Mieke; Tanaka, Hiroki; Nagasaki, Toshihide; Soda, Yasuji; and Kaneta, Hitoshi, 5,378,608, Cl. 435-7.500.

Kanetsugu, Terashima: See—

Murashiro, Katsuyuki; Makoto, Kikuchi; and Kanetsugu, Terashima, 5,378,392, Cl. 252-299.010.

Kang, Bog Youn, to Goldstar Instrument & Electric Co., Ltd. Electronic ballast circuit for discharge lamps. 5,378,964, Cl. 315-247.000.

Kanno, Miki: See—

Anzai, Mitsutoshi; Matsuura, Yuji; Mukudai, Osamu; Kanno, Miki; and Watanabe, Kayoko, 5,378,573, Cl. 430-110.000.

Kanno, Satoshi: See—

Hayashi, Makoto; Kanno, Satoshi; and Saito, Naoto, 5,378,429, Cl. 422-53.000.

Kanno, Shin; Tsujimura, Tsukasa; Yano, Masatsugu; Aoyagi, Hidenori; and Kawawata, Hiroshi. Voice packet assembling/disassembling apparatus. 5,379,293, Cl. 370-94.100.

Kano, Mitsuru: See—

Imai, Nobuhiko; Sekiguchi, Mamoru; Kano, Mitsuru; Krug, Thomas; Steiniger, Gerhard; and Meier, Andreas, 5,378,506, Cl. 427-529.000.

Kansai Electric Power Co., Inc.: See—

Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiro; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Tsuru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.

Kanzaki Kokyukoki Mfg. Co., Ltd.: See—

Azuma, Toshiro; and Okada, Hideaki, 5,377,487, Cl. 60-487.000.

Kao Corporation: See—

Iked, Hiroshi, 5,379,173, Cl. 360-133.000.

Tamura, Tadashi; Kiyomine, Akira; Morita, Osamu; Tanaka, Michio; Ogawa, Masahiko; Tagami, Hidetoshi; and Yoshihara, Toru, 5,378,244, Cl. 8-409.000.

Tanaka, Nobuhiro, 5,377,811, Cl. 198-418.600.

Kao, Wenling; Vogel, Robert L.; Abou-Gharbia, Magid A.; and Caulfield, Craig E., to American Home Products Corporation. Rapamycin oximes and hydrazones. 5,378,836, Cl. 540-456.000.

Kaplan, Samuel: See—

Wilson, James S.; Mallgren, William R.; Donaldson, Janaia M.; Kaplan, Samuel; and Facci, John S., 5,379,234, Cl. 364-496.000.

Kappe, Thomas: See—

Nuebling, Christoph; von Deyn, Wolfgang; Theobald, Hans; Westphalen, Karl-Otto; Kardorff, Uwe; Walter, Helmut; Kappe, Thomas; and Gerber, Matthias, 5,378,679, Cl. 504-246.000.

Karasaki, Mutsunori: See—

Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiro; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Tsuru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.

Karasuda, Toshinori: See—

Ito, Nobuyuki; Okayama, Katsushige; Karasuda, Toshinori; and Miyagawa, Yasumichi, 5,378,766, Cl. 525-333.800.

Kardorff, Uwe: See—

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Karle, James A.: See—

Smith, Charles W., Jr.; Rosio, Larry R.; Shore, Stephen H.; and Karle, James A., 5,377,705, Cl. 134-95.300.

Karube, Norio; Fujioka, Yoshiaki; and Manabe, Mitsuo, to Fanuc Ltd. Laser discharge tube. 5,379,316, Cl. 372-61.000.

Kasamoto, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor protecting apparatus and method for preventing destruction of internal circuit caused by latch-up. 5,379,174, Cl. 361-56.000.

Kasenga, Anthony F.; Lenox, Joseph J.; and Tulk, John S., to GTE Products Corporation. Method of treating europium activated strontium tetraborate phosphor. 5,378,398, Cl. 252-301.40R.

Kashida, Meguru: See—

Hamada, Yuichi; Nagata, Yoshihiko; Kashida, Meguru; and Kubota, Yoshihiro, 5,378,514, Cl. 428-14.000.

Kashiwagi, Yoichiro: See—

Ito, Makoto; Kashiwagi, Yoichiro; and Asahi, Goro, 5,379,021, Cl. 336-83.000.

Kashiwase, Masaharu; and Matsuoka, Terumi, to Chlorine Engineers Corp., Ltd. Method for removing organic film. 5,378,317, Cl. 156-659.100.

Kashiwaya, Makoto, to Fuji Photo Film Co., Ltd. Method of manufacturing magnetic recording medium. 5,378,496, Cl. 427-128.000.

Kaspar Wire Works, Inc.: See—

Baer, Scott D.; and Woycheshin, Douglas W., 5,377,808, Cl. 194-216.000.

Katagiri, Takeshi: See—

Kishi, Yuji; and Katagiri, Takeshi, 5,378,416, Cl. 264-40.500.

Kataoka, Junnosuke, to Canon Kabushiki Kaisha. Facsimile apparatus having improved coding for transmission of plural images without interruption. 5,379,123, Cl. 358-427.000.

Kataoka, Kenichiro: See—

Sakuma, Yasuji; Hasegawa, Masaichi; Kataoka, Kenichiro; Hoshina, Kenji; Yamazaki, Noboru; Kadota, Takashi; and Yamaguchi, Hisao, 5,378,700, Cl. 514-212.000.

Kataoka, Mitsuru: See—

Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Takahagi, Hidekuni; Iijima, Yasuteru; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,689, Cl. 514-18.000.

Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Iijima, Yasuteru; Takahagi, Hidekuni; Koike, Hiroyuki; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,690, Cl. 514-18.000.

Katayama, Toshiyuki; Sugimoto, Norihiko; Inada, Shunji; and Kamada, Seiji, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Clock generating apparatus, data transmitting/receiving apparatus and data transmitting/receiving method. 5,379,325, Cl. 375-106.000.

Katayose, Mitsuo: See—

Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; Morishita, Yoshi; Katayose, Mitsuo; Okamoto, Tadashi; and Hayashi, Nobuyuki, 5,378,589, Cl. 430-495.000.

Kato, Heizaburo, to Sankyo Seisakusho Co. Reforming apparatus. 5,377,517, Cl. 72-164.000.

Kato, Kazuhiro: See—

Kumagai, Toshihiro; Kitamura, Hirokazu; Kodama, Tsutomu; and Kato, Kazuhiro, 5,378,024, Cl. 285-39.000.

Kato, Kazuo: See—

Nishio, Yoji; Masuda, Ikuro; Kato, Kazuo; Kuboki, Shigeo; and Iwamura, Masahiro, 5,378,941, Cl. 307-446.000.

Kato, Mamoru: See—

Ogisu, Yasuhiko; Kato, Mamoru; and Takahashi, Shigeyuki, 5,378,768, Cl. 525-388.000.

Kato, Maoki: See—

Kato, Naoki, 5,379,066, Cl. 348-311.000.

Kato, Naoki, to Sony Corporation. CCD imager having four-phase vertical shift registers operated by three-valued clock signals. 5,379,064, Cl. 348-248.000.

Kato, Naoki, to Kato, Maoki. Horizontal register for CCD imager. 5,379,066, Cl. 348-311.000.

Kato, Nobuhiro: See—

Morimoto, Yojiro; Sekiguchi, Koichi; Muranaga, Miho; and Kato, Nobuhiro, 5,379,424, Cl. 395-600.000.

Kato, Norihide; Shimizu, Tomohide; and Mori, Kenichiro, to Honda Giken Kogyo Kabushiki Kaisha. Method of inspecting the surface of a workpiece. 5,379,347, Cl. 382-8.000.

Kato, Shiro: See—

Murata, Kazuo; Takeuchi, Kenichi; Izuchi, Syuichi; and Kato, Shiro, 5,378,557, Cl. 429-127.000.

Kato, Yasuhito: See—
Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seichirou; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

Katoh, Akira: See—
Ara, Masayasu; and Katoh, Akira, 5,378,291, Cl. 148-251.000.

Katoh, Kazunobu: See—
Hoshimiya, Takashi; Ezoe, Toshihide; and Katoh, Kazunobu, 5,378,578, Cl. 430-264.000.

Katoh, Shinji: See—
Suwa, Nobuyuki; Nishimura, Akio; Miyama, Susumu; and Katoh, Shinji, 5,378,484, Cl. 426-329.000.

Katsumata, Tohru; and Matsunaga, Nobuyuki, to Polyplastics Co., Ltd. Polyacetal resin composition exhibiting reduced surface gloss characteristics and molded articles thereof, 5,378,748, Cl. 524-196.000.

Katsuno, Takafumi, to Rohm Co., Ltd. Square chip resistor, 5,379,017, Cl. 338-332.000.

Katta, Yasuo; Ohkuma, Kazuhiro; Satouchi, Mitsuko; Takahashi, Reiji; and Yamamoto, Takehiko, to Matsutani Chemical Industries Co., Ltd. Method for preparing galacto-oligosaccharides, 5,378,833, Cl. 536-124.000.

Katz, George. Pet cage barrier, 5,377,619, Cl. 119-17.000.

Katzmann, Fred L. Electrothermal conversion elements, apparatus and methods for use in comparing, calibrating and measuring electrical signals, 5,378,873, Cl. 219-502.000.

Kaufman, Stephen R., to Electro-Mechanics Company, The. Automatic antenna tilt apparatus, 5,379,048, Cl. 343-765.000.

Kawabe, Satomi; Hoshino, Hiroyuki; and Matsuzaka, Soji, to Konica Corporation. Silver halide photographic emulsion containing a specific dye-grain combination, 5,378,597, Cl. 430-567.000.

Kawaguchi, Hiroyuki: See—
Sugishima, Yoshio; Ine, Youichirou; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouchirou; Asano, Keiichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Kawahara, Yoshiko: See—
Tujimoto, Nobuharu; Kikuchi, Yoshimi; Kurahashi, Osamu; and Kawahara, Yoshiko, 5,378,616, Cl. 435-110.000.

Kawai, Eri: See—
Shibatani, Takeji; Matsumae, Hiroaki; and Kawai, Eri, 5,378,627, Cl. 435-280.000.

Kawai, Kiyoshi: See—
Johoji, Hirofumi; Shiraishi, Hiroyuki; Sasaki, Toshio; and Kawai, Kiyoshi, 5,378,778, Cl. 526-142.000.

Kawai, Michio: See—
Nozomi, Mamoru; Miyake, Akiko; and Kawai, Michio, 5,378,567, Cl. 430-58.000.

Kawai, Suet: See—
Kajihara, Yujiro; Suzuki, Kazunari; Tsubosaki, Kunihiro; Suzuki, Hiromichi; Miyaki, Yoshinori; Naito, Takahiro; and Kawai, Suet, 5,378,656, Cl. 437-217.000.

Kawakami, Michiya: See—
Tomita, Takeshi; Ishuchi, Yukio; Kawakami, Michiya; and Nagashima, Hiromitsu, 5,378,450, Cl. 423-584.000.

Kawakami, Osamu; and Tsuruta, Kaichi, to Nikku Industry Co., Ltd.; and Senju Metal Industry Co., Ltd. Vacuum drying apparatus, 5,377,425, Cl. 34-92.000.

Kawakami, Takamasa: See—
Inoue, Yoshiaki; Murabayashi, Shigeru; Fujinami, Kazuo; Yoshino, Isamu; Kawakami, Takamasa; Makinose, Satoru; and Naito, Akira, 5,378,428, Cl. 422-9.000.

Kawakubo, Toshio: See—
Obu, Makoto; Hotta, Yoshihiko; Masubuchi, Fumihito; Miyawaki, Katsuaki; Takeda, Yusuke; and Kawakubo, Toshio, 5,379,058, Cl. 346-76.0PH.

Kawamura, Shiget, to Sumitomo Wiring Systems, Ltd. Optical fiber connector, 5,379,362, Cl. 385-92.000.

Kawanami, Takashi: See—
Marusawa, Hiroshi; Kawanami, Takashi; Kounoike, Takehiro; and Tomono, Kunisaburo, 5,379,004, Cl. 333-1.100.

Kawasaki, Masami: See—
Fuji, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiro; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaka, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeki, 5,378,442, Cl. 423-228.000.

Kawashima, Yoshinori; Tamaki, Kenji; Motodate, Shoji; Nakazawa, Yoshihiro; Tonyama, Masayuki; Maeda, Noriyuki; and Osana, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Regenerative brake device and a power transmission device for electric motor vehicles, 5,377,791, Cl. 188-159.000.

Kawawata, Hiroshi: See—
Kanno, Shin; Tsujimura, Tsukasa; Yano, Masatsugu; Aoyagi, Hidenori; and Kawawata, Hiroshi, 5,379,293, Cl. 370-94.100.

Kay, Shepard G.: See—
Arcas, Noe; Kay, Shepard G.; and Parente, Charles A., 5,377,546, Cl. 73-589.000.

Kaylor, Joseph B., to Valkyrie Scientific Proprietary, L.C. Method and means for extinguishing tank fires, 5,377,765, Cl. 169-44.000.

Kazachinsky, Itamar: See—
Gochman, Simcha; Kazachinsky, Itamar; and Kagan, Michael, 5,379,396, Cl. 395-425.000.

Kazi, Arif; Rougeot, Jeanne; Li, Lynn L.; and Dufour, Louis D., to Baylis Medical Company, Inc. Ultrasound catheter with mechanically steerable beam, 5,377,685, Cl. 128-662.060.

Kealey, George T. E.; Westgate, Gillian E.; and Williams, Rebecca, to Chesebrough-Ponds USA Co., Division of Conopco, Inc. Cosmetic composition for inhibiting hair growth, 5,378,455, Cl. 424-73.000.

Keaveney, Benedict: See—
Ayres, George E.; Black, Gary D.; Bowen, Larry; Brackmann, Warren A.; Keaveney, Benedict; and Kilpatrick, John D., 5,377,826, Cl. 206-246.000.

Kee, Kok-Hiong, to Sherwood Medical Company. Suction control valve, 5,377,672, Cl. 128-207.160.

Keeler, Calvin L.; and Dohms, John E. Gene encoding cytochrome protein of mycoplasma gallisepticum and its use, 5,378,820, Cl. 536-23.100.

Keeley, James W.: See—
Peters, Arthur; Zelle, Richard C.; Carroll, Elmer W.; Barlow, George J.; Nibby, Chester M., Jr.; and Keeley, James W., 5,379,378, Cl. 395-200.000.

Keenan, Thomas C.; Lo Presti, Philip B.; and Van Erden, Donald L., to Shippers Paper Products Company. Collapsible and expandable void filler, 5,378,096, Cl. 410-154.000.

Keller, Carl E. Progressive fluid sampling for boreholes, 5,377,754, Cl. 166-264.000.

Keller, Urs: See—
Jornot, Erich; Wicki, Raphael; and Keller, Urs, 5,377,385, Cl. 19-240.000.

Kelley, Donald W., to Qualtec Data Products, Inc. Disk drive lock assembly, 5,377,512, Cl. 70-58.000.

Kelley, Mark D.: See—
Stanley, Thomas R.; Kelley, Mark D.; and Glass, Richard S., 5,378,193, Cl. 452-45.000.

Kelly, Arnold J., to Charged Injection Corporation. Methods and apparatus for dispersing a fluent material utilizing an electron beam, 5,378,957, Cl. 313-231.010.

Kelly, Thomas; Mackenzie, Lewis M.; and Sutherland, Robert J., to Motorola Inc. Parallel processor with array of clustered processing elements having inputs separate from outputs and outputs limited to a maximum of two per dimension, 5,379,440, Cl. 395-800.000.

Kembo, Nobumitsu: See—
Imai, Tunes; Kembo, Nobumitsu; Yamada, Toshiyuki; and Wakabayashi, Takashi, 5,379,368, Cl. 395-117.000.

Kemp Development Corporation: See—
Kemp, Willard E., 5,378,331, Cl. 204-129.700.

Kemp, Paul D.; Carr, Robert M., Jr.; Maresh, John G.; Cavallaro, John; and Gross, Jerome, to Organogenesis, Inc. Collagen threads, 5,378,469, Cl. 424-423.000.

Kemp, Willard E., to Kemp Development Corporation. Apparatus and method for electropolishing metal workpieces, 5,378,331, Cl. 204-129.700.

Kempas, Jorma: See—
Lehtonen, Harri; and Kempas, Jorma, 5,377,810, Cl. 198-303.000.

Kempen, Simone J.: See—
Droin, Gerard M.; and Kempen, Simone J., 5,378,591, Cl. 430-506.000.

Kendili, El Hadi, to Maroc-Chimie. Method and an installation for producing granulated triple superphosphate (TSP), 5,378,258, Cl. 71-41.000.

Kendrew, Robert J. Apparatus for exercising arms and legs vertically, 5,378,209, Cl. 482-52.000.

Kenmochi, Toshio: See—
Yamada, Masakatsu; Yokoyama, Minoru; Kenmochi, Toshio; Ezumi, Yosuke; Toyoda, Hisashi; and Terashima, Hideyuki, 5,379,121, Cl. 358-400.000.

Kennelly, Teresa; Hochmuth, John K.; Chou, Ting C.; and Farrauto, Robert J., to Engelhard Corporation. Combustion process using catalysts containing binary oxides, 5,378,142, Cl. 431-7.000.

Keogh, Joseph P. Installation of safes, 5,377,602, Cl. 109-51.000.

Keoshkerian, Barkev: See—
Winnik, Francoise M.; Keoshkerian, Barkev; Wong, Raymond W.; Drappel, Stephan; Crocher, Melvin D.; Mayo, James D.; and Hofstra, Peter G., 5,378,574, Cl. 430-115.000.

Kersey, Steve: See—
Gilbert, Charles; Kersey, Steve; and Janky, James M., 5,379,045, Cl. 342-357.000.

Kersten, Reinhard; and Klinkenberg, Klaus, to U.S. Philips Corporation. Method of controlling the boiling power for a water-containing vessel, 5,378,482, Cl. 426-231.000.

Kester, Dianne K., to United States of America, Energy. Separation of strontium from fecal matter, 5,378,631, Cl. 436-59.000.

Kestner, Melvin M.: See—
Merkel, Paul B.; Kestner, Melvin M.; and Zengerle, Paul L., 5,378,593, Cl. 430-544.000.

Ketterer, Dieter; deceased; Brigitte, Ketterer; Fritz, Raimund; Seeger, Heinz; Conzelmann, Ralf; Schumacher, Michael; and Moeller, Tilo. Process for inflating a gas cushion and safety system of the air bag type, 5,378,018, Cl. 280-737.000.

Keunecke, Gerhard; Arnold, Adolf; and Butzke, Sabine, to Zimmer Aktiengesellschaft. Process for the production of cellulose carboxylate, 5,378,827, Cl. 536-30.000.

Keutgen, Franz: See—
v. Schnakenburg, Joachim; Perings, Dieter; Wagner, Siegfried; Keutgen, Franz; Winterhager, Rudiger; and Stadler, Peter, 5,377,743, Cl. 164-440.000.

Keville, Kathleen M.; Timken, Hye K. C.; and Ware, Robert A., to Mobil Oil Corp. Method for preparing catalysts comprising zeolites, 5,378,671, Cl. 502-64.000.

Kielmann, Sylke: See—
Mahler, Ulrike; Westfachtel, Alfred; Sladek, Hans-Juergen; and Kielmann, Sylke, 5,378,485, Cl. 426-329.000.

Kienzle, Stefan: See—
Thoms, Volker; Harthun, Ulrich; Kienzle, Stefan; and Siegert, Klaus, 5,377,520, Cl. 72-361.000.

Kihl, Jesper: See—
Alsoe, Karina O.; and Kihl, Jesper, 5,378,811, Cl. 530-381.000.

Kikuchi, Toshihiro; Miyazaki, Hajime; and Nakano, Takashi, to Canon Kabushiki Kaisha. Electroluminescent device, 5,378,519, Cl. 428-690.000.

Kikuchi, Yoshimi: See—
Tujimoto, Nobuharu; Kikuchi, Yoshimi; Kurahashi, Osamu; and Kawahara, Yoshiko, 5,378,616, Cl. 435-110.000.

Kikuchi, Yutaka, to Canon Kabushiki Kaisha. Sheet feeding apparatus with reduced vibration separator, 5,377,970, Cl. 271-121.000.

Kilby, David: See—
Randell, Christopher F.; and Kilby, David, 5,378,559, Cl. 429-206.000.

Kilpatrick, John D.: See—
Ayres, George E.; Black, Gary D.; Bowen, Larry; Brackmann, Warren A.; Keaveney, Benedict; and Kilpatrick, John D., 5,377,826, Cl. 206-246.000.

Kilsby, Celia; and King, Frank C. Lunge line controller, 5,377,626, Cl. 119-796.000.

Kim, Dong G., to Hyundai Electronics Industries Co., Ltd. Compact disk player having an intermediate memory storage device, 5,379,284, Cl. 369-44.320.

Kim, Hyo-Sup, to Litton Systems, Inc. Method of fabricating a transmission mode InGaAs photocathode for night vision system, 5,378,640, Cl. 437-5.000.

Kim, Hyung-Gwon, to Samsung Electronics Co., Ltd. Automatic eye angle adjusting apparatus for an electronic view finder and method thereof, 5,378,973, Cl. 318-640.000.

Kim, Jun-Bae; and Nam, Seong-Woo, to Daewoo Electronics, Co. Ltd. Optical baffling device, 5,379,081, Cl. 353-99.000.

Kim, Minsu: See—
Lee, Myunwoo; Lee, Wooil; and Kim, Minsu, 5,378,201, Cl. 474-77.000.

Kim, Yoon H.; Oh, Tae S.; and Lee, Byeong C., to Korea Institute of Science and Technology. Intercrystalline semiconductive ceramic capacitor, 5,378,667, Cl. 501-136.000.

Kimball, Charles D., to Westpat, Inc. Fluid pressure tensioning apparatus for a web threading endless rope, 5,377,892, Cl. 226-92.000.

Kimber, Eugene L. Ion implantation target charge control system, 5,378,899, Cl. 250-492.210.

Kimura, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and a manufacturing method thereof, 5,378,650, Cl. 437-63.000.

Kimura, Kenji: See—
Komma, Tetsuko; Kimura, Kenji; Asai, Yoshimi; and Suzuki, Shiro, 5,379,369, Cl. 395-119.000.

Kimura, Tatsuya: See—
Shin, Yasuhiro; and Kimura, Tatsuya, 5,378,932, Cl. 327-333.000.

Kind, Guntram, to Pulsotronic Merten GmbH & Co. KB. Device for separating metal particles from a flow of material, 5,377,847, Cl. 209-655.000.

King, Christopher G.: See—
Fiddes, Neil G.; King, Christopher G.; Kobus, Gerhard S.; Mantone, Anthony; and Shaffer, Frank D., 5,379,019, Cl. 335-216.000.

King, Frank C.: See—
Kilsby, Celia; and King, Frank C., 5,377,626, Cl. 119-796.000.

King, Harry L.: See—
Hart, Charles M.; Rogers, James D.; King, Harry L.; and Bartholomew, John J., 5,378,219, Cl. 492-48.000.

Kinoshita, Shin-ichi, to Diafoil Hoechst Company, Limited. Capacitor comprising polyethylene 2,6-naphthalate film, 5,379,180, Cl. 361-323.000.

Kipphan, Helmut; and Tessmann, Uwe, to Heidelberger Druckmaschinen AG. Multiple drive for a sheet-fed rotary printing press, 5,377,585, Cl. 101-181.000.

Kirby, Terry. Security device for controlling window blinds, 5,377,739, Cl. 160-188.000.

Kirchner, Balhasar; and Schleicher, Siegfried, to Ernst Stadelmann Gesellschaft mbH, Firma. Desktop mounted shelf with pivoting arms, 5,377,598, Cl. 108-97.000.

Kiri, Manabu: See—
Ishida, Yoshitaka; and Kiri, Manabu, 5,379,128, Cl. 358-449.000.

Kirk, Ronald L., to ATL Corporation. Synthetic aperture based real time holographic imaging, 5,379,133, Cl. 359-15.000.

Kirkkala, Mauno; and Kuivikko, Reijo, to Oy C.E. Lindren Ab. Method of making a brush element for a brush roller, 5,378,051, Cl. 300-21.000.

Kirkpatrick, Michael E., to Consolidated Industries Corp. Limit switch control especially for warm air furnaces, 5,377,909, Cl. 236-11.000.

Kirma, Safa, to Deutsche Aerospace Airbus GmbH. Device for mounting elongated components, such as electrical wiring, especially in an aircraft, 5,377,939, Cl. 248-68.100.

Kishi, Hiroyoshi: See—
Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Yoshinaga, Yoko; Kishi, Hiroyoshi; and Kishibiki, Nobuo, 5,379,132, Cl. 359-13.000.

Kishi, Kenji; and Nagasaki, Tatsuo, to Olympus Optical Co., Ltd. Electronic still camera system compensating for image displacement, 5,379,063, Cl. 348-208.000.

Kishi, Mitsuhiro, to Japanic Corporation. Deep excavator, 5,377,432, Cl. 37-186.000.

Kishi, Yuji; and Katagiri, Takeshi, to Nissan Motor Co., Ltd.; and Yoshizuka Seiki Co., Ltd. Method of and system for manufacturing powder moldings, 5,378,416, Cl. 264-40.500.

Kita, Hideki: See—
Yasutomi, Yoshiyuki; Nakamura, Kousuke; Kita, Hideki; and Sobue, Masahisa, 5,378,417, Cl. 264-61.000.

Kitagawa, Hidemasa: See—
Mori, Yoshihiro; Endo, Koichiro; Suzuki, Kisoko; and Kitagawa, Hidemasa, 5,379,380, Cl. 395-275.000.

Kitagawa, Hiroshi; and Suzuki, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Driven wheel torque control system, 5,377,562, Cl. 477-110.000.

Kitagawa, Yuichi, to Funai Electric Co., Ltd. Fail safe microwave oven, 5,378,876, Cl. 219-710.000.

Kitahara, Takeshi: See—
Fujihara, Atsushi; and Kitahara, Takeshi, 5,379,402, Cl. 395-425.000.

Shiro, Yusaku; and Kitahara, Takeshi, 5,378,961, Cl. 313-440.000.

Kitamura, Hirokazu: See—
Kumagai, Toshihiro; Kitamura, Hirokazu; Kodama, Tsutomu; and Kato, Kazuhiro, 5,378,024, Cl. 285-39.000.

Kitamura, Koichi: See—
Fuji, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiro; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaka, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeki, 5,378,442, Cl. 423-228.000.

Kitamura, Shigehiro: See—
Takeyama, Toshihisa; Kitamura, Shigehiro; and Koshizuka, Kunihiro, 5,378,675, Cl. 503-227.000.

Kitamura, Yoshiaki: See—
Mizomoto, Hiroyuki; and Kitamura, Yoshiaki, 5,379,040, Cl. 341-143.000.

Kitamura, Yoshinori: See—
Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

Kitane, Shinichi: See—
Machida, Yoshio; Hatanaka, Masahiko; and Kitane, Shinichi, 5,377,679, Cl. 128-653.200.

Kitano, Shigekazu: See—
Ozeki, Tadasi; Kitano, Shigekazu; and Sera, Kyoji, 5,378,130, Cl. 418-102.000.

Kitaoka, Masahiro: See—
Hattori, Atsushi; Uchida, Noriyoshi; and Kitaoka, Masahiro, 5,378,623, Cl. 435-198.000.

Kitchen, Richard L.: See—
Pedersen, Harry; and Kitchen, Richard L., 5,377,454, Cl. 451-5.000.

Kiyohiro, Noriaki; and Ito, Kazutoshi, to CKD Corporation. Control apparatus for electroviscous fluid, 5,377,721, Cl. 137-807.000.

Kiyomine, Akira: See—
Tamura, Tadashi; Kiyomine, Akira; Monta, Osamu; Tanaka, Michio; Ogawa, Masahiko; Tagami, Hidetoshi; and Yoshihara, Toru, 5,378,244, Cl. 8-409.000.

Kiyomura, Masahiro, to Nok Corporation; and Toyota Jidosha Kabushiki Kaisha, a part interest. Electrical nucleation device for super-cooled heat storage medium, 5,378,337, Cl. 204-228.000.

Kjelgaard, John R., Jr.: See—
Bard, Steven L.; Bendz, Gerald A.; Canestaro, Michael J.; Chapura, John R.; Frankoski, Edward J.; Horan, Michael S.; Jones, Jeffrey D.; Kamperman, James S.; Kjelgaard, John R., Jr.; and McCreary, Jack M., 5,378,307, Cl. 156-639.000.

Klaus, Michael; Mohr, Peter; and Weiss, Ekkehard, to Hoffmann-La Roche Inc. Stilbene derivatives, 5,378,705, Cl. 544-227.500.

Klausing, Helmut, to Deutsche Aerospace AG. Synthetic aperture radar having rotating antennas, 5,379,041, Cl. 342-25.000.

Kleid, Dennis G.; Kohr, William J.; and Thibodeau, Francis R., to Geobiotics, Inc. Processes to recover and reconcentrate gold from its ores, 5,378,437, Cl. 423-27.000.

Kleijne, Theodoor A., to NCR Corporation. Wireless local area network transmission system, 5,379,290, Cl. 370-85.200.

Klein Bicycle Corporation: See—
Klein, Gary G.; and Voss, Darrell W., 5,377,734, Cl. 152-209.000.

Klein, Gary G.; and Voss, Darrell W., to Klein Bicycle Corporation. High efficiency all terrain bicycle or motorcycle tire, 5,377,734, Cl. 152-209.000.

Klein, Norbert: See—
Henning, Jurgen; Klein, Norbert; and Huckle, Heinrich, 5,378,136, Cl. 425-188.000.

Klemann, Lawrence P.: See—
Wheeler, Edward L.; D'Amelia, Ronald P.; Leveille, Gilbert A.; Otterburn, Michael S.; Klemann, Lawrence P.; Finley, John W.; Roden, Allan D.; Chrysam, Michael M.; Pelloso, Turiddu A.; and Given, Peter S., Jr., 5,378,490, Cl. 426-606.000.

Klenzoid, Inc.: See—
Derham, James J.; Lubitsky, Joseph E., and Flanagan, William C., 5,378,401, Cl. 252-387.000.

Kley, Victor B. Linear bearing assembly with load compensating ball bearing array, 5,377,552, Cl. 73-862.490.

Klinger, Wayne M., to Northern Illinois Service Co. Apparatus for cleaning excess roadstone away from a gutter. 5,377,766, Cl. 172-782.000.

Klingler, Franz D.: See—
Reichert, Dieter; Klingler, Franz D.; Schwall, Horst; Christmann, Albert; and Buchholz, Berthold, 5,378,801, Cl. 528-354.000.

Klinkenberg, Klaus: See—
Kersten, Reinhard; and Klinkenberg, Klaus, 5,378,482, Cl. 426-231.000.

Klockow, Michael: See—
Jonas, Rochus; Lues, Ingeborg; Minck, Klaus-Otto; and Klockow, Michael, 5,378,702, Cl. 514-222.500.

Klose, Sigmar: See—
Deeg, Rolf; Maurer, Eberhard; Klose, Sigmar; Kopfer, Bernhard; and Babel, Reiner, 5,378,638, Cl. 436-518.000.

Kludt, Thomas W.: See—
Ames, Richard N.; Kludt, Thomas W.; and Moore, Victor S., 5,379,448, Cl. 455-33.400.

KMA Irrevocable Trust: See—
Van Wyk, Robert A., 5,378,512, Cl. 428-11.000.

Knapp, Alan G.: See—
Annis, Alexander D.; Knapp, Alan G.; Sandoe, Jeremy N.; and Wolff, Peter B. A., 5,379,050, Cl. 345-94.000.

Knepper, William H., Jr., to Tuboscope Vetco International, Inc. Transducer support device. 5,377,553, Cl. 73-866.500.

Knigge, Walter N., to Miller-St. Nazianz, Inc. Hydraulic lift rotary rake. 5,377,482, Cl. 56-370.000.

Knight, Thomas F., Jr., and Younis, Saed, to Massachusetts Institute of Technology. Charge recovery logic including split level logic. 5,378,940, Cl. 326-21.000.

Knjascbewitsch, Sascha R., and Petch, David A. Harmful solar radiation detection device. 5,378,896, Cl. 250-474.100.

Knopp, Axel; Binder, Andreas; Hosan, Hans-Josef; and Fuhrmann, Castor, to Stabilus GmbH. Column unit. 5,377,942, Cl. 248-161.000.

Koai, Ichitaro: See—
Hirasawa, Shigeki; Mori, Kinji; Orimo, Masayuki; Takeuchi, Masuyuki; Fujise, Hiroshi; Suzuki, Hitoshi; and Koai, Ichitaro, 5,379,429, Cl. 395-700.000.

Kobayashi, Daiki: See—
Suzuki, Akira; and Kobayashi, Daiki, 5,378,517, Cl. 428-64.000.

Kobayashi, Ippai: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippai; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Kobayashi, Kazuya; Miyasaka, Kiyoshi; and Ogawa, Junji, to Fujitsu Limited. Semiconductor memory device capable of multidirection data access. 5,379,264, Cl. 365-230.060.

Kobayashi, Kenji: See—
Fuji, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.

Kobayashi, Makoto: See—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; and Hosoda, Masaaki, to Nica Chemical Co., Ltd. Heat-sensitive recording material. 5,378,674, Cl. 503-208.000.

Kobayashi, Osamu: See—
Kojima, Takayuki; Ota, Michihiro; and Kobayashi, Osamu, 5,377,807, Cl. 194-215.000.

Kobayashi, Shoji; Hayami, Toshihisa; and Ishikawa, Masaaki, to Koito Manufacturing Co., Ltd. Projection headlamp for vehicles. 5,379,196, Cl. 362-61.000.

Kobayashi, Tomoo; and Sato, Katsuhiro, to Fuji Xerox Co., Ltd. Electrophotographic photoreceptor. 5,378,570, Cl. 430-58.000.

Kobayashi, Yoshinori, to Sumitomo Wiring Systems, Ltd. Plug cap device. 5,377,640, Cl. 123-143.00C.

Kobayashi, Yoshinori, to Kyodo Printing Co., Ltd. Non-contact type IC card. 5,378,887, Cl. 235-492.000.

Kobler, Eckhard, to Heidelberger Druckmaschinen AG. Sheet-fed rotary printing press with inspection-sheet delivery. 5,377,587, Cl. 101-233.000.

Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, to Kajima Corporation. Ultra-high multi-story buildings and construction thereof. 5,377,465, Cl. 52-236.300.

Kobus, Gerhard S.: See—
Fiddes, Neil G.; King, Christopher G.; Kobus, Gerhard S.; Mantone, Anthony; and Shaffer, Frank D., 5,379,019, Cl. 335-216.000.

Koch, Berthold. Arrangement for the separation of floating oil from oil/water mixtures. 5,378,353, Cl. 210-86.000.

Koch, Daniel, to Eta SA Fabriques d'Ebauches. Analog timepiece including means for signalling a change of mode. 5,379,281, Cl. 368-72.000.

Kochi, Tetsunobu: See—
Ohzu, Hayao; and Kochi, Tetsunobu, 5,378,914, Cl. 257-369.000.

Kock, Hans-Otto: See—
Reulein, Hermann; Liensdorf, Alfred; Lacher, Bernd; Eckmann, Peter; and Kock, Hans-Otto, 5,377,554, Cl. 74-2.000.

Kock, Ronald W.; Willhite, William J.; and Satterfield, Richard D., to Procter & Gamble Company, The. Package with replaceable inner

receptacle having large integrally molded fitment. 5,377,875, Cl. 222-95.000.

Kodama, Seiichirou: See—
Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichirou; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

Kodama, Tsutomu: See—
Kumagai, Toshihiro; Kitamura, Hirokazu; Kodama, Tsutomu; and Kato, Kazuhiro, 5,378,024, Cl. 285-39.000.

Koelln, Klaus-Juergen: See—
Boedecker, Bernd; Henniges, Friederike; Koelln, Klaus-Juergen; Kuhnnow, Guenther; Peschke, Guenter-Josef; Rehburg, Manfred; Sobe, Alwin; and Stemmler, Berthold, 5,378,462, Cl. 424-94.290.

Koenig & Bauer Aktiengesellschaft: See—
Bolza-Schunemann, Hans-Bernhard; and Wieland, Erich G., 5,377,590, Cl. 101-389.100.

Koenneke, Dietmar: See—
Frass, Hans W.; Hackmann, Ernst-August; Joerg, Klaus; Koenneke, Dietmar; Neubauer, Rudolf; and Elsaesser, Andreas, 5,378,584, Cl. 430-165.000.

Koerner, Reinhard: See—
Jachow, Harald; Schwab, Ekkehard; Koerner, Reinhard; Mueller, Norbert; Lehnert, Rudi; Ohlinger, Manfred; Auweter, Helmut; Jakusch, Helmut; Veitch, Ronald J.; and Bobrich, Michael, 5,378,383, Cl. 252-62.560.

Koerts, Kees; Bakker, Age; and Vianen, Gerardus M., to Cooperatieve Vereniging Suiker Unie U.A. Process for purifying products containing esters of a non-reducing sugar and one or more fatty acids. 5,378,834, Cl. 536-127.000.

Koetter-Faulhaber, Rudolf: See—
Geisler, Michael; Koetter-Faulhaber, Rudolf; and Jung, Michael, 5,378,284, Cl. 118-723.0MR.

Kohl, Robert E., to Jervis B. Webb Company. Bi-directional accumulation roller conveyor. 5,377,817, Cl. 198-781.000.

Kohler, Burkhard; and Sarabi, Bahman, to Bayer Aktiengesellschaft. Blends of PAS, nitroarylketo compounds and maleic imides. 5,378,749, Cl. 524-259.000.

Kohler Coating Machinery Corporation, The: See—
Kohler, Herbert B.; and Schmidt, Michael L., 5,378,503, Cl. 427-356.000.

Kohler, Herbert B.; and Schmidt, Michael L., to Kohler Coating Machinery Corporation, The. Adjustable blade coater. 5,378,503, Cl. 427-356.000.

Kohn, Harold L.; and Watson, Darrell, to Research Corporation Technologies, Inc. Amino acid derivative anticonvulsant. 5,378,729, Cl. 514-231.200.

Kohno, Hiroshige: See—
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Akabane, Takeaki, 5,378,489, Cl. 426-602.000.

Kohno, Yoshio: See—
Kuriyama, Hirotada; and Kohno, Yoshio, 5,379,247, Cl. 365-63.000.

Kohr, William J.: See—
Kleid, Dennis G.; Kohr, William J.; and Thibodeau, Francis R., 5,378,437, Cl. 423-27.000.

Koide, Kazuo: See—
Takahashi, Toshiro; Ohkawa, Masaaki; and Koide, Kazuo, 5,378,934, Cl. 327-203.000.

Koike, Hiroyuki: See—
Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Takahagi, Hidekuni; Iijima, Yasuteru; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,689, Cl. 514-18.000.

Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Iijima, Yasuteru; Takahagi, Hidekuni; Koike, Hiroyuki; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,690, Cl. 514-18.000.

Koike, Masahiro; Ueda, Hitoshi; Tateishi, Hiroshi; Shimota, Naohito; and Arai, Fumiaki, to Ricoh Company, Ltd. Emulsion ink for use in stencil printing. 5,378,739, Cl. 523-161.000.

Koinuma, Hiroshi: See—
Takegawa, Tomohiro; Tasaki, Akira; and Koinuma, Hiroshi, 5,379,454, Cl. 455-158.500.

Koito Manufacturing Co., Ltd.: See—
Kobayashi, Shoji; Hayami, Toshihisa; and Ishikawa, Masaaki, 5,379,196, Cl. 362-61.000.

Kojima, Masaru: See—
Matsumoto, Masuo; Yoshida, Naohiro; and Kojima, Masaru, 5,377,406, Cl. 29-846.000.

Kojima, Takayuki; Ota, Michihiro; and Kobayashi, Osamu, to Nippon Conlux Co., Ltd. Coin validator with optical coupling. 5,377,807, Cl. 194-215.000.

Kokubo, Nobuyuki; and Ikeda, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Voltage level detecting circuit. 5,378,936, Cl. 327-77.000.

Kokubu, Tatsuo: See—
Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Takahagi, Hidekuni; Iijima, Yasuteru; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,689, Cl. 514-18.000.

Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Iijima, Yasuteru; Takahagi, Hidekuni; Koike, Hiroyuki; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,690, Cl. 514-18.000.

Kokusai Denshin Denwa Co., Ltd.: See—
Wada, Masahiro; and Takishima, Yasuhiro, 5,379,116, Cl. 358-431.000.

Kokusai Electric Co., Ltd.: See—
Nakagoshi, Arata; Suzuki, Hideya; Yamamoto, Yoshinobu; Shimbo, Isao; Furuya, Tsuneo; and Kuwahara, Hiroshi, 5,379,451, Cl. 455-54.200.

Kolene Corporation: See—
Bessey, Charles M., 5,377,398, Cl. 29-81.070.

Koller Enterprises, Inc.: See—
Burd, Wayne D.; and Mills, Charles D., 5,378,003, Cl. 280-32.600.

Kolodziej, Klaus: See—
Brunner, Harald; Kolodziej, Klaus; and Lumpe, Karl-Heinz, 5,377,890, Cl. 224-321.000.

Komma, Tetsuko; Kimura, Kenji; Asai, Yoshimi; and Suzuki, Shiro, to Sharp Kabushiki Kaisha. Apparatus for generating stereoscopic image and method therefor. 5,379,369, Cl. 395-119.000.

Komoda, Michio, to Mitsubishi Denki Kabushiki Kaisha. Logic simulator. 5,379,232, Cl. 364-489.000.

Koncelik, Joseph A.: See—
Chaney, David B.; Chaney, Rex K.; and Koncelik, Joseph A., 5,378,040, Cl. 297-338.000.

Kondo, Jun: See—
Takai, Yoshimi; Kondo, Jun; Matsui, Yasushi; Teranishi, Yutaka; and Matsui, Rie, 5,378,810, Cl. 530-350.000.

Kondo, Koji: See—
Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

Kondo, Masafumi: See—
Seo, Yasutsugu; and Kondo, Masafumi, 5,378,986, Cl. 324-309.000.

Kondo, Masaya: See—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

Kondo, Tetsujiro, to Sony Corporation. Digital video signal resolution converting apparatus using an average of blocks of a training signal. 5,379,072, Cl. 348-441.000.

Kondoh, Harufusa: See—
Nakabayashi, Takeo; and Kondoh, Harufusa, 5,379,395, Cl. 395-425.000.

Konica Corporation: See—
Goan, Kazuyoshi, 5,378,600, Cl. 430-569.000.

Kawabe, Satomi; Hoshino, Hiroyuki; and Matsuzaka, Syoji, 5,378,597, Cl. 430-567.000.

Kudo, Tomoo; Hamada, Junichi; and Sato, Toshiya, 5,379,100, Cl. 355-299.000.

Takeyama, Toshihisa; Kitamura, Shigehiro; and Koshizuka, Kunihiro, 5,378,675, Cl. 503-227.000.

Tsuchiya, Ichiro, 5,378,588, Cl. 430-428.000.

Konig, Klaus: See—
Schallner, Otto; Haas, Wilhelm; Linker, Karl-Heinz; Findeisen, Kurt; Konig, Klaus; Marhold, Albrecht; Santel, Hans-Joachim; and Schmidt, Robert R., 5,378,681, Cl. 504-273.000.

Kono, Ikuo; and Yang, David S., to S. M. W. Seiko. Methods for in situ construction of deep soil-cement structures. 5,378,085, Cl. 405-233.000.

Konuma, Toshimitsu: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippai; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Koolmill Systems Limited: See—
Anderson, Alexander S., 5,377,916, Cl. 241-7.000.

Koops, Ronald: See—
Hines, Horace H.; Walsh, Brian J.; Koops, Ronald; and Jones, Steven M., 5,378,915, Cl. 250-369.000.

Kopfer, Bernhard: See—
Deeg, Rolf; Maurer, Eberhard; Klose, Sigmar; Kopfer, Bernhard; and Babel, Reiner, 5,378,638, Cl. 436-518.000.

Kopitzke, Daniel F.: See—
Rogerson, William E.; and Kopitzke, Daniel F., 5,378,011, Cl. 280-728.00R.

Kopnick, Siegfried: See—
Bruckner, Helmut; Kopnick, Siegfried; and Uggowitzer, Werner, 5,378,858, Cl. 174-255.000.

Korea Institute of Science and Technology: See—
Kim, Yoon H.; Oh, Tae S.; and Lee, Byeong C., 5,378,667, Cl. 501-136.000.

Korhonen, Sirpa; and Lindholm, Rune, to Nokia Mobile Phones Ltd. Clock frequency adjustment of an electrical circuit. 5,378,935, Cl. 327-114.000.

Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsui; and Jinuma, Toshinori, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Baseband signal generator for digital modulator. 5,379,322, Cl. 375-60.000.

Kosaka, Nobuyuki: See—
Miyazaki, Yoko; Tomoda, Toshimasa; Tanaka, Hitoshi; Kosaka, Nobuyuki; and Ohshige, Toyomi, 5,379,150, Cl. 359-561.000.

Kosar, Keith M.; Gilchrist, H. Glen; Guest, Gordon T.; and Leach, Bryan, to Golder Associates Ltd. Ground fracturing probe. 5,377,761, Cl. 166-308.000.

Koschek, Drew G., to Hewlett-Packard Company. Modular distributed antenna system. 5,379,455, Cl. 455-273.000.

Koshika, Norihide: See—
Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura,

Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

Koshimura, Masami: See—
Hirama, Masahiro; Koshimura, Masami; Mori, Sakae; and Yoshida, Jiro, 5,378,875, Cl. 219-705.000.

Koshizuka, Kunihiro: See—
Takeyama, Toshihisa; Kitamura, Shigehiro; and Koshizuka, Kunihiro, 5,378,675, Cl. 503-227.000.

Kosugi, Masato; and Sakaegi, Yuji, to Canon Kabushiki Kaisha. Still image signal processing device. 5,379,073, Cl. 348-513.000.

Kotlarchik, Carl, Jr.: See—
Ford, Frederick E.; Bowne, Arlyce T.; and Kotlarchik, Carl, Jr., 5,378,590, Cl. 430-504.000.

Kottke, Kurt E.: See—
Lindsey, David W.; and Kottke, Kurt E., 5,378,017, Cl. 280-736.000.

Kouguchi, Yukio: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Koumatsu, Seiji: See—
Abe, Kimihiro; and Koumatsu, Seiji, 5,378,170, Cl. 439-595.000.

Kounaves, Samuel P.; Kovacs, Gregory T. A.; and Storment, Christopher W., to Tufts University; and Leland Standard Univ., a part interest. Electrode assembly including iridium based mercury ultra-microelectrode array. 5,378,343, Cl. 204-413.000.

Kounoike, Takehiro: See—
Marusawa, Hiroshi; Kawanami, Takashi; Kounoike, Takehiro; and Tomono, Kunisaburo, 5,379,004, Cl. 333-1.100.

Kovacs, Gregory T. A.: See—
Kounaves, Samuel P.; Kovacs, Gregory T. A.; and Storment, Christopher W., 5,378,343, Cl. 204-413.000.

Kovacs, Lloyd; Cherney, Dale M.; and Hopkins, Keith W., to Hayssen Manufacturing Company. Form-fill-seal packaging apparatus. 5,377,474, Cl. 53-64.000.

Kovacs, Lloyd; and Tosetti, Mario, to Hayssen Manufacturing Company. Package forming apparatus for packaging machine. 5,377,478, Cl. 53-550.000.

Kowalski, David J.: See—
Fong, Dodd W.; and Kowalski, David J., 5,378,784, Cl. 526-307.500.

Koyanagi, Toshiro; Hashimoto, Yayoi; and Takagi, Haruyuki, to Takada Corporation. Restraining protective foldable seat for infants. 5,378,038, Cl. 297-256.130.

Krabbe, Kurt P.: See—
Fernandes, Roosevelt A.; and Krabbe, Kurt P., 5,379,320, Cl. 375-1.000.

Kraft General Foods, Inc.: See—
Merchant, Zohar M.; Wrezel, Paul W.; Spurlock, Lori L.; and Carpenter, Donald E., 5,378,487, Cl. 426-580.000.

Miller, Mark S.; and Surber, Kevin J., 5,378,478, Cl. 426-40.000.

Trecker, Gary W.; Moran, James W.; and Ley, Walter, 5,378,479, Cl. 426-42.000.

Kramer, Gordon; Wolfe, Douglas W.; Worley, Stuart; and Collins, Timothy C., to Hughes Aircraft Company. Hybridized semiconductor pixel detector arrays for use in digital radiography. 5,379,336, Cl. 378-98.800.

Kratky, Vladimir, to Mount Sinai Hospital Corporation. Attachment device for an exophthalmometer. 5,379,079, Cl. 351-204.000.

Kraupa, Werner: See—
Vollmer, Wolfgang; and Kraupa, Werner, 5,378,016, Cl. 285-47.000.

Krause, Eberhard: See—
Mihaylov, Indje O.; Krause, Eberhard; Laundry, Steve W.; and Luong, Cuong V., 5,378,262, Cl. 75-722.000.

Krause, Joseph P.: See—
Sokola, Raymond L.; and Krause, Joseph P., 5,379,011, Cl. 333-206.000.

Krebs, Lynn W.: See—
Griesmer, Jerome J.; and Krebs, Lynn W., 5,379,335, Cl. 378-155.000.

Kreitenberg, Arthur. Self-powered human centrifuge. 5,378,214, Cl. 482-57.000.

Krenik, William R.: See—
Izzi, Louis J.; and Krenik, William R., 5,379,408, Cl. 395-550.000.

Kresge, Charles T.: See—
Herbst, Joseph A.; Kresge, Charles T.; Olson, David H.; Schmitt, Kirk D.; Vartuli, James C.; and Wang, Daniel I. C., 5,378,440, Cl. 423-210.000.

Krimmel, Heinz: See—
Heidemann, Rolf; Krimmel, Heinz; and Junginger, Bernhard, 5,378,937, Cl. 327-306.000.

Krishnamurthy, Sundaram; and Cowan, Stanley W., to Eastman Kodak Company. Photographic material and process comprising a bicyclic pyrazole coupler. 5,378,587, Cl. 430-386.000.

Krishnan, Venkatarani; and Hammonds, Amy G., to Reichhold Chemicals, Inc. Binding agent. 5,378,755, Cl. 524-555.000.

Kristianson, Urban; and Eriksson, Robert, to AB Volvo. Device for making current measurements used in determining the charging of a vehicle storage battery. 5,378,977, Cl. 320-44.000.

Krohm, Harald, to AFT Atlas Fahrzeugtechnik GmbH. Metering volatile fuel components to a combustion engine. 5,377,644, Cl. 123-520.000.

Krsmanovic, Velibor; Durkin, Jon P.; Bhasin, Jagmohan L.; Biquard, Jean-Michel; Macdonald, Phillip A.; and Whitfield, James F., to National Research Council Canada; and Conseil National de Recherche Scientifique. Process for indirect targeted immunocytolysis. 5,378,815, Cl. 530-405.000.

Krug, Thomas: See—
Imai, Nobuhiko; Sekiguchi, Mamoru; Kano, Mitsuru; Krug, Thomas; Steiniger, Gerhard; and Meier, Andreas, 5,378,506, Cl. 427-529.000.

Kruger, Michael; Pfizenmaier, Wolfgang; Rossler, Georg; and Wagen-sommer, Bernhard, to Heidelberger Druckmaschinen AG. Drive for a printing press. 5,377,589, Cl. 101-248.000.

Kruhoefter, Douglas P.; and Burfeind, Craig, to Kruhoefter, Douglas P. Method for creating a 3-D image of terrain and associated weather. 5,379,215, Cl. 364-420.000.

Krupnicki, Theodore A. Power block for liquid-cooled power cables. 5,378,870, Cl. 219-137.630.

Krupp Fordertechnik GmbH: See—
Fleischhaker, Wolfgang; and Mett, Joachim, 5,378,049, Cl. 299-89.000.

Kruse, Wolfgang A.; and Boeke, Burkhard, to Huls Aktiengesellschaft. Process for the production of paste-forming vinyl chloride polymers. 5,378,780, Cl. 526-212.000.

Kryder, Mark H.: See—
Jones, Robert E., Jr.; Kryder, Mark H.; Mountfield, Keith R.; and Guzman, Javier I., 5,378,885, Cl. 235-449.000.

Kuan, Tung-Sheng: See—
Agnello, Paul D.; Gruetzmacher, Detlev A.; Kuan, Tung-Sheng; and Sedgwick, Thomas O., 5,378,651, Cl. 437-106.000.

Kubler, Hans: See—
Wiljan, Harry; Niefenecker, Ulrich; Muck, Ottokar; Kubler, Hans; Schnell, Roland; Carra, Roland; and Wild, Matthias, 5,377,917, Cl. 241-14.000.

Kubo, Masahiko: See—
Sakai, Takashi; Jinbo, Kishio; Makiyama, Koichi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, 5,378,576, Cl. 430-126.000.

Kubo, Osamu; Maeda, Tatsumi; Nomura, Tutomu; Kurisu, Shunji; and Ogawa, Etsuji, to Kabushiki Kaisha Toshiba. Magnetic powder for magnetic recording and magnetic recording medium containing the same. 5,378,547, Cl. 428-694.0BA.

Kuboki, Shigeo: See—
Nishio, Yoji; Masuda, Ikuro; Kato, Kazuo; Kuboki, Shigeo; and Iwamura, Masahiro, 5,378,941, Cl. 307-446.000.

Kubota, Akinori; Kubota, Yoshiya; Okamoto, Shoji; Ijiri, Masaaki; and Soeda, Koji, to Sumitomo Rubber Industries, Ltd. Method for vulcanizing tire and apparatus therefor. 5,378,425, Cl. 264-315.000.

Kubota, Toshihiko: See—
Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

Kubota, Toshio; Toyama, Niichi; Arai, Hiroshi; Ishibashi, Ichirou; and Ono, Yukihito, to Honda Giken Kogyo Kabushiki Kaisha. Method of and apparatus for electrostatically spray-coating work with paint. 5,378,505, Cl. 427-484.000.

Kubota, Yoshihiro: See—
Hamada, Yuichi; Nagata, Yoshihiko; Kashida, Meguru; and Kubota, Yoshihiro, 5,378,514, Cl. 428-14.000.

Kubota, Yoshiya: See—
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Kuchenreuther, Karl-Heinz, to Siemens Nixdorf Informationssysteme AG. Method and arrangement for accomplishing assembly substitution actions during ongoing operation of a bus system. 5,378,930, Cl. 307-38.000.

Kudo, Takeo: See—
Otsuka, Nobuo; and Kudo, Takeo, 5,378,427, Cl. 420-586.100.

Kudo, Tomoo; Hamada, Junichi; and Sato, Toshiya, to Konica Corporation. Cleaning device for use in image forming apparatus. 5,379,100, Cl. 355-299.000.

Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, to Mitsubishi Cable Industries, Ltd. Low molecular weight organic liquid detection sensor in the shape of a wire and detector using this sensor. 5,378,995, Cl. 324-693.000.

Kuehl, Steven J.: See—
Cur, Nihat O.; Kuehl, Steven J.; and LeClear, Douglas D., 5,377,498, Cl. 62-187.000.

Kuekenhoeher, Thomas: See—
Maywald, Volker; Ditrach, Klaus; Kuekenhoeher, Thomas; Ham-precht, Gerhard; Feund, Wolfgang; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, 5,378,680, Cl. 504-270.000.

Schuetz, Franz; Kuekenhoeher, Thomas; Wild, Jochen; Sauter, Hubert; Ammermann, Eberhard; and Lorenz, Gisela, 5,378,711, Cl. 514-311.000.

Kuestner, J. Todd. Method for non-invasive and in-vitro hemoglobin concentration measurement. 5,377,674, Cl. 128-633.000.

Kugler, Donald W., Jr.: See—
Walek, Jeffrey A.; Coley, Christopher D.; and Kugler, Donald W., Jr., 5,379,052, Cl. 345-185.000.

Kuhn, David G.; and Kameswaran, Venkataraman, to American Cyan-amid Company. Insecticidal, acaricidal and molluscicidal 1-(substituted)thioalkylpyrroles. 5,378,839, Cl. 540-544.000.

Kuhnaw, Guenther: See—
Boedecker, Bernd; Henningsen, Friederike; Koelln, Klaus-Juergen; Kuhnaw, Guenther; Peschke, Guenter-Josef; Rehburg, Manfred; Sobe, Alwin; and Stemmle, Berthold, 5,378,462, Cl. 424-94.290.

Kuivikko, Reijo: See—
Kirkkala, Mauno; and Kuivikko, Reijo, 5,378,051, Cl. 300-21.000.

Kuklinski, Siegfried: See—
Flottmann, Willi; and Kuklinski, Siegfried, 5,378,135, Cl. 425-168.000.

Kullmer, Iris: See—
Schwarz, Martin; Kullmer, Iris; and Bock, Joachim, 5,378,682, Cl. 505-490.000.

Kumagai, Toshihiro; Kitamura, Hirokazu; Kodama, Tsutomu; and Kato, Kazuhiro, to Tokai Rubber Industries, Ltd. Quick connector. 5,378,024, Cl. 285-39.000.

Kumashiro, Hideo: See—
Hashimoto, Hideyuki; Nakatani, Munehiro; and Kumashiro, Hideo, 5,379,093, Cl. 355-201.000.

Kumazawa, Toshiaki: See—
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shio; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,378,701, Cl. 514-215.000.

Kumera Oy: See—
Kumpulainen, Vesa, 5,378,326, Cl. 204-67.000.

Kumpulainen, Vesa, to Kumera Oy. Feeding method and device for aluminum electrolysis. 5,378,326, Cl. 204-67.000.

Kung, Patrick S.: See—
Nolan, Thomas R.; Stair, Mark T.; and Kung, Patrick S., 5,379,030, Cl. 340-825.030.

Kuo-Tang, Cheng; and Ching-Ho, Hung. Sensing decorative tree. 5,379,029, Cl. 340-693.000.

Kuo, Thauming: See—
Blount, William W., Jr.; and Kuo, Thauming, 5,378,757, Cl. 524-608.000.

Kurachi, Mikio: See—
Kajino, Tadashi; and Kurachi, Mikio, 5,379,111, Cl. 356-124.000.

Kurahashi, Osamu: See—
Tujimoto, Nobuharu; Kikuchi, Yoshimi; Kurahashi, Osamu; and Kawahara, Yoshiko, 5,378,616, Cl. 435-110.000.

Kurane, Ryuichiro; Nohata, Yasuhiro; Shiomi, Michio; Ishino, Shuichi; Yotsuji, Akira; Murata, Hideki; and Sugimoto, Seiji, to Agency of Industrial Science and Technology; and Kyowa Hakkoh Kogyo Co., Ltd. Polysaccharide and a method of producing it. 5,378,832, Cl. 536-123.100.

Kurata, Tokihiro: See—
Isoai, Masaru; Harada, Toshiharu; Kurata, Tokihiro; Fujita, Kazuhiro; Takama, Kazushi; and Jikuhara, Shigekazu, 5,378,380, Cl. 252-62.560.

Kurata, Tsuguo; and Hirai, Yasuyuki, to Advantest Corporation. EB type IC tester. 5,378,984, Cl. 324-751.000.

Kurata, Yasuhiko; and Michihira, Osamu, to Naldec Corporation; and Mazda Motor Corporation. Apparatus having priority order storages for recovery from failure of multiplex data transmission. 5,379,292, Cl. 370-85.600.

Kure, Jane T.: See—
Andrews, Jeffrey F.; and Kure, Jane T., 5,378,731, Cl. 514-552.000.

Kureha Kagaku Kogyo K.K.: See—
Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Yamamoto, Shinji, 5,378,771, Cl. 525-471.000.

Kureha Kagaku Kogyo K.K.: See—
Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Masuko, Jiro, 5,378,770, Cl. 525-471.000.

Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Yamamoto, Shinji, 5,378,772, Cl. 525-471.000.

Kuribayashi, Kiyoshi: See—
Torii, Hideo; Fujii, Eiji; Hattori, Masumi; Aoki, Masaki; and Kuribayashi, Kiyoshi, 5,378,548, Cl. 428-694.0TS.

Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Akabane, Takeaki, to Kurihara, Yoshie; and Asahi Denka Kogyo Kabushiki Kaisha. Emulsified taste-modifier composition. 5,378,489, Cl. 426-602.000.

Kurisu, Shunji: See—
Kubo, Osamu; Maeda, Tatsumi; Nomura, Tutomu; Kurisu, Shunji; and Ogawa, Etsuji, 5,378,547, Cl. 428-694.0BA.

Kurita, Kazuo: See—
Noma, Nobuhiko; Mizutani, Mikio; Sakai, Tsukasa; Kurita, Kazuo; Noguchi, Osamu; Nemoto, Hiroyuki; and Tomita, Keiichi, 5,379,306, Cl. 371-43.000.

Kurita Water Industries Ltd.: See—
Mizuno, Keisuke; and Horiuchi, Masahiro, 5,378,389, Cl. 252-180.000.

Kuriyama, Hirotada; and Kohno, Yoshio, to Mitsubishi Denki Kabu-shiki Kaisha. Semiconductor memory device including memory cells connected to a ground line. 5,379,247, Cl. 365-63.000.

Kurki, Timo: See—
Jokinen, Mikko; and Kurki, Timo, 5,377,848, Cl. 209-673.000.

Kurmeier, Hans A.: See—
Weber, Georg; Pohl, Ludwig; Hittich, Reinhard; Plach, Herbert; Scheuble, Bernhard; Oyama, Takamasa; Rieger, Bernhard; Kur-meier, Hans A.; and Bartmann, Ekkehard, 5,378,395, Cl. 252-299.630.

Kuroanagi, Norio; and Sakai, Mamoru, to Sansui Co., Ltd. Recording sheets. 5,378,534, Cl. 428-327.000.

Kurokawa, Hideo: See—
Mitani, Tsutomu; Kurokawa, Hideo; and Nakae, Hirokazu, 5,378,285, Cl. 118-723.0HC.

Kurokawa, Tsuyoshi: See—
Nishikawa, Yutaka; Ogawa, Tsuneshi; Kurokawa, Tsuyoshi; and Maruyama, Toshiharu, 5,378,871, Cl. 219-145.220.

Kurokawa, Yumi: See—
Yamada, Yukinori; and Kurokawa, Yumi, 5,379,265, Cl. 365-233.500.

Kurosawa, Yukio: See—
Sato, Takashi; Kurosawa, Yukio; Suzuki, Kouji; Hashimoto, Akira; and Endoo, Shunkichi, 5,379,014, Cl. 335-177.000.

Kurtz, James R.: See—
Blechl, Joseph; Hadjimitsos, Panos; Kurtz, James R.; Shimizu, Hiroyasu; and Haraguchi, Manabu, 5,377,864, Cl. 221-2.000.

Kusada, Kanji: See—
Matsumura, Yasuo; Miyata, Shogo; Kusada, Kanji; and Terauchi, Kaede, 5,378,776, Cl. 526-64.000.

Kusakabe, Hiroki; Okauchi, Tohru; and Takigawa, Masuo, to Matsushita Electric Industrial Co., Ltd. Piezoelectric pressure sensor having tubular charge detecting unit and method of assembling same. 5,377,547, Cl. 73-723.000.

Kushibiki, Nobuo: See—
Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Yoshinaga, Yoko; Kishi, Hiroyoshi; and Kushibiki, Nobuo, 5,379,132, Cl. 359-13.000.

Kuster, Frank K.: See—
Besch, Gordon O.; Kachik, Robert H.; Swartz, Mark A.; Kuster, Frank K.; and Guntermann, Hans J., 5,377,959, Cl. 266-167.000.

Kustov, Boris: See—
Aizatulov, Rafik; Kustov, Boris; Galperin, Grigori; Grenader, Iakov; and Gitman, Gregory, 5,378,261, Cl. 75-528.000.

Kusuda, Masahiro: See—
Yamahata, Hitoshi; and Kusuda, Masahiro, 5,379,300, Cl. 371-15.100.

Kutger, The State University of New Jersey: See—
Snitzer, Elias; and Wei, Kanxian, 5,379,149, Cl. 359-341.000.

Kuwabara, Osamu: See—
Shirasaki, Tomoyuki; and Kuwabara, Osamu, 5,378,859, Cl. 174-261.000.

Kuwahara, Hiroshi: See—
Nakagoshi, Arata; Suzuki, Hideya; Yamamoto, Yoshinobu; Shimbo, Isao; Furuya, Tsuneo; and Kuwahara, Hiroshi, 5,379,451, Cl. 455-54.200.

Kuwajima, Teruaki: See—
Shiraga, Ryuichi; and Kuwajima, Teruaki, 5,378,275, Cl. 106-417.000.

Kuwana, Koji: See—
Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; and Oi, Fumio, 5,378,586, Cl. 430-192.000.

Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Yoshinaga, Yoko; Kishi, Hiroyoshi; and Kushibiki, Nobuo, to Canon Kabushiki Kaisha. Display apparatus for a head-up display system. 5,379,132, Cl. 359-13.000.

Kuzyk, Roman. Automatic photo-chemical replenishment with batch processing. 5,379,086, Cl. 354-324.000.

Kwan, Shing F.; and Hunt, Rebecca J., to Modrovich, Ivan E. Lipase single reagent system. 5,378,609, Cl. 435-18.000.

Kyodo Printing Co., Ltd.: See—
Kobayashi, Yoshinori, 5,378,887, Cl. 235-492.000.

Kyowa Hakkoh Kogyo: See—
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shio; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,378,701, Cl. 514-215.000.

Kyowa Hakkoh Kogyo Co., Ltd.: See—
Kurane, Ryuichiro; Nohata, Yasuhiro; Shiomi, Michio; Ishino, Shuichi; Yotsuji, Akira; Murata, Hideki; and Sugimoto, Seiji, 5,378,832, Cl. 536-123.100.

Kyowa Machinery Co. Ltd.: See—
Tomosue, Shigeo, 5,377,583, Cl. 99-500.000.

Laboratoire Nycomed Ingenop SA: See—
Boussignac, Georges; and Labruno, Jean-Claude, 5,378,237, Cl. 604-96.000.

Labruno, Jean-Claude: See—
Boussignac, Georges; and Labruno, Jean-Claude, 5,378,237, Cl. 604-96.000.

LaCamera, ALfred F.: See—
Dastolfo, Leroy E., Jr.; and LaCamera, ALfred F., 5,378,325, Cl. 204-66.000.

Lacher, Bernd: See—
Reulein, Hermann; Liensdorf, Alfred; Lacher, Bernd; Eckmann, Peter; and Kock, Hans-Otto, 5,377,554, Cl. 74-2.000.

LaFleur, Edward E.: See—
Amici, Robert M.; Bortnick, Newman M.; Graham, Roger K.; LaFleur, Edward E.; and Work, William J., 5,378,758, Cl. 525-57.000.

Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,378,759, Cl. 525-57.000.

Lagomarsino, Rich. Ready wrap. 5,378,522, Cl. 428-100.000.

Lahr, Wolfgang, to Henning Berlin GmbH. Rectally administered pharmaceutical preparation. 5,378,470, Cl. 424-436.000.

L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procédes Georges Claude: See—
Delobel, Olivier; Louise, Jean; and Cornut, Philippe, 5,378,439, Cl. 423-210.000.

Laitram Corporation, The: See—
Horton, Paul L.; and Carbone, John J., 5,377,819, Cl. 198-853.000.

Olivier, Andre W.; and Williams, Oneil J., Jr., 5,378,864, Cl. 200-61.080.

Robertson, Thomas W.; and Johnson, David A., 5,377,492, Cl. 62-63.000.

Lal, Renu B., to United States of America, America. Immunoreactive HTLV-1/II ENV and POL peptides. 5,378,805, Cl. 530-326.000.

Lalaouna, Said: See—
Ollivier, Jean-Francois; Lalaouna, Said; and Penha, Manuel, 5,379,112, Cl. 356-150.000.

Lallo, Arthur J.; and Falasco, Thomas J., to Boeing Company, The. Co-cured composite fan blade and method. 5,378,109, Cl. 416-226.000.

Lam, Kin S.: See—
Schroeder, Daniel R.; Lam, Kin S.; and Veitch, Jacqueline M., 5,378,463, Cl. 424-121.000.

LaMay, Brian K.; Maeshiro, Asamitsu; and Shvitz, William F., to Boeing Company, The. Aircraft flare control system utilizing an envelope limiter. 5,377,937, Cl. 244-185.000.

Lamb, Joseph M., to Stratus Computer, Inc. System using separate transfer circuits for performing different transfer operations respectively and scanning I/O devices status upon absence of both operations. 5,379,381, Cl. 395-275.000.

Lambrecht, Vincent G., Jr.: See—
Becker, Philippe C.; Bruce, Allan J.; DiGiovanni, David J.; and Lambrecht, Vincent G., Jr., 5,378,664, Cl. 501-40.000.

Lamping, John: See—
Bell, Alan G.; and Lamping, John, 5,379,438, Cl. 395-800.000.

Lan, Tung-Hai. Emergency fire escape for multi-storied building. 5,377,778, Cl. 182-48.000.

Lancaster, Michael; Moreton, David J.; and Psaila, Alexander F., to BP Chemicals Limited. Phenolic resins. 5,378,791, Cl. 528-137.000.

Landes, Andreas: See—
Hagen, Helmut; Raatz, Peter; Walter, Helmut; and Landes, Andreas, 5,378,677, Cl. 504-104.000.

Landis, H. Richard, to Landis Plastics, Inc. Container closure with external ribs. 5,377,861, Cl. 220-380.000.

Landis Plastics, Inc.: See—
Landis, H. Richard, 5,377,861, Cl. 220-380.000.

Lane, Michael: See—
Romagosa, Enrique E.; Cooper, John F.; Nuzzolo, Michael; and Lane, Michael, 5,378,272, Cl. 106-273.100.

Lang, Marc, to Ciba-Geigy Corporation. Heteroaryl methylbenzenes. 5,378,721, Cl. 514-374.000.

Langon, Bernard; Duval, Christian; and Vanacker, Alain, to Aluminium Pechiney. Superstructure for a very high power electrolysis cell for the production of aluminum. 5,378,338, Cl. 204-243.00R.

Lanxide Technology Company, LP: See—
Burke, John T., 5,377,741, Cl. 164-97.000.

Lanzer, David J., to Minnesota Mining and Manufacturing Company. Automated random orbital abrading system and method. 5,377,455, Cl. 451-5.000.

Larriava, Rene F.; Nelson, Anne; M.; Czechanski, James G.; and Poff, Ray E., to Interferometrics Inc. Spacecraft ceramic protective shield. 5,377,935, Cl. 244-121.000.

Larsen, James E.: See—
Narayan, Nilabh; and Larsen, James E., 5,377,473, Cl. 52-790.000.

Larson, Lester M.: See—
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Iki, Makoto; Matsuo, Hirofumi; Oono, Masahiro; and Noguchi, Masato, 5,379,105, Cl. 356-359.000.

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Igami, Eiichi; Kagamibashi, Syunji; Hasegawa, Shoji; and Obata, Isao, 5,379,276, Cl. 369-32.000.

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Micka, William F.: See—
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Microelectronics and Computer Technology Corporation: See—
Carey, David H.; and Whalen, Barry H., 5,379,191, Cl. 361-777.000.

MicroFab Technologies, Inc.: See—
Hayes, Donald J., 5,377,902, Cl. 228-254.000.

Micron Semiconductor, Inc.: See—
Cheffings, David F., 5,378,641, Cl. 437-35.000.

Harshfield, Steven T., 5,379,250, Cl. 365-105.000.

Sandhu, Gurtej S.; Meikle, Scott G.; and Westmoreland, Donald L., 5,377,429, Cl. 34-586.000.

Micron Technology, Inc.: See—
Lin, Audrey P.; and Blalock, Guy T., 5,378,648, Cl. 437-52.000.

MicroProbe Corporation: See—
Schwartz, Dennis E.; Kanemoto, Roy H.; Watanabe, Susan M.; and Dix, Kim, 5,378,604, Cl. 435-6.000.

Microslate, Inc.: See—
Clough, William A.; Ouelette, Daneil; and Sablonniere, Serge De La, 5,379,057, Cl. 345-173.000.

Mihailowitsch, Franz-Josef, to Hartmann, H. Michael. Ventral telescope. 5,378,147, Cl. 433-19.000.

Mihara, Katsuhiko: See—
Ono, Yuji; and Mihara, Katsuhiko, 5,378,145, Cl. 432-152.000.

Mihaylov, Indje O.; Krause, Eberhard; Laundry, Steve W.; and Luong, Cuong V., to Inco Limited. Process for the extraction and separation of nickel and/or cobalt. 5,378,262, Cl. 75-722.000.

Mihira, Hiroshi; Shimizu, Tetsuo; Hirahara, Kazuhiro; Ishihara, Toshinobu; and Takaya, Seiki, to Tec, Inc.; and Shin-Etsu Chemical Co., Ltd. Method for vaporizing and supplying organometal compounds. 5,377,616, Cl. 117-104.000.

Mihm, James W.; Loeb, George I.; and Haslbeck, Elizabeth G., to United States of America, Navy. Process for preparing microcapsules having gelatin walls crosslinked with quinone. 5,378,413, Cl. 264-4.300.

Mikata, Yuuichi: See—
Samata, Shuichi; Mikata, Yuuichi; and Usami, Toshiro, 5,378,652, Cl. 437-189.000.

Miki, Takao: See—
Ueda, Michio; Iuchi, Tetsuya; Miki, Takao; and Hamada, Hisanori, 5,377,727, Cl. 141-178.000.

Mikkelsen, Claus W.: See—
Cohn, Oded; Hartung, Michael H.; McCauley, John N., Jr.; Micka, William F.; Mikkelsen, Claus W.; Nagin, Kenneth M.; Novick, Yoram; and Winokur, Alexander, 5,379,398, Cl. 395-425.000.

Mikoshiba, Nobuo: See—
Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, 5,378,983, Cl. 324-158.100.

Miles Inc.: See—
Manitakos, Daniel L., 5,379,134, Cl. 359-17.000.

Miller, Edward W. Handle pole with integral gas spring for jet skis. 5,377,609, Cl. 114-144.00R.

Miller, James M.: See—
Bauer, Tibor L.; Cavaliere, William A.; Dart, Charles R., II; Freeborn, Timothy H.; Linnell, David C.; Miller, James M.; and Wu, Jin J., 5,377,911, Cl. 239-135.000.

Miller, John A.; and Clements, George J., to Minnesota Mining and Manufacturing Company. Repositionable adhesive tape. 5,378,536, Cl. 428-355.000.

Miller, Mark: See—
Aden, Charles M.; Graham, Martin H.; Taylor, Matthew; and Miller, Mark, 5,379,005, Cl. 333-24.00R.

Miller, Mark J.: See—
Owen, Marvin L.; and Miller, Mark J., 5,378,158, Cl. 439-57.000.

Miller, Mark S.; and Surber, Kevin J., to Kraft General Foods, Inc. Manufacture of cheese products with polyol polyester fat substitutes. 5,378,478, Cl. 426-40.000.

Miller, Paul D.: See—
Roth, Richard; Miller, Paul D.; and Plumb, William L., 5,377,827, Cl. 206-310.000.

Miller, Robert W.; and Petschel, Michael, to Henkel Corporation. Phosphate conversion coating and compositions and concentrates therefor with stable internal accelerator. 5,378,292, Cl. 148-259.000.

Miller-St. Nazianz, Inc.: See—
Knigge, Walter N., 5,377,482, Cl. 56-370.000.

Miller, Steven A.: See—
Lundstrom, Robert W.; and Miller, Steven A., 5,378,884, Cl. 235-441.000.

Mills, Charles D.: See—
Burd, Wayne D.; and Mills, Charles D., 5,378,003, Cl. 280-32.600.

Mills, Rex R.; Waterman, Timothy J.; Patterson, Randel K.; and Sherven, Allen L., to Carrier Corporation. Furnace door attachment. 5,377,662, Cl. 126-110.00R.

MIM Industries, Inc.: See—
Frye, Rick J., 5,377,605, Cl. 112-114.000.

Mimaki, Izumi: See—
Nakashima, Kazuyuki; Mimaki, Izumi; Hamamoto, Takayoshi; and Masuda, Kenichi, 5,378,612, Cl. 435-69.600.

Mimura, Munehiko, to Mitsubishi Denki Kabushiki Kaisha. Vehicle electromagnetic clutch control device. 5,379,217, Cl. 364-424.100.

Min, Young-hoon, to Samsung Electronics Co., Ltd. Tape tension regulator. 5,377,926, Cl. 242-334.600.

Minamikawa, Yoriko; and Baba, Hideki, to Fuji Oil Company, Limited. Process for producing food using chocolate. 5,378,481, Cl. 426-99.000.

Minato, Kazuaki: See—
Takagi, Shinya; Minato, Kazuaki; and Satomura, Masafumi, 5,377,494, Cl. 62-102.000.

Minck, Klaus-Otto: See—
Jonas, Rochus; Lues, Ingeborg; Minck, Klaus-Otto; and Klockow, Michael, 5,378,702, Cl. 514-222.500.

Raddatz, Peter; Gante, Joachim; Sombroek, Johannes; Schmitges, Claus J.; and Minck, Klaus-Otto, 5,378,691, Cl. 514-18.000.

Ministero Dell' Universita' E Della Ricerca Scientifica e Tecnologica: See—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Garavaglia, Carlo; and Mirena, Luigi, 5,378,707, Cl. 514-239.500.

Minnesota Mining and Manufacturing Company: See—
Andrews, Jeffrey F.; and Kure, Jane T., 5,378,731, Cl. 514-552.000.

Culler, Scott R.; Berg, Gregory A.; Pieper, Jon R.; and Olson, Richard M., 5,378,251, Cl. 51-295.000.

Erickson, Leif O.; Ignaszewski, Jay J.; and Madsen, David D., 5,377,927, Cl. 242-346.000.

Follensbee, Robert A., 5,378,252, Cl. 51-298.000.

Grootaert, Werner M., 5,378,782, Cl. 526-255.000.

Gutman, Gustav; and Goetz, Richard J., 5,378,405, Cl. 252-62.000.

Hanzalik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., 5,378,542, Cl. 428-483.000.

Hopstock, David M.; Roden, John S.; Dierssen, Gunther H.; and Sapieszko, Ronald S., 5,378,384, Cl. 252-62.620.

Lanzer, David J., 5,377,455, Cl. 451-5.000.

Loder, Harry A., 5,378,161, Cl. 439-77.000.

Lundeen, Richard H., 5,378,741, Cl. 523-454.000.

Miller, John A.; and Clements, George J., 5,378,536, Cl. 428-355.000.

Mitra, Sumita B., 5,378,785, Cl. 526-316.000.

Nagaoka, Yoshiyuki; and Lightle, Vera L., 5,378,520, Cl. 428-72.000.

Rajan, J. Sundar; and Mako, Vincent J., 5,378,575, Cl. 430-126.000.

Schwarz, Theodore A., 5,379,170, Cl. 360-109.000.

Steen, Dirk L.; Wilcox, Malcolm W.; and Martin, Thomas W., 5,377,823, Cl. 206-63.500.

Thomas, Patrick A.; and Wenz, Robert P., 5,378,494, Cl. 427-58.000.

Vidacovich, Kenneth J.; Smith, Philip M.; Scherer, Richard J.; and McKittrick, William D., 5,378,164, Cl. 439-188.000.

Wyman, Stuart J.; and Cantonwine, Devin L., 5,377,832, Cl. 206-397.000.

Minnette, Jeffrey C., to Sunbeam Plastics Corporation. Dispensing closure. 5,377,873, Cl. 222-48.000.

Minnovation Limited: See—
Parrott, George A., 5,378,048, Cl. 299-81.000.

Minolta Camera Kabushiki Kaisha: See—
Hashimoto, Hideyuki; Nakatani, Munehiro; and Kumashiro, Hideo, 5,379,093, Cl. 355-201.000.

Ueda, Hiroshi; Ootsuka, Hiroshi; Ishida, Tokuji; and Norita, Toshio, 5,379,088, Cl. 354-402.000.

Minoura, Sakichi: See—
Hasuo, Hiromi; Suzuki, Kunio; and Minoura, Sakichi, 5,377,769, Cl. 173-169.000.

Mirena, Luigi: See—
Camaggi, Giovanni; Filippini, Lucio; Gusmeroli, Marilena; Garavaglia, Carlo; and Mirena, Luigi, 5,378,707, Cl. 514-239.500.

Misono, Kousuki: See—
Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,379,153, Cl. 360-27.000.

Missbach, Martin, to Ciba-Geigy Corporation. Imidazoles. 5,378,719, Cl. 514-369.000.

Mita Industrial Co., Ltd.: See—
Nakakuma, Akira; and Fukunaga, Yasuyuki, 5,379,096, Cl. 355-245.000.

Sugishima, Yoshio; Irie, Youichirou; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouchirou; Asano, Keichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Mitani, Motohiro: See—
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; Morishita, Yoshii; Katayose, Mitsuo; Okamoto, Tadashi; and Hayashi, Nobuyuki, 5,378,589, Cl. 430-495.000.

Mitani, Tsutomu; Kurokawa, Hideo; and Nakae, Hirokazu, to Matsushita Electric Industrial Co., Ltd. Apparatus for forming a diamond-like thin film. 5,378,285, Cl. 118-723.0HC.

Mitchell, Henry E., to Prattley Engineering Limited. Locking mechanism for stock restraining equipment. 5,378,075, Cl. 403-314.000.

Mitchell, Maurice. Net kinetic energy differential guidance and propulsion system for satellites and space vehicles. 5,377,936, Cl. 244-167.000.

Mitra, Sumita B., to Minnesota Mining and Manufacturing Company. Cements from β -dicarbonyl polymers. 5,378,785, Cl. 526-316.000.

Mitsubishi Cable Industries, Ltd.: See—
Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, 5,378,995, Cl. 324-693.000.

Mitsubishi Denki Kabushiki Kaisha: See—
Ajika, Natsuo; and Arima, Hideaki, 5,378,643, Cl. 437-43.000.

Endoh, Shinji; Namba, Keisuke; Yagi, Shigenori; and Maeda, Kazuhiko, 5,378,436, Cl. 422-186.000.

Fujita, Koreaki, 5,379,259, Cl. 365-200.000.

Gochi, Hidenobu, 5,378,944, Cl. 326-62.000.

Hamada, Kazuya; and Murata, Shigemi, 5,377,653, Cl. 123-655.000.

Hiroshima, Ikuyoshi, 5,379,427, Cl. 395-650.000.

Kasamoto, Masayuki, 5,379,174, Cl. 361-56.000.

Kimura, Hiroshi, 5,378,650, Cl. 437-63.000.

Kokubo, Nobuyuki; and Ikeda, Kazuya, 5,378,936, Cl. 327-77.000.

Komoda, Michio, 5,379,232, Cl. 364-489.000.

Kuriyama, Hirotada; and Kohno, Yoshio, 5,379,247, Cl. 365-63.000.

Matsumura, Tetsuya; Segawa, Hiroshi; Ishihara, Kazuya; Uramoto, Shinichi; and Yoshimoto, Masahiko, 5,379,257, Cl. 365-189.010.

Mimura, Munehiko, 5,379,217, Cl. 364-424.100.

Mitsui, Katsuyoshi; and Shimizu, Masahiro, 5,378,923, Cl. 257-616.000.

Miyazaki, Yoko; Tomoda, Toshimasa; Tanaka, Hitoshi; Kosaka, Nobuyuki; and Ohshige, Toyomi, 5,379,150, Cl. 359-561.000.

Moriyama, Toshinori, 5,378,644, Cl. 437-44.000.
Murakami, Shuji; Wada, Tomohisa; and Anami, Kenji, 5,379,258, Cl. 365-200.000.
Nakabayashi, Takeo; and Kondoh, Harufusa, 5,379,395, Cl. 395-425.000.
Nakahara, Kazuhiko, 5,379,007, Cl. 333-156.000.
Ogawa, Toshiyuki; and Ishikawa, Masahiko, 5,379,263, Cl. 365-230.040.
Okada, Keisuke, 5,379,410, Cl. 395-575.000.
Sato, Koichi; Hirano, Koji; and Saitoh, Kazunori, 5,379,301, Cl. 371-19.000.
Shigeta, Katsunori, 5,379,226, Cl. 364-470.000.
Taneda, Atsushi, 5,378,866, Cl. 219-69.180.
Uenishi, Akio; and Fukumochi, Yasuaki, 5,379,089, Cl. 354-416.000.
Wada, Tomohisa; Anami, Kenji; and Murakami, Shuji, 5,379,248, Cl. 365-63.000.
Mitsubishi Gas Chemical Company, Inc.: See—
Inoue, Yoshiaki; Murabayashi, Shigeru; Fujinami, Kazuo; Yoshino, Isamu; Kawakami, Takamasa; Makinose, Satoru; and Naito, Tomita, Takeshi; Ishiuchi, Yukio; Kawakami, Michiya; and Nagashima, Hiromitsu, 5,378,450, Cl. 423-230.000.
Yui, Tomoyuki; Watanabe, Toshio; Arai, Yoshihisa; and John, Masahiro, 5,378,396, Cl. 252-299.650.
Mitsubishi Jukogyo Kabushiki Kaisha: See—
Fujii, Masumi; Suda, Taichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Tsuru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.
Mitsubishi Kasei Corporation: See—
Nishimura, Tetsuhiko; Chida, Yukio; and Choda, Takahiro, 5,378,382, Cl. 252-62.900.
Nozomi, Mamoru; Miyake, Akiko; and Kawai, Michio, 5,378,567, Cl. 430-58.000.
Suwa, Nobuyuki; Nishimura, Akio; Miyama, Susumu; and Katoh, Shinji, 5,378,484, Cl. 426-329.000.
Takai, Yoshimi; Kondo, Jun; Matsui, Yasushi; Teranishi, Yutaka; and Matsui, Rie, 5,378,810, Cl. 530-350.000.
Mitsubishi Materials Corporation: See—
Hirama, Masahiro; Koshimura, Masami; Mori, Sakae; and Yoshida, Jiro, 5,378,875, Cl. 219-705.000.
Yaginuma, Yoshitaka; and Inoue, Yoshihiro, 5,379,329, Cl. 376-248.000.
Mitsubishi Nuclear Fuel Co.: See—
Yaginuma, Yoshitaka; and Inoue, Yoshihiro, 5,379,329, Cl. 376-248.000.
Mitsubishi Paper Mills Limited: See—
Okaji, Makoto; and Itoh, Akira, 5,378,568, Cl. 430-58.000.
Mitsubishi Petrochemical Company, Ltd.: See—
Hosokawa, Noritaka; and Hayama, Kazuhide, 5,378,735, Cl. 522-79.000.
Ohta, Fumio; Tanaka, Nobuo; Mukasa, Yoshinao; and Gohkura, Akira, 5,377,523, Cl. 73-1.00D.
Mitsuboshi Belting Ltd.: See—
Mizuno, Takahide; Osako, Nobutaka; Murakami, Takeshi; and Murakami, Satoshi, 5,378,206, Cl. 474-263.000.
Mitsui, Katsuyoshi; and Shimizu, Masahiro, to Mitsubishi Denki Kabushiki Kaisha, Semiconductor device including a field effect transistor, 5,378,923, Cl. 257-616.000.
Mitsui Petrochemical Industries, Ltd.: See—
Murata, Kazuhiko; Murakami, Norishige; Muraoka, Kyooji; and Sakamaki, Noboru, 5,378,543, Cl. 428-517.000.
Mitsumata, Tadayasu: See—
Sigetoh, Nobuyuki; Miyazaki, Jinsei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, 5,378,634, Cl. 436-91.000.
Mitsuoka, Shigeaki: See—
Fujii, Masumi; Suda, Taichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Tsuru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.
Miura, Hisanori, to Sony Corporation, CCD linear sensor and method of reading-out charges therefrom, 5,379,067, Cl. 348-311.000.
Miura, Ryusuke: See—
Hineribara, Takashi; Kamei, Yasunori; and Miura, Ryusuke, 5,377,449, Cl. 49-441.000.
Miwa Lock Kabushiki Kaisha: See—
Miyamoto, Kinji; and Akihiko, Imai, 5,377,513, Cl. 70-276.000.
Miyagawa, Yasumichi: See—
Ito, Nobuyuki; Okayama, Katsushige; Karasuda, Toshinori; and Miyagawa, Yasumichi, 5,378,766, Cl. 525-333.800.
Miyagi, Yoshiyuki: See—
Matsubara, Hidetogugu; Tanaka, Yasuo; Miyagi, Yoshiyuki; Goto, Tsuyoshi; Tamamura, Koichi; and Takayama, Seishiro, 5,377,649, Cl. 123-559.100.
Miyajima, Yoshikazu, to Canon Kabushiki Kaisha, Magneto-optical recording/reproducing method with optical head servo inhibited during magnetic head loading, 5,379,283, Cl. 369-44.290.
Miyake, Akiko: See—
Nozomi, Mamoru; Miyake, Akiko; and Kawai, Michio, 5,378,567, Cl. 430-58.000.
Miyaki, Yoshinori: See—
Kajihara, Yujiro; Suzuki, Kazunari; Tsubosaki, Kunihiro; Suzuki, Hiromichi; Miyaki, Yoshinori; Naito, Takahiro; and Kawai, Sueo, 5,378,656, Cl. 437-217.000.

Miyama, Susumu: See—
Suwa, Nobuyuki; Nishimura, Akio; Miyama, Susumu; and Katoh, Shinji, 5,378,484, Cl. 426-329.000.
Miyamoto, Kinji; and Akihiko, Imai, to Miwa Lock Kabushiki Kaisha, Locking device, 5,377,513, Cl. 70-276.000.
Miyamoto, Moritoshi, to Canon Kabushiki Kaisha, Optical information recording-reproducing apparatus having a prism, 5,379,286, Cl. 369-112.000.
Miyao, Yoshio, to Ishikawa Gasket Co., Ltd. Metal laminate gasket with half beads, 5,378,001, Cl. 277-235.00B.
Miyasaka, Kiyoshi: See—
Kobayashi, Kazuya; Miyasaka, Kiyoshi; and Ogawa, Junji, 5,379,264, Cl. 365-230.060.
Miyata, Shogo: See—
Matsumura, Yasuo; Miyata, Shogo; Kusada, Kanji; and Terauchi, Kaede, 5,378,776, Cl. 526-64.000.
Miyatake, Atsushi: See—
Fujii, Tsuyoshi; and Miyatake, Atsushi, 5,377,732, Cl. 144-347.000.
Miyawaki, Katsuaki: See—
Obu, Makoto; Hotta, Yoshihiko; Masubuchi, Fumihito; Miyawaki, Katsuaki; Takeda, Yusuke; and Kawakubo, Toshio, 5,379,058, Cl. 346-76.0PH.
Miyazaki, Hajime: See—
Kikuchi, Toshihiro; Miyazaki, Hajime; and Nakano, Takashi, 5,378,519, Cl. 428-690.000.
Miyazaki, Jinsei: See—
Sigetoh, Nobuyuki; Miyazaki, Jinsei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, 5,378,634, Cl. 436-91.000.
Miyazaki, Mitsuo: See—
Sentsui, Shintaro; Fujisaki, Akira; Ogoshi, Haruki; Mizutani, Morinobu; and Miyazaki, Mitsuo, 5,379,357, Cl. 385-11.000.
Miyazaki, Takeo, to Daiwa Seiko, Inc. Fishing reel, 5,377,925, Cl. 242-312.000.
Miyazaki, Yoko; Tomoda, Toshimasa; Tanaka, Hitoshi; Kosaka, Nobuyuki; and Ohshige, Toyomi, to Mitsubishi Denki Kabushiki Kaisha, Method of manufacturing a spatial frequency filter for use in a pattern defect detection device, 5,379,150, Cl. 359-561.000.
Miyazawa, Shozo: See—
Aoki, Kazuaki; Tadokoro, Tomio; and Miyazawa, Shozo, 5,378,339, Cl. 204-260.000.
Miyoshi, Akira; and Taniguchi, Takashi, to Matsushita Electric Industrial Co., Ltd. Small-sized, low power consumption multiplication processing device with a rounding recoding circuit for performing high speed iterative multiplication, 5,379,244, Cl. 364-754.000.
Miyoshi, Takehiko: See—
Masuda, Toyohiko; Miyoshi, Takehiko; and Horii, Yoshinori, 5,378,537, Cl. 428-364.000.
Mize, Erbie G.: See—
Brock, J. Don; Mize, Erbie G.; and Swanson, Malcom L., 5,378,060, Cl. 366-25.000.
Mizoguchi, Kiyoshi; Sato, Ryoetsu; and Gotoh, Morikazu, to Kan Electronics Co., Ltd. Wire bonder system, 5,377,894, Cl. 228-1.100.
Mizoguchi, Masamichi: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.
Mizomoto, Hiroyuki; and Kitamura, Yoshiaki, to NEC Corporation, Digital-to-analog converter, 5,379,040, Cl. 341-143.000.
Mizuno, Keisuke; and Horiuchi, Masahiro, to Kurita Water Industries Ltd. Wet paint spray booth treating agent and method for the treatment therewith, 5,378,389, Cl. 252-180.000.
Mizuno, Takahide; Osako, Nobutaka; Murakami, Takeshi; and Murakami, Satoshi, to Mitsuboshi Belting Ltd. Toothed belt having twisted core wire, 5,378,206, Cl. 474-263.000.
Mizutani, Mikio: See—
Noma, Nobuhiko; Mizutani, Mikio; Sakai, Tsukasa; Kurita, Kazuo; Noguchi, Osamu; Nemoto, Hiroyuki; and Tomita, Keiichi, 5,379,306, Cl. 371-43.000.
Mizutani, Morinobu: See—
Sentsui, Shintaro; Fujisaki, Akira; Ogoshi, Haruki; Mizutani, Morinobu; and Miyazaki, Mitsuo, 5,379,357, Cl. 385-11.000.
Moatti, Jean-Claude: See—
Christophe, Theophile; and Moatti, Jean-Claude, 5,378,363, Cl. 210-314.000.
Mobil Oil Corporation: See—
Degnan, Thomas F.; and Shih, Stuart S., 5,378,352, Cl. 208-217.000.
Fieler, Eleanor R.; Hen, John; and Jennings, Alfred R., Jr., 5,377,758, Cl. 166-279.000.
Herbst, Joseph A.; Kresge, Charles T.; Olson, David H.; Schmitt, Kirk D.; Vartuli, James C.; and Wang, Daniel I. C., 5,378,440, Cl. 423-210.000.
Keville, Kathleen M.; Timken, Hye K. C.; and Ware, Robert A., 5,378,671, Cl. 502-64.000.
Ng, Ricky C., 5,377,757, Cl. 166-277.000.
Northrop, Paul S.; and Wilson, James L., 5,377,756, Cl. 166-267.000.
Mobile Oil Corporation: See—
Jennings, Alfred R., Jr., 5,377,764, Cl. 166-372.000.
Mochizuki, Seiji: See—
Yamaguchi, Shuichi; Mochizuki, Seiji; Suzuki, Hideaki; Shinada, Satoshi; and Aida, Mayumi, 5,379,061, Cl. 346-141.000.

Modic, Michael J.; Gelles, Richard; and Djiauw, Lie K., to Shell Oil Company, Blends of polystyrene/polypropylene grafted polymers and elastomeric tetrablock copolymers, 5,378,760, Cl. 525-71.000.
Modjesch, Dieter: See—
Bohmer, Gudrun; Gentischer, Josef; Lehner, Rolf; Modjesch, Dieter; and Schmutz, Wolfgang, 5,377,476, Cl. 53-255.000.
Modrovich, Ivan E.: See—
Kwan, Shing F.; and Hunt, Rebecca J., 5,378,609, Cl. 435-18.000.
Moedt, Philip C. Chronoglobe, 5,379,271, Cl. 368-24.000.
Moeller, Christopher P.: See—
Orton, Debra L.; Bolton, Eugenie L.; Chernikoff, Daniel F.; Goldsmith, David B.; and Moeller, Christopher P., 5,379,432, Cl. 395-700.000.
Moeller, Tilo: See—
Ketterer, Dieter, deceased; Brigitte, Ketterer; Fritz, Raimund; Seeger, Heinz; Conzelmann, Ralf; Schumacher, Michael; and Moeller, Tilo, 5,378,018, Cl. 280-737.000.
Mogensen, Bent. Model holding means and articulator for use with dental models and apparatus for adjustment of the articulator, 5,378,148, Cl. 433-64.000.
Mohr, Peter: See—
Klaus, Michael; Mohr, Peter; and Weiss, Ekkehard, 5,378,705, Cl. 544-227.500.
Mok, Steven L.; and Pagilagan, Rolando U., to Du Pont de Nemours, E. I., and Company; and Du Pont Canada Inc. Terephthalic acid copolyamides, 5,378,800, Cl. 528-349.000.
Moki, Keiji: See—
Mutoh, Hideo; Moki, Keiji; and Shibayama, Takehiko, 5,379,423, Cl. 395-600.000.
Molex Incorporated: See—
Comerci, Joseph D.; Data, Mark M.; and DeRoss, Robert, 5,378,165, Cl. 439-188.000.
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Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seichirou; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.
Yoshioka, Hideo; Asada, Hajime; and Fujita, Shinji, 5,378,611, Cl. 435-58.000.
Nippon Oil and Fats Co., Ltd.: See—
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; Morishita, Yoshii; Katayose, Mitsuo; Okamoto, Tadashi; and Hayashi, Nobuyuki, 5,378,589, Cl. 430-495.000.
Nippon Paint Co., Ltd.: See—
Arimatsu, Seiji; Hase, Takakazu; and Ichinose, Yoshifumi, 5,378,579, Cl. 430-281.000.
Shiraga, Ryuichi; and Kuwajima, Teruaki, 5,378,275, Cl. 106-417.000.
Nippon Petrochemicals Company, Limited: See—
Matsumura, Yasuo; Miyata, Shogo; Kusada, Kanji; and Terauchi, Kaede, 5,378,776, Cl. 526-64.000.
Nippon Shoji Kabushiki Kaisha: See—
Marui, Yoji; Hayashi, Chozo; Ito, Shigeki; Fujio, Miko; Tanaka, Hiroki; Nagasaki, Toshihide; Soda, Yasuji; and Kaneta, Hitoshi, 5,378,608, Cl. 435-7.500.
Nippon Steel Semiconductor Corporation: See—
Jones, Oscar F., Jr., 5,379,261, Cl. 365-230.010.
Nippon Telegraph and Telephone Corporation: See—
Tazawa, Satoshi; Leon, Francisco A.; Sharfetter, Donald L.; Saito, Kazuyuki; and Yoshii, Akira, 5,379,225, Cl. 364-468.000.
Nippon Telegraph & Telephone Public Corporation: See—
Mackawa, Kiochi; Ota, Takashi; Fukuyama, Masashi; and Nagasawa, Shinji, 5,379,361, Cl. 385-65.000.
Nippon Thermostat Co., Ltd.: See—
Iwaki, Takahiro; and Suda, Michihiro, 5,378,411, Cl. 261-39.200.
Nippon Zeon Co., Ltd.: See—
Okumura, Kin-ichi; Torii, Masao; Tanimoto, Hirotoshi; and Yamato, Motoyuki, 5,378,783, Cl. 526-283.000.
Nisca Corporation: See—
Ohmori, Masaki, 5,377,966, Cl. 271-3.000.
Nishida, Kikuo: See—
Yamashita, Hiroyuki; Hoshi, Toshiharu; Horio, Yuma; Tsuchiya, Kazuhiro; Iijima, Takashi; and Nishida, Kikuo, 5,378,295, Cl. 148-654.000.
Nishida, Tomoaki: See—
Deguchi, Tetsuya; Nishida, Tomoaki; and Takahara, Yoshimasa, 5,378,738, Cl. 435-262.000.
Nishigaki, Tetsuo: See—
Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,379,153, Cl. 360-27.000.
Nishijima, Shigeru: See—
Yamamoto, Takafumi; Inubushi, Masaaki; Oinuma, Sumio; Hayaishi, Saburo; Nishijima, Shigeru; and Ishikawa, Masaharu, 5,378,525, Cl. 428-192.000.

Nishikawa Rubber Co., Ltd.: *See—*
Hineribara, Takashi; Kamei, Yasunori; and Miura, Ryusuke, 5,377,449, Cl. 49-441.000.

Nishikawa, Sumio: *See—*
Nakanishi, Ken; Takehana, Tadashi; Tamaki, Hiroyuki; and Nishikawa, Sumio, 5,378,592, Cl. 430-533.000.

Nishikawa, Yutaka; Ogawa, Tsuneshi; Kurokawa, Tsuyoshi; and Maruyama, Toshiharu, to Kabushiki Kaisha Kobe Seiko Sho. Flux containing wire for use in stainless steel welding. 5,378,871, Cl. 219-145.220.

Nishimura, Akio: *See—*
Suwa, Nobuyuki; Nishimura, Akio; Miyama, Susumu; and Katoh, Shinji, 5,378,484, Cl. 426-329.000.

Nishimura, Takatoshi: *See—*
Sugishima, Yoshio; Irie, Youichirou; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouichirou; Asano, Keiichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Nishimura, Tetsuhiko; Chida, Yukio; and Choda, Takahiro, to Mitsubishi Kasei Corporation. Piezoelectric ceramic composition for actuator. 5,378,382, Cl. 252-62.900.

Nishio, Yoji; Masuda, Ikuro; Kato, Kazuo; Kuboki, Shigeo; and Iwamura, Masahiro, to Hitachi, Ltd. Bipolar transistor MOS transistor hybrid semiconductor integrated circuit device. 5,378,941, Cl. 307-446.000.

Nissan Motor Co., Ltd.: *See—*
Kishi, Yuji; and Katagiri, Takeshi, 5,378,416, Cl. 264-40.500.
Murakami, Yoshinori, 5,378,911, Cl. 257-334.000.

Nissei Plastic Industrial Co., Ltd.: *See—*
Aoki, Hidemi, 5,378,141, Cl. 425-589.000.

Nissin Kogyo Kabushiki Kaisha: *See—*
Idesawa, Isao, 5,377,792, Cl. 188-264.00G.

Niwa, Takeshi, to Shimadzu Corporation. Particle size measuring device. 5,379,113, Cl. 356-336.000.

Noble, Gardiner A.; Kafka, Leonard; and Ciuffetelli, Mark, to Chrysler Corporation. Ignition transformer. 5,377,652, Cl. 123-634.000.

Nobukawa, Shunji: *See—*
Asano, Teruo; Nobukawa, Shunji; Taniguchi, Etsuo; and Yokota, Tetsuro, 5,377,851, Cl. 211-191.000.

Noda, Hideo, to Shimano Inc. Rod clamp. 5,377,441, Cl. 43-22.000.

Noda, Kazuhiro: *See—*
Takahashi, Kenichi; and Noda, Kazuhiro, 5,378,381, Cl. 252-62.200.

Nodine, John P., to Scientific-Atlanta, Inc. Laser transmitter for light wave (fiber optic) communication especially of AM modulated CATV signals having means . . . against damage. 5,379,145, Cl. 359-187.000.

Nogami, Kazutaka, to Kabushiki Kaisha Toshiba. Semiconductor memory device having loop configuration. 5,379,246, Cl. 365-51.000.

Noguchi, Masato: *See—*
Iki, Makoto; Matsuo, Hirofumi; Oono, Masahiro; and Noguchi, Masato, 5,379,105, Cl. 356-359.000.

Noguchi, Naoki: *See—*
Ezawa, Naoya; Noguchi, Naoki; Takarada, Shinichi; and Matsuzawa, Masahiro, 5,378,968, Cl. 318-568.100.

Noguchi, Osamu: *See—*
Noma, Nobuhiko; Mizutani, Mikio; Sakai, Tsukasa; Kurita, Kazuo; Noguchi, Osamu; Nemoto, Hiroyuki; and Tomita, Keiichi, 5,379,306, Cl. 371-43.000.

Noguchi, Shigeru; Sano, Keiichi; and Iwata, Hiroshi, to Sanyo Electric Co., Ltd. Method of forming crystalline silicon film and solar cell obtained thereby. 5,378,289, Cl. 136-258.000.

Nohata, Yasuhiro: *See—*
Kuran, Ryuichiro; Nohata, Yasuhiro; Shiomi, Michio; Ishino, Shuichi; Yotsuji, Akira; Murata, Hideki; and Sugimoto, Seiji, 5,378,832, Cl. 536-123.100.

Nohira, Osamu: *See—*
Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

Nok Corporation: *See—*
Kiyomura, Masahiro, 5,378,337, Cl. 204-228.000.

Nokia Mobile Phones Ltd.: *See—*
Korhonen, Sirpa; and Lindholm, Rune, 5,378,935, Cl. 327-114.000.
Vaisanen, Risto, 5,379,458, Cl. 455-330.000.

Nokia Technology GmbH: *See—*
Reime, Gerd, 5,378,946, Cl. 327-14.000.

Nolan, Thomas R.; Stair, Mark T.; and Kung, Patrick S., to Motorola, Inc. User friendly channel selection in a selective call receiver and method therefor. 5,379,030, Cl. 340-825.030.

Noma International, Inc.: *See—*
Daun, Daniel, 5,379,202, Cl. 362-252.000.

Noma, Nobuhiko; Mizutani, Mikio; Sakai, Tsukasa; Kurita, Kazuo; Noguchi, Osamu; Nemoto, Hiroyuki; and Tomita, Keiichi, to Matsushita Graphic Communication Systems, Inc. Viterbi decoding method. 5,379,306, Cl. 371-43.000.

Nomura, Tutomu: *See—*
Kubo, Osamu; Maeda, Tatsumi; Nomura, Tutomu; Kurisu, Shunji; and Ogawa, Etsuji, 5,378,547, Cl. 428-694.0BA.

Noranda Inc.: *See—*
Baltazar, Varujan; and Cromwell, John L., 5,378,328, Cl. 204-105.00R.

Nordfang, Ole J.: *See—*
Petersen, Jens G. L.; and Nordfang, Ole J., 5,378,614, Cl. 435-69.800.

Nordyne, Inc.: *See—*
Reedy, Wayne R.; and Boyce, Lawrence J., 5,377,503, Cl. 62-326.000.

Norelli, Francesco: *See—*
Arrighi, Silvana; Norelli, Francesco; Borri, Maria G.; and Bucci, Enzo, 5,378,365, Cl. 210-635.000.

Norita, Toshio: *See—*
Ueda, Hiroshi; Ootsuka, Hiroshi; Ishida, Tokuji; and Norita, Toshio, 5,379,088, Cl. 354-402.000.

Norling, Brian L.; and Woodruff, James R., to AlliedSignal Inc. Servo accelerometer with tunnel current sensor and complementary electrostatic drive. 5,377,545, Cl. 73-517.00B.

Norman, Alvin: *See—*
Wilson, Jewell; and Norman, Alvin, 5,378,056, Cl. 312-249.800.

North Dakota State University: *See—*
Jones, Frank N.; Chen, Der-Shyang; Dimian, Adel F.; and Wang, Daozhang, 5,378,546, Cl. 428-1.000.

North, Oliver L.: *See—*
Bounkong, Bouakeo; Fernandez, Joseph F.; and North, Oliver L., 5,377,577, Cl. 89-36.050.

Northern Illinois Service Co.: *See—*
Klinger, Wayne M., 5,377,766, Cl. 172-782.000.

Northrop Grumman Corporation: *See—*
Stappaerts, Eddy A., 5,378,888, Cl. 250-201.900.
Wes, James A.; Orlando, Harold J.; and Zammit, Steven R., 5,378,890, Cl. 250-252.100.

Northrop, Paul S.; and Wilson, James L., to Mobil Oil Corporation. Method for producing low permeability reservoirs using a single well. 5,377,756, Cl. 166-267.000.

Northwestern University: *See—*
Castro, Anthony J.; Van Duyn, Richard P.; Sheng, King C.; Bianchini, Robert J.; Parr, William J.; Franklin, Ralph; and Natan, Michael J., 5,378,508, Cl. 427-556.000.

Northwestern University & Foundation: *See—*
Bradfield, Christopher A.; Dolwick, Kristin M.; and Poland, Alan, 5,378,822, Cl. 536-23.500.

Norton, George W. Portable tool truck with diverse tool organizational capability. 5,378,005, Cl. 280-47.260.

Nose, Noriyuki; and Abe, Naoto, to Canon Kabushiki Kaisha. Alignment system. 5,379,108, Cl. 356-400.000.

Notthakun, Sawang: *See—*
Bros, David E.; and Notthakun, Sawang, 5,378,267, Cl. 96-168.000.

Novak, James L.; and Wiczer, James J. Non-contact capacitance based image sensing method and system. 5,378,994, Cl. 324-671.000.

Novick, Yoram: *See—*
Cohn, Oded; Hartung, Michael H.; McCauley, John N., Jr.; Micka, William F.; Mikkelsen, Claus W.; Nagin, Kenneth M.; Novick, Yoram; and Winokur, Alexander, 5,379,398, Cl. 395-425.000.

Novo Nordisk A/S: *See—*
Alsoe, Karina O.; and Kihl, Jesper, 5,378,811, Cl. 530-381.000.
Hansen, John B.; Jeppesen, Lone; and Gronvald, Frederik C., 5,378,714, Cl. 514-321.000.

Petersen, Jens G. L.; and Nordfang, Ole J., 5,378,614, Cl. 435-69.800.

Noyes, Dallas B. Method for representation of knowledge in a computer as a network database system. 5,379,366, Cl. 395-54.000.

Noyes, Steven, to International Paper Company. Paper turn-up system and method. 5,377,930, Cl. 242-521.000.

Nozaki, Hidetoshi: *See—*
Ihara, Hisanori; and Nozaki, Hidetoshi, 5,378,541, Cl. 428-428.000.

Nozomi, Mamoru; Miyake, Akiko; and Kawai, Michio, to Mitsubishi Kasei Corporation. Polycarbonate binder resin and electrophotographic photoconductor containing the same. 5,378,567, Cl. 430-58.000.

NSK Ltd.: *See—*
Yamaguchi, Mikio; and Saitoh, Takahiro, 5,378,021, Cl. 280-777.000.

Nuebling, Christoph; von Deyn, Wolfgang; Theobald, Hans; Westphalen, Karl-Otto; Kardorff, Uwe; Walter, Helmut; Kappe, Thomas; and Gerber, Matthias, to BASF Aktiengesellschaft. Heteroaromatically condensed hydroxypyridonecarboxamides, their preparation and use. 5,378,679, Cl. 504-246.000.

Nukada, Hidemi: *See—*
Nukada, Katsumi; Daimon, Katsumi; Iijima, Masakazu; Sakaguchi, Yasuo; Nukada, Hidemi; and Tokida, Akihiko, 5,378,569, Cl. 430-58.000.

Nukada, Katsumi; Daimon, Katsumi; Iijima, Masakazu; Sakaguchi, Yasuo; Nukada, Hidemi; and Tokida, Akihiko, to Fuji Xerox Co., Ltd. Oxytitaniumphthalocyanine hydrate crystal and electrophotographic photoreceptor using said crystal. 5,378,569, Cl. 430-58.000.

Nuzzolo, Michael: *See—*
Romagosa, Enrique E.; Cooper, John F.; Nuzzolo, Michael; and Lane, Michael, 5,378,272, Cl. 106-273.100.

Oakes, Shawn A.; Steichen, Richard T.; Freitas, Michael S.; Toma, Joseph G., Jr.; and Gray, Daryl J. Bottle holder and bottle holding system. 5,377,862, Cl. 220-513.000.

Ohase, Hiroyuki: *See—*
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,378,701, Cl. 514-215.000.

Obata, Hiroyuki; Utsumi, Minoru; Iijima, Masayuki; Okabe, Masato; and Kamiyama, Hironori, to Dai Nippon Printing Co., Ltd. Frost image recording medium and method of and apparatus for forming and reading frost image. 5,378,565, Cl. 430-50.000.

Obata, Isao: *See—*
Igami, Eiichi; Kagamibashi, Syunji; Hasegawa, Shoji; and Obata, Isao, 5,379,276, Cl. 369-32.000.

O'Brien, John T.: *See—*
Belsan, Jay S.; and O'Brien, John T., 5,379,391, Cl. 395-400.000.

Obu, Makoto; Hotta, Yoshihiko; Masubuchi, Fumihito; Miyawaki, Katsuaki; Takeda, Yusuke; and Kawakubo, Toshio, to Ricoh Company, Ltd. Recording apparatus using a thermosensitive recording medium. 5,379,058, Cl. 346-76.0PH.

OCG Microelectronic Materials, Inc.: *See—*
Honda, Kenji, 5,378,802, Cl. 528-480.000.

Ochiai, Akihiko, to Sony Corporation. Semiconductor integrated circuit device with plural gates and plural passive devices. 5,378,919, Cl. 257-204.000.

Ochs, Winfried; and Eichhorn, Jürgen, to Carl Freudenberg, Firma. Rotational vibration damper. 5,377,962, Cl. 267-281.000.

O'Connell, Thomas A., to United States of America, Navy. Apparatus and method of radio communication from a submerged underwater vehicle. 5,379,034, Cl. 340-850.000.

Odaka, Kentaro; Ozaki, Shinya; Inazawa, Yoshizumi; Yamada, Masaki; and Bramhall, Peter, to Sony Corporation; and Hewlett-Packard Limited. Data recorder which partitions the recording medium into data information and table of contents information. 5,379,152, Cl. 360-48.000.

Odaka, Seiichi: *See—*
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippei; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Odau, Charlotte M.: *See—*
French, Diana J.; and Odau, Charlotte M., 5,378,022, Cl. 281-31.000.

Odessa Engineering, Inc.: *See—*
Wan, Larry S., 5,379,341, Cl. 379-102.000.

Oestreich, Craig R.: *See—*
Musiel, D. James; Hadsell, William C.; and Oestreich, Craig R., 5,378,422, Cl. 264-238.000.

Ofosu-Asante, Kofi, to Procter & Gamble Co., The. Light duty dish-washing detergent composition containing an alkyl ethoxy carboxylate surfactant and ions. 5,378,409, Cl. 252-548.000.

Ogata, Kazumi: *See—*
Ohmori, Shinji; Ogata, Kazumi; Tsuruoka, Hideki; Sakaue, Takahiro; Isowaki, Yuuichi; and Umegaki, Yasuko, 5,378,692, Cl. 514-19.000.

Ogawa, Etsuji: *See—*
Kubo, Osamu; Maeda, Tatsumi; Nomura, Tutomu; Kurisu, Shunji; and Ogawa, Etsuji, 5,378,547, Cl. 428-694.0BA.

Ogawa, Junji: *See—*
Kobayashi, Kazuya; Miyasaka, Kiyoshi; and Ogawa, Junji, 5,379,264, Cl. 365-230.060.

Ogawa, Kazuaki: *See—*
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Ogawa, Kazufumi; Soga, Mamoru; and Ikuta, Shigeo, to Matsushita Electric Industrial Co., Ltd. Water- and oil-repelling members and method of manufacturing the same. 5,378,521, Cl. 428-85.000.

Ogawa, Koichi: *See—*
Usui, Taichi; Uejima, Osamu; and Ogawa, Koichi, 5,378,831, Cl. 536-123.100.

Ogawa, Masahiko: *See—*
Tamura, Tadashi; Kiyomine, Akira; Morita, Osamu; Tanaka, Michio; Ogawa, Masahiko; Tagami, Hidetoshi; and Yoshihara, Toru, 5,378,244, Cl. 8-409.000.

Ogawa, Masamichi: *See—*
Nemoto, Kazuhiko; Ohata, Toyoharu; and Ogawa, Masamichi, 5,379,314, Cl. 372-46.000.

Ogawa, Masazumi, to Fuji Photo Film Co., Ltd. Method and apparatus for disassembling and reassembling an article. 5,377,399, Cl. 29-407.000.

Ogawa, Toshiyuki; and Ishikawa, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device which can provide required data flexibly under simplified control and operating method therefor. 5,379,263, Cl. 365-230.040.

Ogawa, Tsuneshi: *See—*
Nishikawa, Yutaka; Ogawa, Tsuneshi; Kurokawa, Tsuyoshi; and Maruyama, Toshiharu, 5,378,871, Cl. 219-145.220.

Ogden, John E.: *See—*
Abrahamson, Kent D.; and Ogden, John E., 5,378,126, Cl. 417-479.000.

Ogino, Kouji: *See—*
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Ogisu, Yasuhiko; Kato, Mamoru; and Takahashi, Shigeyuki, to Toyoda Gosei Co., Ltd. Method for surface modification of polyolefin resin molded article and method for coating surface of polyolefin resin molded article. 5,378,768, Cl. 525-388.000.

Ogoshi, Haruki: *See—*
Sentsui, Shintaro; Fujisaki, Akira; Ogoshi, Haruki; Mizutani, Morinobu; and Miyazaki, Mitsuo, 5,379,357, Cl. 385-11.000.

Oh, Tae S.: *See—*
Kim, Yoon H.; Oh, Tae S.; and Lee, Byeong C., 5,378,667, Cl. 501-136.000.

Ohandjanian, George J.: *See—*
Issagholian-Havai, Robert; and Ohandjanian, George J., 5,378,028, Cl. 285-331.000.

Ohata, Toyoharu: *See—*
Nemoto, Kazuhiko; Ohata, Toyoharu; and Ogawa, Masamichi, 5,379,314, Cl. 372-46.000.

Ohba, Akira: *See—*
Ohba, Kazuo; Shima, Yoshinori; and Ohba, Akira, 5,378,507, Cl. 427-534.000.

Ohba, Kazuo; Shima, Yoshinori; and Ohba, Akira, to Sakae Electronics Industrial Co., Ltd.; Ohba, Kazuo; Shima, Yoshinori; and Ohba, Akira. Dry coating method. 5,378,507, Cl. 427-534.000.

Ohira, Yoji; and Fujita, Tetsuya, to Teijin Chemicals Ltd. Process for the production of aromatic phosphorus-containing polymer. 5,378,794, Cl. 528-167.000.

Ohkawa, Masaaki: *See—*
Takahashi, Toshiro; Ohkawa, Masaaki; and Koide, Kazuo, 5,378,934, Cl. 327-203.000.

Ohkuma, Kazuhiro: *See—*
Katta, Yasuo; Ohkuma, Kazuhiro; Satouchi, Mitsuko; Takahashi, Reiji; and Yamamoto, Takehiko, 5,378,833, Cl. 536-124.000.

Ohlemeier, Jerry A.: *See—*
Francis, Richard T.; and Ohlemeier, Jerry A., 5,377,782, Cl. 187-219.000.

Ohlendorf, Dieter: *See—*
Dubal, Hans-Rolf; Escher, Claus; Harada, Takamasa; Hemmerling, Wolfgang; Illian, Gerhard; Muller, Ingrid; Murakami, Mikio; Ohlendorf, Dieter; and Wingen, Rainer, 5,378,394, Cl. 252-299.610.

Ohlinger, Manfred: *See—*
Jachow, Harald; Schwab, Ekkehard; Koerner, Reinhard; Mueller, Norbert; Lehnert, Rudi; Ohlinger, Manfred; Auweter, Helmut; Jakusch, Helmut; Veitch, Ronald J.; and Bobrich, Michael, 5,378,383, Cl. 252-62.560.

Ohmori, Haruo: *See—*
Ueno, Shinichiro; Hashimoto, Masahiko; Adachi, Akihisa; Ohmori, Haruo; and Sato, Toshiharu, 5,377,682, Cl. 128-660.100.

Ohmori, Hisakazu: *See—*
Ishibashi, Ryoichi; Tachibana, Tetsuo; and Ohmori, Hisakazu, 5,379,307, Cl. 371-62.000.

Ohmori, Masaki, to Nisca Corporation. Automatic document feeder. 5,377,966, Cl. 271-3.000.

Ohmori, Shinji; Ogata, Kazumi; Tsuruoka, Hideki; Sakaue, Takahiro; Isowaki, Yuuichi; and Umegaki, Yasuko, to Senju Pharmaceutical Co., Ltd. Method of lowering lipids. 5,378,692, Cl. 514-19.000.

Ohnishi, Akio, to Sumitomo Rubber Industries, Ltd. Head for iron type golf club. 5,377,985, Cl. 273-169.000.

Ohno, Moriyuki; and Nakada, Yasuhisa, to Suzuki Motor Corporation. Bumper mounting construction. 5,378,031, Cl. 293-102.000.

Ohno, Tetsuji: *See—*
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,378,701, Cl. 514-215.000.

Ohshige, Toyomi: *See—*
Miyazaki, Yoko; Tomoda, Toshimasa; Tanaka, Hitoshi; Kosaka, Nobuyuki; and Ohshige, Toyomi, 5,379,150, Cl. 359-561.000.

Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shiho; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, to Kyowa Hakko Kogyo. Tricyclic compounds. 5,378,701, Cl. 514-215.000.

Ohta, Fumio; Tanaka, Nobuo; Mukasa, Yoshinao; and Gohkura, Akira, to Mitsubishi Petrochemical Co., Ltd. Acceleration sensor suitable for self-checking and a self-checking circuit therefore. 5,377,523, Cl. 73-1.00D.

Ohta, Hiroyuki: *See—*
Sakurai, Hiroshi; Onodera, Hitoshi; Indo, Kenichi; and Ohta, Hiroyuki, 5,377,405, Cl. 29-833.000.

Ohtake, Hisao; Okamoto, Seiji; and Fujii, Shoji, to Oki Electric Industry Co., Ltd. Multipurpose analog front-end circuit. 5,379,294, Cl. 370-30.000.

Ohtani, Haruo: *See—*
Arimoto, Kunio; Yoshida, Nobuo; Ohtani, Haruo; and Ikkaku, Yasuhiko, 5,378,271, Cl. 106-236.000.

Ohuchi, Kazunori: *See—*
Tanaka, Tomoharu; Tanaka, Yoshiyuki; Ohuchi, Kazunori; Momodomi, Masaki; Iwata, Yoshihisa; Sakui, Koji; Saito, Shinji; and Sumihara, Hideki, 5,379,256, Cl. 365-185.000.

Ohzu, Hayao; and Kochi, Tetsunobu, to Canon Kabushiki Kaisha. Semiconductor device with a particular source/drain and gate structure. 5,378,914, Cl. 257-369.000.

Oi, Fumio: *See—*
Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; and Oi, Fumio, 5,378,586, Cl. 430-192.000.

Oike, Yukio, to Yazaki Corporation. Cross coil type indicating instrument with an externally adjustable stopper plate. 5,378,980, Cl. 324-146.000.

Oinuma, Sumio: See—
Yamamoto, Takafumi; Inubushi, Masaaki; Oinuma, Sumio; Hayashi, Saburo; Nishijima, Shigeru; and Ishikawa, Masaharu, 5,378,525, Cl. 428-192.000.

Oishi, Nozomu, to Matsushita Graphic Communication Systems, Inc. Image reading apparatus with the optical reading units and photoelectric conversion device mounted on a common guide member. 5,379,095, Cl. 355-233.000.

Ojima, Toshiyuki: See—
Yamashita, Hiroshi; and Ojima, Toshiyuki, 5,379,277, Cl. 370-14.000.

Okabe, Masato: See—
Obata, Hiroyuki; Utsumi, Minoru; Iijima, Masayuki; Okabe, Masato; and Kamiyama, Hironori, 5,378,565, Cl. 430-50.000.

Okabe, Takeaki: See—
Morikawa, Masatoshi; Yoshida, Isao; Sawase, Terumi; Sakamoto, Kouzou; and Okabe, Takeaki, 5,379,230, Cl. 364-483.000.

Okada, Hideaki: See—
Azuma, Toshiro; and Okada, Hideaki, 5,377,487, Cl. 60-487.000.

Okada, Keisuke, to Mitsubishi Denki Kabushiki Kaisha. Data generating apparatus generating consecutive data and having a data skip scheme and a method of operating the same. 5,379,410, Cl. 395-575.000.

Okada, Shinjiro, to Canon Kabushiki Kaisha. Bi-stable liquid crystal device and driving method which allows for time variable threshold voltages. 5,379,138, Cl. 359-56.000.

Okada, Takao: See—
Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, 5,378,983, Cl. 324-158.100.

Okafuji, Takayuki; and Tanaka, Norio, to Sony Corporation. Helical scan system information signal recording/reproducing apparatus using control signal phase data and head height data from memory during control signal drop out. 5,379,164, Cl. 360-70.000.

Okaji, Makoto; and Itoh, Akira, to Mitsubishi Paper Mills Limited. Electrophotographic photoreceptor containing an azo pigment. 5,378,568, Cl. 430-58.000.

Okamoto, Seiji: See—
Ohtake, Hisao; Okamoto, Seiji; and Fujii, Shoji, 5,379,294, Cl. 370-30.000.

Okamoto, Tadashi: See—
Sawada, Hideo; Mitani, Motohiro; Nakayama, Masaharu; Morishita, Yoshii; Katayose, Mitsuo; Okamoto, Tadashi; and Hayashi, Nobuyuki, 5,378,589, Cl. 430-495.000.

Okamoto, Yutaka; and Tanaka, Yoshiyuki, to Kabushiki Kaisha Toshiba. Nonvolatile semiconductor memory device. 5,379,262, Cl. 365-230.010.

Okamura, Yoshio: See—
Suzuki, Goro; Iwamura, Masahiro; Yamamoto, Tetsuya; and Okamura, Yoshio, 5,378,904, Cl. 257-208.000.

Okamoto, Shoji: See—
Kubota, Akimori; Kubota, Yoshiya; Okamoto, Shoji; Ijiri, Masaaki; and Soeda, Koji, 5,378,425, Cl. 264-315.000.

Okauchi, Tohru: See—
Kusakabe, Hiroki; Okauchi, Tohru; and Takigawa, Masuo, 5,377,547, Cl. 73-723.000.

Okayama, Katsushige: See—
Ito, Nobuyuki; Okayama, Katsushige; Karasuda, Toshinori; and Miyagawa, Yasumichi, 5,378,766, Cl. 525-333.800.

Okazaki, Kentaro; Oshima, Naoto; and Takada, Kiyoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,378,594, Cl. 430-545.000.

Oki Electric Industry Co., Ltd.: See—
Inoue, Nobuhiko; and Yoshimaru, Masaki, 5,378,645, Cl. 437-47.000.

Ohtake, Hisao; Okamoto, Seiji; and Fujii, Shoji, 5,379,294, Cl. 370-30.000.

Shin, Yasuhiro; and Kimura, Tatsuya, 5,378,932, Cl. 327-333.000.

Okonsky, Christian; and Lunsford, David, to Dell USA, L.P. Combination I/O plate/lid hinge structure for a notebook computer. 5,379,183, Cl. 361-681.000.

Oku, Hideaki: See—
Uchida, Hiroyuki; Yamamoto, Tomonaga; Iwamatsu, Noboru; and Oku, Hideaki, 5,378,953, Cl. 310-156.000.

Okumura, Kin-ichi; Torii, Masao; Tanimoto, Hiroto; and Yamato, Motoyuki, to Nippon Zeon Co., Ltd. Dicyclopentadiene activation method and polymerization composition. 5,378,783, Cl. 526-283.000.

Olbrich, Kurt, to Hewing GmbH. Pipe connection, particularly on composite pipes. 5,378,023, Cl. 285-24.000.

O'Lenick, Anthony J., Jr.: See—
Vreckovnik, Rick; and O'Lenick, Anthony J., Jr., 5,378,787, Cl. 528-14.000.

Oliveri, Andrew L.: See—
Robbins, Richard C.; Oliveri, Andrew L.; and DiGiambattista, Mary P., 5,377,514, Cl. 70-452.000.

Olivier, Andre W.; and Williams, Oniel J., Jr., to Lairam Corporation. The. Non-resettable, pressure-actuated switch. 5,378,864, Cl. 200-61.080.

Olliero, Dominique: See—
Biziere, Kathleen; Olliero, Dominique; and Worms, Paul, 5,378,706, Cl. 514-232.800.

Ollivier, Jean-Francois; Lalaouna, Said; and Penha, Manuel, to Framate Connectors International. Process for relative measurement of the center-line of an aperture and the center-line of a cylindrical outline. 5,379,112, Cl. 356-150.000.

Olsen, M. Ardell. Game method and apparatus. 5,377,991, Cl. 273-249.000.

Olsen, Neil C.: See—
Cotton, John M.; Olsen, Neil C.; Wissink, Alex T.; Pieper, Gary V.; Oswald, William A.; Necula, Nicholas; Abreu, Enrique; Mascarenhas, Maurice J.; and De Bruyn, Rudy, 5,379,280, Cl. 370-62.000.

Olson, David H.: See—
Herbst, Joseph A.; Kresge, Charles T.; Olson, David H.; Schmitt, Kirk D.; Vartuli, James C.; and Wang, Daniel I. C., 5,378,440, Cl. 423-210.000.

Olson, Gregory R.; and Allen, Clayton A., to Textron Inc. Tamper-proof drive system based upon multi-lobular configuration. 5,378,101, Cl. 411-405.000.

Olson, James R., to Deknatel Technology Corporation, Inc. Absorbable coating and blend and suture coated therewith. 5,378,540, Cl. 428-394.000.

Olson, Richard M.: See—
Culler, Scott R.; Berg, Gregory A.; Pieper, Jon R.; and Olson, Richard M., 5,378,251, Cl. 51-295.000.

Olympus Optical Co., Ltd.: See—
Adachi, Yutaka, 5,378,881, Cl. 235-462.000.

Ito, Hiroshi, 5,378,255, Cl. 65-64.000.

Kishi, Kenji; and Nagasaki, Tatsuo, 5,379,063, Cl. 348-208.000.

Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, 5,378,983, Cl. 324-158.100.

Omami, James S. Road pavement composition and method therefore. 5,378,079, Cl. 404-75.000.

Omasa S.r.l.: See—
DeGrada, Bruno; and Ortolani, Guido, 5,377,461, Cl. 52-126.400.

Omniplanar Inc.: See—
Batterman, Eric P.; and Chandler, Donald G., 5,378,883, Cl. 235-472.000.

Omura, Naoki; and Igarashi, Minoru, to Shin-Etsu Chemical Co., Ltd. Process for preparation of linear organo-polysiloxane having hydroxyl group at its molecular ends. 5,378,788, Cl. 528-10.000.

O'Neill, Gary A.; and Goyak, George M., to Aluminum Company of America. Method for removing color-imparting contaminants from pulp and paper waste streams using a combination of adsorbents. 5,378,367, Cl. 210-669.000.

O'Neill, Joseph: See—
Dowd, Edward; O'Neill, Joseph; DiSabito, David M.; Hubbard, James R.; and Eichelberger, Cleatis A., 5,377,677, Cl. 128-642.000.

Ong, Edith: See—
Ngan, Kenny K.; and Ong, Edith, 5,378,660, Cl. 437-247.000.

Ono Pharmaceutical Co., Ltd.: See—
Hamanaka, Nobuyuki; Takahashi, Kanji; and Tokumoto, Hidekado, 5,378,716, Cl. 514-333.000.

Ono, Takashi; Watabe, Masayuki; and Maruyama, Yoshinori, to Nippon Conlux Co., Ltd. Bill discriminating apparatus. 5,377,805, Cl. 194-206.000.

Ono, Takeshi: See—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Arai, Takashi; Ishida, Yasushi; Tomoda, Akihito; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

Ono, Yoshinobu; Watanabe, Yoshio; and Tanida, Shinjiro, to Fujitsu Limited. Magnetic levitating transportation apparatus with rail gap sensor and non-parallel magnet unit arrangement. 5,377,596, Cl. 104-284.000.

Ono, Yuji; and Mihara, Katsuhiko, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Tonoku Kabushiki Kaisha. Treatment system and treatment apparatus. 5,378,145, Cl. 432-152.000.

Ono, Yukihito: See—
Kubota, Toshio; Toyama, Niichi; Arai, Hiroshi; Ishibashi, Ichirou; and Ono, Yukihito, 5,378,505, Cl. 427-484.000.

Onodera, Hitoshi: See—
Sakurai, Hiroshi; Onodera, Hitoshi; Indo, Kenichi; and Ohta, Hiroyuki, 5,377,405, Cl. 29-833.000.

Onozuka, Kuniharu, to Sony Corporation. Image projector system. 5,379,080, Cl. 353-37.000.

Onuma, Susumu; and Yokoyama, Kin-ichi, to Seiki Kabushiki Kaisha. Valve gate injection molding apparatus. 5,378,138, Cl. 425-549.000.

Oohara, Hiromitsu, to Japan Tobacco Inc. Apparatus for orientating and feeding rod-like objects. 5,377,812, Cl. 198-455.000.

Oono, Masahiro: See—
Iki, Makoto; Matsuo, Hirofumi; Oono, Masahiro; and Noguchi, Masato, 5,379,105, Cl. 356-359.000.

Oota, Yoshimi: See—
Usami, Yoshiaki; Anjo, Kenichi; and Oota, Yoshimi, 5,379,371, Cl. 395-128.000.

Ootsuka, Hiroshi: See—
Ueda, Hiroshi; Ootsuka, Hiroshi; Ishida, Tokuji; and Norita, Toshio, 5,379,088, Cl. 354-402.000.

Ootsuka, Nobukazu: See—
Sugishima, Yoshio; Irie, Youichirou; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouichirou; Asano, Keiichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Optimed Technologies, Inc.: See—
Ehmsen, Ronald J.; Ekinaka, Michael H.; Brown, Jeffery O.; and Cordero, Mario, 5,377,668, Cl. 128-4.000.

Orbital Engine Company (Australia) Pty. Limited: See—
Leighton, Sam R.; Pracilio, Claudio; and Hill, Raymond J., 5,377,637, Cl. 123-73.0AD.

Schlunke, Christopher K.; Seeber, Kenneth P.; Houston, Rodney A. R.; and Sayer, Christopher N. F., 5,377,630, Cl. 123-184.220.

Organogenesis, Inc.: See—
Kemp, Paul D.; Carr, Robert M., Jr.; Maresh, John G.; Cavallaro, John; and Gross, Jerome, 5,378,469, Cl. 424-423.000.

Orgo-Thermut Inc.: See—
Besch, Gordon O.; Kachik, Robert H.; Swartz, Mark A.; Kuster, Frank K.; and Guntermann, Hans J., 5,377,959, Cl. 266-167.000.

Orimo, Masayuki: See—
Hirasawa, Shigeki; Mori, Kinji; Orimo, Masayuki; Takeuchi, Masuyuki; Fujise, Hiroshi; Suzuki, Hitoshi; and Koai, Ichitaro, 5,379,429, Cl. 395-700.000.

Orion Therapeutic Systems, Inc.: See—
Easton, Thomas G.; and Reich, Edward, 5,378,232, Cl. 604-82.000.

O'Riordan, John F.; and Antwiler, Glen D., to Cobe Laboratories, Inc. Biological/pharmaceutical method and apparatus for collecting and mixing fluids. 5,378,227, Cl. 604-4.000.

Orlando, Harold J.: See—
Wes, James A.; Orlando, Harold J.; and Zammit, Steven R., 5,378,890, Cl. 250-252.100.

Orlowski, David C., to Inpro Companies, Inc. Shaft seal assembly. 5,378,000, Cl. 277-25.000.

Ormo Corporation: See—
Sterrett, Terry L., 5,378,146, Cl. 433-11.000.

O'Rourke, James F.; and Fagan, Robert H., to University of Connecticut, The. Apparatus for detecting leakage from vascular tissue. 5,377,686, Cl. 128-665.000.

Orpin, Murray R., to BP Chemicals Limited. Process for hardening phenolic resins. 5,378,793, Cl. 528-158.000.

Ortega, Frank: See—
Lovell, Robert K.; Tsukida, Robert S.; Ortega, Frank; and White, Thomas W., 5,379,330, Cl. 376-260.000.

Ortho Pharmaceutical Corporation: See—
Press, Jeffery B.; Sanfilippo, Pauline; McNally, James J.; and Falotico, Robert, 5,378,713, Cl. 514-321.000.

Ortolani, Guido: See—
DeGrada, Bruno; and Ortolani, Guido, 5,377,461, Cl. 52-126.400.

Orton, Debra L.; Bolton, Eugene L.; Chernikoff, Daniel F.; Goldsmith, David B.; and Moeller, Christopher P., to Taligent, Inc. Object-oriented interface for a procedural operating system. 5,379,432, Cl. 395-700.000.

Osabe, Akio: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippei; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Osaka, Nobutaka: See—
Mizuno, Takahide; Osaka, Nobutaka; Murakami, Takeshi; and Murakami, Satoshi, 5,378,206, Cl. 474-263.000.

Osana, Yoshimi: See—
Kawashima, Yoshinori; Tamaki, Kenji; Motodate, Shoji; Nakazawa, Yoshihiro; Toriyama, Masayuki; Maeda, Noriyuki; and Osana, Yoshimi, 5,377,791, Cl. 188-159.000.

Oshima, Naoto: See—
Okazaki, Kentaro; Oshima, Naoto; and Takada, Kiyoto, 5,378,594, Cl. 430-545.000.

Oshkosh Truck Corporation: See—
Marino, Robert L.; Burns, Donald J.; and Davis, Leo, 5,378,010, Cl. 280-723.000.

Osram Sylvania Inc.: See—
Dutta, Arunava, 5,378,495, Cl. 427-67.000.

Ostlinning, Edgar: See—
El Sayed, Aziz; Ostlinning, Edgar; and Idel, Karsten-Josef, 5,378,750, Cl. 524-400.000.

Ostojic, Sasha: See—
Dao, Vinh D.; and Ostojic, Sasha, 5,379,375, Cl. 395-155.000.

Ostrowski, Carl L., to Unisys Corporation. SCSI converter with simple logic circuit arbitration for providing bilateral conversion between single ended signals and differential signals. 5,379,405, Cl. 395-500.000.

O'Sullivan, John M.: See—
Cole, Arthur W.; Hamlyn, Franklin A.; Dougherty, James D.; and O'Sullivan, John M., 5,377,663, Cl. 126-152.00B.

Oswald, William A.: See—
Cotton, John M.; Olsen, Neil C.; Wissink, Alex T.; Pieper, Gary V.; Oswald, William A.; Necula, Nicholas; Abreu, Enrique; Mascarenhas, Maurice J.; and De Bruyn, Rudy, 5,379,280, Cl. 370-62.000.

Ota, Kiyoshi: See—
Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,379,153, Cl. 360-27.000.

Ota, Michihiro: See—
Kojima, Takayuki; Ota, Michihiro; and Kobayashi, Osamu, 5,377,807, Cl. 194-215.000.

Ota, Takashi, to Fujii Kinzoku Kako Co., Ltd., a part interest. Electrically conductive exothermic composition comprising non-magnetic hollow particles and heating unit made thereof. 5,378,533, Cl. 428-304.400.

Ota, Takashi; and Fukuyama, Masashi, to NGK Insulators, Ltd. Optical fiber connector and method of manufacturing the same. 5,379,360, Cl. 385-59.000.

Ota, Takashi: See—
Maekawa, Kiochiro; Ota, Takashi; Fukuyama, Masashi; and Nagasawa, Shinji, 5,379,361, Cl. 385-65.000.

Otani, Kazuoki, to Matsushita Electric Industrial Co., Ltd. Magnetic disk drive apparatus including improved decoding circuit. 5,379,160, Cl. 360-49.000.

Othmer, Konstantin; and Leak, Bruce A., to Apple Computer, Inc. Method for compositing a source and destination image using a mask image. 5,379,129, Cl. 358-450.000.

Otis Elevator Company: See—
Barten, Michael; and Toutaoui, Mustapha, 5,378,861, Cl. 187-316.000.

Salmon, John K.; and Fritsch, Antoine, 5,377,783, Cl. 187-325.000.

Otsuka, Koki: See—
Umemoto, Yuji; Ito, Koichi; and Otsuka, Koki, 5,379,338, Cl. 379-58.000.

Otsuka, Nobuo; and Kudo, Takeo, to Sumitomo Metal Industries, Ltd. Corrosion-resistant alloy heat transfer tubes for heat-recovery boilers. 5,378,427, Cl. 420-586.100.

Otsuki, Masahito; and Ueno, Katsunori, to Fuji Electric Co., Ltd. Semiconductor device with low on-voltage and large controllable turn-off current. 5,378,903, Cl. 426-606.000.

Ott, Harald: See—
Merklein, Dieter; Ott, Harald; Schwind-Grellmann, Barbara; Siegel, Heinz; and Bareiss, Alexander, 5,377,580, Cl. 92-248.000.

Otterburn, Michael S.: See—
Wheeler, Edward L.; D'Amelia, Ronald P.; Leveille, Gilbert A.; Otterburn, Michael S.; Klemann, Lawrence P.; Finley, John W.; Roden, Allan D.; Chrysam, Michael M.; Pelloso, Turiddu A.; and Given, Peter S., Jr., 5,378,490, Cl. 426-606.000.

Ottl, Josef, to Grafotec Kottler GmbH. Method and a device for monitoring a web. 5,378,918, Cl. 250-571.000.

Otto, Nancy M.; Clough, Warren R.; and Balduzzi, Henry E., to Carrier Corporation. Refrigeration system with installed acid contamination indicator. 5,377,496, Cl. 62-129.000.

Ouelette, Daniel: See—
Clough, William A.; Ouelette, Daniel; and Sablonniere, Serge De La, 5,379,057, Cl. 354-173.000.

Outboard Marine Corporation: See—
Haman, David F., 5,378,178, Cl. 440-53.000.

Outokumpu Oy: See—
Rissanen, Petri T., 5,378,294, Cl. 148-433.000.

Overby, Lacy R.: See—
Houghton, Michael; Wang, Kang-Sheng; Choo, Qui-Lim; Weiner, Amy J.; and Overby, Lacy R., 5,378,814, Cl. 530-350.000.

Overend, Sean K.; and Mawhood, John N., to Betterprize Limited. Text communication system. 5,379,340, Cl. 379-93.000.

Owa, Hideo, to Sony Corporation. Video disk recording apparatus wherein the frequency of the carrier is lowered and the frequency range of the information signal is narrowed when a recording laser beam is positioned at an extended recording area of the disk. 5,379,119, Cl. 358-310.000.

Owczarz, Aleksander: See—
Bergman, Eric J.; Reardon, Timothy J.; Thompson, Raymon F.; and Owczarz, Aleksander, 5,377,708, Cl. 134-105.000.

Owen, Marvin L.; and Miller, Mark J., to Delco Electronics Corporation. Light emitting diode and socket assembly. 5,378,158, Cl. 439-57.000.

Owens-Corning Fiberglass Technology Inc.: See—
Mott, Richard A.; and Hite, Richard S., 5,377,464, Cl. 52-213.000.

Owton, William M.: See—
Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; Singh, Jai P.; and Smith, Colin W., 5,378,699, Cl. 514-312.000.

Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; and Smith, Colin W., 5,378,717, Cl. 514-337.000.

Oy C.E. Lindren Ab: See—
Kirkkala, Mauno; and Kuivikko, Reijo, 5,378,051, Cl. 300-21.000.

Oy Partek Ab: See—
Soikkeli, Osmo, 5,378,424, Cl. 264-313.000.

Oyama, Takamasa: See—
Weber, Georg; Pohl, Ludwig; Hittich, Reinhard; Plach, Herbert; Scheuble, Bernhard; Oyama, Takamasa; Rieger, Bernhard; Kurmeier, Hans A.; and Bartmann, Ekkehard, 5,378,395, Cl. 252-299.630.

Ozaki, Shinya: See—
Odaka, Kentaro; Ozaki, Shinya; Inazawa, Yoshizumi; Yamada, Masaki; and Bramhall, Peter, 5,379,152, Cl. 360-48.000.

Ozeki, Tadas; Kitano, Shigekazu; and Sera, Kyoji, to Shimadzu Corporation. Tandem type gear pump having an integral inner middle partition wall. 5,378,130, Cl. 418-102.000.

P. J. Nasvytis International, Ltd.: See—
Nasvytis, Pius J., 5,378,112, Cl. 417-213.000.

Pace, Benedict G. Hybrid circuits and a method of manufacture. 5,378,313, Cl. 156-643.000.

Pacer Industries, Inc.: See—
Chasteen, Ronald E., 5,377,646, Cl. 123-527.000.

Packaging Innovations, Inc.: See—
Giljam, Kenneth J

Pahr, Per O., to Tandberg Data A/S. Method and apparatus for improving the accuracy of a tape servo track seek algorithm by using longitudinally correlated waveforms of lateral tape movement unique to each tape cassette. 5,379,165, Cl. 360-78.020.

Pai, Klaus; and Gregory, Ralf, to Motorola, Inc. RF power amplifier control. 5,378,996, Cl. 330-129.000.

Pajak, Bernard W.: See—
Fazio, Paul L.; and Pajak, Bernard W., 5,378,483, Cl. 426-282.000.

Palazzi, Michael A., III; and Epps, Frank A., III. Interactive terminal for the access of remote database information. 5,379,421, Cl. 395-600.000.

Palko, Richard L. Cargo handling system. 5,378,105, Cl. 414-540.000.

Pall Corporation: See—
Geibel, Stephen A.; Hurley, John L.; and Brosious, Sandra L., 5,378,426, Cl. 419-2.000.

Pallanck, Robert G.: See—
Rode, Kenneth A.; Pallanck, Robert G.; Dorman, Mark D.; and Michna, Richard J., 5,377,592, Cl. 102-210.000.

Palmer, Theodore R., to PRS Industries Inc. Safety railing system. 5,377,958, Cl. 256-59.000.

Panasonic Technologies, Inc.: See—
Li, Hong; Senturia, Stephen D.; and Volfson, David, 5,378,330, Cl. 204-129.100.

Pancheri, Eugene J., to Procter & Gamble Company, The. Granular detergent compositions containing selected builders in optimum ratios. 5,378,388, Cl. 252-174.250.

Pandey, Prem C., to United States of America, Commerce. Amperometric flow injection analysis biosensor for glucose based on graphite paste modified with tetracyanoquinodimethane. 5,378,332, Cl. 204-153.120.

Pankove, Jacques I.; and Radehaus, Christian V., to University of Colorado, The Regents of the. Optoelectronic maximum identifier for detecting the physical location of a maximum intensity optical signal in a winner-take-all network. 5,378,902, Cl. 250-208.200.

Pannu, Jasdeep S. Combined bed tray and book holder. 5,377,946, Cl. 248-456.000.

Panzone, Gianbattista; and Gianantonio, Anacleto, to Gruppo Lepetit S.p.A. Process for preparing 2'-(diethylamino)rifamycin P (P/DEA). 5,378,837, Cl. 540-456.000.

Pao, Lily C.: See—
Robinson, Kurt B.; Eslick, Russell D.; Levy, Markus A.; Brown, David M.; Pao, Lily C.; and Dipert, Brian L., 5,379,401, Cl. 395-425.000.

Paoletti, Enzo; and Tartaglia, James, to Virogenetics Corporation. Interferon sensitive recombinant poxvirus vaccine. 5,378,457, Cl. 424-205.100.

Papadopoulos, Costas, to Whistler Corporation. Multiplying saw phase shift envelope detector. 5,379,456, Cl. 455-318.000.

Papathomas, Konstantinos I.: See—
Cibulsky, Michael J.; Papathomas, Konstantinos I.; Summa, William J.; Wang, David W.; and Zippitelli, Patrick R., 5,378,306, Cl. 156-630.000.

Papciak, Charles, to West Company, Incorporated, The. Decoration, identification and differentiation closure system. 5,377,853, Cl. 215-230.000.

Papen, George C.; Murphy, G. Matthew; and Brady, David, to University of Illinois, Board of Trustees of the. External cavity, multiple wavelength laser transmitter. 5,379,310, Cl. 372-23.000.

Papenberg, Robert L.; Yang, Runchan D.; Wotring, David H.; Rydhan, Mohammad F.; Voloshin, Paul; and Talaat, Mohamed M., to Zitel Corporation. Fault tolerant memory system. 5,379,415, Cl. 395-575.000.

PAR Financial Services, Inc.: See—
Getsinger, Victor C., 5,377,944, Cl. 248-218.400.

Paramount Bed Company Limited: See—
Shirai, Kunito, 5,377,369, Cl. 5-236.100.
Shirai, Kunito, 5,377,373, Cl. 5-613.000.

Pare, J. R. Jocelyn, to Canada, Her Majesty the Queen in right of, as represented by the Minister of the Environment. Microwave-assisted generation of volatiles, of supercritical fluid, and apparatus therefor. 5,377,426, Cl. 34-259.000.

Parente, Charles A.: See—
Arcas, Noe; Kay, Shepard G.; and Parente, Charles A., 5,377,546, Cl. 73-589.000.

Parikh, Shrikant N.; and Reddy, Han N., to International Business Machines Corporation. Method of encoding a location of changes in a sequence of video images. 5,379,071, Cl. 348-409.000.

Paris, Nikolaus: See—
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Williams, Danny L.; Hodge, Dean E.; and Jackson, Ted C., Jr., 5,378,477, Cl. 426-2.000.
Purinton, James C.: *See—*
Salzmann, David R.; and Purinton, James C., 5,378,956, Cl. 313-141.000.
Puritan-Bennett Corporation: *See—*
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QLH USA, Inc.: *See—*
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Kelley, Donald W., 5,377,512, Cl. 70-58.000.
Quantum Corporation: *See—*
Harrison, Joel N.; Moon, William G.; and Graham, Randolph H., 5,379,439, Cl. 395-800.000.
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Moran, Thomas F., Jr., 5,377,396, Cl. 29-11.000.
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Quint, Jeffrey T. Aquatic treadmill with mesh belt. 5,378,213, Cl. 482-54.000.
Quintana, Fernando, to International Business Machines Corporation. Method and system for synchronization character location and prediction in a data storage system. 5,379,161, Cl. 360-51.000.
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Joyce, Ronald W., 5,378,007, Cl. 280-433.000.
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Cummings, Michael; Cadotte, Roland, Jr.; Rachlin, Adam; and Babbitt, Richard W., 5,378,949, Cl. 327-113.000.
Racine Flame Spray Inc.: *See—*
Diekmann, Bruno; and Dube, Lawrence H., 5,377,526, Cl. 73-9.000.
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Pankove, Jacques I.; and Radehaus, Christian V., 5,378,902, Cl. 250-208.200.
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Greenberg, Burton L., 5,379,345, Cl. 380-23.000.
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Christen, Hans, 5,377,914, Cl. 239-252.000.
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Rainey, Sharon R.: *See—*
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Roman, Bernard J.; Nguyen, Bich-Yen; and Ramiah, Chandrasekaram, 5,378,659, Cl. 437-229.000.
Randall, Jeffrey C.: *See—*
Gowda, Anil K.; and Randall, Jeffrey C., 5,379,377, Cl. 395-162.000.
Randell, Christopher F.; and Kilby, David, to Eveready Battery Company, Inc. Phosphate ester additive to alkaline cells to reduce gassing. 5,378,559, Cl. 429-206.000.
Randin, Jean-Paul: *See—*
Gratzel, Michael; Fraser, David; Zakeeruddin, Shaik M.; Randin, Jean-Paul; and Frenkel, Erik J., 5,378,628, Cl. 435-288.000.
Ranger, Celeste A. Beverage container holder. 5,377,833, Cl. 206-430.000.
Rao, Pemmasani D.: *See—*
Lin, Hsing K.; and Rao, Pemmasani D., 5,378,448, Cl. 423-508.000.
Rasky, Phillip D.: *See—*
Mueller, Bruce D.; Baum, Kevin L.; Borth, David E.; Rasky, Phillip D.; and Winter, Eric H., 5,379,324, Cl. 375-94.000.
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Fransham, Peter; Rasmussen, John; and Ainslie, Stan, 5,378,323, Cl. 201-8.000.
Rasor, Gregg E., to Motorola, Inc. Plug code for automatically recognizing and configuring both non-microprocessor and microprocessor based radio frequency communication devices. 5,379,404, Cl. 395-500.000.
Ratliff, James M.: *See—*
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De Wames, Roger E.; Goldberg, Ira B.; Morgan, Peter E. D.; Ratto, Joseph J.; Marshall, David B.; and Hall, William F., 5,379,018, Cl. 505-211.000.

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Pillage, Lawrence T.; Ratzlaff, Curtis L.; and Gopal, Nanda, 5,379,231, Cl. 364-488.000.
Rauscher, David J.: *See—*
Shamshoum, Edward S.; Rauscher, David J.; and Malbari, Shabbir A., 5,378,672, Cl. 502-108.000.
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Ray, George F. Aerosol can filler. 5,377,724, Cl. 141-20.000.
Raychem Corporation: *See—*
Chandler, Daniel; Thein, Nelson H.; and Chu, Edward F., 5,378,407, Cl. 252-513.000.
Monovoukas, Yiannis A., 5,378,879, Cl. 219-634.000.
Tomita, Akira, 5,379,083, Cl. 353-122.000.
Raychem Limited: *See—*
Cross, Malcolm G.; and Lines, Robert, 5,378,402, Cl. 252-500.000.
Raychem SA: *See—*
Delalle, Jacques, 5,378,855, Cl. 174-87.000.
Raymond, Brook D.: *See—*
Chi, Tom Y.; and Raymond, Brook D., 5,378,926, Cl. 257-767.000.
Rayovac Corporation: *See—*
Passaniti, Joseph L.; and Dopp, Robert B., 5,378,562, Cl. 429-224.000.
REA Gesellschaft für Recycling von Energie und Abfall mbH: *See—*
Wiljan, Harry; Niefnecker, Ulrich; Muck, Ottokar; Kubler, Hans; Schnell, Roland; Carra, Roland; and Wild, Matthias, 5,377,917, Cl. 241-14.000.
Reardon, Timothy J.: *See—*
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Reaves, Ronald C. Simulated vehicle headlight wipers. 5,377,380, Cl. 15-250.002.
Recot, Inc.: *See—*
Derkach, William J., 5,378,414, Cl. 264-22.000.
Reddy, Hari N.: *See—*
Parikh, Shrikant N.; and Reddy, Hari N., 5,379,071, Cl. 348-409.000.
Redman, Dennis W., to Bobrick Washroom Equipment, Inc. Dual sanitary napkin disposal. 5,377,908, Cl. 232-43.400.
Reeder, Ryan A.: *See—*
Foster, L. Dale; and Reeder, Ryan A., 5,377,370, Cl. 5-620.000.
Reedy, Wayne R.; and Boyce, Lawrence J., to Nordyne, Inc. Convertible top single package heat pump unit. 5,377,503, Cl. 62-326.000.
Reep, Alan J. Check valve device for a fuel pump nozzle. 5,377,729, Cl. 141-392.000.
Reese, Theodore J.; Hansen, Eric R.; and Benoit, Michel R., to Cadence Environmental Energy, Inc.; and Ash Grove Cement Company. Burning of blended waste-derived supplemental fuel for improved manufacture of cement. 5,377,603, Cl. 110-346.000.
Regnier, Kent E., to Molex Incorporated. Electrical connector for mounting on a printed circuit board. 5,378,175, Cl. 439-733.000.
Rehburg, Manfred: *See—*
Boedecker, Bernd; Henningsen, Friederike; Koelln, Klaus-Juergen; Kuhnnow, Guenther; Peschke, Guenter-Josef; Rehburg, Manfred; Sobe, Alwin; and Stemmler, Berthold, 5,378,462, Cl. 424-94.290.
Reich, Edward: *See—*
Easton, Thomas G.; and Reich, Edward, 5,378,232, Cl. 604-82.000.
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Reichhold Chemicals, Inc.: *See—*
Krishnan, Venkatarani; and Hammonds, Amy G., 5,378,755, Cl. 524-555.000.
Reid, Don R.; and Sims, Larry J., to Fintube Limited Partnership. Texturized fin. 5,377,746, Cl. 165-184.000.
Reig, Patrice; Demazeau, Gerard; and Naslain, Roger, to Societe Europeenne de Propulsion. Synthetic phyllosilicates and process for their preparation. 5,378,661, Cl. 501-2.000.
Reime, Gerd, to Nokia Technology GmbH. Arrangement for temporal detection of a signal edge of an electrical signal transmitted over a transmission line. 5,378,946, Cl. 327-14.000.
Reimers Getriebe AG: *See—*
Schoennenbeck, Gert, 5,378,200, Cl. 474-18.000.
Reinaud, Pierrette: *See—*
Martal, Jacques; DeGryse, Erich; Gaye, Pierre; Charlier, Madia; Charpigny, Gilles; Reinaud, Pierrette; and Chaouat, Gerard, 5,378,823, Cl. 536-23.520.
Reis, Herman: *See—*
Walkowiak, Stefan; Petrovich, Stephen; and Reis, Herman, 5,377,784, Cl. 187-336.000.
Reisbord, Steven T.: *See—*
Hirshenhorn, Steven J.; Reisbord, Steven T.; and Galgon, William P., 5,379,199, Cl. 362-147.000.
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Relyea, Mark A.: *See—*
Relyea, Christopher M.; Relyea, Mark A.; and Relyea, Michael S., 5,377,839, Cl. 206-531.000.
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Relyea, Christopher M.; Relyea, Mark A.; and Relyea, Michael S., 5,377,839, Cl. 206-531.000.
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Melton, Guy; and Fleeman, Raymond, 5,377,883, Cl. 223-82.000.

Reneau, Daniel R., to Hamlin, Inc. Multi-directional shock sensor. 5,378,865, Cl. 200-61.45R.

Renn, Robert M., to Whitaker Corporation, The. Electronic apparatus including a pair of assemblies having a zero insertion force therebetween. 5,378,159, Cl. 439-59.000.

Renn, Robert M.: See—
Volz, Keith L.; Irlbeck, Robert D.; Renn, Robert M.; Johnson, David C.; and Deak, Frederick R., 5,378,169, Cl. 439-376.000.

Repasky, John, to Hanover Architectural Products, Inc. Aerodynamically stable roof paver system and ballast block therefor. 5,377,468, Cl. 52-302.400.

Reproductive Sciences, Inc.: See—
Crews, David; and Wibbels, Thane, 5,377,618, Cl. 514-182.000.

Research Corporation Technologies: See—
Zuckerman, Bert M.; Dicklow, M. Bess; and Marban-Mendoza, Nahum, 5,378,460, Cl. 424-93.461.

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Bennett, Robert M., 5,378,686, Cl. 514-12.000.
Kohn, Harold L.; and Watson, Darrell, 5,378,729, Cl. 514-231.200.
Willis, John W., 5,378,806, Cl. 530-350.000.

Ress, Robert A., Jr., to United Technologies Corporation. Composite compressor rotor with removable airfoils. 5,378,110, Cl. 416-244.00R.

Restarick, Henry L.: See—
Arterbury, Bryant A.; Restarick, Henry L.; and Spangler, James E., 5,377,750, Cl. 166-205.000.

Retter, Rafael; Gill, Aharon; and Shenberg, Isaac, to Zoran Corporation. Parallel encoding/decoding of DCT compression/decompression algorithms. 5,379,070, Cl. 348-403.000.

Reulein, Hermann; Liensdorf, Alfred; Lacher, Bernd; Eckmann, Peter; and Kock, Hans-Otto, to Autoflug GmbH & Co. Fahrzeugtechnik. Release device for a mechanical energy storage means. 5,377,554, Cl. 74-2.000.

Revesz, Robert N., to CEM Corporation. Heat resistant and light weight container for materials to be heated, and process for manufacture thereof. 5,378,878, Cl. 219-762.000.

Reyco Industries, Inc.: See—
Stuart, John W.; and Critten, Donald D., 5,378,006, Cl. 280-149.200.

Reyes, Carlos A.: See—
Maskasky, Joe E.; Reyes, Carlos A.; and McMillan, Martin, 5,378,599, Cl. 430-569.000.

Reynolds, Stephen D.; and Culross, Claude C., to Exxon Research and Engineering Company. Method for atomically dispersing catalytic metals into support materials. 5,378,673, Cl. 502-174.000.

Rhodes, Sidney R. Tape wrapping apparatus. 5,378,044, Cl. 297-423.250.

Rhone-Poulenc Specialty Chemicals Co.: See—
Yeh, Michael H., 5,378,830, Cl. 536-118.000.

Rice, John R.: See—
Castillo, Michael J.; Neal, Lisa M.; Nelson, Michael J.; and Rice, John R., 5,379,337, Cl. 379-45.000.

Rice, Robert H.: See—
Morgan, Ira L.; Rice, Robert H.; Bolger, Joseph E.; and Schindler, Donald G., 5,379,237, Cl. 364-578.000.

Richards, Paul N.; Hilbert, Harry A.; and Juda, Gary D., to Xerox Corporation. Signature booklet maker with a modified fold blade and a trim waste elimination device. 5,377,569, Cl. 83-98.000.

Richter, Hans. Electroactive motor. 5,378,948, Cl. 310-328.000.

Richter, Hans-Uwe: See—
Muller, Frank; Weckwarth, Peter; and Richter, Hans-Uwe, 5,377,834, Cl. 206-455.000.

Richter, Wolfgang-Dieter; David, Wolfgang; Weeger, Engelbert; and Hartmann, Bernhard, to Man GHH Schienenverkehrstechnik GmbH. Rail vehicle having articulated connection between vehicle bodies for prohibiting telescoping in case of accidents. 5,377,597, Cl. 105-4.100.

Rickett Precision Industries: See—
Uherek, Robert J.; Uherek, Brian; and Moran, George A., 5,377,751, Cl. 166-241.600.

Rickett, George L.: See—
Martin, James B.; and Rickett, George L., 5,378,094, Cl. 410-112.000.

Rico, Joseph G.: See—
Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,378,727, Cl. 514-465.000.

Ricoh Company Ltd.: See—
Allen, James D., 5,379,355, Cl. 382-56.000.
Aoto, Jun; and Hirano, Yasuo, 5,379,097, Cl. 355-259.000.
Koike, Masahiro; Ueda, Hitoshi; Tateishi, Hiroshi; Shimota, Naohito; and Arai, Fumiaki, 5,378,739, Cl. 523-161.000.
Obu, Makoto; Hotta, Yoshihiko; Masubuchi, Fumihito; Miyawaki, Katsuki; Takeda, Yusuke; and Kawakubo, Toshio, 5,379,058, Cl. 346-76.0PH.

Ricoh Corporation: See—
Allen, James D., 5,379,355, Cl. 382-56.000.

Riedel, Richard: See—
Arbuckle, Steven R.; Grant, Michael E.; Riedel, Richard; and Hammer, Roger L., 5,379,214, Cl. 364-413.010.

Riegelman, Harry M. Locking pivot shoe. 5,377,384, Cl. 16-193.000.

Rieger, Bernhard: See—
Weber, Georg; Pohl, Ludwig; Hittich, Reinhard; Plach, Herbert; Scheuble, Bernhard; Oyama, Takamasa; Rieger, Bernhard; Kurmeier, Hans A.; and Bartmann, Ekkehard, 5,378,395, Cl. 252-299.630.

Rietri Machine Works, Ltd.: See—
Graf, Felix, 5,378,377, Cl. 210-787.000.

Riggle, Russell K., to IMO Industries, Inc. Steering apparatus and method for making same. 5,378,179, Cl. 440-62.000.

Riley, William C.; Albertin, Marc S.; and May, James B., to WhiteMoss, Inc. Radial piston fluid machine and/or adjustable rotor. 5,377,559, Cl. 74-571.00M.

Ring Mekanikk AS: See—
Lie, Tore, 5,378,039, Cl. 297-301.000.

Rink, Linda M.; Lowe, William G.; and Leininger, Daniel R., to Morton International, Inc. Inflatable restraint system inflator emission treatment. 5,378,015, Cl. 280-736.000.

Risley, Kevin S.; and Daniel, Jack H., to Cannon Equipment Company. Compressed gas cylinder safety transport device. 5,378,106, Cl. 414-608.000.

Rissanen, Petri T., to Outokumpu Oy. Copper alloys to be used as brazing filler metals. 5,378,294, Cl. 148-433.000.

Ritter, Lester L. Apparatus for improving impact tool lubrication. 5,377,770, Cl. 175-21.000.

Rix, David M.; Wilson, Harry L.; Wilson, Rodney C.; and Muntean, George L., to Cummins Engine Company, Inc. Solenoid operated pump-line-nozzle fuel injection system and inline pump therefor. 5,377,636, Cl. 123-446.000.

RMS Lighting, Inc.: See—
Epstein, J. Michael, 5,379,195, Cl. 362-20.000.

Roach, Jerry B.: See—
Hilliard, Henry T., Jr.; Roach, Jerry B.; and Lawrence, Gary N., 5,377,723, Cl. 141-4.000.

Robbins, Gordon J.: See—
McAllister, Michael F.; McDonald, James A.; Prasad, Keshav; Robbins, Gordon J.; and Swaminathan, Madhavan, 5,378,927, Cl. 257-773.000.

Robbins, Inc.: See—
Niese, Michael W., 5,377,471, Cl. 52-482.000.

Robbins, Richard C.; Oliveri, Andrew L.; and DiGiambattista, Mary P., to John D. Brush & Co., Inc. Escutcheon and method of making a fire-resistant safe. 5,377,514, Cl. 70-452.000.

Robert Bosch GmbH: See—
Frank, Kurt; Schmid, Werner; Strohl, Willi; Thoenissen, Jochen; and Ungerer, Martin, 5,378,125, Cl. 417-423.300.
Graf, Herbert; Schwenger, Juergen; Zimmermann, Werner; Wicher, Bernd; and Bielech, Thomas, 5,379,178, Cl. 361-152.000.
Haarer, Rolf; Schmitt, Wolfgang; and Moser, Theodor, 5,377,475, Cl. 53-167.000.
Merklein, Dieter; Ott, Harald; Schwind-Grellmann, Barbara; Siegel, Heinz; and Bareiss, Alexander, 5,377,580, Cl. 92-248.000.
Mueller, Martin, 5,377,638, Cl. 123-90.170.
Raddant, Hans-Joachim, 5,379,452, Cl. 455-143.000.

Roberts, James T., to Molex Incorporated. Low profile shielded jack. 5,378,172, Cl. 439-607.000.

Robertson, James W.: See—
Brownlie, Alan W.; Dueterhoeft, Scott S.; Robertson, James W.; and Shay, Francis J., 5,378,174, Cl. 439-709.000.

Robertson, Thomas W.; and Johnson, David A., to Laitram Corporation. The Conveyor system for chilling food products. 5,377,492, Cl. 62-63.000.

Robinson, Kurt B.; Eslick, Russell D.; Levy, Markus A.; Brown, David M.; Pao, Lily C.; and Dipert, Brian L., to Intel Corporation. Flash memory card including circuitry for selectively providing masked and unmasked ready/busy output signals. 5,379,401, Cl. 395-425.000.

Robirds, David C. Moisture detecting and power shut off apparatus for bill validators, coin mechanisms and the like. 5,377,804, Cl. 194-202.000.

Robles, Guillermo S. M.; and Sendelweck, Michael L., to International Business Machines Corporation. Magnetic tape cartridge with second generation leader block and leader block pin. 5,379,167, Cl. 360-95.000.

Roche, John M.: See—
von Behrens, Wieland E.; Haiflich, Sherry; Glazier, John; Roche, John M.; and Director, Bruce A., 5,378,633, Cl. 436-63.000.

Rock, Jeffrey A.: See—
Volo, Corrine A.; and Rock, Jeffrey A., 5,377,915, Cl. 239-533.900.

Rockett, Judith B.: See—
Perez, Libardo A.; Freese, Donald T.; Rockett, Judith B.; and Carey, William S., 5,378,390, Cl. 252-180.000.

Rockwell International Corporation: See—
De Wames, Roger E.; Goldberg, Ira B.; Morgan, Peter E. D.; Ratto, Joseph J.; Marshall, David B.; and Hall, William F., 5,379,018, Cl. 505-211.000.
Dorsman, Adrian K., 5,379,114, Cl. 356-350.000.
Sovero, Emilio A., 5,378,922, Cl. 257-582.000.

Rode, Kenneth A.; Pallanck, Robert G.; Dorman, Mark D.; and Michna, Richard J., to Ensign-Bickford Company. The Impulse signal delay unit. 5,377,592, Cl. 102-210.000.

Roden, Allan D.: See—
Wheeler, Edward L.; D'Amelia, Ronald P.; Leveille, Gilbert A.; Otterburn, Michael S.; Klemann, Lawrence P.; Finley, John W.; Roden, Allan D.; Chrysam, Michael M.; Pelloso, Turiddu A.; and Given, Peter S., Jr., 5,378,490, Cl. 426-606.000.

Roden, John S.: See—
Hopstock, David M.; Roden, John S.; Dierssen, Gunther H.; and Sapieszko, Ronald S., 5,378,384, Cl. 252-62.620.

Rodgers, George W.: See—
Banks, Stewart; Rodgers, George W.; Jamison, Mark D.; and Williamson, Nicholas, 5,377,871, Cl. 222-41.000.

Rodriguez Rivera, Angel L. Hoop balancing game. 5,377,974, Cl. 273-126.00R.

Rodwell, Mark: See—
Marsland, Robert A.; Rodwell, Mark; and Bloom, David M., 5,378,939, Cl. 307-352.000.

Roemer, Peter B.: See—
Barber, William D.; Roemer, Peter B.; and Rohling, Kenneth W., 5,378,989, Cl. 324-318.000.

Dumoulin, Charles L.; Darrow, Robert D.; Schenck, John F.; and Roemer, Peter B., 5,377,678, Cl. 128-653.100.

Rogers, Chester D.; and McLain, Walter L., to Toro Company, The. Hammermill. 5,377,919, Cl. 241-189.200.

Rogers, James D.: See—
Hart, Charles M.; Rogers, James D.; King, Harry L.; and Bartholomew, John J., 5,378,219, Cl. 492-48.000.

Rogers, Jeffrey A.: See—
Crookham, Joe P.; and Rogers, Jeffrey A., 5,377,611, Cl. 116-173.000.

Rogers, Stephen G., to Monsanto Company. Promoter for transgenic plants. 5,378,619, Cl. 435-172.300.

Rogers, Thomas E.: See—
Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,378,727, Cl. 514-465.000.

Rogerson, Douglas E.: See—
Gnatowski, Marek J.; Pike, Robert L.; and Rogerson, Douglas E., 5,378,544, Cl. 428-529.000.

Rogerson, William E.; and Kopitzke, Daniel F., to AlliedSignal Inc. Air bag assembly. 5,378,011, Cl. 280-728.00R.

Rohe, John F. Teaching aid for alpine skiing and method of teaching skiing. 5,378,156, Cl. 434-253.000.

Rohling, Kenneth W.: See—
Barber, William D.; Roemer, Peter B.; and Rohling, Kenneth W., 5,378,989, Cl. 324-318.000.

Rohm Co., Ltd.: See—
Hanamura, Toshihiro; and Sakai, Kaotu, 5,379,190, Cl. 361-766.000.
Katsuno, Takafumi, 5,379,017, Cl. 338-332.000.
Nakamura, Takashi, 5,378,905, Cl. 257-213.000.
Nii, Keita, 5,378,901, Cl. 257-77.000.
Ueda, Shigeyuki, 5,378,921, Cl. 257-574.000.

Rohm, Gunter H. Self-tightening drill chuck. 5,378,002, Cl. 279-62.000.

Rohm and Haas Company: See—
Amici, Robert M.; Bortnick, Newman M.; Graham, Roger K.; LaFleur, Edward E.; and Work, William J., 5,378,758, Cl. 525-57.000.
Amici, Robert M.; LaFleur, Edward E.; and Work, William J., 5,378,759, Cl. 525-57.000.
Tice, Colin M., 5,378,678, Cl. 504-242.000.

Rolnicki, Gregory R.; and Rolnicki, Joseph M. Door transporting and elevating apparatus. 5,378,103, Cl. 414-10.000.

Rolnicki, Joseph M.: See—
Rolnicki, Gregory R.; and Rolnicki, Joseph M., 5,378,103, Cl. 414-10.000.

Romagosa, Enrique E.; Cooper, John F.; Nuzzolo, Michael; and Lane, Michael, to American Gilsonite Company. Uintaite-derived toners and printing inks. 5,378,272, Cl. 106-273.100.

Roman, Bernard J.; Nguyen, Bich-Yen; and Ramiah, Chandrasekaram, to Motorola Inc. Method and structure for forming an integrated circuit pattern on a semiconductor substrate. 5,378,659, Cl. 437-229.000.

Roos, Richard J.; and Roos, Richard J., Jr. Remote controlled decoy. 5,377,439, Cl. 43-3.000.

Roos, Richard J., Jr.: See—
Roos, Richard J.; and Roos, Richard J., Jr., 5,377,439, Cl. 43-3.000.

Rose, Dennis M.; and Fague, Daniel E., to National Semiconductor Corporation. ROM filter. 5,379,242, Cl. 364-724.010.

Rose, Peter D.; Phillips, Trevor D.; and Sanderson, Ronald D., to Sasol Chemical Industries (Proprietary) Limited. Solvent extraction. 5,378,369, Cl. 210-637.000.

Rosen, Robert A.: See—
Carlson, Robert C.; and Rosen, Robert A., 5,379,044, Cl. 342-90.000.

Rosenblum, Stuart B.: See—
Afonso, Adriano; Weinstein, Jay; Gentles, Margaret J.; and Rosenblum, Stuart B., 5,378,694, Cl. 514-82.000.

Rosio, Larry R.: See—
Smith, Charles W., Jr.; Rosio, Larry R.; Shore, Stephen H.; and Karle, James A., 5,377,705, Cl. 134-95.300.

Rosok, Mae J.: See—
Siadak, Anthony W.; and Rosok, Mae J., 5,378,812, Cl. 530-388.400.

Ross, Gerald S. Conversion arrangement for sail board with seat. 5,377,607, Cl. 114-39.200.

Ross, Joseph: See—
Parsons, Donald F.; Gress, Kyle; Dempsey, James M.; Ross, Joseph; Parsons, William; and Parsons, Stephen, 5,379,229, Cl. 364-478.000.

Ross, Patrick D.: See—
Lemon, Steven P.; and Ross, Patrick D., 5,379,431, Cl. 395-700.000.

Rossi, Louis J.; and Chavan, Sunita P., to Scitex Digital Printing, Inc. Recording liquids for ink-jet recording. 5,378,269, Cl. 106-22.00K.

Rossler, Georg: See—
Kruger, Michael; Pfizenmaier, Wolfgang; Rossler, Georg; and Wagensommer, Bernhard, 5,377,589, Cl. 101-248.000.

Roth, Richard; Miller, Paul D.; and Plumb, William L., to Queens Group, Inc. Media disk storage container with printed paperboard sheets. 5,377,827, Cl. 206-310.000.

Rothaupt, Jorg: See—
Biewald, Joachim; Scheub, Volker; Holler, Holge; Fenkl, Karl; Hugel, Stefan; Rothaupt, Jorg; Schneider, Peter; Barth, Wolf-

gang; Moll, Hermann; and Pollmann, Horst, 5,377,788, Cl. 187-374.000.

Rothmans, Benson & Hedges, Inc.: See—
Ayres, George E.; Black, Gary D.; Bowen, Larry; Brackmann, Warren A.; Keaveney, Benedict; and Kilpatrick, John D., 5,377,826, Cl. 206-246.000.

Rotor Tool Company, The: See—
Bornes, John A., 5,377,578, Cl. 91-47.000.

Rougeot, Jeanne: See—
Kazi, Anif; Rougeot, Jeanne; Li, Lynn L.; and Dufour, Louis D., 5,377,685, Cl. 128-662.060.

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Roussel-UCLAF: See—
Chantot, Jean-Francois; Gouin D'Ambrières, Solange; Humbert, Daniel; and Teutsch, Jean-Georges, 5,378,697, Cl. 514-210.000.

Rowles, Howard C.: See—
Howard, Lee J.; and Rowles, Howard C., 5,377,490, Cl. 62-23.000.

Rowley, Daniel R.: See—
Daum, Edward D.; and Rowley, Daniel R., 5,378,253, Cl. 55-269.000.

Roy, Rainer, to Total Walther Feuerschutz GmbH. Method for the disposal of foam, in particular of fire extinguishing foam. 5,378,288, Cl. 134-21.000.

Royal Seafoods, Inc.: See—
Hjorth, Jens, 5,378,194, Cl. 452-170.000.

Royce Medical Company: See—
Grim, Tracy E.; and Iglesias, Joseph M., 5,378,223, Cl. 602-6.000.

Rozman, Rodney R.: See—
Hazer, Peter K.; Talreja, Sanjay S.; and Rozman, Rodney R., 5,379,413, Cl. 395-575.000.

Rozsi, Donald J.: See—
Mustapha, Adam M.; and Rozsi, Donald J., 5,377,797, Cl. 192-3.550.

Rozzi, Sharon M.: See—
Hanzalik, Kenneth L.; Crawford, George H., Jr.; Rozzi, Sharon M.; and Scanlan, David J., 5,378,542, Cl. 428-483.000.

RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: See—
Zeiser, Peter; and Wolf, Anton, 5,377,735, Cl. 152-214.000.

Rudolf, Kenneth O.; and Williams, David W., to Hill-Rom Company, Inc. Hospital bed castor control mechanism. 5,377,372, Cl. 5-600.000.

Ruile, Werner; Machui, Juergen; and Visintini, Giuliano, to Siemens Aktiengesellschaft. Surface acoustic wave reflector filter having two non-resonant tracks. 5,379,010, Cl. 333-195.000.

Ruiz, Antonio: See—
Herzberg, Louis P.; Ruiz, Antonio; and Willebeek-LeMair, Marc H., 5,379,291, Cl. 370-85.500.

Rumsey, Wayne J.: See—
Suman, Danny L.; Rumsey, Wayne J.; and De Kleine, Paul C., 5,377,948, Cl. 248-549.000.

Rungta, Ravi; and Anthony, William H., to General Motors Corporation. Method for improving corrosion resistance of plate-type vacuum brazed evaporators. 5,377,901, Cl. 228-183.000.

Rupar, Mark J.: See—
Donovan, William P.; Rupar, Mark J.; and Slaney, Annette C., 5,378,625, Cl. 435-252.500.

Ruppenthal, Gerhard: See—
Vetter, Helmut; Ruppenthal, Gerhard; and Steinbach, Klaus, 5,377,815, Cl. 198-476.100.

Rush, Joseph. Hovercraft motorcycle. 5,377,775, Cl. 180-116.000.

Ruskewicz, Stephen J.; and Casciani, James R., to Nellcor, Inc. Method and apparatus for improved fetus contact with fetal probe. 5,377,675, Cl. 128-634.000.

Russell, David W.: See—
Brown, Michael S.; Goldstein, Joseph L.; Russell, David W.; Sudhof, Thomas C.; and Martin, David W., Jr., 5,378,603, Cl. 435-6.000.

Russell, James T., to Information Optics Corporation. Optical random access memory. 5,379,266, Cl. 365-234.000.

Russell, Stephen R., to Automobile Association Limited. The Device for simulating electrical characteristics of components. 5,378,157, Cl. 434-379.000.

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Seredinin, Sergey B.; Voronina, Tatiana A.; Likhoshervostov, Arkady M.; Peresada, Vitaly P.; Molodavkin, Gennady M.; and Halikas, James A., 5,378,846, Cl. 544-349.000.

Ryaa, Jan, to Interlego AG. Toy device for picking up objects from a plane face. 5,378,191, Cl. 446-424.000.

Ryan, Clarence A.; Pearce, Gregory L.; and McGurl, Barry F., to Washington State University Research Foundation. Systemin, an inducer of plant defense proteins, and methods of use. 5,378,819, Cl. 536-23.100.

Ryan, Daniel F.: See—
Davis, Stephen M.; and Ryan, Daniel F., 5,378,348, Cl. 208-27.000.

Rydhan, Mohammad F.: See—
Papenberg, Robert L.; Yang, Runchan D.; Wotring, David H.; Rydhan, Mohammad F.; Voloshin, Paul; and Talaat, Mohamed M., 5,379,415, Cl. 395-575.000.

Rymarchyk, Nicholas M., Jr.: See—
Leczo, Theodore J.; Rymarchyk, Nicholas M., Jr.; and Bugar, Gary S., 5,377,960, Cl. 266-225.000.

S. C. Johnson & Son, Inc.: See—
Musiel, D. James; Hadsell, William C.; and Oestreich, Craig R., 5,378,422, Cl. 264-238.000.

S.I.F. RA. Societa Italiana Farmaceutica Ravizza S.p.A.: See—

Segre, Ariel D., 5,377,838, Cl. 206-527.000.

S.L.T. Japan Co., Ltd.: See—

Nakazato, Masataka, 5,378,835, Cl. 540-145.000.

S. M. W. Seiko: See—

Kono, Ikuo; and Yang, David S., 5,378,085, Cl. 405-233.000.

Sablottiere, Serge De La: See—

Clough, William A.; Ouellette, Daneil; and Sablonniere, Serge De La, 5,379,057, Cl. 345-173.000.

Safadi, Reem B., to Honeywell Inc. Method of automatic communications recovery, 5,379,278, Cl. 370-16.000.

Sage Products, Inc.: See—

Haniff, Paul H.; Ponsi, Lawrence G.; and Posey, John, 5,378,226, Cl. 604-3.000.

Saiki, Koichi; and Tanegashima, Toshihiko, to Fujitsu Limited. Multimedia multiplexer device having automatic parameter recognizing and setting function, and communications systems including multimedia multiplexer devices, 5,379,298, Cl. 370-79.000.

Saiki, Terunari, to Honda Giken Kogyo Kabushiki Kaisha. Frame structure for a motorcycle, 5,377,776, Cl. 180-219.000.

Saindon, Stephen A.: See—

Gietman, Peter J., Jr.; and Saindon, Stephen A., 5,377,929, Cl. 242-521.000.

St. Clair, David J., to Shell Oil Company. Monohydroxylated 1,3-polybutadiene/polyisocyanate product reacted with hydroxyl-functional resin, 5,378,761, Cl. 525-111.000.

Saint Gobain Vitreage International: See—

Beyrle, Andre; and L'Her, Ann, 5,378,746, Cl. 524-114.000.

Defendini, Francis, 5,379,146, Cl. 359-275.000.

Gillner, Manfred; Pikhart, Siegfried; Sancho, Emilio; Muller, Karl-Heinz; Vanaschen, Luc; and Sanchez, Matilde H., 5,378,305, Cl. 156-574.000.

Saito, Etsuro, to Sony Corporation. Ultrasonic tape guide device, 5,377,893, Cl. 226-196.000.

Saito, Kazuo: See—

Hayashi, Naoki; and Saito, Kazuo, 5,379,373, Cl. 395-148.000.

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Tazawa, Satoshi; Leon, Francisco A.; Sharfetter, Donald L.; Saito, Kazuyuki; and Yoshii, Akira, 5,379,225, Cl. 364-468.000.

Saito, Masako: See—

Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Akabane, Takeaki, 5,378,489, Cl. 426-602.000.

Saito, Naoto: See—

Hayashi, Makoto; Kanno, Satoshi; and Saito, Naoto, 5,378,429, Cl. 422-533.000.

Saito, Shinji: See—

Tanaka, Tomoharu; Tanaka, Yoshiyuki; Ohuchi, Kazunori; Momodomi, Masaki; Iwata, Yoshihisa; Sakui, Koji; Saito, Shinji; and Sumihara, Hideki, 5,379,256, Cl. 365-185.000.

Saitoh, Kazunori: See—

Sato, Koichi; Hirano, Koji; and Saitoh, Kazunori, 5,379,301, Cl. 371-19.000.

Saitoh, Takahiro: See—

Yamaguchi, Mikio; and Saitoh, Takahiro, 5,378,021, Cl. 280-777.000.

Sakae Electronics Industrial Co., Ltd.: See—

Ohba, Kazuo; Shima, Yoshinori; and Ohba, Akira, 5,378,507, Cl. 427-534.000.

Sakaegi, Yuji: See—

Kosugi, Masato; and Sakaegi, Yuji, 5,379,073, Cl. 348-513.000.

Sakaguchi, Yasuo: See—

Nukada, Katsumi; Daimon, Katsumi; Iijima, Masakazu; Sakaguchi, Yasuo; Nukada, Hidemi; and Tokida, Akihiko, 5,378,569, Cl. 430-58.000.

Sakai, Kaotou: See—

Hanamura, Toshihiro; and Sakai, Kaotou, 5,379,190, Cl. 361-766.000.

Sakai, Katsunori: See—

Yamamoto, Teruo; Harada, Hiroshi; Sakai, Katsunori; Iwaki, Kazumi; and Matsunaga, Kazuki, 5,378,698, Cl. 514-211.000.

Sakai, Mamoru: See—

Kuroanagi, Norio; and Sakai, Mamoru, 5,378,534, Cl. 428-327.000.

Sakai, Takashi; Jinbo, Kishio; Makiyama, Koichi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, to Fuji Xerox Co., Ltd.; and Fuji Photo Film Co., Ltd. Electrophotographic transfer film and process for forming image, 5,378,576, Cl. 430-126.000.

Sakai, Tsukasa: See—

Noma, Nobuhiko; Mizutani, Mikio; Sakai, Tsukasa; Kurita, Kazuo; Noguchi, Osamu; Nemoto, Hiroyuki; and Tomita, Keiichi, 5,379,306, Cl. 371-43.000.

Sakakibara, Shiro: See—

Moroto, Shuzo; and Sakakibara, Shiro, 5,378,198, Cl. 474-8.000.

Sakamaki, Noboru: See—

Murata, Kazuhiko; Murakami, Norishige; Muraoka, Kyooji; and Sakamaki, Noboru, 5,378,543, Cl. 428-517.000.

Sakamoto, Kouzou: See—

Morikawa, Masatoshi; Yoshida, Isao; Sawase, Terumi; Sakamoto, Kouzou; and Okabe, Takeaki, 5,379,230, Cl. 364-483.000.

Sakamoto, Naruhiko, to Casio Computer Co., Ltd. Method and apparatus for calling a handset unit in radio telephone system, 5,379,339, Cl. 379-61.000.

Sakaue, Takahiro: See—

Ohmon, Shinji; Ogata, Kazumi; Tsuruoka, Hideki; Sakaue, Takahiro; Isowaki, Yuichi; and Umegaki, Yasuko, 5,378,692, Cl. 514-19.000.

Sakayama, Takashi: See—

Ikegaya, Tadahiko; Maei, Yoshihiro; Matsui, Tsunehiro; Sakayama, Takashi; and Kamiyama, Yasuhiro, 5,379,124, Cl. 358-440.000.

Sakayori, Hiroyuki: See—

Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippei; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Sakui, Koji: See—

Tanaka, Tomoharu; Tanaka, Yoshiyuki; Ohuchi, Kazunori; Momodomi, Masaki; Iwata, Yoshihisa; Sakui, Koji; Saito, Shinji; and Sumihara, Hideki, 5,379,256, Cl. 365-185.000.

Sakuma, Yasuji; Hasegawa, Masaichi; Kataoka, Kenichiro; Hoshina, Kenji; Yamazaki, Noboru; Kadota, Takashi; and Yamaguchi, Hisao, to Teijin Limited. Fused pyrimidine derivative, process for preparation of same and pharmaceutical preparation comprising same as active ingredient, 5,378,700, Cl. 514-212.000.

Sakurai, Hiroshi; Onodera, Hitoshi; Indo, Kenichi; and Ohta, Hiroyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Method for mounting components and an apparatus therefor, 5,377,405, Cl. 29-833.000.

Sakurai, Yoshihiro, to Kabushiki Kaisha Japan Fitness; and Kabushiki Kaisha Lucent Beauty unit, 5,377,702, Cl. 132-271.000.

Sala International AB: See—

Hamen, Ilkka O.; and Lindgren, Eskil, 5,377,845, Cl. 209-223.000.

Salame, Morris, to Pepsico, Inc. Process for preparing thermoplastic containers, 5,378,421, Cl. 264-230.000.

Salami, Bahman: See—

Alavi, Kamal; and Salami, Bahman, 5,377,920, Cl. 241-17.000.

Salazar, Gerardo S. Timer-controlled start/stop device for an automobile, 5,377,641, Cl. 123-179.400.

Salcedean, Septimiu E.; and Ben-Dov, Daniel, to University of British Columbia. The Platform mountings, 5,377,950, Cl. 248-581.000.

Salice, Luciano, to Arturo Salice S.p.A. Adapter for drilling machines, 5,378,090, Cl. 408-42.000.

Salmon, Dennis J.; Barnette, D. Wayne; and Barnett, Rebecca A., to FMC Corporation. Preparation of lithium hexafluorophosphate solutions, 5,378,445, Cl. 423-301.000.

Salmon, John K.; and Fritsch, Antoine, to Otis Elevator Company. Elevator door drive, 5,377,783, Cl. 187-325.000.

Salmon, Joseph H., to Intel Corporation. UPROM programming protect circuit, 5,379,249, Cl. 365-104.000.

Salomon S.A.: See—

Bourdeau, Joel, 5,378,529, Cl. 428-224.000.

Dogat, Vincent, 5,378,009, Cl. 280-630.000.

Salzman, Philip M.: See—

Vierny, Oskar U.; and Salzman, Philip M., 5,378,107, Cl. 414-786.000.

Salzmann, David R.; and Purington, James C., to Ingersoll-Rand Company. Moisture resistant ceramic igniter for a burner, 5,378,956, Cl. 313-141.000.

Samata, Shuichi; Mikata, Yuichi; and Usami, Toshiro, to Kabushiki Kaisha Toshiba. Method of making a through hole in multi-layer insulating films, 5,378,652, Cl. 437-189.000.

Samsung Electron Devices Co., Ltd.: See—

Yang, Hyeon S., 5,379,117, Cl. 358-400.000.

Samsung Electronics Co., Ltd.: See—

Chin, Dae-Je; and Chung, Tae-Young, 5,378,908, Cl. 257-309.000.

Hwang, Humor, 5,379,074, Cl. 348-606.000.

Kim, Hyoung-Gwon, 5,378,973, Cl. 318-640.000.

Lee, Hyoung-Ju, 5,379,163, Cl. 360-69.000.

Min, Young-hoon, 5,377,926, Cl. 242-334.600.

Song, Jin-Il, 5,379,367, Cl. 395-87.000.

Yun, Duk-Young, 5,377,781, Cl. 184-6.230.

Sanada, Yotaro, to NEC Corporation. Magnetic disk drive spindle motor having plates to shield the motor enclosed space from the outside, 5,379,169, Cl. 360-99.080.

Sanchez, Matilde H.: See—

Gillner, Manfred; Pikhart, Siegfried; Sancho, Emilio; Muller, Karl-Heinz; Vanaschen, Luc; and Sanchez, Matilde H., 5,378,305, Cl. 156-574.000.

Sancho, Emilio: See—

Gillner, Manfred; Pikhart, Siegfried; Sancho, Emilio; Muller, Karl-Heinz; Vanaschen, Luc; and Sanchez, Matilde H., 5,378,305, Cl. 156-574.000.

Sand, William F., to Hydro Systems Company. Selecting and dispensing valve, 5,377,718, Cl. 137-625.110.

Sanderson, Ronald D.: See—

Rose, Peter D.; Phillips, Trevor D.; and Sanderson, Ronald D., 5,378,369, Cl. 210-637.000.

Sandhu, Gurtej S.; Meikle, Scott G.; and Westmoreland, Donald L., to Micron Semiconductor, Inc. Method and apparatus for subliming precursors, 5,377,429, Cl. 34-586.000.

Sandoe, Jeremy N.: See—

Annis, Alexander D.; Knapp, Alan G.; Sandoe, Jeremy N.; and Wolfs, Peter B. A., 5,379,050, Cl. 345-94.000.

Sandoz Ltd.: See—

Nadelson, Jeffrey; Simpson, William R. J.; Anderson, Robert C.; and Bajwa, Joginder S., 5,378,728, Cl. 514-507.000.

Sandstrom, Paul H.: See—

Bauer, Richard G.; Burlett, Donald J.; Massie, Johnny D., II; Sandstrom, Paul H.; Segatta, Thomas J.; and Verthe, John J. A., 5,378,754, Cl. 524-514.000.

Sanfilippo, Pauline: See—

Press, Jeffery B.; Sanfilippo, Pauline; McNally, James J.; and Falotico, Robert, 5,378,713, Cl. 514-321.000.

Sanghvi, Yogesh S.: See—

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Sankyo Company, Limited: See—

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Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Takahagi, Hidekuni; Iijima, Yasuteru; Kokubu, Tatsu-
suo; and Hiwada, Kunio, 5,378,689, Cl. 514-18.000.

Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Iijima, Yasuteru; Takahagi, Hidekuni; Koike, Hiroyuki; Kokubu, Tatsu-
suo; and Hiwada, Kunio, 5,378,690, Cl. 514-18.000.

Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhiro; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

Sankyo Seiki Mfg. Co., Ltd.: See—

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Sankyo Seisakusho Co.: See—

Kato, Heizaburo, 5,377,517, Cl. 72-164.000.

Sano, Keiichi: See—

Noguchi, Shigeru; Sano, Keiichi; and Iwata, Hiroshi, 5,378,289, Cl. 136-258.000.

Sanofi: See—

Biziere, Kathleen; Olliero, Dominique; and Worms, Paul, 5,378,706, Cl. 514-232.800.

Manning, Allan S.; and Chatelain, Pierre P., 5,378,709, Cl. 514-277.000.

Sanshin Kogyo Kabushiki Kaisha: See—

Nakayama, Manabu; Abe, Kouji; Sohawa, Masafumi; and Isogawa, Atsushi, 5,378,180, Cl. 440-89.000.

Sansui Co., Ltd.: See—

Kuroanagi, Norio; and Sakai, Mamoru, 5,378,534, Cl. 428-327.000.

Santel, Hans-Joachim: See—

Schallner, Otto; Haas, Wilhelm; Linker, Karl-Heinz; Findeisen, Kurt; Konig, Klaus; Marhold, Albrecht; Santel, Hans-Joachim; and Schmidt, Robert R., 5,378,681, Cl. 504-273.000.

Sanwa Bank Limited, The: See—

Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Sanyo Electric Co., Ltd.: See—

Blechl, Joseph; Hadjimitsos, Panos; Kurtz, James R.; Shimizu, Hiroyasu; and Haraguchi, Manabu, 5,377,864, Cl. 221-2.000.

Fujimori, Hideaki; Ishikawa, Tetsu; Tamura, Yoshihisa; and Imaizumi, Minoru, 5,379,182, Cl. 361-681.000.

Furukawa, Nobuhiko; Fujimoto, Masahisa; Yoshinaga, Noriyuki; and Ueno, Koji, 5,378,561, Cl. 429-218.000.

Ikematsu, Mineo; Sugiyama, Yukihiko; and Iseki, Masahiro, 5,378,342, Cl. 204-403.000.

Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Inuma, Toshinori, 5,379,322, Cl. 375-60.000.

Noguchi, Shigeru; Sano, Keiichi; and Iwata, Hiroshi, 5,378,289, Cl. 136-258.000.

Sapieszko, Ronald S.: See—

Hopstock, David M.; Roden, John S.; Dierrsen, Gunther H.; and Sapieszko, Ronald S., 5,378,384, Cl. 252-62.620.

Sarabi, Bahman: See—

Kohler, Burkhard; and Sarabi, Bahman, 5,378,749, Cl. 524-259.000.

Sarner, Larry W.; and Beckwith, David C., to United States Voting Machines, Inc. Locking memory device, 5,379,212, Cl. 364-409.000.

Sasai, Osamu, to Sumitomo Wiring Systems, Ltd. Connector, 5,378,176, Cl. 439-752.000.

Sasaki, Masakuni; Shimizu, Yasushi; Yamaguchi, Teruo; and Tanaka, Kiyotaka, to Kabushiki Kaisha Toshiba. Separators and method of manufacturing the same, 5,378,247, Cl. 29-623.100.

Sasaki, Minoru, to Seiko Epson Corporation. Routing method and arrangement for power lines and signal lines in a microelectronic device, 5,378,925, Cl. 257-691.000.

Sasaki, Toshiaki; and Shimizu, Hitoshi, to Fuji Electric Co., Ltd. Method for manufacturing a thin-film photovoltaic conversion device, 5,378,639, Cl. 437-4.000.

Sasaki, Toshio: See—

Johoji, Hirofumi; Shirashi, Hiroyuki; Sasaki, Toshio; and Kawai, Kiyoshi, 5,378,778, Cl. 526-142.000.

Sasatani, Takashi: See—

Takada, Susumu; Sasatani, Takashi; Chomei, Nobuo; Adachi, Makoto; and Matsushita, Akira, 5,378,848, Cl. 546-82.000.

Sasol Chemical Industries (Proprietary) Limited: See—

Rose, Peter D.; Phillips, Trevor D.; and Sanderson, Ronald D., 5,378,369, Cl. 210-637.000.

Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Masuko, Jiro, to Kureha Kagaku Kogyo K.K. Poly(arylene thioether-ketone-ketone) copolymer and production process thereof, 5,378,770, Cl. 525-471.000.

Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Yamamoto, Shinji, to Kureha Kagaku Kogyo K.K. High-heat-resistant, crystalline block copolymers and production process thereof, 5,378,772, Cl. 525-471.000.

Sawada, Yoshihiro: See—

Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhiro; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514

Sawhney, Amarpreet S.: See—
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Sawyer, David A., to Plessey Semiconductors Limited. Low noise amplifier with capacitive feedback. 5,378,997, Cl. 330-260.000.

Sayer, Christopher N. F.: See—
Schlunke, Christopher K.; Seeber, Kenneth P.; Houston, Rodney A. R.; and Sayer, Christopher N. F., 5,377,630, Cl. 123-184.220.

Scandic International Pty. Ltd.: See—
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Brownlie, Alan W.; Dueterhoeft, Scott S.; Robertson, James W.; and Shay, Francis J., 5,378,174, Cl. 439-709.000.

Sheinfeld, Naftali; and Cohen, Michael, to Etzion Metal Works, Device for preventing accidental discharging of a bullet from a firearm, 5,377,438, Cl. 42-96.000.

Shell Oil Company: See—
Ehrlich, Martin L., 5,378,798, Cl. 528-310.000.

Guichard, Philippe; Grandvallet, Pierre; Barre, Guy; Hoek, Arend; and Boon, Andries Q. M., 5,378,351, Cl. 208-143.000.

Massie, Stephen N., 5,378,767, Cl. 525-339.000.

Meurs, Jan H. H.; and De Jong, Feike, 5,378,797, Cl. 528-283.000.

Modic, Michael J.; Gelles, Richard; and Djiauw, Lie K., 5,378,760, Cl. 525-71.000.

St. Clair, David J., 5,378,761, Cl. 525-111.000.

Shenberg, Isaac: See—
Retter, Rafael; Gill, Aharon; and Shenberg, Isaac, 5,379,070, Cl. 348-403.000.

Sheng, King C.: See—
Castro, Anthony J.; Van Duyn, Richard P.; Sheng, King C.; Bianchini, Robert J.; Parr, William J.; Franklin, Ralph; and Natan, Michael J., 5,378,508, Cl. 427-556.000.

Shepherd Products, Inc.: See—
Perl, Ludovic A., 5,377,943, Cl. 248-188.700.

Shepley, Paul E., Jr., to Precision Shooting Equipment, Inc., Reinforcement for bow limb, 5,377,658, Cl. 124-88.000.

Sherven, Allen L.: See—
Mills, Rex R.; Waterman, Timothy J.; Patterson, Randel K.; and Sherven, Allen L., 5,377,662, Cl. 126-110.00R.

Sherwood Medical Company: See—
Kee, Kok-Hiong, 5,377,672, Cl. 128-207.160.

Shewen, Patricia E.; and Wilkie, Bruce N., to University of Guelph, The Process for the production of vaccine for prevention of pasteurized haemolytic pneumonia in bovine, 5,378,615, Cl. 435-71.300.

Shi, Hongqin: See—
Chen, Shaw H.; and Shi, Hongqin, 5,378,393, Cl. 252-299.010.

Shibano, Yoshihide: Ultrasonic vibrator device for ultrasonically cleaning workpiece, 5,377,709, Cl. 134-184.000.

Shibatani, Takeji; Matsumae, Hiroaki; and Kawai, Eri, to Tanabe Seiyaku Co., Ltd., Process for preparing (2S,3R)-3-alkyl-phenylglycidic acid esters using lipase, 5,378,627, Cl. 435-280.000.

Shibayama, Atsushi; and Sato, Susumu, to Nikon Corporation, High variable power ratio zoom lens, 5,379,154, Cl. 359-689.000.

Shibayama, Takehiko: See—
Mutoh, Hideo; Moki, Keiji; and Shibayama, Takehiko, 5,379,423, Cl. 395-600.000.

Shieh, Snoopy, Automatic lavatory detergent and perfume dispenser, 5,377,363, Cl. 4-313.000.

Shigehisa, Yasumichi: See—
Matsushita, Takao; and Shigehisa, Yasumichi, 5,378,742, Cl. 523-213.000.

Shigemitsu, Minoru: See—
Shimizu, Toshihide; and Shigemitsu, Minoru, 5,378,775, Cl. 526-62.000.

Shigeta, Katsunori, to Mitsubishi Denki Kabushiki Kaisha, Sewing data forming device for sewing machining, 5,379,226, Cl. 364-470.000.

Shih, Stuart S.: See—
Degnan, Thomas F.; and Shih, Stuart S., 5,378,352, Cl. 208-217.000.

Shikoku Kakoki Co., Ltd.: See—
Ueda, Michio; Iuchi, Tetsuya; Miki, Takao; and Hamada, Hisanori, 5,377,727, Cl. 141-178.000.

Shima Keiko Mfg. Ltd.: See—
Shima, Masahiro, 5,377,507, Cl. 66-69.000.

Shima, Masahiro, to Shima Keiko Mfg. Ltd., Method for making joined fabric, 5,377,507, Cl. 66-69.000.

Shima, Yoshinori: See—
Ohba, Kazuo; Shima, Yoshinori; and Ohba, Akira, 5,378,507, Cl. 427-534.000.

Shimada, Takashi: See—
Akita, Noboru; Hatakeyama, Toshiya; Shimada, Takashi; and Iwata, Keiichi, 5,378,444, Cl. 423-240.00S.

Shimada, Teiyu: See—
Kurihara, Yoshie; Kohno, Hiroshige; Sugiyama, Hiromu; Shimada, Teiyu; Saito, Masako; and Akabane, Takeaki, 5,378,489, Cl. 426-602.000.

Shimadzu Corporation: See—
Niwa, Takeshi, 5,379,113, Cl. 356-336.000.

Ozeki, Tadasi; Kitano, Shigekazu; and Sera, Kyoji, 5,378,130, Cl. 418-102.000.

Shimano Inc.: See—
Noda, Hideo, 5,377,441, Cl. 43-22.000.

Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, to Hitachi, Ltd.; and Sanwa Bank Limited, The Highly reliable online system, 5,379,418, Cl. 395-575.000.

Shimazu, Shigeaki; Asano, Tetsuo; Usui, Nobuaki; and Nakai, Kazuhiro, to Dainippon Screen Mfg. Co., Ltd., Method and apparatus for extracting a contour of an image, 5,379,350, Cl. 382-22.000.

Shimbo, Isao: See—
Nakagoshi, Arata; Suzuki, Hideya; Yamamoto, Yoshinobu; Shimbo, Isao; Furuya, Tsuneo; and Kuwahara, Hiroshi, 5,379,451, Cl. 455-54.200.

Shimizu, Hiroyasu: See—
Blechl, Joseph; Hadjimitsos, Panos; Kurtz, James R.; Shimizu, Hiroyasu; and Haraguchi, Manabu, 5,377,864, Cl. 221-2.000.

Shimizu, Hiroyuki; and Ito, Kenji, to NGK Spark Plug Co., Ltd., Dielectric filter device, 5,379,012, Cl. 333-206.000.

Shimizu, Hitoshi: See—
Sasaki, Toshiaki; and Shimizu, Hitoshi, 5,378,639, Cl. 437-4.000.

Shimizu, Masahiro: See—
Mitsui, Katsuyoshi; and Shimizu, Masahiro, 5,378,923, Cl. 257-616.000.

Shimizu, Takatoshi: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Shimizu, Tetsuo: See—
Mihira, Hiroshi; Shimizu, Tetsuo; Hirahara, Kazuhiro; Ishihara, Toshinobu; and Takaya, Seiki, 5,377,616, Cl. 117-104.000.

Shimizu, Tomohide: See—
Kato, Norihide; Shimizu, Tomohide; and Mori, Kenichiro, 5,379,347, Cl. 382-8.000.

Shimizu, Toshihide; and Watanabe, Mikio, to Shin-Etsu Chemical Co., Ltd., Process to prevent scale adhesion during polymerization of vinyl monomers, 5,378,773, Cl. 526-62.000.

Shimizu, Toshihide; and Watanabe, Mikio, to Shin-Etsu Chemical Co., Ltd., Polymer scale preventive agent, 5,378,774, Cl. 526-62.000.

Shimizu, Toshihide; and Shigemitsu, Minoru, to Shin-Etsu Chemical Co., Ltd., Polymer scale preventive agent, polymerization vessel for preventing polymer scale deposition, and process of producing polymer using said vessel, 5,378,775, Cl. 526-62.000.

Shimizu, Yasuhiro, to Toyota Jidosha Kabushiki Kaisha, Device for detecting deterioration of a catalytic converter for an engine, 5,377,484, Cl. 60-276.000.

Shimizu, Yasushi: See—
Sasaki, Masakuni; Shimizu, Yasushi; Yamaguchi, Teruo; and Tanaka, Kiyotaka, 5,378,247, Cl. 29-623.100.

Shimojo, Shigeru: See—
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiko; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Touru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.

Shimota, Naohito: See—
Koike, Masahiro; Ueda, Hitoshi; Tateishi, Hiroshi; Shimota, Naohito; and Arai, Fumiaki, 5,378,739, Cl. 523-161.000.

Shin-Etsu Chemical Co., Ltd.: See—
Fujiwara, Makoto; and Amano, Tadashi, 5,378,781, Cl. 526-228.000.

Hamada, Yuichi; Nagata, Yoshihiko; Kashida, Meguru; and Kubota, Yoshihiro, 5,378,514, Cl. 428-14.000.

Inoue, Yoshio, 5,378,734, Cl. 522-11.000.

Mihira, Hiroshi; Shimizu, Tetsuo; Hirahara, Kazuhiro; Ishihara, Toshinobu; and Takaya, Seiki, 5,377,616, Cl. 117-104.000.

Omura, Naoki; and Igarashi, Minoru, 5,378,788, Cl. 528-10.000.

Shimizu, Toshihide; and Watanabe, Mikio, 5,378,773, Cl. 526-62.000.

Shimizu, Toshihide; and Watanabe, Mikio, 5,378,774, Cl. 526-62.000.

Shimizu, Toshihide; and Shigemitsu, Minoru, 5,378,775, Cl. 526-62.000.

Shin-Etsu Handotai Co., Ltd.: See—
Hirano, Yoshihiro; and Baba, Masahiko, 5,378,900, Cl. 117-201.000.

Shin, Yasuhiro; and Kimura, Tatsuya, to Oki Electric Industry, Co., Ltd., Level shifting circuit, 5,378,932, Cl. 327-333.000.

Shinada, Satoshi: See—
Yamaguchi, Shuichi; Mochizuki, Seiji; Suzuki, Hideaki; Shinada, Satoshi; and Aida, Mayumi, 5,379,061, Cl. 346-141.000.

Shindo, Isao: See—
Kai, Susumu; Shindo, Isao; Mutoh, Shigeo; and Yoshida, Kasumi, 5,378,630, Cl. 436-43.000.

Shinozaki, Eiji, to NEC Corporation, High speed driving circuit for magnetic head effective against flyback pulse, 5,379,208, Cl. 363-97.000.

Shinto, Toru; and Hiraki, Jun, to Chisso Corporation, Enzyme stabilization with poly-L-lysine, 5,378,622, Cl. 435-188.000.

Shiom, Michio: See—
Kurane, Ryuichi; Nohata, Yasuhiro; Shiom, Michio; Ishino, Shuichi; Yotsuji, Akira; Murata, Hideki; and Sugimoto, Seiji, 5,378,832, Cl. 536-123.100.

Shionogi & Co., Ltd.: See—
Takada, Susumu; Sasatani, Takashi; Chomei, Nobuo; Adachi, Makoto; and Matsushita, Akira, 5,378,848, Cl. 546-82.000.

Yamamori, Teruo; Harada, Hiroshi; Sakai, Katsunori; Iwaki, Kazumi; and Matsunaga, Kazuki, 5,378,698, Cl. 514-211.000.

Shippell, Joseph C.: See—
Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., 5,377,857, Cl. 220-4.330.

Shippers Paper Products Company: See—
Keenan, Thomas C.; Lo Presti, Philip B.; and Van Erden, Donald L., 5,378,096, Cl. 410-154.000.

Shiraga, Ryuichi; and Kuwajima, Teruaki, to Nippon Paint Co., Ltd., Mica-containing pigment composition and a water base paint composition containing a mica-containing pigment(s), as well as a method of manufacturing the same, 5,378,275, Cl. 106-417.000.

Shirai, Kunito, to Paramount Bed Company Limited, Bottom structure of a bed, 5,377,369, Cl. 5-236.100.

Shirai, Kunito, to Paramount Bed Company Limited, Bottom structure of a bed, 5,377,373, Cl. 5-613.000.

Shiraishi, Hiroyuki: See—
Johoji, Hirofumi; Shiraishi, Hiroyuki; Sasaki, Toshio; and Kawai, Kiyoshi, 5,378,778, Cl. 526-142.000.

Shiraishi, Naomasa, to Nikon Corporation, Projection exposure apparatus, 5,379,090, Cl. 355-67.000.

Shiraiwa, Yasuo: See—
Kudo, Toshio; Nagai, Masaaki; and Shiraiwa, Yasuo, 5,378,995, Cl. 324-693.000.

Shirakura, Hidetoshi: See—
Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

Shirasaki, Masataka, to Fujitsu Limited, Optical transmitter, 5,379,144, Cl. 359-181.000.

Shirasaki, Tomoyuki; and Kuwabara, Osamu, to Casio Computer Co., Ltd., Film wiring board, 5,378,859, Cl. 174-261.000.

Shiro, Yusaku; and Kitahara, Takeshi, to Kabushiki Kaisha Toshiba, Deflection yoke apparatus, 5,378,961, Cl. 313-440.000.

Shivitz, William F.: See—
LaMay, Brian K.; Maeshiro, Asamitsu; and Shivitz, William F., 5,377,937, Cl. 244-185.000.

Shoji, Masahiro: See—
Daimaru, Koji; Takata, Koichi; Yoshizawa, Kenichi; and Shoji, Masahiro, 5,378,218, Cl. 483-9.000.

Shoji, Masao, to Cat Eye Co., Ltd., Battery case attaching unit including housing and battery case and stopper for securing battery case in housing, 5,378,553, Cl. 429-97.000.

Shoji, Yoshio: See—
Sakai, Takashi; Jinbo, Kishio; Makiyama, Koichi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, 5,378,576, Cl. 430-126.000.

Shomler, Robert W., to International Business Machines Corporation, Method and means for effectuating rule based I/O data transfer address control via address control words, 5,379,385, Cl. 395-325.000.

Shore, Stephen H.: See—
Smith, Charles W., Jr.; Rosio, Larry R.; Shore, Stephen H.; and Karle, James A., 5,377,705, Cl. 134-95.300.

Short, Sidney M.; and Laven, Jeffrey J., to Cook Composites and Polymers Co., Cleaning solutions for removing uncured polyester resin systems from the surfaces of processing equipment, 5,378,386, Cl. 252-162.000.

Shu, Jing S.; Liang, Chien S.; Trytten, Grover W.; and Satterfield, Yvonne D., to Texas Instruments Incorporated, Antistatic solution for micro lithic measurement, 5,378,498, Cl. 427-240.000.

Shultz, Cormey, Load securing device for trucks, 5,378,095, Cl. 410-151.000.

Shure Products Inc.: See—
Shure, Thomas S., 5,377,996, Cl. 273-330.000.

Shure, Thomas S., to Shure Products Inc., Electronic paddle game device, 5,377,996, Cl. 273-330.000.

Siadak, Anthony W.; and Rosok, Mae J., to Bristol-Myers Squibb Company, Monoclonal antibodies cross-reactive and cross-protective against *P. aeruginosa* serotypes, 5,378,812, Cl. 530-388.400.

Sibjet: See—
Ansquer, Henri, 5,378,143, Cl. 431-153.000.

Sibley, Duane L.; and Sibley, Dwight A., Apparatus for baling bulk fibrous material, 5,377,481, Cl. 56-341.000.

Sibley, Dwight A.: See—
Sibley, Duane L.; and Sibley, Dwight A., 5,377,481, Cl. 56-341.000.

Sickler, John R., Modular bicycle rack for motor vehicles, 5,377,886, Cl. 224-42.45R.

Siegel, Heinz: See—
Merklein, Dieter; Ott, Harald; Schwind-Grellmann, Barbara; Siegel, Heinz; and Bareiss, Alexander, 5,377,580, Cl. 92-248.000.

Siebert, Klaus: See—
Thoms, Volker; Harthun, Ulrich; Kienzle, Stefan; and Siebert, Klaus, 5,377,520, Cl. 72-361.000.

Siekman, Allen R.; and Nachod, Julius E., III, to Invacare Corporation, Seat cushion for wheelchairs, 5,378,045, Cl. 297-452.250.

Siemens Aktiengesellschaft: See—
Angermaier, Anton; Vogt, Thomas; and Wier, Manfred, 5,377,535, Cl. 73-116.000.

Angermaier, Anton; Vogt, Thomas; and Wier, Manfred, 5,377,536, Cl. 73-116.000.

Erbse, Dietmar; Thiele, Reinhard; and Walter, Helmut, 5,378,410, Cl. 588-16.000.

Hoeltge, Harald, 5,378,913, Cl. 257-365.000.

Lehmeier, Johann; Flierl, Erwin; and Schroether, Gerhard, 5,379,015, Cl. 335-185.000.

Melzner, Hanno, 5,378,907, Cl. 257-301.000.

Ruile, Werner; Machui, Juergen; and Visintini, Giuliano, 5,379,010, Cl. 333-195.000.

Schabert, Hans-Peter; and Laurer, Erwin, 5,377,952, Cl. 251-129.130.

Vollmer, Wolfgang; and Kraupa, Werner, 5,378,016, Cl. 285-47.000.

Siemens Audiologische Technik GmbH: See—
Pfannenmueller, Gerhard; and Martin, Raimund, 5,378,933, Cl. 327-172.000.

Siemens Automotive L.P.: See—
Wakeman, Russell J., 5,377,633, Cl. 123-297.000.

Siemens Electric Limited: See—
Brackett, Stephen E.; and Houle, Dennis E., 5,377,629, Cl. 123-184.560.

Siemens-Elema AB: See—
Froberg, Paul; and Johannsson, Goeran, 5,378,177, Cl. 439-836.000.

Siemens Nixdorf Informationssysteme AG: See—
Kuchenreuther, Karl-Heinz, 5,378,930, Cl. 307-38.000.

Siemens Power Corporation: See—
Urza, Inaky J., 5,377,532, Cl. 73-73.000.

Sierra On-Line, Inc.: See—
Wilden, Mark A.; Hood, Jonathan M.; Hughes, Brian K.; Jensen, Jane S.; Scott, Larry L.; and Smith, Christopher F., 5,377,997, Cl. 273-434.000.

Sigetoh, Nobuyuki; Miyazaki, Jinsei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, to Matsushita Electric Industrial Co., Ltd., Labelling color for detecting methamphetamine, 5,378,634, Cl. 436-91.000.

- Signode Corporation: See—
Haberstroh, James A.; and Pearson, Timothy B., 5,377,477, Cl. 53-399.000.
- Signist, Albert, to Philip Morris Incorporated. Packaging box, blank therefor, and method of assembly. 5,377,905, Cl. 229-231.000.
- Siltech Corporation: See—
Vrcokovnik, Rick; and O'Lenick, Anthony J., Jr., 5,378,787, Cl. 528-14.000.
- Silvestri, George J., Jr.; and Viscovich, Paul W., to Westinghouse Electric Corporation. Internal moisture separation cycle for a low pressure turbine. 5,377,489, Cl. 60-678.000.
- Simms, Graham J.: See—
Bredall, William A.; and Simms, Graham J., 5,377,377, Cl. 15-167.100.
- Simpson, James M.: See—
Dimler, Steven R.; Diodato, David V.; Mazer, Terrence B.; McKamy, Daniel L.; and Simpson, James M., 5,378,488, Cl. 426-580.000.
- Simpson, William R. J.: See—
Nadelson, Jeffrey; Simpson, William R. J.; Anderson, Robert C.; and Bajwa, Joginder S., 5,378,728, Cl. 514-507.000.
- Sims, Larry J.: See—
Reid, Don R.; and Sims, Larry J., 5,377,746, Cl. 165-184.000.
- Sinband, Seymour J.; and Stone, Thomas L., to Science Accessories Corp. Position determining apparatus. 5,379,269, Cl. 367-127.000.
- Singh, Gururaj: See—
Glover, Willie T.; Singh, Gururaj; Gupta, Amar; and Newman, Peter, 5,379,297, Cl. 370-60.100.
- Singh, Jai P.: See—
Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; Singh, Jai P.; and Smith, Colin W., 5,378,699, Cl. 514-312.000.
- Singh, Jasbir: See—
Morgan, Barry A.; Gordon, Thomas D.; Hansen, Philip E.; and Singh, Jasbir, 5,378,803, Cl. 530-317.000.
- Singh, Rajeeva: See—
Whitesides, George M.; Lees, Watson J.; and Singh, Rajeeva, 5,378,813, Cl. 530-404.000.
- Sinko, John, to Wayne Pigment Corporation. Corrosion preventive zinc cyanamide and method. 5,378,446, Cl. 423-368.000.
- Siomkos, John R.: See—
Griffin, Curtis; Siomkos, John R.; and Tan, Geroncio, 5,379,185, Cl. 361-709.000.
- Sirat, Jacques A.; and Zwierski, Didier E., to U.S. Philips Corporation. Method of processing signal data on the basis of principal component transform, apparatus for performing the method. 5,379,352, Cl. 382-41.000.
- Sirinyan, Kirkor: See—
Wolf, Gerhard D.; Sirinyan, Kirkor; Henning, Wolfgang; Merten, Rudolf; Gizycki, Ulrich V.; and Benda, Bruce, 5,378,268, Cl. 106-1.110.
- Skilton, Jonathan: See—
Johnson, Robert A.; Haughey, Sarah K.; and Skilton, Jonathan, 5,379,296, Cl. 370-60.000.
- Skrobis, Kenneth: See—
Guckel, Henry; Christenson, Todd R.; and Skrobis, Kenneth, 5,378,583, Cl. 430-325.000.
- Sladek, Hans-Juergen: See—
Mahler, Ulrike; Westfechtel, Alfred; Sladek, Hans-Juergen; and Kielmann, Sylke, 5,378,485, Cl. 426-329.000.
- Slaney, Annette C.: See—
Donovan, William P.; Ruper, Mark J.; and Slaney, Annette C., 5,378,625, Cl. 435-252.500.
- Slapnicka, Elden R. Self-stowable sawhorse with beam-supporting saddles. 5,377,779, Cl. 182-153.000.
- Slater, Andrea: See—
Layer, James; and Slater, Andrea, 5,378,229, Cl. 604-31.000.
- Slicker, James; Mazur, Joseph S.; and Breen, Michael T., to Eaton Corporation. Clutch mode control logic. 5,378,211, Cl. 477-175.000.
- Slowinski, Lori A.: See—
Chiou, Ruth G.; Brown, Cheryl C.; Little, Jeanette A.; Young, Austin H.; Schanefelt, Robert V.; Harris, Donald W.; Stanley, Keith D.; Coontz, Helen D.; Hamdan, Carolyn J.; Wolf-Rueff, Jody A.; Slowinski, Lori A.; Anderson, Kent R.; Lehnhardt, William F.; and Witczak, Zbigniew J., 5,378,286, Cl. 127-36.000.
- Smedley, William H.: See—
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,378,233, Cl. 604-83.000.
- Smernoff, Ronald. Disposable container for pourable materials having an interlocking spout. 5,377,876, Cl. 222-105.000.
- Smetana, Denis A.: See—
Swarts, Jeffery L.; Fields, James S., Jr.; Guthrie, Guy L.; and Smetana, Denis A., Jr., 5,379,386, Cl. 395-325.000.
- Smith, Barry W.; and Freitas, Michael W., to Fabri-Check, Inc. Transport carrier for use in an article sorting system. 5,377,814, Cl. 198-465.400.
- Smith, Bradley W.; and Harris, Bradley D., to Morton International, Inc. Controlled deployment driver's side air bag. 5,378,019, Cl. 280-743.00R.
- Smith, Charles A. Insulated breathing tube. 5,377,670, Cl. 128-204.170.
- Smith, Charles W., Jr.; Rosio, Larry R.; Shore, Stephen H.; and Karle, James A., to Autoclave Engineers, Inc. Precision cleaning system. 5,377,705, Cl. 134-95.300.
- Smith, Christopher F.: See—
Wilden, Mark A.; Hood, Jonathan M.; Hughes, Brian K.; Jensen, Jane S.; Scott, Larry L.; and Smith, Christopher F., 5,377,997, Cl. 273-434.000.
- Smith, Colin W.: See—
Brunavs, Michael; Dell, Colin P.; Gallagher, Peter T.; Owton, William M.; Singh, Jai P.; and Smith, Colin W., 5,378,699, Cl. 514-312.000.
- Smith, David L.; Wilson, Alan C.; and Harring, Russell W., to Bausch & Lomb Incorporated. Method of edging a contact lens or lens blank. 5,378,412, Cl. 264-2.100.
- Smith, David Morgan, to Martin Marietta Magnesia Specialties Inc. Nutritive feed binder. 5,378,471, Cl. 424-442.000.
- Smith, Dennis E.; and Muehlbauer, John L., to Eastman Kodak Company. Photographic light-sensitive elements. 5,378,577, Cl. 430-138.000.
- Smith, Jerome D.; Hayakawa, Keiichi; and Yamamoto, Yasuo, to Du Pont de Nemours, E. I., and Company. Chip resistor. 5,379,016, Cl. 338-308.000.
- Smith, Jerry, to McKinley Group, The. Key-releasable restraint. 5,377,510, Cl. 70-16.000.
- Smith, Peter M.: See—
Conway-Jones, David C.; and Smith, Peter M., 5,379,399, Cl. 395-425.000.
- Smith, Philip M.: See—
Vidacovich, Kenneth J.; Smith, Philip M.; Scherer, Richard J.; and McKittrick, William D., 5,378,164, Cl. 439-188.000.
- Smith, R. Michael. Tool for driving a tubular stake. 5,377,768, Cl. 173-90.000.
- Smith, Ted M.; and Winstead, Russell E., to International Business Machines Corporation. Electrodynamic pump for dispensing molten solder. 5,377,961, Cl. 266-237.000.
- Smith, Thomas J.; Ashton, Paul; and Pearson, Paul A., to University of Kentucky Research Foundation. Sustained release drug delivery devices. 5,378,475, Cl. 424-473.000.
- Smiths Industries Limited Company: See—
Merriman, Terence C., 5,379,189, Cl. 361-760.000.
- Smiths Industries Public Limited Company: See—
Davies, Andrew C., 5,378,998, Cl. 330-288.000.
- Sneyers, Hendrik: See—
Defieuw, Geert; Verdonck, Emiel; and Sneyers, Hendrik, 5,378,676, Cl. 503-227.000.
- Snitzer, Elias; and Wei, Kanxian, to Kutger, The State University of New Jersey. Glass compositions having low energy phonon spectra and light sources fabricated therefrom. 5,379,149, Cl. 359-341.000.
- Snyder, Brian A.: See—
Boyer, Bradley P.; Contestable, Paul B.; and Snyder, Brian A., 5,378,629, Cl. 436-17.000.
- Snyder, Edward A., to Hydroacoustics Inc. Friction welder which produces orbital motion and drive therefor. 5,378,951, Cl. 310-17.000.
- Sobe, Alwin: See—
Boedecker, Bernd; Hennings, Friederike; Koelln, Klaus-Juergen; Kuhnaw, Guenther; Peschke, Guenter-Josef; Rehburg, Manfred; Sobe, Alwin; and Stemmler, Berthold, 5,378,462, Cl. 424-94.290.
- Sobotta, Peter; and Maxeiner, Isolde, to Heidelberger Druckmaschinen AG. Feeder of a paper sheet processing machine. 5,377,968, Cl. 271-11.000.
- Sobue, Masahisa: See—
Yasutomi, Yoshiyuki; Nakamura, Kousuke; Kita, Hideki; and Sobue, Masahisa, 5,378,417, Cl. 264-61.000.
- Socier, Timothy R.: See—
Brown, Paul E.; and Socier, Timothy R., 5,377,877, Cl. 222-105.000.
- Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle: See—
Metivaud, Guy; Decidour, Jean-Claude; and Vignollet, Michel, 5,378,530, Cl. 428-246.000.
- Societe Anonyme dite: S.A. Andre Boet: See—
Boet, Jean-Paul, 5,377,534, Cl. 73-116.000.
- Societe de Conseils Et d'Etude des Emballes (S.C.E.E.), Societe Anonyme: See—
Morel, Simone, 5,377,870, Cl. 222-23.000.
- Societe Europeenne de Propulsion: See—
Reig, Patrice; Demazeau, Gerard; and Naslain, Roger, 5,378,661, Cl. 501-2.000.
- Societe Nationale Industrielle et Aerospatiale: See—
Blot, Philippe; Augereau, Joel; Bretagne, Joel; and Dittberner, Jean-Jacques, 5,378,134, Cl. 425-149.000.
- Societe Technique de Pulverisation S.T.E.P.: See—
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- Soda, Yasuji: See—
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- Soeda, Koji: See—
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- Soga, Mamoru: See—
Ogawa, Kazufumi; Soga, Mamoru; and Ikuta, Shigeo, 5,378,521, Cl. 428-85.000.
- Sohgawa, Masafumi: See—
Nakayama, Manabu; Abe, Kouji; Sohgawa, Masafumi; and Isogawa, Atsushi, 5,378,180, Cl. 440-89.000.

- Soikkeli, Osmo, to Oy Partek Ab. Process for curing pipe insulation. 5,378,424, Cl. 264-313.000.
- Sokola, Raymond L.; and Krause, Joseph P., to Motorola, Inc. Surface mount ceramic filter duplexer having reduced input/output coupling and adjustable high-side transmission zeroes. 5,379,011, Cl. 333-206.000.
- Solar, Matthew S.: See—
Hammersmark, Dan J.; Wood, Timothy J.; and Solar, Matthew S., 5,378,235, Cl. 604-95.000.
- Solly, Richard K.; Power, Alan J.; Beranek, Ludek A.; Marshman, Shiela J.; Pedley, Joanna F.; and Hiley, Robin W., to Commonwealth of Australia, The; and United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in her Britannic Majesty's Government of the. Method of testing oils. 5,378,632, Cl. 436-60.000.
- Solomon, Gary, to Intel Corporation. Configuration data loopback in a bus bridge circuit. 5,379,384, Cl. 395-325.000.
- Solov, Andrew: See—
Carey, William S.; Solov, Andrew; Freese, Donald T.; and Perez, Libardo A., 5,378,372, Cl. 210-697.000.
- Somar Corporation: See—
Taguchi, Hiroshi; Washizaki, Yoichi; Igarashi, Akira; and Nakano, Hiroyoshi, 5,378,273, Cl. 156-362.000.
- Sombroek, Johannes: See—
Raddatz, Peter; Gante, Joachim; Sombroek, Johannes; Schmitges, Claus J.; and Minck, Klaus-Otto, 5,378,691, Cl. 514-18.000.
- Somerville, Christopher R.: See—
Bedbrook, John R.; Chaleff, Roy S.; Falco, Saverio C.; Mazur, Barbara J.; Somerville, Christopher R.; and Yadav, Narendra S., 5,378,824, Cl. 536-23.600.
- Song, Jin-Il, to Samsung Electronics Co., Ltd. Linear interpolating method for robot control. 5,379,367, Cl. 395-87.000.
- Song, Ki H., to Goldstar Co., Ltd. Video motion compensation circuit. 5,379,076, Cl. 348-699.000.
- Songe, Lloyd J., Jr.; and Pertuit, Jimmy. Oil and gas well logging system. 5,377,540, Cl. 73-151.000.
- Sonobe, Katsuyoshi; and Iwase, Morikazu, to Brother Kogyo Kabushiki Kaisha. Cutting device. 5,377,572, Cl. 83-583.000.
- Sony Corporation: See—
Uehara, Masahiro, 5,378,071, Cl. 400-636.100.
- Sony Corporation: See—
Hamasaki, Masaharu, 5,379,068, Cl. 348-322.000.
- Iizuka, Tetsuya, 5,379,125, Cl. 358-443.000.
- Ikeda, Rikio, 5,378,963, Cl. 313-495.000.
- Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,379,153, Cl. 360-27.000.
- Kaneko, Masahiko; Aratani, Katsuhisa; and Muto, Yoshihiro, 5,379,275, Cl. 369-13.000.
- Kato, Naoki, 5,379,064, Cl. 348-248.000.
- Kondo, Tetsujiro, 5,379,072, Cl. 348-441.000.
- Miura, Hisanori, 5,379,067, Cl. 348-311.000.
- Nagai, Michio, 5,379,151, Cl. 360-018.000.
- Nagasawa, Hirokazu; Yamaguchi, Masahiro; and Matsumoto, Hiroaki, 5,379,075, Cl. 348-678.000.
- Nagayama, Tetsuji; and Tatsumi, Tetsuya, 5,378,311, Cl. 156-643.000.
- Nemoto, Kazuhiko; Ohata, Toyoharu; and Ogawa, Masamichi, 5,379,314, Cl. 372-46.000.
- Ochiai, Akihiko, 5,378,919, Cl. 257-204.000.
- Odaka, Kentaro; Ozaki, Shinya; Inazawa, Yoshizumi; Yamada, Masaki; and Bramhall, Peter, 5,379,152, Cl. 360-48.000.
- Okafuji, Takayuki; and Tanaka, Norio, 5,379,164, Cl. 360-70.000.
- Onozuka, Kuniharu, 5,379,080, Cl. 353-37.000.
- Owa, Hideo, 5,379,119, Cl. 358-310.000.
- Saito, Etsuro, 5,377,893, Cl. 226-196.000.
- Suzuki, Akira; and Kobayashi, Daiki, 5,378,517, Cl. 428-64.000.
- Takahashi, Kenichi; and Noda, Kazuhiro, 5,378,381, Cl. 252-62.200.
- Takeda, Minoru; and Negishi, Michio, 5,379,251, Cl. 365-174.000.
- Tanaka, Hideo, 5,379,436, Cl. 395-750.000.
- Wachi, Shigeaki, 5,379,282, Cl. 369-44.350.
- Yamaguchi, Yoshihiro, 5,377,452, Cl. 451-1.000.
- Yanagida, Toshiharu, 5,378,653, Cl. 437-194.000.
- Sorensen, Joseph A., to Petersen Manufacturing Co., Inc. Bicycle tool. 5,377,567, Cl. 81-426.000.
- Sorge, Anthony M.: See—
Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., 5,378,359, Cl. 210-198.200.
- Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., 5,378,360, Cl. 210-198.200.
- Sorini, & Migliavacca S.p.A.: See—
Sorini, Paolo, 5,377,842, Cl. 206-581.000.
- Sorini, Paolo, to Sorini & Migliavacca S.p.A. Container of devices for cosmetic and personal hygiene purposes, such as make-up brushes and shaving-brushes, lipsticks, applicators in general, perfume dispensers, toothbrushes and so on. 5,377,842, Cl. 206-581.000.
- Sosna, Friedrich: See—
Mugge, Joachim; and Sosna, Friedrich, 5,378,769, Cl. 525-425.000.
- Southern California Edison Company: See—
Fernandes, Roosevelt A.; and Krabbe, Kurt P., 5,379,320, Cl. 375-1.000.
- Sovero, Emilio A., to Rockwell International Corporation. HBT with semiconductor ballasting. 5,378,922, Cl. 257-582.000.
- Spangler, James E.: See—
Arterbury, Bryant A.; Restarick, Henry L.; and Spangler, James E., 5,377,750, Cl. 166-205.000.
- Sparks, David C.; Belfie, Luke; Bruder, Dave; Werner, Christian T.; and Widenhofer, James W., to Sparton Corporation. Buoyancy control system. 5,379,267, Cl. 367-18.000.
- Sparton Corporation: See—
Sparks, David C.; Belfie, Luke; Bruder, Dave; Werner, Christian T.; and Widenhofer, James W., 5,379,267, Cl. 367-18.000.
- Speake, David W.: See—
Lei, Xiao P.; Speake, David W.; and Zakikhani, Mohsen, 5,378,243, Cl. 8-196.000.
- Speaker, Lawrence W.: See—
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- Spectranetics Corporation, The: See—
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- Speese, Scott; and Arvanigian, Gregory, to Arvco Container Corporation. Pallet and pallet runner of corrugated cardboard. 5,377,600, Cl. 108-51.300.
- Spencer Turbine Company, The: See—
Poor, James C., 5,378,354, Cl. 210-188.000.
- Sperduti, David; Adler, Randy W.; and Brezee, Victor L., to New Venture Gear, Inc. Hydraulically-actuated shift system for a transfer case. 5,377,800, Cl. 192-85.0CA.
- Spinks, Gerald R.: See—
Brooks, Frank W., Sr.; and Spinks, Gerald R., 5,377,789, Cl. 188-20.000.
- Sprecker, Mark A.; Belko, Robert P.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Process for preparing mixture of trimethyl and dimethylmethylene propyl polyhydropyrans, products produced thereby perfumery uses of such product. 5,378,685, Cl. 512-11.000.
- Spurlock, Lori L.: See—
Merchant, Zohar M.; Wrezel, Paul W.; Spurlock, Lori L.; and Carpenter, Donald E., 5,378,487, Cl. 426-580.000.
- SQ Services AG: See—
Wirth, Heinz, 5,377,921, Cl. 241-29.000.
- Stabilus GmbH: See—
Knopp, Axel; Binder, Andreas; Hosan, Hans-Josef; and Fuhrmann, Castor, 5,377,942, Cl. 248-161.000.
- Stadler, Peter: See—
v. Schnakenburg, Joachim; Perings, Dieter; Wagner, Siegfert; Keutgen, Franz; Winterhager, Rudiger; and Stadler, Peter, 5,377,743, Cl. 164-440.000.
- Staffin, Kenneth H.; and Bruce, David S., to Procyne Corp.; and David Bruce, a part interest. Fluidized multistaged reaction system for polymerization. 5,378,434, Cl. 422-141.000.
- Staiger, Ulrich, to Eastman Kodak Company. Method of automatically focusing glass-mounted and glassless slides in slide projectors. 5,379,082, Cl. 353-101.000.
- Stair, Mark T.: See—
Nolan, Thomas R.; Stair, Mark T.; and Kung, Patrick S., 5,379,030, Cl. 340-825.030.
- Stanley, Keith D.; and Harris, Donald W., to A.E. Staley Manufacturing Co. Method of preparing a starch hydrolysate, an aqueous starch hydrolysate dispersion, method of preparing a food containing a starch hydrolysate, and a food formulation containing a starch hydrolysate. 5,378,491, Cl. 426-661.000.
- Stanley, Keith D.: See—
Chiou, Ruth G.; Brown, Cheryl C.; Little, Jeanette A.; Young, Austin H.; Schanefelt, Robert V.; Harris, Donald W.; Stanley, Keith D.; Coontz, Helen D.; Hamdan, Carolyn J.; Wolf-Rueff, Jody A.; Slowinski, Lori A.; Anderson, Kent R.; Lehnhardt, William F.; and Witczak, Zbigniew J., 5,378,286, Cl. 127-36.000.
- Stanley, Thomas R.; Kelley, Mark D.; and Glass, Richard S., to Teepak, Inc. Vacuum stuffing horn and method for using same. 5,378,193, Cl. 452-45.000.
- Stappaerts, Eddy A., to Northrop Grumman Corporation. Holographic system for interactive target acquisition and tracking. 5,378,888, Cl. 250-201.900.
- Stark, Edward W. Signal processing method and apparatus. 5,379,238, Cl. 364-578.000.
- Starkey, Daniel C.: See—
Johnson, Mack E.; Price, Macy J., Jr.; Drabczyk, Matthew P.; Starkey, Daniel C.; and Pickles, Timothy J., 5,377,951, Cl. 248-639.000.
- Stec, Inc.: See—
Mihira, Hiroshi; Shimizu, Tetsuo; Hirahara, Kazuhiro; Ishihara, Toshinobu; and Takaya, Seiki, 5,377,616, Cl. 117-104.000.
- Stech, Clyde G., to MARKS-RMS, Inc. Driven axle vehicle inflation system. 5,377,736, Cl. 152-417.000.
- Steen, Dirk L.; Wilcox, Malcolm W.; and Martin, Thomas W., to Minnesota Mining and Manufacturing Company. Compact dental dispensing tray with sliding cover. 5,377,823, Cl. 206-63.500.
- Steichen, Richard T.: See—
Oakes, Shawn A.; Steichen, Richard T.; Freitas, Michael S.; Toma, Joseph G., Jr.; and Gray, Daryl J., 5,377,862, Cl. 220-513.000.
- Stein, Philip D.; Hunt, John T.; and Murugesan, Natesan, to Bristol-Myers Squibb Co. Sulfonamide endothelin antagonists. 5,378,715, Cl. 514-329.000.
- Steinbach, Klaus: See—
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- Steinberg, John D. Electromagnetic cursor control device for a computer display. 5,379,053, Cl. 345-157.000.

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 Alig, Leo; Hadvary, Paul; Hurler, Marianne; Muller, Marcel; Steiner, Beat; and Weller, Thomas, 5,378,712, Cl. 514-315.000.
 Steinhardt, Paul J.; and Taylor, Philip, to University of Pennsylvania. The Trustees of the. Methods and apparatus for eliminating moire interference using quasiperiodic patterns. 5,379,118, Cl. 358-298.000.
 Steinhilber, Friedhelm. Method and device for separating sheet-type recording media. 5,377,969, Cl. 271-21.000.
 Steiniger, Gerhard: See—
 Imai, Nobuhiko; Sekiguchi, Mamoru; Kano, Mitsuru; Krug, Thomas; Steiniger, Gerhard; and Meier, Andreas, 5,378,506, Cl. 427-529.000.
 Steinke, Michael E. Mount for redressably mounting a sign. 5,377,945, Cl. 248-292.100.
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 Stendel, Wilhelm: See—
 Uhr, Hermann; Marhold, Albrecht; Bohm, Stefan; Erdelen, Christoph; Wachendorf-Neumann, Ulrike; and Stendel, Wilhelm, 5,378,724, Cl. 514-424.000.
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 Stengl, Gerhard: See—
 Chalupka, Alfred; Stengl, Gerhard; and Vonach, Herbert, 5,378,917, Cl. 250-492.210.
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 Stenzhorn, Klaus: See—
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 Bron, Jan; Sterk, Geert J.; Timmerman, Hendrik; and Van Der Werf, Jan F., 5,378,718, Cl. 514-356.000.
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 Stern, Anne; and Wolff, Karin, to Boehringer Mannheim GmbH. Specific detection of *Neisseria gonorrhoeae*. 5,378,606, Cl. 435-6.000.
 Sternberg, Nat L.; and Sauer, Brian L., to Du Pont de Nemours, E. I., and Company. Vitro headful packaging system for cloning DNA fragments as large as 95kb. 5,378,618, Cl. 435-172.300.
 Sterrett, Terry L., to Ormco Corporation. Polyurethane biomedical devices & method of making same. 5,378,146, Cl. 433-11.000.
 Sterzel, Hans-Josef, to BASF Aktiengesellschaft. Foamed polylactide moldings and production thereof. 5,378,792, Cl. 521-138.000.
 Stetz, Thomas T., III: See—
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 Stevenson, Charles F.: See—
 Campbell, Albert E., Jr.; and Stevenson, Charles F., 5,378,086, Cl. 405-229.000.
 Stevenson, Paul D., to General Motors Corporation. Transmission control valve system. 5,378,207, Cl. 475-135.000.
 Stevenson, Thomas M.: See—
 Drumm, Joseph E., III; Lett, Renee M.; and Stevenson, Thomas M., 5,378,708, Cl. 514-256.000.
 Stewart, John C. M.: See—
 Horrobin, David F.; and Stewart, John C. M., 5,378,732, Cl. 514-560.000.
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 Summerton, James E.; Weller, Dwight D.; and Stirschak, Eugene P., 5,378,841, Cl. 544-118.000.
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 Stone, Thomas L.: See—
 Sindeband, Seymour J.; and Stone, Thomas L., 5,379,269, Cl. 367-127.000.
 Storage Technology Corporation: See—
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 Stratagene: See—
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 Strong, Henry L., to American Cyanamid Company. 5,6-disubstituted-3-pyridylmethyl ammonium halide compounds useful for the preparation of 5-(substituted methyl)-2,3-pyridinedicarboxylic acids. 5,378,843, Cl. 544-215.000.
 Stropko, John J. Fluid dispensing assembly and adapter means therefor. 5,378,149, Cl. 433-80.000.
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 Brown, Michael S.; Goldstein, Joseph L.; Russell, David W.; Sudhof, Thomas C.; and Martin, David W., Jr., 5,378,603, Cl. 435-6.000.
 Suffis, Robert; Barr, Morton L.; Ishida, Kenya; Sawano, Kiyohito; Sato, Toshiya; and van Loveren, Augustinus G., to Mennen Company, The; and Takasago International Corporation. Composition containing body activated fragrance for contacting the skin and method of use. 5,378,468, Cl. 424-401.000.
 Suga, Kazumi; and Hasegawa, Taketo, to Canon Kabushiki Kaisha. Method and apparatus for rearranging and displaying line data. 5,379,051, Cl. 345-97.000.
 Sugimoto, Norihiko: See—
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 Sugiura, Satoshi, to Pioneer Electronic Corporation. Recording medium and information recording and reproducing apparatus therefor. 5,379,285, Cl. 369-100.000.
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 Abe, Masahiro; Sugiura, Tatsumi; Nanataki, Tsutomu; and Yano, Shinsuke, 5,378,663, Cl. 501-32.000.
 Sugiyama, Hiromu: See—
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 Sugiyama, Keiichi; Takada, Koji; and Yamamoto, Ikuo, to Lion Corporation. Composition for preventing graying of the hair and restoring grayed hair to its natural color. 5,378,453, Cl. 424-70.100.
 Sugiyama, Yukihiro: See—
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 Sakai, Takashi; Jinbo, Kishio; Makiyama, Koiehi; Kubo, Masahiko; Shoji, Yoshio; Asaka, Kazuo; Sugizaki, Yutaka; and Matsuda, Tsukasa, 5,378,576, Cl. 430-126.000.
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Suman, Danny L.; Rumsey, Wayne J.; and De Kleine, Paul C., to Gentex Corporation. Breakaway rearview mirror mounting bracket. 5,377,948, Cl. 248-549.000.
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 Sumitomo Electric Industries, Ltd.: See—
 Hikata, Takeshi; and Sato, Kenichi, 5,378,684, Cl. 505-430.000.
 Yoshino, Masato, 5,378,052, Cl. 303-3.000.
 Sumitomo Metal Industries, Ltd.: See—
 Otsuka, Nobuo; and Kudo, Takeo, 5,378,427, Cl. 420-586.100.
 Sumitomo Rubber Industries, Ltd.: See—
 Kubota, Akinori; Kubota, Yoshiya; Okamoto, Shoji; Ijiri, Masaaki; and Soeda, Koji, 5,378,425, Cl. 264-315.000.
 Ohnishi, Akio, 5,377,985, Cl. 273-169.000.
 Sumitomo Wiring Systems: See—
 Sumida, Tatsuya, 5,378,168, Cl. 439-358.000.
 Sumitomo Wiring Systems, Ltd.: See—
 Kawamura, Shigetoshi, 5,379,362, Cl. 385-92.000.
 Kobayashi, Yoshinori, 5,377,640, Cl. 123-143.000.
 Sasaki, Osamu, 5,378,176, Cl. 439-752.000.
 Summa, William J.: See—
 Cibulsky, Michael J.; Papathomas, Konstantinos I.; Summa, William J.; Wang, David W.; and Zippitelli, Patrick R., 5,378,306, Cl. 156-630.000.
 Summerton, James E.; Weller, Dwight D.; and Stirschak, Eugene P., to Antivirals Inc. Alpha-morpholino ribonucleoside derivatives and polymers thereof. 5,378,841, Cl. 544-118.000.
 Sun Microsystems, Inc.: See—
 Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shalo, Sami, 5,379,426, Cl. 395-650.000.
 Levi, Marc E., 5,379,303, Cl. 371-27.000.
 Sunbeam Plastics Corporation: See—
 Minnette, Jeffrey C., 5,377,873, Cl. 222-48.000.
 Suncast Corporation: See—
 Cashen, Richard E., 5,377,601, Cl. 108-157.000.
 Suncor, Inc.: See—
 White, Richard J., 5,377,818, Cl. 198-844.200.
 Sunkara, Ramu V.: See—
 Heffernan, John S.; Savage, Peter L.; Pittman, Steven J.; and Sunkara, Ramu V., 5,379,419, Cl. 395-600.000.
 Suomalainen, Tarja: See—
 Mayra-Makinen, Annika; and Suomalainen, Tarja, 5,378,458, Cl. 424-93.300.
 Suppelsa, Anthony B.: See—
 Gold, Glenn E.; Suppelsa, Anthony B.; and Suppelsa, Anthony J., 5,379,186, Cl. 361-706.000.
 Suppelsa, Anthony J.: See—
 Gold, Glenn E.; Suppelsa, Anthony B.; and Suppelsa, Anthony J., 5,379,186, Cl. 361-706.000.
 Surber, Kevin J.: See—
 Miller, Mark S.; and Surber, Kevin J., 5,378,478, Cl. 426-40.000.
 Surles, Billy W., to Texaco Inc. Formation treating methods. 5,377,759, Cl. 166-295.000.
 Sutardja, Sehat: See—
 Fandrianto, Jan; Wang, Chi S.; Sutardja, Sehat; Rainnie, Hedley K. J.; and Martin, Bryan R., 5,379,351, Cl. 382-41.000.
 Sutherland, Robert J.: See—
 Kelly, Thomas; Mackenzie, Lewis M.; and Sutherland, Robert J., 5,379,440, Cl. 395-800.000.
 Suwa, Nobuyuki; Nishimura, Akio; Miyama, Susumu; and Katoh, Shinji, to Mitsubishi Kasei Corporation. Process for making an anti-foaming agent-containing beverage. 5,378,484, Cl. 426-329.000.
 Suzuki, Akira; and Kobayashi, Daiki, to Sony Corporation. Optical disc having signal recording layer on each side and method for producing same. 5,378,517, Cl. 428-64.000.
 Suzuki, Chiaki: See—
 Akiyama, Reiko; Suzuki, Chiaki; Eguchi, Atuhiko; and Aoki, Takayoshi, 5,378,572, Cl. 430-110.000.
 Suzuki, Goro; Iwamura, Masahiro; Yamamoto, Tetsuya; and Okamura, Yoshio, to Hitachi, Ltd. Semiconductor integrated circuit and method and system for designing layout of the same. 5,378,904, Cl. 257-208.000.
 Suzuki, Hideaki: See—
 Yamaguchi, Shuichi; Mochizuki, Seiji; Suzuki, Hideaki; Shinada, Satoshi; and Aida, Mayumi, 5,379,061, Cl. 346-141.000.
 Suzuki, Hideki, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 5,378,897, Cl. 250-484.000.
 Suzuki, Hideya: See—
 Nakagoshi, Arata; Suzuki, Hideya; Yamamoto, Yoshinobu; Shimbo, Isao; Furuya, Tsuneco; and Kuwahara, Hiroshi, 5,379,451, Cl. 455-54.200.

Suzuki, Hiromichi: See—
 Kajihara, Yujiro; Suzuki, Kazunari; Tsubosaki, Kunihiro; Suzuki, Hiromichi; Miyaki, Yoshinori; Naito, Takahiro; and Kawai, Sueo, 5,378,656, Cl. 437-217.000.
 Suzuki, Hitoshi: See—
 Hirasawa, Shigeki; Mori, Kinji; Orimo, Masayuki; Takeuchi, Masuyuki; Fujise, Hiroshi; Suzuki, Hitoshi; and Koai, Ichitaro, 5,379,429, Cl. 395-700.000.
 Suzuki, Kazunari: See—
 Kajihara, Yujiro; Suzuki, Kazunari; Tsubosaki, Kunihiro; Suzuki, Hiromichi; Miyaki, Yoshinori; Naito, Takahiro; and Kawai, Sueo, 5,378,656, Cl. 437-217.000.
 Suzuki, Kisoko: See—
 Mori, Yoshihiro; Endo, Koichiro; Suzuki, Kisoko; and Kitagawa, Hidemasa, 5,379,380, Cl. 395-275.000.
 Suzuki, Kouji: See—
 Sato, Takashi; Kurosawa, Yukio; Suzuki, Kouji; Hashimoto, Akira; and Endo, Shunkichi, 5,379,014, Cl. 335-177.000.
 Suzuki, Kunio: See—
 Hasuo, Hiromi; Suzuki, Kunio; and Minoura, Sakichi, 5,377,769, Cl. 173-169.000.
 Suzuki, Makoto: See—
 Naruse, Hideaki; and Suzuki, Makoto, 5,378,596, Cl. 430-549.000.
 Suzuki Motor Corporation: See—
 Ohno, Moriyo; and Nakada, Yasuhisa, 5,378,031, Cl. 293-102.000.
 Suzuki, Nobuyuki: See—
 Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.
 Suzuki, Norio: See—
 Kitagawa, Hiroshi; and Suzuki, Norio, 5,377,562, Cl. 477-110.000.
 Suzuki, Shiro: See—
 Komma, Tetsuko; Kimura, Kenji; Asai, Yoshimi; and Suzuki, Shiro, 5,379,369, Cl. 395-119.000.
 Suzuki, Tetsuji: See—
 Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; Bonde, Hiroyuki; and Matsumura, Tsutomu, 5,379,135, Cl. 359-40.000.
 Suzuki, Yasutomo: See—
 Yamagata, Shigeo; Suzuki, Yasutomo; and Takei, Masahiro, 5,379,158, Cl. 360-9.100.
 Swales, John T., to Advanced Interconnection Technology, Inc. Directly bondable termination for a fixed discrete wire. 5,378,857, Cl. 174-251.000.
 Swaminathan, Madhavan: See—
 McAllister, Michael F.; McDonald, James A.; Prasad, Keshav; Robbins, Gordon J.; and Swaminathan, Madhavan, 5,378,927, Cl. 257-773.000.
 Swanson, Malcolm L., to Astec Industries, Inc. Dust recycling for soil remediation system. 5,378,083, Cl. 405-128.000.
 Swanson, Malcolm L.: See—
 Brock, J. Don; Mize, Erbie G.; and Swanson, Malcolm L., 5,378,060, Cl. 366-25.000.
 Swarts, Jeffery L.; Fields, James S., Jr.; Guthrie, Guy L.; and Smetana, Denis A., Jr., to International Business Machines Corp. Micro channel interface controller. 5,379,386, Cl. 395-325.000.
 Swartz, Mark A.: See—
 Besch, Gordon O.; Kachik, Robert H.; Swartz, Mark A.; Kuster, Frank K.; and Guntermann, Hans J., 5,377,959, Cl. 266-167.000.
 Swinderman, R. Todd, to Martin Engineering Company. Tensioning device. 5,378,202, Cl. 474-92.000.
 Swirbel, Thomas J.: See—
 Williams, Melanie; and Swirbel, Thomas J., 5,378,298, Cl. 156-275.500.
 Swisher, George W., Jr. Milling machine with front-mounted cutter. 5,378,081, Cl. 404-90.000.
 Switzer, Robert D. Cartridge clip reloader. 5,377,436, Cl. 42-87.000.
 Sychra, Marcel: See—
 Greber, Gerhard; deceased; Gruber, Heinrich; and Sychra, Marcel, 5,378,799, Cl. 528-342.000.
 Sykes, Philip K.; and Barnett, Dennis B. Compact disc storage case. 5,377,825, Cl. 206-232.000.
 Sylvester, Keith V.: See—
 Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., 5,378,359, Cl. 210-198.200.
 Huse, William D.; Sorge, Anthony M.; and Sylvester, Keith V., 5,378,360, Cl. 210-198.200.
 Symbol Technologies, Inc.: See—
 Gong, Frank; Gofman, Yuri; and Breymann, Alex, 5,378,882, Cl. 235-472.000.
 Syms, R. R. A.: See—
 Green, Mino; Syms, R. R. A.; Holmes, Andrew S.; Ueki, Ken; and Yanagawa, Hisaharu, 5,378,256, Cl. 65-395.000.
 Syntex Pharmaceuticals, Ltd.: See—
 McCort, Gary; and Pascal, Jean-Claude, 5,378,847, Cl. 544-370.000.
 Syntex (U.S.A.) Inc.: See—
 Hu, Mae W.-L.; Schulkamp, Kirk; Lin, Cheng-I, and Ullman, Edwin F., 5,378,636, Cl. 436-500.000.
 Szablikowski, Klaus: See—
 Hoppe, Lutz; Haase, Bernd; Brauer, Oke; and Szablikowski, Klaus, 5,378,826, Cl. 536-35.000.
 Szabo, George, to ITT Corporation. Quick connector with integral release member. 5,378,025, Cl. 285-39.000.

Szalay, John S.: See—
Feigenbaum, Haim; Szalay, John S.; and Woith, Blake F., 5,378,982, Cl. 324-770.000.

Szpak, Peter S.: See—
LoRusso, Julian A.; Cook, Jeffrey A.; Szpak, Peter S.; and Grizzle, Jessy W., 5,377,654, Cl. 123-673.000.

Tabata, Kaoru: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippei; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Tachibana, Tetsuo: See—
Ishibashi, Ryoichi; Tachibana, Tetsuo; and Ohmori, Hisakazu, 5,379,307, Cl. 371-62.000.

Tackett, Eldon L.: See—
Markin, Rodney S.; Tackett, Eldon L.; and Hoskinson, Stephen J., 5,377,813, Cl. 198-465.100.

Tadokoro, Tomio: See—
Aoki, Kazuaki; Tadokoro, Tomio; and Miyazawa, Shozo, 5,378,339, Cl. 204-260.000.

Tagami, Hidetoshi: See—
Tamura, Tadashi; Kiyomine, Akira; Morita, Osamu; Tanaka, Michio; Ogawa, Masahiko; Tagami, Hidetoshi; and Yoshihara, Toru, 5,378,244, Cl. 8-409.000.

Taguchi, Hiroshi; Washizaki, Yoji; Igarashi, Akira; and Nakano, Hiroyoshi, to Somar Corporation. Base plate conveyor, 5,378,273, Cl. 156-362.000.

Taig, Alistair G., to AlliedSignal Inc. Ultrasonic hydraulic booster pump and braking system, 5,378,120, Cl. 417-322.000.

Tajima, Akira: See—
Sato, Masaharu; and Tajima, Akira, 5,379,319, Cl. 379-387.000.

Tajima, Shouchiro: See—
Sugishima, Yoshio; Irie, Youichiro; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouchiro; Asano, Keichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Takada Corporation: See—
Koyanagi, Toshiro; Hashimoto, Yayoi; and Takagi, Haruyuki, 5,378,038, Cl. 297-256.130.

Takada, Kiyoto: See—
Okazaki, Kentaro; Oshima, Naoto; and Takada, Kiyoto, 5,378,594, Cl. 430-545.000.

Takada, Koji: See—
Sugiyama, Keikichi; Takada, Koji; and Yamamoto, Ikuo, 5,378,453, Cl. 424-70.100.

Takada, Susumu; Sasatani, Takashi; Chomei, Nobuo; Adachi, Makoto; and Matsushita, Akira, to Shionogi & Co., Ltd. Condensed imidazopyridine derivatives, 5,378,848, Cl. 546-82.000.

Takagi, Haruyuki: See—
Koyanagi, Toshiro; Hashimoto, Yayoi; and Takagi, Haruyuki, 5,378,038, Cl. 297-256.130.

Takagi, Shinya; Minato, Kazuaki; and Satomura, Masafumi, to Sharp Kabushiki Kaisha. Heat exchanging apparatus and a method of preventing corrosion, 5,377,494, Cl. 62-102.000.

Takahagi, Hidekuni: See—
Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Takahagi, Hidekuni; Iijima, Yasuteru; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,689, Cl. 514-18.000.

Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Iijima, Yasuteru; Takahagi, Hidekuni; Koike, Hiroyuki; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,690, Cl. 514-18.000.

Takahara, Shio: See—
Ohshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shio; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,378,701, Cl. 514-215.000.

Takahara, Yoshimasa: See—
Deguchi, Tetsuya; Nishida, Tomoaki; and Takahara, Yoshimasa, 5,378,738, Cl. 435-262.000.

Takahashi, Kanji: See—
Hamanaka, Nobuyuki; Takahashi, Kanji; and Tokumoto, Hidekado, 5,378,716, Cl. 514-333.000.

Takahashi, Kenichi; and Noda, Kazuhiro, to Sony Corporation. Polymer solid electrolyte composition, 5,378,381, Cl. 252-62.200.

Takahashi, Reiji: See—
Katta, Yasuo; Ohkuma, Kazuhiro; Satouchi, Mitsuko; Takahashi, Reiji; and Yamamoto, Takehiko, 5,378,833, Cl. 536-124.000.

Takahashi, Ryusaku: See—
Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; Bonde, Hiroyuki; and Matsumura, Tsutomu, 5,379,135, Cl. 359-40.000.

Takahashi, Shigeyuki: See—
Ogisu, Yasuhiko; Kato, Mamoru; and Takahashi, Shigeyuki, 5,378,768, Cl. 525-388.000.

Takahashi, Tomohiko; Matsuo, Takashi; Nakatomi, Yoshitsugu; and Kagaya, Koji, to Kabushiki Kaisha Toshiba. Image forming apparatus in which units connected together occupy a relatively small area, 5,379,101, Cl. 355-309.000.

Takahashi, Toshiaki: See—
Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; and Hosoda, Masaaki, 5,378,674, Cl. 503-208.000.

Takahashi, Toshiro; Ohkawa, Masaaki; and Koide, Kazuo, to Hitachi, Ltd. Circuit having a master-and-slave and a by-pass, 5,378,934, Cl. 327-203.000.

Takahashi, Tsutomu; and Nakahama, Shuhei, to Ebara Corporation. Screw rotor and method of manufacturing the same, 5,377,407, Cl. 29-889.000.

Takai, Toshihiro: See—
Asano, Kazuo; and Takai, Toshihiro, 5,378,140, Cl. 425-451.200.

Takai, Yoshimi; Kondo, Jun; Matsui, Yasushi; Teranishi, Yutaka; and Matsui, Rie, to Mitsubishi Kasei Corporation. Mutant Smg p21 protein with GTP binding activity, 5,378,810, Cl. 530-350.000.

Takama, Kazushi: See—
Isoai, Masaru; Harada, Toshiharu; Kurata, Tokihiro; Fujita, Kazuhiro; Takama, Kazushi; and Jikuhara, Shigekazu, 5,378,380, Cl. 252-62.560.

Takamoto, Hiroshi; and Etou, Mikio, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit for producing activation signals at different cycle times, 5,378,950, Cl. 327-401.000.

Takano, Isamu, to NEC Corporation. Optical regenerative-repeater system, 5,379,143, Cl. 359-177.000.

Takao, Osamu, to Chuo Electronic Measurement Co., Ltd. Method of, and apparatus for, detecting optical axis of headlamp, 5,379,104, Cl. 356-121.000.

Takarada, Shinichi: See—
Ezawa, Naoya; Noguchi, Naoki; Takarada, Shinichi; and Matsuzawa, Masahiro, 5,378,968, Cl. 318-568.100.

Takasago International Corporation: See—
Suffis, Robert; Barr, Morton L.; Ishida, Kenya; Sawano, Kiyohito; Sato, Toshiya; and van Loveren, Augustinus G., 5,378,468, Cl. 424-401.000.

Takashima, Kazunori, to Canon Kabushiki Kaisha. Image forming apparatus with casing latching and opening feature, 5,379,092, Cl. 355-200.000.

Takashima, Masaru, to Aikoh Co., Ltd. Mold release material for die castings, 5,378,270, Cl. 106-38.220.

Takata, Koichi: See—
Daimaru, Koji; Takata, Koichi; Yoshizawa, Kenichi; and Shoji, Masahiro, 5,378,218, Cl. 483-9.000.

Takaya, Seiki: See—
Mihira, Hiroshi; Shimizu, Tetsuo; Hirahara, Kazuhiro; Ishihara, Toshihiro; and Takaya, Seiki, 5,377,616, Cl. 117-104.000.

Takayama, Seishiro: See—
Matsubara, Hidetsugu; Tanaka, Yasuo; Miyagi, Yoshiyuki; Goto, Tsuyoshi; Hatamura, Koichi; and Takayama, Seishiro, 5,377,649, Cl. 123-559.100.

Takeda, Minoru; and Negishi, Michio, to Sony Corporation. Method and apparatus for static RAM, 5,379,251, Cl. 365-174.000.

Takeda, Tomoyuki: See—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

Takeda, Yusuke: See—
Obu, Makoto; Hotta, Yoshihiko; Masubuchi, Fumihito; Miyawaki, Katsuaki; Takeda, Yusuke; and Kawakubo, Toshio, 5,379,058, Cl. 346-76.0PH.

Takegawa, Tomohiro; Tasaki, Akira; and Koinuma, Hiroshi, to Pioneer Electronic Corporation. Station selection device in tuner for automatic selection according to input information, 5,379,454, Cl. 455-158.500.

Takehana, Tadashi: See—
Nakanishi, Ken; Takehana, Tadashi; Tamaki, Hiroyuki; and Nishikawa, Sumio, 5,378,592, Cl. 430-533.000.

Takei, Masahiro: See—
Yamagata, Shigeo; Suzuki, Yasutomo; and Takei, Masahiro, 5,379,158, Cl. 360-9.100.

Takemoto, Shin: See—
Fujiwara, Takaaki; Watanabe, Shoji; Takemoto, Shin; and Harano, Yoshiyuki, 5,378,736, Cl. 522-170.000.

Takenaka, Toru; and Hirose, Masato, to Honda Giken Kogyo Kabushiki Kaisha. Actuator driving method, 5,378,972, Cl. 318-568.220.

Takeuchi, Kenichi: See—
Murata, Kazuo; Takeuchi, Kenichi; Izuchi, Syuichi; and Kato, Shiro, 5,378,557, Cl. 429-127.000.

Takeuchi, Masaaki, to E.R.C. Company Ltd. System for identifying jewels, 5,379,102, Cl. 356-30.000.

Takeuchi, Masuyuki: See—
Hirasawa, Shigeki; Mori, Kinji; Orimo, Masayuki; Takeuchi, Masuyuki; Fujise, Hiroshi; Suzuki, Hitoshi; and Koai, Ichitaro, 5,379,429, Cl. 395-700.000.

Takeuchi, Shinji, to Daiwa Seiko, Inc. Extended cover for a cover type fishing reel, 5,377,924, Cl. 242-238.000.

Takeyama, Toshihisa; Kitamura, Shigehiro; and Koshizuka, Kunihiro, to Konica Corporation. Thermal transfer recording image receiving sheet, 5,378,675, Cl. 503-227.000.

Takigawa, Masuo: See—
Kusakabe, Hiroki; Okauchi, Tohru; and Takigawa, Masuo, 5,377,547, Cl. 73-723.000.

Takishima, Tohru, to NEC Corporation. State tracer system, 5,379,416, Cl. 395-575.000.

Takishima, Yasuhiro: See—
Wada, Masahiro; and Takishima, Yasuhiro, 5,379,116, Cl. 358-431.000.

Takizawa, Hiroo; and Makuta, Toshiyuki, to Fuji Photo Film Co., Ltd. Silver halide photo-sensitive material, 5,378,595, Cl. 430-546.000.

Talaat, Mohamed M.: See—
Papenberg, Robert L.; Yang, Runchan D.; Wotring, David H.; Rydhan, Mohammad F.; Voloshin, Paul; and Talaat, Mohamed M., 5,379,415, Cl. 395-575.000.

Taligent, Inc.: See—
Lemon, Steven P.; and Ross, Patrick D., 5,379,431, Cl. 395-700.000.

Nguyen, Frank T., 5,379,430, Cl. 395-700.000.

Orton, Debra L.; Bolton, Eugenie L.; Chernikoff, Daniel F.; Goldsmith, David B.; and Moeller, Christopher P., 5,379,432, Cl. 395-700.000.

Taller GmbH: See—
Waible, Thomas, 5,378,162, Cl. 439-106.000.

Talreja, Sanjay S.: See—
Hazer, Peter K.; Talreja, Sanjay S.; and Rozman, Rodney R., 5,379,413, Cl. 395-575.000.

Tamaki, Hiroyuki: See—
Nakanishi, Ken; Takehana, Tadashi; Tamaki, Hiroyuki; and Nishikawa, Sumio, 5,378,592, Cl. 430-533.000.

Tamaki, Kenji: See—
Kawashima, Yoshinori; Tamaki, Kenji; Motodate, Shoji; Nakazawa, Yoshihiro; Toriyama, Masayuki; Maeda, Noriyuki; and Osanai, Yoshimi, 5,377,791, Cl. 188-159.000.

Tamfelt Oy Ab: See—
Jaala, Erkki, 5,377,722, Cl. 139-383.0AA.

Tamura, Hiroshi: See—
Tanaka, Shigenori; and Tamura, Hiroshi, 5,378,610, Cl. 435-18.000.

Tamura, Shigeki: See—
Sugishima, Yoshio; Irie, Youichiro; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouchiro; Asano, Keichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

Tamura, Tadashi; Kiyomine, Akira; Morita, Osamu; Tanaka, Michio; Ogawa, Masahiko; Tagami, Hidetoshi; and Yoshihara, Toru, to KAO Corporation. 2-alkoxy-3,5-diaminopyridine derivatives and their salts, and dye compositions for keratinous fibers containing the derivatives or salts, 5,378,244, Cl. 8-409.000.

Tamura, Yoshihisa: See—
Fujimori, Hideaki; Ishikawa, Tetsu; Tamura, Yoshihisa; and Imaizumi, Minoru, 5,379,182, Cl. 361-681.000.

Tan, Geroncio: See—
Griffin, Curtis; Siomkos, John R.; and Tan, Geroncio, 5,379,185, Cl. 361-709.000.

Tanabe Seiyaku Co., Ltd.: See—
Shibatani, Takeji; Matsumae, Hiroaki; and Kawai, Eri, 5,378,627, Cl. 435-280.000.

Tanaka, Akihiro; Fujikura, Takashi; Tsuzuki, Ryuji; Yokota, Masaki; and Yatsu, Takeyuki, to Yamanouchi Pharmaceutical Co., Ltd. Substituted tetrahydroisoquinoline compounds, and process for producing them, and composition containing them, 5,378,849, Cl. 546-114.000.

Tanaka, Hidekazu, to Sony Corporation. Apparatus and method for responding to abnormal manipulations of an information processing system, 5,379,436, Cl. 395-750.000.

Tanaka, Hideo: See—
Kobori, Takuji; Ban, Shigeru; Kubota, Toshihiko; Nohira, Osamu; Koshika, Norihide; Kondo, Koji; Masuda, Sadaaki; Kitamura, Yoshinori; Tanaka, Hideo; Sato, Hiroomi; and Howe, A. Scott, 5,377,465, Cl. 52-236.300.

Tanaka, Hiroki: See—
Marui, Yoji; Hayashi, Chozo; Ito, Shigeki; Fujio, Miko; Tanaka, Hiroki; Nagasaki, Toshihide; Soda, Yasuji; and Kaneta, Hitoshi, 5,378,608, Cl. 435-7.500.

Tanaka, Hitoshi: See—
Miyazaki, Yoko; Tomoda, Toshimasa; Tanaka, Hitoshi; Kosaka, Nobuyuki; and Ohshige, Toyomi, 5,379,150, Cl. 359-561.000.

Tanaka, Kiyotaka: See—
Sasaki, Masakuni; Shimizu, Yasushi; Yamaguchi, Teruo; and Tanaka, Kiyotaka, 5,378,247, Cl. 29-623.100.

Tanaka, Michio: See—
Tamura, Tadashi; Kiyomine, Akira; Morita, Osamu; Tanaka, Michio; Ogawa, Masahiko; Tagami, Hidetoshi; and Yoshihara, Toru, 5,378,244, Cl. 8-409.000.

Tanaka, Nobuhiro, to Kao Corporation. Method and apparatus for collecting goods, 5,377,811, Cl. 198-418.600.

Tanaka, Nobuo: See—
Ohta, Fumio; Tanaka, Nobuo; Mukasa, Yoshinao; and Gohkura, Akira, 5,377,523, Cl. 73-1.00D.

Tanaka, Norio: See—
Okafuji, Takayuki; and Tanaka, Norio, 5,379,164, Cl. 360-70.000.

Tanaka, Satoshi: See—
Urabe, Mikio; Tanaka, Satoshi; and Tsumura, Kenichiro, 5,378,687, Cl. 514-12.000.

Tanaka, Shigenori; and Tamura, Hiroshi, to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation). Method for assaying endotoxin in serum or plasma using limulus amoebocyte lysate, 5,378,610, Cl. 435-18.000.

Tanaka, Shinji: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Tanaka, Shinya; and Ito, Yoshiyuki, to ASCII Corporation. Pointing device, 5,379,054, Cl. 345-163.000.

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Tanaka, Yasuo: See—
Matsubara, Hidetsugu; Tanaka, Yasuo; Miyagi, Yoshiyuki; Goto, Tsuyoshi; Hatamura, Koichi; and Takayama, Seishiro, 5,377,649, Cl. 123-559.100.

Tanaka, Yoshiyuki: See—
Okamoto, Yutaka; and Tanaka, Yoshiyuki, 5,379,262, Cl. 365-230.010.

Tanaka, Tomoharu; Tanaka, Yoshiyuki; Ohuchi, Kazunori; Momodomi, Masaki; Iwata, Yoshihisa; Sakui, Koji; Saito, Shinji; and Sumihara, Hideki, 5,379,256, Cl. 365-185.000.

Tandberg Data A/S: See—
Pahr, Per O., 5,379,165, Cl. 360-78.020.

Tandem Computers Incorporated: See—
Lui, Albert; and Walker, Mark S., 5,379,417, Cl. 395-575.000.

Taneda, Atsushi, to Mitsubishi Denki Kabushiki Kaisha. Electric discharge machining system having a secondary power supply including a controllable voltage source and impedance, 5,378,866, Cl. 219-69.180.

Tanegashima, Toshihiko: See—
Saiki, Koichi; and Tanegashima, Toshihiko, 5,379,298, Cl. 370-79.000.

Tang, Sing C.; and Carnes, James C., to Ford Motor Company. Method for aiding sheet metal forming tooling design, 5,379,227, Cl. 364-472.000.

Tani, Nobuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Selectively operable plural imaging devices for use with a video recorder, 5,379,069, Cl. 348-333.000.

Tanida, Shinjiro: See—
Ono, Yoshinobu; Watanabe, Yoshio; and Tanida, Shinjiro, 5,377,596, Cl. 104-284.000.

Taniguchi, Etsuo: See—
Asano, Teruo; Nobukawa, Shunji; Taniguchi, Etsuo; and Yokota, Tetsuro, 5,377,851, Cl. 211-191.000.

Taniguchi, Naosato: See—
Kuwayama, Tetsuro; Majima, Toshiaki; Taniguchi, Naosato; Yoshinaga, Yoko; Kishi, Hiroyoshi; and Kushibiki, Nobuo, 5,379,132, Cl. 359-13.000.

Taniguchi, Takashi: See—
Miyoshi, Akira; and Taniguchi, Takashi, 5,379,244, Cl. 364-754.000.

Tanimoto, Hirotoshi: See—
Okumura, Kin-ichi; Torii, Masao; Tanimoto, Hirotoshi; and Yamato, Motoyuki, 5,378,783, Cl. 526-283.000.

Tanitsu, Osamu; and Mori, Takashi, to Nikon Corporation. Illumination optical apparatus and scanning exposure apparatus, 5,379,091, Cl. 355-67.000.

Tank, Klaus; and Tomlinson, Peter N. Wire saw, 5,377,659, Cl. 125-21.000.

Tappon, Ellen R.: See—
Asakawa, Stuart D.; McClelland, Paul H.; Tappon, Ellen R.; Vandepoll, Richard R.; Trueba, Kenneth E.; and Chen, Chien-Hua, 5,378,137, Cl. 425-174.400.

Taravella, Philip; Blair, Edward J.; Domanski, Ronald S.; and Shippell, Joseph C., to Anchor Bay Packaging Corporation. Stackable bin with collapsible corner construction, 5,377,857, Cl. 220-4.330.

Tartaglia, James: See—
Paoletti, Enzo; and Tartaglia, James, 5,378,457, Cl. 424-205.100.

Tasaka, Hideo; and Hirai, Masaaki, to Casio Computer Co., Ltd. Universal pivot switch with a hemispheric pivotal support member, 5,378,862, Cl. 200-6.00A.

Tasaki, Akira: See—
Takegawa, Tomohiro; Tasaki, Akira; and Koinuma, Hiroshi, 5,379,454, Cl. 455-158.500.

Tasker, G. William; and Horton, Jerry R., to Galileo Electro-Optics Corporation. Thin film continuous dynodes for electron multiplication, 5,378,960, Cl. 313-103.0CM.

Tateishi, Hiroshi: See—
Koike, Masahiro; Ueda, Hitoshi; Tateishi, Hiroshi; Shimota, Naohito; and Arai, Fumiaki, 5,378,739, Cl. 523-161.000.

Tatom, Frank B.; and Vitton, Stanley J. Method and apparatus for seismic tornado detection, 5,379,025, Cl. 340-601.000.

Tatsumi, Fujiko: See—
Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; Bonde, Hiroyuki; and Matsumura, Tsutomu, 5,379,135, Cl. 359-40.000.

Tatsumi, Tetsuya: See—
Nagayama, Tetsuji; and Tatsumi, Tetsuya, 5,378,311, Cl. 156-643.000.

Tau, Hun, to Yamaha Hatsudoki Kabushiki Kaisha. Compressor system for reciprocating machine, 5,377,634, Cl. 123-317.000.

Taylor, Dale M.; and Joshi, Ashok V., to Ceramtec, Inc. Ceramic solid electrolyte-based electrochemical oxygen concentrator cell, 5,378,345, Cl. 204-421.000.

Taylor, Kelly: See—
Matherne, Lonny R.; Mower, Barry D.; and Taylor, Kelly, 5,377,976, Cl. 273-1.50R.

Taylor Made Golf Company, Inc.: See—
Viollaz, Francois; and Maestri, Robert, 5,377,986, Cl. 273-173.000.

Taylor, Matthew: See—
Aden, Charles M.; Graham, Martin H.; Taylor, Matthew; and Miller, Mark, 5,379,005, Cl. 333-24.00R.

Taylor, Philip: See—
Steinhardt, Paul J.; and Taylor, Philip, 5,379,118, Cl. 358-298.000.

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- Telegraph and Telephone Corporation. Method for efficient calculation of vertex movement for three-dimensional topography simulation. 5,379,225, Cl. 364-468.000.
- Tazi, Mohammed; and Hilbig, David W., to Morgan Crucible Company plc. Flux. 5,378,290, Cl. 148-23.000.
- TDK Corporation: See—
Tsuyuki, Hiroshi, 5,378,662, Cl. 501-17.000.
- Techno Excel Kabushiki Kaisha: See—
Aoki, Kazuaki; Tadokoro, Tomio; and Miyazawa, Shozo, 5,378,339, Cl. 204-260.000.
- Teepak, Inc.: See—
Stanley, Thomas R.; Kelley, Mark D.; and Glass, Richard S., 5,378,193, Cl. 452-45.000.
- Teijim Limited: See—
Nakatani, Kenji; Igarashi, Satoshi; Inata, Hiroo; and Matsuda, Horinori, 5,378,391, Cl. 252-299.010.
- Teijin Chemicals Ltd.: See—
Ohira, Yoji; and Fujita, Tetsuya, 5,378,794, Cl. 528-167.000.
- Teijin Limited: See—
Makino, Osamu; and Matsui, Michikage, 5,378,538, Cl. 428-364.000.
- Marris, Robert C.; and Hirakawa, Tadashi, 5,378,869, Cl. 219-121.710.
- Nakashima, Kazuyuki; Mimaki, Izumi; Hamamoto, Takayoshi; and Masuda, Kenichi, 5,378,612, Cl. 435-69.600.
- Sakuma, Yasuji; Hasegawa, Masaichi; Kataoka, Kenichiro; Hoshina, Kenji; Yamazaki, Noboru; Kadota, Takashi; and Yamaguchi, Hisao, 5,378,700, Cl. 514-212.000.
- Teintureries de la Turdine: See—
Corbiere, Claude, 5,377,509, Cl. 68-5.00D.
- Tele, Chhagan G.: See—
Usher, Thomas C.; Patel, Natu; and Tele, Chhagan G., 5,378,828, Cl. 536-59.000.
- Teledyne, Inc.: See—
Eldridge, Morton T., 5,378,155, Cl. 434-11.000.
- Teleflex Incorporated: See—
Byrnes, John L., 5,377,556, Cl. 74-502.600.
- Telefonaktiebolaget L. M. Ericsson: See—
Weber, Jean-Pierre, 5,379,318, Cl. 372-96.000.
- Temic Telefunken microelectronic GmbH: See—
Schulter, Wolfgang; and Schuler, Rolf, 5,379,221, Cl. 364-424.050.
- Teranishi, Yutaka: See—
Takai, Yoshimi; Kondo, Jun; Matsui, Yasushi; Teranishi, Yutaka; and Matsui, Rie, 5,378,810, Cl. 530-350.000.
- Teraoka, Masao, to Tochigi Fuji Sangyo Kabushiki Kaisha. Gear transmission apparatus. 5,378,210, Cl. 475-312.000.
- Terashima, Hideyuki: See—
Yamada, Masakatsu; Yokoyama, Minoru; Kenmochi, Toshio; Ezumi, Yosuke; Toyoda, Hisashi; and Terashima, Hideyuki, 5,379,121, Cl. 358-400.000.
- Terauchi, Kaede: See—
Matsumura, Yasuo; Miyata, Shogo; Kusada, Kanji; and Terauchi, Kaede, 5,378,776, Cl. 526-64.000.
- Terenzoni, Bob. Timber system. 5,377,472, Cl. 52-730.700.
- Termin, Paul L.; and Porter, Christopher H., to Schneider (USA) Inc. Radially expandable fixation member constructed of recovery metal. 5,378,239, Cl. 604-104.000.
- Terry, Roger M. Dynamic fuse testing device having test probes and fuse condition indicator carried on pivotal head. 5,378,990, Cl. 324-550.000.
- Tesco Controls, Inc.: See—
Tessmer, Wallace D., 5,378,058, Cl. 312-298.000.
- Tessmann, Uwe: See—
Kipphan, Helmut; and Tessmann, Uwe, 5,377,585, Cl. 101-181.000.
- Tessmer, Wallace D., to Tesco Controls, Inc. Service pedestal. 5,378,058, Cl. 312-298.000.
- Teutsch, Jean-Georges: See—
Chantot, Jean-Francois; Gouin D'Ambrières, Solange; Humbert, Daniel; and Teutsch, Jean-Georges, 5,378,697, Cl. 514-210.000.
- Texaco Inc.: See—
Haberman, John P.; Delestatus, Mark; and Brace, Dan G., 5,377,753, Cl. 166-249.000.
- Surles, Billy W., 5,377,759, Cl. 166-295.000.
- Texas Instruments Incorporated: See—
Izzi, Louis J.; and Krenik, William R., 5,379,408, Cl. 395-550.000.
- Leach, Jerald G., 5,379,049, Cl. 345-22.000.
- Shah, Pradeep L., 5,379,255, Cl. 365-185.000.
- Shu, Jing S.; Liang, Chien S.; Trytten, Grover W.; and Satterfield, Yvonne D., 5,378,498, Cl. 427-240.000.
- Textron Inc.: See—
Andrews, George A.; Pratt, John D.; and Eshraghi, Soheil, 5,378,098, Cl. 411-43.000.
- Morrow, John A.; and Campbell, Jack E., 5,377,642, Cl. 123-182.100.
- Olson, Gregory R.; and Allen, Clayton A., 5,378,101, Cl. 411-405.000.
- Thein, Nelson H.: See—
Chandler, Daniel; Thein, Nelson H.; and Chu, Edward F., 5,378,407, Cl. 252-513.000.
- Theobald, Hans: See—
Nuebling, Christoph; von Deyn, Wolfgang; Theobald, Hans; Westphalen, Karl-Otto; Kardoff, Uwe; Walter, Helmut; Kappe, Thomas; and Gerber, Matthias, 5,378,679, Cl. 504-246.000.
- Thermo King Corporation: See—
Friedland, Anthony E., 5,377,493, Cl. 62-77.000.
- Thibodeau, Francis R.: See—
Kleid, Dennis G.; Kohr, William J.; and Thibodeau, Francis R., 5,378,437, Cl. 423-27.000.
- Thiele, Reinhard: See—
Erbse, Dietmar; Thiele, Reinhard; and Walter, Helmut, 5,378,410, Cl. 588-16.000.
- Thies, Uwe; Griesbach, Michael; Schwindt, Jurgen; and Mazanek, Jan, to Bayer Aktiengesellschaft; and Gebr. Borchers AG. Polyurethane thickener compositions and their use for thickening aqueous systems. 5,378,756, Cl. 524-591.000.
- Thiokol Corporation: See—
Boothe, Richard E.; and Hutchens, Dale E., 5,377,593, Cl. 102-289.000.
- Thoenissen, Jochen: See—
Frank, Kurt; Schmid, Werner; Strohl, Willi; Thoenissen, Jochen; and Ungerer, Martin, 5,378,125, Cl. 417-423.300.
- Thomas, George: See—
Meadows, Vernon; Thomas, George; and Anani, Anaba A., 5,378,551, Cl. 429-66.000.
- Thomas, H. Ronald; Babacz, Robert J.; and Newton, Robert R., to Polar Materials Inc. Methods and apparatus for depositing barrier coatings. 5,378,510, Cl. 427-563.000.
- Thomas Jefferson University: See—
Feitelson, Mark; Duan, Ling-Xun; and Guo, Jianhui, 5,378,605, Cl. 435-5.000.
- Thomas, Patrick A.; and Wenz, Robert P., to Minnesota Mining and Manufacturing Company. Method of applying a thin coating on the lower surface of a bilevel substrate. 5,378,494, Cl. 427-58.000.
- Thomas, Raymond H. P.; Wilson, David P.; Pham, Hang; and Pelava, John W., to AlliedSignal Inc. Partially fluorinated silicone refrigeration lubricants. 5,378,385, Cl. 252-68.000.
- Thompson, Leo; Little, Frank; and Pidgeon, Rezin E., Jr., to Scientific Atlanta, Inc. Method and apparatus for transmitting broadband amplitude modulated radio frequency signals over optical links. 5,379,141, Cl. 359-125.000.
- Thompson, Parke H., III, to Hubbell Incorporated. Mechanical torque indicator. 5,377,550, Cl. 73-862.322.
- Thompson, Raymon F.: See—
Bergman, Eric J.; Reardon, Timothy J.; Thompson, Raymon F.; and Owczar, Aleksander, 5,377,708, Cl. 134-105.000.
- Thoms, Roland H., to BMC Industries, Inc. Etchant distribution apparatus. 5,378,308, Cl. 156-640.000.
- Thoms, Volker; Harthun, Ulrich; Kienzle, Stefan; and Siegert, Klaus, to Mercedes-Benz AG. Method and device for inserting sheet bars into drawing tools. 5,377,520, Cl. 72-361.000.
- Thomson-CSF: See—
Cabanel, Regis; Garry, Guy; Schuhl, Alain; and Ghyselen, Bruno, 5,378,683, Cl. 505-190.000.
- Michel, Claude; and Le Pesant, Jean-Pierre, 5,379,140, Cl. 359-83.000.
- Thomson, Donald; Luke, David A.; and Mosher, Claudia, to LeaRonald, Inc. Reducing tin sludge in acid tin plating. 5,378,347, Cl. 205-254.000.
- Thomson, Graham A., to Unilever Patent Holdings B.V. Dispenser for flat objects. 5,377,865, Cl. 221-93.000.
- Tibbitts, Gordon A., to Baker Hughes Incorporated. Drill bit having combined positive and negative or neutral rake cutters. 5,377,773, Cl. 175-397.000.
- Tice, Colin M., to Rohm and Haas Company. 2-aryl-5,6-ring-fused pyrimidines and herbicidal use. 5,378,678, Cl. 504-242.000.
- Tiffany, John E., Jr.: See—
Scott, Russell F., Jr.; and Tiffany, John E., Jr., 5,378,955, Cl. 313-105.0CM.
- Tigwell, David C., to Colorado Meadowlark Corporation. Remote control system. 5,379,453, Cl. 455-151.200.
- Timken, Hye K. C.: See—
Keville, Kathleen M.; Timken, Hye K. C.; and Ware, Robert A., 5,378,671, Cl. 502-64.000.
- Timmerman, Hendrik: See—
Bron, Jan; Sterk, Geert J.; Timmerman, Hendrik; and Van Der Werf, Jan F., 5,378,718, Cl. 514-356.000.
- Tjoeng, Foe S.: See—
Bovy, Philippe R.; Rico, Joseph G.; Rogers, Thomas E.; Tjoeng, Foe S.; and Zablocki, Jeffery A., 5,378,727, Cl. 514-465.000.
- Tobolka, Stefan. Container. 5,378,065, Cl. 383-9.000.
- Tobukuro, Kuniaki: See—
Decker, Gary T.; Gornowicz, Gerald A.; and Tobukuro, Kuniaki, 5,378,532, Cl. 428-272.000.
- Tochigi Fuji Sangyo Kabushiki Kaisha: See—
Teraoka, Masao, 5,378,210, Cl. 475-312.000.
- Toda Kogyo Corp.: See—
Isoai, Masaru; Harada, Toshiharu; Kurata, Tokihiro; Fujita, Kazuhiro; Takama, Kazushi; and Jikuhara, Shigekazu, 5,378,380, Cl. 252-62.560.
- Today's Kids, Inc.: See—
Bro, Jay M.; and Baerenwald, Philip M., 5,378,184, Cl. 446-99.000.
- Todd, Martin; Haxell, Mark A.; and Lawrence, Gordon C., to American Cyanamid Company. Process for the production of macrolide compounds. 5,378,617, Cl. 435-119.000.
- Todd, Stephen J. P., to International Business Machines Corporation. Error handling in a state-free system. 5,379,407, Cl. 395-575.000.
- Todo, Yuji: See—
Matsui, Isamu; Maeda, Yoshiyasu; and Todo, Yuji, 5,377,923, Cl. 242-128.000.

- Tojo, Toru: See—
Watanabe, Toshiyuki; Tsuchiya, Hideo; Tojo, Toru; and Watanabe, Tomohide, 5,379,348, Cl. 382-8.000.
- Tokai Rubber Industries, Ltd.: See—
Kumagai, Toshihiro; Kitamura, Hirokazu; Kodama, Tsutomu; and Kato, Kazuhiro, 5,378,024, Cl. 285-39.000.
- Yamamoto, Takafumi; Inubushi, Masaaki; Oinuma, Sumio; Hayaishi, Saburo; Nishijima, Shigeru; and Ishikawa, Masaharu, 5,378,525, Cl. 428-192.000.
- Tokida, Akihiko: See—
Nukada, Katsumi; Daimon, Katsumi; Iijima, Masakazu; Sakaguchi, Yasuo; Nukada, Hidemi; and Tokida, Akihiko, 5,378,569, Cl. 430-58.000.
- Tokumoto, Hidekado: See—
Hamanaka, Nobuyuki; Takahashi, Kanji; and Tokumoto, Hidekado, 5,378,716, Cl. 514-333.000.
- Tokyo Electric Power Company, Incorporated, The: See—
Sentsui, Shintaro; Fujisaki, Akira; Ogoshi, Haruki; Mizutani, Morinobu; and Miyazaki, Mitsuo, 5,379,357, Cl. 385-11.000.
- Tokyo Electron Kabushiki Kaisha: See—
Ono, Yuji; and Mihara, Katsuhiko, 5,378,145, Cl. 432-152.000.
- Ushikawa, Harunori, 5,378,283, Cl. 118-719.000.
- Tokyo Electron Limited: See—
Yamashita, Satoru, 5,378,971, Cl. 324-760.000.
- Tokyo Electron Tonoku Kabushiki Kaisha: See—
Ono, Yuji; and Mihara, Katsuhiko, 5,378,145, Cl. 432-152.000.
- Tokyo Electron Yamanashi Limited: See—
Yamashita, Satoru, 5,378,971, Cl. 324-760.000.
- Tokyo Nisshin Jabara Co., Ltd.: See—
Tsukada, Ken, 5,378,063, Cl. 366-337.000.
- Toma, Joseph G., Jr.: See—
Oakes, Shawn A.; Steichen, Richard T.; Freitas, Michael S.; Toma, Joseph G., Jr.; and Gray, Daryl J., 5,377,862, Cl. 220-513.000.
- Tomita, Akira, to Raychem Corporation. Projector. 5,379,083, Cl. 353-122.000.
- Tomita, Keiichi: See—
Noma, Nobuhiko; Mizutani, Mikio; Sakai, Tsukasa; Kurita, Kazuo; Noguchi, Osamu; Nemoto, Hiroyuki; and Tomita, Keiichi, 5,379,306, Cl. 371-43.000.
- Tomita, Takeshi; Ishiuchi, Yukio; Kawakami, Michiya; and Nagashima, Hiromitsu, to Mitsubishi Gas Chemical Company, Inc. Process for producing hydrogen peroxide. 5,378,450, Cl. 423-584.000.
- Tomiyama, Hideki, to Fuji Photo Film Co., Ltd. Nonaqueous secondary battery. 5,378,560, Cl. 429-217.000.
- Tomlinson, Peter N.: See—
Tank, Klaus; and Tomlinson, Peter N., 5,377,659, Cl. 125-21.000.
- Tomoda, Akihiro: See—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Arai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.
- Tomoda, Toshimasa: See—
Miyazaki, Yoko; Tomoda, Toshimasa; Tanaka, Hitoshi; Kosaka, Nobuyuki; and Ohshige, Toyomi, 5,379,150, Cl. 359-561.000.
- Tomono, Kunisaburo: See—
Marusawa, Hiroshi; Kawanami, Takashi; Kounoike, Takehiro; and Tomono, Kunisaburo, 5,379,004, Cl. 333-1.100.
- Tomosue, Shigeo, to Kyowa Machinery Co. Ltd. Yolk cup for egg breaking apparatus. 5,377,583, Cl. 99-500.000.
- Tong Yuan Design & Development Co., Ltd.: See—
Chyi-Shiun, Day, 5,378,199, Cl. 474-8.000.
- Tonka Corporation: See—
Lewinski, David P.; and Boyle, Ronald C., 5,377,656, Cl. 124-65.000.
- Toogood, Graham J.; and Barnes, Michael S., to Ultra Hydraulics Limited. Hydraulic flow control valve assemblies. 5,377,717, Cl. 137-101.000.
- Top Fortune Ltd.: See—
Cheng, Ying-Hsiung, 5,377,368, Cl. 5-991.000.
- Toppan Printing Co., Ltd.: See—
Imai, Nobuhiko; Sekiguchi, Mamoru; Kano, Mitsuru; Krug, Thomas; Steiniger, Gerhard; and Meier, Andreas, 5,378,506, Cl. 427-529.000.
- Toray Industries, Inc.: See—
Masuda, Toyohiko; Miyoshi, Takehiko; and Horii, Yoshinori, 5,378,537, Cl. 428-364.000.
- Torii, Hideo; Fujii, Eiji; Hattori, Masumi; Aoki, Masaki; and Kuribayashi, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium and its manufacturing process. 5,378,548, Cl. 428-694.0TS.
- Torii, Masao: See—
Okumura, Kin-ichi; Torii, Masao; Tanimoto, Hirotoshi; and Yamato, Motoyuki, 5,378,783, Cl. 526-283.000.
- Toriyama, Masayuki: See—
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- Toro Company, The: See—
Rogers, Chester D.; and McLain, Walter L., 5,377,919, Cl. 241-189.200.
- Torrington Company, The: See—
Hancock, Michael T., 5,377,555, Cl. 74-493.000.
- Tosetti, Mario: See—
Kovacs, Lloyd; and Tosetti, Mario, 5,377,478, Cl. 53-550.000.
- Toshiba Silicone Co., Ltd.: See—
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- Tosoh Corporation: See—
Ito, Nobuyuki; Okayama, Katsushige; Karasuda, Toshinori; and Miyagawa, Yasumichi, 5,378,766, Cl. 525-333.800.
- Tossenberger, Emeric G.: See—
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- Total Walther Feuerschutz GmbH: See—
Roy, Rainer, 5,378,288, Cl. 134-21.000.
- Toth, Thomas L., to General Electric Company. Variable dose application by modulation of x-ray tube current during CT scanning. 5,379,333, Cl. 378-16.000.
- Tottori Sanyo Electric Co., Ltd.: See—
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Inuma, Toshinori, 5,379,322, Cl. 375-60.000.
- Toudic, Yves: See—
Detaint, Jacques; Schwartzel, Jacquie; Toudic, Yves; Philippot, Etienne; Cappelle, Bernard; Zarka, Albert; Goiffon, Aline; and Arnaud, Roger, 5,377,615, Cl. 117-1.000.
- Toutaoui, Mustapha: See—
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- Townsend, John A. Sliding automobile door. 5,378,036, Cl. 276-155.000.
- Tox-Pressotechnik GmbH: See—
Malina, Viktor, 5,377,488, Cl. 60-560.000.
- Toy Biz, Inc.: See—
Arad, Avi, 5,377,655, Cl. 124-65.000.
- Toya, Masaaki: See—
Sumino, Kozo; and Toya, Masaaki, 5,377,889, Cl. 224-315.000.
- Toya, Tetsuya: See—
Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.
- Toyama, Niichi: See—
Kubota, Toshio; Toyama, Niichi; Arai, Hiroshi; Ishibashi, Ichirou; and Ono, Yukihito, 5,378,505, Cl. 427-484.000.
- Toyama, Yasunari: See—
Kage, Shingo; Toyama, Yasunari; and Yamano, Yoshikazu, 5,379,168, Cl. 360-96.500.
- Toye, Richard L.: See—
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Vanacker, Alain: See—
Langon, Bernard; Duval, Christian; and Vanacker, Alain, 5,378,338, Cl. 204-243.00R.

Vanaschen, Luc: See—
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Agnew, Richard C.; and Van Den Heuvel, Robert, 5,378,032, Cl. 294-99.200.

Vandepoll, Richard R.: See—
Asakawa, Stuart D.; McClelland, Paul H.; Tappan, Ellen R.; Vandepoll, Richard R.; Trueba, Kenneth E.; and Chen, Chien-Hua, 5,378,137, Cl. 425-174.400.

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Bron, Jan; Sterk, Geert J.; Timmerman, Hendrik; and Van Der Werf, Jan F., 5,378,718, Cl. 514-356.000.

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Van Der Zel, Joseph M., to Elephant Holding B.V. Dental prosthesis and method for manufacturing a dental prosthesis. 5,378,154, Cl. 433-223.000.

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Van Erden, Donald L.: See—
Keenan, Thomas C.; Lo Presti, Philip B.; and Van Erden, Donald L., 5,378,096, Cl. 410-154.000.

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Lee, Albert C.; Hallinan, E. Ann; Hagen, Timothy J.; Husa, Robert K.; Tsymalov, Sofya; and Van Hoeck, Jean-Pierre, 5,378,840, Cl. 540-547.000.

van Loveren, Augustinus G.: See—
Suffis, Robert; Barr, Morton L.; Ishida, Kenya; Sawano, Kiyohito; Sato, Toshiya; and van Loveren, Augustinus G., 5,378,468, Cl. 424-401.000.

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Maly, Edward C.; Bermanian, Alireza; and Bryson, John D., Jr., 5,378,254, Cl. 55-271.000.

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Vari, Sandor G.; and Grundfest, Warren S., to Cedars-Sinai Medical Center. Method for determining the biodistribution of substances using fluorescence spectroscopy. 5,377,676, Cl. 128-634.000.

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March, Raymond E.; Londry, Frank A.; and Catinella, Silvia, 5,378,891, Cl. 250-282.000.

Varnum, Shirley. Hair abrader. 5,377,699, Cl. 132-76.400.

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veitch, Jacqueline M.: See—
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Merchel, Horst, 5,377,806, Cl. 194-212.000.

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Houghton, Mark P.; and Verburg, Charles C., 5,378,387, Cl. 252-174.210.

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Versluis, Frederik: See—
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Bauer, Richard G.; Burlett, Donald J.; Massie, Johnny D., II; Sandstrom, Paul H.; Segatta, Thomas J.; and Verthe, John J. A., 5,378,754, Cl. 524-514.000.

Vesa, Juha. Apparatus and process for the production of seat pad parts from loose padding raw material. 5,378,296, Cl. 156-62.600.

Vesco, Luigi: See—
Leoni, Fabrizio; Morganti, Marco; and Vesco, Luigi, 5,377,451, Cl. 451-287.000.

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Koerts, Kees; Bakker, Age; and Vianen, Gerardus M., 5,378,834, Cl. 536-127.000.

Viano, David C.; Neely, Richard J.; and Humer, Mladen, to General Motors Corporation. Vehicle pivotal headrest. 5,378,043, Cl. 297-408.000.

Viaud, Andre: See—
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Yamagishi, Toru, 5,379,433, Cl. 395-725.000.

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Mancini, Filippo, 5,378,959, Cl. 313-402.000.

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Peters, Jeffrey J.; Vidlund, Robert M.; and Arney, Michelle, 5,378,238, Cl. 604-99.000.

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Villarreal, Oscar, Jr. Portable electronic scorekeeping device. 5,377,982, Cl. 273-148.00R.

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Silvestri, George J., Jr.; and Viscovich, Paul W., 5,377,489, Cl. 60-678.000.

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Vitton, Stanley J.: See—
Tatom, Frank B.; and Vitton, Stanley J., 5,379,025, Cl. 340-601.000.

Vlahos, Chris J.: See—
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VLSI Technology, Inc.: See—
Lee, Sang S.; and Fujimoto, George, 5,379,187, Cl. 361-707.000.

Liang, Louis H., 5,378,924, Cl. 257-675.000.

Weling, Milind; and Jain, Vivek, 5,378,318, Cl. 156-662.000.

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Kao, Wenling; Vogel, Robert L.; Abou-Gharbia, Magid A.; and Cauffield, Craig E., 5,378,836, Cl. 540-456.000.

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Hoppe-Hoffler, Monika; Strauss, Udo; and Volkman, Bernd-Rudiger, 5,378,335, Cl. 204-181.700.

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Volo, Corrine A.; and Rock, Jeffrey A., to General Motors Corporation. Fuel injection nozzle. 5,377,915, Cl. 239-533.900.

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Papenberg, Robert L.; Yang, Runchan D.; Wotring, David H.; Rydhan, Mohammad F.; Voloshin, Paul; and Talaat, Mohamed M., 5,379,415, Cl. 395-575.000.

Volumatic Limited: See—
Dalton, Paul W., 5,379,023, Cl. 340-568.000.

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Friedrich, Kilian; Michell, Winfried; and von Behr, Diedrich, 5,377,713, Cl. 137-1.000.

von Behrens, Wieland E.; Haiflich, Sherry; Glazier, John; Roche, John M.; and Director, Bruce A., to Sequoia-Turner Corporation, A Corp. of CA. Method for accurately enumerating and sensitively qualifying heterogeneous cell populations in cytolytic processing conditions. 5,378,633, Cl. 436-63.000.

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Nuebling, Christoph; von Deyn, Wolfgang; Theobald, Hans; Westphalen, Karl-Otto; Kardorff, Uwe; Walter, Helmut; Kappe, Thomas; and Gerber, Matthias, 5,378,679, Cl. 504-246.000.

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Seredeniz, Sergey B.; Voronina, Tatiana A.; Likhoshervostov, Arkady M.; Peresada, Vitaly P.; Molodavkin, Gennady M.; and Halikas, James A., 5,378,846, Cl. 544-349.000.

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Savage, Arthur P., 5,378,670, Cl. 502-60.000.

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Wachi, Shigeaki, to Sony Corporation. System for calculating focus servo control signal using focus error signal and reproduced RF signal. 5,379,282, Cl. 369-44.350.

Wada, Masahiro; and Takishima, Yasuhiro, to Kokusai Denshin Denwa Co., Ltd. Cell-packing system of coded video signal using fixed bit length cells. 5,379,116, Cl. 358-431.000.

Wada, Tomohisa; Anami, Kenji; and Murakami, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 5,379,248, Cl. 365-63.000.

Wada, Tomohisa: See—
Murakami, Shuji; Wada, Tomohisa; and Anami, Kenji, 5,379,258, Cl. 365-200.000.

Wade, Gerald T., to Hewlett-Packard Company. Performance and measurement system which logs reduced data pertaining to groups of processes. 5,379,406, Cl. 395-500.000.

Wade, Steven E., to Greenbrier Innovations, Inc. Opening device for flexible packaging. 5,378,066, Cl. 383-205.000.

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Kruger, Michael; Pfizenmaier, Wolfgang; Rossler, Georg; and Wagensommer, Bernhard, 5,377,589, Cl. 101-248.000.

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Devaney, Mark J.; Lercher, John S.; Frank, Lee F.; Wagner, Paul W.; and Helfer, Jeffrey L., 5,379,087, Cl. 354-331.000.

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v. Schnakenburg, Joachim; Perings, Dieter; Wagner, Siegfried; Keutgen, Franz; Winterhager, Rudiger; and Stadler, Peter, 5,377,743, Cl. 164-440.000.

Waible, Thomas, to Teller GmbH. Electrical plug bridge for an appliance plug. 5,378,162, Cl. 439-106.000.

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Imai, Tunes; Kembo, Nobumitsu; Yamada, Toshiyuki; and Wakabayashi, Takashi, 5,379,368, Cl. 395-117.000.

Wakeman, Russell J., to Siemens Automotive L.P. Railplug direct injector/ignitor assembly. 5,377,633, Cl. 123-297.000.

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Warner, Donald W., 5,377,650, Cl. 123-568.000.

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Lui, Albert; and Walker, Mark S., 5,379,417, Cl. 395-575.000.

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Wall, Alexander C.; and Sculler, Steven J. Adjustable mount device for pre-inked hand stamp. 5,377,599, Cl. 101-327.000.

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Erbse, Dietmar; Thiele, Reinhard; and Walter, Helmut, 5,378,410, Cl. 588-16.000.

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Mauney, Ronald C., 5,377,872, Cl. 222-47.000.

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Tripathi, Prabhakar P.; Whitefield, Bruce; and Wang, Chi-Hung, 5,379,233, Cl. 364-491.000.

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Fandrianto, Jan; Wang, Chi S.; Sutardja, Sehat; Rainnie, Hedley K. J.; and Martin, Bryan R., 5,379,351, Cl. 382-41.000.

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Wang, Eva Y.: See—
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Wang Laboratories, Inc.: See—
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Sugishima, Yoshio; Irie, Youichirou; Himegi, Tooru; Nagai, Hiroyuki; Ootsuka, Nobukazu; Nishimura, Takatoshi; Honda, Kenichi; Tajima, Shouchirou; Asano, Keiichi; Kawaguchi, Hiroyuki; Tamura, Shigeki; and Washitani, Motohisa, 5,377,972, Cl. 271-293.000.

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Watanabe, Hisashi: to Matsushita Electronics Corporation. Resist composition having a siloxane-bond structure. 5,378,585, Cl. 430-176.000.

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Anzai, Mitsutoshi; Matsuura, Yuji; Mukudai, Osamu; Kanno, Miki; and Watanabe, Kayoko, 5,378,573, Cl. 430-110.000.

Watanabe, Kazuhiro; Nakatani, Naofumi; and Ikezaki, Masao: to Matsushita Electric Industrial Co., Ltd. Homebus system for permitting homebus equipment and ISDN basic interface equipment to use same twisted pair line homebus. 5,379,441, Cl. 395-800.000.

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Weiner, Amy J.: See—
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Western Atlas International, Inc.: See—
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Silvestri, George J., Jr.; and Viscovich, Paul W., 5,377,489, Cl. 60-678.000.

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Wheeler, Edward L.; D'Amelia, Ronald P.; Leveille, Gilbert A.; Otterburn, Michael S.; Klemann, Lawrence P.; Finley, John W.; Roden, Allan D.; Chrysam, Michael M.; Pelloso, Turiddu A.; and Given, Peter S., Jr.: to Nabisco, Inc. Reduced calorie triglyceride mixtures. 5,378,490, Cl. 426-606.000.

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Gallagher, Robert E., Sr., 5,378,166, Cl. 439-214.000.

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Lovell, Robert K.; Tsukida, Robert S.; Ortega, Frank; and White, Thomas W., 5,379,330, Cl. 376-260.000.

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Tripathi, Prabhakar P.; Whitefield, Bruce; and Wang, Chi-Hung, 5,379,233, Cl. 364-491.000.

Whitehouse, Donald: to Valor Limited. Method and apparatus for use in installing a fire in a fireplace in connection with a flue liner. 5,377,666, Cl. 126-500.000.

WhiteMoss, Inc.: See—
Riley, William C.; Albertin, Marc S.; and May, James B., 5,377,559, Cl. 74-571.00M.

Whitesides, George M.; Lees, Watson J.; and Singh, Rajeeva: to President and Fellows of Harvard College. Meso-2,5-dimercapto-N,N,N',N'-tetramethyladipamide. 5,378,813, Cl. 530-404.000.

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Wiljan, Harry; Niefnecker, Ulrich; Muck, Ottokarl; Kubler, Hans; Schnell, Roland; Carra, Roland; and Wild, Matthias: to REA Gesellschaft für Recycling von Energie und Abfall mbH. Processing waste materials for anaerobic digestion of the biogenic-organic constituents. 5,377,917, Cl. 241-14.000.

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Bell, Alan G.; and Lamping, John, 5,379,438, Cl. 395-800.000.

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Eschbach, Reiner, 5,379,122, Cl. 358-426.000.

Girmay, Girmay K., 5,379,321, Cl. 375-22.000.

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Mandel, Barry P.; and Buddendeck, Gerald A., 5,377,965, Cl. 270-37.000.

Mantell, David A., 5,378,916, Cl. 257-440.000.

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Yu, Robert C. U., 5,378,566, Cl. 430-58.000.

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Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Takahagi, Hidekuni; Iijima, Yasuteru; Kokubu, Tatsuo; and Hiwada, Kunio, 5,378,689, Cl. 514-18.000.

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Yadav, Narendra S.: See—
Bedbrook, John R.; Chaleff, Roy S.; Falco, Saverio C.; Mazur, Barbara J.; Somerville, Christopher R.; and Yadav, Narendra S., 5,378,824, Cl. 536-23.600.

Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, to Olympus Optical Co., Ltd. Scanning tunneling potential spectroscopic microscope and a data detecting method. 5,378,983, Cl. 324-158.100.

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Endoh, Shinji; Namba, Keisuke; Yagi, Shigenori; and Maeda, Kazuhiko, 5,378,436, Cl. 422-186.000.

Yaginuma, Yoshitaka; and Inoue, Yoshihiro, to Mitsubishi Nuclear Fuel Co.; and Mitsubishi Materials Corporation. Method and apparatus for inspecting end face of pellet. 5,379,329, Cl. 376-248.000.

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Usui, Taichi; Uejima, Osamu; and Ogawa, Koichi, 5,378,831, Cl. 536-123.100.

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Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhiro; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

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Obshima, Etsuo; Kanai, Fumihiko; Sato, Hideyuki; Obase, Hiroyuki; Kumazawa, Toshiaki; Takahara, Shio; Ohno, Tetsuji; Ishikawa, Tomoko; and Yamada, Koji, 5,378,701, Cl. 514-215.000.

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Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Arai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

Yamada, Masaki: See—
Odaka, Kentaro; Ozaki, Shinya; Inazawa, Yoshizumi; Yamada, Masaki; and Bramhall, Peter, 5,379,152, Cl. 360-48.000.

Yamada, Toshiyuki: See—
Imai, Tuneso; Kembo, Nobumitsu; Yamada, Toshiyuki; and Wakabayashi, Takashi, 5,379,368, Cl. 395-117.000.

Yamada, Yukinori; and Kurokawa, Yumi, to NEC Corporation. Semiconductor memory device having variable precharging period. 5,379,265, Cl. 365-233.500.

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Yamagishi, Toru, to Victor Company of Japan, Ltd. Protection against unauthorized use of software recorded on recording medium. 5,379,433, Cl. 395-725.000.

Yamaguchi, Hisao: See—
Sakuma, Yasuji; Hasegawa, Masaichi; Kataoka, Kenichiro; Hoshina, Kenji; Yamazaki, Noboru; Kadota, Takashi; and Yamaguchi, Hisao, 5,378,700, Cl. 514-212.000.

Yamaguchi, Masahiro: See—
Nagasawa, Hirokazu; Yamaguchi, Masahiro; and Matsumoto, Hiroaki, 5,379,075, Cl. 348-678.000.

Yamaguchi, Mikio; and Saitoh, Takahiro, to NSK Ltd. Collapsible steering column apparatus. 5,378,021, Cl. 280-777.000.

Yamaguchi, Shuichi; Mochizuki, Seiji; Suzuki, Hideaki; Shinada, Satoshi; and Aida, Mayumi, to Seiko Epson Corporation. Apparatus for declogging an ink jet recording apparatus. 5,379,061, Cl. 346-141.000.

Yamaguchi, Teruo: See—
Sasaki, Masakuni; Shimizu, Yasushi; Yamaguchi, Teruo; and Tanaka, Kiyotaka, 5,378,247, Cl. 29-623.100.

Yamaguchi, Toshiharu: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippei; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Yamaguchi, Yoshihiro, to Sony Corporation. Grinder for grinding stamper used for disc molding. 5,377,452, Cl. 451-1.000.

Yamaguchi, Yukihiro: See—
Seiki, Kazuhiro; Yamaguchi, Yukihiro; and Kanda, Minoru, 5,378,012, Cl. 280-728.00B.

Yamaha Corporation: See—
Yamashita, Hiroyuki; Hoshi, Toshiharu; Horio, Yuma; Tsuchiya, Kazuhiro; Iijima, Takashi; and Nishida, Kikuo, 5,378,295, Cl. 148-654.000.

Yamaha Hatsudoki Kabushiki Kaisha: See—
Sakurai, Hiroshi; Onodera, Hitoshi; Indo, Kenichi; and Ohta, Hiroyuki, 5,377,405, Cl. 29-833.000.

Taue, Hun, 5,377,634, Cl. 123-317.000.

Yamahata, Hitoshi; and Kusuda, Masahiro, to NEC Corporation. Test signal output circuit for LSI. 5,379,300, Cl. 371-15.100.

Yamamitsu, Tadashi: See—
Ishizaki, Takeshi; Nakayama, Yoshiyuki; Mori, Kenjiro; Nakamura, Fumio; and Yamamitsu, Tadashi, 5,379,374, Cl. 395-155.000.

Yamamori, Teruo; Harada, Hiroshi; Sakai, Katsunori; Iwaki, Kazumi; and Matsunaga, Kazuki, to Shionogi & Co., Ltd. Benzothiazepine derivatives. 5,378,698, Cl. 514-211.000.

Yamamoto, Ikuo: See—
Sugiyama, Keiichi; Takada, Koji; and Yamamoto, Ikuo, 5,378,453, Cl. 424-70.100.

Yamamoto, Makoto, to Yozan Inc. Moving object tracking method. 5,379,236, Cl. 364-516.000.

Yamamoto, Makoto, to Yozan Inc. Memory device. 5,379,252, Cl. 365-183.000.

Yamamoto, Shinji: See—
Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Yamamoto, Shinji, 5,378,771, Cl. 525-471.000.

Satake, Yoshikatsu; Inaguma, Yoshiyuki; and Yamamoto, Shinji, 5,378,772, Cl. 525-471.000.

Yamamoto, Takafumi; Inubushi, Masaaki; Onuma, Sumio; Hayashi, Saburo; Nishijima, Shigeru; and Ishikawa, Masaharu, to Tokai Rubber Industries, Ltd. Crowned resilient roll with coating layer and method of producing the same. 5,378,525, Cl. 428-192.000.

Yamamoto, Takehiko: See—
Katta, Yasuo; Ohkuma, Kazuhiro; Satouchi, Mitsuko; Takahashi, Reiji; and Yamamoto, Takehiko, 5,378,833, Cl. 536-124.000.

Yamamoto, Tetsuya: See—
Suzuki, Goro; Iwamura, Masahiro; Yamamoto, Tetsuya; and Okamura, Yoshio, 5,378,904, Cl. 257-208.000.

Yamamoto, Tomonaga: See—
Uchida, Hiroyuki; Yamamoto, Tomonaga; Iwamatsu, Noboru; and Oku, Hideaki, 5,378,953, Cl. 310-156.000.

Yamamoto, Yasuo: See—
Smith, Jerome D.; Hayakawa, Keiichi; and Yamamoto, Yasuo, 5,379,016, Cl. 338-308.000.

Yamamoto, Yoshinobu: See—
Nakagoshi, Arata; Suzuki, Hideya; Yamamoto, Yoshinobu; Shimbo, Isao; Furuya, Tsuneo; and Kuwahara, Hiroshi, 5,379,451, Cl. 455-54.200.

Yamano, Yoshikazu: See—
Kage, Shingo; Toyama, Yasunari; and Yamano, Yoshikazu, 5,379,168, Cl. 360-96.500.

Yamanouchi Pharmaceutical Co., Ltd.: See—
Tanaka, Akihiro; Fujikura, Takashi; Tsuzuki, Ryuji; Yokota, Masaki; and Yatsu, Takeyuki, 5,378,849, Cl. 546-114.000.

Yamasaki, Hajime: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Yamashita, Hiroshi; and Ojima, Toshiyuki, to NEC Corporation. Path monitoring bit extraction device. 5,379,277, Cl. 370-14.000.

Yamashita, Hiroyuki; Hoshi, Toshiharu; Horio, Yuma; Tsuchiya, Kazuhiro; Iijima, Takashi; and Nishida, Kikuo, to Yamaha Corporation. Golf club head and a method for producing the same. 5,378,295, Cl. 148-654.000.

Yamashita, Satoru, to Tokyo Electron Limited; and Tokyo Electron Yamanashi Limited. Probe and a method of manufacturing the same. 5,378,971, Cl. 324-760.000.

Yamashita, Tetsuhiro: See—
Anan, Yoshiaki; Yamashita, Tetsuhiro; and Nagaoka, Mitsuru, 5,379,222, Cl. 364-426.030.

Yamashita, Tetsuo: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Yamate-Honeywell Co., Ltd.: See—
Kamiyenten, Shoji, 5,377,527, Cl. 73-25.030.

Yamoto, Motoyuki: See—
Okumura, Kin-ichi; Torii, Masao; Tanimoto, Hirotoshi; and Yamato, Motoyuki, 5,378,783, Cl. 526-283.000.

Yamazaki, Noboru: See—
Sakuma, Yasuji; Hasegawa, Masaichi; Kataoka, Kenichiro; Hoshiba, Kenji; Yamazaki, Noboru; Kadota, Takashi; and Yamaguchi, Hisao, 5,378,700, Cl. 514-212.000.

Yamazaki, Satoshi, to Dai Nippon Printing Co., Ltd. Method of preventing forgery of diffraction grating pattern and forgery-proof diffraction grating pattern recording structure. 5,379,131, Cl. 359-2.000.

Yamazaki, Shunpei: See—
Sato, Masahiko; Konuma, Toshimitsu; Odaka, Seiichi; Yamaguchi, Toshiharu; Watanabe, Toshio; Aoyagi, Osamu; Tabata, Kaoru; Isigaki, Chizuru; Sakayori, Hiroyuki; Kobayashi, Ippei; Osabe, Akio; and Yamazaki, Shunpei, 5,379,139, Cl. 359-81.000.

Yamazaki, Yasuo, to Olympus Optical Co., Ltd. Camera having a zoom optical system. 5,379,084, Cl. 354-195.120.

Yanagawa, Hisaharu: See—
Green, Mino; Syms, R. R. A.; Holmes, Andrew S.; Ueki, Ken; and Yanagawa, Hisaharu, 5,378,256, Cl. 65-395.000.

Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

Yanagida, Toshiharu, to Sony Corporation. Method of forming aluminum based pattern. 5,378,653, Cl. 437-194.000.

Yanagisawa, Kiyoshi, to Ebara Corporation. Multi-stage screw vacuum pump. 5,378,128, Cl. 418-9.000.

Yanai, Toshiaki: See—
Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

Yanez, Francisco: See—
Marquez, Marco A.; Gonzalez, Jose C.; Degouveia, Victor J.; Bolivar, Carmelo; Leal, Orlando; and Yanez, Francisco, 5,378,250, Cl. 44-447.000.

Yang, David S.: See—
Kono, Ikuo; and Yang, David S., 5,378,085, Cl. 405-233.000.

Yang, Hung Y., and Chen, Chin-Sheng. Method of manufacturing a malleable material for candles. 5,378,248, Cl. 44-275.000.

Yang, Hyeon S., to Samsung Electron Devices Co., Ltd. Supporting member for a VLMF coil. 5,379,117, Cl. 358-400.000.

Yang, Qing, to Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, The. Cache memory system for vector processing. 5,379,393, Cl. 395-400.000.

Yang, Runchan D.: See—
Papenberg, Robert L.; Yang, Runchan D.; Wotring, David H.; Rydhan, Mohammad F.; Voloshin, Paul; and Talaat, Mohamed M., 5,379,415, Cl. 395-575.000.

Yang, Ten S., to Fast Maker Enterprise Co., Ltd. Water cooled air conditioner. 5,377,500, Cl. 62-238.600.

Yano, Masatsugu: See—
Kanno, Shin; Tsujimura, Tsukasa; Yano, Masatsugu; Aoyagi, Hidenori; and Kawawata, Hiroshi, 5,379,293, Cl. 370-94.100.

Yano, Shinsuke: See—
Abe, Masahiro; Sugiura, Tatsumi; Nanataki, Tsutomu; and Yano, Shinsuke, 5,378,663, Cl. 501-32.000.

Yano, Tatsushi: See—
Shimazaki, Hiroyuki; Mizoguchi, Masamichi; Yamasaki, Hajime; Ogawa, Kazuaki; Tanaka, Shinji; Yano, Tatsushi; Shimizu, Takatoshi; Kouguchi, Yukio; Yamashita, Tetsuo; Murabayashi, Satoshi; Suzuki, Nobuyuki; Watanabe, Yoshikuni; Nakagawa, Koichi; Fukagawa, Daisuke; and Ogino, Kouji, 5,379,418, Cl. 395-575.000.

Yasuda, Kenji; Aoki, Masami; and Yokokura, Takefumi, to Hitachi, Ltd. Method of measuring a catecholamine and its metabolite. 5,378,635, Cl. 436-111.000.

Yasuhara, Norio: See—
Nakagawa, Akio; and Yasuhara, Norio, 5,378,920, Cl. 257-487.000.

Yasutomi, Yoshiyuki; Nakamura, Kousuke; Kita, Hideki; and Sobue, Masahisa, to Hitachi, Ltd. Process for producing ceramic compositions. 5,378,417, Cl. 264-61.000.

Yatsu, Takeyuki: See—
Tanaka, Akihiro; Fujikura, Takashi; Tsuzuki, Ryuji; Yokota, Masaki; and Yatsu, Takeyuki, 5,378,849, Cl. 546-114.000.

Yazaki Corporation: See—
Abe, Kimihiro; and Koumatsu, Seiji, 5,378,170, Cl. 439-595.000.

Hayashi, Tetsuji, 5,377,519, Cl. 72-326.000.

Ishibashi, Wataru, 5,379,219, Cl. 364-424.040.

Oike, Yukio, 5,378,980, Cl. 324-146.000.

Yeh, Michael H., to Rhone-Poulenc Specialty Chemicals Co. Amphoteric polysaccharide compositions. 5,378,830, Cl. 536-118.000.

Yen, Jeffrey H.-G., to Elf Atochem North America, Inc. Hot lime precipitation of arsenic from wastewater or groundwater. 5,378,366, Cl. 210-667.000.

Yokev, Hanoch; and Harel, Haim, to Nexus Telecommunication Systems, Inc. Remote position determination system. 5,379,047, Cl. 342-457.000.

Yokoi, Shinji: See—
Yanagi, Mikio; Sugizaki, Hiroyasu; Toya, Tetsuya; Kato, Yasuhito; Shirakura, Hidetoshi; Watanabe, Tetsuo; Yajima, Yoshimi; Kodama, Seiichiro; Masui, Akio; Yanai, Toshiaki; Tsukamoto, Yoshihisa; Sawada, Yoshihiro; and Yokoi, Shinji, 5,378,726, Cl. 514-456.000.

Yokoishi, Shouji: See—
Nakanishi, Masatsugu; Tsutsuki, Misao; and Yokoishi, Shouji, 5,378,527, Cl. 428-216.000.

Yokokura, Takefumi: See—
Yasuda, Kenji; Aoki, Masami; and Yokokura, Takefumi, 5,378,635, Cl. 436-111.000.

Yokota, Masaki: See—
Tanaka, Akihiro; Fujikura, Takashi; Tsuzuki, Ryuji; Yokota, Masaki; and Yatsu, Takeyuki, 5,378,849, Cl. 546-114.000.

Yokota, Tetsuo: See—
Asano, Teruo; Nobukawa, Shunji; Taniguchi, Etsuo; and Yokota, Tetsuo, 5,377,851, Cl. 211-191.000.

Yokoyama, Kin-ichi: See—
Onuma, Susumu; and Yokoyama, Kin-ichi, 5,378,138, Cl. 425-549.000.

Yokoyama, Minoru: See—
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Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Arai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, 5,379,055, Cl. 346-76.0PH.

Yokoyama, Seiichiro; Ishikawa, Motoharu; Hiroi, Yoshio; and Watanabe, Nobuaki, to Idemitsu Kosan Co., Ltd. Color filter, method for manufacture thereof and liquid crystal projector using said color filter. 5,378,274, Cl. 106-410.000.

Yonehara, Akifumi, to NEC Corporation. Cross-connect system for asynchronous transfer mode. 5,379,295, Cl. 370-60.000.

Yoshida, Isao: See—
Morikawa, Masatoshi; Yoshida, Isao; Sawase, Terumi; Sakamoto, Kouzou; and Okabe, Takeaki, 5,379,230, Cl. 364-483.000.

Yoshida, Jiro: See—
Hirama, Masahiro; Koshimura, Masami; Mori, Sakae; and Yoshida, Jiro, 5,378,875, Cl. 219-705.000.

Yoshida, Kasumi: See—
Kai, Susumu; Shindo, Isao; Mutoh, Shigeo; and Yoshida, Kasumi, 5,378,630, Cl. 436-43.000.

Yoshida, Kunihiro: See—
Fujii, Masumi; Suda, Taiichiro; Hotta, Yoshitsugu; Kobayashi, Kenji; Yoshida, Kunihiro; Shimojo, Shigeru; Kitamura, Koichi; Kawasaki, Masami; Karasaki, Mutsunori; Iijima, Masaki; Seto, Toru; and Mitsuoka, Shigeaki, 5,378,442, Cl. 423-228.000.

Yoshida, Naohiro: See—
Matsumoto, Masuo; Yoshida, Naohiro; and Kojima, Masaru, 5,377,406, Cl. 29-846.000.

Yoshida, Nobuo: See—
Arimoto, Kunio; Yoshida, Nobuo; Ohtani, Haruo; and Ikkaku, Yasuhiko, 5,378,271, Cl. 106-236.000.

Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Arai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Takeda, Tomoyuki; Kondo, Masaya; and Yamada, Masakatsu, to Canon Kabushiki Kaisha. Thermal transfer recording apparatus and facsimile terminal equipment using said apparatus. 5,379,055, Cl. 346-76.0PH.

Yoshihara, Masayuki: See—
Nakatsuji, Yoshihiro; Yoshihara, Masayuki; Maruyama, Hiroaki; and Igarashi, Toshio, 5,378,745, Cl. 524-99.000.

Yoshihara, Toru: See—
Tamura, Tadashi; Kiyomine, Akira; Morita, Osamu; Tanaka, Michio; Ogawa, Masahiko; Tagami, Hidetoshi; and Yoshihara, Toru, 5,378,244, Cl. 8-409.000.

Yoshii, Akira: See—
Tazawa, Satoshi; Leon, Francisco A.; Sharfetter, Donald L.; Saito, Kazuyuki; and Yoshii, Akira, 5,379,225, Cl. 364-468.000.

Yoshikawa, Kuniyoshi, to Kabushiki Kaisha Toshiba. Memory transistor having increased interelectrode capacitance. 5,378,910, Cl. 257-319.000.

Yoshimaru, Masaki: See—
Inoue, Nobuhiko; and Yoshimaru, Masaki, 5,378,645, Cl. 437-47.000.

Yoshimoto, Masahiko: See—
Matsumura, Tetsuya; Segawa, Hiroshi; Ishihara, Kazuya; Uramoto, Shinichi; and Yoshimoto, Masahiko, 5,379,257, Cl. 365-189.010.

Yoshimoto, Mitsufumi: See—
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Inuma, Toshinori, 5,379,322, Cl. 375-60.000.

Yoshimura, Hisashi, to Sharp Kabushiki Kaisha. Ink-jet recording head device. 5,379,060, Cl. 347-71.000.

Yoshinaga, Noriyuki: See—
Furukawa, Nobuhiko; Fujimoto, Masahisa; Yoshinaga, Noriyuki; and Ueno, Koji, 5,378,561, Cl. 429-218.000.

Yoshinaga, Yoko: See—
Kuwayama, Tetsuo; Majima, Toshiaki; Taniguchi, Naosato; Yoshinaga, Yoko; Kishi, Hiroyoshi; and Kushibiki, Nobuo, 5,379,132, Cl. 359-13.000.

Yoshino, Isamu: See—
Inoue, Yoshiaki; Murabayashi, Shigeru; Fujinami, Kazuo; Yoshino, Isamu; Kawakami, Takamasa; Makinose, Satoru; and Naito, Akira, 5,378,428, Cl. 422-9.000.

Yoshino, Masato, to Sumitomo Electric Industries, Ltd. Electronic brake pedal adjustment apparatus and method therefor. 5,378,052, Cl. 303-3.000.

Yoshioka, Hideki; Asada, Hajime; and Fujita, Shinji, to Nippon Kayaku Kabushiki Kaisha. Process for producing 6 β ,14 α -dihydroxy-4-androstene-3,17-dione amid 14 α -hydroxy-4-androstene-3,6,17-trione from 4-androstene-3,17-dione using myrothecium sp. ferm bp-4432. 5,378,611, Cl. 435-58.000.

Yoshizawa, Kenichi: See—
Daimaru, Koji; Takata, Koichi; Yoshizawa, Kenichi; and Shoji, Masahiro, 5,378,218, Cl. 483-9.000.

Yoshizuka Seiki Co., Ltd.: See—
Kishi, Yuji; and Katagiri, Takeshi, 5,378,416, Cl. 264-40.500.

Yotsuji, Akira: See—
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Muschett, William G.: Combined gimbal tray and cups therefor. 353,977, 1-3-95, Cl. D7-708.000.

N.K. Biotechnical Engineering Company: See—
Kovacevic, Nebojsa, 353,959, Cl. D6-482.000.

Nagele, Albert L.; and Mischenko, Nicholas, to Motorola, Inc.: Telephone handset housing panel. 354,055, 1-3-95, Cl. D14-138.000.

Naito, Eiichiro: See—
Higashibata, Toru; and Naito, Eiichiro, 353,957, Cl. D6-451.000.

Namkung Promotions Inc.: See—
Hamlin, John, 354,093, Cl. D21-59.000.

Nations, Howard: Handicap shower base. 354,117, 1-3-95, Cl. D23-283.000.

Neal, Carol A.: Combined patient hand and wrist restraint. 354,137, 1-3-95, Cl. D24-190.000.

New, Bruce C.: Child safety belt. 353,932, 1-3-95, Cl. D2-627.000.

Ng, John W.: See—
Lo, Canice K.; Tsang, Chin-Hun; and Ng, John W., 353,942, Cl. D6-310.000.

Ninomiya, Atsushi; Kamimura, Seiji; Takekoshi, Isamu; Kaji, Hironori; Seki, Hideo; and Hagiya, Kaoru, to Hitachi, Ltd.: Liquid chromatograph analyzer. 354,013, 1-3-95, Cl. D10-81.000.

Nishida, Koji: See—
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Nogas, David A., to Mitel Corporation: Housing for a plug-in printed circuit board. 354,042, 1-3-95, Cl. D13-162.000.

Noland, Bruce: Plug lock. 354,043, 1-3-95, Cl. D13-156.000.

Nortier, Richard; and Whiteside, John F., to Sloan Valve Company: Flush valve cover. 354,113, 1-3-95, Cl. D23-233.000.

Novo Nordisk A/S: See—
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O'Hearn, William M.: Sponge brush with coupling for attachment to an extension handle. 353,941, 1-3-95, Cl. D4-137.000.

Okuyama, Toru: See—
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Ono, Junichi; and Shigemura, Atsushi, to Casio Computer Co., Ltd.: Electronic cash register. 354,074, 1-3-95, Cl. D18-4.000.

Ono, Junichi: See—
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Padron, Jose: See—
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Ancona, Bruce; Ancona, Jane; and Padron, Jose, 354,082, Cl. D19-78.000.

Paggi, Alfred J.: Fishing rod hand warmer. 354,112, 1-3-95, Cl. D22-139.000.

Pajetta, Max, to Ideal Standard S.p.A.: Furniture unit with wash basin, mirror and lateral drawers. 354,120, 1-3-95, Cl. D23-286.000.

Park, Jin H., to Lucky, Ltd.: Cosmetic container. 354,001, 1-3-95, Cl. D9-544.000.

Pasto, Cris E.: Tool for installing wooden planks. 353,987, 1-3-95, Cl. D8-88.000.

Paul, John E.: See—
McNamara, George E.; Holmstadt, Ronald J.; Juare, Phillip R.; Hart, Douglas W.; Loebertmann, Douglas E.; and Paul, John E., 354,142, Cl. D25-16.000.

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Perkins, Dallas: Shucking utensil. 353,976, 1-3-95, Cl. D7-693.000.

Peters, Wolfram, to Hamax AS: Attachment for a child's bicycle seat. 353,963, 1-3-95, Cl. D6-502.000.

Petronio, James: See—
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; Heinzelman, Bert D.; Sherman, Adam; Moskovich, Robert; Petronio, James; Lamond, Donald R.; and Edelman, Laura H., 353,939, Cl. D4-104.000.

Phelps, Tilman; and Stoeckl, Klaus, to Siemens Aktiengesellschaft: Dental instrument table. 354,136, 1-3-95, Cl. D24-177.000.

Phleps, Tilman; and Stoeckl, Klaus, to Siemens Aktiengesellschaft: Combined backrest and headrest. 353,964, 1-3-95, Cl. D6-502.000.

Phleps, Tilman; and Stoeckl, Klaus, to Siemens Aktiengesellschaft: Dental expectorant basin. 354,135, 1-3-95, Cl. D24-177.000.

Pistilli, Roddie, to GTC Properties, Inc.: Clock. 354,009, 1-3-95, Cl. D10-28.000.

Pistilli, Roddie M., to GTC Properties, Inc.: Clock. 354,010, 1-3-95, Cl. D10-28.000.

Pollack, Peggy L., to Angel-Etts of California: Athletic shoe. 353,935, 1-3-95, Cl. D2-902.000.

Porter, David H., to L. D. Kichler Co., The: Lighting fixture roof. 354,150, 1-3-95, Cl. D26-113.000.

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PTL Equipment Manufacturing Co., Inc.: See—
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Coronato, Robert M.; and Coronato, Robert M., Jr., 354,045, Cl. D13-158.000.

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Rashman, Richard, to Prestige Medical Corporation: Stethoscope name tag. 354,086, 1-3-95, Cl. D20-22.000.

Ratliff, Keith D.: See—
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Redhawk, Jim: Portable sun and glare shield. 354,038, 1-3-95, Cl. D12-191.000.

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Richards, Scott H.: See—
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Riener, Karl S., to Rika Metallwarengesellschaft m.b.H.: Oven in the shape of a fireplace. 354,125, 1-3-95, Cl. D23-343.000.

RIKA Metallwarengesellschaft m.b.H.: See—
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Rinehart, Laney T.: Combination mask and breathing apparatus adaptor. 354,128, 1-3-95, Cl. D24-110.100.

Robinson, David: See—
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Robling, Brent D.; and Dunaj, Matthew R., III, to Kidworks, Inc.: Drinking cup. 353,972, 1-3-95, Cl. D7-510.000.

Rodriguez, Gregory O.; and Rodriguez, Patricia E.: Game board. 354,089, 1-3-95, Cl. D21-34.000.

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Rodriguez, Gregory O.; and Rodriguez, Patricia E., 354,089, Cl. D21-34.000.

Rogers, Sydney M.: Neck cushion. 353,966, 1-3-95, Cl. D6-601.000.

Romesburg, R. Bruce: Small horse trailer. 354,023, 1-3-95, Cl. D12-102.000.

Roos, Scott L., to Juno Lighting, Inc.: Adjustable track lighting fixture with adjustable lamp ring. 354,148, 1-3-95, Cl. D26-63.000.

Rosenblad, Lars-Goran, to Isaberg AB: Stapler. 353,983, 1-3-95, Cl. D8-49.000.

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Dunlap, Thomas; and Hofman, James, 354,088, Cl. D20-42.000.

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Sakaguchi, Hiroshi; Hino, Shinsaku; and Nishida, Koji, to Sharp Kabushiki Kaisha: Electronic organizer. 354,046, 1-3-95, Cl. D14-100.000.

Salvadori, Lawrence A., to Kendall Company, The: Enteral feeding bag. 354,129, 1-3-95, Cl. D24-118.000.

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Scheid, William J.; and Kurcbart, Robert, to Motorola, Inc.: Multi-function radio pager charger. 354,041, 1-3-95, Cl. D13-108.000.

Schmidt, Klaus N.: Remote control holder. 353,956, 1-3-95, Cl. D6-449.000.

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Seikosha Co., Ltd.: See—
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Sakaguchi, Hiroshi; Hino, Shinsaku; and Nishida, Koji, 354,046, Cl. D14-100.000.

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Shigemura, Atsushi, to Casio Computer Co., Ltd.: Electronic calculator having the functions of telephone book, address book, calendar, schedule book and memo book. 354,073, 1-3-95, Cl. D18-2.000.

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Siemens Aktiengesellschaft: See—
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Sims, William A.: Device for chilling liquid containers. 354,064, 1-3-95, Cl. D15-88.000.

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Smith, Wardell, III: Basketball training aid. 354,101, 1-3-95, Cl. D21-201.000.

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Phleps, Tilman; and Stoeckl, Klaus, 353,964, Cl. D6-502.000.

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Takahata, Kenji; and Ono, Junichi, to Casio Computer Co., Ltd.: Electronic calculator. 354,075, 1-3-95, Cl. D18-7.000.

Takashima, Asao, to Seikosha Co., Ltd.: Travel alarm clock. 354,003, 1-3-95, Cl. D10-18.000.

Takashima, Asao, to Seikosha Co., Ltd.: Clock. 354,008, 1-3-95, Cl. D10-28.000.

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Tanaka, Toyoyasu, to Menicon Co., Ltd.: Pincette for an ocular lens. 354,134, 1-3-95, Cl. D24-143.000.

Tapia, Rafael G.: Paint ball judge shield. 354,156, 1-3-95, Cl. D29-100.000.

Thompson, Eugene R.: Pool cue support guide. 354,106, 1-3-95, Cl. D21-232.000.

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Tsay, Fwu; and Zhang, Shiun-Fang: Pushup exercise stand. 354,100, 1-3-95, Cl. D21-198.000.

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Ueda, Takashi, to Cateye Co., Ltd.: Dual headlamp for bicycle. 354,147, 1-3-95, Cl. D26-28.000.

Ueda, Yoshihiro: See—
Kimura, Koji; Ueda, Yoshihiro; Ichimaru, Takeshi; and Oashi, Yukihiko, 354,048, Cl. D14-106.000.

Uvex Safety, LLC: See—
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Vardon Golf Company, Inc.: See—
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Wandinger, Franz: See—
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Wang, Ming-Jeng, to Compal Electronics, Inc.: Desk clock. 354,005, 1-3-95, Cl. D10-23.000.

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- Weigl, James: *See—*
 Clawson, Burrell E.; and Weigl, James, 354,126, Cl. D23-358.000.
 Weiss, Stephan; and Seidler, David. Pump bottle. 353,993, 1-3-95, Cl. D9-300.000.
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 Nortier, Richard; and Whiteside, John F., 354,113, Cl. D23-233.000.
 Williams, Daniel L., to Motorola, Inc. Mobile radiotelephone handset. 354,062, 1-3-95, Cl. D14-248.000.
 Winebrenner, John F. Portable rolled tissue dispenser. 353,965, 1-3-95, Cl. D6-518.000.
 Witzky, Hans, to Sensormatic Electronics Corporation. Antenna pedestal. 354,060, 1-3-95, Cl. D14-230.000.
- Yallanardo, Diane. Adjustable fly for trousers. 353,934, 1-3-95, Cl. D2-742.000.
 Yatabe, Takashi, to Casio Computer Co., Ltd. Electronic calculator having the functions of telephone book, address book, calendar, schedule book and memo book with sphygmomanometer. 354,072, 1-3-95, Cl. D18-2.000.
 Yoshida Kogyo K.K.: *See—*
 Murasaki, Ryuichi, 354,030, Cl. D8-382.000.
 Yoshii, Noriko: *See—*
 Kawamura, Seijiro; and Yoshii, Noriko, 354,121, Cl. D23-295.000.
 Young, Frederick W. Specific gravity metal separator. 354,066, 1-3-95, Cl. D15-147.000.
 Young, Kevin, to F. C. Young & Co., Inc. Garland. 354,019, 1-3-95, Cl. D11-119.000.
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- Conard-Pyle Company, The: *See—*
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 DeVor Nurseries, Inc.: *See—*
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 Florida Foundation Seed Producers, Inc.: *See—*
 Dudeck, Albert E., 9,030, Cl. 90.000.
 Hoff, Petrus M. M., to Hoffgaarde B.V. Variety of Liliun names Zsazsa. 9,027, 1-3-95, Cl. 87.400.
 Hoff, Petrus M. M., to Hoffgaarde B.V. Variety of Liliun named Fur Elise. 9,028, 1-3-95, Cl. 87.400.
 Hoffgaarde B.V.: *See—*
 Hoff, Petrus M. M., 9,027, Cl. 87.400.
 Hoff, Petrus M. M., 9,028, Cl. 87.400.
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 Layng, W. John. Chrysanthemum plant named Rosepink Debonair. 9,034, 1-3-95, Cl. 80.000.
 Mantel, Homme. Liliun 'Gold Dwarf'. 9,029, 1-3-95, Cl. 87.400.
- Mayer, Eugene W.: *See—*
 Meier, Virgil D.; Turner, J. Kevin; and Mayer, Eugene W., 9,036, Cl. 90.200.
 Meier, Virgil D.; Turner, J. Kevin; and Mayer, Eugene W., to O. M. Scott and Sons Company, The. BA 73-366 Kentucky bluegrass. 9,036, 1-3-95, Cl. 90.200.
 Meilland, Alain A., to Conard-Pyle Company, The. Miniature rose plant named Meifruije. 9,033, 1-3-95, Cl. 7.100.
 Nor'East Miniature Roses, Inc.: *See—*
 Saville, F. Harmon, 9,031, Cl. 9.000.
 O. M. Scott and Sons Company, The: *See—*
 Meier, Virgil D.; Turner, J. Kevin; and Mayer, Eugene W., 9,036, Cl. 90.200.
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 Turner, J. Kevin: *See—*
 Meier, Virgil D.; Turner, J. Kevin; and Mayer, Eugene W., 9,036, Cl. 90.200.
 Twomey, Jerry, to DeVor Nurseries, Inc. Floribunda rose plant named Tworight. 9,032, 1-3-95, Cl. 28.000.
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- A. E. Staley Manufacturing Company: *See—*
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 Behl, Wishvender K.: *See—*
 Plichta, Edward J.; and Behl, Wishvender K., H1397, Cl. 429-122.000.
 Bixler, Robert A., to United States of America, Navy. Optical correlation velocity log. H1409, 1-3-95, Cl. 364-456.000.
 Bloom, John J., Jr.; and Maas, Leslie H., to Caterpillar Inc. Hydraulic connection device. H1391, 1-3-95, Cl. 251-89.500.
 Buske, Gary R., to Dow Chemical Company, The. Diphenyl ether and benzophenone compositions. H1393, 1-3-95, Cl. 252-73.000.
 Campagnuolo, Carl J.; and Gross, Donald, to United States of America, Army. Claymore training device. H1390, 1-3-95, Cl. 434-11.000.
 Campbell, Carlton L., to Du Pont de Nemours, E. I., and Company. Fungicidal oxazolidinones. H1401, 1-3-95, Cl. 514-63.000.
 Campbell, James R. DNA-based fluorescent sensor. H1398, 1-3-95, Cl. 435-6.000.
 Caterpillar Inc.: *See—*
 Bloom, John J., Jr.; and Maas, Leslie H., H1391, Cl. 251-89.500.
 Chin, Steven S.; Miller, John A.; and Gobran, Ramsis, to Shell Oil Company. Styrene-isoprene-styrene block copolymer composition and adhesives made therefrom. H1402, 1-3-95, Cl. 525-314.000.
 Crawford, Wheeler C.: *See—*
 Sanderson, John R.; and Crawford, Wheeler C., H1407, Cl. 585-10.000.
 Culbreath, Albert K.; and McLean, Henry S. Fungicide. H1400, 1-3-95, Cl. 514-383.000.
 Dow Chemical Company, The: *See—*
 Buske, Gary R., H1393, Cl. 252-73.000.
 Dreese, Patrick C., to A. E. Staley Manufacturing Company. Method of preparing reduced fat spreads. H1394, 1-3-95, Cl. 426-603.000.
 Du Pont de Nemours, E. I., and Company: *See—*
 Campbell, Carlton L., H1401, Cl. 514-63.000.
 Endres, William E.: *See—*
 Kozlowski, Gregory; and Endres, William E., H1399, Cl. 505-452.000.
 Exxon Production Research Company: *See—*
 Frederick, Paul E., H1392, Cl. 405-63.000.
 Frederick, Paul E., to Exxon Production Research Company. Specialty boom and outrigger system for use with offshore skimmers. H1392, 1-3-95, Cl. 405-63.000.
 George, Eric R., to Shell Oil Company. Polyketone polymer blends. H1403, 1-3-95, Cl. 525-64.000.
- George, Eric R., to Shell Oil Company. Polyketone polymer blends. H1404, 1-3-95, Cl. 525-185.000.
 Gobran, Ramsis: *See—*
 Chin, Steven S.; Miller, John A.; and Gobran, Ramsis, H1402, Cl. 525-314.000.
 Gross, Donald: *See—*
 Campagnuolo, Carl J.; and Gross, Donald, H1390, Cl. 434-11.000.
 Hartley, Gerald A., to United States of America, Navy. H-infinity controller for an electro-mechanical actuator. H1410, 1-3-95, Cl. 364-148.000.
 Hendrickson, Mary A.: *See—*
 Vig, John R.; Hendrickson, Mary A.; and Laffey, Sally M., H1396, Cl. 428-434.000.
 Kozlowski, Gregory; and Endres, William E., to United States of America, Air Force. Process for transforming pure Y₂BaCuO₅ into a superconducting matrix of YBa₂Cu₃O_{7-x} with fine and homogeneously dispersed Y₂BaCuO₅ inclusions. H1399, 1-3-95, Cl. 505-452.000.
 Laffey, Sally M.: *See—*
 Vig, John R.; Hendrickson, Mary A.; and Laffey, Sally M., H1396, Cl. 428-434.000.
 Maas, Leslie H.: *See—*
 Bloom, John J., Jr.; and Maas, Leslie H., H1391, Cl. 251-89.500.
 McLean, Henry S.: *See—*
 Culbreath, Albert K.; and McLean, Henry S., H1400, Cl. 514-383.000.
 Miller, John A.: *See—*
 Chin, Steven S.; Miller, John A.; and Gobran, Ramsis, H1402, Cl. 525-314.000.
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 Pottick, Lorelle A.; and Modic, Michael J., H1405, Cl. 525-92.000.
 Plichta, Edward J.; and Behl, Wishvender K., to United States of America, Army. Cathode material for use in a high temperature rechargeable molten salt cell and high temperature rechargeable molten salt cell including the cathode material. H1397, 1-3-95, Cl. 429-122.000.
 Potenziani, Ernest, II: *See—*
 Babbitt, Richard W.; Stern, Richard A.; and Potenziani, Ernest, II, H1408, Cl. 333-1.100.
 Pottick, Lorelle A.; and Modic, Michael J., to Shell Oil Company. Epoxy resin composition. H1405, 1-3-95, Cl. 525-92.000.
 Powers, Matthew R., to Rhone Poulenc Rorer Pharmaceuticals Inc. Process for preparing dibenzofurans via catalytic heteroannulation. H1406, 1-3-95, Cl. 549-461.000.
 Pratap, Siddharth: *See—*
 Weldon, William F.; and Pratap, Siddharth, H1389, Cl. 89-8.000.

Prosser, Shawna L., to A. E. Staley Manufacturing Company. Composition and method of preparing reduced fat spreads. H1395, 1-3-95, Cl. 426-633.000.

Rhone-Poulenc Rorer Pharmaceuticals Inc.: See—

Powers, Matthew R., H1406, Cl. 549-461.000.

Sanderson, John R.; and Crawford, Wheeler C., to Texaco Chemical Company. Synthetic lubricant base stocks by co-reaction of vinylcyclohexene and long-chain olefins. H1407, 1-3-95, Cl. 585-10.000.

Shell Oil Company: See—

Chin, Steven S.; Miller, John A.; and Gobran, Ramsis, H1402, Cl. 525-314.000.

George, Eric R., H1403, Cl. 525-64.000.

George, Eric R., H1404, Cl. 525-185.000.

Pottick, Lorelle A.; and Modic, Michael J., H1405, Cl. 525-92.000.

Stern, Richard A.: See—

Babbitt, Richard W.; Stern, Richard A.; and Potenziani, Ernest, II, H1408, Cl. 333-1.100.

Texaco Chemical Company: See—

Sanderson, John R.; and Crawford, Wheeler C., H1407, Cl. 585-10.000.

United States of America

Air Force: See—

Kozlowski, Gregory; and Endres, William E., H1399, Cl. 505-452.000.

Army: See—

Babbitt, Richard W.; Stern, Richard A.; and Potenziani, Ernest, II, H1408, Cl. 333-1.100.

Campagnuolo, Carl J.; and Gross, Donald, H1390, Cl. 434-11.000.

Plichta, Edward J.; and Behl, Wishvender K., H1397, Cl. 429-122.000.

Vig, John R.; Hendrickson, Mary A.; and Laffey, Sally M., H1396, Cl. 428-434.000.

Weldon, William F.; and Pratap, Siddharth, H1389, Cl. 89-8.000.

Navy: See—

Bixler, Robert A., H1409, Cl. 364-456.000.

Hartley, Gerald A., H1410, Cl. 364-148.000.

Vig, John R.; Hendrickson, Mary A.; and Laffey, Sally M., to United States of America, Army. Oxide substrate with a strongly adherent gold film of 10 to 40 nm in thickness on the substrate. H1396, 1-3-95, Cl. 428-434.000.

Weldon, William F.; and Pratap, Siddharth, to United States of America, Army. Iron backed, round bore, augmented electromagnetic accelerator as an injector. H1389, 1-3-95, Cl. 89-8.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 3, 1995

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	620	5,377,422	560	5,377,488	571 M	5,377,559	CLASS 108	CLASS 126				
48	5,377,359	CLASS 34	678	5,377,489	574	5,377,560	51.3	5,377,600	42	5,377,660		
181	5,377,360	70	5,377,423	CLASS 62	594.6	5,377,561	97	5,377,598	101	5,377,661		
		90	5,377,424	23	5,377,490	CLASS 75	157	5,377,601	110 R	5,377,662		
252.4	5,377,361	92	5,377,425	63	5,377,491	500	5,378,260	CLASS 109	152 B	5,377,663		
292	5,377,362	259	5,377,426	77	5,377,492	528	5,378,261	51	5,377,602	204	5,377,664	
313	5,377,363	275	5,377,427	102	5,377,493	722	5,378,262	CLASS 110	299 R	5,377,665		
483	5,377,364	446	5,377,428	125	5,377,494	CLASS 76	86	5,377,563	500	5,377,666		
523	5,377,365	586	5,377,429	129	5,377,495	CLASS 81	165 R	Re.34,814	CLASS 127			
561.1	5,377,366	CLASS 36	158	5,377,496	9.44	5,377,564	346	5,377,603	36	5,378,286		
605	5,377,367	51	5,377,430	187	5,377,498	57.33	5,377,565	CLASS 112	CLASS 128			
		134	5,377,431	195	5,377,499	58.2	5,377,566	114	5,377,605	3	5,377,667	
236.1	5,377,369	CLASS 37	238.6	5,377,500	426	5,377,567	254	5,377,606	4	5,377,668		
503.1	5,377,371	186	5,377,432	292	5,377,501	CLASS 83	39.2	5,377,607	6	5,377,669		
600	5,377,372	CLASS 40	326	5,377,503	74	5,377,568	114	5,377,607	204.17	5,377,670		
613	5,377,373	411	5,377,433	CLASS 63	98	5,377,569	144 R	5,377,608	204.23	5,377,671		
620	5,377,370	611	5,377,434	15	5,377,505	175	5,377,570	145 R	207.16	5,377,672		
991	5,377,368	645	5,377,435	28	5,377,506	399	5,377,571	259	214	5,378,526		
		CLASS 42	64	5,378,255	395	5,378,256	583	5,377,572	633	5,377,673		
114	5,377,374	87	5,377,436	CLASS 65	64	5,378,255	CLASS 84	280	634	5,377,674		
137	5,378,242	94	5,377,437	CLASS 66	69	5,377,507	377	5,377,573	642	5,377,675		
196	5,378,243	96	5,377,438	CLASS 68	4	5,377,508	402	5,377,574	653.1	5,377,676		
409	5,378,244	3	5,377,439	5 D	5,377,509	411 R	5,377,575	308	653.2	5,377,677		
543	5,378,245	22	5,377,441	CLASS 70	16	5,377,510	727	5,378,850	653.4	5,377,678		
625	5,378,246	44.4	5,377,442	38 A	5,377,511	36.05	5,377,577	CLASS 89	104	5,377,679		
		44.9	5,377,443	58	5,377,512	CLASS 91	47	5,377,578	201	5,378,900		
49.1	5,377,375	44.91	5,377,444	276	5,377,513	CLASS 92	63	5,377,579	264	5,378,281		
83	5,377,376	137	5,377,446	452	5,377,514	CLASS 95	248	5,377,580	697	5,378,282		
167.1	5,377,377	CLASS 44	275	5,378,248	CLASS 71	12	5,378,257	719	772	5,378,283		
230	5,377,378	388	5,378,249	CLASS 47	41	5,378,258	54	5,378,263	723 HC	5,378,284		
246	5,377,379	447	5,378,250	59	5,378,259	CLASS 72	154	5,378,264	723 MR	5,378,284		
250.002	5,377,380	33	5,377,447	13	5,377,515	CLASS 96	219	5,378,265	774	5,377,691		
304	5,377,381	360	5,377,448	37	5,377,516	CLASS 99	114	5,378,266	844	5,377,692		
340.1	5,377,382	441	5,377,449	164	5,377,517	CLASS 100	168	5,378,267	845	5,377,693		
353	5,377,383	502	5,377,450	267	5,377,518	CLASS 101	181	5,378,268	849	Re.34,816		
		295	5,378,251	326	5,377,519	CLASS 102	228	5,378,269	888	5,377,694		
193	5,377,384	298	5,378,252	361	5,377,520	CLASS 103	233	5,378,270	CLASS 131	248	5,377,696	
CLASS 16		CLASS 52	467	5,377,522	CLASS 73	295	5,377,581	234	330	5,377,697		
CLASS 19		1	5,377,458	1 D	5,377,523	420	5,377,582	709	370	5,377,698		
CLASS 24		57	5,377,459	4 R	5,377,524	500	5,377,583	796				
3 B	5,377,386	81.1	5,377,460	9	5,377,525	CLASS 104	110	5,377,584	CLASS 122	4 D	5,377,627	
16 PB	5,377,387	126.4	5,377,461	25.03	5,377,526	CLASS 105	181	5,377,585	CLASS 123	41.31	5,377,628	
20 R	5,377,389	127.2	5,377,462	31.01	5,377,527	CLASS 106	228	5,377,586	73 AD	5,377,637	1	5,378,287
49 CF	5,377,390	200	5,377,463	40	5,377,528	CLASS 107	240	5,377,588	90.17	5,377,638	21	5,378,288
72.5	5,377,391	236.3	5,377,465	49.5	5,377,530	CLASS 108	248	5,377,589	143 C	5,377,639	76	5,377,704
303	5,377,392	238.1	5,377,467	53.05	5,377,531	CLASS 109	327	5,377,599	179.4	5,377,641	95.3	5,377,705
637	5,377,393	302.4	5,377,468	73	5,377,532	CLASS 110	389.1	5,377,590	182.1	5,377,642	104.1	5,377,706
683	5,377,394	396.02	5,377,469	86	5,377,533	CLASS 111	423	5,377,591	184.22	5,377,643	105	5,377,707
		482	5,377,471	116	5,377,534	CLASS 112	210	5,377,592	184.56	5,377,629	184	5,377,708
2	5,377,395	730.7	5,377,472	117.3	5,377,535	CLASS 113	289	5,377,593	193.3	5,377,643		
11	5,377,396	790	5,377,473	118.2	5,377,536	CLASS 114	308	5,377,594	198 E	5,377,632	CLASS 135	
33 T	5,377,397	64	5,377,474	146.8	5,377,537	CLASS 115	118	5,377,595	198 F	5,377,631	66	5,377,710
81.07	5,377,398	167	5,377,475	151	5,377,540	CLASS 116	284	5,377,596	297	5,377,633	87	5,377,711
407	5,377,399	255	5,377,476	379.02	5,377,541	CLASS 117	418	5,377,597	317	5,377,634	88.13	5,377,712
517	5,377,400	399	5,377,477	504	5,377,543	CLASS 118	118	5,377,595	336	5,377,635		
523	5,377,401	550	5,377,478	505	5,377,544	CLASS 119	284	5,377,596	446	5,377,636	CLASS 136	
623.1	5,378,247	CLASS 55	269	5,378,253	517 B	5,377,545	4.1	5,377,597	520	5,377,644	258	5,378,289
745	5,377,402	CLASS 56	271	5,378,254	589	5,377,546	1.11	5,378,268	525	5,377,645	CLASS 137	
827	5,377,403	14.3	5,377,479	723	5,377,547	589	5,377,547	538	5,377,647	1	5,377,713	
830	5,377,404	102	5,377,480	768	5,377,548	568	5,377,548	559.1	5,377,648	2	5,377,714	
833	5,377,405	862.322	5,377,550	860	5,377,549	569	5,377,549	568	5,377,649	15	5,377,715	
846	5,377,406	862.49	5,377,552	862.49	5,377,551	569	5,377,551	569	5,377,650	68.1	5,377,716	
889	5,377,407	864.45	5,377,551	864.45	5,377,551	569	5,377,551	569	5,377,651	101	5,377,717	
898.07	5,377,408	866.5	5,377,553	866.5	5,377,553	569	5,377,553	569	5,377,652	625.11	5,377,718	
		CLASS 60	2	5,377,554	CLASS 74	410	5,378,272	569	5,377,653	625.63	5,377,719	
41	5,377,409	39.06	5,377,483	493	5,377,555	417	5,378,273	569	5,377,654	625.65	5,377,720	
90.1	5,377,410	276	5,377,484	502.6	5,377,556	493	5,378,274	569	5,377,655	807	5,377,721	
133	5,377,411	288	5,377,486	551.2	5,377,557	606	5,378,275	569	5,377,656	CLASS 139		
262	5,377,412	398	5,377,485	551.8	5,377,558	709	5,378,276	569	5,377,657	383 AA	5,377,722	
340	5,377,413	487	5,377,487			719	5,378,277	569	5,377,658	4	5,377,723	
346.51	5,377,414					793	5,378,278	569	5,377,659	20	5,377,724	
363	5,377,415							569	5,377,659	27	5,377,725	
517	5,377,416							569	5,377,659			
199 R	5,377,417							569	5,377,659			
478	5,377,418							569	5,377,659			
535	5,377,419							569	5,377,659			
542	5,377,421							569	5,377,659			
559	5,377,420							569	5,377,659			

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	5,379,391	531	5,378,102	549	5,378,138	52	5,378,648		CLASS 477
	5,379,392				5,378,139		5,378,649	110	5,377,562
	5,379,393	CLASS 414		589	5,378,141	126	5,378,650	175	5,378,211
425	5,379,394	10	5,378,103				5,378,651		CLASS 482
	5,379,395	460	5,378,104	CLASS 426	5,378,576	106	5,378,652	52	5,378,209
	5,379,396	540	5,378,105	2	5,378,477	165	5,378,653	54	5,378,212
	5,379,397	608	5,378,106	40	5,378,478	176	5,378,654	57	5,378,213
	5,379,398	786	5,378,107	42	5,378,479	192	5,378,655	67	5,378,214
	5,379,399			67	5,378,480	264	5,378,656	94	5,378,215
	5,379,400	CLASS 416		99	5,378,481	281	5,378,657	111	5,378,216
	5,379,401	97 R	5,378,108	231	5,378,482	303	5,378,658		CLASS 483
	5,379,402	226	5,378,109	282	5,378,483	313	5,378,659	9	5,378,218
500	5,379,403	244 R	5,378,110	329	5,378,484	321	5,378,660	48	5,378,219
	5,379,404				5,378,485	325	5,378,583		CLASS 493
	5,379,405	203	5,378,111	549	5,378,486	386	5,378,587	226	5,378,220
	5,379,406	213	5,378,112	580	5,378,487	428	5,378,588	367	5,378,221
550	5,379,407	236	5,378,113		5,378,488	495	5,378,589	405	5,378,222
575	5,379,408	269	5,378,114	602	5,378,489	504	5,378,590		CLASS 492
	5,379,409		5,378,115	606	5,378,490	506	5,378,591	48	5,378,219
	5,379,410		5,378,116	661	5,378,491	533	5,378,592		CLASS 493
	5,379,411	296	5,378,117			544	5,378,593	226	5,378,220
	5,379,412	298	5,378,118	CLASS 427	5,378,492	545	5,378,594	367	5,378,221
	5,379,413	308	5,378,119	1	5,378,493	546	5,378,595	405	5,378,222
	5,379,414	313	5,378,120	8	5,378,494	549	5,378,596		CLASS 501
	5,379,415	322	5,378,121	58	5,378,495	567	5,378,597	2	5,378,661
	5,379,416	363	5,378,122	67	5,378,496	569	5,378,598	3	5,378,662
	5,379,417	395	5,378,123	128	5,378,497		5,378,599	17	5,378,663
	5,379,418	415	5,378,124	211	5,378,498		5,378,600	32	5,378,664
600	5,379,419	423.1	5,378,125	240	5,378,499			40	5,378,665
	5,379,420	423.3	5,378,126	242	5,378,500	CLASS 431	5,378,501	95	5,378,666
	5,379,421	479	5,378,127	250	5,378,501	7	5,378,502	97	5,378,667
	5,379,422	506		255.2	5,378,503	11	5,378,504	136	
	5,379,423			305	5,378,504	153	5,378,505		CLASS 502
	5,379,424	9	5,378,128	356	5,378,506		5,378,507	20	5,378,668
650	5,379,425	55.5	5,378,129	377	5,378,508	CLASS 432	5,378,509	37	5,378,669
	5,379,426	102	5,378,130	484	5,378,510	120	5,378,511	60	5,378,670
	5,379,427			529	5,378,512	152	5,378,513	64	5,378,671
700	5,379,428			534	5,378,514		5,378,515	108	5,378,672
	5,379,429	2	5,378,426	556	5,378,516	CLASS 433	5,378,517	174	5,378,673
	5,379,430				5,378,518	11	5,378,519		CLASS 503
	5,379,431	508	Re 34,819	563	5,378,520	19	5,378,521	208	5,378,674
	5,379,432	586.1	5,378,427	600	5,378,522	64	5,378,523	227	5,378,675
	5,379,433				5,378,524	80	5,378,524		5,378,676
725	5,379,434			CLASS 428	5,378,525	91	5,378,526		
	5,379,435			1	5,378,527	150	5,378,528	CLASS 445	
750	5,379,436			11	5,378,529	173	5,378,530	208	5,378,674
	5,379,437	9	5,378,428	13	5,378,531	216	5,378,532	227	5,378,675
	5,379,438	53	5,378,429	14	5,378,532	223	5,378,533		CLASS 504
	5,379,439	57	5,378,430	40	5,378,534		5,378,535	104	5,378,677
	5,379,440	73	5,378,431	64	5,378,536	11	5,378,537	242	5,378,678
	5,379,441	82.07	5,378,432		5,378,538	253	5,378,539	246	5,378,679
800	5,379,442			100	5,378,540	379	5,378,541	270	5,378,680
	5,379,443	141	5,378,433	65	5,378,542	CLASS 434	5,378,543	273	5,378,681
	5,379,444	177	5,378,434	72	5,378,544	11	5,378,545		CLASS 505
	5,379,445	186	5,378,435	85	5,378,546	253	5,378,547	190	5,378,683
	5,379,446			100	5,378,548	371	5,378,549	211	5,379,018
				141	5,378,550	424	5,378,551		5,379,020
110	5,378,068			192	5,378,552	CLASS 435	5,378,553	430	5,378,684
477	5,378,069			216	5,378,554	2	5,378,555	490	5,378,682
615.2	5,378,070			219	5,378,556	5	5,378,557		CLASS 512
636.1	5,378,071			224	5,378,558	47	5,378,559	11	5,378,685
692	5,378,072			246	5,378,560	287	5,378,561		CLASS 514
		CLASS 402		255	5,378,562	364	5,378,563	12	5,378,686
		5,378,073		272	5,378,564		5,378,565	15	5,378,687
31		301		304.4	5,378,566	CLASS 451	5,378,567	170	5,378,688
		368		327	5,378,568	1	5,378,569		5,378,689
284	5,378,074			335	5,378,570	45	5,378,571	18	5,378,690
314	5,378,075			355	5,378,572	47	5,378,573	19	5,378,692
379	5,378,076			364	5,378,574	13.4	5,378,575	45	5,378,693
402	5,378,077			378	5,378,576	33.2	5,378,577	82	5,378,694
		CLASS 404		394	5,378,578	52.3	5,378,579	167	5,378,695
25	5,378,078			428	5,378,580	54.2	5,378,581	183	5,378,696
75	5,378,079			483	5,378,582		5,378,583	210	5,378,697
90	5,378,080			517	5,378,584	143	5,378,585	211	5,378,698
	5,378,081			529	5,378,586	151.2	5,378,587	215	5,378,701
		CLASS 405		573	5,378,588	158.5	5,378,589	222.5	5,378,702
		5,378,082		690	5,378,590	273	5,378,591	222.8	5,378,703
3	5,378,083			694 BA	5,378,592	318	5,378,593	231.2	5,378,704
128	5,378,084			694 TS	5,378,594	323	5,378,595	232.8	5,378,706
186	5,378,085				5,378,596	330	5,378,597	239.5	5,378,707
229	5,378,086				5,378,598	CLASS 452	5,378,599	256	5,378,708
233	5,378,087				5,378,600	119	5,378,601	277	5,378,709
239.5	5,378,088				5,378,602	128	5,378,603	284	5,378,710
284	5,378,089				5,378,604	8	5,378,605	311	5,378,711
		CLASS 406			5,378,606	18	5,378,607	312	5,378,699
123	5,378,090				5,378,608	77	5,378,609	315	5,378,712
		5,378,091			5,378,610	92	5,378,611	329	5,378,713
42	5,378,092				5,378,612	96	5,378,613	333	5,378,714
		5,378,093			5,378,614	110	5,378,615	337	5,378,715
132	5,378,094				5,378,616	206	5,378,617	356	5,378,716
143	5,378,095				5,378,618	263	5,378,619	369	5,378,717
		5,378,096			5,378,620	CLASS 453	5,378,621	373	5,378,718
32	5,378,097				5,378,622	135	5,378,623	410	5,378,719
112	5,378,098				5,378,624	276	5,378,625	411	5,378,720
151	5,378,099				5,378,626	CLASS 454	5,378,627	424	5,378,721
154	5,378,099				5,378,628	135	5,378,629		5,378,722
267	5,378,100				5,378,630	135	5,378,631		5,378,723
		CLASS 407			5,378,632	135	5,378,633		5,378,724
		5,378,090			5,378,634	135	5,378,635		
		5,378,091			5,378,636	135	5,378,637		
		5,378,092			5,378,638	135	5,378,639		
		5,378,093			5,378,640	135	5,378,641		
		5,378,094			5,378,642	135	5,378,643		
		5,378,095			5,378,644	135	5,378,645		
		5,378,096			5,378,646	135	5,378,647		
		5,378,097			5,378,648	135	5,378,649		
		5,378,098			5,378,650	135	5,378,651		
		5,378,099			5,378,652	135	5,378,653		
		5,378,100			5,378,654	135	5,378,655		
		5,378,101			5,378,656	135	5,378,657		
		5,378,102			5,378,658	135	5,378,659		
		5,378,103			5,378,660	135	5,378,661		
		5,378,104			5,378,662	135	5,378,663		
		5,378,105			5,378,664	135	5,378,665		
		5,378,106			5,378,666	135	5,378,667		
		5,378,107			5,378,668	135	5,378,669		
		5,378,108			5,378,670	135	5,378,671		
		5,378,109			5,378,672	135	5,378,673		
		5,378,110			5,378,674	135	5,378,675		
		5,378,111			5,378,676	135	5,378,677		
		5,378,112			5,378,678	135	5,378,679		
		5,378,113			5,378,680	135	5,378,681		
		5,378,114			5,378,682	135	5,378,683		
		5,378,115			5,378,684	135	5,378,685		
		5,378,116			5,378,686	135	5,378,687		
		5,378,117			5,378,688	135	5,378,689		
		5,378,118			5,378,690	135	5,378,691		
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01	5,377,593	5,377,825	5,378,473	5,379,198	5,378,235	5,377,613
	5,378,155	5,377,856	5,378,480	5,379,233	5,378,246	5,377,623
	5,379,025	5,377,876	5,378,499	5,379,234	5,378,378	5,377,681
02	5,378,448	5,377,886	5,378,508	5,379,242	5,378,688	5,377,751
04	5,377,458	5,377,887	5,378,522	5,379,246	5,378,840	5,377,868
	5,377,495	5,377,897	5,378,535	5,379,249	5,378,902	5,377,907
	5,377,502	5,377,908	5,378,609	5,379,253	5,379,044	5,377,934
	5,377,544	5,377,912	5,378,620	5,379,254	5,379,171	5,377,983
	5,377,658	5,377,914	5,378,621	5,379,289	5,379,212	5,378,010
	5,377,770	5,377,936	5,378,633	5,379,297	5,379,224	5,378,092
	5,377,944	5,377,975	5,378,636	5,379,303	5,379,261	5,378,188
	5,378,149	5,377,977	5,378,660	5,379,309	5,379,337	5,378,217
	5,378,151	5,377,980	5,378,665	5,379,311	5,379,391	5,378,229
	5,378,152	5,377,993	5,378,730	5,379,312	5,379,411	5,378,282
	5,378,501	5,377,995	5,378,737	5,379,317	5,377,409	5,378,298
	5,378,640	5,377,997	5,378,740	5,379,320	5,377,411	5,378,303
	5,378,869	5,378,020	5,378,814	5,379,321	5,377,530	5,378,512
	5,378,928	5,378,028	5,378,816	5,379,330	5,377,556	5,378,551
	5,379,161	5,378,032	5,378,824	5,379,336	5,377,564	5,378,892
	5,379,167	5,378,036	5,378,825	5,379,349	5,377,592	5,379,008
	5,379,308	5,378,041	5,378,879	5,379,351	5,377,621	5,379,030
	5,379,412	5,378,058	5,378,880	5,379,355	5,377,655	5,379,031
05	5,377,542	5,378,062	5,378,885	5,379,356	5,377,671	5,379,177
	5,377,558	5,378,078	5,378,888	5,379,372	5,377,673	5,379,185
	5,378,037	5,378,084	5,378,890	5,379,375	5,377,686	5,379,186
06	Re.34,818	5,378,086	5,378,898	5,379,385	5,377,783	5,379,279
	Re.34,819	5,378,098	5,378,909	5,379,401	5,378,070	5,379,400
	Re.34,820	5,378,107	5,378,915	5,379,406	5,378,108	5,379,437
	Re.34,821	5,378,121	5,378,922	5,379,413	5,378,112	5,379,404
	5,377,359	5,378,122	5,378,924	5,379,415	5,378,354	5,377,689
	5,377,360	5,378,137	5,378,926	5,379,417	5,378,421	5,377,957
	5,377,362	5,378,146	5,378,938	5,379,420	5,378,463	5,377,979
	5,377,368	5,378,160	5,378,939	5,379,426	5,379,270	5,378,083
	5,377,377	5,378,181	5,378,945	5,379,428	5,379,280	5,378,221
	5,377,388	5,378,209	5,378,955	5,379,430	5,379,315	5,378,290
	5,377,443	5,378,214	5,378,982	5,379,431	5,379,332	5,378,805
	5,377,446	5,378,225	5,378,999	5,379,432	5,377,741	5,378,974
	5,377,459	5,378,228	5,379,000	5,379,438	5,379,439	5,379,141
	5,377,512	5,378,231	5,379,005	5,379,439	5,379,442	5,379,145
	5,377,519	5,378,233	5,379,018	5,379,442	5,378,397	5,379,403
	5,377,552	5,378,234	5,379,028	5,379,443	5,378,539	5,379,403
	5,377,576	5,378,278	5,379,045	5,379,444	5,378,708	5,377,692
	5,377,581	5,378,299	5,379,053	5,379,457	5,378,790	5,377,429
	5,377,609	5,378,318	5,379,065	5,379,477	5,378,820	5,377,852
	5,377,624	5,378,334	5,379,077	5,379,439	5,379,136	5,378,631
	5,377,626	5,378,356	5,379,083	5,377,510	5,377,364	5,378,641
	5,377,668	5,378,359	5,379,114	5,377,516	5,377,427	5,378,648
	5,377,675	5,378,360	5,379,115	5,377,760	5,377,442	5,378,895
	5,377,676	5,378,362	5,379,129	5,377,885	5,377,444	5,379,250
	5,377,683	5,378,407	5,379,157	5,377,951	5,377,470	5,377,424
	5,377,747	5,378,432	5,379,172	5,378,022	5,377,489	5,377,453
	5,377,756	5,378,437	5,379,184	5,378,046	5,377,599	5,377,477
	5,377,794	5,378,441	5,379,187	5,378,227	5,377,603	5,377,503

5,377,559	5,377,661	5,378,762	5,378,468	5,378,664	5,378,531
5,377,601	5,377,933	5,378,868	5,378,486	5,378,789	5,378,693
5,377,617	5,377,938	5,378,874	5,378,490	5,378,803	5,378,754
5,377,641	5,378,005	5,379,213	5,378,524	5,378,821	5,378,798
5,377,766	5,378,088	5,379,227	5,378,626	5,378,857	5,378,965
5,377,768	5,378,332	5,379,267	5,378,637	5,378,870	5,378,993
5,377,801	5,378,413	5,379,405	5,378,669	5,378,882	5,379,133
5,377,861	5,378,497	5,379,449	5,378,685	5,378,912	5,379,335
5,377,863	5,378,602	5,377,376	5,378,694	5,378,916	5,377,456
5,377,864	5,378,670	5,377,473	5,378,696	5,378,927	5,377,716
5,377,996	5,378,723	5,377,493	5,378,704	5,378,943	5,377,740
5,378,000	5,378,809	5,377,541	5,378,713	5,378,951	5,377,746
5,378,101	5,378,854	5,377,549	5,378,715	5,378,966	5,377,955
5,378,103	5,379,006	5,377,821	5,378,728	5,378,975	5,378,008
5,378,126	5,379,043	5,377,823	5,378,763	5,378,989	5,378,080
5,378,131	5,379,299	5,377,832	5,378,804	5,379,087	5,378,081
5,378,133	5,377,413	5,377,959	5,378,830	5,379,094	5,378,104
5,378,165	5,377,472	5,378,034	5,378,843	5,379,098	5,378,113
5,378,171	5,377,531	5,378,061	5,378,873	5,379,122	5,378,215
5,378,172	5,377,607	5,378,067	5,378,883	5,379,193	5,378,223
5,378,175	5,377,663	5,378,072	5,378,934	5,379,201	5,378,280
5,378,178	5,377,690	5,378,079	5,378,949	5,379,207	5,378,349
5,378,186	5,377,817	5,378,238	5,378,957	5,379,238	5,378,449
5,378,193	5,377,820	5,378,239	5,378,978	5,379,269	5,378,464
5,378,197	5,377,910	5,378,251	5,379,052	5,379,291	5,378,747
5,378,202	5,378,123	5,378,252	5,379,086	5,379,342	5,378,764
5,378,226	5,378,236	5,378,267	5,379,149	5,379,345	5,379,179
5,378,230	5,378,330	5,378,384	5,379,313	5,379,359	5,378,840
5,378,286	5,378,341	5,378,494	5,379,358	5,379,370	5,377,430
5,378,478	5,378,343	5,378,536	5,379,364	5,379,376	5,377,664
5,378,479	5,378,542	5,378,542	5,379,421	4,971,932	5,377,691
5,378,483	5,378,374	5,378,575	5,377,754	5,377,416	5,377,699
5,378,487	5,378,460	5,378,731	5,377,866	5,377,437	5,377,779
5,378,491	5,378,469	5,378,741	5,378,550	5,377,565	5,378,089
5,378,545	5,378,475	5,378,782	5,378,994	5,377,595	5,378,220
5,378,722	5,378,495	5,378,785	5,379,011	5,377,697	5,378,504
5,378,784	5,378,581	5,378,884	5,377,365	5,377,707	5,378,686
5,378,822	5,378,752	5,379,001	5,377,872	5,377,872	5,378,841
5,379,032	5,378,807	5,379,162	5,377,883	5,377,883	5,379,384
5,379,039	5,378,808	5,379,170	5,377,415	5,377,387	5,377,410
5,379,202	5,378,813	5,379,215	5,377,418	5,377,906	5,377,422
5,379,211	5,378,940	5,379,327	5,377,454	5,377,987	5,377,468
5,379,220	5,378,960	5,379,377	5,377,491	5,378,007	5,377,490
5,379,271	5,378,988	5,379,392	5,377,496	5,378,159	5,377,573
5,379,310	5,379,036	5,059,279	5,377,499	5,378,169	5,377,693
5,379,324	5,379,134	5,377,550	5,377,514	5,378,242	5,377,693
5,379,332	5,379,156	5,377,646	5,377,522	5,378,357	5,377,705
5,379,343	5,379,305	5,377,672	5,377,522	5,378,408	5,377,710
5,379,447	5,379,378	5,377,711	5,377,546	5,378,431	5,377,853
5,379,457	5,379,379	5,377,725	5,377,569	5,378,433	5,377,896
5,379,478	5,379,381	5,377,782	5,377,678	5,378,445	5,377,900
5,379,487	5,379,419	5,377,782	5,377,688	5,378,447	5,377,960
5,379,495	5,379,455	5,377,829	5,377,696	5,378,755	5,378,087
5,379,503	5,379,455	5,378,003	5,377,700	5,378,842	5,378,109
5,379,506	5,379,456	5,378,006	5,377,715	5,378,878	5,378,166
5,379,517	5,379,477	5,378,477	5,377,752	5,379,037	5,378,187
5,379,519	5,379,486	5,378,554	5,377,784	5,379,389	5,378,222
5,379,524	5,379,495	5,378,619	5,377,800	5,377,610	5,378,264
5,379,529	5,379,503	5,378,619	5,377,827	5,377,729	5,378,325
5,379,537	5,379,517	5,378,622	5,377,869	5,377,945	5,378,368
5,379,540	5,379,524	5,379,524	5,377,879	5,378,546	5,378,372
5,379,549	5,379,537	5,379,537	5,377,884	5,377,366	5,378,373
5,379,550	5,379,540	5,379,540	5,377,901	5,377,380	5,378,390
5,379,551	5,379,541	5,379,541	5,377,903	5,377,395	5,378,398
5,379,552	5,379,542	5,379,542	5,377,904	5,377,396	5,378,401
5,379,553	5,379,543	5,379,543	5,377,911	5,377,421	5,378,461
5,379,554	5,379,544	5,379,544	5,377,915	5,377,448	5,378,510
5,379,555	5,379,545	5,379,545	5,377,915	5,377,464	5,378,558
5,379,556	5,379,546	5,379,546	5,377,915	5,377,471	5,378,605
5,379,557	5,379,547	5,379,547	5,377,915	5,377,478	5,378,618
5,379,558	5,379,548	5,379,548	5,377,915	5,377,485	5,378,625
5,379,559	5,379,549	5,379,549	5,377,915	5,377,492	5,378,678
5,379,560	5,379,550	5,379,550	5,377,915	5,377,499	5,378,720
5,379,561	5,379,551	5,379,551	5,377,915	5,377,506	5,378,758
5,379,562	5,379,552	5,379,552	5,377,915	5,377,513	5,378,836
5,379,563	5,379,553	5,379,553	5,377,915	5,377,520	5,378,838
5,379,564	5,379,554	5,379,554	5,377,915	5,377,527	5,378,839
5,379,565	5,379,555	5,379,555	5,377,915	5,377,534	5,378,895
5,379,566	5,379,556	5,379,556	5,377,915	5,377,541	5,379,118
5,379,567	5,379,557	5,379,557	5,377,915	5,377,548	5,379,199
5,379,568	5,379,558	5,379,558	5,377,915	5,377,555	5,379,203
5,379,569	5,379,559	5,379,559	5,377,915	5,377,562	5,379,209
5,379,570	5,379,560	5,379,560	5,377,915	5,377,569	5,379,229
5,379,571	5,379,561	5,379,561	5,377,915	5,377,576	5,379,278
5,379,572	5,379,562	5,379,562	5,377,915	5,377,583	5,379,296
5,379,573	5,379,563	5,379,563	5,377,915	5,377,590	5,377,518
5,379,574	5,379,564	5,379,564	5,377,915	5,377,597	5,377,802
5,379,575	5,379,565	5,379,565	5,377,915	5,377,604	5,377,874
5,379,576	5,379,566	5,379,566	5,377,915	5,377,611	5,378,802
5,379,577	5,379,567	5,379,567	5,377,915	5,377,618	5,379,034
5,379,578	5,379,568	5,379,568	5,377,915	5,377,625	5,379,268
5,379,579	5,379,569	5,379,569	5,377,915	5,377,632	5,379,393
5,379,580	5,379,570	5,379,570	5,377,915	5,377,639	5,379,451
5,379,581	5,379,571	5,379,571	5,377,915	5,377,646	5,378,213
5,379,582	5,379,572	5,379,572	5,377,915	5,377,653	5,378,219
5,379,583	5,379,573	5,379,573	5,377,915	5,377,660	5,378,253
5,379,584	5,379,574	5,379,574	5,377,915	5,377,667	5,378,266
5,379,585	5,379,575	5,379,575	5,377,915	5,377,674	5,378,327
5,379,586	5,379,576	5,379,576	5,377,915	5,377,681	5,378,370
5,379,587	5,379,577	5,379,577	5,377,915	5,377,688	5,378,371
5,379,588	5,379,578	5,379,578	5,377,915	5,377,695	5,378,388
5,379,589	5,379,579	5,379,579	5,377,915	5,377,702	5,378,409
5,379,590	5,379,580	5,379,580	5,377,915	5,377,709	5,378,419
5,379,591	5,379,581	5,379,581	5,377,915	5,377,716	5,378,420
5,379,592	5,379,582	5,379,582	5,377,915	5,377,723	5,378,488
5,379,593	5,379,583	5,379,583	5,377,915	5,377,730	5,378,503
5,379,594	5,379,584	5,379,584	5,377,915	5,377,737	5,378,515
5,379,595	5,379,585	5,379,585	5,377,915	5,377,744	
5,379,596	5,379,586	5,379,586	5,377,915	5,377,751	
5,379,597	5,379,587	5,379,587	5,377,915	5,377,758	
5,379,598	5,379,588	5,379,588	5,377,915	5,377,765	
5,379,599	5,379,589	5,379,589	5,377,915	5,377,772	
5,379,600	5,379,590	5,379,590	5,377,915	5,377,779	
5,379,601	5,379,591	5,379,591	5,377,915	5,377,786	
5,379,602	5,379,592	5,379,592	5,377,915	5,377,793	
5,379,603	5,379,593	5,379,593	5,377,915	5,377,800	
5,379,604	5,379,594	5,379,594	5,377,915	5,377,807	
5,379,605	5,379,595	5,379,595	5,377,915	5,377,814	
5,379,606	5,379,596	5,379,596	5,377,915	5,377,821	
5,379,607	5,379,597	5,379,597	5,377,915	5,377,828	
5,379,608	5,379,598	5,379,598	5,377,915	5,377,835	
5,379,609	5,379,599	5,379,599	5,377,915	5,377,842	
5,379,610	5,379,600	5,379,600	5,377,915	5,377,849	
5,379,611	5,379,601	5,379,601	5,377,915	5,377,856	
5,379,612	5,379,602	5,379,602	5,377,915	5,377,863	
5,379,613	5,379,603	5,379,603	5,377,915	5,377,870	
5,379,614	5,379,604	5,379,604	5,377,915	5,377,877	
5,379,615	5,379,605	5,379,605	5,377,915	5,377,884	
5,379,616	5,379,606	5,379,606	5,377,915	5,377,891	
5,379,617	5,379,607	5,379,607	5,377,915	5,377,898	
5,379,618	5,379,608	5,379,608	5,377,915	5,377,905	
5,379,619	5,379,609	5,379,609	5,377,915	5,377,912	
5,379,620	5,379,610	5,379,610	5,377,915	5,377,919	
5,379,621	5,379,611	5,379,611	5,377,915	5,377,926	
5,379,622	5,379,612	5,379,612	5,377,915	5,377,933	
5,379,623	5,379,613	5,379,613	5,377,915	5,377,940	
5,379,624	5,379,614	5,379,614	5,377,915	5,377,947	
5,379,625	5,379,615	5,379,615	5,377,915	5,377,954	
5,379,626	5,379,616	5,379,616	5,377,915	5,377,961	
5,379,627	5,379,617	5,379,617	5,377,915	5,377,968	
5,379,628	5,379,618	5,379,618	5,377,915	5,377,975	
5,379,629	5,379,619	5,379,619	5,377,915	5,377	

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PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

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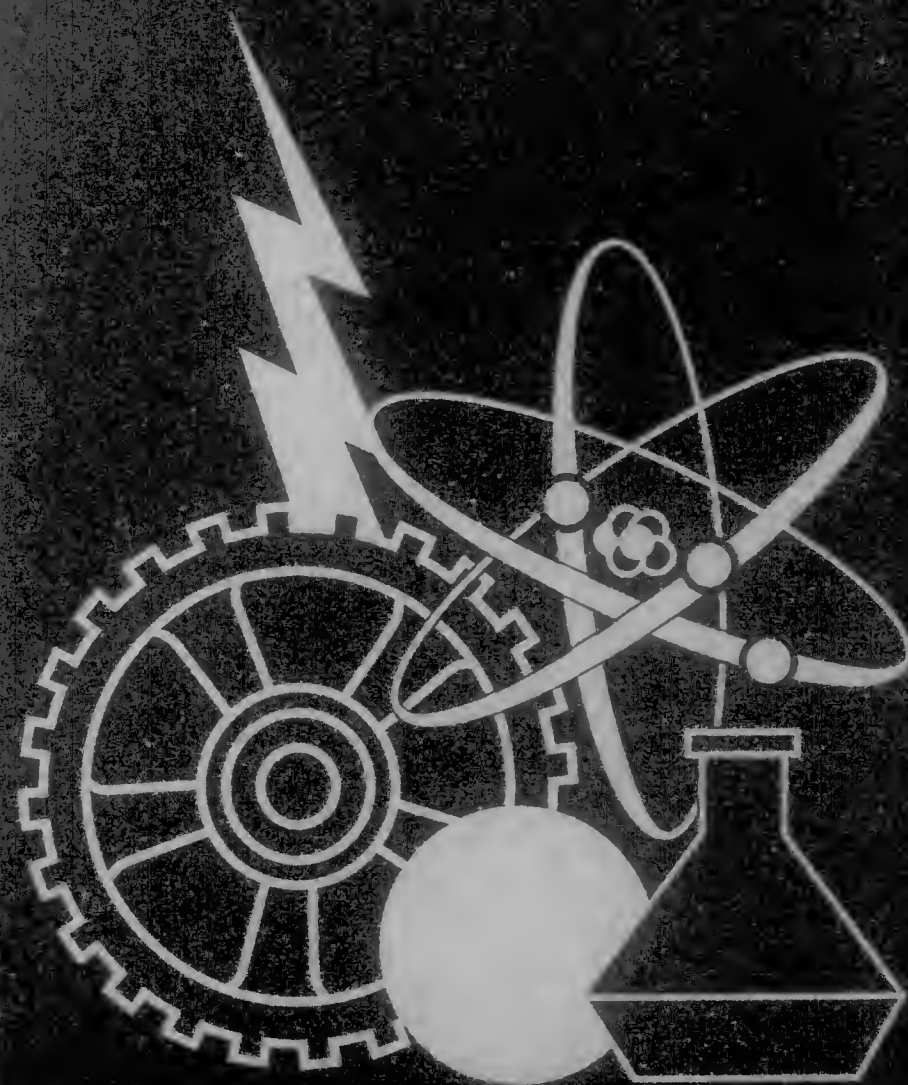
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1168 O.G. 100, on Nov. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on January 1, 1995, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1168 O.G. 99, on Nov. 29, 1994.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Jan. 1, 1995, is as follows:

International Application (PCT Chapter I) fees:

Transmittal fee.....	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed.....	640.00
—Corresponding prior U.S. national application filed.....	420.00
—Supplemental search fee, per additional invention (payable only upon invitation).....	180.00
European Patent Office as ISA.....	1537.00

International fees

Basic fee.....	604.00
Basic Supplemental fee (for each page over 30).....	12.00
Designation fee per country or region	
—For the first 10 national or regional offices designated.....	147.00
—For each designation in excess of 10 offices.....	No Charge

Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee.....	147.00
—Confirmation fee.....	73.50

International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee.....	185.00
Preliminary examination fee	

USPTO as International Preliminary Examining Authority (IPEA)		
—USPTO was ISA in PCT Chapter I.....	460.00	
—Additional examination fee, per additional invention (payable only upon invitation).....	140.00	
—USPTO was not ISA in PCT Chapter I.....	690.00	
—Additional examination fee, per additional invention (payable only upon invitation).....	240.00	

U.S. National Stage Fees	Small Entity	Regular
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Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4).....	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4).....	330.00	660.00
USPTO was ISA but not IPEA.....	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office.....	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office.....	425.00	850.00

Other National fees		
—For each independent claim in excess of 3.....	38.00	76.00
—For each claim in excess of 20.....	11.00	22.00
—For each application containing a multiple dependent claim.....	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1).....	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1).....	130.00	130.00

Dec. 12, 1994
BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 7, 1992 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,077,836 through 5,079,774
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 5, 1988 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,716,594 through 4,715,121
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 3, 1984 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,423,523 through 4,424,594
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))\$480.00
By other than a small entity\$960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))\$965.00
By other than a small entity\$1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))\$1,450.00
By other than a small entity\$2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))\$65.00
By other than a small entity\$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable\$640.00
(2) unintentional\$1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 2, 1994 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,159	06/666,270	05/27/86
(4,357,112)	(06/217,584)	(11/02/82)
Re. 33,080	06/896,229	10/03/89
(4,357,484)	(06/298,118)	(11/02/82)
Re. 33,272	07/372,055	07/24/90
(4,619,676)	(06/678,282)	(10/28/86)
4,356,583	06/243,245	11/02/82
4,356,594	06/303,313	11/02/82
4,356,604	06/230,355	11/02/82
4,356,621	06/216,833	11/02/82
4,356,626	06/245,295	11/02/82
4,356,627	06/270,704	11/02/82
4,356,657	06/233,675	11/02/82
4,356,670	06/288,902	11/02/82
4,356,676	06/303,804	11/02/82
4,356,747	06/246,860	11/02/82
4,356,752	06/228,783	11/02/82
4,356,764	06/259,949	11/02/82
4,356,801	06/230,228	11/02/82
4,356,802	06/215,898	11/02/82
4,356,808	06/317,284	11/02/82
4,356,854	06/289,227	11/02/82
4,356,867	06/306,047	11/02/82
4,356,882	06/225,418	11/02/82
4,356,887	06/221,031	11/02/82
4,356,894	06/217,416	11/02/82
4,356,907	06/259,098	11/02/82
4,356,913	06/241,129	11/02/82
4,356,916	06/226,584	11/02/82
4,356,919	06/262,440	11/02/82
4,356,931	06/275,391	11/02/82
4,356,954	06/259,259	11/02/82
4,356,955	06/278,190	11/02/82
4,356,985	06/238,317	11/02/82
4,357,012	06/259,246	11/02/82
4,357,013	06/289,038	11/02/82
4,357,054	06/268,507	11/02/82
4,357,057	06/286,748	11/02/82
4,357,072	06/218,796	11/02/82
4,357,084	06/271,020	11/02/82
4,357,088	06/239,448	11/02/82
4,357,090	06/303,576	11/02/82
4,357,091	06/264,571	11/02/82
4,357,093	06/217,965	11/02/82
4,357,099	06/287,624	11/02/82
4,357,104	06/217,146	11/02/82
4,357,147	06/316,576	11/02/82
4,357,151	06/238,081	11/02/82
4,357,152	06/220,818	11/02/82
4,357,155	06/298,715	11/02/82
4,357,157	06/247,626	11/02/82
4,357,161	06/275,855	11/02/82
4,357,163	06/297,162	11/02/82
4,357,168	06/239,728	11/02/82
4,357,181	06/304,525	11/02/82
4,357,189	06/289,266	11/02/82
4,357,194	06/254,224	11/02/82
4,357,210	06/227,052	11/02/82
4,357,211	06/259,050	11/02/82

Patent Number	Serial Number	Issue Date	4,619,041	06/539,147	10/28/86
4,357,212	06/220,883	11/02/82	4,619,042	06/744,659	10/28/86
4,357,216	06/307,011	11/02/82	4,619,043	06/591,190	10/28/86
4,357,224	06/251,791	11/02/82	4,619,050	06/723,427	10/28/86
4,357,232	06/225,235	11/02/82	4,619,052	06/745,180	10/28/86
4,357,233	06/254,698	11/02/82	4,619,054	06/782,598	10/28/86
4,357,234	06/264,598	11/02/82	4,619,055	06/666,273	10/28/86
4,357,240	06/238,818	11/02/82	4,619,060	06/751,247	10/28/86
4,357,244	06/231,531	11/02/82	4,619,061	06/757,174	10/28/86
4,357,263	06/216,896	11/02/82	4,619,062	06/785,577	10/28/86
4,357,268	06/220,878	11/02/82	4,619,069	06/673,670	10/28/86
4,357,280	06/268,222	11/02/82	4,619,070	06/799,356	10/28/86
4,357,284	06/277,806	11/02/82	4,619,071	06/699,895	10/28/86
4,357,285	06/248,255	11/02/82	4,619,079	06/717,788	10/28/86
4,357,292	06/296,669	11/02/82	4,619,084	06/695,825	10/28/86
4,357,293	06/275,869	11/02/82	4,619,085	06/580,464	10/28/86
4,357,312	06/283,826	11/02/82	4,619,086	06/515,265	10/28/86
4,357,313	06/219,297	11/02/82	4,619,087	06/729,495	10/28/86
4,357,324	06/237,617	11/02/82	4,619,091	06/517,008	10/28/86
4,357,325	06/255,576	11/02/82	4,619,092	06/711,831	10/28/86
4,357,326	06/297,389	11/02/82	4,619,093	06/480,838	10/28/86
4,357,327	06/260,533	11/02/82	4,619,095	06/810,541	10/28/86
4,357,328	06/260,550	11/02/82	4,619,098	06/662,505	10/28/86
4,357,335	06/280,547	11/02/82	4,619,099	06/641,600	10/28/86
4,357,336	06/332,981	11/02/82	4,619,105	06/697,783	10/28/86
4,357,341	06/266,462	11/02/82	4,619,107	06/739,044	10/28/86
4,357,345	06/324,064	11/02/82	4,619,110	06/729,547	10/28/86
4,357,360	06/311,321	11/02/82	4,619,117	06/818,304	10/28/86
4,357,367	06/245,839	11/02/82	4,619,118	06/668,541	10/28/86
4,357,373	06/254,219	11/02/82	4,619,121	06/658,601	10/28/86
4,357,376	06/278,851	11/02/82	4,619,122	06/686,033	10/28/86
4,357,378	06/234,708	11/02/82	4,619,125	06/628,472	10/28/86
4,357,379	06/245,462	11/02/82	4,619,126	06/737,773	10/28/86
4,357,384	06/290,254	11/02/82	4,619,132	06/769,429	10/28/86
4,357,394	06/291,027	11/02/82	4,619,133	06/644,330	10/28/86
4,357,405	06/237,067	11/02/82	4,619,136	06/751,412	10/28/86
4,357,417	06/251,648	11/02/82	4,619,137	06/737,436	10/28/86
4,357,418	06/266,647	11/02/82	4,619,138	06/683,403	10/28/86
4,357,423	06/331,706	11/02/82	4,619,142	06/657,310	10/28/86
4,357,425	06/256,901	11/02/82	4,619,143	06/643,915	10/28/86
4,357,427	06/312,575	11/02/82	4,619,146	06/266,622	10/28/86
4,357,431	06/280,015	11/02/82	4,619,148	06/598,501	10/28/86
4,357,443	06/316,456	11/02/82	4,619,150	06/767,241	10/28/86
4,357,445	06/238,998	11/02/82	4,619,161	06/825,770	10/28/86
4,357,451	06/297,454	11/02/82	4,619,170	06/679,757	10/28/86
4,357,460	06/256,317	11/02/82	4,619,173	06/690,056	10/28/86
4,357,463	06/326,842	11/02/82	4,619,186	06/701,793	10/28/86
4,357,468	06/288,764	11/02/82	4,619,188	06/683,614	10/28/86
4,357,471	06/221,089	11/02/82	4,619,190	06/797,115	10/28/86
4,357,477	06/316,192	11/02/82	4,619,194	06/591,514	10/28/86
4,357,479	06/308,705	11/02/82	4,619,196	06/656,735	10/28/86
4,357,502	06/219,205	11/02/82	4,619,199	06/636,454	10/28/86
4,357,510	06/238,885	11/02/82	4,619,201	06/648,798	10/28/86
4,357,514	06/257,914	11/02/82	4,619,202	06/682,206	10/28/86
4,357,522	06/217,385	11/02/82	4,619,204	06/559,124	10/28/86
4,357,544	06/219,097	11/02/82	4,619,210	06/698,368	10/28/86
4,357,561	06/301,394	11/02/82	4,619,217	06/687,424	10/28/86
4,357,565	06/327,192	11/02/82	4,619,219	06/649,802	10/28/86
4,357,584	06/236,424	11/02/82	4,619,221	06/653,436	10/28/86
4,357,598	06/252,681	11/02/82	4,619,223	06/728,691	10/28/86
4,357,612	06/240,899	11/02/82	4,619,227	06/733,784	10/28/86
4,357,625	06/230,091	11/02/82	4,619,228	06/659,840	10/28/86
4,357,631	06/248,199	11/02/82	4,619,230	06/472,908	10/28/86
4,357,644	06/245,768	11/02/82	4,619,231	06/686,369	10/28/86
4,357,651	06/220,248	11/02/82	4,619,235	06/710,183	10/28/86
4,619,009	06/644,730	10/28/86	4,619,239	06/573,803	10/28/86
4,619,012	06/739,327	10/28/86	4,619,240	06/547,593	10/28/86
4,619,018	06/562,491	10/28/86	4,619,244	06/581,265	10/28/86
4,619,019	06/740,981	10/28/86	4,619,252	06/683,462	10/28/86
4,619,021	06/633,219	10/28/86	4,619,261	06/639,381	10/28/86
4,619,024	06/682,114	10/28/86	4,619,262	06/741,483	10/28/86
4,619,025	06/682,449	10/28/86	4,619,264	06/620,748	10/28/86
4,619,029	06/709,182	10/28/86	4,619,268	06/522,640	10/28/86
4,619,030	06/753,336	10/28/86	4,619,276	06/637,259	10/28/86
4,619,031	06/639,579	10/28/86	4,619,289	06/687,740	10/28/86
4,619,032	06/758,321	10/28/86	4,619,290	06/689,409	10/28/86
4,619,033	06/732,605	10/28/86	4,619,293	06/736,786	10/28/86
4,619,039	06/657,644	10/28/86	4,619,296	06/768,952	10/28/86
			4,619,298	06/710,474	10/28/86

Patent Number	Serial Number	Issue Date	4,619,530	06/815,294	10/28/86
4,619,301	06/642,689	10/28/86	4,619,531	06/671,332	10/28/86
4,619,302	06/653,900	10/28/86	4,619,535	06/704,389	10/28/86
4,619,311	06/749,662	10/28/86	4,619,538	06/697,955	10/28/86
4,619,314	06/635,244	10/28/86	4,619,544	06/546,398	10/28/86
4,619,317	06/617,692	10/28/86	4,619,548	06/700,132	10/28/86
4,619,320	06/585,424	10/28/86	4,619,549	06/670,042	10/28/86
4,619,323	06/513,876	10/28/86	4,619,555	06/644,387	10/28/86
4,619,324	06/787,203	10/28/86	4,619,557	06/606,023	10/28/86
4,619,328	06/675,630	10/28/86	4,619,562	06/664,174	10/28/86
4,619,330	06/591,785	10/28/86	4,619,563	06/632,128	10/28/86
4,619,333	06/553,440	10/28/86	4,619,565	06/736,231	10/28/86
4,619,334	06/770,165	10/28/86	4,619,566	06/587,807	10/28/86
4,619,335	06/641,577	10/28/86	4,619,567	06/609,303	10/28/86
4,619,338	06/680,429	10/28/86	4,619,568	06/544,868	10/28/86
4,619,339	06/674,073	10/28/86	4,619,569	06/564,242	10/28/86
4,619,340	06/691,503	10/28/86	4,619,571	06/366,530	10/28/86
4,619,343	06/758,169	10/28/86	4,619,572	06/799,929	10/28/86
4,619,346	06/629,682	10/28/86	4,619,574	06/546,910	10/28/86
4,619,348	06/603,810	10/28/86	4,619,575	06/695,579	10/28/86
4,619,351	06/647,383	10/28/86	4,619,577	06/673,280	10/28/86
4,619,353	06/703,555	10/28/86	4,619,578	06/724,878	10/28/86
4,619,358	06/667,373	10/28/86	4,619,579	06/630,773	10/28/86
4,619,359	06/510,879	10/28/86	4,619,580	06/530,985	10/28/86
4,619,364	06/417,142	10/28/86	4,619,581	06/753,357	10/28/86
4,619,370	06/703,334	10/28/86	4,619,583	06/578,799	10/28/86
4,619,383	06/794,813	10/28/86	4,619,585	06/779,271	10/28/86
4,619,384	06/787,733	10/28/86	4,619,600	06/671,831	10/28/86
4,619,387	06/776,249	10/28/86	4,619,606	06/699,407	10/28/86
4,619,390	06/763,777	10/28/86	4,619,611	06/737,655	10/28/86
4,619,392	06/715,030	10/28/86	4,619,613	06/588,290	10/28/86
4,619,398	06/781,508	10/28/86	4,619,621	06/701,777	10/28/86
4,619,401	06/574,603	10/28/86	4,619,623	06/681,815	10/28/86
4,619,405	06/629,919	10/28/86	4,619,624	06/781,346	10/28/86
4,619,411	06/628,263	10/28/86	4,619,628	06/664,070	10/28/86
4,619,415	06/764,607	10/28/86	4,619,629	06/606,523	10/28/86
4,619,421	06/669,105	10/28/86	4,619,632	06/762,404	10/28/86
4,619,423	06/550,681	10/28/86	4,619,633	06/747,222	10/28/86
4,619,427	06/626,049	10/28/86	4,619,640	06/641,763	10/28/86
4,619,428	06/689,146	10/28/86	4,619,643	06/621,482	10/28/86
4,619,430	06/594,395	10/28/86	4,619,645	06/678,875	10/28/86
4,619,437	06/823,670	10/28/86	4,619,652	06/766,627	10/28/86
4,619,441	06/595,682	10/28/86	4,619,657	06/814,080	10/28/86
4,619,442	06/742,657	10/28/86	4,619,659	06/653,519	10/28/86
4,619,443	06/657,061	10/28/86	4,619,662	06/724,875	10/28/86
4,619,444	06/733,575	10/28/86	4,619,663	06/603,708	10/28/86
4,619,449	06/817,156	10/28/86	4,619,664	06/707,890	10/28/86
4,619,452	06/623,098	10/28/86	4,619,667	06/743,506	10/28/86
4,619,456	06/599,287	10/28/86	4,619,670	06/776,760	10/28/86
4,619,458	06/814,372	10/28/86	4,619,679	06/666,068	10/28/86
4,619,461	06/719,760	10/28/86	4,619,683	06/765,610	10/28/86
4,619,462	06/618,193	10/28/86	4,619,684	06/843,414	10/28/86
4,619,464	06/736,610	10/28/86	4,619,685	06/671,689	10/28/86
4,619,466	06/653,776	10/28/86	4,619,686	06/631,651	10/28/86
4,619,469	06/401,636	10/28/86	4,619,700	06/774,726	10/28/86
4,619,470	06/703,331	10/28/86	4,619,701	06/723,738	10/28/86
4,619,471	06/802,277	10/28/86	4,619,703	06/676,590	10/28/86
4,619,474	06/776,909	10/28/86	4,619,704	06/680,729	10/28/86
4,619,475	06/742,984	10/28/86	4,619,708	06/683,733	10/28/86
4,619,476	06/815,183	10/28/86	4,619,709	06/615,565	10/28/86
4,619,477	06/707,812	10/28/86	4,619,716	06/659,423	10/28/86
4,619,482	06/605,914	10/28/86	4,619,719	06/822,942	10/28/86
4,619,486	06/618,492	10/28/86	4,619,724	06/420,691	10/28/86
4,619,487	06/655,971	10/28/86	4,619,726	06/733,323	10/28/86
4,619,488	06/702,350	10/28/86	4,619,733	06/725,506	10/28/86
4,619,489	06/636,881	10/28/86	4,619,735	06/701,153	10/28/86
4,619,490	06/683,757	10/28/86	4,619,740	06/713,266	10/28/86
4,619,491	06/675,764	10/28/86	4,619,742	06/751,538	10/28/86
4,619,492	06/697,626	10/28/86	4,619,745	06/659,319	10/28/86
4,619,494	06/785,313	10/28/86	4,619,746	06/782,826	10/28/86
4,619,495	06/641,940	10/28/86	4,619,747	06/719,921	10/28/86
4,619,499	06/269,871	10/28/86	4,619,750	06/704,086	10/28/86
4,619,501	06/689,699	10/28/86	4,619,754	06/473,207	10/28/86
4,619,505	06/610,632	10/28/86	4,619,755	06/759,026	10/28/86
4,619,515	06/698,665	10/28/86	4,619,757	06/683,764	10/28/86
4,619,525	06/640,330	10/28/86	4,619,758	06/602,632	10/28/86
4,619,526	06/732,411	10/28/86	4,619,760	06/729,770	10/28/86
4,619,527	06/559,802	10/28/86	4,619,761	06/683,820	10/28/86
			4,619,766	06/780,250	10/28/86

Patent Number	Serial Number	Issue Date	4,620,050	06/771,981	10/28/86
4,619,770	06/689,534	10/28/86	4,620,051	06/758,983	10/28/86
4,619,772	06/497,210	10/28/86	4,620,052	06/758,936	10/28/86
4,619,773	06/731,051	10/28/86	4,620,053	06/745,556	10/28/86
4,619,780	06/644,054	10/28/86	4,620,056	06/770,506	10/28/86
4,619,786	06/486,981	10/28/86	4,620,063	06/691,555	10/28/86
4,619,787	06/670,796	10/28/86	4,620,064	06/648,509	10/28/86
4,619,794	06/696,228	10/28/86	4,620,067	06/732,557	10/28/86
4,619,797	06/673,111	10/28/86	4,620,068	06/617,694	10/28/86
4,619,800	06/723,145	10/28/86	4,620,069	06/677,438	10/28/86
4,619,803	06/633,313	10/28/86	4,620,071	06/679,559	10/28/86
4,619,804	06/723,410	10/28/86	4,620,073	06/815,137	10/28/86
4,619,808	06/535,105	10/28/86	4,620,075	06/742,572	10/28/86
4,619,814	06/530,032	10/28/86	4,620,077	06/703,197	10/28/86
4,619,817	06/716,428	10/28/86	4,620,081	06/637,628	10/28/86
4,619,821	06/803,588	10/28/86	4,620,082	06/676,228	10/28/86
4,619,822	06/726,621	10/28/86	4,620,084	06/566,095	10/28/86
4,619,824	06/556,245	10/28/86	4,620,086	06/781,380	10/28/86
4,619,825	06/724,376	10/28/86	4,620,089	06/721,254	10/28/86
4,619,827	06/785,001	10/28/86	4,620,090	06/691,595	10/28/86
4,619,829	06/631,555	10/28/86	4,620,093	06/547,305	10/28/86
4,619,831	06/616,993	10/28/86	4,620,094	06/617,351	10/28/86
4,619,836	06/815,076	10/28/86	4,620,095	06/571,894	10/28/86
4,619,840	06/497,321	10/28/86	4,620,102	06/715,498	10/28/86
4,619,845	06/704,117	10/28/86	4,620,106	06/538,742	10/28/86
4,619,850	06/690,954	10/28/86	4,620,107	06/649,061	10/28/86
4,619,852	06/612,767	10/28/86	4,620,108	06/740,948	10/28/86
4,619,854	06/738,052	10/28/86	4,620,112	06/539,559	10/28/86
4,619,870	06/589,547	10/28/86	4,620,119	06/638,090	10/28/86
4,619,877	06/804,337	10/28/86	4,620,121	06/804,150	10/28/86
4,619,884	06/759,786	10/28/86	4,620,123	06/684,882	10/28/86
4,619,890	06/766,992	10/28/86	4,620,126	06/625,401	10/28/86
4,619,899	06/713,389	10/28/86	4,620,128	06/728,352	10/28/86
4,619,901	06/704,104	10/28/86	4,620,131	06/629,140	10/28/86
4,619,907	06/725,053	10/28/86	4,620,148	06/644,242	10/28/86
4,619,911	06/828,137	10/28/86	4,620,155	06/641,234	10/28/86
4,619,912	06/771,777	10/28/86	4,620,163	06/601,292	10/28/86
4,619,914	06/583,093	10/28/86	4,620,168	06/608,573	10/28/86
4,619,922	06/688,134	10/28/86	4,620,169	06/719,982	10/28/86
4,619,923	06/691,460	10/28/86	4,620,172	06/624,255	10/28/86
4,619,927	06/716,884	10/28/86	4,620,181	06/669,896	10/28/86
4,619,932	06/473,641	10/28/86	4,620,182	06/690,346	10/28/86
4,619,936	06/742,466	10/28/86	4,620,195	06/700,522	10/28/86
4,619,942	06/521,084	10/28/86	4,620,207	06/683,722	10/28/86
4,619,944	06/703,054	10/28/86	4,620,214	06/557,594	10/28/86
4,619,945	06/785,682	10/28/86	4,620,217	06/534,592	10/28/86
4,619,947	06/756,089	10/28/86	4,620,218	06/510,284	10/28/86
4,619,950	06/833,573	10/28/86	4,620,223	06/652,979	10/28/86
4,619,953	06/773,499	10/28/86	4,620,226	06/611,249	10/28/86
4,619,962	06/722,358	10/28/86	4,620,228	06/622,134	10/28/86
4,619,971	06/717,938	10/28/86	4,620,230	06/653,582	10/28/86
4,619,972	06/717,538	10/28/86	4,620,233	06/454,307	10/28/86
4,619,975	06/772,881	10/28/86	4,620,238	06/644,194	10/28/86
4,619,977	06/680,112	10/28/86	4,620,239	06/589,645	10/28/86
4,619,980	06/718,668	10/28/86	4,620,240	06/568,024	10/28/86
4,619,986	06/749,705	10/28/86	4,620,242	06/788,113	10/28/86
4,619,989	06/523,606	10/28/86	4,620,246	06/403,865	10/28/86
4,619,993	06/631,930	10/28/86	4,620,249	06/369,682	10/28/86
4,619,994	06/759,493	10/28/86	4,620,254	06/455,473	10/28/86
4,619,997	06/812,224	10/28/86	4,620,256	06/635,722	10/28/86
4,620,000	06/737,963	10/28/86	4,620,262	06/650,250	10/28/86
4,620,004	06/220,196	10/28/86	4,620,264	06/685,133	10/28/86
4,620,009	06/307,459	10/28/86	4,620,265	06/699,097	10/28/86
4,620,016	06/734,506	10/28/86	4,620,270	06/745,864	10/28/86
4,620,017	06/734,510	10/28/86	4,620,279	06/518,518	10/28/86
4,620,018	06/749,151	10/28/86	4,620,281	06/580,316	10/28/86
4,620,025	06/637,081	10/28/86	4,620,283	06/555,960	10/28/86
4,620,026	06/640,072	10/28/86	4,620,287	06/459,394	10/28/86
4,620,028	06/738,230	10/28/86	4,620,290	06/545,514	10/28/86
4,620,029	06/668,193	10/28/86	4,620,291	06/577,561	10/28/86
4,620,031	06/697,449	10/28/86	4,620,294	06/530,690	10/28/86
4,620,034	06/693,251	10/28/86	4,620,296	06/676,146	10/28/86
4,620,036	06/592,446	10/28/86	4,620,305	06/651,108	10/28/86
4,620,038	06/706,263	10/28/86	4,620,306	06/633,855	10/28/86
4,620,040	06/713,119	10/28/86	4,620,307	06/688,379	10/28/86
4,620,043	06/788,276	10/28/86	4,620,308	06/792,782	10/28/86
4,620,045	06/713,511	10/28/86	4,620,312	06/804,238	10/28/86
4,620,047	06/661,860	10/28/86	4,620,320	06/684,291	10/28/86
			4,620,321	06/610,487	10/28/86

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Patent Number	Serial Number	Issue Date	4,966,151	07/335,664	10/30/90
			4,966,152	07/221,807	10/30/90
4,965,886	07/337,331	10/30/90	4,966,154	07/152,272	10/30/90
4,965,888	07/378,374	10/30/90	4,966,158	07/271,015	10/30/90
4,965,890	07/361,236	10/30/90	4,966,166	07/228,397	10/30/90
4,965,892	07/343,615	10/30/90	4,966,167	07/296,970	10/30/90
4,965,894	07/263,902	10/30/90	4,966,168	07/387,419	10/30/90
4,965,895	07/363,592	10/30/90	4,966,169	07/149,482	10/30/90
4,965,896	07/498,423	10/30/90	4,966,174	07/392,412	10/30/90
4,965,897	07/496,643	10/30/90	4,966,175	07/355,826	10/30/90
4,965,898	07/427,488	10/30/90	4,966,176	07/288,631	10/30/90
4,965,900	07/426,241	10/30/90	4,966,178	07/407,363	10/30/90
4,965,903	07/386,453	10/30/90	4,966,182	07/286,335	10/30/90
4,965,926	07/337,951	10/30/90	4,966,187	07/432,633	10/30/90
4,965,927	07/410,726	10/30/90	4,966,200	07/301,115	10/30/90
4,965,928	07/395,372	10/30/90	4,966,202	07/270,990	10/30/90
4,965,935	07/362,008	10/30/90	4,966,208	07/470,218	10/30/90
4,965,939	07/360,095	10/30/90	4,966,211	07/352,995	10/30/90
4,965,942	07/509,790	10/30/90	4,966,222	07/417,737	10/30/90
4,965,943	07/404,710	10/30/90	4,966,224	07/246,711	10/30/90
4,965,946	07/299,258	10/30/90	4,966,237	07/383,111	10/30/90
4,965,947	07/224,272	10/30/90	4,966,242	07/234,573	10/30/90
4,965,954	07/356,774	10/30/90	4,966,243	07/258,851	10/30/90
4,965,956	07/349,105	10/30/90	4,966,245	07/338,237	10/30/90
4,965,959	07/367,933	10/30/90	4,966,252	07/399,142	10/30/90
4,965,963	07/172,076	10/30/90	4,966,253	07/397,239	10/30/90
4,965,964	07/297,647	10/30/90	4,966,255	07/272,556	10/30/90
4,965,968	07/390,498	10/30/90	4,966,256	07/331,616	10/30/90
4,965,969	07/323,363	10/30/90	4,966,262	07/380,308	10/30/90
4,965,972	07/390,246	10/30/90	4,966,271	07/424,074	10/30/90
4,965,976	07/411,418	10/30/90	4,966,272	07/411,694	10/30/90
4,965,979	07/352,138	10/30/90	4,966,277	07/392,000	10/30/90
4,965,987	07/253,682	10/30/90	4,966,278	07/365,749	10/30/90
4,965,988	07/307,062	10/30/90	4,966,283	07/436,453	10/30/90
4,965,990	07/406,027	10/30/90	4,966,287	07/393,886	10/30/90
4,965,992	07/421,160	10/30/90	4,966,288	07/234,934	10/30/90
4,965,994	07/285,569	10/30/90	4,966,289	07/276,942	10/30/90
4,965,995	07/248,985	10/30/90	4,966,295	07/392,409	10/30/90
4,965,999	07/402,949	10/30/90	4,966,296	07/326,922	10/30/90
4,966,003	07/505,190	10/30/90	4,966,303	07/390,975	10/30/90
4,966,012	07/446,285	10/30/90	4,966,304	07/314,132	10/30/90
4,966,014	07/351,940	10/30/90	4,966,310	07/278,592	10/30/90
4,966,019	07/388,255	10/30/90	4,966,311	07/277,588	10/30/90
4,966,020	07/362,309	10/30/90	4,966,312	07/280,672	10/30/90
4,966,022	07/449,596	10/30/90	4,966,313	07/315,658	10/30/90
4,966,023	07/231,875	10/30/90	4,966,316	07/459,201	10/30/90
4,966,024	07/382,145	10/30/90	4,966,318	07/321,586	10/30/90
4,966,032	07/357,886	10/30/90	4,966,321	07/376,366	10/30/90
4,966,042	07/306,835	10/30/90	4,966,326	07/328,588	10/30/90
4,966,047	07/327,758	10/30/90	4,966,329	07/337,597	10/30/90
4,966,053	07/326,460	10/30/90	4,966,330	07/424,260	10/30/90
4,966,054	07/127,249	10/30/90	4,966,337	07/352,867	10/30/90
4,966,056	07/446,208	10/30/90	4,966,340	07/342,733	10/30/90
4,966,058	07/251,516	10/30/90	4,966,342	07/396,338	10/30/90
4,966,067	07/315,715	10/30/90	4,966,346	07/421,282	10/30/90
4,966,068	07/330,973	10/30/90	4,966,348	07/374,441	10/30/90
4,966,071	07/369,194	10/30/90	4,966,351	07/439,342	10/30/90
4,966,075	07/399,338	10/30/90	4,966,353	07/241,082	10/30/90
4,966,077	07/340,765	10/30/90	4,966,358	07/222,043	10/30/90
4,966,079	06/334,667	10/30/90	4,966,362	07/179,749	10/30/90
4,966,082	07/258,590	10/30/90	4,966,366	07/206,278	10/30/90
4,966,083	07/447,015	10/30/90	4,966,376	07/306,849	10/30/90
4,966,086	07/482,871	10/30/90	4,966,378	07/396,425	10/30/90
4,966,088	07/292,652	10/30/90	4,966,383	07/349,565	10/30/90
4,966,090	07/400,775	10/30/90	4,966,385	07/337,553	10/30/90
4,966,091	07/213,053	10/30/90	4,966,387	07/359,636	10/30/90
4,966,097	07/169,011	10/30/90	4,966,392	07/349,103	10/30/90
4,966,107	07/473,125	10/30/90	4,966,400	07/373,193	10/30/90
4,966,113	07/438,026	10/30/90	4,966,403	07/335,056	10/30/90
4,966,117	07/330,343	10/30/90	4,966,405	07/362,007	10/30/90
4,966,121	07/444,283	10/30/90	4,966,407	07/341,942	10/30/90
4,966,123	07/423,750	10/30/90	4,966,413	07/394,874	10/30/90
4,966,124	07/182,442	10/30/90	4,966,420	07/351,978	10/30/90
4,966,126	07/426,232	10/30/90	4,966,422	07/261,491	10/30/90
4,966,127	07/145,554	10/30/90	4,966,425	07/410,006	10/30/90
4,966,129	07/396,315	10/30/90	4,966,429	07/399,238	10/30/90
4,966,132	07/278,368	10/30/90	4,966,430	07/419,583	10/30/90
4,966,133	07/241,588	10/30/90	4,966,438	07/333,151	10/30/90
4,966,147	07/341,873	10/30/90	4,966,440	07/327,114	10/30/90

JANUARY 10, 1995

U.S. PATENT AND TRADEMARK OFFICE

1170 OG 415

Patent Number	Serial Number	Issue Date	4,966,730	07/453,830	10/30/90
			4,966,733	06/857,003	10/30/90
4,966,444	07/137,080	10/30/90	4,966,741	07/270,140	10/30/90
4,966,450	07/335,170	10/30/90	4,966,742	06/767,451	10/30/90
4,966,451	07/333,613	10/30/90	4,966,745	07/372,482	10/30/90
4,966,460	07/369,043	10/30/90	4,966,747	07/042,183	10/30/90
4,966,462	07/310,128	10/30/90	4,966,756	07/442,365	10/30/90
4,966,463	07/234,948	10/30/90	4,966,761	07/220,763	10/30/90
4,966,465	07/266,410	10/30/90	4,966,766	07/478,361	10/30/90
4,966,466	07/367,571	10/30/90	4,966,770	07/385,194	10/30/90
4,966,481	07/224,714	10/30/90	4,966,781	07/376,962	10/30/90
4,966,483	07/267,952	10/30/90	4,966,786	07/231,533	10/30/90
4,966,484	07/332,387	10/30/90	4,966,798	07/363,962	10/30/90
4,966,487	07/494,756	10/30/90	4,966,804	07/266,944	10/30/90
4,966,490	07/436,809	10/30/90	4,966,818	07/346,974	10/30/90
4,966,492	07/384,076	10/30/90	4,966,828	06/651,116	10/30/90
4,966,493	07/417,101	10/30/90	4,966,842	07/194,923	10/30/90
4,966,495	07/221,422	10/30/90	4,966,845	07/159,995	10/30/90
4,966,496	07/404,678	10/30/90	4,966,847	07/078,339	10/30/90
4,966,498	07/394,552	10/30/90	4,966,851	07/122,848	10/30/90
4,966,502	07/383,367	10/30/90	4,966,878	07/375,223	10/30/90
4,966,503	07/358,128	10/30/90	4,966,879	07/375,220	10/30/90
4,966,504	07/278,249	10/30/90	4,966,890	07/371,849	10/30/90
4,966,506	07/487,843	10/30/90	4,966,895	07/305,234	10/30/90
4,966,513	07/326,748	10/30/90	4,966,900	07/075,412	10/30/90
4,966,515	07/214,432	10/30/90	4,966,907	07/230,825	10/30/90
4,966,528	07/307,888	10/30/90	4,966,921	07/457,724	10/30/90
4,966,530	07/389,062	10/30/90	4,966,923	07/120,044	10/30/90
4,966,539	07/220,669	10/30/90	4,966,927	07/375,284	10/30/90
4,966,541	07/342,118	10/30/90	4,966,936	07/266,845	10/30/90
4,966,543	07/454,454	10/30/90	4,966,937	07/356,184	10/30/90
4,966,547	07/330,899	10/30/90	4,966,954	07/197,651	10/30/90
4,966,549	07/424,826	10/30/90	4,966,956	07/384,277	10/30/90
4,966,550	07/396,551	10/30/90	4,966,957	07/288,307	10/30/90
4,966,551	07/212,618	10/30/90	4,966,962	07/256,025	10/30/90
4,966,553	07/339,160	10/30/90	4,966,971	07/270,272	10/30/90
4,966,560	07/404,197	10/30/90	4,966,973	07/363,787	10/30/90
4,966,566	07/239,222	10/30/90	4,966,974	07/332,853	10/30/90
4,966,571	07/417,522	10/30/90	4,966,978	07/363,084	10/30/90
4,966,577	07/168,697	10/30/90	4,966,979	07/341,994	10/30/90
4,966,584	07/165,126	10/30/90	4,966,982	07/343,448	10/30/90
4,966,585	07/200,231	10/30/90	4,966,983	07/323,995	10/30/90
4,966,586	07/453,043	10/30/90	4,966,987	07/297,424	10/30/90
4,966,595	07/241,032	10/30/90	4,966,993	07/338,406	10/30/90
4,966,596	07/229,622	10/30/90	4,966,996	07/203,293	10/30/90
4,966,605	07/225,377	10/30/90	4,967,005	07/260,511	10/30/90
4,966,612	07/343,657	10/30/90	4,967,012	07/357,043	10/30/90
4,966,613	06/677,106	10/30/90	4,967,022	07/442,676	10/30/90
4,966,614	07/158,081	10/30/90	4,967,026	07/350,399	10/30/90
4,966,616	07/382,694	10/30/90	4,967,030	07/367,995	10/30/90
4,966,623	07/405,786	10/30/90	4,967,037	07/380,138	10/30/90
4,966,624	07/403,700	10/30/90	4,967,039	07/434,479	10/30/90
4,966,625	07/361,183	10/30/90	4,967,050	07/403,859	10/30/90
4,966,629	07/256,015	10/30/90	4,967,054	07/381,393	10/30/90
4,966,638	07/365,748	10/30/90	4,967,057	07/227,109	10/30/90
4,966,642	07/333,989	10/30/90	4,967,063	07/207,676	10/30/90
4,966,643	07/316,949	10/30/90	4,967,064	07/374,478	10/30/90
4,966,653	07/412,933	10/30/90	4,967,065	07/392,676	10/30/90
4,966,655	07/229,778	10/30/90	4,967,071	07/322,418	10/30/90
4,966,664	07/335,858	10/30/90	4,967,074	07/234,711	10/30/90
4,966,666	07/237,918	10/30/90	4,967,077	07/349,012	10/30/90
4,966,670	07/373,899	10/30/90	4,967,097	07/320,490	10/30/90
4,966,677	07/344,244	10/30/90	4,967,098	07/195,080	10/30/90
4,966,683	07/343,658	10/30/90	4,967,109	07/447,948	10/30/90
4,966,684	07/343,659	10/30/90	4,967,117	07/311,929	10/30/90
4,966,685	07/248,996	10/30/90	4,967,119	07/199,259	10/30/90
4,966,686	07/155,825	10/30/90	4,967,122	07/319,727	10/30/90
4,966,687	06/810,864	10/30/90	4,967,134	07/316,664	10/30/90
4,966,688	07/210,888	10/30/90	4,967,138	07/442,362	10/30/90
4,966,695	07/346,782	10/30/90	4,967,145	07/318,796	10/30/90
4,966,704	07/332,432	10/30/90	4,967,147	07/199,016	10/30/90
4,966,709	07/220,919	10/30/90	4,967,148	07/398,430	10/30/90
4,966,714	07/423,339	10/30/90	4,967,150	07/245,378	10/30/90
4,966,715	07/354,039	10/30/90	4,967,160	07/369,859	10/30/90
4,966,718	07/322,647	10/30/90	4,967,162	07/149,375	10/30/90
4,966,719	07/493,042	10/30/90	4,967,180	07/351,475	10/30/90
4,966,725	07/302,691	10/30/90	4,967,200	07/269,732	10/30/90
4,966,726	07/222,340	10/30/90	4,967,214	07/409,997	10/30/90
4,966,729	07/177,415	10/30/90	4,967,217	07/325,111	10/30/90

Patent Number	Serial Number	Issue Date
4,967,220	07/120,697	10/30/90
4,967,227	07/405,434	10/30/90
4,967,240	07/343,525	10/30/90
4,967,255	07/396,227	10/30/90
4,967,258	07/319,367	10/30/90
4,967,275	07/358,983	10/30/90
4,967,278	07/229,251	10/30/90
4,967,282	07/407,526	10/30/90
4,967,287	07/504,095	10/30/90
4,967,297	07/282,762	10/30/90
4,967,304	07/256,357	10/30/90
4,967,308	07/355,195	10/30/90
4,967,313	07/380,458	10/30/90
4,967,314	07/430,924	10/30/90
4,967,317	07/208,413	10/30/90
4,967,322	07/390,465	10/30/90
4,967,324	07/211,365	10/30/90
4,967,325	07/500,088	10/30/90
4,967,332	07/484,945	10/30/90
4,967,335	07/410,768	10/30/90
4,967,340	07/273,155	10/30/90
4,967,354	07/063,504	10/30/90
4,967,361	07/404,049	10/30/90
4,967,365	07/282,179	10/30/90
4,967,369	07/203,414	10/30/90
4,967,375	06/840,459	10/30/90
4,967,390	07/230,636	10/30/90
4,967,392	07/225,113	10/30/90
4,967,401	07/384,510	10/30/90
4,967,402	07/307,838	10/30/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,160,029, Re. S.N. 08/333,491, Nov. 2, 1994, Cl. 206/453, UNITARY TOP FRAME, Maurice J. Piggot, et. al., Owner of Record: *Nucon Corp., Northbrook, Ill.*, Attorney or Agent: Roger H. Stein, Ex. Gp.: 2404

5,103,498, Re. S.N. 08/223,620, Apr. 6, 1994, Cl. 395/68, INTELLIGENT HELP SYSTEM, Charles D. Lanier, et. al., Owner of Record: *AST Research, Inc., Irvine, Calif.*, Attorney or Agent: Stephen J. LeBlanc, Ex. Gp.: 2308

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 32,368, Reexam. No. 90/003,634, Nov. 10, 1994, Cl. 342/032, COLLISION AVOIDANCE SYSTEM FOR AIRCRAFT, Chuhei Funatsu, et. al., Owner of Record: *Toyo Tsushinki, Samukawa, Japan*, Attorney or Agent: Darby & Darby, New York, N.Y., Ex. Gp.: 2202, Requester: Owner

4,630,301, Reexam. No. 90/003,638, Nov. 15, 1994, Cl. 381/036, VOICE ACTIVATED ECHO GENERATOR, G. Burnell Hohl, et. al., Owner of Record: *Well Made Toy Manufacturing Corp., Long Island City, N.Y.*, Attorney or Agent: Gerard F. Dunne, New York, N.Y., Ex. Gp.: 2308, Requester: John N. Hansen Co., Inc., Millbrae, Calif.

4,839,039, Reexam. No. 90/003,635, Nov. 10, 1994, Cl. 210/143, AUTOMATIC FLOW CONTROL DEVICE, Natan E. Parsons, et. al., Owner of Record: *Recurrent Solutions Limited Partnership, Cambridge, Mass.*, Attorney or Agent: Joseph H. Born, Cesari & McKenna, Boston, Mass., Ex. Gp.: 1306, Requester: Cahill, Sutton & Thomas, Phoenix, Ariz.

4,870,519, Reexam. No. 90/003,639, Nov. 17, 1994, Cl. 360/103, UNIFORM HAVING HEIGHT SLIDER ASSEMBLY WITH IMPROVED DYNAMIC AIR BEARING CHARACTERISTICS, James W. White, Owner of Record: *Inventor, Attorney or Agent: Robert C. Colwell, Townsend & Townsend, Khouri & Crew, Palo Alto, Calif.*, Ex. Gp.: 2512, Requester: David R. Fairbairn, Kinney & Lange, Minneapolis, Minn.

4,900,320, Reexam. No. 90/003,637, Nov. 10, 1994, Cl. 604/387, SANITARY NAPKIN WITH PARTY GATHERING FLAPS, Sherilyn S. McCoy, Owner of Record: *McNeil-PPC, Inc., Milltown, N.J.*, Attorney or Agent: Robert L. Minier, Johnson & Johnson, New Brunswick, N.J., Ex. Gp.: 3308, Requester: Virgil H. Marsh, Fisher, Christen & Sabol, Washington, D.C.

5,148,802, Reexam. No. 90/003,640, Nov. 18, 1994, Cl. 128/204.18, METHOD AND APPARATUS FOR MAINTAINING AIRWAY PATENCY TO TREAT SLEEP APNEA AND OTHER DISORDERS, Mark H. Sanders, et. al., Owner of Record: *Respiroics, Inc., Monroeville, Pa.*, Attorney or Agent: J. Stewart Brams, Carothers & Carothers, Pittsburgh, Pa., Ex. Gp.: 3307, Requester: Oliver E. Todd, Jr., MacMillan, Sobanski & Todd, Toledo, Ohio

5,158,379, Reexam. No. 90/003,643, Nov. 25, 1994, Cl. 400/279, PRINTING STARTING POSITION CONTROLLER FOR SERIAL PRINTER, Mikio Moriya, et. al., Owner of Record: *Citizen Watch Co., Ltd., Tokyo, Japan*, Attorney or Agent: Wenderoth, Lind & Ponack, Washington, D.C., Ex. Gp.: 3307, Requester: Robert T. Pous, Oblon, Spivak, McClelland, Maier & Neustadt, Arlington, Va.

5,247,826, Reexam. No. 90/003,636, Nov. 10, 1994, Cl. 073/24.01, GAS CONCENTRATION AND/OR FLOW SENSOR, Frank R. Frola, et. al., Owner of Record: *De Vilbiss Health Care, Inc., Somerset, Pa.*, Attorney or Agent: Oliver E. Todd, Jr., MacMillan, Sobanski & Todd, Toledo, Ohio, Ex. Gp.: 2605, Requester: Owner

5,317,787, Reexam. No. 90/003,641, Nov. 18, 1994, Cl. 024/016, CABLE TIE HAVING IMPROVED TAIL GRIPPING AND HOLDING FEATURE, William A. Fortsch, Owner of Record: *Thomas & Betts Corp., Memphis, Tenn.*, Attorney or Agent: Robert M. Rodrick, Thomas & Betts Corp., Memphis, Tenn., Ex. Gp.: 3507, Requester: Visions Plastics Manufacturing Co., Inc., San Diego, Calif.

5,339,905, Reexam. No. 90/003,642, Nov. 23, 1994, Cl. 166/369, GAS INJECTION DEWATERING PROCESS AND APPARATUS, Clark A. Dowker, Owner of Record: *Subzone Lift Systems, Johannesburg, Mich.*, Attorney or Agent: Carl S. Clark, Price, Heneveld, Cooper, DeWitt & Litton, Grand Rapids, Mich., Ex. Gp.: 3506, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED NOVEMBER 28, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date	798,873	72/410,030	02/19/1974
42,124	70/042,124	02/23/1904	798,874	72/411,916	02/19/1974
310,314	71/342,534	02/20/1934	798,880	72/417,120	02/19/1974
310,322	71/342,267	02/20/1934	798,883	72/417,829	02/19/1974
310,331	71/335,865	02/20/1934	798,885	72/424,853	02/19/1974
310,350	71/340,672	02/20/1934	798,886	72/429,680	02/19/1974
310,368	71/342,985	02/20/1934	798,887	72/432,294	02/19/1974
310,371	71/343,146	02/20/1934	798,888	72/432,447	02/19/1974
310,372	71/343,138	02/20/1934	798,889	72/432,834	02/19/1974
310,374	71/343,179	02/20/1934	798,891	72/435,068	02/19/1974
444,795	71/506,253	02/23/1954	798,893	72/436,458	02/19/1974
531,762	71/578,125	10/10/1950	798,896	72/437,831	02/19/1974
585,428	71/631,856	02/09/1954	798,897	72/437,838	02/19/1974
585,886	71/571,509	02/23/1954	798,900	72/439,876	02/19/1974
585,891	71/588,352	02/23/1954	798,902	72/440,442	02/19/1974
585,904	71/608,580	02/23/1954	798,908	72/422,280	02/19/1974
585,906	71/610,026	02/23/1954	798,909	72/425,583	02/19/1974
585,909	71/612,140	02/23/1954	798,912	72/430,245	02/19/1974
585,914	71/613,990	02/23/1954	798,914	72/435,056	02/19/1974
585,933	71/621,178	02/23/1954	798,917	72/442,455	02/19/1974
585,947	71/625,928	02/23/1954	798,919	72/444,999	02/19/1974
585,953	71/626,960	02/23/1954	798,920	72/447,619	02/19/1974
585,967	71/632,425	02/23/1954	798,923	72/409,303	02/19/1974
585,968	71/632,899	02/23/1954	798,925	72/437,628	02/19/1974
585,975	71/633,986	02/23/1954	798,927	72/423,614	02/19/1974
585,976	71/634,074	02/23/1954	798,928	72/428,853	02/19/1974
585,977	71/634,090	02/23/1954	798,937	72/422,426	02/19/1974
585,991	71/636,763	02/23/1954	798,939	72/394,139	02/19/1974
585,992	71/637,031	02/23/1954	798,943	72/435,060	02/19/1974
585,993	71/637,119	02/23/1954	798,944	72/435,796	02/19/1974
586,001	71/638,260	02/23/1954	798,946	72/438,193	02/19/1974
586,004	71/638,934	02/23/1954	798,959	72/435,585	02/19/1974
586,005	71/638,982	02/23/1954	798,961	72/436,797	02/19/1974
586,011	71/639,788	02/23/1954	798,962	72/437,513	02/19/1974
586,022	71/641,594	02/23/1954	798,963	72/437,522	02/19/1974
586,023	71/641,655	02/23/1954	798,975	72/444,887	02/19/1974
586,024	71/641,694	02/23/1954	798,978	72/445,951	02/19/1974
586,026	71/641,867	02/23/1954	798,979	72/446,412	02/19/1974
586,027	71/641,922	02/23/1954	798,986	72/451,030	02/19/1974
586,030	71/642,332	02/23/1954	798,993	72/451,841	02/19/1974
586,031	71/642,368	02/23/1954	798,998	72/436,113	02/19/1974
586,036	71/642,642	02/23/1954	799,001	72/455,469	02/19/1974
586,049	71/643,516	02/23/1954	799,004	72/407,902	02/19/1974
586,050	71/643,559	02/23/1954	799,005	72/427,486	02/19/1974
586,052	71/643,632	02/23/1954	799,006	72/430,601	02/19/1974
586,059	71/643,828	02/23/1954	799,008	72/435,230	02/19/1974
586,062	71/644,018	02/23/1954	799,011	72/440,308	02/19/1974
586,064	71/644,072	02/23/1954	799,016	72/450,479	02/19/1974
586,069	71/644,521	02/23/1954	799,017	72/451,195	02/19/1974
586,070	71/644,885	02/23/1954	799,019	72/428,667	02/19/1974
586,074	71/644,976	02/23/1954	799,025	72/425,485	02/19/1974
586,077	71/645,180	02/23/1954	799,026	72/427,711	02/19/1974
586,082	71/645,949	02/23/1954	799,030	72/446,976	02/19/1974
586,088	71/645,558	02/23/1954	799,034	72/444,888	02/19/1974
586,090	71/645,712	02/23/1954	799,035	72/448,596	02/19/1974
586,092	71/645,770	02/23/1954	799,036	72/450,388	02/19/1974
586,096	71/646,304	02/23/1954	799,041	72/390,821	02/19/1974
586,100	71/646,582	02/23/1954	799,042	72/424,858	02/19/1974
586,111	71/647,419	02/23/1954	799,046	72/434,685	02/19/1974
586,116	71/647,629	02/23/1954	799,048	72/439,377	02/19/1974
586,120	71/648,661	02/23/1954	799,049	72/455,460	02/19/1974
586,124	71/649,745	02/23/1954	799,054	72/424,099	02/19/1974
586,125	71/649,746	02/23/1954	799,057	72/428,498	02/19/1974
586,144	71/639,059	02/23/1954	799,058	72/437,454	02/19/1974
954,776	72/353,240	03/13/1973	799,059	72/428,605	02/19/1974
955,633	72/373,325	03/20/1973	799,061	72/437,308	02/19/1974
959,434	72/418,919	05/22/1973	799,062	72/422,375	02/19/1974
978,849	72/449,737	02/19/1974	799,065	72/452,310	02/19/1974
978,858	72/446,457	02/19/1974	799,066	72/456,116	02/19/1974
978,860	72/447,027	02/19/1974	799,067	72/458,412	02/19/1974
978,862	72/452,194	02/19/1974	799,070	72/438,685	02/19/1974
978,863	72/452,635	02/19/1974	799,073	72/448,191	02/19/1974
978,868	72/453,619	02/19/1974	799,077	72/453,523	02/19/1974
978,871	72/409,683	02/19/1974	799,079	72/454,688	02/19/1974
			799,083	72/455,921	02/19/1974
			799,087	72/400,134	02/19/1974
			799,088	72/407,499	02/19/1974
			799,095	72/417,834	02/19/1974
			799,096	72/421,657	02/19/1974

Reg. No.	Serial Number	Reg. Date
979,097	72/430,834	02/19/1974
979,098	72/430,964	02/19/1974
979,104	72/444,700	02/19/1974
979,105	72/446,002	02/19/1974
979,109	72/397,160	02/19/1974
979,116	72/431,775	02/19/1974
979,117	72/433,712	02/19/1974
979,127	72/437,088	02/19/1974
979,133	72/404,430	02/19/1974
979,135	72/419,370	02/19/1974
979,137	72/431,936	02/19/1974
979,139	72/446,536	02/19/1974
979,142	72/436,031	02/19/1974
979,145	72/461,130	02/19/1974
979,146	72/405,759	02/19/1974
979,152	72/428,376	02/19/1974
979,157	72/436,487	02/19/1974
979,158	72/453,794	02/19/1974
979,166	72/461,216	02/19/1974
979,170	72/435,968	02/19/1974
979,171	72/437,111	02/19/1974
979,668	72/449,837	02/26/1974

Erratum

"All reference to Patent No. 5,347,290 to Heinrich Garn, et. al., of Austria for COMB GENERATOR, DEVICE AND PROCESS FOR CALIBRATING MEASUREMENT SECTIONS appearing in the *Official Gazette* of September 13, 1994 should be deleted since no patent was granted."

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before February 24, 1995.

Newholm, Therese M. 6439 Washington Cir., Wauwatosa, Wis. 53213
Pomrening, Anthoula, c/o James Kyriaz, 7742 W. Foster Ave., Chicago, Ill. 60656
Woodard, Joye L., 100 Lauren Ln., Clinton, Miss. 39056

Dec. 13, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held April 13, 1994. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before February 24, 1995.

Oswecki, Jane C., 436 Rainbow Rd., Windsor, Conn. 06095

Dec. 13, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Patents Terms Extended Under 35 U.S.C. § 156

Patent term extension certificates under 35 U.S.C. § 156 extending the terms of the following patents were issued on December 15, 1994.

U.S. Patent No. 3,929,971; Granted December 30, 1975, to Della M. Roy; Owner of Record: Research Corp. Technologies; Title: POROUS BIOMATERIALS AND METHOD OF MAKING SAME; Classification: 423/308; Product Trade Name: PRO OSTEON Implant 500 Coralline Hydroxyapatite Bone Void Filler; Term Extended: two years from the original expiration date of the patent.

U.S. Patent No. 3,975,512; Granted August 17, 1976, to David M. Long, Jr.; Owner of Record: Board of Trustees of the University of Illinois; Title: NON-TOXIC BROMINATED PERFLUOROCARBONS RADIOPAQUE AGENTS; Classification: 424/5; Product Trade Name: Imagent GI; Term Extended: two years from the original expiration date of the patent.

U.S. Patent No. 4,267,179; Granted May 12, 1981, to Jan Heeres, et. al.; Owner of Record: Janssen Pharmaceutica N.V.; Title: HETEROCYCLIC DERIVATIVES OF (4-PHENYL-PIPERAZIN-1-YL-ARYLOXYMETHYL-1,3-DIOXOLAN-2-YL) METHYL-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES; Classification: 514/252; Product Trade Name: Sporanox; Term Extended: two years from the original expiration date of the patent.

U.S. Patent No. 4,278,789; Granted July 14, 1981, to Robert D. Birkenmeyer; Owner of Record: The Upjohn Company; Title: LINCOMYCIN COMPOUNDS; Classification: 536/16.3; Product Trade Name: Pirsue Aqueous Gel; Term Extended: three years from the original expiration date of the patent.

U.S. Patent No. 4,755,534; Granted July 5, 1988, to Anton Stuetz; Owner of Record: Sandoz Pharmaceuticals Corporation; Title: PROPENYLAMINES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR USE AS PHARMACEUTICALS; Classification: 514/655; Product Trade Name: Lamisil Cream; Term Extended: 543 days from the original expiration date of the patent.

Patents Available For License or Sale

D. 349,794 SPONGE
Contact: Alton L. Hayes, Jr.
1450 Carol Oaks Lane
Apt. No. 406
Fort Worth, Tex. 76112
(817) 654-0176

D. 354,348 SMOKE PROTECTIVE HOOD
Contact: Marshall Hamilton
366 N. Susong St.
Newport, Tenn. 37821

4,396,430 NOVEL FOUNDRY SAND BINDING COMPOSITIONS
Contact: Ronald J. Kubovcik
Adduci, Mastriani, Schaumburg & Schill
1140 Connecticut Ave., N.W.
Suite 250, Washington, D.C. 20036
(202) 467-6300 Fax: (202) 466-2006

4,985,041 DYE ASSISTANT COMPOSITION FOR HYDROPHOBIC FIBERS
Contact: Ronald J. Kubovcik
Adduci, Mastriani, Schaumburg and Schill
1140 Connecticut Ave., N.W.
Suite 250, Washington, D.C. 20036
(202) 467-6300 Fax: (202) 466-2006

5,322,493 LEG MUSCLE CONDITIONING DEVICE
Contact: Frederick L. Bergert
Nies, Kurz, Bergert & Tamburro
2121 Crystal Drive, Suite 706
Arlington, Va. 22202
(703) 521-6590

5,336,128 NAIL TECHNICIAN'S VENTILATOR
Contact: Kenneth Southall
Deveau, Colton & Marquis
Two Midtown Plaza, Suite 1400
1360 Peachtree St., N.E.
Atlanta, Ga. 30309-3209
(404) 875-3555

Certificate of Correction
For Week of January 10, 1995

B1 4,683,291	5,200,502	5,292,832	5,324,736
Re. 34,657	5,202,156	5,292,844	5,325,078
D. 333,968	5,203,171	5,293,485	5,325,522
D. 343,717	5,213,807	5,293,627	5,325,840
D. 346,126	5,223,401	5,294,173	5,326,595
D. 351,687	5,224,056	5,296,612	5,326,600
D. 352,819	5,227,384	5,297,258	5,326,772
4,306,042	5,230,916	5,298,536	5,326,958
4,573,067	5,234,896	5,298,608	5,327,621
4,657,837	5,235,436	5,298,633	5,329,031
4,674,824	5,235,905	5,299,385	5,329,431
4,822,954	5,237,061	5,299,669	5,329,513
4,849,580	5,238,005	5,300,016	5,329,898
4,879,109	5,243,360	5,300,514	5,329,982
4,900,975	5,244,518	5,300,966	5,329,987
4,966,843	5,248,481	5,300,975	5,330,665
5,002,617	5,249,231	5,301,262	5,330,718
5,008,073	5,249,767	5,301,268	5,330,739
5,010,635	5,251,029	5,301,537	5,331,129
5,019,395	5,252,745	5,302,129	5,331,147
5,023,430	5,253,844	5,302,649	5,331,345
5,030,651	5,255,184	5,303,015	5,331,357
5,034,228	5,256,351	5,303,197	5,331,384
5,078,918	5,257,564	5,303,381	5,331,430
5,083,131	5,258,538	5,303,652	5,331,462
5,096,076	5,262,259	5,304,308	5,332,797
5,096,277	5,266,476	5,304,486	5,333,397
5,096,281	5,267,205	5,305,208	5,333,610
5,099,863	5,267,966	5,307,072	5,335,083
5,108,124	5,268,598	5,309,355	5,335,085
5,108,703	5,268,630	5,310,434	5,335,189
5,111,441	5,270,283	5,310,435	5,335,222
5,115,945	5,270,748	5,311,991	5,335,475
5,116,111	5,274,084	5,312,128	5,335,728
5,117,612	5,276,914	5,313,047	5,335,972
5,120,246	5,277,162	5,313,245	5,336,065
5,121,840	5,278,128	5,313,248	5,336,377
5,132,108	5,279,300	5,313,305	5,336,795
5,132,409	5,279,457	5,313,391	5,336,740
5,139,943	5,280,188	5,313,462	5,337,663
5,142,484	5,280,589	5,314,724	5,337,707
5,149,355	5,280,672	5,315,016	5,337,794
5,157,046	5,281,504	5,316,062	5,337,977
5,159,437	5,282,257	5,317,746	5,338,046
5,159,462	5,282,370	5,317,856	5,338,048
5,159,654	5,282,868	5,318,007	5,338,131
5,162,103	5,284,525	5,318,906	5,338,598
5,164,298	5,284,650	5,319,144	5,338,668
5,175,126	5,287,349	5,319,427	5,339,204
5,175,521	5,287,393	5,319,790	5,339,601
5,177,509	5,287,597	5,320,335	5,339,737
5,177,722	5,288,951	5,321,063	5,339,890
5,185,190	5,289,175	5,321,065	5,339,968
5,191,548	5,289,303	5,321,824	5,340,168
5,191,649	5,292,099	5,322,392	5,340,263
5,193,539	5,291,589	5,322,803	5,340,282
5,198,227	5,292,739	5,324,656	5,340,548

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box Pat. Ext.	New patent application and associated papers and fees.
Box PCT	Applications for patent term extension.
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Box Reexam	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Requests for Reexamination for <i>original</i> request papers <i>only</i> .
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	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications <i>prior</i> to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

November 7-11, 1994

Date Issued	Type of Case ⁽¹⁾	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's Mark and Goods/Services	Applicant's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
11-8	EX	74/303,440	Griset Industries, Inc.	2(e)(1)	Refusal Affirmed		"THE 8 FTR" [manually operated multi-purpose tool in the nature of a clamp for working with wood and other materials]		No
11-8	EX	74/340,771	Johnson Chemical Co., Inc.	2(d)	Refusal Affirmed		"TKO" [all purpose cleaners and mildew stain removers; disinfectants]	"TKO" [liquid hand cleaner]	No
11-9	OPP	89,290	Destileria Serralles, Inc. v. Blair Imports, Ltd.	2(d)	Opposition Sustained	"BLACKBEARD" [rum]	"BLUEBEARD'S" [spiced rum, sold in sealed bottles]		No

(1) EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor <i>except</i> communications relating to <i>pending litigation</i> ; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
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	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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North Carolina North Dakota Ohio	New York Public Library (The Research Libraries)	(212) 930-0917
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	Grand Forks: Chester Fritz Library, University of North Dakota.....	(701) 777-4888
	Cincinnati and Hamilton County, Public Library of.....	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
Oklahoma	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
	Stillwater: Oklahoma State University Center for International Trade Development.....	(405) 744-7086
	Salem: Oregon State Library	(503) 378-4239
	Philadelphia, The Free Library of	(215) 686-5331
Oregon Pennsylvania	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
	Providence Public Library.....	(401) 455-8027
	Charleston: Medical University of South Carolina Library.....	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
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	Memphis & Shelby County Public Library and Information Center.....	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
	Austin: McKinney Engineering Library, University of Texas at Austin.....	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University.....	(409) 845-3826
South Dakota Tennessee	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Salt Lake City: Marriott Library, University of Utah.....	(801) 581-8394
	Richmond: James Branch Cabell Library, Virginia Commonwealth University.....	(804) 828-1104
	Seattle: Engineering Library, University of Washington.....	(206) 543-0740
Texas Utah Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
	Madison: Kurt F. Wendt Library, University of Wisconsin Madison.....	(608) 262-6845
	Milwaukee Public Library.....	(414) 286-3247
	Casper: Natrona County Public Library	Not Yet Operational
	Wyoming	

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—		
JOHN E. KITTLE, Director	308-0661	12/23/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	10/21/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director.....		
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-0651	03/08/94
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-2351	01/06/94
	308-0196	08/15/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director		
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-1782	11/16/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300— BOBBY R. GRAY, Director	308-0511	05/17/93
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—Vacant	305-9600	11/23/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500— JANICE A. HOWELL, Director.....	308-0771	11/29/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director.....	308-0956	09/13/93
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	305-4700	05/06/93
	308-0661	03/02/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director		
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director.....	308-1113	12/06/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director.....	308-1148	11/16/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0858	12/23/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-0861	07/02/93
	308-1021	09/23/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during December 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151. Patents..... Numbers 4,060,852 to 4,065,811 inclusive Plant Patents..... 4,161 to 4,173

TRADEMARK OPERATION

Bruce Lehman, Commissioner
 Phillip G. Hampton II, Assistant Commissioner
 Robert M. Anderson, Deputy Assistant Commissioner
 David E. Bucher, Director, Trademark Examining Operation
 Condition of Trademark Applications as of Nov. 1, 1994

Law Office	Oldest Date	
	New*	Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/06/94	10/12/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/23/94	08/08/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/09/94	07/01/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/01/94	07/11/94
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/12/94	08/17/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/24/94	08/24/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/19/94	07/27/94
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings—Int. Classes 22, 23, 24, 25, 26, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/24/94	08/09/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/15/94	08/08/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/25/94	08/23/94
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/31/94	08/08/94
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	06/16/94	09/09/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—Int. Classes 17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42.....	05/26/94	07/27/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500	05/24/94	—0—
Affidavits Under Sections 8 & 15 (All Classes).....	09/01/94	—0—
Renewals (All Classes).....	—0—	—0—
Section 12(C) Publications (All Classes).....		

- ** Assigned to each law office
- Applicants with inquiries concerning the status of their applications and a touch tone phone should call (703) 308-8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
- * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

JANUARY 10, 1995

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,873,459 (2451st)

PROGRAMMABLE INTERCONNECT ARCHITECTURE

Abbas A. El Gamal, Palo Alto; Khaled A. El-Ayat, Cupertino; Jonathan W. Greene, Palo Alto; Ta-Pen R. Guo, Cupertino, and Justin M. Reyneri, Los Altos, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

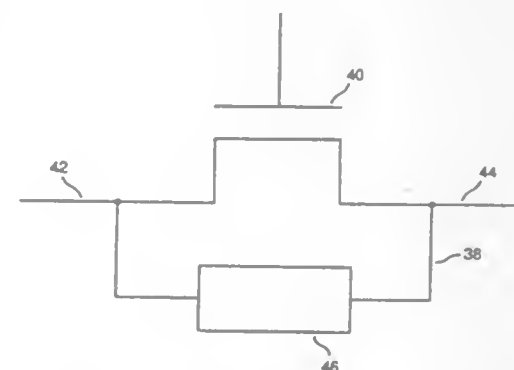
Reexamination Request No. 90/003,414, Apr. 19, 1994.

Reexamination Certificate for Patent No. 4,873,459, issued Oct. 10, 1989, Ser. No. 195,728, May 18, 1988.

Continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745

Int. Cl.⁶ H03K 19/094

U.S. Cl. 307—465



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-12 is confirmed.

11. In a programmable integrated circuit array of functional devices having inputs and outputs programmably connectable to plural interconnect conductors which are segmented into discrete lengths, apparatus including:

- a permanent irreversibly programmable first circuit connection device serially connected between at least one pair of said discrete lengths of segmented conductors, and
- a temporary reversibly programmable second circuit connection device connected in parallel across said first circuit connection device.

B1 5,234,280 (2452nd)

TRAFFIC CHANNELING DEVICES

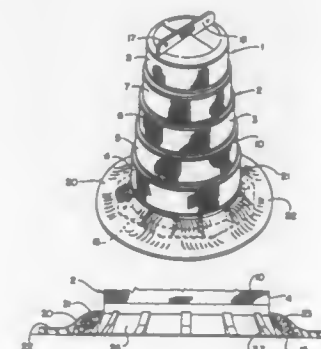
David A. Cowan, Cleveland Hts., Ohio, assignor to Plastic Safety Systems, Inc., Cleveland, Ohio

Reexamination Request No. 90/003,397, Apr. 5, 1994.

Reexamination Certificate for Patent No. 5,234,280, issued Aug. 10, 1993, Ser. No. 860,179, Mar. 30, 1992.

Int. Cl.⁶ E01F 9/00, 13/00

U.S. Cl. 404—6



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 9 is cancelled.

Claims 1, 10, 11, 14, 15, 18, 19, 20, 23 and 28 are determined to be patentable as amended.

Claims 2-8, 12, 13, 16, 17, 21, 22 and 24-27, dependent on an amended claim, are determined to be patentable.

New claims 29-32 are added and determined to be patentable.

1. A traffic channeling device comprising a deformable hollow plastic drum, and rubber collar means adapted to be inserted over said drum to act as ballast for said drum, said drum having a radially outwardly and axially downwardly tapering skirt portion adjacent a bottom edge of said drum for resisting pullout of said drum from said rubber collar means, *said drum being deformable upon impact by a vehicle to cause said drum to become dislodged from said rubber collar means leaving said rubber collar means behind.*

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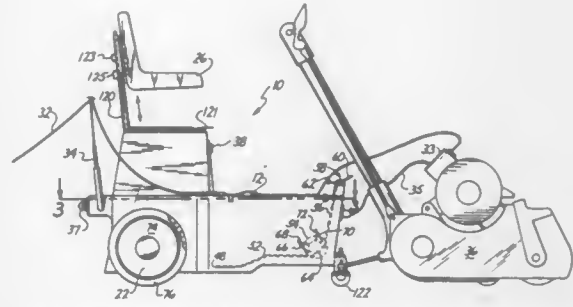
REISSUES

JANUARY 10, 1995

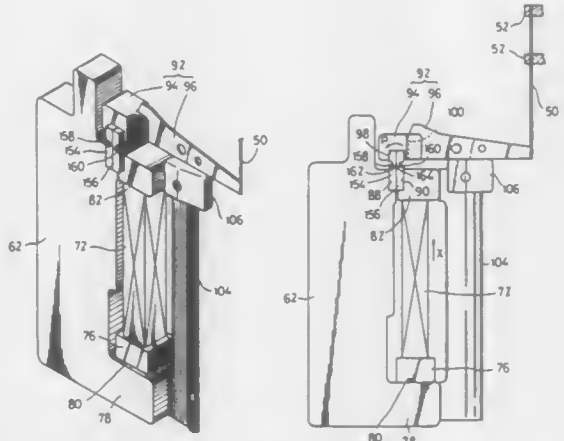
Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,822
POWER RIDING TRAILER FOR AN IMPLEMENT
Bryan Mattson, Hastings, Mich., assignor to Floor Style Products, Inc., Hastings, Mich.
Original No. 5,033,564, dated Jul. 23, 1991, Ser. No. 481,294, Feb. 20, 1990. Application for reissue Jul. 16, 1993, Ser. No. 93,117
Int. Cl.⁶ B62D 63/00
U.S. Cl. 180—11

Re. 34,823
DEVICE FOR MAGNIFYING DISPLACEMENT OF PIEZOELECTRIC ELEMENT OR THE LIKE AND METHOD OF PRODUCING SAME
Atsuo Sakaida, Gifu; Yasuji Chikaoka, Aichi; Yasuo Imoto, Nagoya; Akira Iriguchi, Nagoya, and Yoshiyuki Ikezaki, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Original No. 4,874,978, dated Oct. 17, 1989, Ser. No. 202,035, Jun. 3, 1988. Application for reissue Oct. 17, 1991, Ser. No. 780,099
Claims priority, application Japan, Jun. 9, 1987, 62-143530; Jun. 12, 1987, 62-90834; Jun. 16, 1987, 62-149535; Oct. 30, 1987, 62-277169; Jan. 23, 1988, 63-13229; Jan. 25, 1988, 63-14019; Jan. 29, 1988, 63-19844; Feb. 2, 1988, 63-23561
Int. Cl.⁶ H01L 41/08
U.S. Cl. 310—328 49 Claims



1. A [vehicle having a length, a front end and a substantially opposing rear end useful in controlling an implement coupled thereto, said vehicle] floor sander machine, comprising:
a) a vehicle having a length, a front end and a substantially opposing rear end;
b) an electric floor sander coupled to said vehicle;
c) said vehicle being arranged to control said coupled floor sander and including:
i) two driven wheels located near said rear end and positioned to rotate in a direction generally parallel to said length of said vehicle;
ii) power means for providing powder to rotate said two driven wheels [;], said power means including:
1) a non-gasoline powered motor; and
2) a hydraulic transmission system, said non-gasoline powered motor being coupled to said hydraulic transmission system;
iii) at least one non-steered wheel located near said front end, said non-steered wheel being rotatable about an axis, which axis is at least partially rotatable; and
iv) seat means for providing a location at which a human being can sit on said vehicle and control said vehicle; and
v) said vehicle having no independent steering system and being sized so that the human being sitting in said seat means is capable of directly steering said coupled [implement] electric floor sander.



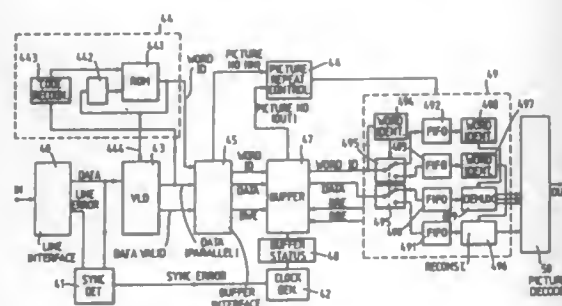
29. A displacement magnifying device comprising:
a frame;
an elastic member having first and second connection portions, said first connecting portion being secured to said frame;
an electro-distortion element having first and second opposite ends and responsive to selective application of an electrical voltage thereto to undergo displacement, said first end being connected to said frame, said second end being connected to said second connecting portion; and
an elastically deformable restricting member for restricting displacement of said electro-distortion element, said elastically deformable restricting member having first and second opposite restriction ends, said first restriction end being secured to a first connection part connecting said frame to said first end of said electro-distortion element, said second restriction end being secured to a second connection part connecting said second end of said electro-distortion element to said second connecting portion of said elastic member.

Re. 34,824
VIDEO CODER

David G. Morrison; Andrew P. Heron, and David O. Beaumont, all of Ipswich, England, assignors to British Telecommunications public limited company, London, England
Original No. 4,985,766, dated Jan. 15, 1991, Ser. No. 358,370, Sep. 23, 1988. Application for reissue Jan. 13, 1993, Ser. No. 4,082
Claims priority, application United Kingdom, Sep. 23, 1987, 8722394

Int. Cl.⁶ H04N 7/133, 7/137
U.S. Cl. 348—419

15 Claims



11. A video coder comprising:

- a generating means for generating, from an input video signal, data at a variable rate;
- a variable length coding means for encoding the data using a variable length code as a series of coded words;
- a buffer between the generating means and the variable length coding means; and
- a calculating means for calculating the total of the lengths of the coded words which will be produced by the variable

length coding means from the instantaneous contents of the buffer.

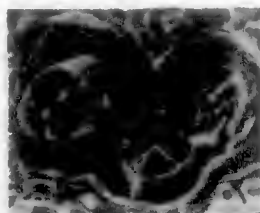
Re. 34,825

COMPOSITE ARTICLE AND METHOD OF MAKING SAME

James W. Warren, Woodland Hills, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Original No. 4,397,901, dated Aug. 9, 1983, Ser. No. 273,958, Jun. 15, 1981. Continuation of Ser. No. 668,817, Nov. 6, 1984, abandoned. Application for reissue Oct. 7, 1986, Ser. No. 916,845

Int. Cl.⁶ B32B 3/06
U.S. Cl. 428—101

46 Claims



14. A carbon-silicon composite anisotropic article comprising a multiplicity of carbon fibers forming a shaped article, a coating of pyrolytic carbon extending over each of said fibers, a reaction formed diffusion coating of silicon extending substantially over each of said pyrolytic carbon coated fibers and substantially over the outer periphery of the article, said pyrolytic carbon coating and said silicon coating having been applied to said fibers in a manner whereby said fibers are free to move relative to said coatings, said carbon fibers and said silicon coating having a different coefficient of thermal expansion.

PLANT PATENTS

GRANTED JANUARY 10, 1995

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,037

HYBRID TEA ROSE PLANT NAMED DELSTROBLA
Georges Delbard, Commeny, France, assignor to Société Civile Agricole Pépinières et Roseraies Georges Delbard, Commeny, France

Filed Oct. 26, 1993, Ser. No. 144,873
Claims priority, application France, Dec. 21, 1992, 12040
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—11

1 Claim

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

- (a) from a physical point of view it forms green mature wood, assumes a bushy growth habit, and forms attractive long-lasting red striped with light pink and white double flowers having consistent petals that detach cleanly, and
- (b) from the biological point of view forms semi-vigorous to vigorous vegetation, produces flowers in abundance, exhibits the ability readily to be forced, and is very resistant to diseases when grown under greenhouse conditions and in the garden;

substantially as herein shown and described.

9,039

TABLE GRAPE VARIETY NAMED LARSON B-36
Drake Larson, P.O. Box 355, Thermal, Calif. 92253
Filed Oct. 8, 1993, Ser. No. 134,257
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—47.1

1 Claim

1. A new and distinct black seedless grape plant known as 'Larson B-36', substantially as shown and described.

9,040

TABLE GRAPE VARIETY NAMED MARIAH
Drake Larson, P.O. Box 355, Thermal, Calif. 92253
Filed Oct. 8, 1993, Ser. No. 134,258
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—47.1

1 Claim

1. A new and distinct black seedless grape plant known as 'Larson D-12', substantially as shown and described.

9,038

HYBRID TEA ROSE PLANT NAMED DEVICO
Stanley G. Marciel, and Jeanne A. Marciel, both of Aptos, Calif., assignors to DeVor Nurseries, Inc., Freedom, Calif.
Filed Jan. 24, 1994, Ser. No. 185,708
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—18

1 Claim

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

9,041

ALSTROEMERIA PLANT NAMED STABEC
Jacob van Andel, CA Aalsmeer, Netherlands, assignor to Van Staaveren B.V., Netherlands
Filed Feb. 25, 1994, Ser. No. 202,511
Int. Cl.⁶ A01H 5/00

U.S. Cl. Plt.—87.1

1 Claim

1. A new variety of Alstroemeria plant substantially as herein shown and described.

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PATENTS
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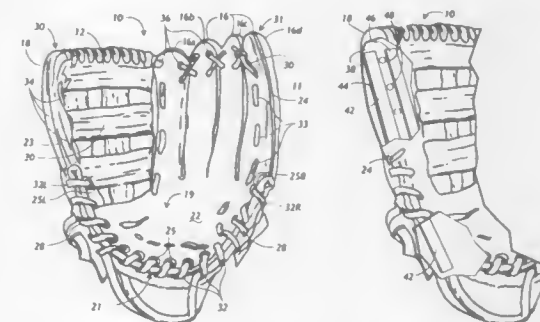
For CLASS	See PATENT NO.
451-177	5,379,554
073-003	5,379,627
132-118	5,379,781
132-275	5,379,782
132-279	5,379,783
134-102	5,379,784
134-184	5,379,785
135-087	5,379,786
180-021	5,379,842
187-269	5,379,855
266-074	5,379,930
228-037	5,379,931
229-125	5,379,934
229-303	5,379,935
236-012	5,379,936
239-014	5,379,937
239-119	5,379,938
239-119	5,379,939
239-675	5,379,940
366-025	5,380,082
602-041	5,380,260
205-122	5,380,407
424-184	5,380,512
424-001	5,380,513
424-009	5,380,514
424-009	5,380,515
424-001	5,380,646
502-313	5,380,696
502-348	5,380,697
544-369	5,380,736
522-014	5,380,772
523-464	5,380,781
427-385	5,380,816
548-235	5,380,854
556-410	5,380,889
307-116	5,381,043
327-109	5,381,044
327-141	5,381,045

ERRATA—CONTINUED

For CLASS	See PATENT NO.
327-390	5,381,051
327-060	5,381,052
327-065	5,381,053
327-082	5,381,054
326-027	5,381,055
326-021	5,381,056
326-126	5,381,057
326-041	5,381,058
326-058	5,381,059
326-068	5,381,060
326-057	5,381,061
326-068	5,381,062
327-288	5,381,063
318-454	5,381,065
347-010	5,381,162
356-004	5,381,222
335-030	5,381,223
345-126	5,381,259
359-256	5,381,278
362-031	5,381,309
362-032	5,381,310
362-034	5,381,311
362-062	5,381,312
362-066	5,381,313
364-767	5,381,380
359-140	5,381,520

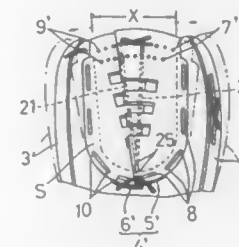
PATENTS
GRANTED JANUARY 10, 1995
GENERAL AND MECHANICAL

5,379,459
BASEBALL GLOVE INCORPORATING ARAMID
BRACES
Charlton H. Williams, Jr., Marietta, Ga., assignor to Natraflex
Systems, Inc., Columbus, Ga.
Filed Feb. 5, 1993, Ser. No. 14,445
Int. Cl.⁶ A41D 13/08
U.S. Cl. 2—19 29 Claims



1. A baseball glove defining a front side and a back side thereon, said baseball glove comprising:
 - a thumb stall an outer edge of which defines a first lateral edge of said glove, said thumb stall having an upper end and a lower end;
 - a finger stall an outer edge of which defines an opposing second lateral edge of said glove, said finger stall having an upper end and a lower end;
 - a heel portion interconnecting said lower end of said thumb stall and said lower end of said finger stall;
 - a palm located adjacent to said heel portion, an inside portion of said palm configured to engage the palm of a user when the user's hand is in the glove; and
 - a first flexible, resilient brace defining an initial shape and having a resistance to bending and a tendency to fully recover to said initial shape after bending, said brace extending along said first lateral edge and at least a portion of the palm of the glove from a point which is adjacent said heel to a first location up said thumb stall, such that said resistance of said brace to bending causes said thumb stall to be biased away from said little finger stall, urging said glove into an open position.

5,379,460
AN ADJUSTABLE BALL CATCHING APPARATUS
Akio Aoki, Osaka, Japan, assignor to Trion Corporation, Osaka,
Japan
Continuation of Ser. No. 784,966, Oct. 30, 1991, abandoned.
This application Mar. 1, 1993, Ser. No. 24,804
Claims priority, application Japan, Nov. 1, 1990, 2-115067[U]
Int. Cl.⁶ A41D 13/08
U.S. Cl. 2—19 6 Claims



1. A ball catching apparatus comprising:

- a main body for receiving a hand including a thumb receiving portion;
- a forefinger receiving portion;
- a connecting support member integrally formed with said body, said connecting support member projecting from said main body, said connecting support member having an extreme end positioned inwardly of extreme ends of said thumb and said forefinger receiving portions;
- a ball catching means including a first ball catching element and a second ball catching element;
- said first ball catching element having a plurality of holes for tightly interconnecting said first ball catching element and said forefinger receiving portion, and a plurality of adjustment holes provided in lines for interconnecting said first ball catching element and said connecting support member;
- said second ball catching element having a plurality of holes for tightly interconnecting said second ball catching element and said thumb receiving portion, and a plurality of adjustment holes provided in lines for interconnecting said second ball catching element and said connecting support member;
- connecting portions provided in each of said first and second ball catching elements to interconnect said first and second ball catching elements;
- said plurality of adjustment holes provided in lines of said first and second ball catching elements being arranged along a longitudinal direction of said thumb and said forefinger receiving portions; and
- a strap receivable in some of said plurality of adjustment holes provided in lines of said first and second ball catching elements to interconnect said first and second ball catching elements;
- wherein said plurality of adjustment holes provided in lines of said first and second ball catching elements may selectively receive said strap to vary the width of said ball catching means.

5,379,461
INTERACTIVE CLOTHING WITH INDICIA AND COVER
PANEL
Rita B. Wilmers, 79 Commerce St., Staten Island, N.Y. 10314
Filed May 3, 1993, Ser. No. 56,417
Int. Cl.⁶ A41D 1/00
U.S. Cl. 2—115 14 Claims



1. An article of interactive clothing comprising:
 - a) a display panel having a first display section and a second display section, said first display section having first indicia displayed thereon, said second display section having second indicia displayed thereon, said second indicia bearing a relationship to said first indicia; and
 - b) a movable cover panel covering said second display section and having a peripheral edge including:
 - i) a first continuous edge portion fixedly secured to said display panel;

- ii) a second continuous edge portion having a length, said second edge portion being releasably secured to said display panel along the entire length thereof; and
- a third continuous edge portion having a length and extending between said first and second edge portions in a generally horizontal direction, said third continuous edge portion being free from securement to said display panel along the entire length thereof to define an opening, said cover panel being movable between a first position wherein said second continuous edge portion of said peripheral edge is releasably secured to said display panel to define a pocket to contain items for ready access through said opening and a second position wherein said second continuous edge portion of said peripheral edge is released from said display panel to reveal said second indicia.

5,379,462

MALE PANT-TYPE GARMENTS WITH INTERNAL SUSPENSORY SUPPORT STRUCTURE

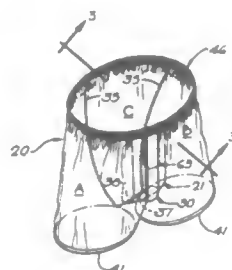
Rodney A. Morgan, and Kathy R. Griffin, both of Dayton, Tenn., assignors to Robinson Manufacturing Co., Inc., Dayton, Tenn.

Filed Aug. 9, 1993, Ser. No. 103,971

Int. Cl.⁶ A41B 9/02

U.S. Cl. 2—403

4 Claims



1. In combination with a male short or pant-type garment incorporating a waist band, an openable centrally located, vertically oriented frontal fly and a central crotch zone establishing the junction of the garment's pant legs; a genito-suspensory support comprising:

an elongated cloth liner panel formed and constructed to provide a loose fitting genito-supportive pouch open over its inner side and extending from an operationally lower end thereof, a generally V-shaped comfort opening extending from the operationally upper end of said panel partially along the central longitudinal axis thereof, and means connecting said panel to the interior of said garment so that it is aligned symmetrically behind said fly; said upper end of said panel being fastened to the garment's waist band on opposite sides of said fly and said lower end of said panel being anchored to said crotch zone; with laterally outer margins of said panel being folded over and sewn to encase elastic bands and provide covered yieldable lateral hems therealong, which hems are freely moveable and unattached to the garment between said panel's upper and lower ends.

5,379,463

FACIAL SHIELD, PARTICULARLY FOR PROTECTION FROM THE SUN

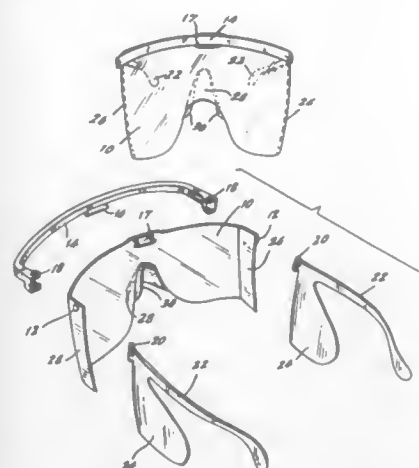
Linda Schleger, Kings Point, and Mary Wittman, Great Neck, both of N.Y., assignors to Hubert Greenway, Rancho Santa Fe and Steven Pratt, La Jolla, both of Calif., a part interest to each

Filed Jul. 24, 1992, Ser. No. 919,587

Int. Cl.⁶ A61F 9/02

U.S. Cl. 2—431

40 Claims



1. Facial protective wear comprising:

a contiguous, one-piece facial shield member for disposition over both eyes of the wearer and having a substantially light transmissive portion for allowing visible light to pass to the wearer's eyes but substantially preventing ultraviolet radiation from reaching the wearer's eyes and skin beneath the shield member, said light transmissive portion being sized such that it extends downwardly to cover a portion of the wearer's upper cheek areas;

means coupled to the facial shield member for supporting the facial shield member on the wearer's head, said means for supporting comprising:

a bridge bar disposed above the facial shield member and to which the facial shield member is coupled;

temple bars pivotally attached to opposite ends of the bridge bar for providing support on the wearer's ears; and

a nose support conforming to a portion of the wearer's nose for providing support on the wearer's nose;

the facial shield member further comprising a nose protective portion extending over and protecting substantially the wearer's entire nose from ultraviolet radiation from in front and from above; and

side portions protecting the wearer's eyes in a direction from the sides of the wearer's head.

5,379,464

FACIAL SHIELD, PARTICULARLY FOR PROTECTION FROM THE SUN

Linda Schleger, 110 Beach Rd., Kings Point, N.Y. 11024, and Mary Wittman, 7 Ash Pl., Great Neck, N.Y. 11021

Continuation-in-part of Ser. No. 919,587, Jul. 24, 1992. This application Apr. 29, 1993, Ser. No. 53,040

Int. Cl.⁶ A61F 9/02

U.S. Cl. 2—431

13 Claims

1. Facial protective wear comprising:

a contiguous, one piece facial shield member for disposition over both eyes of the wearer having a substantially light transmissive portion for allowing visible light to pass to the wearer's eyes but substantially preventing ultraviolet radiation from reaching the wearer's eyes and skin beneath the shield member, said light transmissive portion

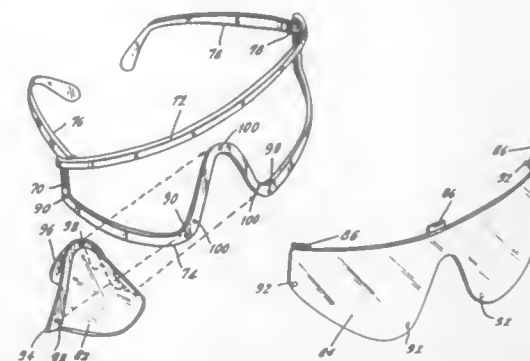
being sized such that it extends downwardly to cover a portion of the wearer's upper cheek areas;

means coupled to the facial shield member for supporting the facial shield member on the wearer's head, said means for supporting comprising:

a bridge bar disposed above the facial shield member and to which the facial shield member is coupled;

temple bars pivotally attached to opposite ends of the bridge bar for providing support on the wearer's ears; and

a nose support conforming to a portion of the wearer's nose for providing support to the wearer's nose;



- a lower frame contoured to the lower edge of the light transmissive portion of the facial shield member; and further comprising:
- a light transmissive, substantially rigid nose protective portion extending over, conforming to and protecting substantially the wearer's entire nose from ultraviolet radiation from in front and from above, said nose protective portion being attached to said lower frame and being a separate piece from said facial shield member.

5,379,465

ATTACHMENT FOR A TOILET

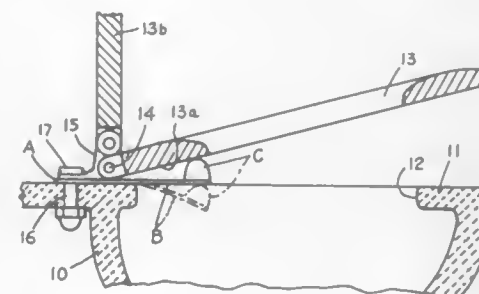
Gene A. Vaughn, 2036 Fountain Inn Rd., Woodruff, S.C. 29388

Filed Oct. 25, 1993, Ser. No. 140,506

Int. Cl.⁶ A47K 13/04

U.S. Cl. 4—246.1

8 Claims



1. An attachment for avoiding wetting the seat of a toilet having a bowl with a rim defining an open top, said seat having an overhanging portion extending beyond said rim over a rear portion of said open top, a hinge connecting said seat to said bowl at a rear portion of said bowl, and a threaded means connecting said hinge to said rim, the improvement comprising:

a bracket secured to said rim beneath the seat;

a flat spring constructed of resilient flexible material fixed to said bracket extending in an unflexed state so as to exert no resilient force against said seat and being out of engagement therewith when said seat is fully raised, said spring extending beyond said rim and over said open top beneath said overhanging portion of said seat;

an upwardly extending protuberance carried by a free end of

said spring opposite said bracket engaging an underside of said overhanging portion of said seat and maintaining said seat in partially elevated position; and

said flat spring having sufficient resistance to downward flexing to yieldably support the weight of said seat bearing against a flat side of the spring to thereby maintain said seat in said partially elevated position exerting sufficient resilient force to support the weight of said seat and being sufficiently yieldable to permit said seat to be fully lowered against the force of said spring when in use;

whereby a user is prompted to either raise the seat fully avoiding wetting the seat or to exert a downward force on the protuberance flexing the spring downwardly fully lowering the seat and maintaining the seat in said lowered position when supporting the user in a sitting position.

5,379,466

PORTABLE PRIVACY CLOSET

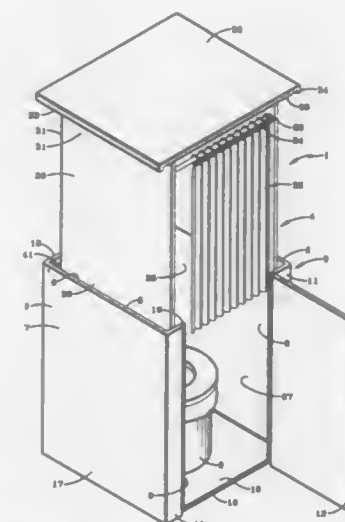
Benjamin P. Davies, 7227 Downey Dr., Sherrodsville, Ohio 44675

Filed Sep. 30, 1993, Ser. No. 129,359

Int. Cl.⁶ A47K 3/23, 11/02

U.S. Cl. 4—449

16 Claims



1. A portable privacy closet selectively moveable between a lowered position and a raised position, said portable privacy closet comprising:

a base formed by a pair of rigid spaced apart sidewalls, a rear wall, a bottom wall and a front wall;

a rigid door hingedly attached to said front wall;

a top portion formed by a pair of rigid spaced apart sidewalls, a rigid rear wall, and a rigid top wall extending outwardly from the sidewalls of the top portion and rear wall of the top portion, and formed with a front opening, said top portion being telescopically movable with respect to the base;

closure means for opening and closing the front opening in said top portion operable between a completely open and completely closed position when the top portion is in either one of the lowered position and raised position;

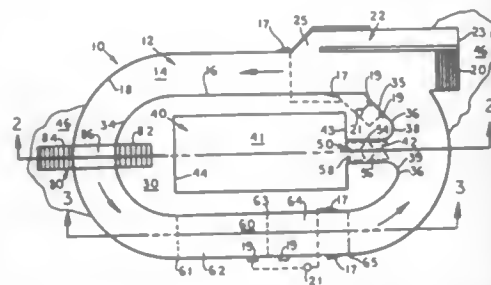
lift means for telescopically moving the top portion between the raised position and the lowered position with respect to the base such that only the rigid top wall of the top portion extends out of the base when in the lowered position;

door seal means for providing sealing engagement between the door and the front wall;

outer seal means for providing sealing engagement between the top portion and the base when the portable privacy closet is in the raised position.

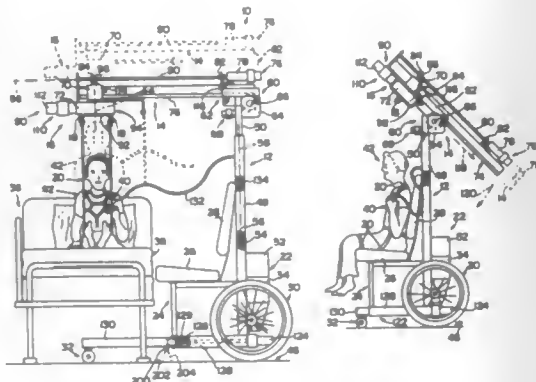
closet is in the lowered position, such outer seal means is a weather strip extending substantially around a perimeter of the rigid top wall of the base; and said top portion extending inside said base as a weathertight storage unit when the top is in the lowered position.

5,379,467
DEEP WATER EXERCISE AND THERAPY POOL
 Kenneth Lochbaum, 3002 E. 38th St., Erie, Pa. 16510-2924
 Filed Mar. 4, 1994, Ser. No. 205,567
 Int. Cl.⁶ E04H 4/12, 4/14
 U.S. Cl. 4—489 21 Claims



1. An exercising and conditioning facility comprising a closed loop water track and a soaking pool; said track having a bottom, an outside wall and an inside wall extending up from said bottom; said bottom of said exercise and conditioning facility being substantially flat providing for generally constant depth water for walking or running exercises; an island is formed inside said inside wall of said track; said soaking pool is formed in said island; said soaking pool having a bottom and an outside wall extending up from said bottom of said soaking pool and defining said soaking pool; a channel formed in said island extending between said soaking pool and said track; said channel having a substantially flat bottom whereby a user can walk through said channel between said track and said soaking pool.

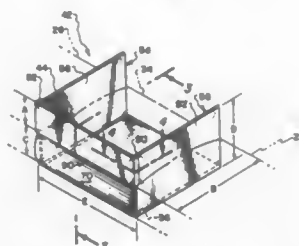
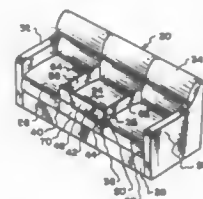
5,379,468
PATIENT-HANDLING APPARATUS
 Joseph P. Cassidy, 612 Central Ave., Lafayette, Ind. 47905-1864; James L. Meyer, and David J. Meyer, both of 1889 180th Ave., Lost Nation, Iowa 52254
 Filed Apr. 26, 1993, Ser. No. 52,462
 Int. Cl.⁶ A61G 7/10, 7/14
 U.S. Cl. 5—86.1 28 Claims



1. A patient-handling apparatus comprising an upright post having a top end,

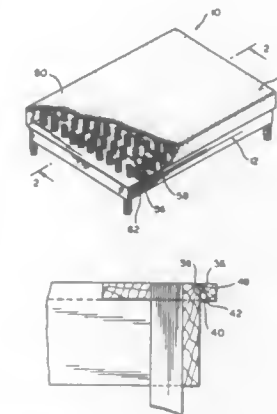
a support arm having an inner end adjacent to the upright post and an outer end away from the upright post, means for coupling the support arm to the top end of the post about a pivot point to permit movement of the support arm relative to the post between a cantilevered position at an angle to the post and a stored position alongside the post and to permit movement of the support arm relative to the pivot point during movement of the support arm between the cantilevered and stored positions, means for suspending a patient in the air from the support arm following movement of the support arm to its cantilevered position so that a patient can be moved from one place to another along the support arm, and means for moving the patient back and forth along the cantilevered support arm between the inner and outer ends of the support arm.

5,379,469
INFANT CRIB
 Sandra S. Millis, and J. Michael Millis, both of 12 Acacia Tree La., Irvine, Calif. 92715
 Filed Sep. 27, 1993, Ser. No. 126,874
 Int. Cl.⁶ A47D 7/04
 U.S. Cl. 5—95 20 Claims



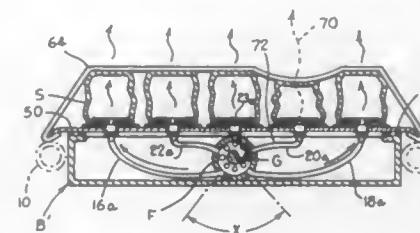
1. An infant crib adapted to be placed in conjunction with a piece of furniture used to locate one or more infants in a sitting position where the furniture has at least one sitting cushion, said crib comprising:
 a front panel terminating at a pair of ends, a right side panel attached at a pivot point to one of said ends, a left side panel attached at a pivot point to the other of said ends, both said right side panel and said left side panel being movable by their respective pivot joints at least ninety degrees relative to said front panel between an extended position and a collapsed position, said collapsed position being when said front panel and said left side and right side panels are located in juxtaposition, said extended position being when said side panels assume a transverse position relative to said front panel, said side panels having substantially a greater height than said front panel, said front panel and said right and left panels being rigid, whereby with said side panels in said extended position a portion of each said side panel is to wedgingly engage between the sitting cushion and the remainder of the piece of furniture.

5,379,470
DIVAN FOR USE WITH FITTED SHEET
 Kenneth E. Morgan, 68 Lady Musgrave Road, Kingston 10, Jamaica W1
 Filed Feb. 24, 1994, Ser. No. 201,227
 Int. Cl.⁶ A47C 23/00
 U.S. Cl. 5—475 8 Claims



1. A divan, comprising:
 a base having a top portion and a top surface on said top portion of said base;
 an operative utility strip having a top surface and an inside surface adjacent said top surface, said operative utility strip being attached to said top portion of said base, said operative utility strip has a groove surface adjacent said inside surface, said groove surface having a groove therein;
 an innerspring atop said base and fastened to said base; at least one layer of padding atop said innerspring; and a first covering fastened to said operative utility strip and covering said padding and innerspring.

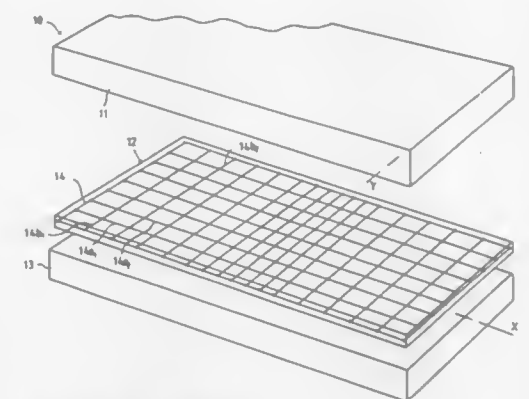
5,379,471
PNEUMATIC WHEEL CHAIR CUSHION FOR REDUCING ISCHEMIC INJURY
 Terry K. Holdredge, 346 Town Creek Dr., Anderson, S.C. 29621
 Continuation-in-part of Ser. No. 647,031, Jan. 28, 1991, Pat. No. 5,193,237. This application Mar. 11, 1993, Ser. No. 29,832
 The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
 Int. Cl.⁶ A47C 27/08
 U.S. Cl. 5—456 24 Claims



1. A pneumatic cushion for reducing ischemic injury comprising:
 a supporting top member extending over an upper part of said cushion having a plurality of air openings;
 a plurality of inflatable air sacs carried by said top member over said air openings, said air sacs being arranged in an rectangular array, where N is the number of rows and M is the number of columns in said rectangular array, and said air sacs are inflated and deflated in alternating inflation and deflation cycles according to a preselected sequence for reducing ischemic injury to a person supported on said cushion;

a dynamic air distribution system for distributing air to said air sacs and for periodically reducing air pressure in selected portions of said pneumatic cushion, said air distribution system comprising:
 a continuous air supply which supplies air in a continuous manner generally at a common system pressure;
 a plurality of air conduits connected to said air sacks, and said air conduits being in fluid communication with said air supply;
 a rotary air distributor disposed in fluid communication between said air supply and said air conduits for controlling said air in said air conduits;
 said rotary air distributor including a stationary element having a plurality of ports in fluid connection to said air conduits, and a rotary valve mechanism for periodically opening said ports during said inflation cycle in which said air sacks are inflated at said common system pressure, and blocking said ports to periodically interrupt the flow of air to said inflated air sacks during said deflation cycle in accordance with said preselected sequence;
 said air sacks including an air permeable fabric which permits sufficient air escapement outwardly from said air sacks to deflate said air sacks during said deflation cycle when said valve mechanism is blocking said ports; said stationary element having ports connected to said air sacks;
 a cover secured to said housing extending over said plurality of air sacks; and
 a blower included in said air supply for delivering said air to said rotary air distributor.

5,379,472
MATTRESS
 Samuel S. Aittomäki, Kautamokatu 4 A 1, 02210 Espoo, Finland
 Filed May 11, 1993, Ser. No. 60,359
 Claims priority, application Finland, May 15, 1992, 922248
 Int. Cl.⁶ A47C 27/04
 U.S. Cl. 5—476 21 Claims



1. A mattress, comprising
 a first layer of soft material,
 an intermediate layer having a periphery enclosing an area, said intermediate layer underlying at least a portion of said first layer of soft material and being deformable in response to a load applied onto the mattress at a loading point,
 a second layer of soft material for supporting said first layer of soft material and said intermediate layer, the material of said second layer supporting and extending beneath the entire area of said intermediate layer,
 said intermediate layer comprising means for causing a lever effect between said first and second layers of soft material

to transfer forces arising from the load to other locations at sides of the loading point to raise the mattress at said other locations by the lever effect and to thereby shift some of the vertical force effect of the load in a lateral direction, said intermediate layer means comprising a grille construction having elongate spring members, a first portion of said spring members being oriented substantially in a longitudinal direction of the mattress and a second portion of said spring members being oriented substantially in a transverse direction of the mattress.

5,379,473

AUTOMATIC SWIMMING POOL CLEANER

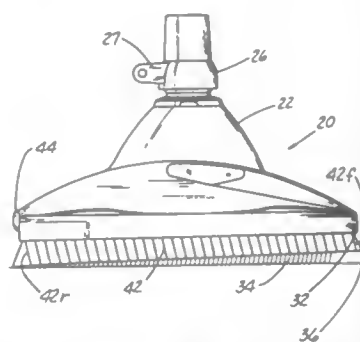
Dieter J. Rief, Rohnert Park, and Herman E. Frentzel, Sausalito, both of Calif., assignors to Sta-Rite Industries, Inc., Delavan, Wis.

Continuation-in-part of Ser. No. 52,699, Apr. 27, 1993, Pat. No. 5,293,659, which is a continuation of Ser. No. 771,787, Oct. 4, 1991, abandoned, which is a continuation of Ser. No. 758,005, Sep. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,425, Sep. 21, 1990, abandoned. This application Nov. 1, 1993, Ser. No. 145,807

Int. Cl.⁶ E04H 3/20

U.S. Cl. 15—1.7

22 Claims



1. In a swimming pool cleaner suction head of the type having a housing, a chamber open at its lower side and a hose connection by which a pump causes water flow through the chamber and into the hose, the improvement comprising: a vibrator device secured to the housing to vibrate the head in response to water flow through the chamber; flexible main bristles secured with respect to the housing and projecting downwardly to terminate in free main-bristle ends disposed substantially in a common plane and adapted to support the head on a surface to be cleaned, a preponderance of the main bristles inclined such that, when their ends engage a horizontal surface, the main bristles deviate from vertical in a common direction and vibration causes forward head movement; and at least one group of vertically-fixed secondary flexible bristles secured with respect to the housing and projecting downwardly to terminate in secondary-bristle ends positioned for bristle-end engagement with the surface to be cleaned, the secondary bristles deviating from vertical in other than the common direction such that, upon contact of secondary-bristle ends with the surface to be cleaned, vibration causes a turning of the head away from the forward direction.

5,379,474
FINGERTIP WASHER

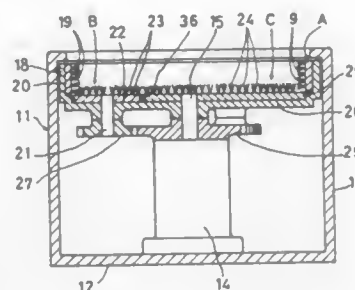
Masahiko Nakamura, Higashiosaka, Japan, assignor to GS Food Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 991,556, Dec. 15, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 136,919 Claims priority, application Japan, Dec. 16, 1991, 3-103466[U]; Apr. 27, 1992, 4-027515[U]

Int. Cl.⁶ A45D 29/17; A46B 13/02

U.S. Cl. 15—21.1

1 Claim



1. A fingertip washer comprising a disk-shaped bottom plate having a peripheral wall provided along the outer circumference of said bottom plate and planted with a multiplicity of hairs in the inner periphery thereof, a rotary shaft fixed to the center of said disk-shaped bottom plate, a driving means for rotating said rotary shaft in either direction, small disks loosely mounted in said bottom plate near its outer circumference so as to be moved by said bottom plate in a circumferential direction of said bottom plate when said bottom plate is rotated about its rotation axis by said driving means, and means for rotating said small disks about their own axes when said small disks are moved by said bottom plate, said small disks being planted in the top surfaces thereof with a multiplicity of hairs, said bottom plate being planted in its top surface with a multiplicity of hairs.

5,379,475

SCRAPER FOR A PIPE PIG

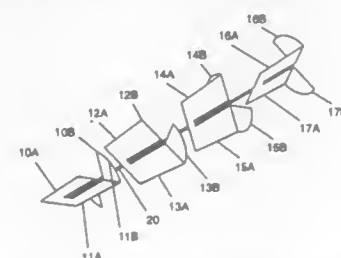
Orlando Sivacoe, #601, 4700 - 55 St., Red Deer, Alberta, Canada T4N 2H8

Filed Aug. 5, 1993, Ser. No. 102,265

Int. Cl.⁶ B08B 9/02

U.S. Cl. 15—104.061

7 Claims



1. A scraper for a pipe pig, the scraper comprising: a unitary blank having a plurality of fins disposed radially about a common central axial member; each fin including a scraping end and a connector end, the connector end being connected to the common central axial member, and the scraping end extending circumferentially from the connector end; and the scraping ends having peripheral edges and the peripheral edges collectively covering substantially a full circle when viewed along the common central axial member.

5,379,476

SKID ASSEMBLY FOR CONDUIT CLEANER

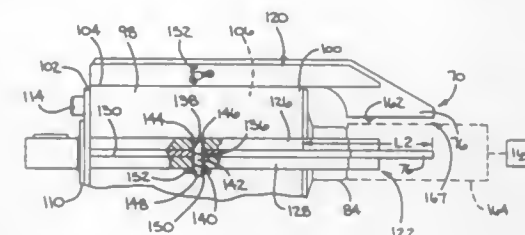
Roy W. Salecker, Mendota, Ill., assignor to Spartan Tool Div. of Pettibone Corp., Mendota, Ill.

Filed Apr. 13, 1993, Ser. No. 46,158

Int. Cl.⁶ B08B 9/02

U.S. Cl. 15—104.31

19 Claims



1. A conduit cleaner comprising: means operated by a power unit for clearing foreign matter within a conduit, said power unit including a motor having an axis and a frame defining a receptacle for the motor; a first skid with an elongate edge and having axially spaced ends; and first means for removably connecting the first skid to the power unit with the elongate edge facing radially inwardly relative to the motor axis and located adjacent to the power unit so that c) the first skid can be separated from the power unit and d) with the first skid in an operative position on the power unit the first skid guides movement of the power unit within a conduit, said first means including a first plate on the power unit and one and only one fastener extending at least partially through the first skid between the axially spaced ends thereof and the first plate, whereby pivoting of the first skid about the one fastener is limited by the power unit which is abutable to the elongate skid edge.

5,379,477

COATING FILM TRANSFER TOOL

Shigeru Tamai, Ikeda, Japan; Naomi Ikeda, London, United Kingdom, and Kakuhel Koyama, Osaka, Japan, assignors to Seed Rubber Company, Ltd., Osaka, Japan

PCT No. PCT/JP92/01098, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO93/04875, PCT Pub. Date Mar. 18, 1993

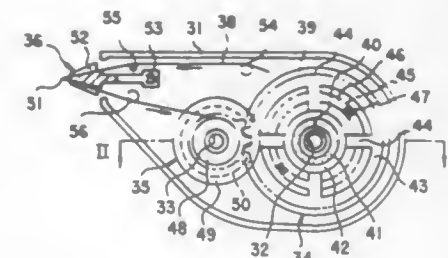
PCT Filed Aug. 28, 1992, Ser. No. 39,172

Claims priority, application Japan, Aug. 30, 1991, 3-246848

Int. Cl.⁶ B05C 1/14

U.S. Cl. 15—104.94

6 Claims



1. A coating film transfer tool, comprising:

a case for the tool;
a pay-out reel for feeding a coating film transfer tape rotatably mounted in said case;
a winding reel for recovery of the used coating film transfer tape rotatably mounted in said case;

a head provided protrusively extending out of said case at one end of said case;
said pay-out reel including a pay-out cylinder and including a drive-gear wheel having a boss;
a friction member provided on an outer periphery of said boss of the drive gear wheel, said pay-out cylinder being in frictional contact with said friction member;
said winding reel including a winding cylinder and including a driven gear wheel which engages with said drive gear wheel
said coating film transfer tape being wound on said pay-out cylinder, being fed from said pay-out cylinder, being turned around over said head, and being wound around said winding cylinder.

5,379,478

SWIVEL JOINT ASSEMBLY FOR A DUST MOP

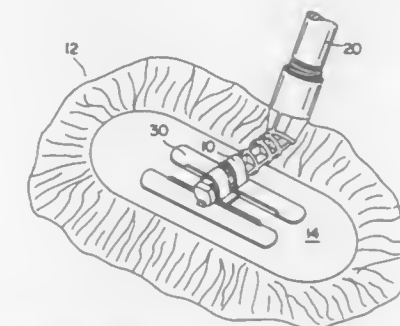
Peter S. Vosbikian, Moorestown, N.J., assignor to Quickie Manufacturing Corporation, Cinnaminson, N.J.

Filed Dec. 18, 1992, Ser. No. 993,138

Int. Cl.⁶ A47L 13/256

U.S. Cl. 15—147.2

19 Claims



1. A mop swivel joint assembly, comprising: a swivel base generally defining a plane and including means for attachment of mop material; a swivel socket on the swivel base, the swivel socket having a cylindrical passageway, an unrestricted rearward opening and a restricted forward opening including a raised lip protruding from the swivel base to rotatably engage a swivel connector; the swivel connector having a front end and a rear end, the rear end including a receptacle for a handle and the front end including a swivel rod, the swivel rod defining a substantially cylindrical bearing member including a grooved end having a circumferential groove adjacent the front end of the swivel rod; and at least one ramp with a planar sloping surface at an axial forward portion of the grooved end of the swivel rod, wherein the ramp is disposed on a side of the swivel rod aligned to the raised lip only at a predetermined rotational position of the swivel rod in the cylindrical passageway, the ramp engaging the raised lip for passage into the circumferential groove when the swivel rod is at said rotational position, and being angularly spaced from the raised lip at other rotational positions, such that the swivel connector is rotated to said rotational position to align the ramp and the raised lip.

5,379,479

ADHESIVE SPREADER

Jim L. Nelson, 1818 Dogwood, Arlington, Tarrant County, Tex. 76012

Filed Dec. 31, 1992, Ser. No. 999,598

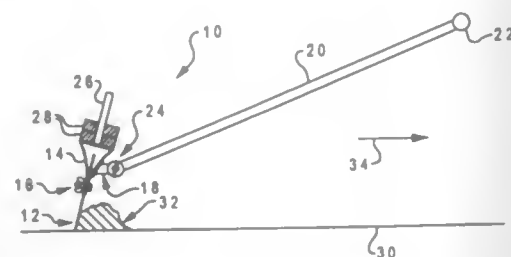
Int. Cl.⁶ E01C 19/22; E04G 21/10

U.S. Cl. 15—245.1

5 Claims

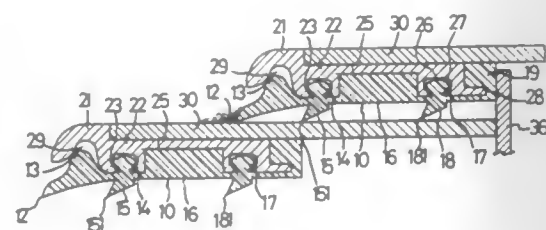
1. An apparatus for spreading an adhesive on a surface, comprising:

- a handle;
 a blade housing attached to the handle, wherein said housing has an upper surface and two side surfaces extending downward therefrom, and wherein at least two pins project upward from the upper surface;
 a blade placed between the two housing side surfaces and fixedly attached to both of the side surfaces so that a lower edge thereof projects below said housing to make contact



with the surface, wherein said blade is held at an angle such that only the lower edge contacts the surface; and at least one weight attached to said housing for generating a downward force through said blade, wherein said weight has at least two holes corresponding to positions of the pins, and wherein said weight rests upon the upper surface and is held in position so that force due to said weight is transmitted through said blade, and to the surface through the lower edge of said blade.

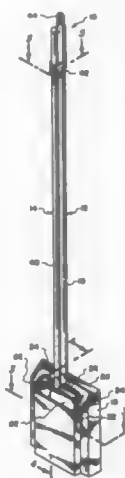
5,379,480
DEVICE FOR CLEARING IRON CHIPS PRODUCED DURING A MECHANICAL WORKING PROCESS
 Neng S. Lo, No. 546, Sec. 1, Feng Shih Rd., Fengyuan City, Taichung Hsien, Taiwan, Prov. of China
 Filed Apr. 22, 1994, Ser. No. 231,390
 Int. Cl.⁶ B23Q 11/08; F16C 17/00
 U.S. Cl. 15—246 3 Claims



1. A device for clearing iron chips produced during a mechanical working process, comprising:
 a plurality of telescopic housings (3) each having an upper plate (30), two side plates and a lower plate;
 a fastening member (20) securely attached to an underside of said upper plate (30) of said telescopic housing (3) and having a first side wall member (22) and a second side wall member (26);
 a recess (25) having a substantially rectangular cross-section being defined in an underside of said fastening member (20) between said first and second side wall members (22) and (26) thereof;
 a first socket (23) defined through an underside of said first side wall member (22);
 a second socket (27) defined through an underside of said second side wall member (26);
 a first lug portion (21) extending outwardly from said first side wall member (22);
 a groove (29) having an arc-shaped cross-section being defined in an underside of said first lug portion (21);
 a first flange portion (28) laterally formed on said second

- side wall member (26) and extending outwardly therefrom; and
 a resilient member (10) securely attached to said fastening member (20) and having a first side and a second side, and comprising:
 a block element (16) having a substantially rectangular cross-section being received in said substantially rectangular recess (25);
 a first locking element (14) formed on the first side of said resilient member (10) being securely received in said first socket (23);
 a first protrusion portion (15) formed on an underside of said first locking element (14) and having a first clearing edge portion (151) extending outwardly therefrom;
 a second locking element (17) formed on the second side of said resilient member (10) being securely received in said second socket (27);
 a second protrusion portion (18) formed on an underside of said second locking element (17) and having a second clearing edge portion (181) extending outwardly therefrom;
 a second lug portion (13) having an arc-shaped cross-section, extending from the first side of said resilient member (10) and being partially enclosed in said arc-shaped groove (29);
 a third clearing edge portion (12) extending outwardly from a distal end of said second arc-shaped lug portion (13) for clearing iron chips produced during a mechanical working process; and
 a second flange portion (19) having an L-shaped cross-section being formed on said second side of said resilient member (10) and being securely mounted on said first flange portion (28).

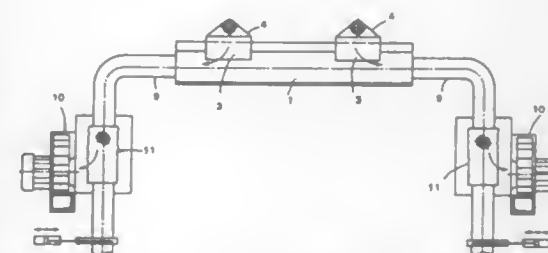
5,379,481
COMBINED DUSTPAN AND BROOM
 Robert A. DeMars, 23221 Ladrillo Ave., Woodland Hills, Calif. 91367
 Filed Jan. 25, 1993, Ser. No. 15,452
 Int. Cl.⁶ A47L 13/52
 U.S. Cl. 15—257.4 4 Claims



1. A combined dustpan and broom comprising:
 a dustpan having an internal chamber, an open top edge, and a closed bottom, a portion of said top edge having an inclined ramp to facilitate the entry of dust and debris into said internal chamber, said dustpan having a separate broom head receiving compartment which is open to said internal chamber;
 a first handle, a U-shaped connector having an apex section from which extends a pair of parallel legs, said apex section being fixed to said first handle, said parallel legs

- having outer ends which are pivotally connected to said dustpan at points which are closer to said open top edge than said closed bottom, each of said parallel legs being offset from said apex section to said outer end such that said dustpan is movable relative to said first handle between a usage position and stowage position, said stowage position locates said apex section across said open top edge, said usage position locates said dustpan relative to said first handle approximately ninety degrees displaced from its position in said stowage position; and
 a broom having a broom head attached to a second handle, said broom head located in said broom head receiving compartment when said dustpan is in said stowage position such that said apex is located between said broom head and said inclined ramp to prevent movement of said dustpan to said usage position and having said second handle being in juxtaposition to said first handle.

5,379,482
CLEANING SYSTEM FOR TEXTILE MACHINES
 Reiner Junger, Friedberg, Germany, assignor to Ernst Jacobi GmbH, Gersthofen, Germany
 Filed Apr. 16, 1993, Ser. No. 46,820
 Claims priority, application Germany, Apr. 16, 1992, 9205280[U]
 Int. Cl.⁶ B08B 5/04
 U.S. Cl. 15—312.1 14 Claims



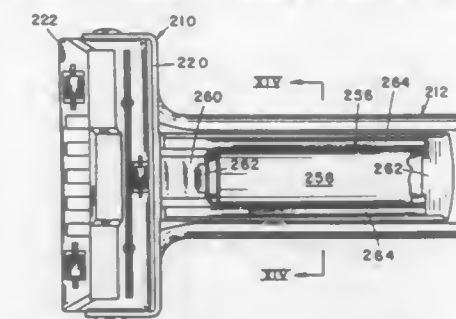
1. A cleaning system for textile machines comprising two essentially identical travelling cleaners which can travel separately from one another along a line of textile machines, each cleaner having a boat-shaped suction nozzle which engages with a stationary suction duct, two sealing lips abutting against the suction nozzle, sealing the nozzle and duct interiors with each other and from the outside atmosphere, the two essentially identical travelling cleaners engaging their suction nozzles in the suction duct, the suction duct having at least two connections at a distance from one another with which it is in fluid communication with the suction side of at least one blower.

5,379,483
VACUUM CLEANER HAVING A TOOL ATTACHED TO THE NOZZLE

Giovanni Pino, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.
 Continuation-in-part of Ser. No. 917,820, Jul. 21, 1992, Pat. No. 5,337,443. This application Sep. 14, 1992, Ser. No. 944,875
 Int. Cl.⁶ A47L 9/02
 U.S. Cl. 15—323 12 Claims

1. A vacuum cleaner, comprising:
 a housing having a nozzle;
 a floor cleaning tool having one end detachably coupled to an end of said nozzle, said floor cleaning tool including an elongate neck having an exterior surface, said neck terminating in a floor engaging head pivotal about an axis transverse to said elongate neck;
 a shallow depression defined in said exterior surface of said elongate neck and extending generally the length of said elongate neck, said shallow depression having a pair of

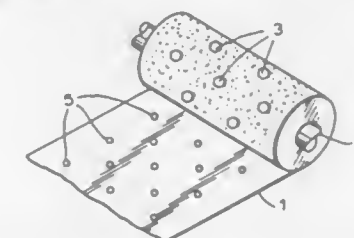
- attachment members, each at an opposite end of said shallow depression; and
 an accessory cleaning tool having first and second ends, each



detachably retained in said depression by said attachment members, whereby said accessory cleaning tool is detachable from said floor cleaning tool for attachment to said end of said nozzle in place of said floor cleaning tool.

5,379,484
Patent Not Issued For This Number

5,379,485
FLEXIBLE SHEETING WITH CASTERS
 Ellen Oshins, and Mary L. Impellizzeri, both of 3 Sheridan Sq. - Apt. 2H, New York, N.Y. 10014
 Filed Jul. 27, 1993, Ser. No. 97,708
 Int. Cl.⁶ B60B 33/08
 U.S. Cl. 16—24 8 Claims

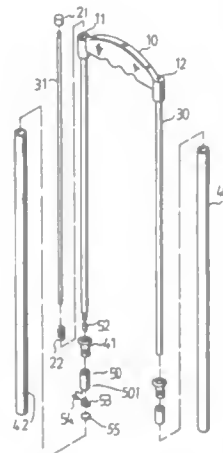


1. Apparatus for moving heavy objects comprising a base web of sheet-like material flexible enough to be wound in and dispensed from a spool and to conform to irregular surfaces about which it is wound, said base web having a plurality of apertures, caster means mounted on said base web at each of said apertures, said caster means comprising a housing having a cavity and a ball snugly disposed within said cavity, said ball being freely rotatable within said cavity but restricted from translational movement, a portion of the circumference of each of said balls protruding through a respective one of said base web apertures from one surface of said base web.

5,379,486
PULL HANDLE OF A TRUNK
 Chien-shan Wang, No. 17, Nan Fang Lin 2, Fang Li Li, Yuan-Li Chen, Miao Li Hsien, Taiwan, Prov. of China
 Filed Aug. 18, 1993, Ser. No. 108,171
 Int. Cl.⁶ B25G 1/04
 U.S. Cl. 16—115 1 Claim

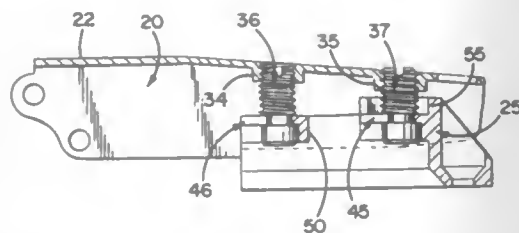
1. An improved pull handle for a trunk, comprising:
 an inverted U-shaped grasp handle having two ends;
 a pair of hollow rods each attached to one of said ends of said grasp handle;
 an actuation rod disposed in one of said hollow rods;
 a press button attached to a top end of said actuation rod;
 a cam member disposed at a bottom end of said actuation rod;

a pair of positioning tubes in which said hollow rods are housed;
 a mushroom-shaped cap being engaged with a top end of each said positioning tube;
 a plurality of spaced slots disposed on the positioning tube in which said actuation rod is housed;
 a sleeve member having a supporting plate disposed at a bottom end thereof;
 a base seat disposed in said sleeve member and supported by said supporting plate;



said base seat being spring biased and slidably abutting against said cam member;
 said base seat having a tilted surface on which said cam member can slidably move as said press button of said actuation rod is pushed downwardly or released so that said base seat can move back and forth in correspondence to the actuation of said press button and engage with or disengage from one of the slots on said positioning tube so as to permit said pull handle to be adjusted in length and retained in place at the adjusted position.

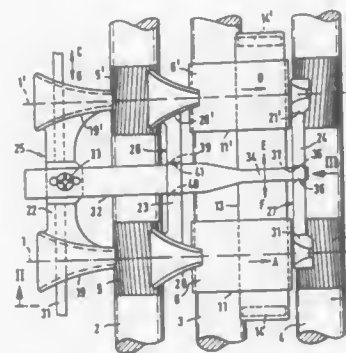
5,379,487
HINGE WITH ADJUSTABLE HINGE ARM
 Michael J. Bowers, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
 Filed Jul. 19, 1993, Ser. No. 93,588
 Int. Cl.⁶ E05D 7/04, 7/12
 U.S. Cl. 16—240 8 Claims



1. A hinge comprising a base plate adapted to be attached to a stationary cabinet member, a longitudinally extending hinge arm attachable to said base plate, and a hinge member pivotally attached to said hinge arm and adapted to be attached to a cabinet door, two threaded holes formed through and spaced longitudinally along said hinge arm, first and second screws threaded into said holes, each of said screws including a shank having an annular groove formed therearound, said base plate having first and second longitudinally spaced and generally U-shaped slots opening in a direction longitudinally of said hinge arm, each of said slots having longitudinally extending edge portions adapted to be received in the groove of the respective screw in straddling relation with the shank thereof

when said hinge arm is moved longitudinally into assembled relation with said base plate, said first screw being operable when tightened to clamp said hinge arm and said base plate in assembled relation, and said second screw bearing against said base plate and being operable when adjusted to change the inclination of said hinge arm relative to said base plate.

5,379,488
SLIVER GUIDING ARRANGEMENT FOR DRAFTING UNITS OF SPINNING MACHINES
 Fritz Stahlecker, Bad Überkingen, Germany, assignor to Hans Stahlecker, Germany, a part interest
 Filed Jun. 24, 1993, Ser. No. 80,773
 Claims priority, application Germany, Aug. 20, 1992, 4227492
 Int. Cl.⁶ D01H 5/72
 U.S. Cl. 19—287 20 Claims

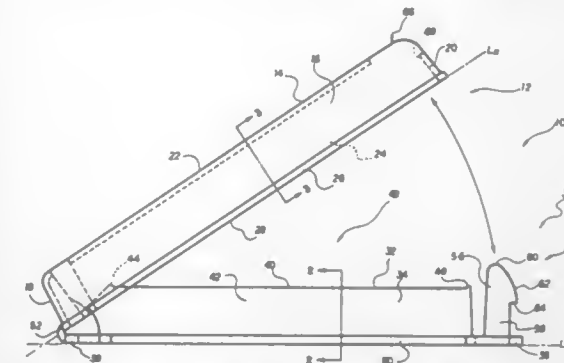


1. A sliver guiding arrangement for drafting units of spinning machines comprising:
 at least two silver guides which are assigned to two drafting units and are arranged upstream from a nip line of a roller pair;
 a coupling member that connects the silver guides to form a unit;
 a driving device coupled to a traversing rod and to the coupling member; and
 a sliding surface on which the unit is guided in parallel to the nip line;
 wherein the driving device bridges a distance between the traversing rod and the coupling member and is connected to the coupling member such that the coupling member moves together with the driving device in parallel to the nip line and is free for relative movement with respect to the driving device towards the roller pair.

5,379,489
BAG CLOSURE CLAMP WITH HINGE-SUPPLEMENTING COMPLEMENTARY CAM SURFACES
 Robert E. Delk, Dallas, and Michael L. Bowen, Arlington, both of Tex., assignors to Struckmeyer Corporation, Dallas, Tex.
 Filed Apr. 13, 1993, Ser. No. 45,258
 Int. Cl.⁶ B65D 77/10
 U.S. Cl. 24—30.5 R 6 Claims

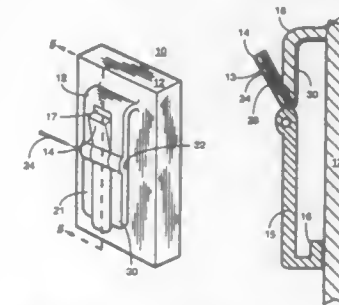
1. A closure comprising:
 a trough;
 a blade engageable with said trough, whereby a bag may be sealed therebetween;
 a hinge pivotally connecting said trough to said blade;
 a latch for releasably maintaining said closure in a closed position;
 a smoothly-curved, protruding cam shoulder formed within said trough proximate to said hinge;
 a complementary, smoothly-curved cam surface formed in said blade proximate said hinge, said complementary,

smoothly-curved cam surface contoured to complement said smoothly-curved cam shoulder, whereby upon closing



ing said closure, said smoothly-curved cam shoulder engages said complementary, smoothly-curved cam surface.

5,379,490
BELT CLIP ASSEMBLY
 Henry Wandt, Boca Raton, and Gerald E. Brinkley, West Palm Beach, both of Fla., assignors to Motorola, Schaumburg, Ill.
 Filed Jan. 4, 1993, Ser. No. 335
 Int. Cl.⁶ A45F 5/02
 U.S. Cl. 24—3 J 16 Claims

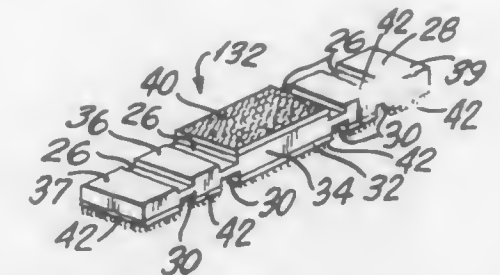


1. A belt clip assembly, comprising:
 a hook shaped feature having a void, said hook shaped feature depending from a housing;
 a latch member which is pivotally retained within said void of the hook shaped feature using complementing snap fit features in the latch member and the hooked shaped feature; and
 spring means for biasing a bottom portion of the latch member in a closed position against the housing, wherein the bottom portion of the latch member is oriented towards the bottom of the housing.

5,379,491
MOUNTING MEANS FOR REMOVABLY SECURING FUNCTIONAL ITEMS TO SUPPORT ARTICLES
 Alan J. Solo, 1835 Burnett St., Brooklyn, N.Y. 11229
 Filed Dec. 11, 1992, Ser. No. 989,376
 The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
 Int. Cl.⁶ A44B 21/00
 U.S. Cl. 24—3 R 21 Claims

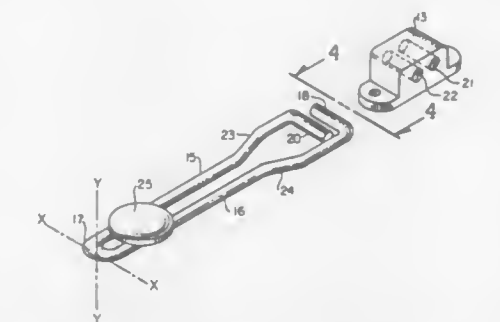
1. Mounting means for removably securing conventional items, including compasses, pedometers, pouches, purses, cases, watches, clips, holding members and flashlights, to support articles, including clothing, footwear, parts of a person's body, posts, steps and moldings, where the support articles have convex, concave or stepped surfaces, comprising:
 a mounting member including at least a central section and

two longitudinally opposing end sections arranged in a one piece integral construction;
 hinge means transversely disposed across said mounting member between each of said sections to permit said end sections to pivot both upwardly and downwardly relative to said central section to conform to an associated convex, concave or stepped surface of the support article;
 first fastener means for removably securing at least one conventional item to one side of said mounting member;



second fastener means for removably securing an opposite side of said mounting member to the support article; and
 said hinge means being transversely extending recesses provided on said one side of said mounting member between said sections, and associated corresponding transversely extending recesses provided on said opposite side of said mounting member between said sections.

5,379,492
SPRING CLIP
 Louis S. Glessner, P.O. Box 800, Golden, Colo. 80402-0800
 Filed Aug. 17, 1993, Ser. No. 106,995
 Int. Cl.⁶ A44B 21/00
 U.S. Cl. 24—3 L 5 Claims



1. A spring clip employing torsional action to achieve retention comprising:
 a stationary mounting having a pair of spaced-apart open-ended, side-by-side passageways in parallel relationship opening on opposite sides of said mounting and said passageways having longitudinal axis lying on a common horizontal plane;
 an elongated clip member having pivot means insertably carried within said passageways on said mounting;
 said pivot means including a pair of lugs laterally overlapping each other on said horizontal plane in spaced relationship and being insertably received from said opposite sides into said pair of passageways respectively;
 said mounting includes a portion separating said pair of passageways being of fixed dimension and said spaced-apart clip member lugs being spaced apart substantially equal to said fixed dimension separating said passageways;
 said clip member has a first raised position and a second lowered position;
 said clip member being twistable about said mounting gener-

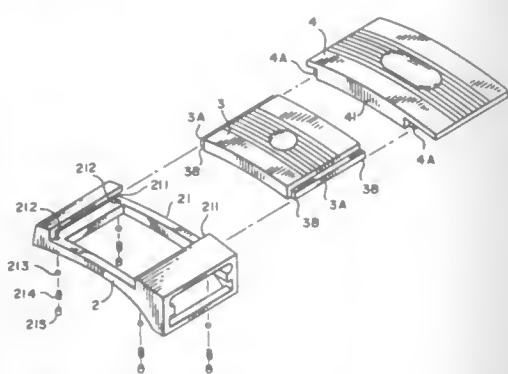
ating a torsional action providing a yieldable bias urging said clip member into said second lowered position; said clip member includes an integral member folded over upon itself at its midsection to define a cantilevered clip end at one end of said clip member and said spaced-apart clip member lugs at its opposite end.

5,379,493
BELT BUCKLE WITH REPLACEABLE ORNAMENTAL FACE PLATES
Ji-Won Wu, No. 20 Fwu-Der Lane Huu-Shan Street, Yan Jwu Village, Hua Tan Hsiang, Chang Hua Hsien, Taiwan, Prov. of China

File¹ Dec. 6, 1993, Ser. No. 161,532
Int. Cl.⁶ A44B 11/22

U.S. Cl. 24—163 K

3 Claims



1. A belt buckle comprising:
 - a base frame for joining the ends of a belt which comprises a rectangular top recess on a top wall thereof, two parallel sliding grooves transversely disposed at two opposite sides by said rectangular top recess, two pairs of holes respectively made on two opposite ends of either sliding groove, said sliding grooves having a respective front end opened and a respective rear end closed, each hole receiving a spring and a steel ball supported on the spring, the steel ball in either hole partially projecting into either sliding groove; and
 - an ornamental face plate mounted on the rectangular top recess on the base frame and having two guide rails respectively inserted into said sliding grooves on said base frame, said guide rails having a respective pair of recessed portions at the bottom into which the steel balls in said holes of said base frame engage respectively.

5,379,494
BINDER FOR BUNDLING ELECTRIC WIRES OR THE LIKE
Yuji Shirakawa, Tokyo, Japan, assignor to Nirei Industry Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1993, Ser. No. 3,746

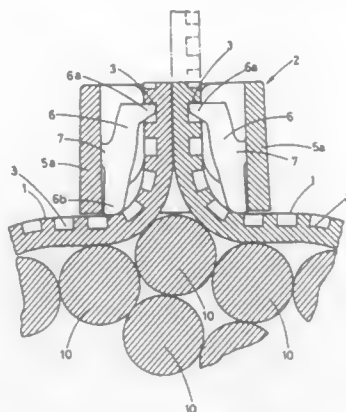
Claims priority, application Japan, Jun. 26, 1992, 4-051069[U]
Int. Cl.⁶ B65D 63/10

U.S. Cl. 24—168 PB

4 Claims

1. A binder for bundling electric wires or the like, comprising:
 - a long bundling band of synthetic resin for winding like a loop around objects to be bundled such as electric wires or the like to thereby bundle said objects and having on its surface a plurality of convex-concave portions formed like a rack; and
 - a stopper of synthetic resin having a box-like opening portion through which two portions of said bundling band can be inserted with respective back surfaces of said two portions in contact, the stopper having inner opposite walls with guide surfaces for guiding the portions of the bundling band and further having a pair of pawl members formed on the inner opposite walls of said opening portion

for engaging with said convex-concave portions of said bundling band inserted through said opening portion; wherein substantially intermediate portions of said pair of pawl members are connected to said inner opposite walls of said box-like opening portion respectively, respective top ends of said pair of pawl members on one side of the intermediate portions are formed so as to engage with said

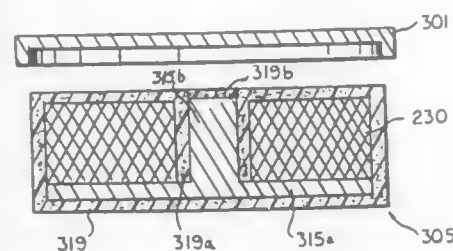


convex-concave portions of said rack-shaped bundling band, respective leg portions of said pair of pawl members on a side of the intermediate portions opposite to the top ends project beyond the guide surfaces formed on said inner opposite walls and a space is formed between said leg portions and said inner walls to allow said pawl member to pivot about the intermediate portion.

5,379,495
MAGNETIC LATCH
Robert G. Riceman, West Caldwell, N.J., and Mitchell A. Medina, New York, N.Y., assignors to Randolph-Rand Corporation, New York, N.Y.
Continuation of Ser. No. 944,711, Sep. 11, 1992, Pat. No. 5,251,362, which is a continuation of Ser. No. 705,036, May 24, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,826
Int. Cl.⁶ A44B 21/00

U.S. Cl. 24—305

9 Claims

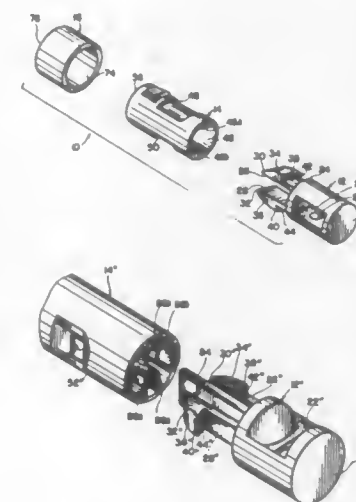


1. A magnetic latch comprising:
 - a) a first member including magnetically attractable material;
 - b) a second member including:
 - 1) a magnet having a first surface positioned adjacent said first member when said latch is in a closed position so as to attract said first member, said magnet defining a hole therethrough;
 - 2) a backing plate attached to a second surface of said magnet opposite said first surface;
 - 3) a central projection extending from said backing plate through the entire length of said hole defined within said magnet and having a surface substantially coplanar with the first surface of said magnet, said central projection being separated by a spacing from the inner surface of the magnet defining said hole;

- 4) a solid non-magnetic member in the form of a waterproof protective layer substantially filling the entire spacing between the magnet inner surface and the central projection;
- 5) an additional member forming a waterproof protective layer encapsulating substantially the entire first surface of said magnet and the coplanar surface of said projection; and
- c) said first and second members including means for substantially preventing lateral movement of said first member relative to said second member when said first and second members are latched together.

5,379,496
CORD RELEASE BUCKLE
Mark J. Krauss, East Greenwich, R.I., assignor to American Cord & Webbing Co., Inc., Woonsocket, R.I.
Filed Jul. 27, 1993, Ser. No. 97,681
Int. Cl.⁶ A44B 11/00; F16G 11/00
U.S. Cl. 24—625

10 Claims



1. A cord release buckle for releasably securing ends of cord comprising:

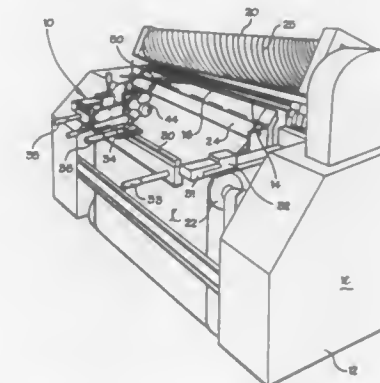
A tubular cylindrical male member comprising a back end and a forward end, a first coupling means for coupling the male member to a cord end, a pair of opposed flexible arms extending longitudinally from the forward end being adapted to be shiftable toward one another; each arm having a free end and a head at the free end having a tapered camming surface and a hook portion;

a tubular cylindrical female member comprising a back end and a forward end, a second coupling means for coupling the female member to a cord end, a central opening and a pair of opposed transverse opening communicating with the central opening, each having a hook engaging edge, whereby the male member and female member are adapted to be releasably secured to one another by inserting the free ends of the arms of the male member into the central opening of the female member causing faces of the female member to engage the camming surface of each head to shift the arms toward one another as the arms are inserted into the central opening, upon further insertion of the arms into the central opening, each head aligns with an associated transverse opening whereupon the arms snap outwardly with each head projecting into the associated transverse opening and the hook portion engaging a hook engaging edge, thereby releasably securing the male member to the female member, the distance between the camming surface of the heads of the male member is larger than the transverse dimension of the central opening of the female member, the female member includes guide surfaces for orienting the male member relative to the female

member such that the heads will ultimately be aligned with the associated transverse openings, whereby the male member and female member are adapted to be released from one another by digitally depressing the heads so that the arms flex toward one another to free the hook portions from the associated hook engaging edges and the heads are withdrawn from the associated transverse opening so that when the male member is retracted from the female member the heads of the arms travel within the central opening until the arms are fully retracted from the central opening whereupon the male member is free of the female member.

5,379,497
APPARATUS FOR INSPECTING SETTINGS ON A TEXTILE FABRIC SHEARING MACHINE
Arne Nielsen; Phillip D. McCartney, both of Oak Ridge, and Majid Moghaddassi, Greensboro, all of N.C., assignors to Guilford Mills, Inc., Greensboro, N.C.
Filed Aug. 18, 1993, Ser. No. 108,342
Int. Cl.⁶ D06C 13/00
U.S. Cl. 26—15 R

12 Claims



1. In a textile fabric shearing machine of the type comprising a frame, a shear cylinder rotatably mounted on the frame and having peripheral cutting blades, an elongate ledger blade stationarily mounted on the frame axially alongside the periphery of the cylinder in shear cutting relation with its cutting blades, and an elongate fabric rest stationarily mounted on the frame axially alongside the periphery of the cylinder at a lateral spacing relative to the ledger blade, apparatus for inspecting the relative dispositions of the shear cylinder, the ledger blade, and the fabric rest, the apparatus comprising a linear guide rail mounted to the frame in precise axially parallel relation to the shear cylinder, and a carriage mounted on the rail for linear movement therealong, the carriage having a detection tool selectively positionable for traveling movement along the fabric rest or the ledger blade for identifying irregularities in linearity or relative disposition to the shear roller.

5,379,498
METHOD AND APPARATUS FOR CONTROLLING SHEARING OF PILE FABRIC
Arne Nielsen, Oak Ridge, and Majid Moghaddassi, Greensboro, both of N.C., assignors to Guilford Mills, Inc., Greensboro, N.C.

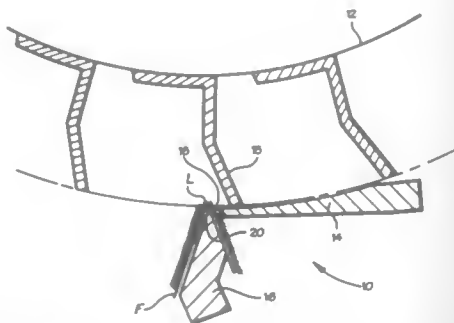
Filed Nov. 15, 1993, Ser. No. 152,398
Int. Cl.⁶ D06C 13/00

U.S. Cl. 26—15 R

8 Claims

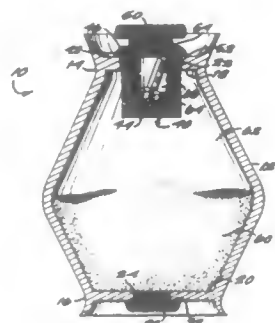
1. A method of controlling the shearing of pile loops of a pile fabric in a shearing machine having a rotatably driven shear cylinder supporting a plurality of circumferentially-spaced shearing blades and a fabric rest surface extending alongside the periphery of the cylinder for fabric travel over the fabric rest to present the fabric tufts to the shearing blades for shear-

cutting, the method comprising calculating a numeric value representing the number of times each loop of the fabric will be cut by the shearing blades of the shearing cylinder as a function of predetermined parameters including the rotational speed of the cylinder, the number of shearing blades thereon, the dimen-



sion of the fabric rest surface normal to the axis of rotation of the cylinder, and the traveling speed of the fabric, and selectively adjusting at least one of the predetermined parameters for achieving a desired number of cuts of each loop of the fabric, thereby to control the effect of shear-cutting on the pile fabric.

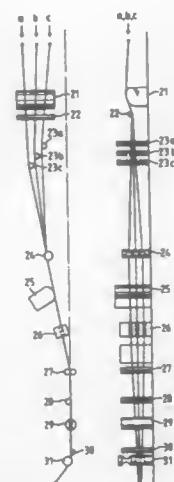
5,379,499
CREMATION URN
Robert L. Jackson, 545 University Pkwy., Aiken, S.C. 29801
Filed Sep. 22, 1993, Ser. No. 126,253
Int. Cl.⁶ A61G 17/08
U.S. Cl. 27-1



1. A cremation urn, comprising:
a first container adapted for storing cremated remains, said first container having a first end, an opposing second end, a first opening in said first end and a second opening in said second end;
a second container having an opening, said second container having first closing means formed thereon for closing said first opening so that, when said first closing means closes said first opening, said second container is substantially within said first container, said opening being accessible to a user, and said cremated remains are sealed in said first container; second closing means for closing said opening of said second container, said second and said first closing means having a joint therebetween and being in adjacent relationship so that said joint is concealed.

5,379,500
METHOD AND APPARATUS FOR PRODUCING UNTWISTED YARN FROM AT LEAST TWO FIBRIL BUNDLES
Werner Flachmueller, Rickenbach, and Hans-Joach Weiss, Ullsbach, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
Division of Ser. No. 60,814, May 12, 1993, Pat. No. 5,299,345, which is a division of Ser. No. 902,536, Jun. 22, 1992, Pat. No. 5,220,778, Continuation of Ser. No. 619,754, Nov. 28, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 116,046
Claims priority, application Switzerland, Dec. 18, 1989, 4531/89

U.S. Cl. 28-220 Int. Cl.⁶ D02J 3/18 10 Claims

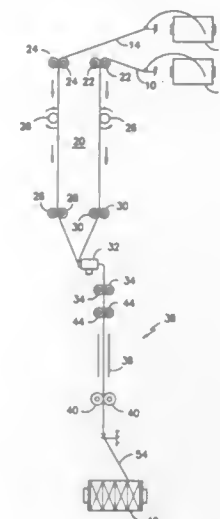


1. An apparatus for producing an untwisted yarn of at least two fibril bundles of different color, said apparatus comprising: guide means for guiding at least two fibril bundles of different color in a predetermined juxtaposed relation from a spinning station to a stretching station; oiling means for oiling the fibril bundles in said juxtaposed relation during guidance in said guide means; and false twisting means downstream of said oiling means and upstream of the stretching station for imparting a false twist to each respective fibril bundle during guidance in said guide means.

5,379,501
METHOD OF PRODUCE LOOP PILE YARN
André M. Goineau, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed May 24, 1993, Ser. No. 99,284
Int. Cl.⁶ D02G 3/00, 3/04

U.S. Cl. 28-281 3 Claims
1. A method of producing a looped yarn comprising the steps of: supplying multifilament, partially oriented, non-textured synthetic core and effect yarns, drawing said core and effect yarns, supplying said drawn core and effect yarns directly into an air entangling and texturing jet via core and effect draw rolls, supplying the jet with air at a pressure in excess of 100 psi, entangling and texturing the core and effect yarns in the air jet, withdrawing the entangled and textured yarn from the air jet via withdraw rolls and taking up the

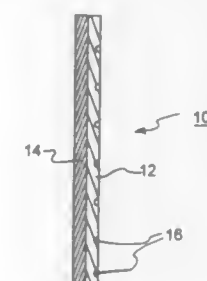
textured yarn; wherein, the effect yarn is supplied by the effect draw rolls with an overfeed of 100-200% with respect to the



withdraw rolls so as to produce a yarn having numerous loops projecting therefrom.

5,379,502
METHODS FOR FABRICATING BATTERY PLATES FOR LEAD/ACID BATTERIES
Robert S. Feldstein, Pelham, N.Y., assignor to Derafe, Ltd., Buffalo, N.Y.
Filed Jun. 10, 1993, Ser. No. 74,358
Int. Cl.⁶ H01M 4/04

U.S. Cl. 29-2 19 Claims



1. A method of fabricating a battery plate for use in lead/acid batteries, where said battery plate exhibits a high active surface area when compared with its projected area; and wherein the principal active constituent of said battery plate is elemental lead or lead oxide; said method comprising the steps of:
(a) producing a thin layer of lead;
(b) forming a discrete plate unit so as to include a substrate and said thin layer of lead at its active surface; and
(c) surface treating at least the thin layer of lead of said discrete plate unit so as to form depressions therein.

5,379,503
EXTRACTION TOOL FOR TRANSMISSIONS
William J. Fakult, Eastlake, Ohio, assignor to Roy-Con Tool & Mfg., Inc., Eastlake, Ohio
Filed May 10, 1993, Ser. No. 58,388
Int. Cl.⁶ B23P 19/04

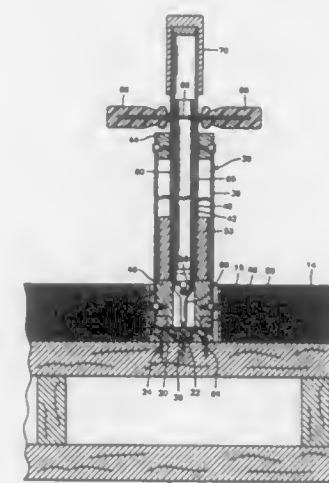
U.S. Cl. 29-265 3 Claims
1. An extraction tool comprising an elongated tubular body, a substantially coextensive operating part having an upper threaded portion and a lower threaded section, a mating nut part at the upper end of the body fixed on the threads and

bearing against the upper end of the body, and an expansion unit mounted on the lower threaded section, whereby rotation of the operating part will cause the expansion unit to internally grip a tubular part of a transmission or the like to facilitate withdrawal of certain of the internal parts carried on the tubular transmission or like part, the tubular body is provided with



a wide shoulder member fixed near the upper end of the body, a bearing support is positioned to engage the shoulder member and a bearing area of a transmission unit or the like, whereby initial rotation of the operating part will effect an initial predetermined gripping engagement of the expansion unit and further rotation of the part will effect a lifting action of the unit within which the unit is positioned.

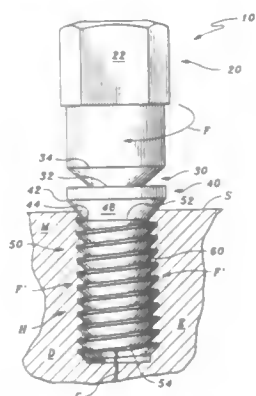
5,379,504
APPARATUS FOR LOCATING SLIT ROLL ON A SKID
John P. Sovitch, and Linda A. Sovitch, both of 1318 Porter St., Taylor, Pa. 18504
Division of Ser. No. 964,291, Oct. 21, 1992, Pat. No. 5,274,898. This application Jan. 3, 1994, Ser. No. 176,642
Int. Cl.⁶ B25B 27/00
U.S. Cl. 29-270 5 Claims



1. An impact tool for supporting, positioning and anchoring a positioning disk upon a skid, said tool including relatively telescopically engaged elongated outer and intermediate members and an inner elongated member telescoped within said intermediate member, said outer tubular member including first and second ends having first and second tubular plugs, respectively, secured therein and including opposing and remote ends, the end of said intermediate tubular member corresponding to said second end of said outer tubular member being disposed between said first and second tubular plugs and having an exterior weight and impact sleeve secured thereon, the inside diameter of said second tubular plug being less than the outside diameter of said weight and impact sleeve and the inside diameter of said first tubular plug being less than the

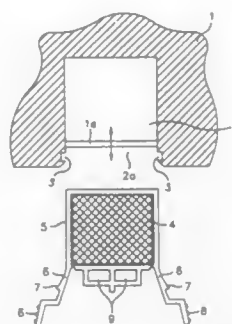
outside diameter of said weight and impact sleeve whereby selective longitudinal reciprocation of said intermediate tubular member relative to said outer tubular member will impact said weight and impact sleeve with either of the opposing ends of said first and second tubular plugs, the ends of said intermediate and inner members corresponding to said first end of said outer tubular member projecting endwise outwardly of said first end of said outer tubular member, said intermediate tubular member including diametrically opposite longitudinal slots formed therein, said inner member including a diametric support shaft whose opposite end portions project through and are slidably received in said slots and have hand grips mounted thereon exteriorly of said intermediate tubular member, and the end of said inner member corresponding to said second end of said outer tubular member including a rotary torque transfer shank thereon projectable outwardly through the interior of said tubular plug at said second end of said outer tubular member for rotary torque transfer to a threaded shank-type fastener.

5,379,505
METHOD FOR REPAIRING CRACKS
Gary J. Reed, Turlock, Calif., assignor to Lock-N-Stitch International, Turlock, Calif.
Filed Jun. 16, 1993, Ser. No. 77,854
Int. Cl.⁶ B23P 6/04
U.S. Cl. 29—402.17



1. A method for cold repair of a crack in a material having a surface by forcing opposite sides of the crack together, the steps including:
drilling holes, each having a first diameter, through the surface and between opposite sides of the crack,
tapping the holes with threads, the hole threads having a hole major diameter and a hole minor diameter, with a top portion of each hole thread adjacent to the hole major diameter closer to the surface than any other portion thereof, and
threading pins into the holes formed in said drilling step, the pins each including a head and pin threads with a pin major diameter and a pin minor diameter with a top portion of each pin thread adjacent to the pin major diameter closer to the head than any other part thereof;
whereby when a pin is threaded into a hole, pin threads engage hole threads, thereby forcing opposite sides of the crack toward each other.

5,379,506
DEVICE FOR REMOVING/INSERTING AN OZONE FILTER FROM AND INTO AN ELECTROPHOTOGRAPHIC APPARATUS
Kyung-Ho Park, Ahnsan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 12, 1993, Ser. No. 150,737
Claims priority, application Rep. of Korea, Nov. 13, 1992, 21314/1992
Int. Cl.⁶ B23P 11/02
U.S. Cl. 29—426.6

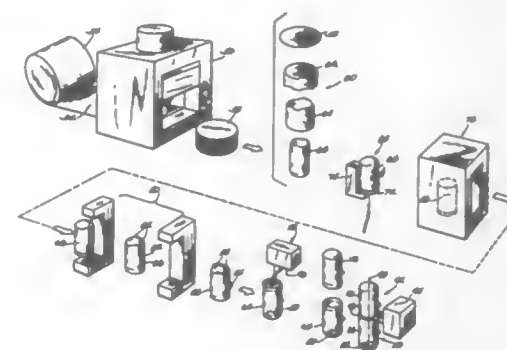


13. A process for removing an ozone filter media from a filter mounting recess formed within a frame member of a main body of an electrophotographic apparatus, comprising the steps of:
grasping first and second tension members outwardly extending respectively from first and second ends of an ozone filter holder surrounding said ozone filter media;
pressing said first and second tension members towards each other until first and second raised edges respectively positioned on said first and second tension members are respectively withdrawn from first and second slots respectively formed on first and second sides of said filter mounting recess; and
removing said ozone filter media from said filter mounting recess formed within said frame member of said main body of said electrophotographic apparatus by withdrawing said ozone filter holder from said filter mounting recess.

5,379,507
METHOD OF MANUFACTURING A TANK
John R. Lindahl, Chapmansboro, Tenn., assignor to State Industries, Inc., Ashland City, Tenn.
Continuation of Ser. No. 898,388, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 505,318, Apr. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 329,688, Mar. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 179,670, Apr. 11, 1988, abandoned. This application Jul. 30, 1993, Ser. No. 99,985
Int. Cl.⁶ B23P 19/04; B65D 90/02; B05D 7/22; B21D 22/20
U.S. Cl. 29—460

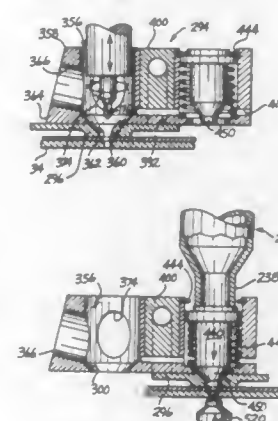
1. A method of making a tank for containing contents comprising the steps of:
(i) forming a pair of top and bottom half members by deep drawing, one of the half members having an opening therein;
(ii) fastening the top and bottom half members together by welding to form an outer shell having an internal surface;
(iii) introducing a non-corrosive polymer material into one of the half members through the opening therein;
(iv) simultaneously rotating and heating the outer shell having the non-corrosive polymer material introduced therein, thereby causing the entire charge of polymer material to be uniformly distributed over the internal surface of the outer shell to thereby form an inner shell of non-corrosive material inside the outer shell wherein the inner shell provides a substantially leak-tight liner for the

outer shell to thus prevent contact between the contents of the tank and the outer shell, said outer shell serving as



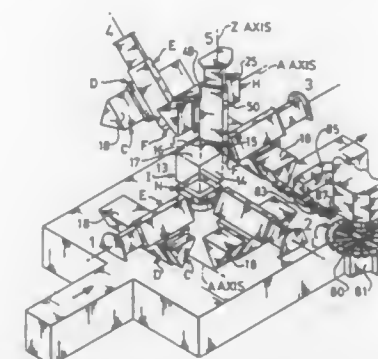
a mold for the inner shell wherein said mold becomes a permanent part of the completed tank.

5,379,508
METHOD OF RIVETING
Gregory C. Givler; Gregory L. Clark, both of Issaquah; Edward J. Woods, Port Orchard; Karl A. Hansen, Seattle, and John R. Hare, Federal Way, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Division of Ser. No. 632,445, Dec. 21, 1990, Pat. No. 5,231,747.
This application Nov. 2, 1992, Ser. No. 820,177
Int. Cl.⁶ B21J 15/06; B23P 19/04
U.S. Cl. 29—525.2



1. A method of drilling a hole in a workpiece and upsetting a rivet in said hole, comprising:
rotating a drill spindle holding a drill bit coaxially disposed on a machine axis in a drill quill;
drilling a hole in said workpiece by plunging said drill bit into the workpiece;
suctioning drill chips cut by said drill bit during said drilling step;
withdrawing said drill to a level just above a shuttle mounted below said drill and in which a die is mounted in a die station;
blowing a rivet through a rivet guide and into said hole in said workpiece;
moving said shuttle to shift said rivet die in said die station into alignment with said machine axis;
moving a driver into contact with said rivet in said hole in said workpiece;
operating an electromagnetic actuator in contact with said driver to produce a force impulse on said driver, thereby driving said driver against said rivet die to upset said rivet.

5,379,509
METHOD FOR MULTIPLE-SPINDLE MACHINING
Daniel M. Mills, Riverview; Richard Ogletree, Southfield, both of Mich., and Thomas J. Lindem, Rockford, Ill., assignors to Ford Motor Company, Dearborn, Mich.
Division of Ser. No. 923,436, Jul. 31, 1992, Pat. No. 5,314,397.
This application Sep. 24, 1993, Ser. No. 125,825
Int. Cl.⁶ B23P 13/02; B23Q 3/157
U.S. Cl. 29—558

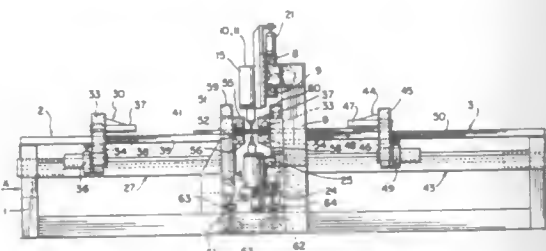


1. A method of machining simultaneously a sequence of surfaces on each of multiple sides of a workpiece, comprising:
(a) supporting a plurality of rotary-driven spindles, each carrying a cutting tool, each spindle being supported by a plurality of relatively movable elements that provide for movement into and out of a predetermined sized, cubed machining space, such support providing for spindle movement having vectors along at least mutually perpendicular axes;
(b) placing said workpiece in said machining space at a predetermined location;
(c) actuating relative movement of said elements by use of linear motors to accurately position each spindle for simultaneous machining of first surfaces on each of multiple sides of said workpiece, said linear motors having a predetermined power frequency less than the natural frequency of the elements providing support, the linear motors being effective to move the spindle at peak accelerations/decelerations of at least one G and at linear speeds up to 3000 inches per minute; and
(d) actuating said elements by use of said linear motors to reposition said plurality of spindles for simultaneously machining other surfaces on each of multiple sides of said workpiece.

5,379,510
MULTISPINDLE MACHINE FOR PROCESSING WORKPIECES
Hallvard Berge, Vendomveien 2, N-1165 Oslo, Norway
PCT No. PCT/NO92/00010, § 371 Date Aug. 27, 1993, § 102(e) Date Aug. 27, 1993, PCT Pub. No. WO92/12816, PCT Pub. Date Aug. 6, 1992
PCT Filed Jul. 15, 1993, Ser. No. 90,174
Claims priority, application Norway, Jan. 18, 1991, 910207
Int. Cl.⁶ B23Q 7/00; B21D 43/10; B23B 47/18
U.S. Cl. 29—564

1. A machine for processing workpieces, comprising:
a) a bipartite worktable for the support of a workpiece,
b) tool assemblies movably arranged on transverse guiding means in an intermediate space between the worktables, for processing the workpiece,
c) a clamping and feeding means on each worktable for engagement with transverse side edges of the workpiece, and for feeding the workpiece during the processing thereof, and
d) at least one cooperating pair of upper and lower guiding and pressure applying means arranged in said intermediate

space, for the stable support of the workpiece in said intermediate space,
e) said clamping and feeding means being mounted on longitudinally extending guiding means and arranged to clamp the workpiece separately or simultaneously, and being independently movable for positioning the workpiece

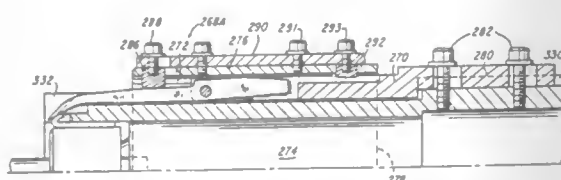


during processing and for successive alternating feeding of the workpiece, a forward one of the clamping means, as viewed in a feed direction, being arranged to take over the workpiece when said workpiece has been fed to a suitable take-over position by a rearward one of the clamping means.

5,379,511
ARMATURE WINDING METHOD AND APPARATUS
Nathan A. Corey, Fairborn; Carl L. Clark, Dayton, and Patrick A. Dolgas, Milford, all of Ohio, assignors to Globe Products, Inc., Huber Heights, Ohio
Filed Mar. 16, 1993, Ser. No. 32,359
Int. Cl.⁶ H01R 43/06

U.S. Cl. 29—597

13 Claims



1. In an armature winding machine for winding an armature having an armature shaft, a core having coil-receiving slots mounted on said shaft, and a commutator mounted on said shaft, said commutator having coil lead-receiving tangs, said armature winding machine having a winding station, means for holding an armature in said winding station, at least one wire guiding flier for winding coils of wire in said coil-receiving slots, a commutator shield assembly comprising an inner shield having at least one notch for exposing a commutator tang to enable wire leading from said flier to be hooked around said exposed tang, and an outer shield movable between a first, extended position in which it covers said notch and a second, retracted position wherein it uncovers said notch,

wire clamp means actuated to grip a stretch of wire extending from said flier at the end of the winding of one armature in said winding station until the commencement of the winding of the next armature in said winding station, and drive means for moving said wire clamp means, the improvement comprising:

a wire trimming blade having a sharp edge, a blade mounting bracket, means for pivotally mounting said wire trimming blade on said mounting bracket in a position wherein said wire trimming blade is closely adjacent the outer periphery of said inner shield and substantially parallel to the longitudinal axis of an armature in said winding station for rocking movement about a pivot axis extending transversely through said blade and intermediate its ends, means for pivoting said blade about said pivot axis to move said blade from a first position in which said sharp edge is

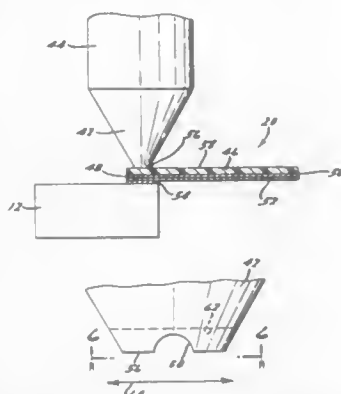
located closely adjacent a tang and radially nearer the armature shaft than the outer edge of said last mentioned tang when said outer shield is retracted and located sufficiently remote from said tang when said outer shield is extended that it would not interfere with the removal of said armature from said winding station, and means on said inner shield for preventing lateral movement of said wire trimming blade.

5,379,512
METHOD FOR BONDING A FLEXIBLE CABLE TO AN ELECTRICAL COMPONENT

Lloyd D. Ingle, Lompoc; Leonard E. Peck, Jr., and Jose A. Santana, both of Goleta, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.
Division of Ser. No. 394,049, Aug. 14, 1989, Pat. No. 5,183,973.
This application Nov. 3, 1992, Ser. No. 970,900
Int. Cl.⁶ H05K 3/30

U.S. Cl. 29—832

10 Claims



1. A method for bonding a flexible cable to an electrical component, the component having a connection point, the method comprising

- providing a flexible cable having a polyimide film substrate, the substrate having an upper and a lower side, the lower side further having a layer of material affixed thereto and a plurality of conductors deposited onto the material;
- placing the cable over the component so that the end of a conductor lies on a connection point;
- pressing the upper side of the substrate over said end of a conductor with an ultrasonic bonding tool with a pressure that compresses the polyimide film substrate beyond its elastic limit;
- applying ultrasonic energy to the tool and through the substrate while applying downward pressure for a sufficient period of time to bond the conductor to the connection point; and
- ceasing pressing the upper surface of the substrate and the application of ultrasonic energy to the bonding tool.

5,379,513
AUTOMATED NAILING DEVICE
Terrence L. Thompson, Minneapolis, Minn., and Jack W. Gresham, Armucbee, Ga., assignors to Viking Engineering & Development, Incorporated, Fridley, Minn.
Filed Sep. 24, 1992, Ser. No. 950,253
Int. Cl.⁶ B23P 21/00; B27F 7/09

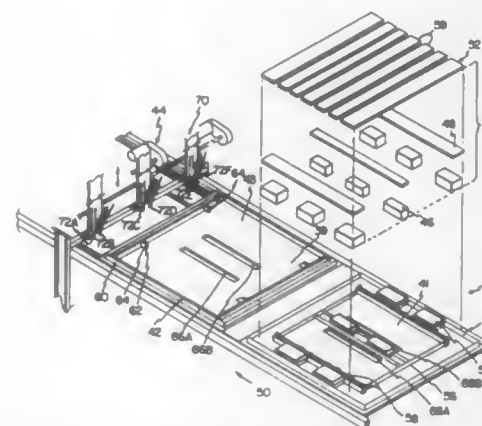
U.S. Cl. 29—772

25 Claims

1. For use in a machine, a device for driving nails in a selected nailing pattern into an arrangement of components having at least one nailing surface during a nailing operation, the components thereafter being movable in a machine direction, comprising:

a frame;

retaining means for retaining the arrangement of components to be nailed within the frame, the retaining means moving in the machine direction;
nailing means for nailing the selected pattern into at least one of the nailing surfaces of the arrangement of components comprising a plurality of movable nailing heads mounted to the frame for delivering the selected nailing pattern to the nailing surface;
nail delivery means for delivering nails to the nailing heads;



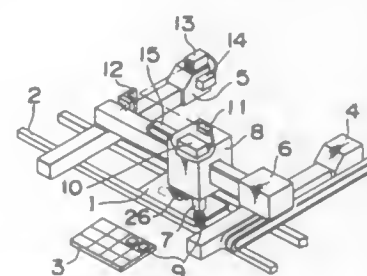
means for causing at least one of the nailing heads to move in a direction transverse to the machine direction;
means for causing the nailing heads to move in the machine direction and in a direction opposite the machine direction; and
means for automatically causing the nailing heads to move in a direction normal to both the machine direction and the transverse direction and to move in a direction opposite the normal direction.

5,379,514
ELECTRONIC COMPONENT INSTALLING APPARATUS AND METHOD

Osamu Okuda, Hirakata; Minoru Yamamoto, Ashiya; Tomoyuki Nakano, Osaka, and Wataru Hirai, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 17, 1993, Ser. No. 153,095
Claims priority, application Japan, Nov. 19, 1992, 4-309974
Int. Cl.⁶ H05K 3/30; B23P 19/00
U.S. Cl. 29—833

8 Claims



1. A method for installing an electronic component on an electronic component circuit board, comprising the steps of: operating an electronic circuit board transporting unit to transport an electronic circuit board to and from a predetermined position;
mounting a head positioning device, including a fixed portion, adjacent said transporting unit;
mounting a head to said head positioning device for movement relative to said fixed portion thereof, said head including a suction nozzle for creating a suction force to draw thereto and hold an electronic component;
operating said head positioning device to move said head

along X and Y axes relative to said fixed portion and said transporting unit and to position said head at a given position along said X and Y axes;
mounting a detection means to one of said head and said fixed portion, and operating said detection means to detect positional information for at least one of the electronic component and said suction nozzle; and
mounting a controller, operable to control operation of said head and said suction nozzle, to the other of said head and said fixed portion; and

optically transmitting/receiving control signals between said detection means and said controller by operating a first optical signal transmitting/receiving unit mounted to said head for movement with said head and a second optical signal transmitting/receiving unit mounted to said fixed portion of said head positioning device.

5. An electronic component installing apparatus comprising: an electronic circuit board transporting unit for transporting an electronic circuit board to and from a predetermined position;

a head positioning device including a fixed portion and being mounted adjacent said transporting unit;

a head mounted to said head positioning device for movement relative to said fixed portion thereof, said head including a suction nozzle for creating a suction force to draw thereto and hold an electronic component;

said head positioning device constituting a means for moving said head along X and Y-axes relative to said fixed portion and said transporting unit and for positioning said head at a given position along said X and Y-axes;

a detection means, mounted to one of said head and said fixed portion, for detecting positional information for at least one of the electronic component and said suction nozzle; and

a controller, mounted to the other of said head and said fixed portion, for controlling operation of said head and said suction nozzle; and

an optical signal transmitting/receiving device, including a first optical signal transmitting/receiving unit mounted to said head for movement with said head and a second optical signal transmitting/receiving unit mounted to said fixed portion of said head positioning device, for optically transmitting/receiving control signals between said detection means and said controller.

5,379,515
PROCESS FOR PREPARING ELECTRICAL CONNECTING MEMBER

Hiroshi Kondo, Osaka; Tetsuo Yoshizawa, Yokohama; Toyohide Miyazaki, Ibaraki; Takashi Sakaki, Tokyo; Yoshimi Terayama, Odawara; Yoichi Tamura, Tokyo; Takahiro Okabayashi, Tokyo; Kazuo Kondo, Tokyo; Yasuo Nakatsuka, Tokyo, and Yuichi Ikegami, Osaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Sumitomo Metal Industries, Osaka, both of Japan
Continuation of Ser. No. 112,216, Aug. 26, 1993, abandoned, which is a continuation of Ser. No. 26,101, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 866,274, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 625,801, Dec. 11, 1990, abandoned. This application Feb. 16, 1994, Ser. No. 20,141

Claims priority, application Japan, Dec. 11, 1989, 1-321733; Dec. 11, 1989, 1-321734; Mar. 16, 1990, 2-67820; Mar. 16, 1990, 2-67821; Mar. 30, 1990, 2-85420

Int. Cl.⁶ H01K 3/10

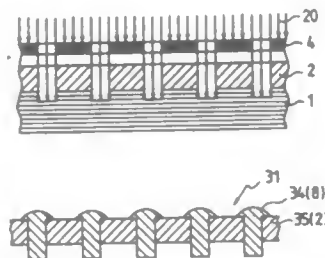
U.S. Cl. 29—852

77 Claims

1. A process for preparing an electrical connecting member having a hole with a high aspect ratio to be filled with an electroconductive member of said electrical connecting member, said electrical connecting member having a holding member comprising an electrically insulating material and a plurality of electroconductive members equipped in said holding member in a state mutually insulated from each other, one end

of each electroconductive member being exposed at one surface of said holding member, and the other end of each electroconductive member being exposed at the other surface of said holding member, said process comprising;

the step of forming a matrix having a state in which said



holding member is in contact with a base member for supporting said holding member; and the step of irradiating a high energy beam on said matrix from said holding member side to remove an irradiated portion of said holding member to form a plurality of holes each having said high aspect ratio.

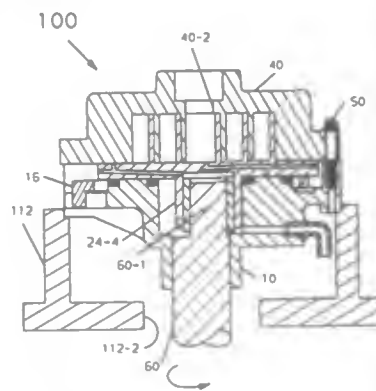
5,379,516 SCROLL COMPRESSOR PUMP CARTRIDGE ASSEMBLY

Joseph P. Vaccaro, Durhamville, and Thomas L. Kassouf, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 6, 1993, Ser. No. 43,416
Int. Cl.⁶ B23P 15/00

U.S. Cl. 29—888,022

16 Claims



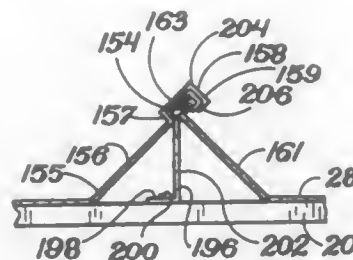
1. A method of assembling a pump cartridge for insertion in a scroll compressor comprising the steps of: removably locating a crankcase on an assembly fixture; locating an Oldham coupling in operative engagement with the crankcase; locating a slider block on the assembly fixture; locating an orbiting scroll in operative engagement with the slider block and Oldham coupling and supported by the crankcase; locating a fixed scroll in operative engagement with the orbiting scroll and supported by the crankcase; and securing the fixed scroll to the crankcase to form a pump cartridge assembly.

5,379,517 METHOD AND APPARATUS FOR ROOFING

Lawrence Skelton, 101 Harris La., Springdale, Ark. 72764
Continuation of Ser. No. 362,474, Jun. 7, 1989, abandoned, which is a division of Ser. No. 918,476, Oct. 14, 1986, Pat. No. 4,872,331, which is a division of Ser. No. 669,471, Nov. 8, 1984, Pat. No. 4,686,809. This application Nov. 9, 1990, Ser. No. 747,841

Int. Cl.⁶ E04D 3/30
U.S. Cl. 29—897.3

3 Claims



1. A method of forming elongated roofing members for the construction of a roof, said method comprising the consecutive steps of:

- continuously feeding a supply of sheet metal material through a roll forming apparatus having a plurality of mutually engaged sets of forming rollers;
- continuously forming an elongated male flange extending from one edge of an elongated flat central portion of said sheet metal material, said elongated male flange having a first elongated portion extending angularly outwardly and upwardly from said elongated flat central portion of said sheet metal material and a second elongated portion extending angularly upwardly from said first elongated portion in the direction towards the area above said elongated flat central portion;
- continuously forming an elongated female flange extending from the opposite edge of said elongated flat central portion, said elongated female flange having a third elongated portion extending angularly outwardly and upwardly from said elongated flat central portion of said sheet metal material and a fourth elongated portion extending angularly upwardly from said third elongated portion generally in the direction toward the area above said elongated flat central portion, a fifth elongated portion extending angularly upwardly from said fourth elongated portion generally in the direction away from the area above said elongated flat central portion, and a sixth elongated portion extending angularly downwardly from said fifth elongated portion generally in the direction away from the area above said elongated flat central portion, said fourth, fifth and sixth elongated portions of said elongated female flange defining an elongated channel for receiving a second elongated portion of an elongated male flange of an adjacent elongated roofing member, said sixth elongated portion of said elongated female flange being deflectable such as to crimp the second elongated portion of the elongated male flange of the adjacent elongated roofing member between said fifth and sixth elongated portions of said elongated female flange to engage the elongated male flange of the adjacent elongated roofing member with said elongated female flange for interconnection of adjacent elongated roofing members;
- continuously feeding said metal material from said plurality of mutually engaged sets of forming rollers to and through a selectively operable cutter; and
- periodically actuating said selectively operable cutter so as to cut said sheet metal material into elongated roofing members of predetermined length, each of said elongated roofing members having an elongated central

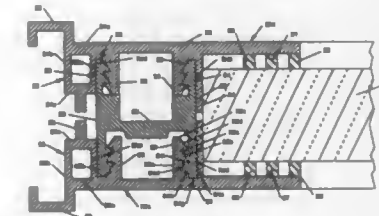
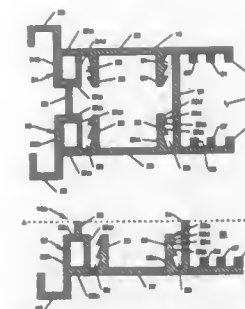
portion, and an elongated male flange and an elongated female flange extending upwardly from opposite edges thereof such that said elongated male flange of one of said elongated roofing members is selectively engageable with said elongated female flange of another of said elongated roofing members by deflection of a portion of said female flange about a portion of said male flange so as to crimp said female flange into engagement with said portion of said male flange.

5,379,518 METHOD OF PRODUCING A WINDOW SASH

James P. Hopper, Delmont, Pa., assignor to Caradon America Inc., Norcross, Ga.

Filed Feb. 4, 1993, Ser. No. 13,765
Int. Cl.⁶ B23P 19/04; E06B 1/32
U.S. Cl. 29—897,312

11 Claims



1. A method of producing a window sash comprising: providing a window sash frame; cutting said window sash frame longitudinally to create a first frame portion and a second frame portion, said first and second portion being completely severed from each other so that no section of one of said frame portions contacts any section of said other frame portion; after cutting said window sash frame, securing rigid connection means in said first frame portion; placing a glazing member into either of said first or second frame portions; and securing said second frame portion to said first frame portion by means of said connection means to form said window sash.

5,379,519 METHOD FOR REMOVAL OF A BEARING FRAME ASSEMBLY

Douglas Paddock, Penn Yan; Peter J. Ruzicka, Auburn, and George Wilson, Skaneateles all of N.Y., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.
Division of Ser. No. 842,287, Feb. 27, 1992, Pat. No. 5,287,612.
This application Feb. 18, 1994, Ser. No. 198,984
Int. Cl.⁶ B23Q 3/00; B23P 19/00

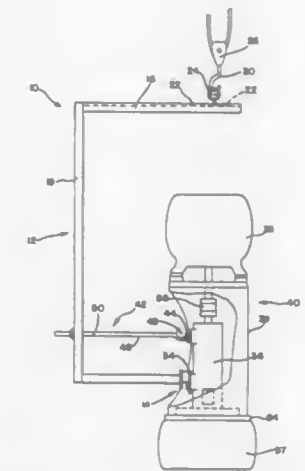
U.S. Cl. 29—898.08

8 Claims

1. A method for horizontally removing a bearing assembly from a vertical centrifugal pump system including said bearing assembly, an electric motor and a pump body, comprising the steps of:

removably connecting a pivot attachment means forming part of a rigid frame to said bearing assembly, said pivot

attachment means defining a pivot point proximate to said bearing assembly; disconnecting said bearing assembly from said motor and said pump body; movably connecting force means to an upper portion of said



bearing assembly at a point vertically disposed from said pivot point; operating said force means to force said bearing assembly to rotate about said pivot point; and horizontally displacing said bearing assembly to a desired location.

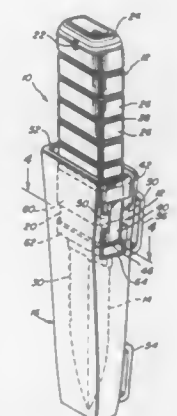
5,379,520 TOOL/SHEATH LOCKING ASSEMBLY

Walter W. Collins, North, S.C., assignor to Seaquest, Inc., Carlsbad, Calif.

Filed Apr. 30, 1993, Ser. No. 55,515
Int. Cl.⁶ B26B 29/02

U.S. Cl. 30—162

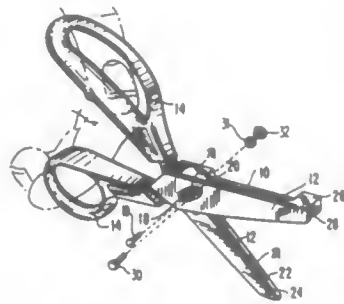
6 Claims



1. A knife/sheath combination, comprising: a sheath; a knife to be inserted in said sheath, said knife having a handle; a raised band on said handle; a movable lever secured to said sheath; and said lever having an engagement end and an opposite button end so that said engagement end is engageable with said raised band when said knife is fully inserted within said sheath, thereby preventing removal of said knife, and wherein removal of said knife from said sheath requires urging of said button end of said lever in a direction toward said handle of said knife.

5,379,521
SAFETY SCISSORS
 Michael J. Lynders, Huntington, Conn., assignor to Ed Kaplan Associates, Teaneck, N.J.
 Filed Jan. 25, 1994, Ser. No. 186,326
 Int. Cl.⁶ B26B 13/00
 U.S. Cl. 30—233

8 Claims



1. A safety scissor comprising: first and second scissor blades, each having an inner surface and an outer surface together defining a cutting edge, and each having a tip at a first end and an operating handle at a second end; pivot means for pivotally connecting said first and second scissor blades together such that their inner surfaces are adjacent and such that their cutting edges are opposed, said pivot means being located between the opposed cutting edges and the operating handles of said first and second scissor blades;
- a flat shield member which is attached to the outer surface of said first scissor blade, which flat shield member extends beyond the cutting edge of said first scissor blade in the direction of said cutting edge and beyond the tip of said first scissor blade in the direction of said tip;
- a generally U-shaped elongated shield which is attached to the outer surface of said second scissor blade such that said second scissor blade is fixedly situated within the generally U-shaped elongated shield, and which is of sufficient dimensions to extend beyond the cutting edge of said second scissor blade in the direction of said cutting edge and beyond the tip of said second scissor blade in the direction of said tip;
- such that the generally U-shaped elongated shield has an elongated opening alongside said fixedly situated second scissor blade, the width of which opening is sufficient to accommodate the inclusion of said first scissor blade as well as its attached flat shield member.

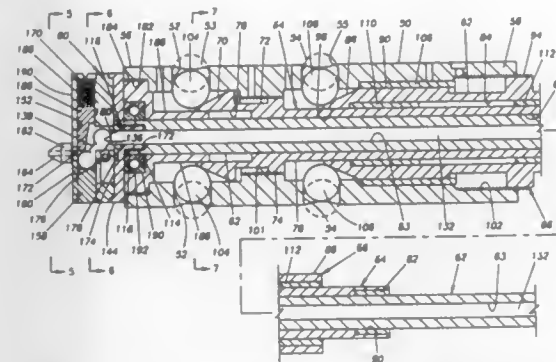
5,379,522
ORIFICE ECCENTRICITY MEASUREMENT TOOL
 James L. Jacobs, Dusen, La., assignor to Oilfield Production Equipment Co., Ltd., Lafayette, La.
 Continuation-in-part of Ser. No. 803,122, Dec. 4, 1991, abandoned. This application Jun. 12, 1992, Ser. No. 898,031
 Int. Cl.⁶ G01B 5/20

U.S. Cl. 33—543

11 Claims

5. A measurement tool for measuring the eccentricity of an orifice plate bore in a longitudinal bore of an orifice fitting, the measurement tool comprising: a housing having a first and second plurality of radial bores; a first plurality of balls wherein at least one ball is inserted in each of said first radial bores; a second plurality of balls wherein at least one ball is inserted in each of said second radial bores; first means for radially forcing said first plurality of balls outwardly of said housing against the longitudinal bore of the orifice fitting; second means for radially forcing said second plurality of balls outwardly of said housing against the longitudinal bore of the orifice fitting.

wherein said first and second radially forcing means are independent of one another; an insertion member having a tapered end portion, said

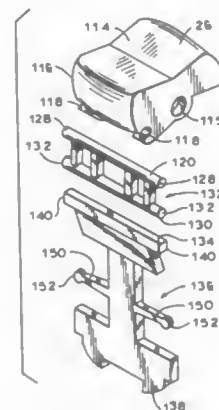


insertion member capable of being inserted in the orifice plate bore; and means for indicating the eccentricity of the orifice plate bore.

5,379,523
TAPE LOCK MECHANISM
 Rudolf Wingert, West Milford, N.J., assignor to Arrow Fastener Co., Inc., Saddle Brook, N.J.
 Filed Sep. 16, 1993, Ser. No. 121,570
 Int. Cl.⁶ G01B 3/10

U.S. Cl. 33—767

7 Claims



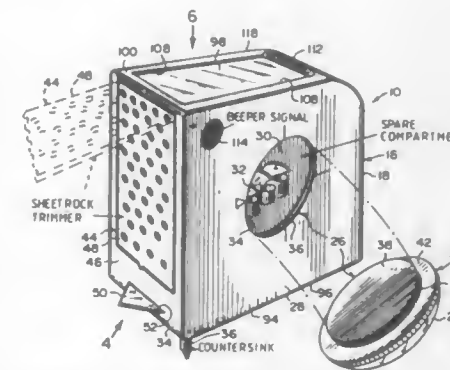
1. A retractable tape measure comprising a casing having an opening formed therein, a coiled tape rule within said casing having a free end extending through said opening in said casing, means for retracting the tape rule into the casing, and means for locking the tape rule in an extended position and releasing the tape rule for retraction into the casing, said locking means including an actuator member movably mounted on said casing between a locking and an unlocking position, a tape lock blade mounted in said casing for movement between a locking position in which the locking blade is engaged with the tape rule and an unlocked position wherein it is released from engagement with the tape rule, and separate connecting means operatively engaged between said actuator member and said locking blade for transmitting movement of the actuator member to the locking blade when the actuator member is moved from said unlocked position to said locked position, said locking blade including integrally formed spring means engaged with said casing for applying a biasing force to said locking blade which urges the entire locking blade against the locking action of the actuator member and for moving the locking

blade to said unlocked position when the actuator member is moved to its unlocked position.

5,379,524
VERSATILE TAPE MEASURE TOOL
 Melvin Dawson, 10 N. 11th St., Wyandanch, N.Y. 11798
 Filed Mar. 25, 1994, Ser. No. 217,728
 Int. Cl.⁶ G01B 3/10

U.S. Cl. 33—768

11 Claims



1. An improved versatile tape measure tool which comprises: a) an elongated strip of tape marked off in a linear scale for taking measurements; b) a casing for storing said tape therein in a coiled spring biased condition with said tape being extendable through a first end wall of said casing for measuring; c) a plurality of components built into said casing, to help in the measuring and cutting to size of plasterboard, so that the plasterboard can be used to cover interior walls and ceilings; d) wherein one of the components includes a circular shaped level to ascertain whether a surface in a first instance is horizontal and in a second instance is vertical; e) means for attaching said level in a removable manner to a first side wall of said casing, thereby forming a compartment within said casing for storing spare part; f) wherein said removable attaching means includes said casing having a circular hole with internal threads extending through the first side thereof; g) a circular collar with external threads formed on a rear surface of said level to thread into said circular hole in the first side wall of said casing; h) wherein a second of said components includes a trimmer pivotally mounted to a second end wall of said casing for shaving the edges of the plasterboard; i) wherein said trimmer is a perforated rectangular plate having one upper short side hinged to the second end wall of said casing.

5,379,525
DRYING STAND FOR SKI BOOTS, GLOVES AND THE LIKE
 George T. Raynor, P.O. Box 495, Westhampton Beach, N.Y. 11978

Filed Apr. 28, 1994, Ser. No. 234,682

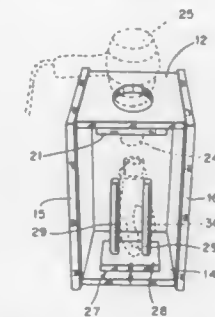
Int. Cl.⁶ F26B 25/00

U.S. Cl. 34—104

12 Claims

1. A drying stand for ski boots, gloves and other clothing items comprising: a generally planar, horizontally-disposed top wall having an opening formed therethrough dimensioned to accommodate a hair blow nozzle; means for supporting said top wall spaced in a raised position relative to a ground support so as to be able to position a clothing article beneath said opening in said top wall; and variable-adjustable aperture means mounted adjacent said opening through which said nozzle may extend and be

generally supported in an upright manner, said aperture means automatically adjusting to the diameter of the nozzle to provide proper support therefor and wherein said aperture means comprises a resilient, generally planar gasket having a generally centrally-disposed multi-slit opening, which gasket is mounted underneath said top

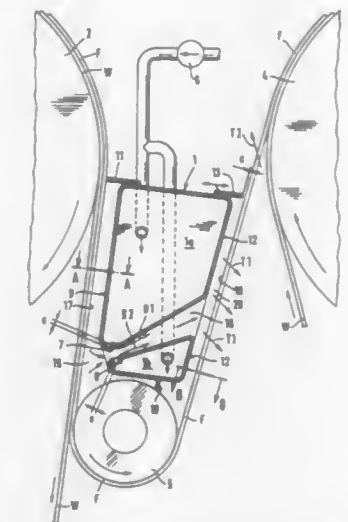


wall such that said top wall and gasket openings are generally vertically aligned, said multi-slit opening of said gasket defining a plurality of resilient, radially inwardly-extending fingers which are normally disposed in a closed position in which they lie in the plane of said gasket, but which, in an open position, are biased downwardly, wherein a hair blower nozzle is inserted into said opening.

5,379,526
APPARATUS FOR ELIMINATING THE FLUTTER OF A PAPER WEB IN THE DRYER SECTION OF A PAPERMAKING MACHINE
 Timo Haverinen, Masku, Finland, assignor to Valmet Paper Machinery Inc., Helsinki, Finland
 Filed Jul. 12, 1993, Ser. No. 89,891
 Int. Cl.⁶ F26B 11/02

U.S. Cl. 34—114

6 Claims



1. An apparatus in the dryer section of a papermaking machine in a double fabric configuration, including cylinders positioned in two tiers between which a web to be dried is adapted to travel in a tortuous path such that it is supported against the cylinders of one and the same tier by means of one and the same support element, said web having a free run between cylinders of different tiers and said support element being run between the adjacent cylinders positioned such that said support element supports web over a section between a cylinder and the guide roll, said apparatus comprising an air blow box located within a loop of the support element formed around said guide roll between said adjacent cylinder, said box

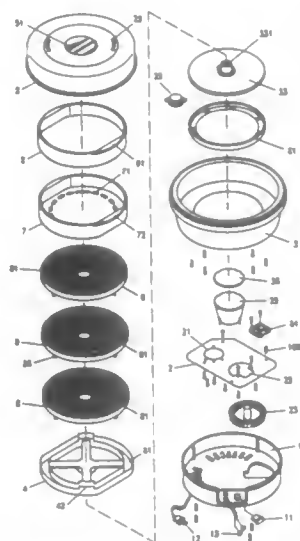
being adapted to blow air for producing a vacuum within said loop in a space defined by said section of the support element carrying said web and for delivering air to the opposite side of the loop through a section of the support element uncovered by the web, said blow box including a blow chamber, into whose wall opens a nozzle which, together with an opposite wall included in the box, forms an ejector assembly and the walls form therebetween a flow path directed towards said uncovered section of the support element, said nozzle being directed towards the flow path for delivering an air current discharging therefrom through the flow path and into a space defined by said uncovered section of the support element and also for creating said vacuum by virtue of the same air current in said space defined downstream the ejector assembly by said section of the support element carrying the web.

5,379,527
COMBINED STEAMING AND DEHYDRATING APPARATUS

Yung S. Su, No. 170, Chung Lun, Chung Sah Tsuo, An-Ting Hsiang, Tainan, Taiwan, Prov. of China
Continuation-in-part of Ser. No. 24,384, Mar. 1, 1993, Pat. No. 5,311,673. This application Jan. 13, 1994, Ser. No. 181,226
Int. Cl.⁶ F26B 25/18

U.S. Cl. 34—197

1 Claim



1. A combined steaming and dehydrating apparatus comprising:

- a base having a plug and a switch electrically connected to the plug;
- a fixing plate arranged on said base and having an outlet and an inlet;
- a motor mounted on said fixing plate and electrically connected to said switch;
- an impeller drivingly connected with said motor;
- a conical tubular member mounted on the outlet of said fixing plate;
- an insulating disc installed on said conical tubular member;
- a water container disposed on said insulating disc;
- a solenoid arranged on said water container;
- an electric heater provided with a cross outlet at the center and mounted on said solenoid;
- a water collector disposed on said electric heater;
- a plurality of drying pans mounted on said water collector and each provided with a plurality of mesh holes and a plurality of legs on the top;
- a steaming pan mounted on said drying pan and provided with a plurality of slots and a lug at both sides for holding;
- a cooking pan mounted on said steaming pan and provided with a lug at both sides for holding in hand; and

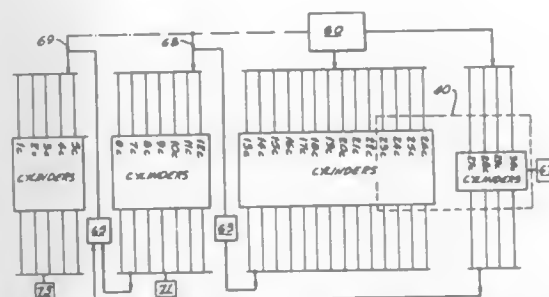
a cover adapted to be fitted on said cooking pan and formed on the top with a plurality of ventilating perforations.

5,379,528
PAPER MAKING MACHINE DRYING SECTION STEAM PRESSURE PROFILE

Markus Oechsle, Bartholomae, Germany, assignor to J. M. Volth GmbH, Heldenheim, Germany
Filed Dec. 9, 1993, Ser. No. 164,412
Int. Cl.⁶ F26B 3/00

U.S. Cl. 34—446

14 Claims



1. A web drying section for a paper making machine, comprising:

- a plurality of hollow, steam receiving drying cylinders arranged along a pathway of a paper web to be dried;
- means associated with the drying cylinders for guiding the web to pass along a web pathway past the drying cylinders, with the web partially wrapping each of the drying cylinders in sequence along the path of the web;
- the drying cylinders being arranged into a first and a second set; the first set of drying cylinders being in a single tier drying section array, wherein all the first set drying cylinders and the respective guiding means for the web at each cylinder are so arrayed that only one side of the web wraps around each of the drying cylinders in the first set thereof;
- the second set drying cylinders are located along the path of the web after the first set drying cylinders, the second set of drying cylinders defining the end of the path of the web through the drying section; the second set drying cylinders being arrayed in two rows and the path of the web through the second set drying cylinders is directed so that a first side of the web is in contact with a first one of the second set drying cylinders in the first row thereof, then the opposite, second side of the web is in contact with a first one of the second set drying cylinders in the second row, then the first side of the web is in contact with a second one of the second set of drying cylinders in the first row, then the second side of the web is in contact with the second one of the second set of drying cylinders in the second row, and so forth through the second set of drying cylinders in two rows;
- first steam supply means for supplying steam to the first set of drying cylinders under pressure for heating the first set drying cylinders;
- second steam supply means for supplying steam at a first pressure level to a first group of the second set of drying cylinders, wherein the first group comprises a series of the second set drying cylinders in sequence along the path of the web, including at least one drying cylinder in the first row and the next successive drying cylinder in the second row;
- third steam supply means for supplying steam to a second group of the second set of drying cylinders, which follows after the first group of cylinders in the second set in sequence along the path of the web through the second set, wherein the second group of drying cylinders in the second set comprises at least one drying cylinder in the first

row and the next successive drying cylinder in the second row, and wherein the third steam supply means causes the steam pressure in the second group of the second set of cylinders to be at a lower pressure than the steam pressure in the first group of the second set of cylinders.

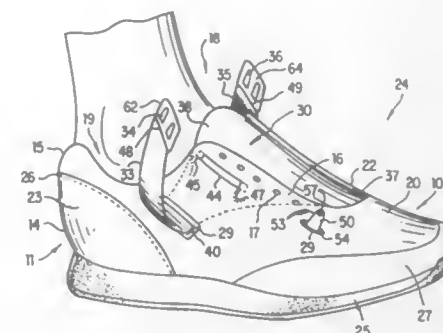
5,379,529
TONGUE STRAPPING SYSTEM FOR A SHOE UPPER
Steven F. Smith, Taunton, and Peter M. Foley, Needham, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.

Continuation of Ser. No. 971,627, Nov. 5, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 253,203

Int. Cl.⁶ A43B 23/26

U.S. Cl. 36—54

23 Claims



1. A shoe comprising:

- a sole;
- an upper attached said sole, said upper having a heel portion, a first side and a second side defining a top opening including an ankle opening and a lacing margin extending to said ankle opening;
- a first aperture formed within said first side of said upper, said first aperture disposed rearwardly of said lacing margin;
- a second aperture formed within said second side of said upper, said second aperture disposed rearwardly of said lacing margin;
- a tongue affixed to and disposed within said upper adjacent said top opening;
- a first strap secured to said tongue and extending through said first aperture to the exterior of said upper;
- a second strap secured to said tongue and extending through said second aperture to the exterior of said upper; and
- fastening means in conjunction with said straps for securing said first and second straps about the foot of a wearer, wherein the fastening of said fastening means causes said tongue to be pulled downwardly and rearwardly within said shoe toward said heel portion of said upper.

5,379,530
MULTI-APPLICATION ANKLE SUPPORT FOOTWEAR
Anthony H. G. Bell, Laguna Niguel, and Carl E. Prindle, South Laguna Beach, both of Calif., assignors to Oansh Designs, Ltd., Laguna Niguel, Calif.

Continuation of Ser. No. 933,328, Aug. 21, 1992, Pat. No. 5,317,820. This application Nov. 16, 1993, Ser. No. 153,651
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.⁶ A43B 7/20, 23/08

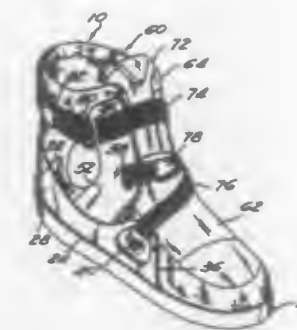
U.S. Cl. 36—89

16 Claims

1. An ankle supporting shoe wearable on a wearer's foot having a plantar surface, ankle, heel, shin, lateral malleolus and medial malleolus, said shoe comprising:

- a sole member defining lateral and medial edges and a generally planar top surface having heel, toe and central portions;
- a boot attached to said sole member, said boot defining a toe portion, a vamp portion and an ankle portion surrounding

the ankle, heel and lower shin of the wearer's foot when such is inserted into the boot, said ankle portion including lateral and medial side panel portions; and
a brace member attached to the top surface of said sole member, comprising:
a base portion formed to suit the shape of at least a portion of the plantar surface of the wearer's foot; and
curved lateral and medial struts extending upwardly from said base portion;
said lateral strut being formed and oriented on the base



portion so as to extend upwardly along the lateral aspect of the ankle and about the front of the lateral malleolus and subsequently along the lower lateral and frontal aspects of the shin when the foot is inserted into the boot and the boot tightened; and

said medial strut being formed and oriented on the base portion so as to extend upwardly along the medial aspect of the ankle and about the back of the medial malleolus and subsequently along the lower medial aspect of the shin when the foot is inserted into the boot and the boot tightened.

5,379,531
SKI BOOT

Shinichi Iwama, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

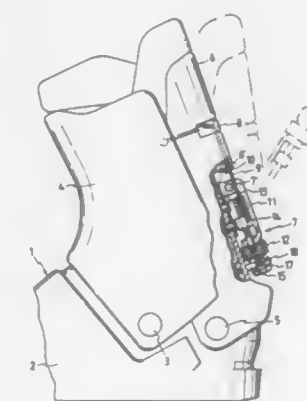
Filed Nov. 30, 1992, Ser. No. 983,050

Claims priority, application Japan, Dec. 6, 1991, 3-108521[U];
Jul. 2, 1992, 4-052052[U]

Int. Cl.⁶ A43B 5/04

U.S. Cl. 36—119

12 Claims



1. A ski boot for receiving a skier's foot within an outer shell thereof, comprising:

- a clamping lever provided on said outer shell and pivotally movable to a predetermined position for tightening said outer shell onto said skier's foot;
- means for biasing said clamping lever away from said predetermined position; and

engagement means for operatively engaging said clamping lever with said outer shell and securing said clamping lever at said predetermined position, wherein a pivoting force necessary to pivot said clamping lever away from said predetermined position upon release of said engagement means is reduced by said biasing means continuously by the pivoting of the clamping lever from the predetermined position to a released position.

5,379,532
SKI BOOT

Sigard Seldel, Graz, Austria, assignor to Raichle Sportschuh AG, Kreuzlingen, Switzerland

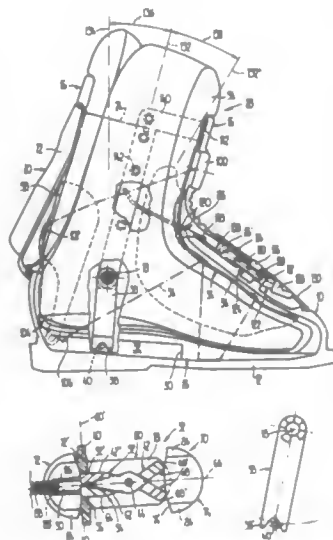
Filed Apr. 27, 1993, Ser. No. 52,746

Claims priority, application Switzerland, Apr. 28, 1992, 01358/92

Int. Cl.⁶ A43B 5/04

U.S. Cl. 36—119

20 Claims U.S. Cl. 36—136



19. A ski boot having a longitudinal axis and a transverse axis, comprising:

- a shell configured to surround a skier's foot, said shell including a sole extending substantially parallel to said longitudinal axis;
- a shaft configured to surround a skier's leg pivotally coupled to said shell about a pivot axis substantially parallel to said transverse axis, said shaft being pivotal from a standing position to a forward lean position in a first range and being pivotal from the forward lean position to a more forward position in a second range;
- a foot-holding device disposed within said shell and said shaft including a cable-pull element configured to tension around a skier's foot and lower leg, and an actuating mechanism coupled to said shaft; and
- a tensioning device disposed in said shell and coupled to said foot-holding device, including a movable control mechanism coupled to said actuating mechanism, an expandable tensioning mechanism coupled to said cable-pull element, and a rotatable linkage-type transmission member disposed between said control mechanism and said tensioning mechanism, said transmission member transmitting movement of said shaft to said cable-pull element, wherein said transmission member has a surface defining a control path including a first section and a second section extending from said first section at an angle thereto, and wherein said control mechanism abuts said surface, and wherein upon pivoting of said shaft through said first pivoting range, said control mechanism travels along said first section imparting movement to said transmission member and

expanding said tensioning mechanism thus tensioning said cable-pull element, and upon pivoting of said shaft through said second pivoting range, said control mechanism travels along said second section imparting no movement to said transmission member and maintaining said tensioning mechanism in an expanded condition thus maintaining a tension in said cable-pull element.

5,379,533
FLUID FILLED AMUSEMENT OR ATTENTION ATTRACTING ARTICLE FOR ATTACHMENT TO FOOTWEAR

Eric Swartz, Malden, Mass., assignor to Converse Inc., North Reading, Mass.

Filed Dec. 6, 1991, Ser. No. 803,024

Int. Cl.⁶ A43B 23/24; A43C 3/00

25 Claims



1. A fluid filled amusement or attention attracting article attached to footwear, the article comprising:

- at least one hollow chamber being formed with overlapping top and bottom layers of material and with an interior volume of the chamber sealed between the top and bottom layers, the bottom layer being generally planar to conform to a surface area of the footwear to which it is attached, the top layer being flexible and being formed in a non-planar configuration with a central portion of the top layer being surrounded by a peripheral portion of the top layer that is connected to the bottom layer and spaces the central portion of the top layer from the bottom layer with a void therebetween, thereby forming the interior volume of the chamber in the void between the top and bottom layers;
- a fluid filling the interior volume of the chamber, portions of the fluid being caused to flow from one area of the chamber interior volume to another area of the chamber interior volume in response to flexing of the top layer of the chamber; and
- means for securing the chamber to a surface of the footwear where the chamber is visible and accessible.

5,379,534
BUCKET EQUIPPED WITH MIXING DEVICE, EXCAVATION MACHINE HAVING THE BUCKET, AND SOIL IMPROVEMENT METHOD USING THE EXCAVATION MACHINE

Jinichiro Negishi, 3533, Shichihongi, Kamisatomachi, Kodamagun, Saitama-ken, Japan

Filed Nov. 24, 1992, Ser. No. 981,743

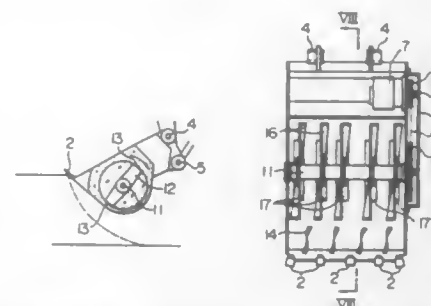
Int. Cl.⁶ E02F 5/02

U.S. Cl. 37—379

13 Claims

- 1. A bucket suitable for use with an excavation machine for improvement of ground, the bucket comprising: a pair of side plates defining a pair of opposing side surfaces, a bottom plate defining a bottom surface; excavating edge means on said bottom surface for excavating the ground and for enabling at least a portion of the

excavated ground to be scooped into the bucket; said excavating edge means comprising a plurality of excavating pawls; crushing plate means for inverting and crushing the ground scooped into the bucket; and mixing means for mixing the ground crushed by said crushing plate means in the bucket; said excavating edge means, crushing plate means, and mixing means being arranged in the bucket such that ground

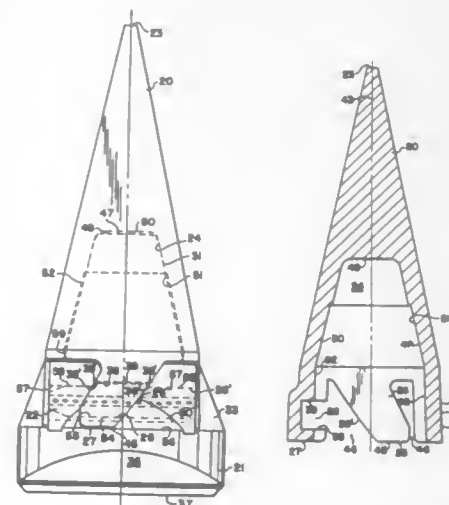


excavated and scooped into the bucket using said excavating edge means can be inverted and crushed by said crushing plate means, and then mixed by said mixing means, said plurality of excavating pawls being aligned in a row along an edge portion of the bucket, said crushing plate means comprising a plurality of crushing plates aligned in a row in the bucket behind said row of excavating pawls, said crushing plates having a twist configuration, said mixing means comprising a device for mixing the ground crushed by said crushing plate means.

5,379,535
REPLACEABLE EXCAVATING TOOTH ASSEMBLY
Stephen M. Bowes, Jr., Jacksonville, Fla., assignor to Mobile Pulley & Machine Works, Inc., Mobile, Ala.
Continuation-in-part of Ser. No. 982,898, Nov. 30, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 107,530
Int. Cl.⁶ E02F 9/28

U.S. Cl. 37—452

20 Claims



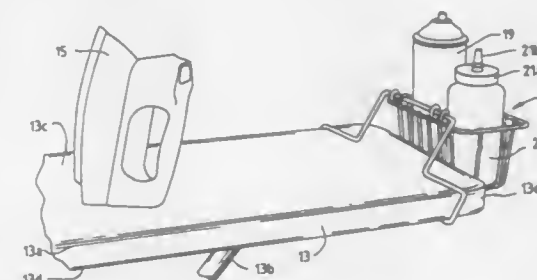
- 1. An excavating tooth assembly comprising an adaptor member for attachment to a cutter head, a replaceable tooth member adapted to be removably attached to said adaptor member by a male/female coupling having a common longitudinal axis, and a locking means for locking said tooth member to said adaptor member in a nonrotational connection; said adaptor member being a solid body having a conical nose portion and a base portion, said base portion having a parametric surface containing a plurality of generally longitudinal alternating helical grooves and externally exposed helical lands; said tooth member having a generally hollow conical shape with a mid portion including an inner socket to receive said nose portion of said adaptor member, and a base portion formed as a skirt having a plurality of generally longitudinally spaced, externally exposed, helical ears which fit slidably into corresponding said grooves of said adaptor member base portion with both said helical lands and ears forming an external surface of said assembly, said base portions of said adaptor and tooth members including at least one keyway extending linearly through both said base portions generally perpendicular to and spaced away from said axis; said locking means including at least one key member, having opposite sides and being adapted to fit closely within and extend through said at least one keyway and engaging both said base portions respectively on said opposite sides of said key member.

ric surface containing a plurality of generally longitudinal alternating helical grooves and externally exposed helical lands; said tooth member having a generally hollow conical shape with a mid portion including an inner socket to receive said nose portion of said adaptor member, and a base portion formed as a skirt having a plurality of generally longitudinally spaced, externally exposed, helical ears which fit slidably into corresponding said grooves of said adaptor member base portion with both said helical lands and ears forming an external surface of said assembly, said base portions of said adaptor and tooth members including at least one keyway extending linearly through both said base portions generally perpendicular to and spaced away from said axis; said locking means including at least one key member, having opposite sides and being adapted to fit closely within and extend through said at least one keyway and engaging both said base portions respectively on said opposite sides of said key member.

5,379,536
IRONING BOARD ATTACHMENT INCLUDING BASKET
Moises B. Lorenzana, 601 Lake Hinsdale Dr., Willowbrook, Ill. 60514

Filed Nov. 15, 1993, Ser. No. 152,580
Int. Cl.⁶ D06F 81/10; A47G 23/02; B65D 43/20
U.S. Cl. 38—106

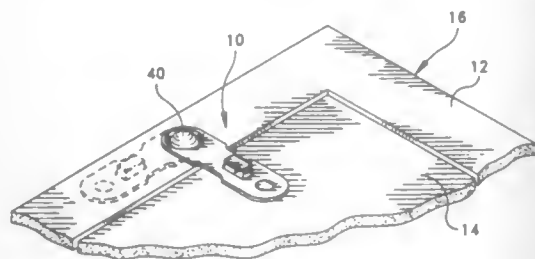
11 Claims



1. An ironing board attachment for conveniently supporting supplies used in pressing clothes on an ironing board of the type having an elongated pressing member with upper and lower surfaces and including a framework supporting said pressing member with the upper surface being a planar surface with a width transverse to an elongated length and disposed horizontally, the combination comprising:

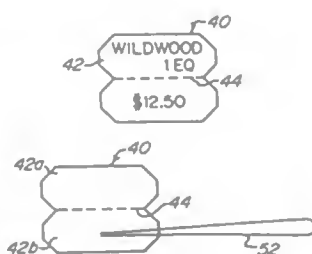
- (a) a yoke having a first portion defining an elongated opening which has a length and width to receive an end of an ironing board, said yoke having a second portion which extends laterally from the first portion providing a horizontal basket support bar at said ironing board end when the attachment is assembled to an ironing board, said first and second portions being integrally connected to preclude relative motion between said first and second portions;
- (b) a basket for receiving ironing supplies having a bottom and sides and having a hook portion for detachable engagement with said support bar to mount said basket in an upright position at said ironing board end with the basket pivotally connected to said support bar and said ironing board end engaged with the side of the basket;
- (c) said elongated opening in said first portion of said yoke being wider than the spacing between said upper and lower surfaces of said pressing member so that said yoke is easily assembled to said ironing board end when disposed vertically and then pivoted about the length of the elongated opening to engage lengthwise extending edges of said elongated opening with said upper and lower surfaces of said ironing board and to position said support bar over said ironing board end, said basket having a weight which locks said yoke in position on said pressing member.

5,379,537
TURN BUTTON
 Armand E. Roy, Attleboro, Mass., assignor to Craft, Inc., Attleboro, Mass.
 Filed Apr. 29, 1993, Ser. No. 53,475
 Int. Cl.⁶ G09F 1/12
 U.S. Cl. 40—156



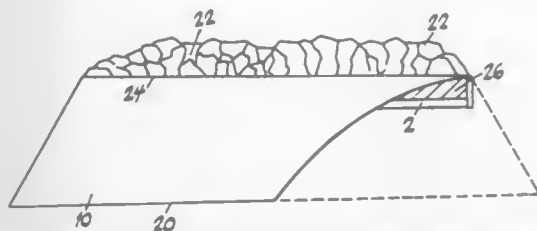
1. A turn button for a picture frame comprising an elongated metal body portion having opposite first and second side surfaces and opposite first and second ends, first and second raised bosses on said first side surface adjacent said first and second ends, respectively, said first boss having an aperture there-through for rotatably securing said turn button to a first portion of a picture frame, said second boss having a substantially smooth outwardly facing surface on said first side of said body portion for engaging a second portion at said picture frame in order to retain said second portion in a predetermined position relative to said first portion, and a third raised boss on the second side surface of said body portion between said first and second bosses for rotating said turn button relative to said first frame portion.

5,379,538
DUAL-FUNCTION LABEL
 Thomas E. Osborne, P.O. Box 209, Stewarts Point, Calif. 95480-0209
 Continuation of Ser. No. 235,173, Aug. 23, 1988, abandoned.
 This application Jun. 22, 1990, Ser. No. 541,950
 Int. Cl.⁶ G09F 3/10
 U.S. Cl. 40—299



1. A method of labeling objects with a dual-function label, said method comprising the steps of providing a medium having a front side for receiving information, a back side completely coated with adhesive material, and a fold line physically formed in and completely bisecting the medium into two halves with each half being a mirror image of the other; selectively providing a separate fastening element; determining whether the dual function label is to be used as an adhesion label or as a tag label; and selectively either affixing the adhesive back side of the medium to an object in an unfolded state when the label is to be used as an adhesion label, or folding the medium along the full length of the fold line into two matching halves having their adhesive back sides joined together to capture said fastening element therebetween so that the folded medium may be attached to an object by the fastening element when the label is to be used as a tag label.

5,379,539
ILLUMINATED SIGN WITH ICE-LIKE CHARACTERS
 Paul Hannula, Minneapolis, Minn., assignor to Lakeside Ltd., Minneapolis, Minn.
 Continuation-in-part of Ser. No. 783,108, Oct. 25, 1991, Pat. No. 5,282,330, which is a continuation of Ser. No. 430,735, Nov. 2, 1989, Pat. No. 5,099,593. This application Nov. 18, 1993, Ser. No. 154,059
 Int. Cl.⁶ G09F 13/04
 U.S. Cl. 40—552



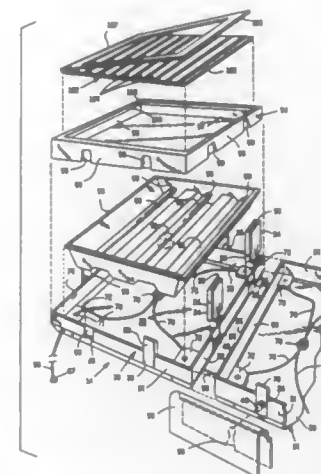
1. An illuminated display including features appearing like chiseled pieces of ice, comprising:
 a light source;
 a first diffusion member located around a first portion of the light source;
 a second diffusion member located around at least a portion of the first diffusion member so that light leaving the first portion of the light source travels through the first diffusion member to the second diffusion member; and
 a display portion including raised transparent features having a chiseled ice-like configuration, each raised transparent feature being defined by a plurality of raised discrete surfaces, wherein each discrete surface is oriented in a different plane relative to at least one other discrete surface and wherein the discrete surfaces form a plurality of groups of contiguous discrete surfaces which simulate surfaces of a chiseled piece of ice and which form raised transparent features appearing as a chiseled piece of ice, the display portion being located around at least a portion of the second diffusion member so that light leaving the first portion of the light source travels through the first diffusion member, and then through the second diffusion member to leave the illuminated display through the raised transparent features of the display portion, wherein a second portion of the light source is exposed to an exterior of the illuminated display so that light from the second portion of the light source escapes the illuminated display without traveling through a diffusion member, to form an illuminated display which provides light which is not diffused to an area to be illuminated and which includes a display portion with features which appear as if they were chiseled from ice.

5,379,540
MODULAR SIGN SYSTEM
 Kent D. Howard, Dousman, Wis., assignor to The Howard Company, Brookfield, Wis.
 Filed Nov. 17, 1993, Ser. No. 154,045
 Int. Cl.⁶ G09F 13/04
 U.S. Cl. 40—558

5. A modular sign assembly comprising:
 a first module and a second module each including a base having a back panel and a plurality of walls projecting from the back panel, wherein each one of the plurality of walls has at least one dovetail groove in an exterior surface, each of said first and second modules also having a display panel and a light bulb within the base for back lighting the display panel, and wherein one of the plurality

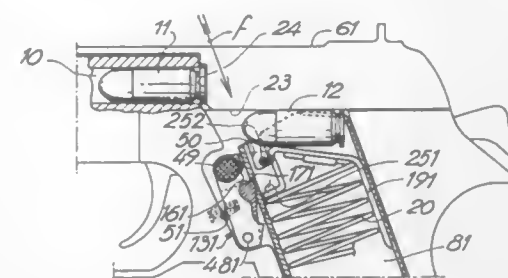
of walls of said first module abuts one of the plurality of walls of said second module; and

latch means into said second direction and thereby withdraw said tooth means from said notch means.



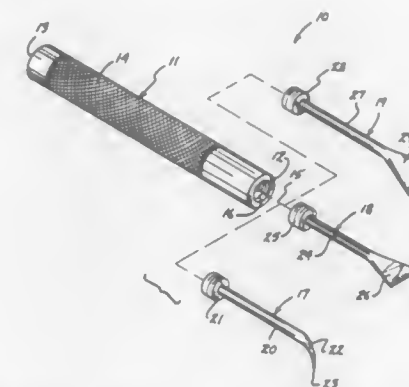
a double dovetail union engaging dovetail grooves in each abutting wall of said first and second modules to hold those modules together.

5,379,541
AUTOMATIC OR SEMIAUTOMATIC FIREARM
 Timour Bammate, Paris, France, assignor to Marianne Bammate, Paris, France
 Filed Jan. 13, 1993, Ser. No. 3,748
 Claims priority, application Switzerland, Mar. 26, 1992, 00964/92
 Int. Cl.⁶ F41A 9/70
 U.S. Cl. 42—7



1. An automatic or semiautomatic firearm comprising:
 a frame;
 a barrel close to said frame;
 a removable cartridge magazine in the frame;
 spring actuated piston means movable in said cartridge magazine for feeding the barrel with cartridges inserted into the magazine;
 notch means formed in a wall of said magazine;
 latch means assembled to said frame for movement into first and second directions opposite to one another;
 said latch means being a single rigid body rotating about a single axis;
 spring means for urging said latch means into said first direction;
 tooth means on said latch means, said tooth means for insertion into said notch means when said latch means are spring urged into said first direction;
 manual control means on said latch means, said manual control means for urging said latch means into said second direction for withdrawing said tooth means from said notch means against the bias of said spring means; and
 drive means also on said latch means, said drive means for being directly urged by said piston means to move said

5,379,542
HANDGUN CLEANING TOOL KIT
 Arsenio F. Guzman, 231 S. Brighton St., Burbank, Calif. 91506
 Filed Jul. 30, 1993, Ser. No. 99,529
 Int. Cl.⁶ F41A 29/02
 U.S. Cl. 42—95

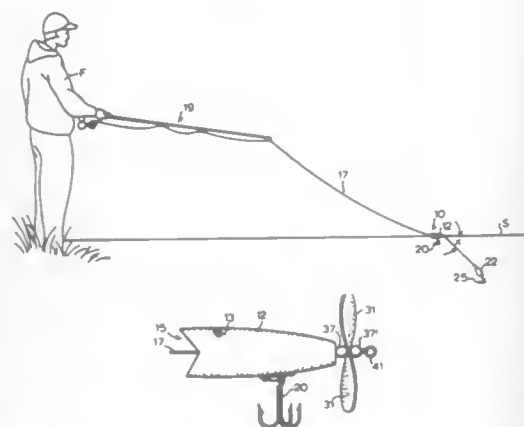


1. A handgun cleaning tool kit, comprising,
 an elongate tubular handle, having a handle first end and a handle second end, with the handle including a knurled exterior wall surface oriented between the handle first end and the handle second end, and the handle symmetrically oriented about a handle axis,
 and
 an internally threaded socket directed into the handle first end,
 and
 a plurality of tools, including a first tool having a first tool threaded boss arranged for selective reception within the socket, and a first tool shank integrally directed from the first tool threaded boss, and a pick member having a pick member tip, with the pick member oriented at an oblique angular orientation relative to the first tool shank,
 and
 the tool members including at least a second tool, having a second tool scraping plate mounted to a second tool shank, wherein the second tool shank includes a second tool threaded boss arranged for reception within the socket,
 a storage housing mounted integrally to the second end, with the storage housing including a door plate hingedly mounted to the storage housing for reception of at least one of said tool members therewithin.

5,379,543
FISHING LURE ASSEMBLY
 John E. Avent, 311 Acorn St., Raleigh, N.C. 27604
 Filed Feb. 4, 1994, Ser. No. 191,950
 Int. Cl.⁶ A01K 83/00

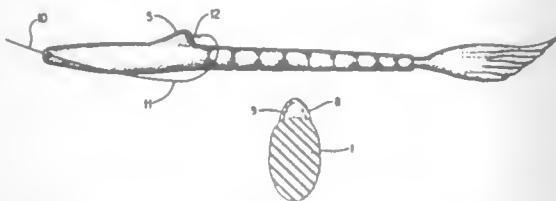
U.S. Cl. 43—42.15
 1. A fishing lure assembly for use with a fishing line and means for casting the line, comprising:
 (a) a primary lure having:
 (i) a floatable, rearwardly tapering, fish colored, smooth surfaced, solid body portion extending lengthwise between leading and trailing ends;
 (ii) said leading end formed to simulate the open jaws of a fish and said trailing end terminating in an end surface which is free of any associated lure attachment;
 (iii) a pair of simulated fish eyes mounted on an upper portion of said body portion rearward of an upper of said jaws;
 (iv) within a selected inner portion of said jaws, a cavity

- portion formed so as to create an intermittent sound when said body portion is pulled through water;
- (v) cross sections of said body portion formed generally of cylindrical shape and of varying diameter between said leading and trailing ends and having a central horizontally disposed longitudinal axis extending between said ends and centrally through said cylindrical cross sections;
- (vi) a horizontal cylindrical bore of uniform diameter formed coaxial with said axis and extending between a front opening to said bore located centrally of said leading end and a rear opening to said bore located on said end surface centrally of said body portion at said trailing end; and
- (vii) a first hook structure loosely supported on a bottom surface of said body portion at a location intermediate said leading and trailing ends;



- (b) a fishing line having a continuous first portion including a portion passing loosely through said bore and totally but loosely confined within said body portion between said leading and trailing ends;
- (c) a submersible secondary lure attached to an outer end of a second portion of said line forming an extension of said first portion, said secondary lure being freely movable rearwardly and downwardly from a casting position adjacent and posterior to the said trailing end of said primary lure body portion thereby enabling said primary lure to serve as a surface lure and said secondary lure as a subsurface lure;
- (d) a second hook structure loosely secured to said secondary lure; and
- (e) means associated with said secondary lure for attracting fish.

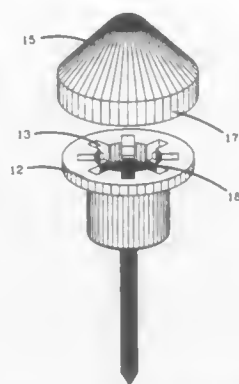
5,379,544
WEEDLESS LURE
 Lawrence P. Davidson, 29 Smallwood St., Indian Orchard, Mass. 01151
 Filed Aug. 6, 1993, Ser. No. 102,890
 Int. Cl.⁶ A01K 85/00
 U.S. Cl. 43—42.24 4 Claims



1. An artificial fishing lure comprising a flexible, preferably polymeric substance having at least a three sections (A) the

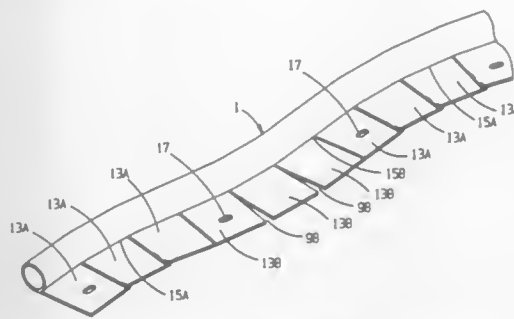
first section being smooth and substantially cylindrical or slightly in the shape of an oval and containing a hollow dorsal fin, said fin being enclosed on all sides except being open on the side nearest the second section of the lure and having walls up to 4 mm in thickness; (B) the second section containing several segments pinched at each end; and (C) a third section being substantially flat.

5,379,545
ANIMAL REPELLENT DEVICE
 Bela Gall, and John Gall, both of 1801 Coral Ridge Dr., Fort Lauderdale, Fla. 33305
 Continuation-in-part of Ser. No. 38,242, Mar. 29, 1993, abandoned. This application Dec. 30, 1993, Ser. No. 175,508
 Int. Cl.⁶ A01M 25/00
 U.S. Cl. 43—131 2 Claims



1. A device for applying chemical animal repellent comprising in combination: a body portion (11) and a cover portion (15); said body portion (11) having an upper outwardly extending rim (12), an inner chamber (18), and a plurality of orifices (13) in said rim (12) and said body portion (11); said cover (15) having a flange (17) which seats over said rim (12); a ground-engaging means (14) being attached to the bottom of said body portion (11); the device being so characterized that when animal repellent is placed in said chamber (18), the combination of the cover (15) and body portion (11) protects the interior of chamber (18) from rain but said orifices (13) permit connection between the interior of the chamber (18) and the outside atmosphere so that any volatile ingredients in the chamber (18) may diffuse into the atmosphere; said orifices (13) extending vertically through rim (12).

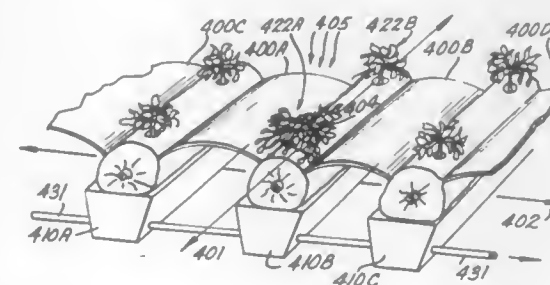
5,379,546
BED DIVIDER
 Richard Popp, 1505 Rue Reynard Rd., Menasha, Wis. 54952
 Filed Jul. 30, 1992, Ser. No. 921,738
 Int. Cl.⁶ A01G 1/00
 U.S. Cl. 47—33 7 Claims



1. A bed divider for above-ground use comprising:

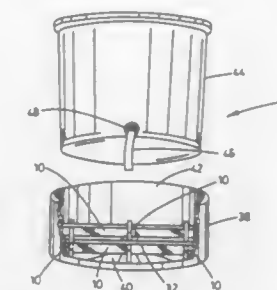
- a. a flexible elongated separation member having a closed circular tubular cross section with an outer surface and defining a longitudinal axis, the separation member being selectively bendable such that the longitudinal axis thereof is straight or defines a selected continuous reverseable smooth curve that defines a first plane; and
- b. an elongated thin planar flange extending unidirectionally from the separation member and lying in a second plane that is parallel to the first plane, the flange having a free edge and a second edge that is integrally joined to the separation member, the flange having opposed top and bottom surfaces, the flange bottom surface extending tangentially into the separation member outer surface, the flange bottom surface being placeable horizontally on the surface of the ground with the separation member lying above the ground, the flange defining a plurality of generally straight cuts that extend from the flange free edge to the separation member to thereby form a plurality of tabs, adjacent tabs having respective facing surfaces formed by the cuts that are spaced apart when the separation member longitudinal axis is straight.

5,379,547
PLANT CULTIVATION APPARATUS AND METHOD
 Blake Whisenant, P.O. Box 207 - Hwy. 62, Parrish, Fla. 34219
 Continuation-in-part of Ser. No. 546,448, Jul. 2, 1990, Pat. No. 5,193,306. This application Nov. 17, 1992, Ser. No. 976,351
 Int. Cl.⁶ A01G 25/00
 U.S. Cl. 47—79 5 Claims



1. A structure for commercially growing vegetables, comprising:
- a line of substantially evenly spaced reservoir container assemblies, each of said reservoir container assemblies comprising a growing medium container means with at least one plant growing opening therein, a second container means for holding a liquid and having a wall, conduit means extending from the interior of said second container means through said wall into the interior of said growing medium container means, said conduit means having means for assisting the transfer of liquid from said second to said growing medium container means, said growing medium container means having a second opening disposed remote from said at least one plant growing opening for allowing evaporation of liquid therethrough; and
- a number of arch support structures, one of said arch support structures being located in the space between each successive reservoir container assemblies in the line, each of said arch support structures being formed from a piece of flat material which is arched so that two opposing sides of the piece of material form supporting portions, the arch support structures being oriented so that each supporting portion is substantially perpendicular to said line.

5,379,548
SYSTEM FOR SUPPORTING AND WATERING PLANT POTS
 Mary K. Peterson, 261 Millington La., Hartland, Wis. 53209-1608
 Filed Jul. 14, 1993, Ser. No. 91,350
 Int. Cl.⁶ A01G 25/00
 U.S. Cl. 47—81 11 Claims

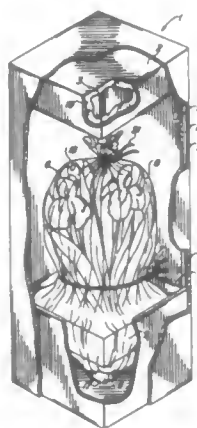


1. An apparatus for supporting and watering plant pots, comprising:
- (a) a container having bottom and side walls for holding water;
- (b) a free-standing support having a plurality of water-impervious narrowly rectangular panels, each of the panels having a first end, a second end, a midpoint, a longitudinal axis, a first planar surface, a second planar surface that opposes the first planar surface, and a boundary about the planar surfaces which includes a first linear edge and a second linear edge which is parallel to the first linear edge, and wherein the panel has a given length and width dimension and includes a first notch which extends inwardly from the first linear edge, and second and third notches which extend inwardly from the second linear edge, the first notch being disposed between the midpoint and the first end, the second notch being disposed substantially at the midpoint, and the third notch being disposed between the midpoint and the second end, and wherein the first, second and third notches are oriented substantially normally relative to the longitudinal axis, and wherein the notches are substantially uniformly sized such that one panel may be interfitted with another by mating notches from the different panels, and wherein the individual notches have a given length dimension which is not greater than one-half the width dimension of the panel, and a width dimension which is substantially uniform along its entire length, and wherein the support is built by interlocking a desired number of panels to create a pattern of panels having interstices therebetween, and wherein the support fits within the bottom and side walls of the container and further wherein the support is placed between the bottom wall of the container and the plant pot; and
- (c) a wick which extends between one of the interstices formed between the pattern of panels and the plant pot to convey water by capillary action to the plant pot when the container has been filled with water.

5,379,549
RECEPTACLE FOR SHIPPING HORTICULTURAL PRODUCTS
 John Carcich, Newark, Calif., and William J. Lowry, Grand Rapids, Ohio, assignors to Aquila Enterprises, Holland, Ohio
 Filed Sep. 25, 1992, Ser. No. 950,955
 Int. Cl.⁶ A01G 9/02
 U.S. Cl. 47—84 4 Claims

1. A receptacle for securely holding and protecting a horticulture product during shipment comprising:
- an exterior receptacle having an exterior upright wall portion, a closable top opening, and a closable bottom open-

ing, for providing a first degree of protection to the horticulture product from an external environment;
 an interior liner having an interior upright wall portion and a lower edge, configured to be slidably received within the exterior receptacle for providing a second degree of protection to the horticulture product from the external environment;
 an open top vase configured to be slidably received within the exterior receptacle and securely held through a



contact with the lower edge of the interior liner for providing support to the horticulture product;
 a moisture retention block configured to be slidably received within the open top vase for holding and providing moisture to the horticulture product; and
 a moisture barrier flexibly disposed between the open top vase and the moisture retention block for retaining moisture from the moisture retention block within the moisture barrier and for providing a third degree of protection to the horticulture product from the external environment.

5,379,550

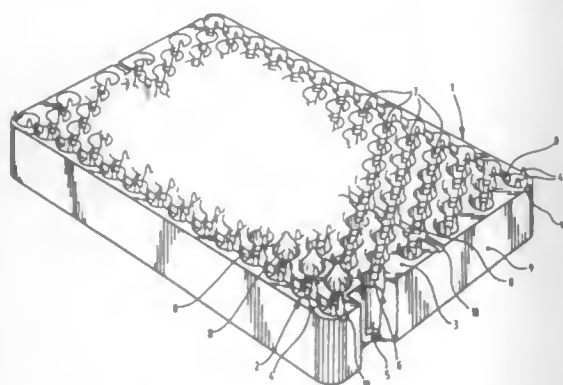
CARRIER FOR BULBOUS PLANTS

Johannes M. W. Beljaars, Gilze, Netherlands, assignor to Curtec Nederland B.V., Rijen, Netherlands
 Filed Apr. 6, 1993, Ser. No. 45,520
 Claims priority, application Netherlands, Apr. 6, 1992, 9200641

Int. Cl.⁶ A01G 9/02

U.S. Cl. 47—87

7 Claims



1. In a plant starting carrier receptacle for a plurality of plants, said receptacle having a plurality of pockets and each of said pockets being provided for starting a corresponding one of said plants, the improvement comprising:
 each of said pockets, with a closed bottom portion and an open top portion, providing a reservoir for receiving a

liquid medium in which roots of an individual plant can grow;
 holding means, associated with each said top portion, for engaging and supporting a bulb of said plant over said reservoir with a bottom of said bulb at a preferred depth in said liquid medium;
 overflow means for defining a maximum level of said liquid medium within said reservoir.

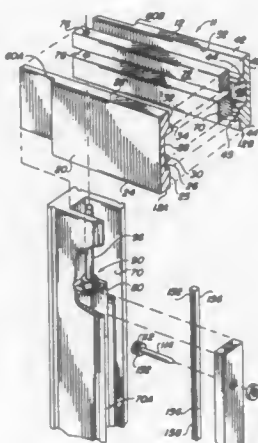
5,379,551

WINDOW SHUTTER

Ronald L. Swapo, 3547 E. Fairfield, Mesa, Ariz. 85213
 Filed Nov. 20, 1992, Ser. No. 980,196
 Int. Cl.⁶ E06B 7/08

U.S. Cl. 49—82.1

4 Claims



1. A shutter frame comprising:
 - (a) generally U-shaped vertical stile fabricated from a plastic material and defining a first longitudinally extending channel within said U-shape;
 - (b) a horizontal rail fabricated from a plastic material and defining a second longitudinally extending channel therein, said vertical stile and horizontal rail being in abutting relationship;
 - (c) rigid reinforcing means positioned in at least one of said first and second channels;
 - (d) load transferring means attached to said rigid reinforcing means and extending to the other of said channels to interconnect the vertical stile and horizontal rail and reinforce the frame;
 - (e) a mounting strip having spaced-apart openings therein, positioned in said first longitudinally extending channel; and
 - (f) louvers having pins associated therewith, said pins being rotatively received in said spaced-apart holes in said mounting strips.

5,379,552

DOOR PROTECTOR

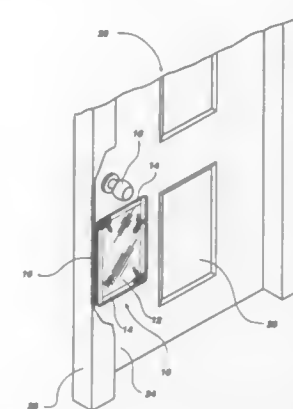
Blaine O. Smith, Salt Lake City, Utah, assignor to Dynatec International Inc., Salt Lake City, Utah
 Filed Mar. 9, 1993, Ser. No. 28,344
 Int. Cl.⁶ E06B 3/30

U.S. Cl. 49—460

14 Claims

1. A device which can be used for protecting an area on a door having a front surface and other structures having a front surface from marring caused by dogs and other animals scratching upon the door, the device comprising:
 - a protective pad which is substantially planar and having a dimensional area sufficient to shield an area to be protected from an animal's scratching, the protective pad having a surface area which is substantially less than the

surface area of the front surface and having a first side and a second side;
 a scratching surface provided on the first side of the protective pad, the scratching surface having a first axis and a second axis perpendicular to the first axis and a non-smooth textured surface such that as the animal scratches thereon by movement of a paw in a substantially vertical direction and parallel to the first axis the paw engages the textured surface and an intensified audible noise is created thereby which is greater than the audible noise created if



the paw were scratched on a substantially smooth surface; and
 means for directly mounting the protective pad onto the front surface of the door over the area to be protected such that as the animal scratches on the scratching surface the protective pad remains in position on the door and the second side of the protective pad contacts the front surface and the audible sound is transmitted to the front surface and the protective pad shields the door surface from marring.

5,379,553

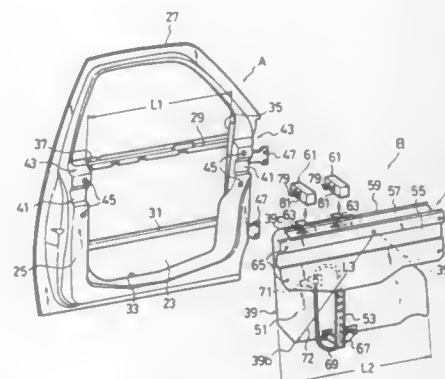
DOOR STRUCTURE FOR VEHICLE AND METHOD FOR ASSEMBLING SUCH DOOR STRUCTURE

Koichi Kimura, and Kiyoto Matsuzaki, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
 Filed Dec. 13, 1993, Ser. No. 165,810
 Claims priority, application Japan, Dec. 18, 1992, 4-338903

Int. Cl.⁶ B60J 5/04

U.S. Cl. 49—502

6 Claims



1. A door structure for a vehicle comprising:
 - an outer module including an inner panel and an outer panel connected to said inner panel, said inner panel having an opening defining in part by first and second edges having a distance L1 therebetween; and
 - a regulator module including an inner frame which is fixed to said inner panel, a regulator fixed to said inner frame,

and a window panel connected to said regulator and being movable by said regulator between first and second positions, wherein said window panel has a maximum width L2, an edge sloped relative to a horizontal plane and a corner opposite from said sloped edge such that a distance L3 between said corner and said sloped edge, as measured along an imaginary line intersecting said sloped edge at a right angle, is less than L1, and L2 is greater than L1.

5,379,554

GRINDING AND FINISHING WORM

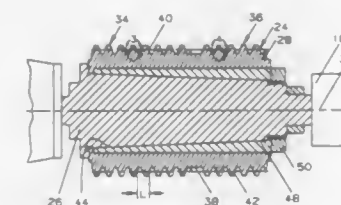
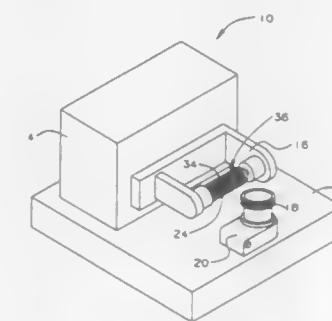
Dan L. Thurman, Peoria; Michael L. Gilham, Morton, and John C. Lee, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 18,833, Feb. 18, 1993, abandoned. This application Jun. 1, 1994, Ser. No. 259,732

Int. Cl.⁶ B24D 17/00

U.S. Cl. 451—177

7 Claims



1. An apparatus for grinding and finishing a metal member, comprising:
 - a single unitary composite grinding and finishing worm having an axis, first and second end portions, a middle portion, and first and second outer surfaces, said first and second outer surfaces each defining a preselected tooth profile, a continuous common preselected lead, said middle portion being free of said tooth profile over a preselected distance as measured along the axis, said preselected distance being substantially equal to lead dimension of said first and second end portions; and
 - one of said end portions being adapted for grinding and the other end portion being adapted for finishing.

5,379,555

TEMPORARY DRAIN COVER

Stephen F. Strieb, 9 Partridge Ct., Novato, Calif. 94947, and Gerald W. McCall, 57 Ventura St., Vallejo, Calif. 94590
 Filed Aug. 4, 1992, Ser. No. 924,671

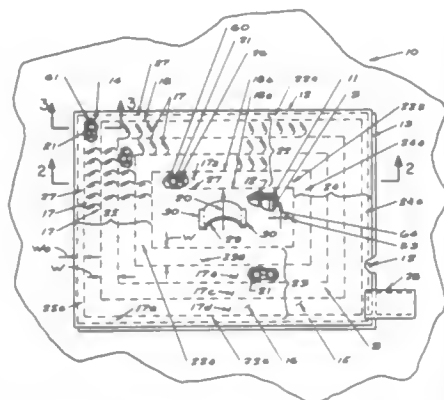
Int. Cl.⁶ F04B 5/00; F04D 5/14

U.S. Cl. 52—3

20 Claims

1. A device for providing a temporary cover for drains, vents of the like of a water drainage system of a refinery that may be contaminated by hydrocarbon fuel wherein flame fronts generated exterior thereof are quenched prior to gaining entry into said drainage system, comprising:
 - a plurality of sheets of flame resistant and chemical resistant materials in broad surface contact defining coextensive top and bottom surfaces, said top and bottom surfaces each including a central section and an outer edge section

in integral contact with said central section, said outer edge sections composed of said top and bottom surfaces, being attached together in a series of undulations that occur on said and bottom surfaces, terminating at a perimetric continuous edge wherein said series of undulations are separated in a radial direction measured from said central section, said undulations having a common longitudinal axis of symmetry extending around said central section between a near end adjacent to said central section and remote end adjacent to said perimetric edge, weighted chain means having a longitudinal axis of symmetry, said weighted chain means adapted to be positioned relative to an associated horizontal, slightly curved irregular attaching surface of said drainage system and being inserted within said series of undulations wherein said



longitudinal axis of symmetry of said weighted chain means is adapted to be substantially parallel with said associated horizontal, slightly curved irregular attaching surface and collinear of said longitudinal axis of symmetry of said series of undulations so as to add loft and weight as a function of radial extent relative to said central section whereby contact of said bottom surface relative to said associated horizontal, slightly curved irregular attaching surface is surprisingly strong and flame retardant wherein flame fronts generated exterior of said perimetric edge of said outer edge sections are quenched whether traveling radially across said series of undulations or along a continuous path paralleling said common longitudinal axis of symmetry of said undulations, said continuous path also permitting water to seep from exterior of said perimetric edge to said central section.

5,379,556

FOLDING GRANDSTAND

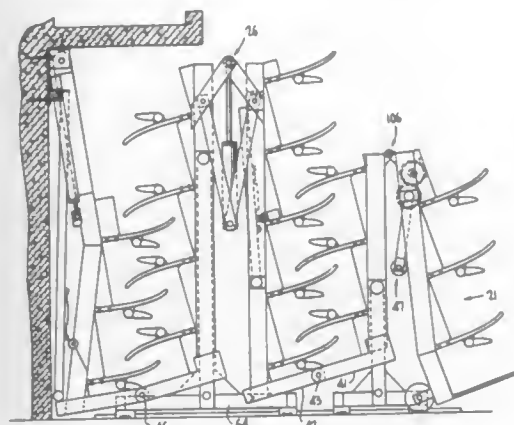
James R. MacIntyre, 1680 Woodglen Ln., Altadena, Calif. 91001
Filed Jun. 17, 1993, Ser. No. 77,452
Int. Cl. E04H 3/12

U.S. Cl. 52—9

11 Claims

1. A folding grandstand comprising, a supporting frame comprising at least a forward, an intermediate and a rearward section hinged together at adjacent ends thereof, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal, each of the frame sections comprising a plurality of transversely spaced longitudinal support beams and an upper occupant supporting deck surface mounted on the beams, the respective beams of all the frame sections being in alignment, vertical support means hingedly supporting each of the respective sections on a ground surface, means hingedly supporting an upper end of the rearward section to an upstanding wall, the vertical support means supporting the rearward section comprising a structural frame, the vertical support means supporting the intermediate and forward sections each comprising a continuous truss hinged directly to said longitudinal beams, each said truss comprising interconnected upper, lower, vertical and diagonal struts, the

upper struts spanning the longitudinal beams, the vertical struts extending only from a first set of alternating longitudinal beams, the lower struts extending between the vertical struts, and pairs of the diagonal struts sloping from a second set of remaining alternating longitudinal beams respectively toward lower ends of the vertical struts, the vertical struts being supported on tracks located on the ground beneath only the first



set of alternating beams, at least one of the vertical support means comprising a dolly assembly having platform sections with track engaging rollers, whereby static and live loads acting on the deck surfaces of the sections are transmitted via all the longitudinal beams directly to the underlying tracks thereby avoiding the need to transmit the loads vertically from the second set of beams to any other tracks which would otherwise become necessary.

5,379,557

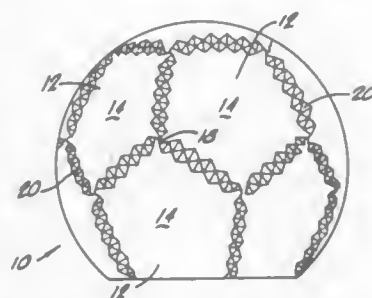
ARCHITECTURAL PANEL SYSTEM FOR GEODESIC-LIKE STRUCTURES

Rodman W. Kotter, 10815 Molony Rd., Culver City, Calif. 90230, assignor to Rodman W. Kotter, Culver City, Calif.
Continuation of Ser. No. 817,155, Jan. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 586,793, Sep. 24, 1990, Pat. No. 5,077,949, which is a continuation-in-part of Ser. No. 355,788, May 19, 1989, Pat. No. 4,958,476, which is a division of Ser. No. 174,516, Mar. 28, 1988, abandoned. This application Oct. 8, 1993, Ser. No. 135,138

Int. Cl. E04B 1/32; E04H 12/06

U.S. Cl. 52—81.1

19 Claims



1. An architectural panel system comprising at least three panels, each of said panels having a panel surface bounded along at least two edges thereof by side flanges formed integrally with said panels, each of said side flanges having a flange surface extending away from said panel surface substantially perpendicularly thereto, and means for fastening each of said side flanges to the side flange of at least one other panel such that said at least three panels converge in a vertex to form a polyhedral angle, each of said flange surfaces having corrugations formed therein directed substantially perpendicular to the

edge of the panel surface that engage complementary corrugations formed in a flange surface of an adjoining panel.

5,379,558

GROUND COVERING MAT FOR GROUND ANCHORED STRUCTURE

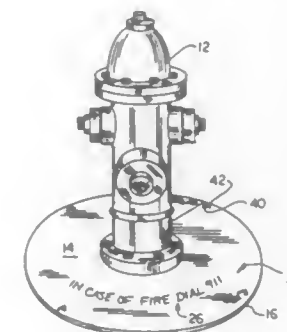
Russell E. Mason, III, Fayetteville, N.C., assignor to R. E. Mason Enterprises, Fayetteville, N.C.

Filed Jun. 23, 1993, Ser. No. 81,605

Int. Cl. E04H 3/08

U.S. Cl. 52—105

38 Claims



1. A ground-cover apparatus for clearing the area around a ground-anchored structure, comprising:

- a mat having a generally planar, flexible configuration including a main body portion defined by an outer perimeter;
- said mat being formed of a substantially fibrous material that is uniformly porous so as to block the passage of sunlight while being pervious to air and water, and is treated with an ultraviolet inhibitor and a flame retardant;
- a central area of the mat being removable to permit installation of said mat around said ground anchored structure;
- a pattern of scored concentric profiles located within the perimeter of said main body and indicative of said removable central area;
- whereby said mat, when installed, discourages the presence of animals in the immediate area, prevents the growth of vegetation around the structure, is substantially non-biodegradable, drains and dries.

5,379,559

SEMISUBMERSIBLE BUILDING

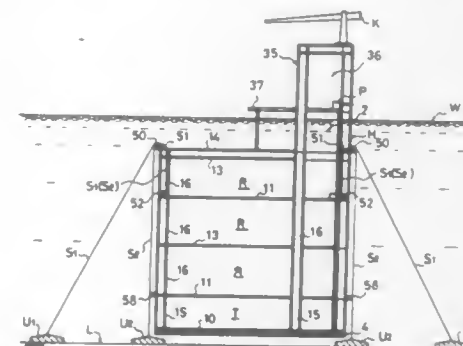
Masateru Nilmura, 6-4-4, Ohmori Nishi, Ohta-ku, Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 981,103

Claims priority, application Japan, Nov. 29, 1991, 3-356137;
Dec. 6, 1991, 3-360416

Int. Cl. E02B 17/00; B63B 35/44

U.S. Cl. 52—169.7

10 Claims



1. A semisubmersible building, comprising:
a building body formed as a multi-layer structure and includ-

ing an entrance tower portion at the top of the building body capable of projecting above water;
said building body having a chamber between an outer wall and an inner wall thereof, said building body also having a pumping means for submerging the building body in water by pumping water into or out of the chamber so that only said entrance tower portion formed at the top of the building body projects above water;
a plurality of cables connected to the building body for keeping the building body stationary at a specified depth of water; and
a winding means, installed in the building body and connected with one end of each of the cables, for winding said cables in a forward or reverse direction based upon changes in the specific gravity of the building body to keep the building body stationary at a specified depth; wherein said plurality of cables is made up of a plurality of pairs of cables, and including means for connecting a first of said cables from each pair of cables to the winding means in a tensed condition and for connecting a second of said cables from each pair of cables to the winding means, at a location adjacent to said first of said cables, in an untensed condition regardless of water currents and other forces acting on the building such that the second cable does not pull the building body under tension under all circumstances where said first of each said cables are operational and not failed, wherein should the first cable fail the second cable will take over and hold the building body.

5,379,560

BANDED WINDOW SASH

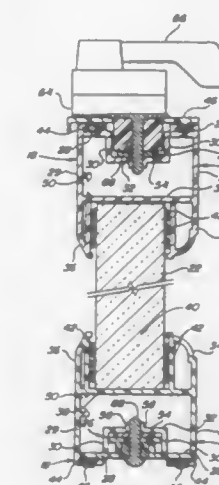
Timothy J. Steller, Brooklyn, Mich., assignor to Quick Plastics, Jackson, Mich.

Filed Nov. 12, 1993, Ser. No. 150,868

Int. Cl. E06B 1/04

U.S. Cl. 52—204.7

17 Claims



1. A frame for a generally planar article comprising:
a plurality of extruded plastic frame members having mitered ends and arranged in end-to-end relationship to form a closed frame surrounding said planar article, said frame members having a substantially identical cross sectional shape forming a closed hollow body defined in part by an outer peripheral wall and a recess in said outer peripheral wall extending into said closed hollow body, said recess being formed by a pair of spaced intermediate walls connected to said outer peripheral wall and extending therefrom into said closed hollow body and terminating in a base wall connecting said intermediate walls to one another; and
a tensioned band disposed in said recess firmly engaging said

base walls of said frame members and extending around said frame for maintaining said frame members in said end-to-end relationship.

5,379,561
EXTERNAL WALL PANEL AND MOUNTING STRUCTURE THEREOF

Makoto Saito, Tokyo, Japan, assignor to Kajima Corporation, Tokyo, Japan

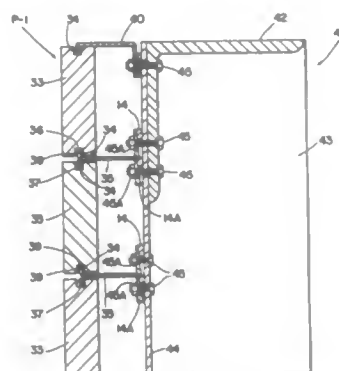
Division of Ser. No. 636,020, Jan. 4, 1991, Pat. No. 5,239,798, which is a continuation-in-part of Ser. No. 346,884, May 3, 1989, abandoned, and Ser. No. 504,556, Apr. 3, 1990, abandoned. This application May 20, 1993, Ser. No. 65,183

Claims priority, application Japan, Oct. 30, 1987, 62-275133; May 9, 1988, 63-112257; Sep. 29, 1988, 63-245436; Oct. 24, 1988, 63-267738; Jan. 27, 1989, 1-018189; Feb. 27, 1989, 1-045582; Apr. 4, 1989, 1-85381

Int. Cl.⁶ E04B 1/38

U.S. Cl. 52—235

5 Claims



1. A wall panel having an exterior side and an interior side for use in sheathing the framework of a building, comprising: a rectangular frame having an exterior side and an interior side; a plurality of rectangular wall panel segments sized to overlay said frame; means to secure said panel segment members to said frame and spaced apart from said frame so as to provide an isopiestic space therebetween; means to adjust the volume of said isopiestic space; means to ventilate said isopiestic space; wherein said means to secure said panel segments to said frame comprise furring members extending horizontally from side to side of said frame; means to secure said furring members to said frame; means to secure said furring members to said panel segments; wherein said furring members each comprise: a horizontal isopiestic spacer strip extending from side to side of said frame; said spacer strip being formed from a U-shaped channel member in which the opposed side members are crenelated to provide alternating upwardly and downwardly projecting tabs along each edge of said horizontal isopiestic spacer strip; means to secure one crenelated side member to said wall panel segments; and means to secure the opposed side member to said frame.

5,379,562
FLOW-THROUGH CAP AND STIRRUP FOR REINFORCEMENT BARS AND METHOD OF USE THEREOF

Ronald P. Hohmann, 32 Stratford Pl., Syosset, N.Y. 11791

Filed Feb. 1, 1993, Ser. No. 11,757

Int. Cl.⁶ F16B 7/00

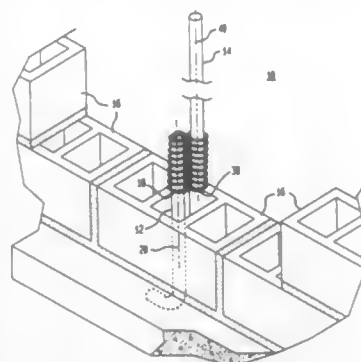
U.S. Cl. 52—295

16 Claims

1. A cap and stirrup device for holding the ends of a pair of overlapping reinforcement bars emplaced within a core of a building wall formed by successive layers of masonry blocks comprising:

a body formed from a coiled wire formative having coils

thereof spaced apart the one from the other, in turn, comprising:
an elongated cap portion being symmetrical about the longitudinal axis thereof, said cap portion having a wall with a closed end and an open end and a longitudinal crosssection having a first predetermined profile;
a cap channel extending between said closed end and said open end of said cap portion;
an elongated stirrup portion being symmetrical about the longitudinal axis thereof, said stirrup portion having a wall with a closed end and an open end and a longitudinal crosssection having a second predetermined profile,



said first profile and said second profile being substantially identical;
a stirrup channel extending between said closed end and said open end of said stirrup portion having a longitudinal axis therethrough being substantially parallel to the longitudinal axis of said cap channel; and,
a plurality of apertures in said body to permit the flow of a cementitious material into and through said cap portion and said stirrup portion, said apertures formed from spaces between said coils; and,
whereby, when said pair of reinforcement bars are installed within said cap and stirrup device and said core is filled with cementitious material, a reinforced wall is formed.

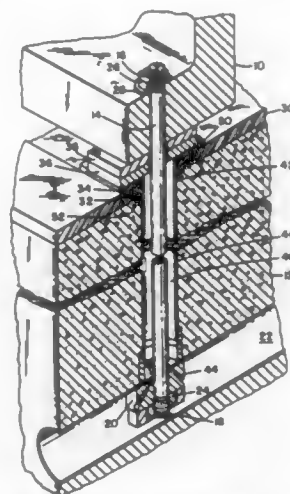
5,379,563
ANCHORING ASSEMBLY
C. Roscoe Tinsley, Longview, Tex., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Sep. 13, 1993, Ser. No. 119,633

Int. Cl.⁶ E02D 27/00

U.S. Cl. 52—295

2 Claims



1. Anchoring assembly for securing an object to a founda-

tion wherein said foundation is provided with a plurality of holes having a surface and a predetermined size for accepting elongated mounting members from said object, said holes having barrier means substantially covering the surface of said holes, the size of said holes including said barrier means being appreciably greater than the size of said mounting members whereby voids are created between said mounting members and said barrier means, said holes connecting with a drain at the end opposite said object, means for securing said mounting members at an end thereof within said drain, and means at the opposite end of said mounting members for tightening said object against said foundation, whereby fluid draining around the mounting members is conducted through said voids to said drain without contacting said foundation.

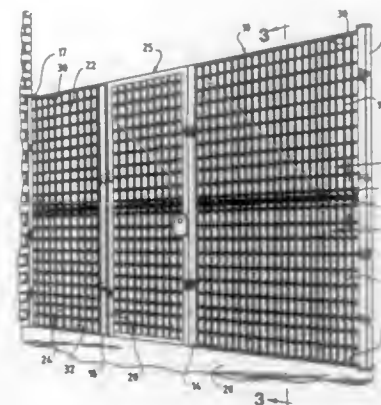
5,379,564
SELF-REINFORCING MESH PARTITION
Douglas Wynne, Chicago, Ill., assignor to Don Wynne Inc., Chicago, Ill.

Filed May 19, 1993, Ser. No. 64,406

Int. Cl.⁶ E06B 3/70

U.S. Cl. 52—458

20 Claims



1. A partition which comprises:
a plurality of spaced, vertical posts; at least one mesh wall vertically positioned between said spaced, vertical posts and attached thereto, said mesh wall comprising strands and defining a horizontally extending mesh portion extending substantially the length of said mesh wall, with strands of said horizontally extending portion being integral with strands of the remainder of said mesh wall but bent into transverse relation with the remainder of said mesh wall, whereby said horizontally extending portion stiffens said mesh wall.

5,379,565
ELEMENT AND METHOD OF CONSTRUCTION WITHOUT MORTAR

Fabien Vienne, Gif Sur Yvette, France, assignor to Brandom, Le Port, France

PCT No. PCT/FR91/00936, § 371 Date May 28, 1993, § 102(e) Date May 28, 1993, PCT Pub. No. WO92/09762, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 26, 1991, Ser. No. 66,150

Claims priority, application France, Nov. 29, 1990, 90 14964

Int. Cl.⁶ E04C 2/04

U.S. Cl. 52—606

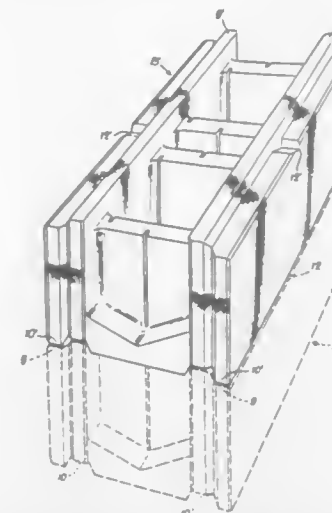
14 Claims

1. An element of construction to be laid without mortar, comprising a substantially hollow block having six faces including opposite top and bottom faces, two opposite end faces and two opposite side faces,

wherein one of said faces is at least partially open and includes at least one opening therethrough to define at least one internal cell open on said at least partially open face of the block,

wherein one of said faces is ribbed and includes at least two

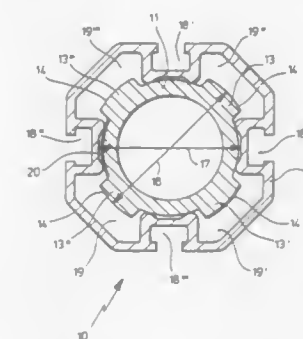
raised ribs which extend parallel to and are spaced from at least two edges of said ribbed face, wherein the face opposite said ribbed face is grooved and includes at least two grooves which extend parallel to and are spaced from at least two edges of said grooved face, said grooves being complementary in position and dimension to said ribs so that said blocks can be jointed together by engagement of the ribs of a first block with the grooves of a second, adjacent block,



wherein the length of each of said ribs and grooves is no greater than the greatest dimension of the faces of the block on which said ribs and grooves are located, and wherein said ribbed face further includes at least one transverse drainage channel extending perpendicularly from at least one of said ribs to the nearest parallel edge from which said rib is spaced.

5,379,566
ADJUSTABLE-HEIGHT POST
Artur Schwörer, Baden-Württemberg, Germany, assignor to Peri GmbH, Weissenhorn, Germany
Filed Jan. 11, 1993, Ser. No. 2,799
Claims priority, application Germany, Jan. 25, 1992, 4206573
Int. Cl.⁶ E04G 25/08; E04H 12/18
U.S. Cl. 52—632

4 Claims

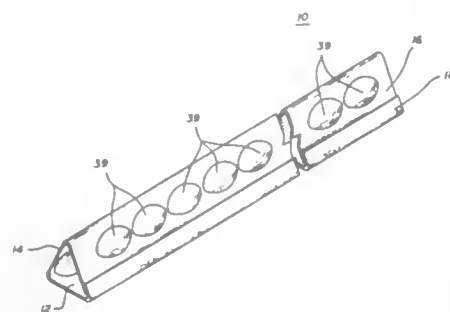


1. An adjustable-height post for construction formwork comprising: an essentially closed hollow outer tube having a plurality of recesses on an inner surface and an essentially closed hollow inner tube having threads on an inner tube outer surface, the threads having gaps spaced around the outer surface, and the threads fit non-rotatably into the recesses of the outer tube, whereby the inner tube is secured in the outer tube by a threaded nut.

5,379,567
STRUCTURAL MEMBER
 Michael Vahey, 19 Norwood Ct., Medford, N.J. 08055
 Filed Feb. 12, 1993, Ser. No. 17,688
 Int. Cl.⁶ E04C 3/34

U.S. Cl. 52—724

16 Claims

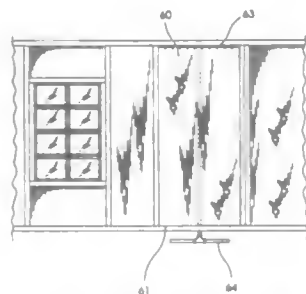


1. A structural member comprising: an elongated triangular member having three elongated planar rectangular sheets and a connecting flap, said triangular member formed from a single folded elongated planar member, each said sheet having a long edge and a short edge; said member including a central cavity extending there-through; each said sheet having a plurality of semi-ellipsoid indentations therein; wherein said semi-ellipsoid indentations in one said sheet contact said semi-ellipsoid indentations in each of said other two sheets.

5,379,568
METHOD AND APPARATUS FOR PROVIDING CELLULOSE-FILLED INSULATION BATTS
 Earl W. Murray, Rte. 2, Box 60, Seymour, Ind. 47274
 Filed Apr. 13, 1992, Ser. No. 867,875
 Int. Cl.⁶ E04B 1/00

U.S. Cl. 52—743

10 Claims

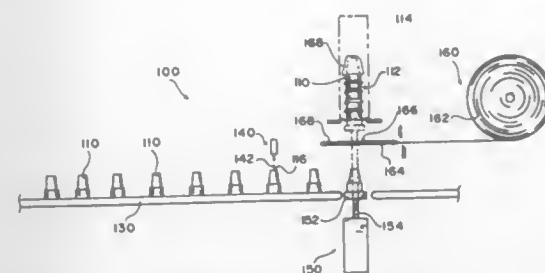


1. A method of providing loose-fill insulation in a vertical cavity in the wall of a building, comprising the steps of: (a) providing a form to correspond to a wall cavity to produce a loose-fill insulation batt sized to fit said wall cavity; (b) lining the form with a flexible liner having an opening therein; (c) providing loose-fill insulation into said flexible liner, while the liner is enclosed in the form, to make a loose-fill insulation batt; and thereafter (d) placing said loose-fill insulation batt vertically in said vertical wall cavity.

5,379,569
METHOD AND APPARATUS FOR PROTECTING A FOOD
 Martin Mueller, 4929 E. Lake Shore Dr., Wonder Lake, Ill. 60097
 Filed Jul. 6, 1993, Ser. No. 86,316
 Int. Cl.⁶ B65B 35/50, 61/22

U.S. Cl. 53—397

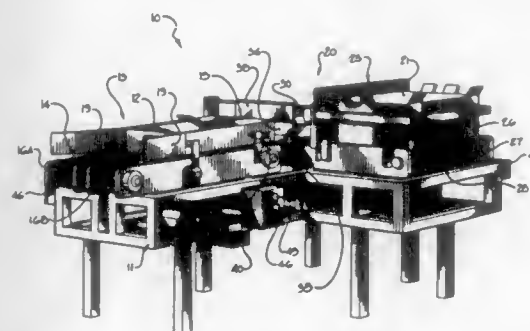
9 Claims



1. A method for protecting an ice cream cone comprising: a) providing a plurality of ice cream cones; b) applying an adhesive to a base of each cone in the plurality of ice cream cones; c) providing paper supply; d) coordinating the paper supply and the cone to arrive at a predetermined point; e) applying a sheet of paper to the adhesive; f) nesting a first cone within a second cone after the paper has been applied thereto to form a paper protected cone; and g) recovering the paper protected cone.

5,379,570
SLEEVEING MACHINE
 Herman F. Terjung, 412 N. Exeter St., Baltimore, Md. 21202, and David P. Crum, 4207 Kolb Ave., Baltimore, Md. 21206
 Filed Mar. 3, 1993, Ser. No. 25,843
 Int. Cl.⁶ B65B 13/02, 19/18, 57/06, 57/18
 U.S. Cl. 53—399

18 Claims



18. A method for automatically inserting a tray of postal mail into a sleeve, the sleeve having a top, a bottom, two sides and two open ends, the method comprising the steps of: providing a transport station having a first side, a second side, a first end and a second end, the sides being substantially perpendicular to the ends; providing a first continuous belt means disposed between the sides of the transport station, providing a second continuous belt means disposed adjacent to and parallel to the first belt means between the sides of the transport station, providing at least one pusher means attached to the second belt means such that the at least one pusher means may engage the tray; placing the tray on the first belt means at the first end of the transport station and moving said tray to the second end of the transport station;

providing a sleeving station adjacent to the second end of the transport station, said sleeving station having a first side an opposite second side, the second belt means extending through the sleeving station between the sides of the sleeving station wherein the at least one pusher means advances the tray in a direction from the transport station to the sleeving station;

providing a hopper adjoining the first side of the the sleeving station, the hopper containing therein a plurality of collapsed sleeves, providing means for dispensing the collapsed sleeves one at a time as desired, into the sleeving station, providing means within the sleeving station and on said opposite second side for opening the collapsed sleeves wherein the open ends of the sleeve are oriented in the direction of movement of the tray such that the tray may be advanced by the at least one pusher means and be disposed inside the opened sleeve;

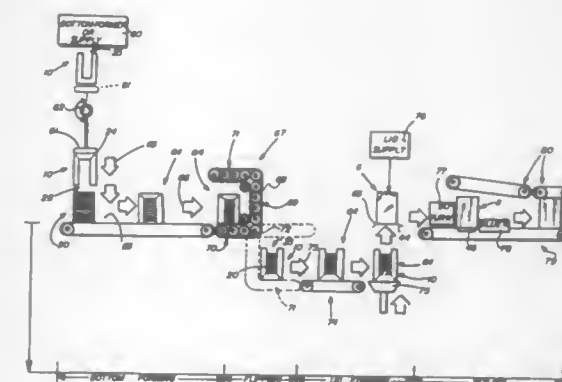
dispensing the sleeve into the sleeving station; moving the collapsed sleeve laterally from the hopper across the sleeving station to the sleeve opening means and opening the collapsed sleeve while maintaining said sleeve opening means on said opposite second side;

providing sensing means, wherein the sensing means comprises a first sensor which activates the second belt means when a tray is disposed on the first belt means, a second sensor which is activated by the at least one pusher means to deactivate the second belt means when the sleeve containing the tray has been advanced out of the sleeving station, and a third sensor mounted in the sleeving station which senses when an opened sleeve is removed from the sleeving station and thereupon activates the means for dispensing the collapsed sleeve into the sleeving station, such that the sleeve may be opened to receive the tray; advancing the tray into the opened sleeve in the sleeving station and pushing the sleeve containing the tray out of the sleeving station and

sequentially repeating of the steps and operating the sleeving machine at a linear rate of 120 to 200 feet per minute so that, in one hour, approximately 600 to 1,800 trays are inserted into respective sleeves.

5,379,571
METHOD AND APPARATUS FOR PACKAGING A STACK OF PAPER IN A CARDBOARD CARTON
 Thomas M. Gottfried, Warsaw, Ind., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
 Division of Ser. No. 117,600, Sep. 8, 1993, Pat. No. 5,348,147.
 This application Mar. 4, 1994, Ser. No. 205,560
 Int. Cl.⁶ B65B 5/06, 7/28, 43/42
 U.S. Cl. 53—471

20 Claims



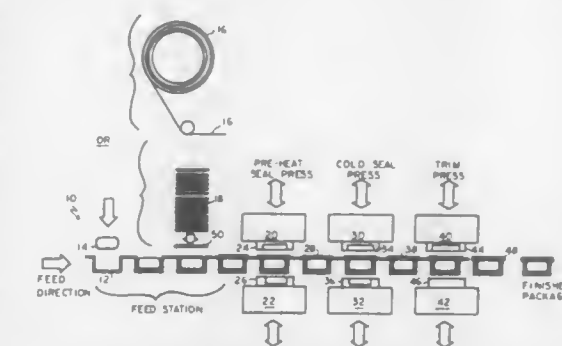
1. A method of packaging a stack of paper in a cardboard carton having a bottom with an open top, comprising the steps of automatically: (a) providing the paper in a stack having a height at least as great as the depth of the carton bottom; (b) providing the carton bottom over the stack of paper so

that the open top of the carton bottom faces downwardly by forming the cardboard carton bottom so that its top faces upwardly, automatically grasping an exterior portion of the carton, rotating the carton bottom 180° about the horizontal axis, and pushing the carton bottom over the paper in the stack;

- (c) rotating the carton bottom with paper stack therein, approximately 180° about a horizontal axis so that the open top of the carton bottom faces upwardly; and (d) securing a covering on the carton bottom so that the paper is held within the carton bottom.

5,379,572
BLISTER PACKAGING SYSTEM AND METHOD
 Anthony Giovannone, Osterville, Mass., assignor to Sencorp Systems, Inc., Hyannis, Mass.
 Continuation-in-part of Ser. No. 870,405, Apr. 17, 1992. This application Aug. 25, 1993, Ser. No. 111,834
 Int. Cl.⁶ B65B 51/32
 U.S. Cl. 53—478

21 Claims



1. A method of sealing a blister package, which method comprises:

- a) feeding from a feed station to a preheat seal station two thermoplastic sheet materials to be sealed together to form an article-containing blister package with overlapping, contacting top and bottom surfaces;
- b) preheating at the preheat seal station with heated press platens the top and bottom surfaces of the thermoplastic sheet materials to be joined to a temperature sufficient to melt to a tacky state the top and bottom surfaces while pressing the heated surfaces together during the preheating period to form a preheated blister package;
- c) transferring the preheated blister package to a cold seal station;
- d) rapidly cooling with chilled press platens at the cold seal station the preheated sheet material package to a temperature of less than about 60° F. for a period of time while pressing the joined preheated sheet materials of the blister package together under pressure to form a strong cold-seal bond between the joined surfaces; and
- e) optionally trimming at a trim press station the cold-bonded, joined, plastic sheet material of the blister package to form a trimmed, bonded blister package product.

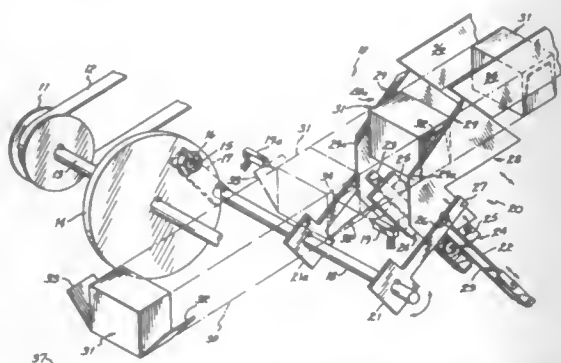
5,379,573
CARTON FLAP CLOSING APPARATUS
 Joseph D. Greenwell, Florence, Ky., assignor to R. A. Jones & Co. Inc., Crescent Springs, Ky.
 Filed Feb. 19, 1993, Ser. No. 20,210
 Int. Cl.⁶ B65B 7/20, 51/02

U.S. Cl. 53—491

21 Claims

1. A method for sealing conveyed cartons including the steps of: conveying cartons in a first conveyed direction past a glue station; applying glue to a carton flap at said glue station to define a first glued carton;

conveying a glued carton in a second conveyed direction to a compression station; engaging a carton flap of said glued carton at said compression station with a plow having a top edge which slopes toward cartons moving in said first conveyor direction and said plow being movable in a path with a component of motion in a direction toward cartons moving in said



first conveyed direction for engaging a carton flap and moving it toward a sealed position; and retracting said plow with a component of motion in said second conveyed direction while said plow is in compression contact with said engaged carton flap and while said glued carton is being conveyed in said second conveyed direction.

5,379,574

APPARATUS FOR PACKAGING INDIVIDUAL OBJECTS, ESPECIALLY PACKAGES, E.G. OF PREPACKED FOODSTUFFS

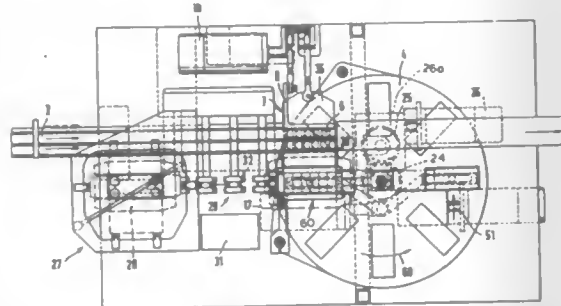
Georg Fischer, Velbert, and Edgar Glätzer, Duisburg, both of Germany, assignors to Benz & Hilgers GmbH, Düsseldorf, Germany

Filed Apr. 16, 1993, Ser. No. 49,251

Claims priority, application Germany, Apr. 24, 1992, 4213555
Int. Cl.⁶ B65B 7/26, 11/06, 35/50

U.S. Cl. 53—535

16 Claims



1. An apparatus for packing grouped individual prepacked packages containing a food product, said apparatus comprising:

- a turntable rotatable about a substantially vertical axis and formed with a plurality of angularly equispaced upwardly open receptacle-receiving chambers;
- drive means connected with said turntable for rotating said turntable to step said chambers to a receiving station and to a discharging station along a cyclical path of said chambers;
- a feed and assembling device located close to said receiving station for feeding the individual packages to and grouping said individual packages at a location aligned with said receiving station;
- a displaceable folder at said location registering with each of

said chambers as each chamber is positioned at said receiving station;

feeding means for feeding a generally flat packing blank, erectable into a receptacle for said grouped individual packages, onto said folder in alignment with a respective one of said chambers of said turntable;

means for shifting said individual packages grouped at said location onto said blank;

a folding and hold-down device at said receiving station for engaging said blank and grouped individual packages therein to be packed for displacing said blank and said grouped individual packages through said folder and into said one chamber at said receiving station, thereby erecting said receptacle from the blank around the grouped individual packages;

means at said discharge station for receiving receptacles filled with the individual packages from respective chambers subsequently arriving at said discharge station; and

means for stepwise adjustment of a height of said turntable, said folder and of said folding and hold-down device to different receiving levels to enable formation of layers of the grouped individual packages in each of said receptacles, said means for stepwise adjustment including releasing means for displacing said folder independently from stepwise adjustment of said turntable and hold-down device.

5,379,575

APPARATUS FOR INTRODUCING (SMALL) PACKS, ESPECIALLY CIGARETTE PACKS, INTO A BOX

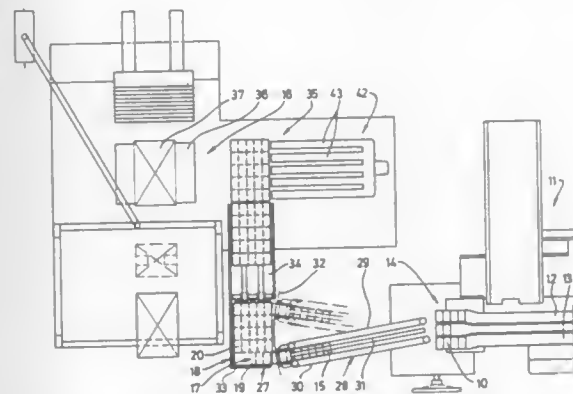
Heinz Focke, Verden, and Thomas Häfker, Etelsen, both of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Mar. 22, 1993, Ser. No. 42,389

Claims priority, application Germany, Mar. 21, 1992, 4209246
Int. Cl.⁶ B65B 5/06

U.S. Cl. 53—543

12 Claims



1. In an apparatus for introducing cigarette packs (10) into one or more boxes (16), so that, the cigarette packs (10) are oriented in rows and layers within each box (16), the improvement comprising:

- a) means (28) for conveying the cigarette packs (10) in succession into an intermediate container (18), so that the total number of the cigarette packs (10) which are conveyed into said intermediate container (18) corresponds to the contents of at least one of said boxes (16);
- b) wherein the intermediate container (18) has a plurality of compartments (19), each for accommodating a pack group (20) formed from a plurality of cigarette packs (10), said compartments (19) being arranged next to one another and above one another inside of the box (16), in accordance with the formed group of the cigarette packs (10);
- c) wherein the compartments (19) are defined by vertical

walls (25) and horizontal walls (26), and are open at both ends;

d) wherein a free inner cross-section and a length of each compartment (19) respectively correspond to a cross-section and a length of the pack group (20);

e) wherein said conveying means (28) conveys the cigarette packs (10) into the compartments (19) in a longitudinal direction of said packs which are pushable out of each compartment (19) as a pack group (20); and further comprising

f) push-out means (42) having plungers (43), which pass through the compartments in the longitudinal direction, for pushing out the contents of the compartments (19), assigned to a box (16), in a single working cycle into the assigned box (16) which faces the intermediate container (18) with an open side.

5,379,576

BAND FEEDING AND TIGHTENING APPARATUS FOR PACKING MACHINE

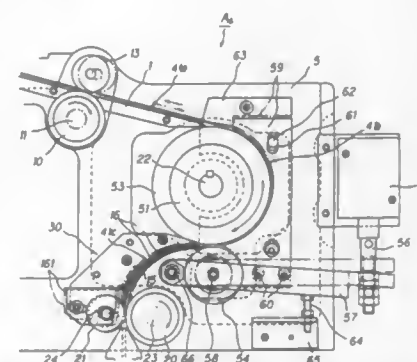
Selichiro Koyama, Tokyo, Japan, assignor to Strapack Corporation, Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 72,541

Claims priority, application Japan, Jun. 10, 1992, 150887
Int. Cl.⁶ B65B 13/04, 41/10

U.S. Cl. 53—589

8 Claims



1. A band feeding and tightening apparatus for a packing machine which is adapted to feed a band to a package to surround it with the band, grip a distal end of the band, draw back the band to tighten it, bond an overlapped portion of the band and cut a portion of the band wound around the package from the remaining portion of the band, comprising:

- a feed roller rotatable at a high speed to feed the band;
- a movable feed touch roller arranged to access to said feed roller through the band;
- a return roller rotatable at a high speed to draw back the band;
- a return touch roller arranged to access to said return roller through the band;
- a tension roller rotatable at a low speed and a high torque to tighten the band;
- a tension touch roller arranged to access to said tension roller through the band;
- feed chute means for providing a band passage between said feed roller and said tension roller through which the band is passed in a direction of movement, said band passage of said feed chute constituting an elongated gap having a dimension transverse to said direction of band movement;
- a tension chute communicating with said feed chute means, said tension chute having an arc-like shape providing a band passage around said tension roller;
- a return chute communicating with said tension chute and providing a band passage between said tension roller and said return roller; and
- a dimension varying mechanism for varying said transverse dimension of said gap of said feed chute means, said dimension varying mechanism reducing said transverse

dimension of said gap to a dimension approaching a lower limit which permits passing of the band when the band is fed and enlarging the transverse dimension of said gap when the band is drawn back or tightened.

5,379,577

CANE HARVESTER AND METHOD

Kenneth G. Caillouet, Terroborne, La., assignor to LaCane Manufacturing, Inc., Thibodaux, La.

Continuation of Ser. No. 22,982, Feb. 26, 1993, Pat. No.

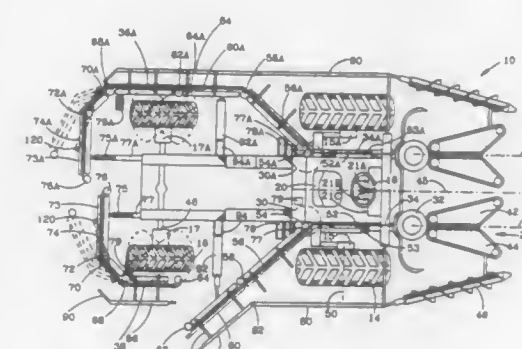
5,303,533. This application Feb. 25, 1994, Ser. No. 201,907

The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

Int. Cl.⁶ A01D 45/10

U.S. Cl. 56—14.3

20 Claims



17. A method of simultaneously harvesting at least two rows of cane with a harvester, comprising:

- propelling the harvester along first and second cane rows such that a pair of front harvester wheels are each positioned on opposite sides of the first and second cane rows;
- collecting and positioning cane gathered from the respective first and second cane rows;
- cutting a base of the collected and positioned cane while within the first and second rows to separate the cane from the ground;
- carrying the cut cane rearward within the cane harvester while in a substantially erect position through respective first and second pathways each passing between the pair of front wheels;
- while a pair of side pilers are in a closed position, receiving cane from the respective first and second pathways and releasing the cut cane across a common heap row spaced between the first and second cane rows; and
- thereafter moving the side piles to an opened position to receive cane from the respective first and second pathways and pass cut cane between a respective front and rear wheel and thereafter release the cut cane on a respective one of a pair of existing cut cane rows each spaced outward from the respective front and rear wheels.

5,379,578

GREEN SUGAR CANE BILLETING COMBINE

Walter J. Landry, Jeanerette, and John W. Angers, New Iberia, both of La., assignors to Agronomics, Inc., Jeanerette, La.

Filed Jan. 25, 1994, Ser. No. 186,179

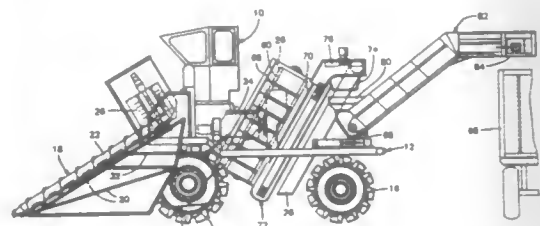
Int. Cl.⁶ A01D 45/00

U.S. Cl. 56—14.5

9 Claims

1. A sugar cane harvester including sugar cane gathering, lifting and severing means to engage, right lift and sever the tops and bottoms of sugar cane oriented in a row during forward movement of the harvester, a conveying unit for moving cut sugar cane rearwardly on the harvester while maintaining the cane upright, rearwardly inclining the cane being conveyed and release of the conveyed cane while in inclined position for rearward and downward gravity falling from said conveying unit, and a forwardly and upwardly opening elon-

gated cane billet cutter for receiving inclined cut cane moving rearwardly and downwardly theretoward and operative to



sever the cane as well as the leaves thereon at predetermined zones spaced predetermined distances along said cane.

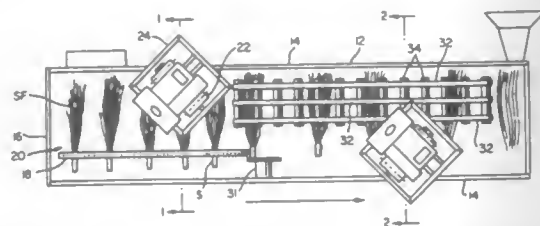
5,379,579
METHOD FOR HARVESTING BROOM CORN AND APPARATUS THEREFOR
Thomas F. Monahan, Jr., Arcola, Ill., assignor to The Thomas Monahan Company, Arcola, Ill.

Filed Aug. 17, 1993, Ser. No. 108,114

Int. Cl.⁶ A01D 45/02

U.S. Cl. 56—54

13 Claims



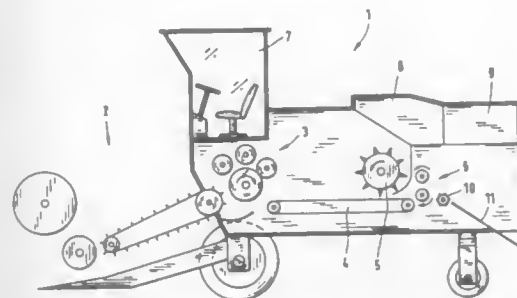
1. A process for harvesting wet broom corn, comprising the steps of:

- holding said broom corn at a position of the stem while gripping a vein of said broom corn to allow for said vein and boot leaves of the broom corn to be torn away from the broom corn;
- tearing said vein and boot leaves from the broom corn;
- cutting said broom corn at a point on a stalk of said broom corn to provide a processable remainder of said broom corn which includes a stem attached to a knuckle attached to a seed fiber;
- holding said remainder of said broom corn at a position of said stem while deseeding seed fiber;
- holding said fiber while busting out said knuckle and said stem to provide a resultant fiber with an increased length, said fiber owing part of their length to a portion of said knuckle and said stem; and
- drying said resultant fiber in a manner to remove a sufficient amount of water without substantially effecting the coloration, flexibility and grade of the fiber.

5,379,580
CROP CONDITIONER WITH FORAGE MAT SEPARATING DEVICE
Heiko Gropp, Syrgenstein; Frank Leppat, Dillingen, and Martin Häfele, Adelmannsfelden, all of Germany, assignors to Klockner-Humboldt-Deutz AG, Cologne, Germany
Filed Sep. 15, 1993, Ser. No. 122,008
Claims priority, application Germany, Sep. 24, 1992, 4231923
Int. Cl.⁶ A01D 43/10, 82/00, 90/10
U.S. Cl. 56—192

7. A harvester for forage processing including a forage cutting means, a forage conveying means, a forage preparation means including a forage receiving end receiving forage from said conveying means and a forage

discharge end, said forage preparation means being operable to form a mat of forage which exits at said discharge end of said preparation means, and



a roller positioned at said discharge end of said preparation means operable to separate said mat from said preparation means, said roller having a surface structure promoting separation of said mat from said preparation means including fins which are at least partially elastically deformable.

5,379,581
APPARATUS FOR REVERSE-THREADING A CENTRAL YARN-SPINNING PASSAGE
Martin Tobler, Hinwilerstrasse 58, CH-8623 Wetzikon, Switzerland

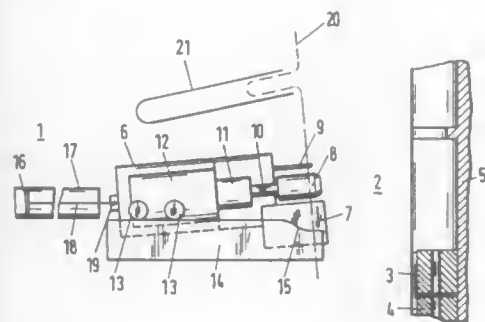
Filed Jan. 6, 1992, Ser. No. 817,456

Claims priority, application Switzerland, Jan. 4, 1991, 00016/91-7

Int. Cl.⁶ D01H 13/26, 9/00

U.S. Cl. 57—280

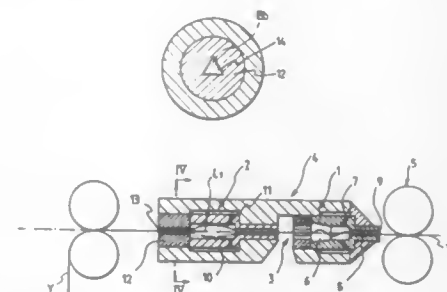
25 Claims



1. Apparatus for reverse threading a yarn through a yarn-spinning device having a central yarn passage having an outlet end and a longitudinal axis, the apparatus comprising a nozzle for receiving a thread end, aligning with the yarn passage and reversely blowing the thread end through the yarn passage, the nozzle including a longitudinal recess having an open end for receiving the thread end and a longitudinal cylindrical aperture communicating with the recess, the thread end being receivable through the open end of the recess into the cylindrical aperture, the cylindrical aperture having an axis, the apparatus further comprising a mechanism for moving the nozzle from a first yarn-receiving position to a second yarn-delivering position at the outlet end of the central yarn passage, the nozzle including an air conduit discharging air into the longitudinal aperture along the axis of the aperture and a bottom surface having a groove therein extending along the bottom surface for receiving the yarn end, the bottom surface of the nozzle mating with the outlet end of the yarn passage and the axis of the aperture being coaxially aligned with the yarn passage axis when the nozzle is in the yarn delivering position, the yarn end received within the groove on the bottom surface of the nozzle being maintained within the groove between opposing side-walls of the groove and reversely blown through the yarn passage by air discharging through the aperture.

5,379,582
BALLOON CONTROLLER FOR A SPINNING NOZZLE
Yoshihisa Inoue, Ibaraki; Koichi Doi, Kyoto; Hiroshige Maruki, Kusatsu, and Teruo Nakayama, Ohtsu, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Continuation of Ser. No. 905,830, Jun. 29, 1992, abandoned.
This application Apr. 4, 1994, Ser. No. 224,996
Claims priority, application Japan, Jul. 1, 1991, 3-058869[U]
Int. Cl.⁶ D01H 5/28, 1/115
U.S. Cl. 57—333

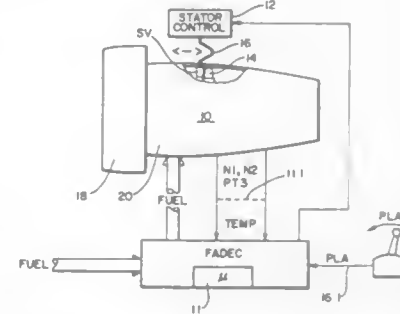
3 Claims



1. A spinning nozzle, comprising:
a first nozzle defining a substantially tubular yarn passage and provided with a jetting hole through which compressed air is jetted into the yarn passage,
a second nozzle defining a substantially tubular yarn passage and provided with a jetting hole through which compressed air is jetted into the yarn passage, the first and second nozzles defining a yarn running direction and the first nozzle being located upstream of the second nozzle in the yarn running direction, the second nozzle defining an outlet end, and
a balloon controller provided at the outlet end of the second nozzle, the balloon controller defining a through hole having a substantially triangular cross section.

5,379,583
CLOSED LOOP STATOR VANE CONTROL
Herbert C. Zickwolf, Jr., Bosrah, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 8, 1993, Ser. No. 164,078
Int. Cl.⁶ F02C 9/20
U.S. Cl. 60—39.29

5 Claims

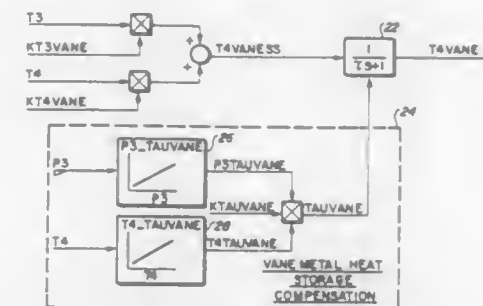


1. A gas turbine engine comprising stators and a stator control and an engine control having a signal processor responsive to the engine operating parameters for controlling the engine, characterized in that:
the signal processor comprises means for providing a first signal manifesting compressor speed for instantaneous pressure across the compressor based on a stored relationship between pressure across the compressor and compressor speed; for storing said relationship; for summing said first signal with a second signal manifesting compressor speed to produce an error signal manifesting the difference between actual compressor speed and the compres-

sor speed manifested by said first signal; for integrating said error signal to provide a fourth signal manifesting a stator deflection; for applying said fourth signal to the stator control.

5,379,584
SYNTHESIS OF CRITICAL TEMPERATURE OF A TURBINE ENGINE
David K. Windish; James D. Harris, and Darin J. McDaniel, all of Phoenix, Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed Aug. 18, 1992, Ser. No. 931,913
Int. Cl.⁶ B63H 11/00; G06F 15/48
U.S. Cl. 60—204

9 Claims



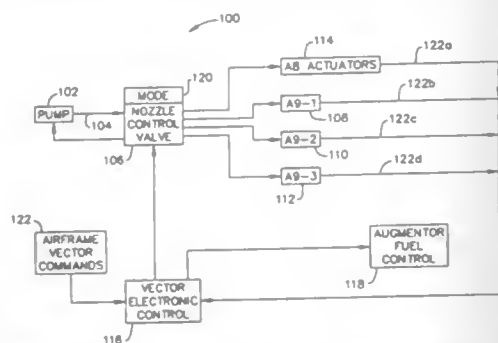
1. An apparatus for indicating a first parameter of a gas turbine engine, comprising:
synthesizing means for synthesizing said first parameter according to a mathematical model;
measuring means for taking a measurement on said engine; and
correcting means, operative on said synthesizing means, for correcting said first parameter with said measurement when said engine operates under steady-state conditions, said synthesizing means synthesizing said first parameter according to at least one input,
said correcting means correcting said one input during steady-state operation of said engine,
said correcting means including error signal means for generating an error signal from said measurement and said input during steady-state operation of said engine, and
said synthesizing means including tuning means for tuning said input with said error signal.

5,379,585
HYDRAULIC CONTROL SYSTEM FOR A JET ENGINE NOZZLE
Barton H. Snow, Wyoming; David M. Leighton, Loveland, and Michael J. Steckler, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Jul. 6, 1993, Ser. No. 86,069
Int. Cl.⁶ F02K 1/00
U.S. Cl. 60—204

20 Claims

1. A method for controlling an actuation system adapted to control throat nozzle actuators and vectoring nozzle actuators, the method comprising the steps of:
summing a plurality of signals representative of flow to the vectoring nozzle actuators with a signal representative of flow to the throat nozzle actuators to generate a total flow signal;
comparing the total flow signal to a signal representative of maximum pump output to generate a reserve signal;
generating a scaled rate limit signal from the reserve signal; and
multiplying the scaled rate limit signal by predetermined

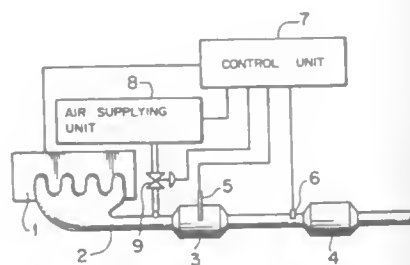
ratio signals, which ratio signals are limited by the difference between pump output and pump demand of a hydraulic pump, to provide a scaled demanded flow consistent with flow capability of the pump.



5,379,586
SYSTEM FOR CONTROLLING OXYGEN CONCENTRATION IN EXHAUST GAS AND EXHAUST GAS CLEANING SYSTEM EMPLOYING THE SAME
 Akio Honji, Hitachi; Toshio Ogawa, Takahagi; Osamu Kuroda, Hitachi; Hisao Yamashita, Hitachi; Takahiro Tachi, Hitachi; Hiroshi Miyadera, Hitachi; and Masakatsu Fujishita, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Sep. 21, 1992, Ser. No. 948,265
 Claims priority, application Japan, Sep. 20, 1991, 3-241273
 Int. Cl.⁶ F01N 3/22, 3/20

U.S. Cl. 60—276

20 Claims



1. A system for controlling oxygen concentration in an exhaust gas in an exhaust gas cleaning system, said exhaust gas cleaning system comprising a catalyzer for cleaning exhaust gas of an engine, an adsorbent for adsorbing unburned hydrocarbons in said exhaust gas received from the engine and for supplying said exhaust gas to said catalyzer for cleaning, and control means for controlling an amount of air in said exhaust gas supplied to said adsorbent to a quantity required to substantially eliminate in said catalyzer unburned hydrocarbons, which are released from said adsorbent, in accordance with the oxygen concentration upstream from said catalyzer and the temperature of said adsorbent.

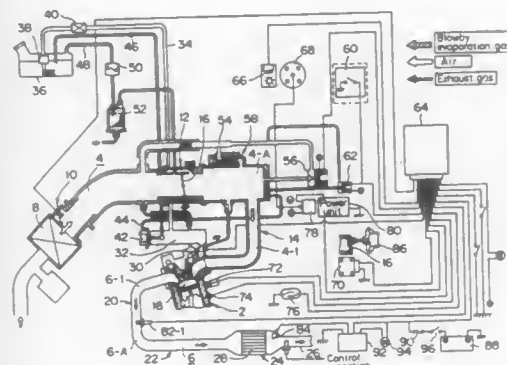
5,379,587
APPARATUS FOR JUDGING DETERIORATION OF CATALYST OF INTERNAL COMBUSTION ENGINE
 Katsuhiko Toyoda, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan
 Filed Aug. 4, 1993, Ser. No. 102,090
 Claims priority, application Japan, Aug. 31, 1992, 4-253605; Aug. 31, 1992, 4-253606; Aug. 31, 1992, 4-253607
 Int. Cl.⁶ F01N 3/28

U.S. Cl. 60—276

4 Claims

1. In a catalyst deterioration judging apparatus of an internal combustion engine in which a first exhaust sensor is provided on an exhaust passage of the internal combustion engine on an upstream side of a catalyst material provided in the exhaust passage, a second exhaust sensor is provided on said exhaust passage on the catalyst downstream side, and a deterioration of

the catalyst material is judged while feedback controlling an air fuel ratio by detection signals of the first and second exhaust sensors, the improvement comprising control means having a judging function such that upon judgment of a deterioration, a feedback correction amount is set to be larger than that in a non-deteriorated state, a dual exhaust sensor feedback control is stopped, a rich judgment delay time and a lean judgment delay time are set in accordance with a ratio at the time of the dual exhaust sensor feedback control so as to set a rich/lean

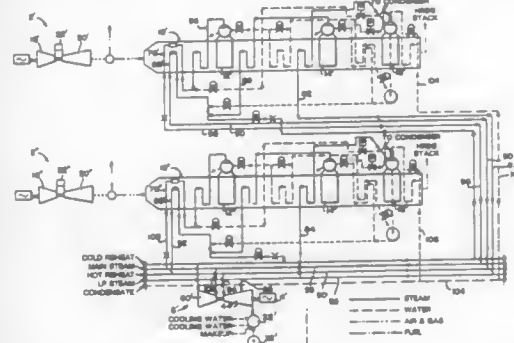


judgment delay time to a predetermined time, said feedback correction amount is set to a deterioration judgment value, a second exhaust sensor response delay time is corrected by an engine load and an exhaust temperature, and said deterioration judgment value is corrected by a period of time of a first exhaust sensor, the second exhaust sensor response delay time after completion of the correction is compared with said deterioration judgment value, and the deterioration of the catalyst material is judged.

5,379,588
REHEAT STEAM CYCLE FOR A STEAM AND GAS TURBINE COMBINED CYCLE SYSTEM
 Leroy O. Tomlinson, Schenectady, and Raub W. Smith, Saratoga, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
 Continuation of Ser. No. 615,794, Nov. 20, 1990, abandoned.
 This application May 21, 1992, Ser. No. 887,391
 Int. Cl.⁶ F02C 6/00

U.S. Cl. 60—39.182

20 Claims



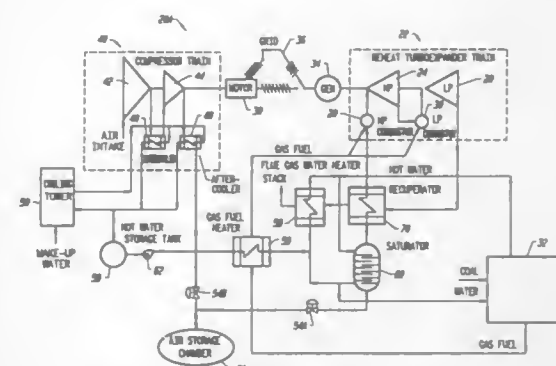
1. In a combined cycle power system in which condensate from a steam turbine is heated in at least one heat recovery steam generator by exhaust gas from at least one gas turbine, and wherein said at least one heat recovery steam generator includes at least one superheater connected to a high pressure section of the steam turbine and at least one reheater connected to a lower pressure section of the steam turbine, the improvement comprising at least a high temperature section of the superheater within the heat recovery steam generator located

so as to present first heat exchange surfaces to exhaust gas entering the heat recovery steam generator from said at least one gas turbine so that a reduction in temperature is effected in said exhaust gas across said superheater to thereby prevent overheating of said reheater; and a bypass arrangement for use in start up of the heat recovery steam generator consisting of means for bypassing steam from said superheater past said steam turbine directly to a condenser which receives exhaust steam from said steam turbine, and from which the condensate is passed to said heat recovery steam generator; and wherein said superheater receives steam from a high pressure evaporator; and wherein said reheater receives steam from an intermediate pressure evaporator.

5,379,589
POWER PLANT UTILIZING COMPRESSED AIR ENERGY STORAGE AND SATURATION
 Arthur Cohn, Palo Alto, Calif., and David J. Minderman, Westlake, Ohio, assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
 Continuation of Ser. No. 42,458, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 716,541, Jun. 17, 1991, abandoned.
 This application Sep. 20, 1993, Ser. No. 124,572
 Int. Cl.⁶ F02C 7/00

U.S. Cl. 260—39.59

9 Claims



1. An apparatus for producing power, comprising: a compressor train including a plurality of compressors, said compressor train including a compressor train input side and a compressor train output side, said compressor train input side receiving ambient air and said compressor train output side discharging compressed air; a storage input conduit including a storage input conduit first end and a storage input conduit second end, said storage input conduit first end being coupled to said compressor train output side to receive said compressed air; an underground storage cavern coupled to said storage input conduit second end to receive and store said compressed air; a saturator input conduit including a saturator input conduit first end and a saturator input conduit second end, said saturator input conduit first end being coupled to said storage cavern to receive compressed air from said storage cavern; a saturator including a saturator input side and a saturator output side, said saturator input side being coupled to said saturator input conduit second end to receive said compressed air from said storage cavern, said saturator output side discharging heated and humidified compressed air; a combustor input conduit including a combustor input conduit first end and a combustor input conduit second end, said combustor input conduit first end being coupled to said saturator output side to receive said heated and humidified compressed air; and a combustor with a combustor input side and a combustor output side, said combustor input side being coupled to said combustor input conduit second end to receive said heated and humidified compressed air, said combustor

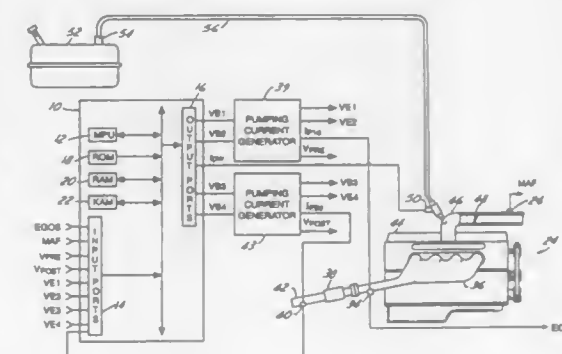
burning a fuel and generating a hot working fluid for discharge through said combustor output side; and a turbine coupled to said combustor output side, said turbine being rotated by said hot working fluid to produce power.

5,379,590
AIR/FUEL CONTROL SYSTEM WITH HEGO CURRENT PUMPING
 Douglas R. Hamburg, Bloomfield; Eleftherios M. Logothetis, Birmingham; Jeffrey A. Cook, and Lajos Rimai, both of Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 6, 1993, Ser. No. 132,407
 Int. Cl.⁶ F01N 3/20

U.S. Cl. 60—276

12 Claims



3. A control system for maintaining engine air/fuel operation within the efficiency window of a catalytic converter positioned in the engine exhaust, comprising: a downstream exhaust gas oxygen sensor positioned downstream of the catalytic converter having a step change between first and second output states, said downstream sensor comprising first and second electrodes of differing oxygen concentrations separated by an oxygen-ion-conducting material; initialization means coupled to said downstream sensor for shifting said step change to an initial air/fuel ratio, said initialization means including current means for generating current flow in said first electrode of said downstream sensor; adjusting means for shifting said initial air/fuel ratio in response to engine operating conditions; and fuel adjusting means for supplying fuel to the engine in response to at least said downstream exhaust gas oxygen sensor.

5,379,591
AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
 Yoichi Iwata; Naoki Iida; Tsuyoshi Takizawa; Yasunari Seki; Toshihiko Sato, all of Wako, and Takayoshi Nakayama, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Jan. 28, 1994, Ser. No. 187,724
 Claims priority, application Japan, Jan. 29, 1993, 5-034932
 Int. Cl.⁶ F01N 3/22

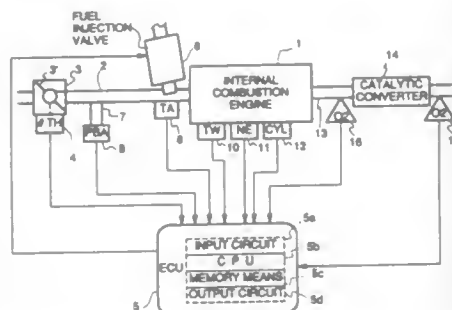
U.S. Cl. 60—276

5 Claims

1. In an air-fuel ratio control system for an internal combustion engine having an exhaust passage, a catalytic converter arranged in said exhaust passage for purifying noxious components contained in exhaust gases, including a first air-fuel ratio sensor arranged in said exhaust passage at a location upstream of said catalytic converter, and a second air-fuel ratio sensor arranged in said exhaust passage at a location downstream of said catalytic converter, air-fuel ratio feedback control parameter-calculating means for calculating an air-fuel ratio feedback

control parameter, by proportional-integral control using a proportional factor and an integral factor, based on an output signal from said second air-fuel ratio sensor, and air-fuel ratio correction amount-calculating means for calculating said air-fuel ratio correction amount based on said air-fuel ratio feedback control parameter and an output signal from said first air-fuel ratio sensor,

the improvement comprising:



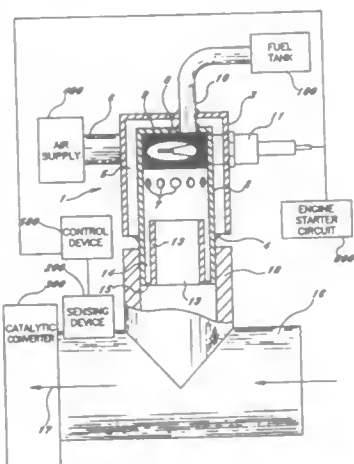
inversion period-measuring means for measuring a repetition period of inversion of said output signal from said second air-fuel ratio sensor; and
proportional factor-changing means for changing said proportional factor according to said repetition period of inversion of said output signal from said second air-fuel ratio sensor detected by said repetition period-measuring means.

5,379,592
CATALYTIC CONVERTER WITH IGNITION BURNER
Gerhard Waschuttis, 134 Marine Cir., Pembroke Park, Fla. 33009

Continuation of Ser. No. 781,621, Oct. 23, 1991, abandoned.
This application Sep. 15, 1993, Ser. No. 121,975
Int. Cl.⁶ F01N 3/20

U.S. Cl. 60—286

10 Claims



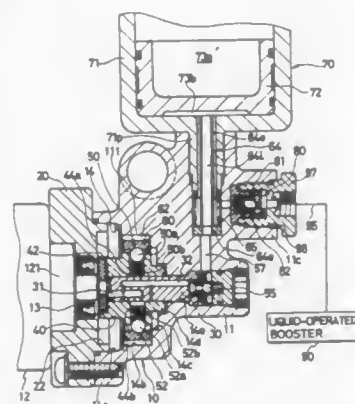
1. A catalytic converter preheater, comprising:
a first chamber means for conveying a flow of air from an air source to the preheater;
a second chamber means for housing combustion disposed concentrically within said first chamber means, said second chamber means being defined by at least one sidewall defining air duct means communicating the first chamber means with the second chamber means;
means for supplying combustion fuel to said second chamber means;
means for dispersing fuel generally evenly throughout at

least a portion of said second chamber means, said means for dispersing including excess fuel reservoir means; and
means for igniting said fuel and air within said second chamber means,
wherein air in the first chamber means cools the combustion chamber means sidewall, resulting in a relatively cool first chamber means exterior sidewall and preheated air upon entry into said combustion chamber means.

5,379,593
LIQUID PRESSURE SOURCE UNIT FOR LIQUID-OPERATED BOOSTER
Ichiro Ishiwata, Yokosuka, Japan, assignor to Nabco Limited, Hyogo, Japan

Filed Oct. 26, 1993, Ser. No. 143,454
Claims priority, application Japan, Nov. 9, 1992, 4-324801;
Dec. 12, 1992, 4-353237
Int. Cl.⁶ F16D 31/02; B60T 13/00
U.S. Cl. 60—413

9 Claims



1. In a liquid pressure source unit for a liquid-operated booster comprising a hydraulic pressure pump actuated by an external power and adapted to draw hydraulic liquid and discharge pressurized liquid, an accumulator for accumulating the pressurized liquid discharged from said hydraulic pressure pump, the pressurized liquid accumulated in said accumulator being supplied to said liquid-operated booster, the improvement comprising a throttle valve unit provided between said accumulator and said liquid-operated booster and adapted to greatly reduce a flow area until a pressure differential or a flow rate reaches a predetermined value, said throttle valve unit having a throttling function equivalent to a tiny hole of 0.01 mm order in diameter, said throttle valve unit having a member that moves between a first position forming a throttle having a very small flow area in accordance with change in pressure differential or flow rate, and a second position for cancelling the throttle, the throttle valve unit operating to prevent a foreign sound which will be generated when a liquid-operated booster is abruptly actuated, said accumulator having means for preventing pulsation generated by said hydraulic pressure pump.

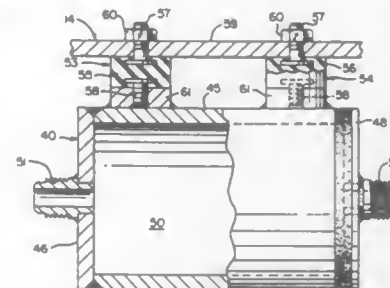
5,379,594
LIFT TRUCK WITH NOISE ATTENUATED HYDRAULIC CIRCUIT
Timothy S. Quellhorst, New Bremen, Ohio, assignor to Crown Equipment Corporation, New Bremen, Ohio

Filed Apr. 6, 1992, Ser. No. 863,954
Int. Cl.⁶ F16D 31/02; B64D 33/02
U.S. Cl. 60—469

9 Claims

1. In a lift truck having a hydraulic driven mechanism, a noise-attenuated hydraulic circuit comprising:
a source of hydraulic fluid;
a hydraulic pump;
means for actuating said mechanism;

a fluid supply line interconnecting said pump and said actuating means;
an in-line expansion muffler having a generally cylindrical body with an inlet, an outlet and a diameter greater than said supply line, said muffler being mounted on said supply line between said pump and said actuating means such that said inlet and said outlet are connected to said supply line; and



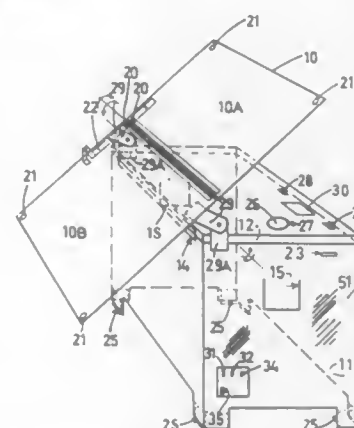
means for isolating said muffler from said truck and said supply line, said isolating means including a resilient mount attaching said body to said truck, a first flexible, resilient line interconnecting said inlet with said supply line between said muffler and said pump, and a second flexible, resilient line interconnecting said outlet with said supply line between said muffler and said actuating means, whereby said muffler is completely isolated from said truck, and structureborne noise generated by said pump is minimized.

5,379,595
Patent Not Issued For This Number

5,379,596
SELF-CONTAINED HAND-HELD SOLAR CHEST
Tom Grayson, 448 E. 87th St., New York, N.Y. 10128
Filed May 13, 1992, Ser. No. 882,576
Int. Cl.⁶ F25B 21/02

U.S. Cl. 62—362

20 Claims



1. A portable container comprising:
a chest including,
a bottom,
a plurality of side walls, and
an openable top wall;
said bottom and plurality of side walls connected to each other to form an open-topped compartment and, said top wall openably-connected to at least one side wall so that the top wall closes the compartment but also opens up the compartment and allows access to the compartment;
a temperature control system including,
a cooling or heating system embedded in a side wall of the chest, and

a heat exchanger connected to said cooling or heating system and positioned within the compartment; and,
a power source including,

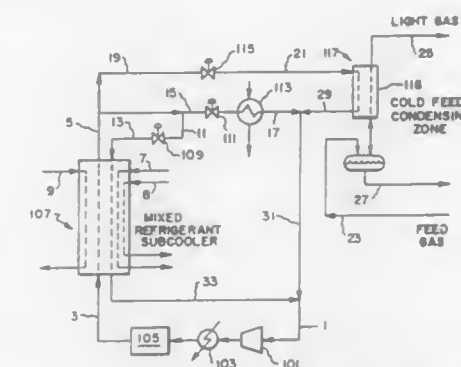
a photovoltaic collector array panel comprised of at least two foldable panels connected to the temperature control system and, attached to the chest at at least one wall by means for attaching the panel to the chest which allow the at least two connected foldable panels to swing, as one unit, from 90 degrees perpendicular to the horizon up to 180 degrees parallel to the horizon, to allow a user to position the photovoltaic collector array panel; said photovoltaic collector array panel being separate from the walls of the chest and positioned over at least a portion of the chest; and, said photovoltaic collector array panel is of a size sufficient to power the temperature control system without reliance upon batteries or an external power source when placed in sufficient light.

5,379,597
MIXED REFRIGERANT CYCLE FOR ETHYLENE RECOVERY
Lee J. Howard, Allentown, and Howard C. Rowles, Center Valley, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 4, 1994, Ser. No. 192,024
Int. Cl.⁶ F25J 3/06

U.S. Cl. 62—23

20 Claims



1. In the recovery of ethylene from a feed gas containing ethylene, hydrogen, and C₁ to C₃ hydrocarbons, wherein said recovery includes the steps of compressing and cooling said feed gas to condense a portion thereof, fractionating the condensed feed gas liquids in one or more demethanizer columns to recover a light overhead product comprising chiefly hydrogen and methane, and fractionating the one or more demethanizer column bottoms streams to recover an ethylene product and streams containing C₂ and heavier hydrocarbons, refrigeration for said recovery is provided in a cycle which comprises:

- compressing a mixed refrigerant vapor comprising two or more components selected from the group consisting of methane, ethane, ethylene, propane, and propylene, and cooling the resulting compressed vapor to yield a condensed mixed refrigerant stream;
- subcooling said condensed mixed refrigerant stream by indirect heat exchange with one or more cold process streams to yield a subcooled mixed refrigerant;
- flashing a first portion of said subcooled mixed refrigerant and using the resulting refrigerant to provide overhead condenser refrigeration for at least one of said demethanizer columns by indirect heat exchange, which warms and at least partially vaporizes said first portion of subcooled mixed refrigerant;
- flashing a second portion of said subcooled mixed refrigerant and using the resulting refrigerant to provide at least a portion of the refrigeration required to cool said feed gas by indirect heat exchange and condense a portion thereof,

which warms and at least partially vaporizes said second portion of subcooled mixed refrigerant; and
(e) combining the resulting warmed vapor streams from said first and second portions of the subcooled mixed refrigerants of steps (c) and (d) to provide at least a portion of said mixed refrigerant vapor, and repeating steps (a) through (e);

whereby said feed gas is separated into a vapor stream containing lighter feed components and one or more liquid condensate streams enriched in heavier feed components.

5,379,598
CRYOGENIC RECTIFICATION PROCESS AND APPARATUS FOR VAPORIZING A PUMPED LIQUID PRODUCT

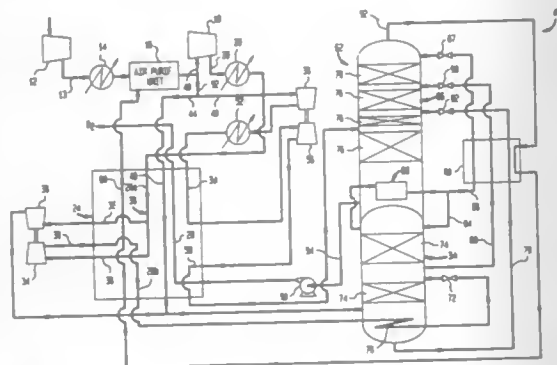
Robert A. Mostello, Somerville, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Aug. 23, 1993, Ser. No. 110,742

Int. Cl.⁶ F25J 3/02

U.S. Cl. 62—24

6 Claims



1. A process for separating air and thereby producing a gaseous oxygen product at a delivery pressure, said process comprising:

- compressing the air, removing heat of compression from the air, and purifying the air;
- cooling the air in a main heat exchanger;
- prior to the cooling of the air, further compressing at least a portion of the air to be cooled to form a further compressed air stream and removing heat of compression from the further compressed air stream;
- removing at least part of the further compressed air stream from the main heat exchanger at a location of the main heat exchanger at which said further compressed stream has a temperature in the vicinity of a theoretical pinch point temperature determined for the main heat exchanger, still further compressing at least a portion of said at least part of the further compressed air stream removed from the main heat exchanger to form a first subsidiary air stream, and introducing said first subsidiary air stream back into the main heat exchanger at a level thereof having a warmer temperature than said theoretical pinch point temperature;
- after reintroduction into the main heat exchanger, fully cooling said first subsidiary air stream to a temperature suitable for its rectification;
- removing part of the air to be cooled from the main heat exchanger to form a second subsidiary air stream and cooling said second subsidiary air stream to a temperature suitable for its rectification without the use of the main heat exchanger;
- the second subsidiary air stream being cooled by expanding said second subsidiary air stream with the performance of expansion work;
- applying at least part of the work of expansion to the further compression of said at least portion of the at least part of

the further compressed air stream removed from the main heat exchanger;

rectifying the air in the first and second subsidiary air streams within an air separation unit configured such that liquid oxygen is produced;

supplying refrigeration to the process to maintain energy balance of the process; and

removing a liquid oxygen stream from the air separation unit composed essentially of the liquid oxygen, pumping the liquid oxygen stream to the delivery pressure, vaporizing said liquid oxygen stream in the main heat exchanger such that it is fully warmed to ambient temperature, and extracting said liquid oxygen stream from the main heat exchanger as the gaseous oxygen product.

5,379,599
PUMPED LIQUID OXYGEN METHOD AND APPARATUS

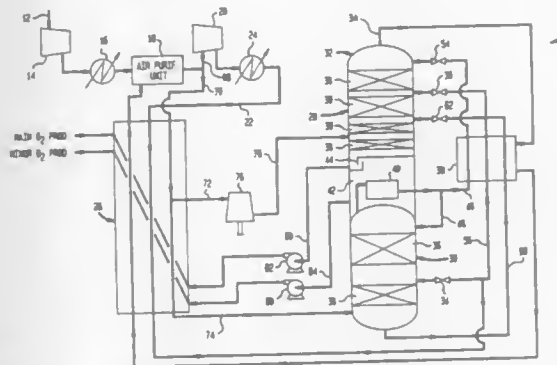
Robert A. Mostello, Somerville, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Aug. 23, 1993, Ser. No. 109,960

Int. Cl.⁶ F25J 3/02

U.S. Cl. 62—25

8 Claims



1. A process for producing a gaseous oxygen product at a delivery pressure and so as to contain a low concentration of heavy impurities, said process comprising:
- compressing the air, removing heat of compression from the compressed air, and purifying the air;
 - cooling the air within a main heat exchanger to a temperature suitable for its rectification;
 - introducing the further compressed air stream into a double rectification column so that the air is rectified, said double rectification column including high and low pressure columns operatively associated with one another in a heat transfer relationship by provision of a condenser-reboiler having a sump, each of the high and low pressure columns having contacting elements for contacting an ascending vapor phase having an ever increasing nitrogen concentration as the vapor phase ascends with a descending liquid phase having an ever increasing oxygen and heavy impurity concentrations as the liquid phase descends such that, in the low pressure column, liquid oxygen having a high concentration of the heavy impurities collects in the sump of the condenser-reboiler and the liquid phase flowing to the sump has the low concentration of the heavy impurities;
 - introducing refrigeration into the process so that heat balance within the process is maintained;
 - withdrawing a major liquid oxygen stream from the low pressure column composed of the liquid phase flowing to the sump of the condenser-reboiler, pumping it to the delivery pressure, and vaporizing said liquid oxygen stream within the main heat exchanger to produce said gaseous oxygen product;
 - withdrawing a purge liquid oxygen stream from the low

pressure column composed of the liquid oxygen collected in the sump of the condenser-reboiler such that the heavy impurities do not concentrate in the liquid oxygen at a level above their solubility limit;

pumping the purge liquid oxygen stream to a sufficiently high pressure level that the heavy impurities will vaporize substantially with the liquid oxygen contained within said purge liquid oxygen stream; and

vaporizing the purge liquid oxygen stream within the main heat exchanger.

5,379,600
SUPERCONDUCTING MAGNET AND METHOD FOR ASSEMBLING THE SAME

Kazuki Moritsu, Takahiro Matsumoto, Mitsuo Horikawa, Shuichi Nakagawa, all of Aiko; Hideto Yoshimura, Amagasaki; Masashi Nagao, Amagasaki, and Takashi Inaguchi, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

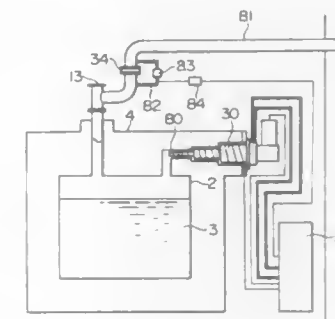
Filed Mar. 26, 1993, Ser. No. 37,455

Claims priority, application Japan, Mar. 27, 1992, 4-070922

Int. Cl.⁶ F17C 5/02

U.S. Cl. 62—47.1

21 Claims



1. A superconducting magnet comprising:
- a superconducting coil;
 - a cryogenic refrigerant vessel containing a cryogenic refrigerant for refrigerating said superconducting coil;
 - a heat-shield surrounding said cryogenic refrigerant vessel; and
 - a vacuum vessel surrounding said heat-shield;
- wherein said cryogenic refrigerant vessel is provided with a drawing portion having an end exposed to an atmosphere of a cryogenic refrigerant gas being evaporated in said cryogenic refrigerant vessel;
- at least a part of heat stages is exposed to said drawing portion; and
- a multistage cold heat accumulation refrigerator for reliquefying the cryogenic refrigerant gas being drawn into said drawing portion is mounted substantially in horizontal state on said vacuum vessel.

5,379,601
TEMPERATURE ACTUATED SWITCH FOR CRYO-COOLERS

John B. Gillett, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1993, Ser. No. 122,262

Int. Cl.⁶ F25B 19/00

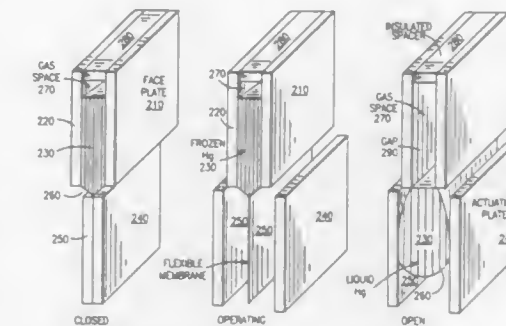
U.S. Cl. 62—51.1

12 Claims

1. A temperature actuated switch comprising two sensibly parallel conducting plates separated by a gap, said gap containing a non-conducting fluid in a first state, a conducting fluid in a second state, said conducting fluid becoming a conducting solid in a third state;
- wherein said conducting fluid becomes a conducting solid when its temperature falls below a critical value, and

returns to a conducting fluid when its temperature rises above a similar critical value; and

wherein said switch includes means to replace said non-conducting fluid in said gap with said conducting fluid, and a flexible membrane which contains said conducting fluid when switch is in said first state, and means to compress



said conducting fluid against said membrane to force said conducting fluid into said gap, replacing said non-conducting fluid to produce said second state;

whereby said conducting fluid becomes solid at a temperature below said critical temperature, and in which release of compression of said conducting fluid against said membrane produces no movement of said conducting solid.

5,379,602
METHOD FOR PROVIDING COOLING AND A COOLING APPARATUS SUITED FOR THE SAME

Heikki Sipilä, and Sakari Viitamäki, both of Espoo, Finland, assignors to Outokumpu Instruments Oy, Espoo, Finland

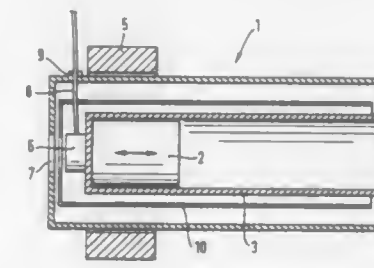
Filed Jul. 14, 1993, Ser. No. 92,260

Claims priority, application Finland, Jul. 15, 1992, 923237

Int. Cl.⁶ F25B 19/02

U.S. Cl. 62—51.2

23 Claims



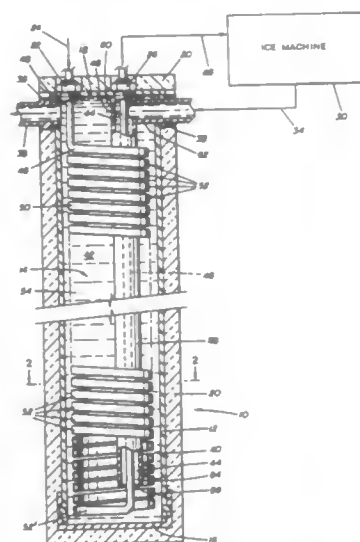
1. A method of operating a rechargeable cooling apparatus that comprises a wall means defining a chamber that is under vacuum, the wall means including at least one thermally conductive wall member that separates the chamber from the exterior of the apparatus, and a cooling element located in the chamber in spaced relationship with the wall means, the cooling element being supported relative to the wall means by support elements of length substantially greater than minimum distance between the cooling element and the wall means, and wherein the method comprises:
- placing the thermally conductive wall member in thermally conductive connection with a cryogen,
 - establishing a heat transfer relationship between the cooling element and the thermally conductive wall member, whereby the cooling element is charged, and
 - interrupting the heat transfer relationship between the cooling element and the thermally conductive wall member.

5,379,603 **METHOD AND APPARATUS FOR PRECHILLING TAP WATER IN ICE MACHINES**

Daniel L. Welch, 4817 E. 13th St., Tucson, Ariz. 85711, and Jeff L. Love, 903 Leander Dr., Leander, Tex. 78641
Continuation-in-part of Ser. No. 39,844, Mar. 30, 1993, abandoned. This application Mar. 28, 1994, Ser. No. 218,348
Int. Cl.⁶ F25C 1/12

U.S. Cl. 62—66

17 Claims



5. In an apparatus for prechilling the warm tap water, fed into an ice maker machine to make ice cubes and the like, with the near freezing waste water ejected by the machine after one or more ice making cycles; comprising an insulated, elongated casing having top and bottom ends forming there between a closed reservoir housing a heat exchanger made of copper tubing or the like, said casing having a waste water inlet, a tap water inlet, a waste water overflow outlet, and a tap water outlet, the improvement wherein:

said heat exchanger has a coil having a plurality of spiral turns for maximum heat transfer followed by a substantially straight tube portion within and surrounded by said turns;

a hollow member, closed at one end, spaced from said straight tube to be surrounded by said coil turns to form between said hollow member and said straight tube an elongated chamber whose bottom is open to the interior of said reservoir;

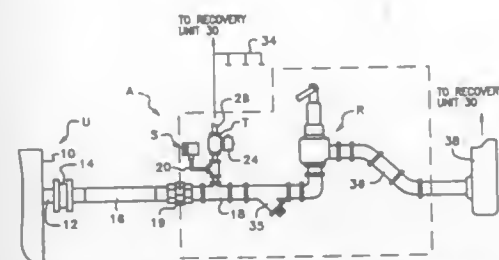
said chamber is fluidly coupled to said waste water inlet, said coil is fluidly coupled to said tap water inlet, and said straight tube is fluidly coupled to said tap water outlet, whereby in use said warm tap water flows under pressure spirally toward the lowest one of said coil turns, thence within said straight tube and through said tap water outlet into said machine for making ice, and said cold waste water flows through said chamber, along and around said straight tube, into the interior of said reservoir, and therein along and around said coil turns, and exiting through said overflow outlet, thereby progressively and continuously increasing the waste water's temperature from the top of said chamber to the bottom of said reservoir, and progressively increasing the waste water's temperature from the bottom of said reservoir to said overflow outlet, whereat it has its highest temperature, and progressively and continuously decreasing the temperature of the tap water from near the inlet of said coil to near the outlet of said straight tube, whereat said tap water has its lowest temperature.

5,379,604 **EMERGENCY REFRIGERANT RECOVERY ACTIVATION SYSTEM**

Patrick L. Furr, Houston, Tex., assignor to Houston Industries Incorporated, Houston, Tex.
Filed Nov. 19, 1993, Ser. No. 155,013
Int. Cl.⁶ F25B 45/00

U.S. Cl. 62—77

13 Claims



12. A method of reducing the escape of excess pressure refrigerant from a pressure sensitive mechanism connected to an air conditioning unit in the event of rupture of the pressure sensitive mechanism to prevent release of refrigerant from the unit, comprising the steps of:

sensing the pressure of the released refrigerant in a relief conduit leading from the pressure sensitive mechanism;
stopping operation of the air conditioning unit in response to sensing excess pressure of the released refrigerant in the relief conduit;
activating an alarm to indicate excess pressure in the released refrigerant in the relief conduit; and
transferring the excess pressure released refrigerant from the relief conduit to a refrigerant recovery unit.

5,379,605 **METHOD FOR CLEANING AIR CONDITIONING SYSTEM**

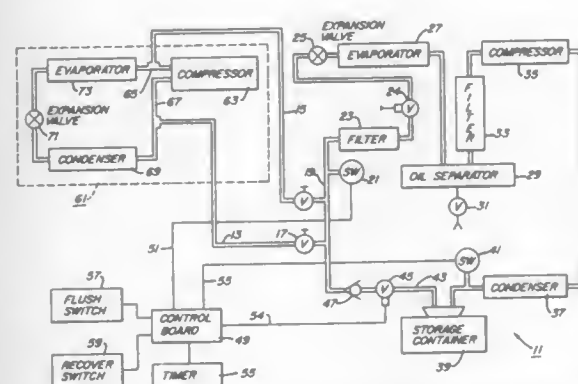
George R. Outlaw, Arlington; Fred L. Ptacek, Joshua, and Charles R. Smith, Grapevine, all of Tex., assignors to Wynn's Climate Systems, Inc., Fort Worth, Tex.

Filed Jan. 27, 1994, Ser. No. 187,212

Int. Cl.⁶ F25B 45/00

U.S. Cl. 62—77

14 Claims



1. A method of cleaning an air conditioning system having a system compressor with an output side and a suction side, the method comprising:

providing a maintenance unit with a recovery expansion valve connected to a recovery evaporator, which leads to a suction side of a recovery compressor, the recovery compressor having an output side connected to a recovery condenser which leads to a storage container which has an outlet conduit and which contains refrigerant, the maintenance unit having at least one filter;

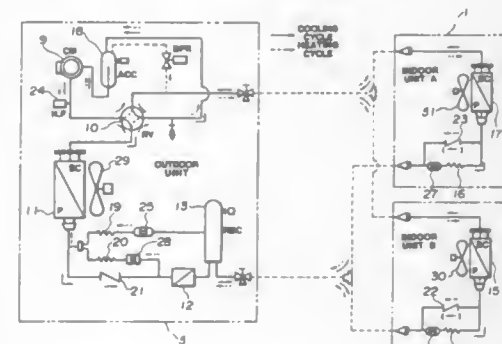
connecting the suction side and the output side of the system compressor to the recovery expansion valve; then communicating the outlet conduit of the storage container to the suction side and to the output side of the system compressor to flow refrigerant from the storage container into the air conditioning system simultaneously on both the suction side and the output side of the system compressor, while operating the recovery compressor to flow refrigerant into the storage container; then stopping the communication of the outlet conduit of the storage container to the suction side and to the output side of the system compressor; and operating the recovery compressor to recover refrigerant from the suction side and the output side of the system compressor and to flow the recovered refrigerant through the recovery expansion valve, recovery evaporator, filter, recovery condenser and into the storage container, the recovered refrigerant bringing along with it foreign matter from the air conditioning system which is filtered by the filter.

5,379,606 **CONTROL DEVICE FOR AN AIR CONDITIONER**

Hikaru Katsuki, Kiryu; Masayuki Shimizu, Ohizumi; Minoru Kato, Sumiyoshi; Tetsuo Inoue, Ohta, and Masakazu Hosoya, Shironouchi, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Apr. 22, 1993, Ser. No. 51,470
Claims priority, application Japan, May 11, 1992, 4-117435
Int. Cl.⁶ F25B 49/02

U.S. Cl. 62—126

7 Claims

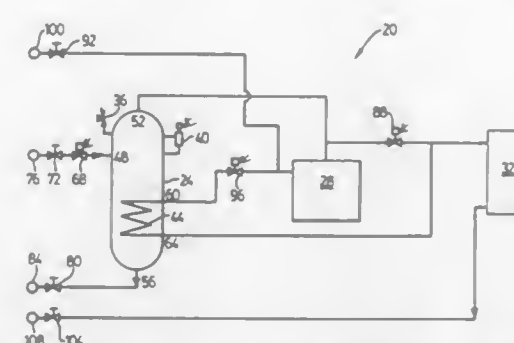


1. An air conditioner having:
an indoor side unit having an indoor side heat exchanger for performing heat exchange with the air in a room,
an outdoor side unit having an outdoor side heat exchanger for performing heat exchange with the open air, and
a refrigerating circuit for cooling said room being constituted of said indoor side heat exchanger, a compressor, said outdoor side heat exchanger, and an expansion device, comprising:
a temperature condition means for cooling said room in controlling said compressor to operate at a full power or to stop based on a temperature of said room, and
a protective means for compulsorily stopping said compressor independently of said temperature condition means when the open air temperature becomes lower than a predetermined temperature.

5,379,607 **REFRIGERANT RECOVERY AND RECYCLING SYSTEM**

U.S. Cl. 62—126

9 Claims



1. Apparatus for recovering and recycling refrigerant compounds from refrigeration equipment comprising:

a separation unit for separating refrigerant from contaminants, said separation unit including means operable to heat a mixture of liquid refrigerant and liquid contaminants to distil refrigerant from said liquid contaminants and means to separate suspended liquid contaminants from gaseous refrigerant including means to collect liquid contaminants;

first valve means operable to connect said separation unit to said refrigeration equipment and responsive to a liquid level sensor to close said first valve means when a predefined level of liquid in said separation unit is obtained;

a timing means to maintain said first valve means in said closed position for a predetermined time period;

means to draw gaseous refrigerant from said separation unit and to pressurize said gaseous refrigerant, said means to draw operable to create a reduced pressure in said separation unit and said reduced pressure drawing liquid and/or gaseous refrigerant and liquid contaminants from said equipment to said separation unit when said first valve is not in said closed position;

means to remove collected liquid contaminants from said separation unit; and

second valve means operable to supply said pressurized refrigerant to a storage vessel.

5,379,608 **DEFROSTING CONTROL UNIT FOR SHOWCASES**

Keiichi Ishimaru, Osamu Itoh; Tomoyoshi Nakatani; Haruhiko Sudo, and Masaya Kurita, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Mar. 22, 1993, Ser. No. 35,151
Claims priority, application Japan, Mar. 24, 1992, 4-097277;
Jul. 1, 1992, 4-199225

Int. Cl.⁶ F25D 21/06

U.S. Cl. 62—155

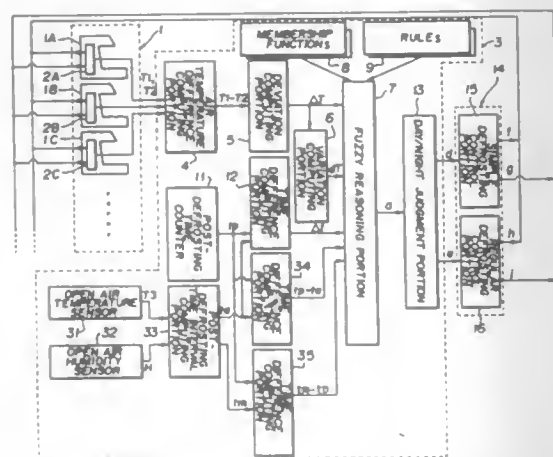
20 Claims

1. A defrosting control unit for a showcase having a showcase unit with an inner duct for circulating air, an evaporator provided in the inner duct to cool the air circulating in the inner duct, and a defrosting device attached to the evaporator, the defrosting device having heating means for melting frost which has settled on the evaporator, the defrosting device additionally having a defrosting termination function, said defrosting control unit comprising:

a situation-reflecting signal generation portion which generates a situation-reflecting signal for starting a defrosting control operation, said situation-reflecting signal generation portion including a fuzzy reasoning portion, membership functions, and rules, said situation-reflecting signal

reflecting a present situation expressed in terms of a result of fuzzy reasoning conducted by said fuzzy reasoning portion, said fuzzy reasoning portion inferring an optimal time for starting a defrosting operation based on at least one environmental parameter or value derived therefrom as an element of a fuzzy set, said environmental parameter or value derived therefrom being selected from the group consisting of

- an optimal defrosting time interval obtained from the temperature and humidity of open air,
- a marginal defrosting time interval obtained from the temperature and humidity of open air,
- a stable-state value, the stable-state value being an average value of a difference between the temperature of air blown out of said inner duct and the temperature of air immediately after it passes said evaporator over a period after said difference has reached a steady state,
- a deviation, from said stable-state value, of an actual value of the difference between the temperature of air blown out of said inner duct and the temperature of air immediately after it passes said evaporator,



- a temporal variation of said deviation,
 - a difference between a post defrosting time and said optimum defrosting interval, and
 - a difference between said post defrosting time and said marginal defrosting time;
- a defrosting control portion which receives said situation-reflecting signal from said situation-reflecting signal generation portion and generates, upon receipt of said situation-reflecting signal, a defrosting control start signal; and a showcase unit controller connected to said heating means, said showcase unit controller driving said heating means upon receipt of said defrosting control start signal to start a defrosting operation, wherein said defrosting control portion also generates a defrosting end signal for safety after a predetermined time from said starting of said defrosting operation if defrosting has not been stopped by said defrosting termination function of said defrosting device, and wherein said showcase unit controller terminates said defrosting operation of said heating means upon receipt of said defrosting end signal.

5,379,609

AIR CONDITIONER HAVING AIR FILTER

Kensuke Matsumoto, Gunma; Yasutomo Akutsu, Maebashi; Masao Koseki, Kato; Michio Kurakami, Ashikaga; Yoshiyuki Kitamura, Sano, and Kiyoshi Koyama, Isesaki, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

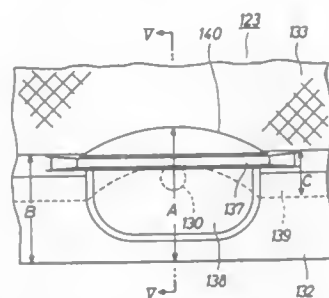
Filed Aug. 12, 1993, Ser. No. 105,150

Claims priority, application Japan, Aug. 24, 1992, 4-224132; Feb. 17, 1993, 5-053060

Int. Cl.⁶ B01D 46/00; F24F 1/00

U.S. Cl. 62-262

11 Claims



1. An air conditioner comprising an indoor unit having at least an indoor-side heat exchanger and an outdoor unit having at least an outdoor-side heat exchanger, said air conditioner implementing a refrigeration cycle with a compressor, the indoor-side heat exchanger (120), an expansion device and the outdoor-side heat exchanger, the improvement wherein said indoor unit comprises:

- an air suction port for sucking air to be air-conditioned;
- an air blow-out port (106) for discharging the air-conditioned air;
- an air blowing unit (121) defining an air flow path along which the air supplied from said air suction port is discharged from said air blow-out port after being heated or cooled in said indoor-side heat exchanger;
- an air filter (123) detachably disposed in said indoor unit between said air suction port and said indoor-side heat exchanger in said air flow path, and comprising a frame body (132) and a filter mesh (133) secured to said frame body, wherein a bottom of said frame body has a widened portion (140) which is wider than other portions thereof, and an outwardly extending support post (130) formed at the widened portion of said frame body such that said outwardly extending support post is not located at a joint portion (139) between said frame body and said filter mesh, and disposed at an edge of said air suction port when said air filter is disposed in said indoor unit; and
- an engaging member engageable with said support post of said air filter frame body to fixedly secure said air filter to said indoor unit, wherein the upper portion of the indoor-side heat exchanger is bent toward the air blowing unit.

5,379,610

REFRACTORY ELEMENT

Akira Sakurai; Masahiro Shiotsu, both of Kyoto; Toshikazu Yano, Yokohama; Masao Ochi, Yokohama, and Toshihiro Sugawara, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 73,619, Jun. 8, 1993, Pat. No. 5,329,785, which is a continuation of Ser. No. 695,693, May 3, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 111,944

Claims priority, application Japan, May 21, 1990, 2-130563; May 21, 1990, 2-130564; May 21, 1990, 2-130565; Oct. 4, 1990, 2-267142

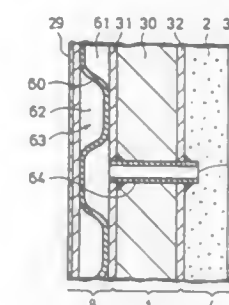
Int. Cl.⁶ F28D 5/02

U.S. Cl. 62-316

8 Claims

1. A refractory member for retaining cool an inner side of said member when an outer side of said member is subjected to

excessive heat, said member comprising an intermediate refractory layer of heat insulating material, said intermediate layer having inner and outer faces, said panel also comprising an inner, heat transmission cooling layer, means for joining said inner heat transmission cooling layer to the inner face of said intermediate layer, said heat transmission cooling layer comprising first liquid passages arranged over said inner face of said intermediate layer and including a liquid supply port for connecting said first liquid passages to a source of liquid under pressure for attaining a cooling effect over said inner face of said intermediate layer when said port is connected to pressure liquid, an outer layer including a porous ooze cooling layer and means for joining said ooze cooling layer to the outer face of said intermediate layer, second liquid passages connected to



5,379,611

JEWELRY CONVERTER APPARATUS

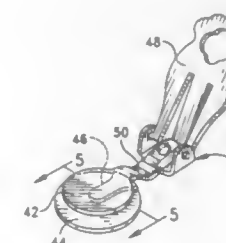
Michael R. Impagliazzo, P.O. Box 2682, Providence, R.I. 02907-0682

Filed Jun. 17, 1993, Ser. No. 77,277

Int. Cl.⁶ A44C 7/00

U.S. Cl. 63-14.1

4 Claims



1. A decorative jewelry member comprising a disc having obverse and reverse sides, a generally U-shaped plate having a selected thickness and having a right between first and second legs, the legs defining an opening therebetween

a converter having first and second plate elements lying in planes generally parallel to one another, means to connect the plates together and to space the first and second plate elements a distance apart slightly greater than the selected thickness, attachment means for attaching the converter to an object, the converter being adapted to receive the U-shaped plate between the first and second plate elements

ments and means to lock the converter to the U-shaped plate.

5,379,612

METHOD OF PRODUCING VOLUMINOUS KNITTED ARTICLES

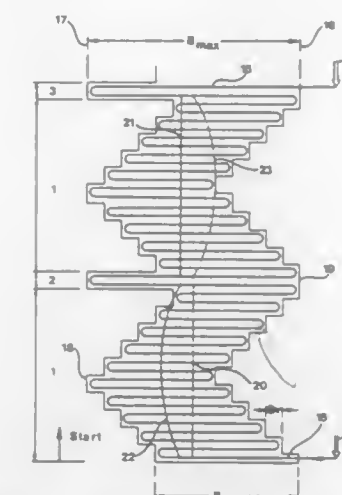
Thomas Stoll, Reutlingen; Wolfgang Rempp, Sonnenbühl, and Franz Schmid, Bodelshausen, all of Germany, assignors to H. Stoll GmbH & Co., Reutlingen, Germany

Filed Jun. 11, 1993, Ser. No. 75,771

Claims priority, application Germany, Jun. 25, 1992, 4220861 Int. Cl.⁶ D04B 7/30, 1/22

U.S. Cl. 66-64

5 Claims



1. A method of producing voluminous knitted articles on a two-bed flat knitting machine, comprising the steps of forming by knitting a plurality of pocket-shaped convexities from a base plane over a length of a knitted article continuously and one after the other, and including

- knitting a rib wale row during a carriage travel in a first direction from a right edge of a maximal knitting width by a first cam from a first thread with each needle of a first needle bed and with each second needle of a second needle bed, and simultaneously knitting a jersey wale from a second thread with each first releasing needle of the second needle bed by a second cam over the base knitting width which is smaller than the maximal knitting width;
- performing a carriage travel in a second direction and during the carriage travel repeating the step a) however over the base knitting width minus an offset width.

5,379,613

METHOD OF FINISHING EDGES OF KNITTED FABRIC

Masato Suzuki, Wakayama, Japan, assignor to Shima Seiki Mfg., Ltd., Wakayama, Japan

Continuation of Ser. No. 785,595, Oct. 30, 1991, abandoned.

This application Jul. 14, 1993, Ser. No. 91,740

Claims priority, application Japan, Oct. 31, 1990, 2-296756

Int. Cl.⁶ D04D 7/10

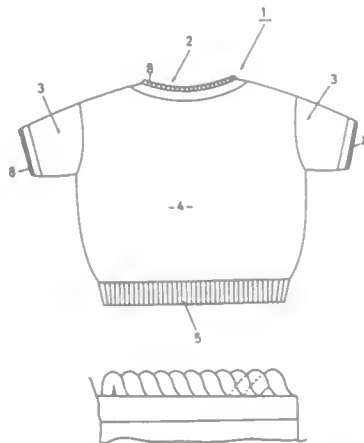
U.S. Cl. 66-69

3 Claims

1. A method of finishing an edge of a cuff or neck portion of a knitted fabric formed with a flat knitting machine, said knitting machine having a front needle bed and a rear needle bed, at least one of the needle beds arranged for lengthwise movement, comprising the steps of:

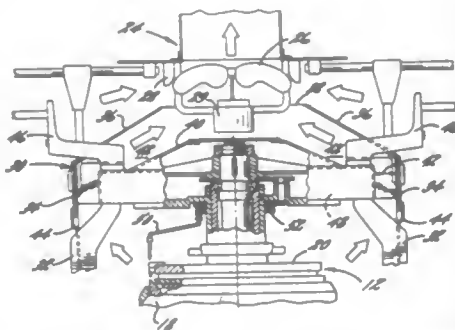
- transferring loops at an edge of the knitted fabric held by respective knitting needles of one needle bed to the other needle bed,
- knitting a strand of stitches of a desired length to have a sufficient thickness for functioning as a decorative stitch by using both front and rear needle beds, from a given

- number of loops carried on knitting needles of the other needle bed,
- 3) transferring loops of a front end of loops of the strand of loops to the other needle bed,
 - 4) moving the needle beds relative to each other for displacing the front end loops of the strand from a start position of the same,
 - 5) transferring the loops at the end of the strand of loops to knitting needles of one needle bed which are holding loops of an edge of the knitted fabric to provide an arch on the edge of the knitted fabric, said knitting needles of one



- needle bed to which the loops at an end of the string of loops are transferred are displaced from the knitting needles which are holding the loops at a start of knitting the strand of loops by more than a width of the given number of knitting needles which form the strand of loops,
- 6) knitting a strand of loops of a desired length by repeating a step of forming loops on the given number of knitting needles between the knitting needles which are holding the loops at the start of knitting the strand of loops and the loops at the end of the strand of loops, and
 - 7) repeating the steps 3-6 to provide a series of arches on the edge of the knitted fabric.

5,379,614
DUST AND WASTE REMOVAL AND COLLECTION SYSTEM FOR DOUBLE KNITTING MACHINE
 Yoshiaki Igarashi, Kobe, Japan, assignor to Precision Fukuhara Works, Ltd., Hyogo, Japan
 Filed Sep. 2, 1993, Ser. No. 116,353
 Claims priority, application Japan, Sep. 18, 1992, 4-275449
 Int. Cl.⁶ D04B 35/32
 U.S. Cl. 66—168 17 Claims

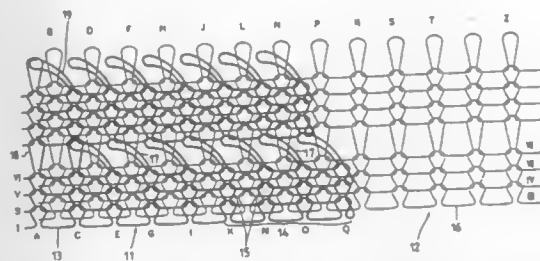


1. In a double knitting machine having a knitting section comprising a needle cylinder, cylinder needles mounted in said needle cylinder, a dial mounted above and in operative association with said needle cylinder, dial needles mounted in said dial and cooperating with said cylinder needles, and yarn feeding and guiding means for supplying yarns to said cylinder needles

and said dial needles to form double knit fabric, the combination therewith of a dust and other fiber waste removal system comprising

- (a) suction fan means mounted above said knitting section for creating an upwardly flowing air stream through and across said needle cylinder and said dial to remove dust and other fiber waste therefrom, and
- (b) hood means overlying said knitting section and extending outwardly beyond the periphery of said needle cylinder and said dial, said hood means defining a restricted air passageway therethrough communicating with said suction fan means at one end thereof and terminating in an ingress end at the other end thereof, said ingress end of said air passageway being located radially outwardly of and above said knitting section so that the air stream created by said suction fan means flows upwardly from and outwardly of said knitting section, whereby dust and other fiber waste is removed from said knitting section and is carried outwardly beyond the periphery of said knitting section.

5,379,615
TUBULAR KNIT FABRIC HAVING VENT PORTION
 Masahiro Shima, Wakayama, Japan, assignor to Shima Seiki Mfg. Ltd., Wakayama, Japan
 PCT No. PCT/JP91/01387, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO92/07128, PCT Pub. Date Apr. 30, 1992
 PCT Filed Oct. 11, 1991, Ser. No. 39,307
 Claims priority, application Japan, Oct. 12, 1990, 2-275019
 Int. Cl.⁶ D04B 1/24
 U.S. Cl. 66—176 4 Claims

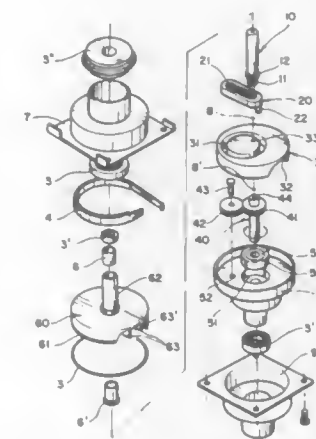


1. In a flat knitting machine having a front needle bed and a back needle bed for forming a tubular knit fabric by changing the needle bed to which a yarn is fed and by changing the feeding direction of a knitting yarn at an end portion of a knitting range on the needle bed, a method of forming a vent portion in the tubular knit fabric as a plurality of wales at an edge of the vent portion are knitted, the method comprising the steps of:

- (1) knitting a cylindrical fabric on alternating needles in courses prior to formation of the vent portion;
- (2) forming the progressive opening vent portion by the steps of:
 - (a) transferring loops from needles of a plurality of wales arranged along a section where the vent portion is to be formed from the front needle bed to corresponding empty needles of the back, opposing needle bed;
 - (b) supplying yarn to and knitting on needles of the front needle bed maintaining loops and on the back needle bed on the corresponding needles;
 - (c) transferring loops from the corresponding needles on the back needle bed to the front needle bed;
 - (d) knitting a course on the front and the back needle beds;
 - (e) repeating steps (a), (b) and (c);
 - (f) transferring loops from at least a first, second and third wale from the front needle bed to the corresponding empty needles on the back needle bed;

- (g) racking the back needle bed at least two needle positions in a direction to a side opposite the vent portion;
- (h) transferring the loops from the back needle bed to the front needle bed; and
- (i) repeating steps (a)-(h) to form the vent portion.

5,379,616
POWER TRANSFER APPARATUS OF FULLY-AUTOMATED WASHING MACHINE
 Sang-Chul Bae, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
 Filed Jan. 4, 1993, Ser. No. 70,932
 Claims priority, application Rep. of Korea, Jun. 5, 1992, 92-9750
 Int. Cl.⁶ D06F 37/40
 U.S. Cl. 68—23.7 8 Claims



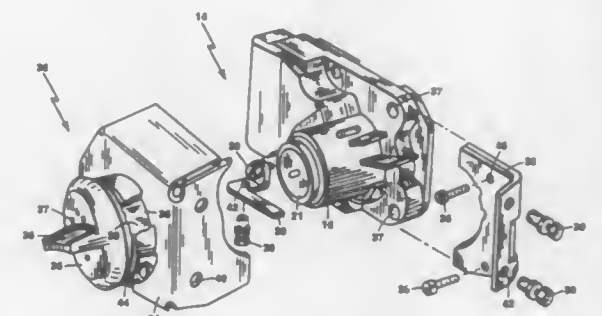
1. A power transfer apparatus of a clothes washing machine comprised of an oscillatable washing agitator having a driven shaft, and a rotatable spin dry container, said power transfer apparatus comprising:

- a vertical drive shaft rotatable about a vertical axis in first and second directions; and
 - a connecting mechanism connecting said drive shaft to said agitator and to said spin dry container for oscillating said agitator in said first and second directions in response to rotation of said drive shaft in said first direction while keeping said spin-dry container stationary, and for rotating said agitator and said spin dry container together in said second direction in response to rotation of said drive shaft in said second direction;
- said connecting mechanism comprising:
- a case disposed adjacent an upper end of said drive shaft and connected fixedly to said spin dry container for rotation therewith about said axis,
 - a clutch disposed adjacent an upper end of said drive shaft for transmitting rotation from said drive shaft to said case in response to rotation of said drive shaft in said second direction for rotating said case and said spin dry container;
 - a conversion member mounted within said case and being rotatable relative to said case about said axis,
 - a gear arrangement interconnecting said drive shaft and said conversion member for transmitting rotation there-between,
 - a rack mounted in said case for rotation therewith about said axis and for horizontal reciprocation relative to said case, said rack having teeth connected to said driven shaft for oscillating said driven shaft about said axis in response to reciprocation of said rack relative to said case, said rack carrying a pin mounted in an endless eccentric track carried by said conversion member for producing reciprocation of said track in response to rotation of said conversion member about said axis;
 - a connecting element interconnecting said conversion

member and said rack for reciprocating said rack in response to rotation of said conversion member relative to said case about said axis, and

a brake band being engageable with an outer periphery of said case for preventing rotation of said case when said drive shaft is rotated in said first direction and being releasable for permitting rotation of said case when said drive shaft is rotated in said second direction.

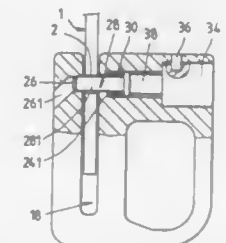
5,379,617
AUTOMOBILE ANTI-THEFT DEVICE
 Dimitar S. Zagoroff, Cambridge, Mass., assignor to Steadfast Corporation, Chelsea, Mass.
 Filed Mar. 1, 1993, Ser. No. 24,413
 Int. Cl.⁶ E05B 17/18
 U.S. Cl. 70—18 2 Claims



1. An automobile anti-theft device for covering an ignition switch mechanism enclosed in the housing positioned on an automobile steering column, the device including:

- A. a non-deformable bracket which attaches to the housing and the steering column with screws, the bracket shaped to receive a cover; and
- B. a shaped cover which attaches to the bracket, the shaped cover covering (i) the screws by which the bracket attaches to the housing and the steering column, (ii) the housing and (iii) a lock barrel which protrudes from the housing, the shaped cover including an opening to provide access to a lock cylinder positioned within the lock barrel.

5,379,618
LOCKING DEVICE ESPECIALLY FOR USE IN LOCKING DISK BRAKE OF MOTOR CYCLE
 Jin-Ren Shieh, No. 178, Shih Chia Rd., Taichung, Taiwan, Prov. of China
 Filed Apr. 29, 1993, Ser. No. 53,664
 Int. Cl.⁶ E05B 67/36
 U.S. Cl. 70—33 9 Claims



1. A locking device especially for use in locking disk brake of motor cycle comprising:
 - a body having a first side, a second side adjacent to said first side, and a slot of a length and substantially perpendicular to said first side;
 - said body being divided by the slot into a first portion and a

second portion having a width smaller than said first portion, said first portion having a tunnel parallel to said first side;

a locking bolt disposed in said body such that said locking bolt can be caused by an external force to move from a first position to a second position so as to seal off an opening end of said slot of said body, said locking bolt having an outer diameter so dimensioned as to permit said locking bolt to pass through one of heat-radiating holes of a disk brake of a motor cycle, said length of said slot being sufficient to receive said disk brake;

said locking bolt being disposed in a front segment of said tunnel, a locking apparatus being fastened in a rear segment of said tunnel;

a locking apparatus housed in said body and provided with a lock core capable of remaining at a third position or a fourth position at such time when said locking apparatus is in an unlocking state or in a locking state, said lock core being at said third position at such time when said locking bolt is caused to move to remain at said first position, and further said lock core being at said fourth position at such time when said locking bolt is caused to move to remain at said second position;

wherein said locking bolt is so disposed that the axis of said locking bolt is parallel to said first side; and wherein said lock core is coupled with said locking bolt in such a manner that the axes of said lock core and said locking bolt are parallel to each other,

wherein said second portion is provided with a slanted through hole in communication with a locking hole; wherein dust deposited in said locking hole is forced out through said slanted through hole when said locking bolt is inserted into said locking hole.

5,379,619

ANTI-THEFT BRAKE LOCKING DEVICE FOR VEHICLES

Leonard Young, 2830 W. Highland Blvd., Apt. #104, Milwaukee, Wis. 53208

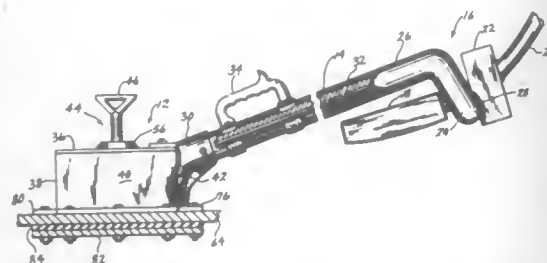
Filed Jul. 7, 1989, Ser. No. 376,810

The portion of the term of this patent subsequent to Feb. 10, 2008, has been disclaimed.

Int. Cl.⁶ F16H 57/00

U.S. Cl. 70—202

5 Claims



1. An anti-theft device for a motor vehicle including a brake pedal disposed adjacent an interior surface of said vehicle and mounted to the end of a stem, comprising:

pedal engaging means comprising a hook member mounted to the distal end of a neck, said neck being secured to a base;

hook engaging means mounted to said stem; and releasable retaining means connected said pedal engaging means, and located rearwardly of the brake pedal for selectively securing said base to the interior surface of said vehicle, so that said brake pedal can be maintained in a depressed position wherein movement of said vehicle is prevented when said base is secured to said vehicle surface, and said brake pedal can be released by releasing said retaining means so as to allow movement of said vehicle.

5,379,620 APPARATUS AND METHOD FOR FORMING PRECISION SURFACES ON SHAFT-LIKE COMPONENTS

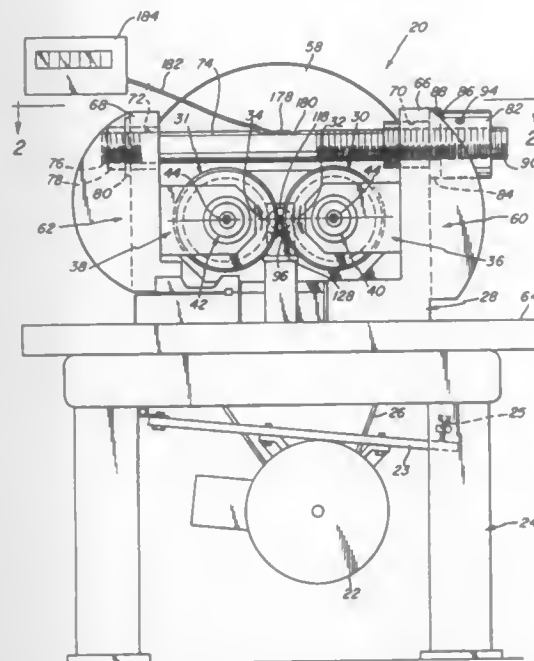
Howard A. Greis, Holden, Mass., assignor to Kinefac Corporation, Worcester, Mass.

Filed Jun. 23, 1993, Ser. No. 82,061

Int. Cl.⁶ B21H 1/22

U.S. Cl. 72—19

43 Claims



1. An apparatus for forming precision diameter cylindrical surface shapes on shaft-like parts comprising:

a pair of substantially cylindrical rotatable dies that each rotate on a respective axis, each of the dies including a preform surface for forming a cylindrical preform shape on a shaft-like part therewith over at least a portion of a circumference of each of the dies, each of the dies further including a size control surface concentric with the respective axis;

a size control ring located between each of the size control surfaces, the size control ring rotating on an axis and constructed and arranged to support a shaft-like part therein at a location concentric with the axis thereof, the size control ring having an outer circumference that is engaged and elastically deformed by each of the size control surfaces when the preform surfaces are in pressurable, surface-forming, engagement with a surface of the shaft-like part; and

a size adjustment mechanism constructed and arranged to apply pressure to each of the dies wherein the size control surfaces apply preload force to the size control ring to elastically deform the size control ring and the preform surfaces engage and preform the surface of the shaft-like part when the size control surfaces apply an elastically-deforming preload to the size control ring, the size adjustment mechanism further including a pressure sensor for determining an amount of pressure applied by each of the dies to each of the size control ring and the shaft-like part, a depth of engagement of the preform surfaces with the surface of the shaft-like part being adjustable based upon a sensed pressure indicated by the pressure sensor.

5,379,621 APPARATUS FOR GENERATING AN UNDERLIQUID SHOCK PRESSURE

Minoru Suzuki; Katsumi Ikusawa; Kenji Araki; Naotake Yoshihara, and Yoshio Murayama, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

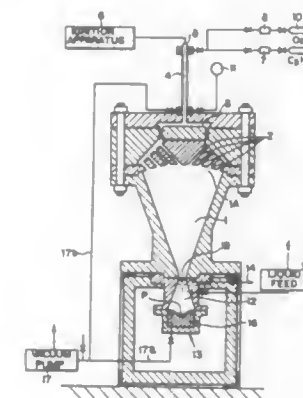
Division of Ser. No. 63,160, May 18, 1993, which is a division of Ser. No. 886,717, May 21, 1992, Pat. No. 5,256,430. This application Apr. 5, 1994, Ser. No. 223,424

Claims priority, application Japan, May 29, 1991, 3-152278; Jun. 17, 1991, 3-170326; Jun. 17, 1991, 3-170327; Jun. 17, 1991, 3-170328; Aug. 30, 1991, 3-244081; Aug. 30, 1991, 3-244082; Aug. 30, 1991, 3-244083; Oct. 25, 1991, 3-305651

Int. Cl.⁶ B21D 26/08

U.S. Cl. 72—56

9 Claims



1. An apparatus for generating an underliquid shock pressure, comprising:

a combustion chamber whose cross-sectional area decreases from one end of the chamber toward another end of the chamber;

an ignition chamber, to which fuel is fed and in which a spark producing means is positioned;

a plurality of guidance paths extending from said ignition chamber and communicating with said one end of said combustion chamber, each of the guidance paths having substantially the same length; and

a pressure medium chamber connected to an opening at said another end of said combustion chamber having the smallest cross-sectional area.

5,379,622

METHOD OF FORMING HELICAL SPLINES WITH STOPPERS ON A ROTARY SHAFT, AND ROLLING TOOLS FOR PRACTICING THE METHOD

Mitsuo Saito; Yoshihiro Umebayashi; Shigetake Aoyagi, all of Aichi; Shuzo Iozumi, Hyogo; Noriyuki Tanaka, Hyogo, and Junichi Kasa, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and O S G Corporation, Aichi, both of Japan

Filed Sep. 14, 1993, Ser. No. 120,466

Claims priority, application Japan, Sep. 16, 1992, 4-245387

Int. Cl.⁶ B21H 3/00

U.S. Cl. 72—88

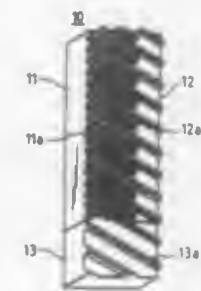
5 Claims

1. A method of forming helical splines with stoppers on a rotary shaft, comprising the steps of:

providing a shaft to be processed which has a large-diameter portion and a small-diameter portion; and

rolling, with said large-diameter portion held between a pair of rolling tools, said shaft under pressure by moving said pair of rolling tools, to form a plurality of helical grooves, and communication grooves communicated with every other one of the helical grooves on said large-diameter portion, while leaving stoppers between said communica-

tion grooves, said stoppers having a configuration different that said communication and helical grooves, and finishing said communication grooves and every other one



5,379,623

RADIAL MILLING HEAD

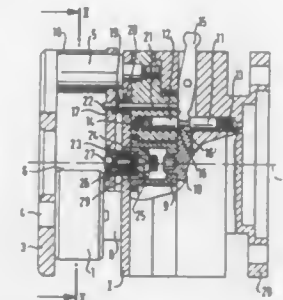
Horst Drewalowski, Schwarzenbek, Germany, assignor to Wilhelm Fette GmbH, Schwarzenbek, Germany

Filed Oct. 26, 1993, Ser. No. 143,468

Int. Cl.⁶ B21H 3/04

U.S. Cl. 72—104

11 Claims



1. Radial milling head, comprising a casing, a plurality of peripherally spaced rollers which are equidistantly arranged about a center axis of said casing and which are rotatably supported in said casing, a plurality of roller gear wheels each secured to a respective roller, a central gear wheel meshing with said roller gear wheels, said rollers including a peripheral working surface, having a diameter spirally increasing for working the workpiece, a locking means including a spring biased locking member and a release means for releasing said locking member to initially rotate said rollers into frictional engagement with the workpiece by a rotational movement of said spring biased locking member, whereupon said rollers are further rotated by frictional engagement with said workpiece until the locking member and said rollers are locked again after having performed a full rotation, a trip member which is slidably arranged concentrically with respect to said center axis of said casing, said trip member cooperating through a linkage mechanism with said release member to initiate a full rotation of said rollers when said trip member is axially displaced by a workpiece axially entering between said rollers.

5,379,624
SLAVED TUBE LENGTH CONTROL FOR HAIRPIN BENDER

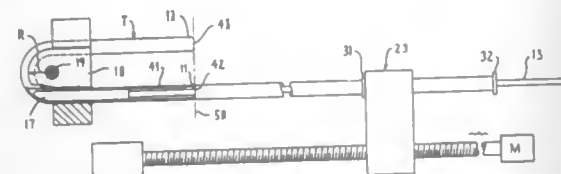
Galen B. Harman, La Grange, Ind., and James G. Milliman, Sturgis, Mich., assignors to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Filed Nov. 22, 1993, Ser. No. 156,274

Int. Cl.⁶ B21D 7/04

U.S. Cl. 72—149

13 Claims



1. A tube length control for a tube bending mechanism, comprising:

- a tube bending device;
- supply and delivery means for intermittently supplying at least one finite length segment of tubing and delivering said finite length segment to said tube bending device, said tube bending device having a bend arbor pivotal about a bend axis and an elongated tube mandrel extending longitudinally away from said bend arbor on a side of said bend axis remote from said supply and delivery means, said supply and delivery means simultaneously causing a first end of said finite length segment to become telescoped over said tube mandrel as said finite length segment is delivered to said tube bending device;
- clamping means on said bend arbor and initially oriented on a side of said bend axis adjacent said supply means for clamping said finite length segment to said bend arbor and thereby fixedly orienting a second end of said finite length segment from said bend axis;
- first drive means for drivingly pivoting said bend arbor through a predetermined angle to effect a bending of said finite length segment;
- first control means for limiting the delivery of said finite length segment to said tube bending device so that the first end thereof is oriented a predetermined distance on a side of a plane, oriented perpendicular to a longitudinal axis of said finite length segment and containing said bend axis, that is remote from said supply and delivery means;
- second drive means for drivingly engaging said first end of said finite length segment and for pushing said first end along said tube mandrel toward said clamping means;
- second control means for halting the movement of said second drive means toward said bend axis at a location whereat said first end, following 180° bend, becomes generally coplanar with said second end.

5,379,625
METHOD AND APPARATUS FOR UPSETTING THE ENDS OF STEEL PIPE

John Hale, 2008 Highway 21 E., Bryan, Tex. 77803

Filed Oct. 20, 1993, Ser. No. 139,306

Int. Cl.⁶ B21D 41/04

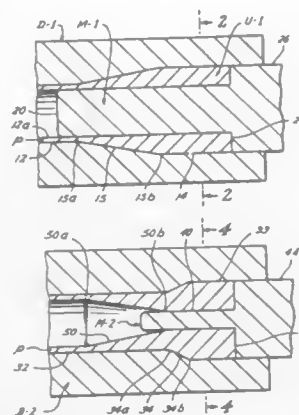
U.S. Cl. 72—318

3 Claims

1. A method of working the end of a steel pipe by external and internal upset forging comprising:

- upsetting the external end of a pipe for increasing the peripheral wall thickness adjacent such end by moving a first mandrel having an external diameter substantially the same as the unworked tubular member axially relative to said pipe end in a first die having an internal end diameter larger than the external diameter of said unworked tube;
- positioning said externally upset tube end between a pair of laterally moveable second dies and simultaneously moving said second dies laterally together to press said externally upset end portion radially inwardly while also mov-

ing a second mandrel having a smaller external diameter than said first mandrel axially into the open end of the pipe end whereby a portion of said externally upset material is



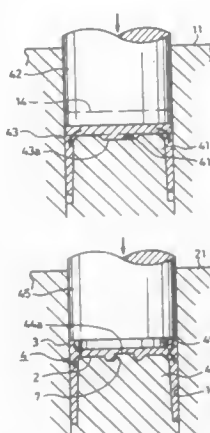
moved inwardly to form a tapered internal upset portion extending inwardly from said unworked tubular portion to said smaller diameter passage formed by said second mandrel.

5,379,626
METHOD OF FORMING A TAPPET BODY IN AN INTERNAL COMBUSTION ENGINE
Nobuo Hara, Fujisawa, and Makoto Nagaya, Koza, both of Japan, assignors to Fuji Oozx, Inc., Kanaqawa, Japan
Filed Sep. 28, 1993, Ser. No. 127,807
Claims priority, application Japan, Oct. 12, 1992, 4-298167; Mar. 23, 1993, 5-86946

Int. Cl.⁶ B21K 1/20

U.S. Cl. 72—356

2 Claims



- 1. A method of forming a tappet body in an internal combustion engine, the method comprising the steps of: forming an intermediate which comprises a circular upper wall having a thickened portion in the middle of a lower surface thereof, and a cylindrical skirt integrally formed with the upper wall from plastically deformable material in a first forging; and forming a recess in the thickened portion of the upper wall in a second forging to make the tappet body.

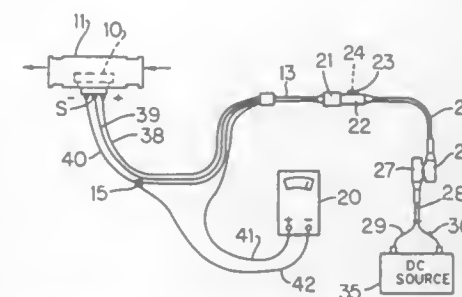
5,379,627
TESTER FOR MASS AIRFLOW SENSOR
James F. Bates, Jr., Fond du Lac, Wis., assignor to A&E Manufacturing Co., Inc., Racine, Wis.

Filed Jun. 3, 1992, Ser. No. 892,785

Int. Cl.⁶ G01F 25/00

U.S. Cl. 73—3

3 Claims



1. A method of testing a mass airflow sensor comprising the steps of:

- connecting the positive polarity terminal of the sensor to the positive terminal of a dc power source,
- connecting the negative polarity terminal of the sensor to the negative terminal of the dc power source,
- connecting a circuit comprised of a resistor in series with an LED between said positive terminal of the dc source and the signal (S) terminal of said sensor,
- such that if after said connections are made said LED flashes, one indication of a good sensor is provided, and after said connections are made, blowing air on the sensor to determine if the flashing rate of said LED changes with changes in air flow.

5,379,628
DRIVE FOR SHIFTING THE STROKE POSITION OF FORMING MACHINES

Michael Pahnke, Düsseldorf, and Walter Westermeyer, Neuss, both of Germany, assignors to Pahnke Engineering GmbH & Co. KG, Düsseldorf, Germany

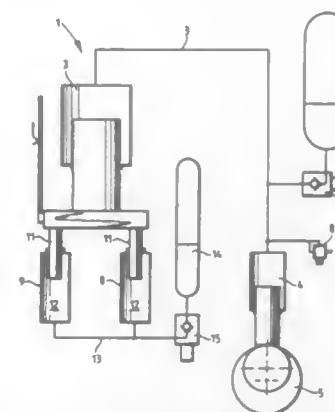
Filed Jan. 29, 1993, Ser. No. 11,434

Claims priority, application Germany, Mar. 31, 1992, 4210504

Int. Cl.⁶ B21J 7/28

U.S. Cl. 72—453.18

7 Claims



- 1. A method of operating a hydraulic press including a ram, a working cylinder for effecting a downward, working stroke of the ram, and return cylinder means for effecting an upward return stroke of the ram, said method comprising the steps of: providing a drive, including a press cylinder for imparting motion to the working cylinder, a crank drive for operating the press cylinder, a low pressure container communicating with the press cylinder, first fluid line means communicating the press cylinder with the working cylinder,

second fluid line means communicating the low pressure container with the press cylinder, a first check valve located in the second fluid line means and having an open position, in which fluid flows between the press cylinder and the low pressure container, and a closed position, in which fluid flows between the working and press cylinders, a fluid accumulator, third fluid line means communicating the return cylinder means with the fluid accumulator, and a second check valve located in the third fluid flow line means and having an open position in which the return cylinder means communicates with the fluid accumulator, and a closed position, in which pressure in the return cylinder means remains constant;

closing the first check valve for enabling fluid flow between the press and working cylinders in accordance with operation of the crank drive, and opening the second check valve for enabling fluid flow between the return cylinder means and the fluid accumulator to thereby provide for operation of the press with a first working stroke displacement;

shifting the operation of the press with the first working stroke displacement to an operation with a second stroke displacement by changing over the second check valve at one of top and bottom dead centers of the working stroke, whereby a return stroke is prevented due to blocking fluid flow from the fluid accumulator to the return cylinder means while pressure fluid is aspirated from the low pressure container through the first check valve into the press cylinder, so that the press starts the operation with the second stroke displacement, which is delayed by half of a stroke period and which has a displacement length double that of a displacement length of the first stroke displacement; and

thereafter, again opening the second check valve to enable a continuous operation of the press with the second working stroke.

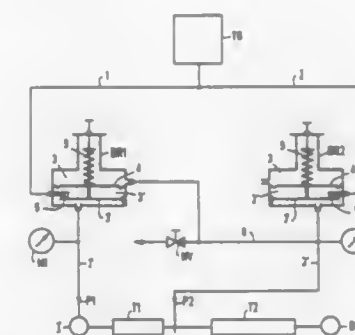
5,379,629
METHOD AND APPARATUS FOR REGULATING THE CARRIER GAS PRESSURE FOR SEPARATION COLUMN ARRANGEMENTS IN GAS CHROMATOGRAPHY
Friedhelm Müller, Linkenheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE89/00089, § 371 Date Oct. 15, 1991, § 102(e) Date Oct. 15, 1991, PCT Pub. No. WO90/09585, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 16, 1989, Ser. No. 743,363

Int. Cl.⁶ G01N 30/32

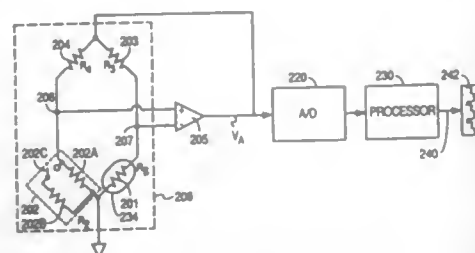
U.S. Cl. 73—23.27

4 Claims



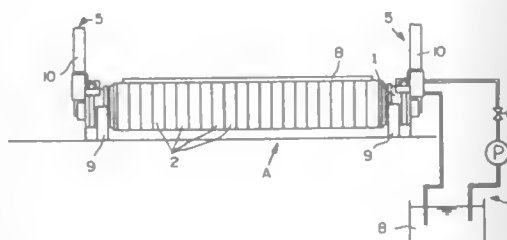
- 1. A method for controlling carrier gas pressures in supply lines coupled to an input and output of a first of two serially connected gas-chromatographic separating columns of a separating column circuit, said method comprising the step of controlling an input pressure of the first separating column as a function of its output pressure with the effect of maintaining constant the difference between the inlet and outlet pressure of the first separation column.

14 Claims



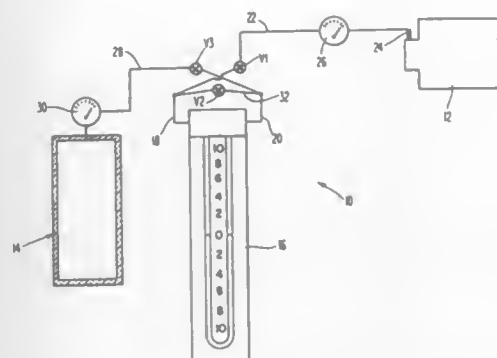
7. A method for determining the thermal conductivity of a sample fluid comprising the steps of:
applying an alternating voltage to a sensor to vary a temperature of said sensor as a sample gas flows across said sensor, a resistance of said sensor being dependent upon a temperature of said sensor, a frequency of said alternating voltage being sufficiently low such that a temperature of said sensor substantially tracks said alternating voltage;
measuring an electrical quantity that is related to an instantaneous temperature of said sensor; and
determining a magnitude of said electrical quantity that has a frequency three times said frequency of said alternating voltage.

5,379,631
FLATNESS DETECTOR
Yoichi Kira, and Kenji Misumi, both of Yokohama, Japan,
assignors to Ishikawajima-Harima Jukogyo Kabushiki Kai-
sha, Tokyo, Japan
Filed Mar. 11, 1993, Ser. No. 29,571
Claims priority, application Japan, Mar. 17, 1992, 4-14231[U]
Int. Cl.⁶ G01B 13/22
U.S. Cl. 73—37.5 3 Claims



1. In a flatness detector having a fixed shaft and a plurality of rotary rings loosely fitted over said shaft and adjacent to each other along an axis of the shaft, a pneumatic bearing being defined by an air gap between said shaft and said rings, the improvement comprising heating means associated with said shaft for heating said shaft and hence said rings through said air gap, and bending means at opposite ends of said shaft for bending said shaft in a predetermined direction.

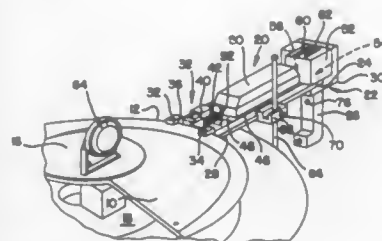
U.S. CL. 73-40



1. A method of testing a gas-cooled electrical generator for leakage of pressurized coolant gas, comprising:
 - (a) communicating a container with pressurized coolant gas that is within a sealed space in said generator, said container being positioned externally of said generator;
 - (b) sealing said container once said container becomes filled with coolant gas at a pressure which is equal to a pressure within said sealed space;
 - (c) subsequently comparing the pressure in said sealed space with the pressure in said sealed container, whereby a lower pressure in said sealed space will indicate coolant leakage; and
 - (d) determining the rate of leakage from said sealed space based on the pressure comparison performed in step (c).

Filed May 20, 1993, Ser. No. 65,091
Int. Cl.⁶ G01M 13/00

U.S. Cl. 73-104



1. An apparatus for objectively measuring the relative sharpness of a food product slicer blade, the apparatus comprising:
 - a sample holder for positioning at least a portion of a test sample in a given position and under tension;
 - means for engaging said apparatus with respect to said slicer blade for measuring said slicer blade sharpness;
 - means for determining both the angular disposition of said slicer blade and said apparatus with respect to a predetermined reference datum;
 - means for matching and maintaining the angular disposition of the apparatus with the slicer blade angular disposition

while said apparatus is in engagement with said slicer blade;

means for advancing the sample holder toward a cutting edge portion of said slicer blade, wherein the test sample is initially contacted against the slicer blade cutting edge portion and is further advanced against said cutting edge portion until said slicer blade cutting edge cuts through said test sample; and

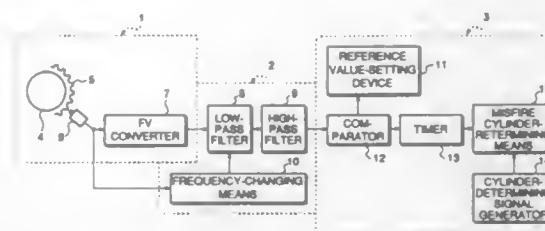
means for quantitatively determining a maximum force associated with said slicer blade cutting through said test sample.

Claims priority, application Japan, Jul. 12, 1991, 3-062210[U]; Jul. 12, 1991, 3-197412; Jul. 12, 1991, 3-197413; Dec. 4, 1991, 3-347728; Dec. 27, 1991, 3-360626; Dec. 27, 1991, 3-360627.

Int. Cl.⁶ G01L 15/00

U.S. CL. 73-116

29 Claims



1. A misfire-detecting system for an internal combustion engine having a plurality of cylinders, comprising:
engine rotational speed-detecting means for detecting a rotational speed of said engine and for outputting a waveform signal indicative of the detected rotational speed of said engine;
signal-processing means for filtering said waveform signal to take out a waveform component having a particular frequency range therefrom;
differentiating means for differentiating said waveform component output from said signal-processing means; and
misfire-detecting means for determining occurrence of a misfire in said engine by comparing an output from said differentiating means with a predetermined reference value.

Filed Dec. 3, 1993, Ser. No. 161,029
Int. Cl.⁶ G01M 19/00

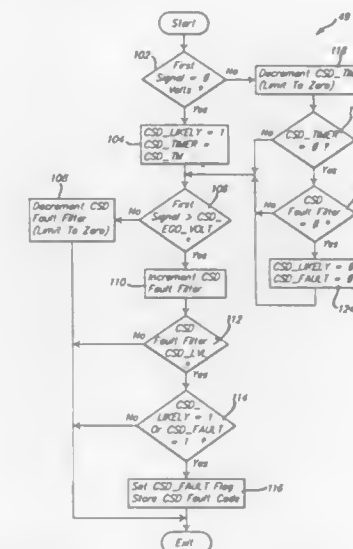
U.S. Cl. 73-118.1

20 Claims

1. A method for detecting a fault in an exhaust gas oxygen (EGO) sensor of an engine, said EGO sensor being a device which generates an output signal which has a normal output voltage range with an upper boundary and a lower boundary, said method comprising the steps of:

generating a first signal substantially equal to a voltage V1 if the EGO sensor output signal has a voltage below a first threshold VT1 but above a second threshold VT2; generating a first signal substantially equal to a voltage V2 if the

EGO sensor output signal has a voltage below the second threshold VT2;
performing a first measurement of the voltage of said first signal;
setting a first flag if said first voltage measurement is substantially equal to voltage V1, said first flag indicating a possible EGO sensor fault;

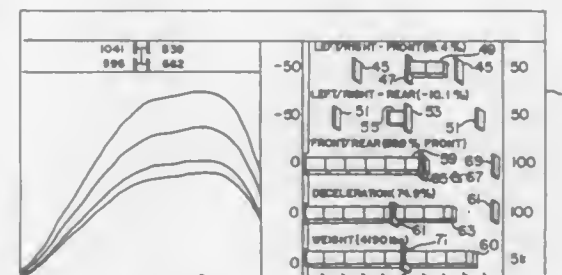


performing a subsequent measurement of the voltage of said first signal; and
 setting a second flag indicating an EGO sensor fault if said subsequent voltage measurement is greater than a threshold voltage VT3, said threshold voltage VT3 being less than voltage V2, and if said first flag is set.

Int. Cl.⁶ G01L 5/28

U.S. Cl. 73—122

5 Claims



1. Plate brake tester for testing the brakes of a motor vehicle, comprising two pair of tread plates one beside the other, each of said tread plates having a measuring device for measuring the force exerted on the tread plate, a processing unit for processing measuring signals provided by at least two of the measuring devices, and a display, and further comprising a weighing device for determining the weight of the front axle and the rear axle of the vehicle, respectively, said processing unit being adapted to compute the braking retardation from the measured brake forces and the total weight of the vehicle and

being adapted to compute the brake force ratio front axle/rear axle from the measured brake forces, said processing unit also being adapted to compute the dynamic weight ratio front axle/rear axle from the computed braking retardation, the wheelbase of the vehicle, the height of the center of gravity of the vehicle and the measured weight of the front axle and the rear axle, respectively, wherein the processing unit provides an indication through the display if said brake force ratio deviates from said dynamic weight ratio and this deviation exceeds threshold values.

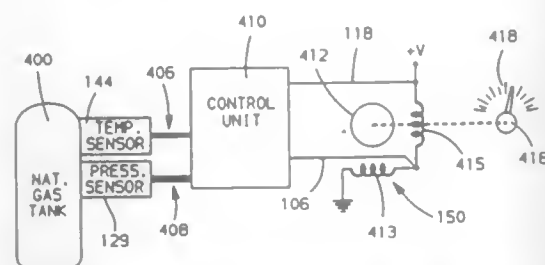
5,379,637

NATURAL GAS VEHICLE FUEL GAUGE SYSTEM

Michael J. Abowd, Ann Arbor, Mich.; Pierre Y. Abboud, and
James R. Ray, both of Cortland, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1993, Ser. No. 133,940
Int. Cl.⁶ G01F 23/18, 23/22, 25/00

U.S. Cl. 73—290 R **3 Claims**



1. A method of measuring and indicating, with a two coil air core gauge, a level of natural gas fuel in a storage tank of a motor vehicle, comprising the steps of:

- determining a temperature of the natural gas;
- determining a pressure of the natural gas;
- retrieving from a look-up table, responsive to the determined temperature and pressure, a signal representative of a desired voltage ratio of a first voltage across a first coil and a second voltage across a second coil of the two coil air core gauge;
- developing a command responsive to the desired voltage ratio;
- driving the two coil air core gauge according to the developed command to indicate the level of natural gas in the tank;
- measuring the actual voltage ratio of the first and second coils of the two coil air core gauge; and
- correcting the developed command using the measured actual voltage ratio so that the actual voltage ratio substantially equals the desired voltage ratio.

5,379,638
METHOD AND DEVICE FOR DETECTING THE FLUID
LEVEL IN A TANK
Helmut Denz, Stuttgart, and Andreas Blumenstock, Ludwigs-
burg, both of Germany, assignors to Robert Bosch GmbH,
Stuttgart, Germany
Filed Aug. 12, 1993, Ser. No. 107,659
Claims priority, application Germany, Feb. 4, 1992, 4203099
Int. Cl.⁶ G01F 23/00, 23/14

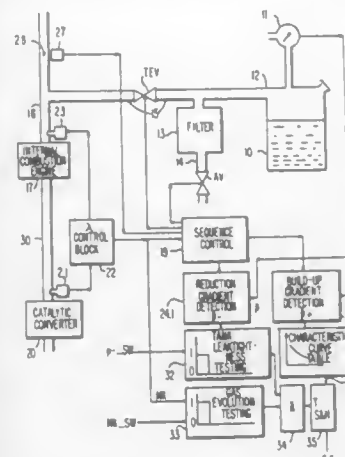
U.S. Cl. 73—291 **12 Claims**

1. A method for detecting a fluid level of fuel in a tank of a motor vehicle, the method comprising the steps of assessing tank conditions whether the tank at least achieves a predetermined leaktightness and whether the fuel vaporized less than corresponds to a predetermined value; and

if the conditions are fulfilled, detecting a fuel level, said detecting including subjecting a volume of the tank to pressure changes, determining an associated value of a pressure change gradient parameter from at least one

achieved pressure change and one time period associated therewith due to said pressure changes, and estimating an instantaneous value of the fluid level from a known interrelation between the pressure change gradient parameter and the fluid level, said subjecting includes obtaining the pressure change in form of a build-up of partial vacuum in the tank with a tank venting system by closing a shut-off valve in a venting line of an adsorption filter connected to the tank and opening a tank venting valve in a valve line between the adsorption filter and an intake line of an internal combustion engine of the motor vehicle.

12. A device for detecting a fluid level of fuel in a tank of a motor vehicle, comprising tank leaktightness testing means;

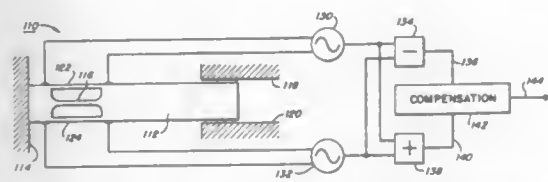


gas evaluation testing means for testing whether the fuel in the tank vaporizes; pumping-out/sequence control means for subjecting the tank to a pressure change with respect to time; gradient detecting means for detecting a value of a pressure change gradient parameter from at least one pressure change and one time period associated therewith; and fluid level output means which receives signals from said tank leaktightness testing means, said gas evaluation testing means, and said gradient detecting means in order to output an instantaneous value of the fluid level with the aid of a known interrelationship between the pressure change gradient parameter and the fluid level whenever the tank is sufficiently leaktight and the vaporization of the fuel is sufficiently low.

5,379,639
COMBINED FORCE TRANSDUCER AND
TEMPERATURE SENSOR

Rand H. Hulsing, II, Redmond; Charles K. Lee, Seattle, and Steven A. Foote, Issaquah, all of Wash., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Dec. 10, 1992, Ser. No. 988,444
Int. Cl.⁶ G01P 15/00

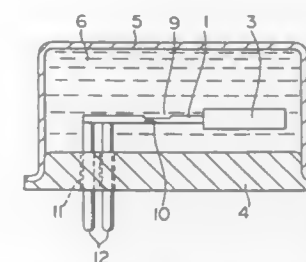
U.S. Cl. 73—517 AV **11 Claims**



1. A transducer for providing a signal representative of mechanical deflection and of temperature, comprising:
a deflectable member;

a pair of vibratory members affixed to said deflectable member, said deflectable member and said vibratory members cooperating to cause the frequency of vibration of one of said members to increase and the frequency of vibration of the other to decrease upon deflection of the deflectable member, the difference in the frequencies of vibration being indicative of the magnitude of the deflection of the deflectable member; and means for providing a signal representative of the average frequency of vibration of said vibratory members, said average frequency representative signal being representative of temperature.

5,379,640
SEMICONDUCTOR ACCELERATION DETECTING
APPARATUS
Masahiro Yamamoto, Itami, Japan, assignor to Mitsubishi
Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 8, 1993, Ser. No. 44,003
Claims priority, application Japan, Sep. 9, 1992, 4-240586
Int. Cl.⁶ G01P 15/12
U.S. Cl. 73—517 AV 3 Claims



1. A semiconductor acceleration detecting device comprising:
an acceleration detecting beam having opposed first and second ends and including a flexing diaphragm intermediate the first and second ends on which a gauge resistor is disposed, said gauge resistor being connected to a bridge circuit;
a substrate; and
lead pins contacting and supporting the first end of said acceleration detecting beam and fixed to said substrate, said lead pins being directly electrically connected to said bridge circuit for input and output of electrical signals to and from said bridge circuit, the second end of said acceleration detecting beam being free to move in response to applied accelerations, thereby flexing said flexing diaphragm.

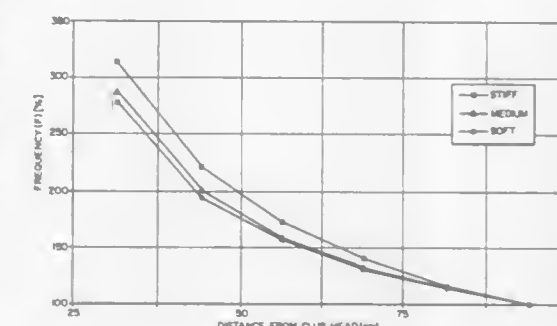
5,379,641
METHOD FOR MEASURING THE DEFLECTION IN THE
SHAFT OF A GOLF CLUB FOR CONTROLLING THE
DYNAMIC LOFT ANGLE OF A CLUB
Jukka Paasilvaara, Paris, France; Matti Suominen, Vantaa, and
Pekka Tiikkainen, Mäntymäki, both of Finland, assignors to
Exel Oy, Finland
Filed Jun. 7, 1993, Ser. No. 73,347
Claims priority, application Finland, May 4, 1993, 932001
Int. Cl. G01H 9/00

U.S. Cl. 73—579 4 Claims

1. A method for measuring the deflection in the shaft (3) of a golf club for controlling the dynamic loft angle of a club, the method comprising:

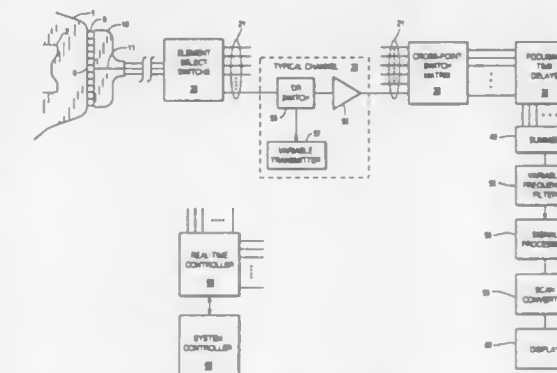
- (a) fixedly clamping the shaft (3) at a certain distance from a club head (5),
- (b) setting the club head (5) in vibration,
- (c) measuring the vibration frequency while the shaft (3) is clamped at the clamping distance,
- (d) releasing the shaft (3) from clamping,

(e) repeating steps (a) through (d) at varying distances from club head (5), and



(f) setting up a frequency profile for shaft (3) using the obtained measurements.

5,379,642
METHOD AND APPARATUS FOR PERFORMING
IMAGING
Wilbur A. Reckwerdt, Campbell; Sved O. Ishrak, Los Gatos, and
Wanqun Bao, Santa Clara, all of Calif., assignors to Diasonics
Ultrasound, Inc., Milpitas, Calif.
Filed Jul. 19, 1993, Ser. No. 93,808
Int. Cl.⁶ G01N 29/00
U.S. Cl. 73—625 42 Claims



1. A method of imaging an object using energy waves, said method comprising the steps of:

- (i) selecting a plurality of focal depths within the object, wherein each of said plurality of focal depths corresponds to one of a plurality of zones, and further wherein each of said plurality of zones has a depth and a lateral length that is substantially perpendicular to the depth; and
- (ii) sending a plurality of energy waves to one of said plurality of zones as a plurality of scan lines transmitted one at a time across the lateral length of said one of the plurality of zones, wherein the energy waves are focused at said one of the plurality of focal depths within the object, such that the waves are reflected from discontinuities within the object to produce a plurality of echo signals, wherein said one of the plurality of zones, corresponding to said one of the plurality of focal depths, is scanned along the entire lateral length before focusing at focal depths other than said one of the plurality of focal depths;
- (iii) receiving the plurality of echo signals;
- (iv) performing steps (ii) and (iii) for each one of the plurality of zones; and
- (v) generating an image of the object in response to the plurality of echo signals.

5,379,643
MOUNT ASSEMBLY FOR USE WITH VIBRATION
TRANSDUCERS

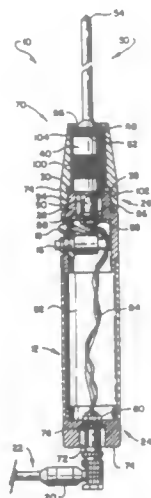
James K. Taylor, Columbus, Ohio, assignor to 1RD Mechanical, Inc., Columbus, Ohio

Filed Jul. 21, 1993, Ser. No. 95,667

Int. Cl.⁶ G01N 29/04

U.S. Cl. 73—654

20 Claims



1. A mount assembly for use with a vibration transducer of a variety positioned at a machine point under evaluation, said transducer having a transducer contact surface including a threaded coupler connectable with a threaded coupling stud, and an oppositely disposed connector end including a back surface and a multiple lead transducer connector of predetermined configuration for removable coupling with a corresponding multiple lead cable connector of a multiple lead transmission cable, comprising:

a hand support component having a hand graspable handle portion extending between a forward mount portion and a rearward portion, said forward mount portion including a contact surface and a multiple lead intermediate connector configured in correspondence with said cable connector for removable coupling with said multiple lead transducer connector, a second said transducer connector configured in correspondence with said multiple lead transducer connector and mounted upon said hand support component for removable connection with said multiple lead cable connector, and a first connector component formed upon said hand support component at said forward mount portion;

lead means for electrically coupling said second transducer connector and said intermediate connector;

a probe having a contact end for positioning in abutting engagement with said machine point and extending to a base portion having a rearwardly disposed support surface and an oppositely disposed retention surface;

connector means for removably, threadably connecting said probe base portion with said vibration transducer threaded coupler; and

a forward retainer having a rearward portion including a second connector component configured for effecting a constrictively tightening connection with said first connector component, having a hollow interior extending to an interior abutting surface surmounting a tip opening and configured for positioning over said vibration transducer and said probe when said multiple lead transducer connector is coupled with said multiple lead intermediate connector, said transducer back surface is in abutment with said forward mount portion contact surface, said probe support surface is abutably engaged with said transducer contact surface and said interior abutting surface is in abutment with said probe retention surface

said forward retainer urging said probe into compressive

contact with said vibration transducer and said vibration transducer into compressive contact with said forward mount portion contact surface when said forward retainer second connector component effects said constrictively tightening connection.

5,379,644
STRAIN OR STRESS GAUGE AND METHOD FOR
DETECTING STRAIN OR STRESS OF STRUCTURE
USING THE SAME, AND PLASTIC COMPOSITE
MATERIAL FOR FOREKNOWING PROGRESS OF
BREAKDOWN OF STRUCTURE AND METHOD USING
THE SAME

Hiroaki Yanagida, Chofu; Masaru Miyayama, Kawasaki; Norio Mnto, Sagami; Minoru Sugita, Tokyo; Teruyuki Nakatsuji, Tokyo, and Yasushi Otsuka, Tokyo, all of Japan, assignors to Shlmizu Construction Co., Ltd., Tokyo and Hiroaki Yanagida, Chofu, both of Japan

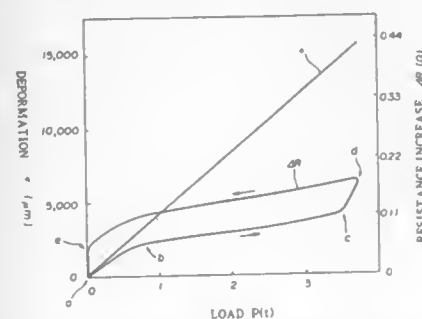
Filed Jul. 24, 1992, Ser. No. 919,526

Claims priority, application Japan, Aug. 15, 1991, 3-205303; Aug. 15, 1991, 3-205304

Int. Cl.⁶ G01B 7/16; G01L 1/18

U.S. Cl. 73—787

18 Claims



1. A method for detecting strain or stress of a structure using a strain or stress gauge, which comprises a bundle of electrically conductive fibers and a pair of terminals provided on both ends of the bundle for measuring an electric resistance of the bundle of electrically conductive fibers, wherein the bundle of electrically conductive fibers has a characteristic of electric resistance comprising, a first stage of relatively intensive increase, a second stage of moderate increase after the first stage, and a third stage of intensive increase during load increase in a higher strain range near the point of tensile rupture, said stages accompanying an increase of the load on the bundle of electrically conductive fibers, and which characteristic comprises a shift to a higher value of resistance with respect to the initial resistance value after the load is removed; the method comprising the steps of:

preparing data of said characteristic of electric resistance of a bundle of electrically conductive fibers in a strain or stress gauge, which data includes the three stages of increase and the shift in resistance to a higher value; applying the strain or stress gauge to the structure; measuring the electric resistance of the bundle of electrically conductive fibers of the strain or stress gauge; and determining the approach of the maximum stress in the higher strain range near the point of tensile rupture by comparing the measurement value or the change thereof with the previously provided data of said characteristics of electric resistance, which maximum stress was applied to the bundle of electrically conductive fibers in the past.

5,379,645
TEST CELL FOR APPLYING DIRECTIONALLY
VARIABLE THREE DIMENSIONAL STRESS FIELDS TO
A TEST SPECIMEN

Brian G. D. Smart, Falkirk, United Kingdom, assignor to Heriot-Watt University, Scotland, United Kingdom

PCT No. PCT/GB92/00172, § 371 Date Jul. 23, 1993, § 102(e)

Date Jul. 23, 1993, PCT Pub. No. WO92/14131, PCT Pub. Date Aug. 20, 1992

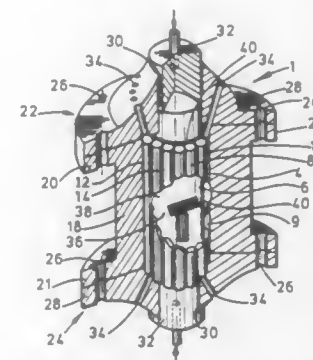
PCT Filed Jan. 30, 1992, Ser. No. 90,153

Claims priority, application United Kingdom, Feb. 1, 1991, 9102248

Int. Cl.⁶ G01N 3/08

U.S. Cl. 73—794

12 Claims



1. A test cell suitable for use in applying directionally variable three dimensional stress fields to a polygonal—section test specimen which test cell comprises a cell body having a barrel extending therethrough formed and arranged for receiving a said test specimen therein, said barrel having an inside wall and a central axis, characterized in that said barrel has an array of elongate tubes disposed in side-by-side relation lining the inside wall of said barrel extending substantially axially along said barrel and substantially parallel to said central axis of the barrel, and said tubes having flexible side walls and being formed and arranged for connection, in use, to a pressurized fluid supply means, said test cell including control means formed and arranged for supplying at least one said tube with pressurized fluid at a different pressure to that in another said tube thereby to provide an angularly variable radial pressure loading on a said test specimen mounted in said barrel.

5,379,646
SEATBACK LOAD APPLYING DEVICE

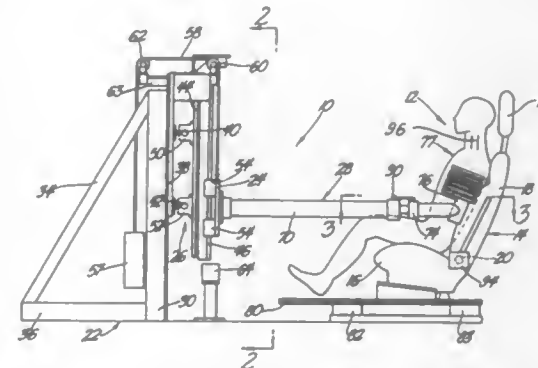
Dennis V. Andrzejak, Royal Oak; William E. Hering, Washington, and David C. Viano, Bloomfield Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 20, 1993, Ser. No. 123,209

Int. Cl.⁶ G01N 19/00

U.S. Cl. 73—804

10 Claims



1. A seatback load applying device for determining the

deflection characteristics of a seat assembly which includes a seatback portion and cushion portion supported in a fixed position and having a dummy seated therein, said device comprising a stanchion, a carriage mounted on said stanchion for movement along a horizontal axis and a vertical axis, a longitudinally extendable force applying member having one end thereof mounted on said carriage and the other end thereof connected to said dummy, means connected to said carriage for counterbalancing the weight of said carriage and said force applying means, and means operatively associated with said carriage and said force applying member and also with said seat assembly for providing output signals for determining the deflection of said seatback in relation to the force applied to said dummy.

5,379,647
HOLE ELONGATION TESTING SYSTEM

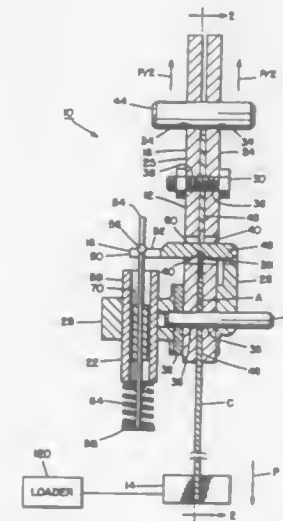
Glen R. Sherwin, Brentwood, Tenn., assignor to Avco Corporation, Providence, R.I.

Continuation of Ser. No. 880,239, May 8, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,628

Int. Cl.⁶ G01N 3/08

U.S. Cl. 73—834

18 Claims



1. An apparatus for measuring deformation of a test article, the apparatus comprising:

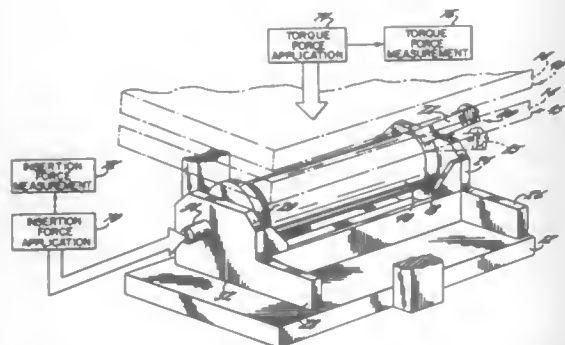
a testing attachment having means for receiving a first portion of the test article, means for fixedly connecting the test article to a frame of the testing attachment, and means for measuring the distance between two locations on the test article inside the means for receiving, the means for measuring including a first member for positioning in a hole of the test article inside the means for receiving and a second member for positioning on a top surface of the test article inside the means for receiving, the means for measuring measuring the distance between the first member and the top surface as the test article is deformed; and means for moving the testing attachment relative to a second portion of the test article to thereby deform the test article.

5,379,648
METHOD AND APPARATUS FOR TESTING CHEW-OUT
STRENGTH OF PAPERBOARD CORE
Ronald C. Tiffin, Surrey, Canada, assignor to Sonoco Products
Company, Hartsville, S.C.

Filed Jul. 26, 1993, Ser. No. 97,771
Int. Cl.⁶ G01N 3/00

U.S. Cl. 73-847

21 Claims



1. An apparatus for testing the chew-out strength of a tubular core having first and second opposed ends comprising: clamping means for clamping the core to prevent rotation thereof;
a splined chuck element for partial axial insertion into one end of the core comprising an axially tapered member having a plurality of axially elongate splines distributed circumferentially on the exterior surface thereof;
insertion means for inserting the splined chuck element into the core to positively engage and embed the splines of the splined chuck element into the first end face of the core at a predetermined axial force;
torquing means for applying increasing torque at a controlled rate to the splined chuck element; and
means for measuring a force representative of the torque applied to the splined chuck element.

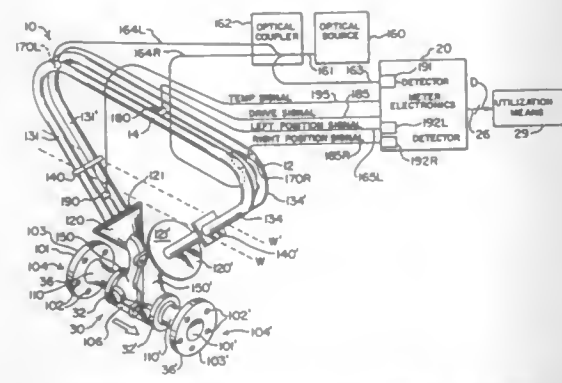
5,379,649
CORIOLIS EFFECT METER USING OPTICAL FIBER
SENSORS

Paul Z. Kalotay, Lafayette, Colo., assignor to Micro Motion, Inc., Boulder, Colo.

Filed Dec. 23, 1991, Ser. No. 809,146

U.S. Cl. 73-861.38

23 Claims



1. A Coriolis mass flowmeter for measuring the mass flow rate of material through a conduit, said flow meter comprising:
- (a) at least one flow tube having an inlet and an outlet;
 - (b) means for coupling said at least one flow tube when in

use, with a conduit to provide flow of material through said at least one flow tube from said inlet to said outlet;

(c) means for vibrating said at least one flow tube so that the vibration of said at least one flow tube and the flow of material through said at least one flow tube together produce a resultant oscillation of said at least one flow tube; and

(d) optical fiber means that, in use, bend in response to said oscillation of said at least one flow tube for optically measuring said oscillation of said at least one flow tube to provide for measurement of the mass flow rate through the conduit, wherein said optical fiber means comprises at least one optical fiber capable of providing optical attenuation in response to microbending of said at least one optical fiber.

5,379,650
DIFFERENTIAL PRESSURE SENSOR FOR
RESPIRATORY MONITORING

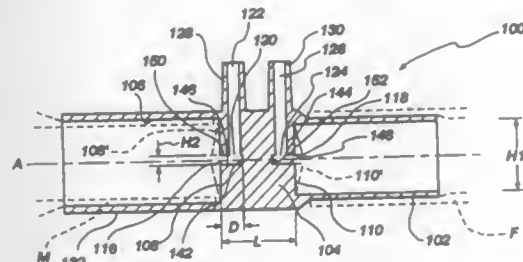
Scott A. Kofoed, and Joseph A. Orr, both of Salt Lake City, Utah, assignors to Korr Medical Technologies Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 949,573, Sep. 23, 1992. This application Aug. 24, 1993, Ser. No. 111,161

Int. Cl.⁶ G01F 1/46; A61B 5/087

U.S. Cl. 73—861.52

40 Claims



1. A differential pressure sensor for measuring respiratory gas flow, said differential pressure sensor comprising:
a tubular housing having a bore and a longitudinal axis; a strut diametrically disposed and longitudinally extending within said tubular housing bore,
said strut having a first end face, a second end face, a first side face, a second side face, and an axial length along the longitudinal axis of said tubular housing;
first and second longitudinally spaced notch means in said strut located proximate said longitudinal axis of said tubular housing for allowing said respiratory gas flow thereinto, said first notch means extending from said first end face axially inward into said strut and from said first side face to said second side face, said second notch means extending from said second end face axially inward into said strut and from said first side face to said second side face; and
first and second pressure ports respectively opening into said first and second notch means from first and second lumens contained within said strut and extending to the exterior of said tubular housing.

5,379,651
POINT OPTICAL BEAM ELECTRONIC ROTAMETER
James Doolittle, Kalispell, Mont., assignor to Semitool, Inc.,
Kalispell, Mont.

Filed Feb. 7, 1994, Ser. No. 193,785

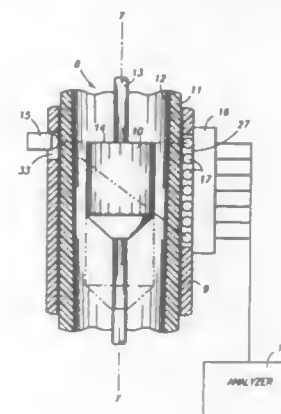
U.S. Cl. 73-861.56

9 Claims

1. An electronic flowmeter, comprising:
a flow tube having a flow channel; said flow tube serving to convey a fluid stream longitudinally through the flow channel for which the flow rate is to be measured;

- a flow-responsive member movable within the flow channel of the flow tube; said flow-responsive member being movable within the flow channel along a path which extends longitudinally along the flow tube in response to varying flow rates of the fluid stream;
- a point beam source for producing an optical beam which beams from a point location across the flow tube;
- a detector array mounted adjacent the flow tube in opposing relationship to the optical beam so that the optical beam passes across the flow channel and is detected by the detector array; the detector array having detector pixels arranged at different longitudinal positions along the flow tube;

said optical beam being capable of detection by said detector array when the optical beam directly impinges upon one or more of the pixels of said detector array;



- said detector array being arranged so as not to significantly detect an optical beam from a source other than said point beam source;
- said flow tube being sufficiently transparent to allow the optical beam to beam from said point beam source across the flow tube and upon said detector array;
- a shadow-defining edge formed upon the flow-responsive member;
- said shadow-defining edge, point source of radiation, and detector array being constructed and positioned so that the shadow-defining edge casts a shadow line when the flow-responsive member is positioned between the point beam source and the detector array; said shadow line functioning to move upon the detector array in response to movement of said flow-responsive member along said path; said shadow line being defined by said shadow-defining edge for all positions of the shadow line upon pixels of the detector array.

5,379,652
METHOD AND DEVICE FOR MEASURING THE NIP
FORCE AND/OR NIP PRESSURE IN A NIP
Harri Allonen, Jyväskylä, Finland, assignor to Valmet Paper
Machinery Inc., Helsinki, Finland

Filed Sep. 14, 1993, Ser. No. 121,743

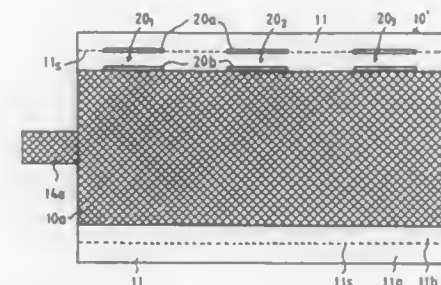
Claims priority, application Finland, Sep. 16, 1992, 924138
Int. Cl.⁶ G01L 5/00

U.S. Cl. 73—862.55

20 Claims

12. A device for measuring the nip force, the nip pressure and/or the distribution of the nip force or nip pressure in a press nip formed by first and second revolving press members utilized in the manufacture of paper, comprising
detectors placed in operative relationship with a surface of the first press member in an axial direction thereof, said detectors detecting a force in a nip formed in part by the first press member and generating a signal based thereon,
a first telemeter transmitter/receiver coupled to the first

press member, said first transmitter/receiver receiving the signals generated by said detectors, a second telemeter transmitter/receiver spaced from the first press member to form a two-way wireless telemetric connection between said first transmitter/receiver and said second transmitter/receiver through which signals from said detectors are passed, and



control means connected to said second transmitter/-receiver, control data from said control means being transferred through said second transmitter/receiver and said first transmitter/receiver via the telemetric connection to regulate the flow of measurement data from selected ones of said detectors being transferred via the telemetric connection to said control means.

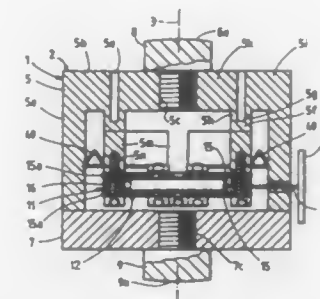
5,379,653
FORCE MEASURING DEVICE
Kaspar Saner, Dübendorf, Switzerland, assignor to K-Tron
Technologies, Inc., Wilmington, Del.

Filed Oct. 28, 1992, Ser. No. 967,432
Claims priority, application Switzerland, Oct. 31, 1991,
03184/91

U.S. Cl. 73—862.59

Int. Cl.⁶ G01L 1/10

19 Claims



1. A force measuring device, comprising:
 - (b) means for applying the tensioning force to the transducing element when input forces are transmitted to the transducer; and
 - (5) a force transmission device which transmits the input forces from the ring to the transducer when the ring is deformed,
 - (a) the force transmission device having a frame and two straps,
 - (b) the frame being connected to the ring at first connecting points distributed along a circumference of the frame to deform said frame when said ring is deformed,
 - (c) each strap being connected to the frame at a respective second connecting point a distance away from the first connecting points, and
 - (d) each strap being connected to the transducer at a third connecting point to transmit the input forces from the frame to the transducer via the straps when the frame is deformed.

a cantilever free-end type feed screw shaft having a support end rotatably supported on a base;
a nut screwed on the feed screw shaft and secured to a moving member guidingly movable relative to the base;
a vibration damping member loosely fitted on a mounting portion provided at the free end of said feed screw shaft; and
means for allowing lubricating oil which penetrates into a space formed by said vibration damping member and said free end of said feed screw to escape from said space, said means including a recessed portion formed on an inner circumferential surface of said vibration damping member.

5,379,661

LOADING CAM DEVICE

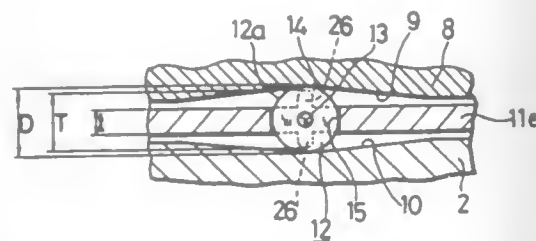
Masaki Nakano, Hiroshi Fukushima, and Hisashi Machida, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo and Nissan Motor Co., Ltd., Kanagawa, both of Japan
Filed Mar. 12, 1993, Ser. No. 31,390

Claims priority, application Japan, Mar. 13, 1992, 4-021982[U]

Int. Cl.⁶ F16H 15/38, 25/18

U.S. Cl. 74—99 A

1 Claim



1. In a loading cam device constructed of:
a first cam surface having concavities and convexities alternately arranged in a circumferential direction,
a second cam surface having concavities and convexities alternately arranged in a circumferential direction and located axially opposite the first cam surface,
a ring-shaped retainer disposed between the first cam surface and the second cam surface and defining plural pockets formed at angular intervals in the retainer, and
a like plural number of rolling members maintained in contact with the first and second cam surfaces while rotatably held within the respective pockets, the improvement wherein the thickness of the retainer is set greater at a location adjacent to each pocket to have a value a little smaller than the outer diameter of the corresponding rolling element but is set smaller at a location remote from the pocket to have a value smaller than the thickness at the location adjacent to the pocket, so that raised portions are formed at locations flanking each pocket from both sides in a thicknesswise direction of the retainer.

5,379,662

GEAR LUBRICATION

Andriolo Livio, Oggiono, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 24, 1993, Ser. No. 110,892

Claims priority, application United Kingdom, Aug. 28, 1992, 9218364

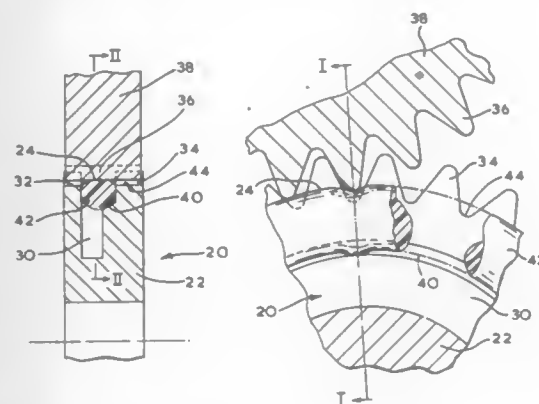
Int. Cl.⁶ F16H 57/04

U.S. Cl. 74—468

8 Claims

1. A gear comprising a substantially disc-like wheel having a periphery, teeth arranged around the periphery of the wheel, a groove running through and below the teeth and an elastomeric ring, wherein the groove receives lubricant and is closed

by the elastomeric ring such that, when a meshing gear having teeth engages the gear, the teeth of the meshing gear disturb



the elastomeric ring to permit the lubricant to leak from the groove.

5,379,663

MULTI-AXIAL JOY STICK DEVICE

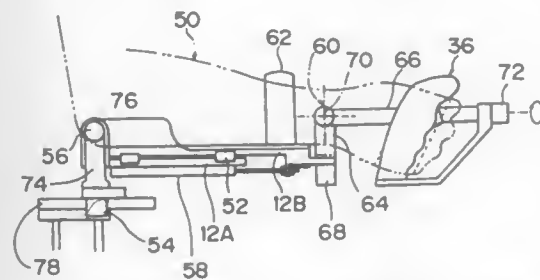
Kenji Hara, Tamano, Japan, assignor to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 844,857, Mar. 3, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,340

Int. Cl.⁶ G05G 9/04

U.S. Cl. 74—471 XY

5 Claims



1. A multi-axial joy stick device for remotely controlling a multi-axial controlled device, comprising:
an extendable arm on which an operator's arm is set, said arm having a movable arm portion extendable by a sliding joint;
a base bracket which connects a rear end portion of said extendable arm to a base and a top bracket erected from said extendable arm at an end connected to said base, said base bracket and said top bracket having two rotational shafts perpendicular to each other at said rear end portion of said arm to form a rotational joint at an operator's elbow, one of said two rotational shafts being a horizontal rotary shaft secured to a top portion of said top bracket;
a handle provided at a front end portion of said extendable arm; and
a first front bracket which connects said handle to the arm and which provides two front rotational shafts perpendicular to each other at said front end portion of said arm and a second front bracket with another rotational shaft connected to said first front bracket with an axis of said another rotational shaft extending through an intersecting point of the axes of said two shafts of said first front bracket wherein said first and second front brackets are arranged so that the intersecting point of the axes of the front rotational shafts coincides with the center of an operator's wrist set on the device to form a rotational joint at said operator's wrist.

5,379,664

HYDRAULIC MANIPULATOR

Keith Kershaw, Abingdon; John D. Asquith, Wantage, and Peter Shilton, deceased, late of Newbury, all of United Kingdom by Molly Patricia Shilton, administratrix, assignors to United Kingdom Atomic Energy Authority, Didcot, England

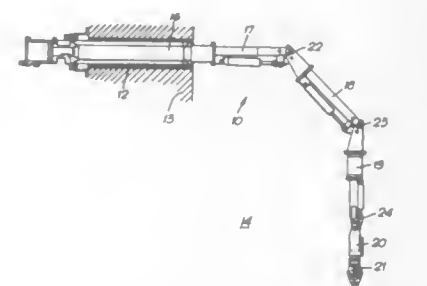
Filed Sep. 27, 1993, Ser. No. 127,073

Claims priority, application United Kingdom, Oct. 7, 1992, 9221127

Int. Cl.⁶ B25J 17/00, 18/00

U.S. Cl. 74—490.05

4 Claims



1. A manipulator with a plurality of hydraulically operable joints, each said joint comprising a first arm member pivotally linked at a centre axis to a second arm member, each arm member being at least in part of hollow box section with spaced-apart walls, and the pivotal linkage being provided by two spaced-apart pivotal links between corresponding walls of the arm members, a linear hydraulic actuator pivotally connected at one end to the first arm member and at the other end to two linking members, the first linking member being pivotally connected to the first arm member, and the second linking member being pivotally connected to the second arm member, wherein the first linking member comprises two parallel spaced-apart link bars each pivotally connected at one end to the hydraulic actuator, and each pivotally connected at the other end to a respective wall of the first arm member by respective spaced-apart pivotal links on a common axis, the manipulator also comprising at least one cable extending along the first arm member and extending to the second arm member passing substantially through the centre axis of the joint.

5,379,665

BICYCLE PEDAL

Masashi Nagano, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jun. 4, 1992, Ser. No. 893,544

Claims priority, application Japan, Jun. 19, 1991, 3-46173[U]

Int. Cl.⁶ G05G 1/14; F16C 13/00

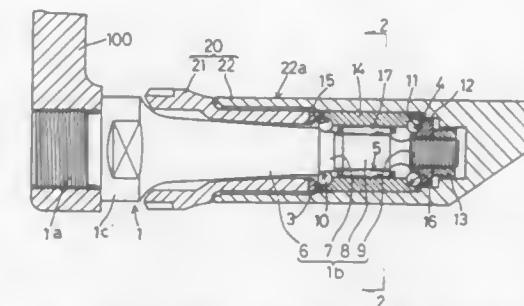
U.S. Cl. 74—594.4

3 Claims

1. A bicycle pedal adapted to be attached to a crank arm comprising:

a pedal shaft having an attachment portion formed at one end thereof for attachment to the crank arm, said pedal shaft defining an elongated proximal portion adjacent said attachment portion and a small diameter portion formed adjacent the other end thereof and having a smaller diameter than said attachment portion;
a first and second ball bearings arranged in a region of said small diameter portion and spaced apart from each other axially of said pedal shaft for supporting a tread surface in a radial direction of said pedal shaft;
a needle bearing disposed in said region of said small diame-

ter portion, wherein said needle bearing is disposed between said first ball bearing and said second ball bearing; and



a pedal body rotatably supported on said small diameter portion through said first and second ball bearings and said needle bearing, said pedal body defining said tread surface on a surface thereof.

5,379,666

REPLACEMENT APPARATUS FOR FLUORESCENT BULBS

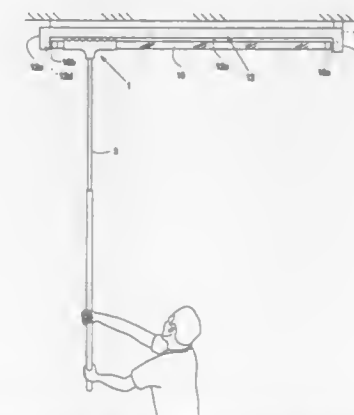
James H. Held, 13303 Marceline, San Antonio, Tex. 78232
Division of Ser. No. 982,956, Nov. 30, 1992, Pat. No. 5,330,243.

This application Nov. 19, 1993, Ser. No. 156,022

Int. Cl.⁶ H01K 3/32

U.S. Cl. 81—53.1

1 Claim



1. Apparatus for inserting cylindrical fluorescent bulbs in axially spaced sockets mounted in out of reach overhead locations on a housing having a downwardly facing wall between said sockets, said bulbs being of the type having a single central rigid contact prong projecting axially from each end of the bulb; said sockets defining axially aligned tubular contacts for respectively receiving said prongs, at least one of said tubular contacts being axially spring biased toward the other prong, comprising:

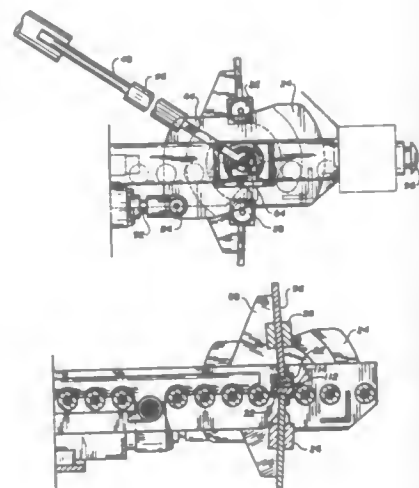
an elongated tubular handle;
a one piece bulb grasping unit formed by molding of a semi-rigid, resiliently deformable plastic material;
said grasping unit defining a socket for rigidly securing one end of said handle therein;
said bulb grasping unit being elongated along an axis perpendicular to the axis of said tubular handle and being of generally semi-cylindrical cross-section with diametrically opposed longitudinal edges; said longitudinal edges having a wave-like configuration to produce a recess of generally semi-cylindrical cross-section coaxial with said axis; said longitudinal edges having axially spaced, arcuate portions thereof with an arcuate extent slightly greater than 180°.

the internal radius of said recess being substantially equal to, but not less than the external radius of said fluorescent bulb, whereby said fluorescent bulb can be secured in, or removed from said recess by a generally radial movement of said grasping unit relative to a fluorescent bulb to resiliently deform said axially spaced arcuate portions of said recess; and
said tubular handle having a length sufficient to move a grasped bulb to or from an axially aligned position relative to said sockets without requiring a ladder.

5,379,667
PINCH CUTTING METHOD AND APPARATUS
Michael L. Lanber, Uniontown, Ohio, assignor to General Tire, Akron, Ohio

Filed Oct. 28, 1991, Ser. No. 783,516
Int. Cl.⁶ B26D 5/16
U.S. Cl. 83—16

15 Claims



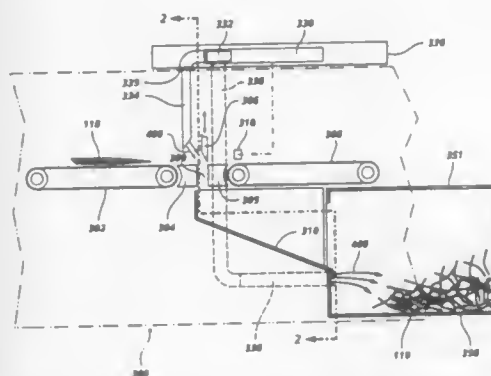
1. A method of cutting lengths of material comprising the steps of:
passing a length of material between a pair of vertically opposed cutting blades having ends which are operably connected to cam followers;
rotating a pair of rotatably driven cam plates having arcuate scroll grooves cut therein to selectively engage said cam followers to translate rotational movement of said cam plates to generally vertical movement of said cutting blades to cut said material;
disengaging said cam followers from said grooves in said cam plates; and
pivoting said pair of cutting blades from a position which is generally perpendicular to a plane containing said length of material to a position generally parallel to said plane containing said length of material intermediate subsequent cutting sequences.
12. An apparatus for cutting lengths of material, comprising:
a frame;
a pair of generally planar rotatably driven cam plates having arcuate scroll grooves cut therein, each of said cam plates being rotatably mounted to said frame;
two pairs of cam followers, each pair of cam followers being associated with one of said pair of cam plates and being selectively engageable with said arcuate scroll grooves to cause said cam followers to move toward each other in response to rotation of said cam plates when engaged with said cam and to permit independent movement of said cam plates and said cam followers when not so engaged;
at least one pneumatically operated cylinder operatively connected at one end to said frame and at the other to one of said cam plates;
a pair of vertically opposed cutting blades each having first

and second ends, said first ends being operably connected with one of said pairs of cam followers, said second ends being operably connected with the other of said pairs of cam followers, said pair of cutting blades being constructed from a metallic material and having electrically heated cutting surfaces; and
means to disengage said cam followers from said grooves in said cam plates and pivot said pair of cutting blades toward said rear end of said frame about a common point located on said frame, wherein said means to disengage said cam followers and pivot said cutting blades comprises a pneumatically operated cylinder operatively connected at one end to said frame and at the other end to said cutting blades.

5,379,668
TRIMMER BLOWER AND HIGH CAPACITY WASTE BIN
Robert C. Standing, Hilton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1993, Ser. No. 128,504
Int. Cl.⁶ B26D 7/18
U.S. Cl. 83—99

16 Claims



9. An electrophotographic printing machine having a finishing station including a sheet set trimming device having a trimmer blade and a trim waste bin, comprising:
an airflow source;
a first conduit operatively connecting said airflow source to a trimmer blade area, said first conduit directing the airflow through the trimmer blade area so that trim scraps are forced into said waste bin by the airflow;
a second conduit operatively connecting said airflow source to the waste bin so that airflow through said second conduit causes the waste bin to be filled efficiently with waste trimmings; and
a valve for alternating airflow between said first conduit and said second conduit.

5,379,669
PRECISION MITER GAUGE
Joseph L. Roedig, 8824 E. Old Spanish Trail, Tucson, Ariz. 85710

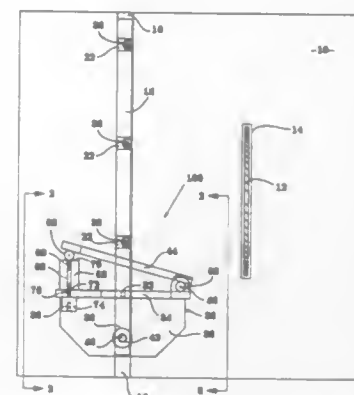
Filed Aug. 23, 1993, Ser. No. 109,948
Int. Cl.⁶ B27B 25/08

U.S. Cl. 83—421

18 Claims

1. A precision miter gauge for positioning a workpiece at a predetermined cutting angle with respect to a blade in a conventional table saw having a miter slot adapted for use with a conventional miter gauge, comprising:
(a) a guide bar adapted for slidable engagement within said miter slot in the table saw;
(b) a mounting plate rotatably connected to the guide bar through pivot means disposed therebetween;
(c) first locking means for releasably fixing the mounting plate to a predetermined angular position with respect to the guide bar;

- (d) a stationary plate rigidly attached to said mounting plate;
- (e) a hinged plate hingedly connected to said stationary plate by first hinge means and adapted to form a variable angle therebetween from zero degrees to less than 90 degrees, said hinged and stationary plates being disposed in parallel when said angle equals zero;
- (f) a plurality of gauge blocks, each having a predetermined thickness along a main axis corresponding to a desired predetermined angle between said stationary and hinged plates;



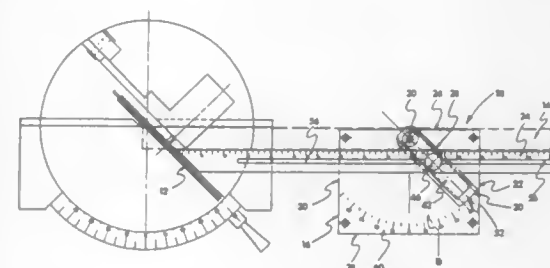
- (g) second hinge means connected to said hinged plate for hingedly fastening any one of said plurality of gauge blocks thereto; and
- (h) second locking means for releasably securing to said stationary plate said any one of said plurality of gauge blocks hingedly connected to said hinged plate, said any one of said plurality of gauge blocks being disposed with its main axis perpendicular to said stationary plate.

5,379,670
GUIDE FOR A MITRE SAW
Gordon Ferry, 12210 - 86 Street, Edmonton, Alberta, Canada T5B 3K9

Filed Jan. 13, 1994, Ser. No. 181,240
Int. Cl.⁶ B27B 27/06

U.S. Cl. 83—468

6 Claims



6. A guide for a mitre saw, comprising:
a. a base having a face with a first side edge, a second side edge, a first edge and a second edge;
b. a guide member pivotally mounted to the face of the base by a screw-form pivot pin having external threads, the guide member having an axially extending channel, the channel having inwardly and upwardly inclined sidewalls which form axially extending tracks, the screw-form pivot pin screws into the base, thereby locking the guide member to the base in a preselected angular position;
- c. a telescopic member having axially extending peripheral fins which engage the tracks in the channel of the guide member thereby securing the telescopic member to the guide member for co-axial telescopic movement, the telescopic member having a mounting pin with external

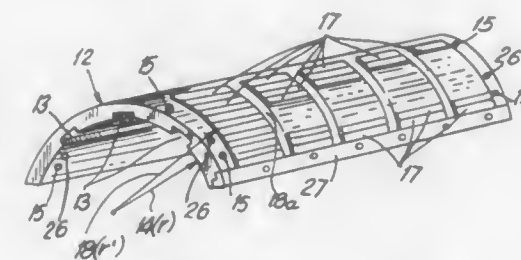
- threads and a remote end with a projecting pointer member;
- d. a ruler having an elongate mounting slot which telescopically receives the mounting pin such that the ruler is movable relative to the mounting pin toward the first side edge and the second side edge of the base within limits defined by the elongate mounting slot;
- e. a clamping member is threaded onto the external threads of the mounting pin thereby locking the ruler to the telescopic member and the telescopic member in a selected position relative to the guide member such that the position of the telescopic member determines the position of the ruler relative to the first edge and the second edge of the base; and
- f. a scale positioned on the base in the vicinity of the remote end of the telescopic member such that the projecting pointer member points to the scale thereby visually indicating the angular positioning of the guide member.

5,379,671
MAGNETIC SADDLE FOR NON-MAGNETIC DIE-CUTTING CYLINDERS
Pierson S. Kang, North Wales, Pa., assignor to Xynatech, Inc., Rio Rancho, N. Mex.

Filed Feb. 16, 1993, Ser. No. 17,725
Int. Cl.⁶ B26D 1/62, 7/26

U.S. Cl. 83—698.11

1 Claim



1. A magnetic saddle apparatus, comprising:
a segment of the wall of a cylinder;
an array of permanent magnets adhered to said wall;
mounting means for fastening said saddle apparatus to a die-cutting cylinder;
longitudinal channels on its underside to assist bending compliance to the die-cutting cylinder;
a gripping bar to prevent slippage of small area etched dies during operation of the die-cutting cylinder;
height and level adjusting screws;
longitudinal channels on its underside to assist compliance to a cylinder to which it is to be mounted; and
a gripping bar to prevent slippage of small area etched dies.

5,379,672
SAW BLADE WITH CUTTING WINGS
Milton L. Thomas, 1499 Emory Rd., Atlanta, Ga. 30306
Filed Jun. 22, 1993, Ser. No. 81,076
Int. Cl.⁶ B27B 33/08

U.S. Cl. 83—837

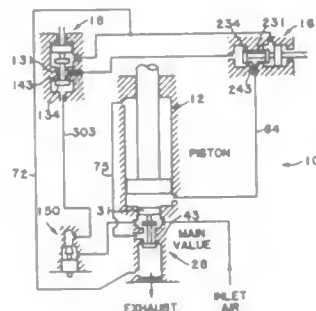
2 Claims

1. A saw blade for cutting a workpiece, the blade comprising:
a blade body;
a plurality of teeth located on an outer edge of said blade body, each tooth containing a leading edge in a predetermined cutting direction of said blade body and containing an outer cutting edge;
a first cutting wing extending from a first side of each tooth, said first cutting wing containing an edge concave in said predetermined cutting direction;

1. A hydraulic drive fashioned as one of a rotary or swivel device for NC or CNC controlled machine tools, feeding devices of such machine, manipulators, or robots with several rotary or swivel joints, the hydraulic drive comprising:
 - an axial-piston hydraulic motor forming a power drive;
 - a follow-up control valve for controlling a pressure medium supply with an electrically controlled desired position

value presetting and mechanical actual position value acknowledgement;
 an electric motor provided for the electrically controlled desired position value presetting, said electric motor being be activatable by output signals of a central NC or CNC control unit wherein a rotor of the axial-piston hydraulic motor is rotatably supported by a circular-cylindrical-tubular section of an output shaft thereof on an outer casing surface of an axial extension, the axial-extension being fashioned in a hollow tubular-shape and forming a pivot pin for the rotor of a housing section having said electric motor provided for the desired value presetting with the follow-up control valve being a pivot pin for the rotor of a housing section containing the electric motor; control channels which during operation of the hydraulic drive couple a pressure medium alternately fed and discharged through control connections of the follow-up control valve to and from linear cylinders of the rotor arranged in sequence as viewed in a circumferential direction of the rotor, said control channels are formed as sector-shaped outer grooves of the pivot pin and radial transverse channels of the rotor lead to drive channels of the linear cylinders of the rotor; and supply connections of the follow-up control valve connected to transverse bores of a housing of the follow-up control valve, with the transverse bores terminating in transverse channels of the pivot pin which, as viewed in the circumferential direction of the valve housing are arranged in an offset fashion and are connected by way of correspondingly offset longitudinal channels with connecting nipples arranged at the housing section forming the pivot pin with one of the transverse channels terminating into an inner groove of the circular-cylindrical tubular section of the rotor shaft of the axial-piston hydraulic motor which the circular-cylindrical tubular surrounds the pivot pin and an other of the transverse channel terminating into an outer groove of the pivot pin, a transverse channel of the rotor shaft ending in the outer groove and being located between the inner groove and an end of the rotor shaft on an output side, and one supply connection channel extended from the inner groove of the rotor shaft and the transverse channel to the end of the rotor shaft on the output side.

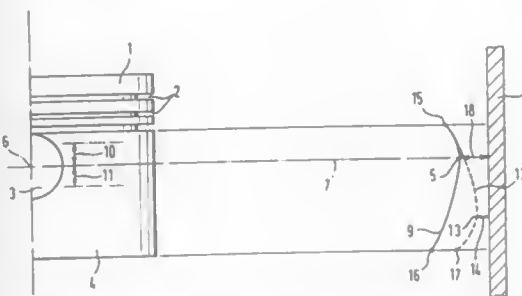
5,379,679
ACUTATOR WITH SERIES ARRANGED CONTROL VALVES
 Ronald C. Falter, and Robert Brouckson, both of Columbia, S.C., assignors to Cooper Industries, Inc., Houston, Tex.
 Filed Apr. 10, 1992, Ser. No. 867,254
 Int. Cl.⁶ F15B 11/08
 U.S. Cl. 91—424 10 Claims



1. A pneumatic power unit for single stroke tools comprising:
 a piston and cylinder assembly;
 a control system for said piston and cylinder assembly including:
 a main valve;

a first remote valve constructed and arranged for finger actuation;
 a second remote valve constructed and arranged for thumb actuation;
 said first and second valves being positioned relative to each other such that both valves can be actuated with a single hand;
 said first remote valve, said second remote valve and said main valve fluidically interconnected to each other such that the power unit is activated by either simultaneously or sequentially actuating both the first and second remote valves and deactivated by releasing either the first or second remote valve.

5,379,680
PISTON FOR AN INTERNAL COMBUSTION ENGINE
 Gerhard Bohm, Rosstal-Grossweismannsdorf, and Klaus Kofahl, Weinstadt, both of Germany, assignors to Alcan Deutschland GmbH, Germany
 PCT No. PCT/EP90/01600, § 371 Date Dec. 20, 1991, § 102(e) Date Dec. 20, 1991, PCT Pub. No. WO91/04429, PCT Pub. Date Apr. 4, 1991
 PCT Filed Sep. 25, 1989, Ser. No. 778,835
 Claims priority, application Germany, Sep. 25, 1989, 3931949
 Int. Cl.⁶ F16S 1/04
 U.S. Cl. 92—208 4 Claims

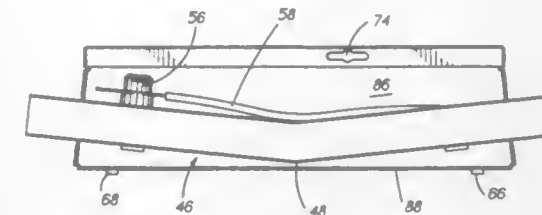


1. A piston for a combustion engine comprising:
 a generally cylindrical piston body having a head with at least one piston ring groove, said body having a height with a piston pin bore through said body and an axis of said bore extending perpendicular to said height;
 said height being divided into a compression height above the axis of the piston pin bore and a lower body below the axis of the piston pin bore;
 said piston body having regions of varying diameter along the height thereof, with a greater diameter, in the shape of a bulge, in a region of the axis of the piston pin bore, said bulge having an apex lying in a plane which is parallel to said piston pin bore axis, said plane lying above or below said piston pin bore axis at a distance which is a maximum 8% of a diameter of a cylinder fitting the piston and said piston body being free of inserts having a coefficient of expansion which is lower than a coefficient of expansion of the piston body.

5,379,681
PASSIVE FILTER INCLUDING A SELF-REGENERATING COMPOSITION OF MATERIALS FOR SORPTION OF GASEOUS SUBSTANCES
 Jarl-Erik Rolten, Magnebergskroken 5, S-122 31 Enskede, Sweden
 PCT No. PCT/SE92/00176, § 371 Date Sep. 16, 1993, § 102(e) Date Sep. 16, 1993, PCT Pub. No. WO92/16291, PCT Pub. Date Oct. 1, 1992
 PCT Filed Mar. 20, 1992, Ser. No. 119,080
 Claims priority, application Sweden, Mar. 21, 1991, 9100852
 Int. Cl.⁶ B01D 53/04
 U.S. Cl. 96—132 9 Claims

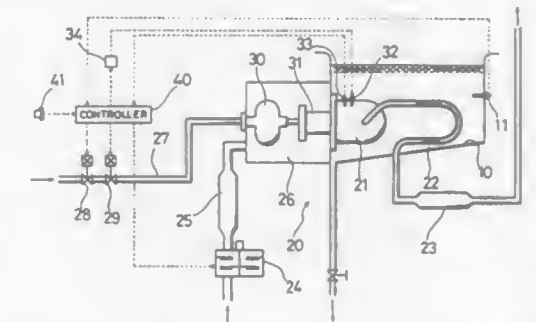
1. A passive filter for taking up gaseous substances from a space, including a porous, sorbating, self-regenerating material composition, including two material components (A, B) of which a first material component (A) consists of at least one porous material selected from the group consisting of perlite, zeolite, bentonite, silicon dioxide ground to powder and chris-tobalite, and a second material component (B) consists of at least one material with capability or taking up water molecules directly from the surrounding air, wherein the material components (A, B) are kept joined to a lattice by means of a binder, and wherein the material composition is in the form of a layer with a thickness of 0.5–5 mm upon one or more surfaces which completely or partially surround the space in which the odour substances can be present.

5,379,682
HOT WATER GENERATOR ASSEMBLY FOR COFFEEMAKER
 Michael A. Andrew, Milford; Walter Birdsell, Beacon Falls, and Stephen D. Mowers, Fairfield, all of Conn., assignors to Black & Decker Inc., Newark, Del.
 Filed Jan. 13, 1994, Ser. No. 181,122
 Int. Cl.⁶ A47J 31/00
 U.S. Cl. 99—281 5 Claims



1. A coffeemaker comprising:
 a housing;
 a water reservoir contained within the housing;
 a carafe supported on a base portion of said housing;
 a spreader mounted within said housing; and
 a hot water generator having an inlet conduit connected to the water reservoir and an outlet conduit connected to the spreader, said hot water generator having a generally shallow V-shape, said hot water generator having an inlet end connected to said inlet conduit and an outlet end connected to said outlet conduit and a longitudinally extending central portion, the longitudinal center of said central portion being disposed vertically belows aid inlet and outlet ends.

5,379,683
COOKER
 Susumu Ejiri, Toyooka; Makoto Kimura, Inazawa, and Hajime Hiraoka, Aichi, all of Japan, assignors to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan
 Filed Mar. 9, 1993, Ser. No. 28,335
 Claims priority, application Japan, Mar. 16, 1992, 4-022956[U]
 Int. Cl.⁶ A47J 37/12
 U.S. Cl. 99—331 18 Claims

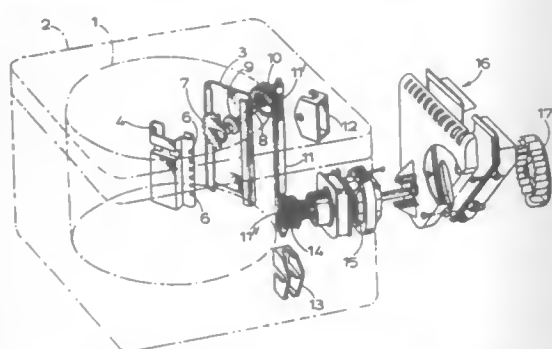


1. A cooker for cooking food items in a cooking medium, said cooker comprising
 heating means for heating said cooking medium to within a predetermined temperature range,
 temperature detecting means for detecting temperature of said cooking medium,
 temperature control means for controlling said heating means to start and stop heating based on the temperature of said cooking medium detected by said temperature detecting means so as to maintain said cooking medium within said predetermined temperature range;
 forcible heating control means for controlling said heating means to start forcible heating of said cooking medium irrespective of the temperature of said cooking medium as detected by said temperature detecting means; and
 temperature control resumption means connected with said temperature control means and with said forcible heating control means for producing a signal in response to the temperature of said cooking medium to stop forcible heating and start heating based on the temperature of said cooking medium.

5,379,684
DEEP FRYER
 Ian G. Ettridge, Stourton, England, assignor to Moulinex Swan Holding Limited, Birmingham, England
 Continuation of Ser. No. 24,100, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 783,847, Oct. 29, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,488
 Int. Cl.⁶ A41J 37/12
 U.S. Cl. 99—336 7 Claims

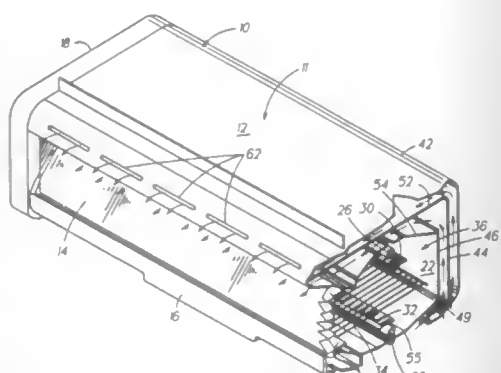
1. A deep fryer, comprising:
 a vessel in which a cooking medium is heated;
 a basket in which foodstuff to be fried is supported and lowered into the vessel to immerse the foodstuff in the cooking medium;
 transport means operative to cause the basket to be automatically raised and subsequently lowered in the vessel during a cooking cycle;
 control means for controlling the number of and timing of the automatic raising and subsequent lowering operations performed by the transport means, including monitoring means for monitoring the temperature of the cooking medium throughout the cooking cycle, the control means being operative to automatically vary at least one of the timing and the number of raising and subsequent lowering

operations performed during the cooking cycle in the event that the temperature of the cooking medium as



monitored by the monitoring means, varies from a predetermined cooking temperature.

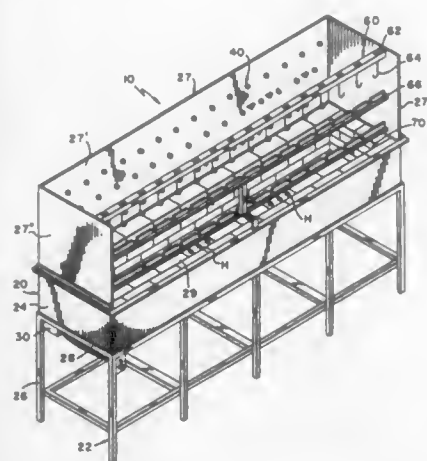
5,379,685
VENTING SYSTEM FOR AN ELECTRIC TOASTER
Charles Z. Krasznai, Fairfield, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Jan. 7, 1994, Ser. No. 178,997
Int. Cl. H05B 3/06; A47F 5/08; F24C 7/00
U.S. Cl. 99—389 **8 Claims**



1. An electric toaster suspended from a lower surface of a kitchen cabinet and including heating means for toasting a food product inserted into a toasting compartment comprising: an outer housing enclosing said toasting compartment including a vertically extending wall and a horizontally extending wall disposed substantially parallel to the lower surface of the kitchen cabinet; inner wall means spaced from the walls of the outer housing having a first leg spaced from and extending parallel to the outer housing vertical wall and a second leg spaced from and extending parallel to the outer housing horizontal wall; partition means extending between the horizontal and vertical walls of the outer housing and the first and second legs of the inner wall means to define inner and outer air paths; each of the air paths including a first vertically extending section and a second horizontally extending section in fluid flow communication with the first section; air inlet means positioned substantially at a lower end of the vertically extending section of the inner air path to enable relatively cool ambient air to enter into the inner air path, a relatively small portion of said air inlet means being in fluid flow communication with the vertically extending section of said outer air path to enable a limited quantity of air to flow into said outer air path; and first air outlet means positioned substantially at the end of the horizontal section of the inner air path from the vertical section, second air outlet means positioned substan-

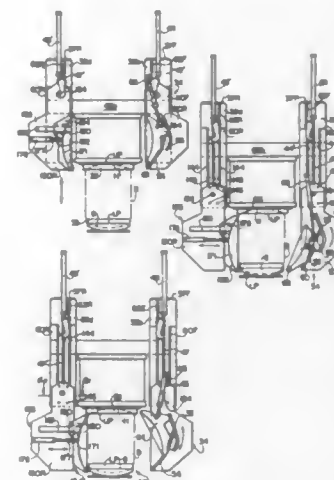
tially at the end of the horizontal section of the outer air path, said second air outlet means restricting the flow of air from said outer air path to form a substantially quiescent air insulating barrier in said outer air flow path, said inner wall means, said inner and outer air paths and said partition means minimizing the transfer of heat from the toasting compartment to the walls of the outer housing.

5,379,686
ROTISSERIE APPARATUS
Fernando Silva, 515 NW. 122 St., N. Miami Beach, Fla. 33168
Filed Nov. 23, 1993, Ser. No. 155,890
Int. Cl. A47J 37/04
U.S. Cl. 99—421 H **1 Claim**



1. A rotisserie apparatus for cooking articles of food and said apparatus including a heat source comprising:
A. housing means mounted above said heat source including a rear wall, two lateral walls perpendicularly mounted to said rear wall and said lateral walls being kept in a spaced apart and parallel relationship to each other by said rear wall, said lateral walls and said rear walls defining a space therein;
B. a plurality of rotatable means mounted to said rear wall and said rotatable means including a respective plurality of receiving shank members that protrude through said rear wall into said space, and wherein said receiving shanks include a cross-hatch thereon;
C. a plurality of skewer means removably mounted to said receiving shank members so that said skewer means engage and disengage to said shank members while rotating, and wherein the skewer means includes a shaft, having first and second ends, a point on said first end and an elongated channel running longitudinally substantially along the length of said shaft and said point being received by said cross-hatch of said receiving shanks;
D. a means for supporting said plurality of skewer means when said skewer means are engaged to said receiving shank members so that said skewer means are kept in a spaced apart and a parallel relationship with respect to each other and to said heat source, and wherein said means for supporting said plurality of skewer means includes a cross-bar, having hooks suspended therefrom, and a crenulated cross-bar, said hooks and said crenulated cross-bar demountably engaging said skewer means and keeping said skewer means in a spaced apart and parallel relationship with respect to each other and to said heat source; and
E. means for rotating said plurality of rotatable means.

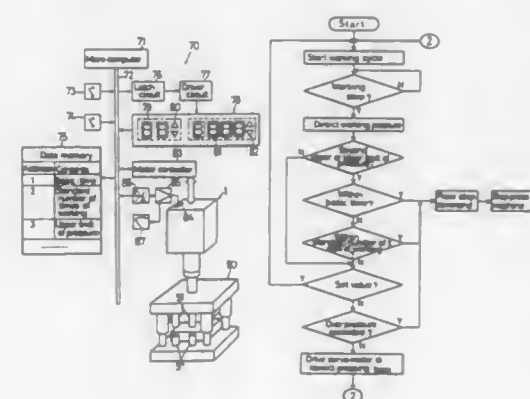
5,379,687
BALE WIRE TIE APPARATUS AND METHOD
James D. Moseley, Montgomery, Ala., assignor to Continental Eagle Corporation, Prattville, Ala.
Filed Feb. 4, 1994, Ser. No. 192,396
Int. Cl. B65B 13/04
U.S. Cl. 100—3 **8 Claims**



8. A method of operating a wire-tying device to position a wire tie about a bale, the wire tying device comprising:
(a) a plurality of wire ties with a loop at each end of each wire tie;
(b) a top platen and a bottom platen;
(c) a front assembly and a rear assembly, each having a left side, a right side, a top and a bottom;
(d) connecting means for connecting the front assembly to the rear assembly;
(e) a pair of feed chute head plates guided within the front assembly and a pair of guide chute head plates guided within the rear assembly;
(f) an infeed chute sub-assembly guided between the feed chute head plates and a guide chute sub-assembly guided between the guide chute head plates;
(g) a plurality of infeed chutes within said feed chute sub-assembly, each infeed chute having a drive wheel and drive means for rotating said drive wheel, gripping means for holding a wire tie, alignment means for preventing the wire tie from twisting when it is loaded into the front assembly, a pair of idler rollers and actuating means for moving said idler rollers against said wire tie and said drive wheel so that rotation of said drive wheel effects movement of the wire tie;
(h) power means for generating motion of the feed chute sub-assembly that is simultaneously translational and rotational;
(i) power means for generating motion of the guide chute sub-assembly that is translational;
(j) power means for generating motion of the feed chute head plates that is translational; and
(k) power means for generating motion of the guide chute head plates that is translational;
the method comprising the steps of:
(1) loading said wire ties into the front assembly;
(2) placing an end loop of each wire tie over the alignment means in each infeed chute;
(3) moving the idler rollers toward the drive wheel with a portion of the wire tie trapped in between the idler rollers and the drive wheel to permit translation of the wire tie in said infeed chute;
(4) moving the feed chute head plates and the guide chute head plates a predetermined amount;
(5) moving the feed chute sub-assembly a predetermined amount;

(6) moving the guide chute sub-assembly a predetermined amount;
(7) rotating said drive wheels in a forward direction for a predetermined amount, thereby advancing said wires into a desired position encircling compressed material to be baled;
(8) moving the guide chute sub-assembly a predetermined amount, first in one direction, and then in the opposite direction;
(9) activating the gripping means;
(10) moving the feed chute sub-assembly a predetermined amount, thereby taking slack out of each wire tie;
(11) deactivating the gripping means;
(12) rotating said drive wheels in a reverse direction for a predetermined amount, thereby partially interlocking one looped end with the opposite looped end of each wire tie;
(13) activating the gripping means; and
(14) moving the feed chute sub-assembly a predetermined amount, thereby further interlocking in an untightened manner one looped end with the opposite looped end of each wire tie so that subsequent release of pressure on the baled material will tension the wire tie and effect a tensioning of the wire tie and a tightening of the looped ends into a tight permanent bond.

5,379,688
METHOD OF AND APPARATUS FOR AUTOMATICALLY CONTROLLING PRESSING FORCE OF PRESS MACHINE
Mitishi Ishii, 1-3, Higashiomichi 2-chome, Ohita-shi, Ohita, Japan
PCT No. PCT/JP92/01570, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO93/10966, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 30, 1992, Ser. No. 90,152
Claims priority, application Japan, Dec. 3, 1991, 3-347921
Int. Cl. B30B 13/00, 15/26, 15/14
U.S. Cl. 100—35 **4 Claims**



1. A method of automatically controlling pressing force of a press machine in a press working cycle wherein at least a part of a workpiece is plastically deformed by using said press machine and a die tool, said method comprising the steps of: detecting a magnitude of pressing force with which said die tool presses on said workpiece during said press working; comparing said pressing force detected with a preset optimal pressing force; correcting, if there is a difference between a detected pressing force and a preset pressing force, said pressing force for said difference so that said detected pressing force approaches said preset pressing force; and suspending said press working cycle when said pressing force exceeds an upper or a lower limit of a preset value, and within a basis time upon which a period of time is set

or within a working period which is set with regard to abnormal circumstances.

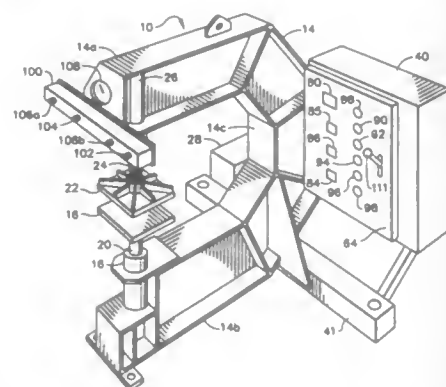
5,379,689
COMPOSITE REPAIR PRESS FOR MANUFACTURING AND REPAIRING A WORKPIECE MADE FROM A COMPOSITE MATERIAL

James V. Timmons; Bert C. Jones, III, and Paul S. Manicke, all of Albuquerque, N. Mex., assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 29, 1993, Ser. No. 100,009
Int. Cl.⁶ B30B 15/26, 15/34

U.S. Cl. 100—43

10 Claims



10. A device for manufacturing and repairing a workpiece made from a composite material, comprising:
a substantially C-shaped frame with an upper arm and a lower arm;
an hydraulic cylinder mounted to said lower arm;
an upper platen connected to said upper arm;
a lower platen disposed opposite said upper platen and attached to a movable piston of said hydraulic cylinder to move said lower platen between a non-operative position at a spacing from said upper platen and an operative position to apply a compressive force to the workpiece in cooperation with said upper platen;
at least one heater disposed on one of said platens, said at least one heater is a conformal heating blanket for delivering heat up to about 900° F.;
at least one temperature sensor mountable to the workpiece;
at least one temperature controller coupled to said at least one heater and to said at least one temperature sensor to control heat applied to the workpiece when disposed between said platens; and
at least one pressure controller operably associated with said hydraulic cylinder to control application of said compressive force.

5,379,690
SINGLE VALUE POSTAGE DISPENSING APPARATUS
Flavio M. Manduley, 87 Old Grassy Hill Rd., Woodbury, Conn. 06798

Continuation of Ser. No. 997,044, Dec. 28, 1992, abandoned.
This application Mar. 8, 1994, Ser. No. 218,046
Int. Cl.⁶ B41L 47/46

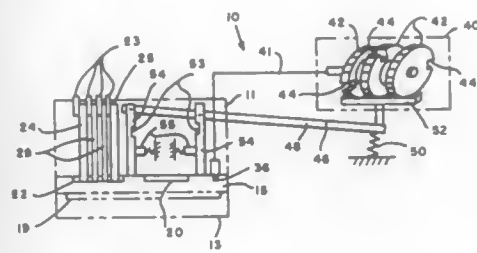
U.S. Cl. 101—91

4 Claims

1. A value dispensing apparatus comprising:
 - a) a housing;
 - b) a printhead having a single fixed value font supported in said housing;
 - c) a counter supported within said housing, wherein said counter includes a plurality of accounting wheels each having a slot therein;
 - d) a platen spaced from and movable relative to said printhead for contact therewith, said printhead and platen defining a slot therebetween;
 - e) an actuator spaced relative to said platen within said

housing and in communication with said counter for actuating said counter with each contact between said printhead and said platen;

- f) means for preventing contact between said print head and said platen upon said counter reaching a zero value;
- g) contact preventing means including a pivot supported by said housing and a pivot arm pivotally supported by said pivot;
- h) a latch supported at one end of said pivot arm and in engagement with said accounting wheels;



- i) at least one finger located at the other end of said pivot arm at the location of said slot;
- j) biasing means for urging said latch toward said accounting wheels and at least one finger toward said housing slot; and
- k) whereby, upon said latch contacting the accounting wheel slots simultaneously, said biasing means urges said latch into said accounting wheel slots and urges said accounting wheels at least one finger into said housing slot.

5,379,691
SCREEN PRINTING FRAME ASSEMBLY WITH SCREEN ANCHORS

Alan J. Hamu, and Kaino J. Hamu, both of 16061 Dominica Cir., Huntington Beach, Calif. 92649

Filed Sep. 14, 1992, Ser. No. 944,223
Int. Cl.⁶ B41L 13/02

U.S. Cl. 101—127.1

10 Claims



1. A printing screen frame assembly comprising:
 - an open rectangular screen frame having four corners, normally upper and lower sides, and a rectangular frame opening which opens through said frame sides, and said frame including four elongate frame members joined end to end at said corners and surrounding said opening,
 - an elongate screen anchor extending lengthwise of each frame member and having a longitudinal side forming a planar screen bonding surface,
 - means removably mounting each screen anchor on its respective frame member in a position wherein said bonding surface of the respective screen anchor is exposed at the lower side of said frame, and wherein
 - said means removably mounting each screen anchor on its respective frame member comprises a channel extending longitudinally of the respective frame member and having an open longitudinal side at said lower side of said frame opening through an adjacent surface of said frame assembly, and said channel removably receiving the respective screen anchor with said longitudinal side of the respective screen anchor projecting laterally outwardly through said open longitudinal side of said channel and beyond said adjacent surface of said frame assembly to locate the entire

bonding surface of the respective screen anchor beyond said adjacent surface,
said frame members have screen support surfaces at said lower side of said frame between said frame opening and said screen anchors and disposed in a common plane parallel to said frame sides, and
said screen anchors are arranged on said frame to locate said bonding surfaces in one of the following positions (a), (b) relative to said frame: (a) positions in which said bonding surfaces are located in said common plane of said screen support surfaces and face in the normally downward direction of said frame, (b) positions in which the bonding surfaces are located between said common plane of said screen support surfaces and the upper side of said frame and face at an acute angle relative to said common plane.

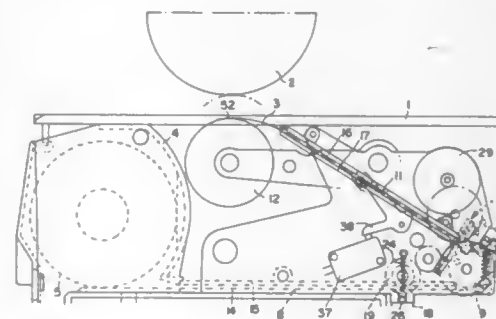
5,379,692
APPARATUS FOR LABEL TRANSPORT
Werner Haug, Langnau, Switzerland, assignor to Frama AG, Lauperswil, Switzerland

Filed Feb. 22, 1993, Ser. No. 22,379
Claims priority, application Switzerland, Mar. 10, 1992, 00755/92-8

U.S. Cl. 101—227

Int. Cl.⁶ B41F 13/56

3 Claims



1. An apparatus for label transport, particularly adhesive labels for a franking machine having a printing station, said apparatus comprising:

- a label roll carrier for labels stored in strip-like manner for feeding to said printing station;
- at least two guideways disposed between said label roll carrier and said printing station for guiding the label strip along a prescribed path to said printing station;
- a reversing guide disposed in between said two guideways for altering the path of the label strip, said two guideways being arranged to form a non-linear path and communicating with one another via the reversing guide;
- a reversible motor;
- at least one transport roller pair located in one of the guideways and connected to said reversible motor;
- a cutter for cutting off individual labels;
- an electronic control unit for controlling said reversible motor; and
- a signalling device located on one of the guideways and connected to the control unit, for signalling that the label strip is in a position to begin a printing operation; and wherein said control unit reverses said reversible motor after completion of each printing operation, so that, following the cutting off of the last label of each printing operation, the label strip is moved back around the reversing guide to position the leading edge of the label strip on the opposite side of the reversing guide from the printing station.

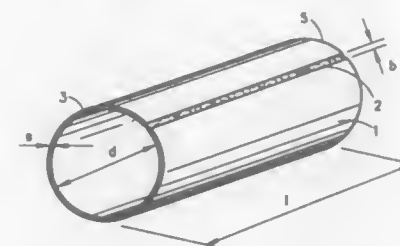
5,379,693
WELDED TUBULAR PRINTING PLATE, AND THE METHOD OF MAKING

Eduard Hoffmann, Boblingen; Johann Winterholter, Friedberg; Wolfgang Prem, Ustersbach, and Herbert Stöckl, Augsburg, all of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Dec. 4, 1992, Ser. No. 986,425
Claims priority, application Germany, Dec. 11, 1991, 4140768
Int. Cl.⁶ B41F 27/12

U.S. Cl. 101—375

13 Claims



1. A method of making a circumferentially continuous offset printing plate or form for a plate cylinder (37) of a rotary offset printing machine, in which the side edge regions of the plate cylinder (37) are formed with at least one cylinder register element (14, 16), said method comprising:

- cutting an essentially rectangular plate of printing plate or printing form material of aluminum, tri-metal or other multi-metal to circumferential and width dimensions of the plate cylinder (37), to provide a cut plate defining leading and trailing edges (1a, 1b) and side edges (3, 5);
- forming the cut plate with at least one form register element (4, 6) at a location or locations which match the location of the at least one cylinder register element (14, 16);
- coating the cut plate with a photo-sensitive layer to permit application of subject matter to be printed on the coated plate;
- rolling the cut plate into tubular form to then define an inner plate side and an outer plate side;
- clamping the tubular cut plate in a workpiece holder of a welding machine with the at least one form register element in predetermined position on the workpiece holder; and
- forming a long welding seam (2) axially of the tubular formed cut plate to join the leading and trailing edges; and controlling the welding seam formation such that the welding seam, in cross section, will have essentially concave shape at the outer plate side and at the inner plate side of the tubular formed cut plate.

5,379,694
LATERAL REGISTER SYSTEM FOR PRINTING FORMS
Josef Hajek, Friedberg, and Anton Neumeir, Mering, both of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Dec. 8, 1993, Ser. No. 163,823
Claims priority, application Germany, Dec. 10, 1992, 4241588.8

U.S. Cl. 101—415.1

Int. Cl.⁶ B41F 21/00

9 Claims



1. A lateral register system for a plurality of flexible printing forms which are held by their edges in an axially extending

inclined in a plate cylinder having an end side, the edges being pre-bent according to the inclination of the gap, the lateral register system comprising: a separate insert strip provided for each of the printing forms to be held in the gap of the plate cylinder, the insert strips having at least one stationary register pin and being insertable into the gap so as to be movable in an axial direction of the plate cylinder; and means for individually adjusting each insert strip in the axial direction, the separate insert strips provided in the gap having different lengths and being placed one on top of the other so that each printing form can cooperate with the register pin provided for it.

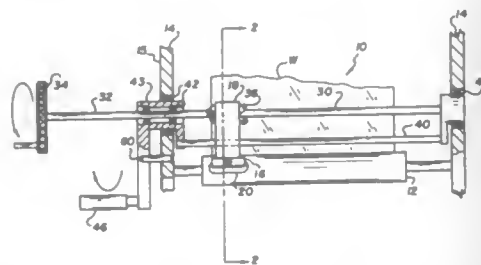
5,379,695
APPARATUS AND METHOD FOR REMOVING CONTAMINANTS FROM ROLLERS

John E. Rieth, Penfield, and Theodore R. Czlonka, Jr., Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1993, Ser. No. 69,065
Int. Cl.⁶ B41F 35/00

U.S. Cl. 101—424

10 Claims



1. Apparatus for removing contaminants from a roller supporting photosensitive web material thereon inside a machine enclosure containing solvent vapor, the apparatus comprising: a cleaning head having an absorbent material thereon; means for moving the cleaning head lengthwise along the roller, said moving means comprising a skewed bearing arrangement and a smooth shaft mounted for rotation in said skewed bearing arrangement, said smooth shaft supporting the cleaning head; means for selectively urging the cleaning head into contact with a predetermined location on the roller and retracting the cleaning head therefrom; and, means, external to the machine enclosure, for manually operably controlling both the moving means and the urging and retracting means.

5,379,696
APPARATUS FOR CLEANING A ROLLER NIP IN ROTARY PRINTING MACHINES

Andreas Boehme, Bensheim; Peter Mayer, Muhlheim/Main; Arno Gärtner, Sinsal-Welperz; Jurgen Heinen, Wiesbaden, and Manfred Straub, Offenbach am Main, all of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Jul. 1, 1993, Ser. No. 86,552
Claims priority, application Germany, Jul. 1, 1992, 4221527
Int. Cl.⁶ B41F 35/00

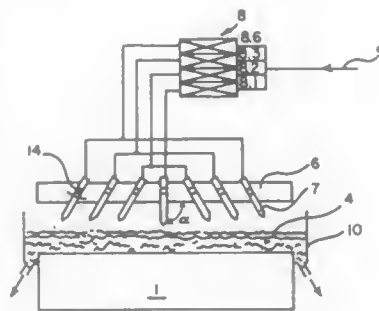
U.S. Cl. 101—424

9 Claims

1. An air blast apparatus for removing fluid axially from a roller nip in a rotary printing machine, said nip being formed by two axis-parallel rollers engaging one another and having opposite ends, said fluid being confined in said nip by a pair of lateral ductors respectively located adjacent the opposite ends of said rollers and at least one of said lateral ductors having a discharge opening through which said fluid may be caused to flow, said air blast cleaning apparatus comprising, in combination,

a plurality of air nozzles disposed above said nip and between said rollers and said lateral ductors, means including a source of air under pressure and a control

valve coupled to said air nozzles for selectively discharging a blast of air therethrough, means for mounting and distributing said nozzles along the lengthwise direction of said nip between said lateral ductors,



and means for orienting said nozzles at an angle (α) relative to said lengthwise direction in order to direct said blast of air against said fluid and convey it along said nip in said lengthwise direction toward at least one end of said rollers and out through said discharge opening in said lateral ductor.

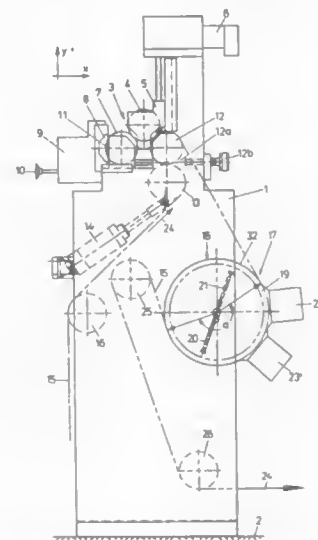
5,379,697
PRINTING MACHINE

Wolfgang Ertl, Parkstein, Germany, assignor to BHS Druck- und Veredelungstechnik GmbH, Weibhammer, Germany

Filed Sep. 7, 1993, Ser. No. 116,693
Claims priority, application Germany, Sep. 7, 1992, 4229352
Int. Cl.⁶ B41F 23/04

U.S. Cl. 101—424.1

7 Claims



4. A UV radiation and cooling unit adapted for use with a web press for printing UV-curing inks on a web, the UV radiation and cooling unit comprising: a cooling cylinder (18) having a surface; deflection pulleys (16, 26, 28) and the cooling cylinder for wrapping the web over the surface about the cooling cylinder through a wrapping angle; a radiator mounting site adjacent the surface of the cooling cylinder; a UV radiator (23, 23', 23'', 23'''), adapted for mounting on the mounting site, for radiating with UV the portion of the web wrapped over the surface of said cooling cylinder; and

cooling means in said cooling cylinder for cooling the web by removing heat from the cooling cylinder.

5,379,698
LITHOGRAPHIC PRINTING MEMBERS FOR USE WITH LASER-DISCHARGE IMAGING

Michael T. Nowak, Leominster, Mass., and Thomas E. Lewis, E. Hampstead, N.H., assignors to Presstek, Inc., Hudson, N.H. Continuation-in-part of Ser. No. 62,431, May 13, 1993, Pat. No. 5,339,737, which is a continuation-in-part of Ser. No. 917,481, Jul. 20, 1992, abandoned. This application May 20, 1994, Ser. No. 247,016

The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.

Int. Cl.⁶ B41N 1/08

U.S. Cl. 101—454

18 Claims



1. A lithographic printing member directly imageable by laser discharge, the member comprising:
a. a topmost first layer which is polymeric; and
b. a thin metal layer underlying the first layer; and
c. a substrate underlying the metal layer; wherein
d. the metal layer is formed of a material which is subject to ablative absorption of imaging infrared radiation and the first layer is not; and
e. the first layer and the substrate exhibit different affinities for at least one printing liquid selected from the group consisting of ink and an adhesive fluid for ink.

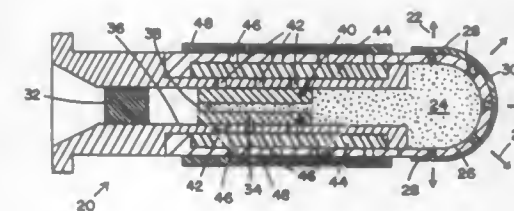
5,379,699
ACTIVE SPRAY ROCKET PROPELLANT IGNITION CONTROLLER

Paul T. Johnsen, Ridgecrest; Alfred O. Smith, China Lake, and Robert B. Dillinger, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1993, Ser. No. 104,954
Int. Cl.⁶ C06B 45/00

U.S. Cl. 102—290

7 Claims



1. A rocket propellant ignition controller for applying a combustion modifying substance to the propellant just prior to the ignition of the propellant comprising in combination: an igniter adapted to be mounted in communication with the burning surface of the rocket propellant; a sealed fluid containing chamber in said igniter containing a combustion modifying fluid; initiator means in said igniter adapted to generate hot pressurized gas upon ignition; means for transferring the force of said pressurized gas against the fluid in said chamber so as to force the fluid out of the chamber and onto the propellant; and means to valve said pressurized gas out of the igniter so as to

begin combustion of the propellant immediately after the fluid is forced onto the propellant.

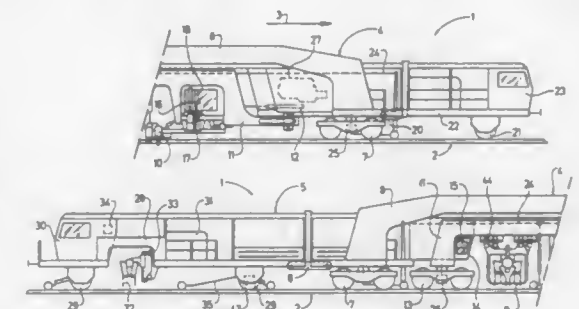
5,379,700
TWO MACHINE ARRANGEMENT FOR TRACK TAMPING IN SWITCHES HAVING TRACK LIFTING UNITS MOUNTED ONLY ON FIRST MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnmaschinen-Industriegesellschaft M.B.H., Vienna, Austria

Filed Jan. 5, 1994, Ser. No. 177,423
Claims priority, application Austria, Jan. 27, 1993, A 131/93
Int. Cl.⁶ E01B 27/17, 27/11

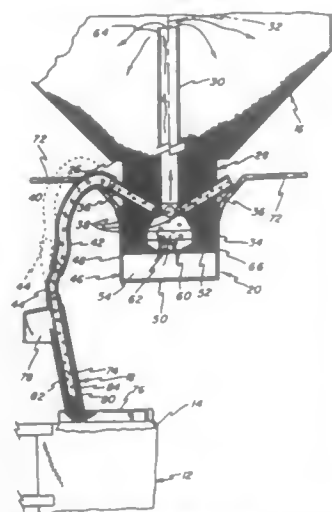
U.S. Cl. 104—7.2

9 Claims



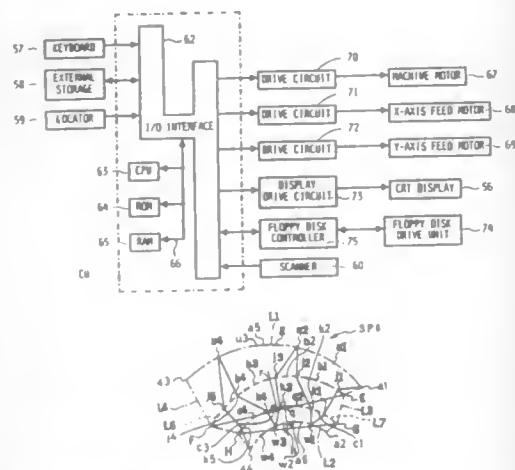
1. A mobile track tamping machine arrangement comprising (a) a first machine and a second machine, each machine comprising
(1) an elongated machine frame supported on undercarriages running on the track,
(2) a drive means for moving the machine frame in an operating direction along the track, the first machine preceding the second machine in the operating direction and the machine frame of the first machine being longer than that of the second machine, and
(3) vertically adjustable track tamping tool units mounted on each machine frame, the tamping tool units mounted on the longer machine frame being transversely adjustable sideways beyond the longer machine frame,
(b) a detachable coupling connecting facing ends of the machine frames,
(c) a track leveling and lining unit operable to correct the track position,
(d) a leveling and lining reference system controlling the operation of the track leveling and lining unit,
(e) an auxiliary rail lifting device mounted on the longer machine frame for engaging a rail of a branch track adjacent the track, the auxiliary rail lifting device being adjustable for vertical and transverse adjustment thereof,
(f) drive means for transversely adjusting the tamping tool units on the longer machine frame and the auxiliary rail lifting device,
(g) a respective operator's cab mounted on the longer machine frame immediately ahead of, and behind, the transversely adjustable tamping tool unit, and
(h) an operator's cab at an end of each machine opposite to the facing ends of the machine frames.

column structure, said air supply being capable of buoying said particulate material within said column structure such



that said particulate material may be distributed through at least one of said plurality of discharge outlets.

5,379,707
STITCH DATA PREPARING DEVICE FOR EMBROIDERY SEWING MACHINE
 Fumiaki Asano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
 Filed Aug. 17, 1993, Ser. No. 107,361
 Claims priority, application Japan, Aug. 17, 1992, 4-241163
 Int. Cl.⁶ D05B 21/00
 U.S. Cl. 112-121.12 22 Claims

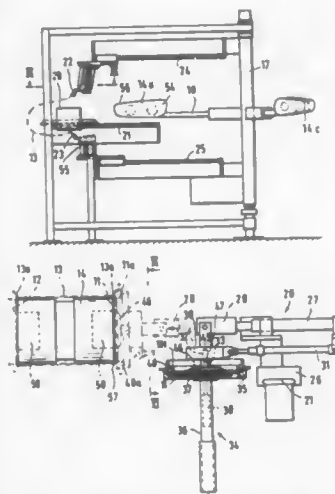


1. A stitch data preparing device and data utilization means for (a) determining an optimal embroidery pattern for an embroidery area of an embroidery figure, the embroidery area being defined by a pair of main lines and a pair of sublines connecting the pair of main lines, the optimal embroidery pattern comprising an embroidery stitch path extending between the pair of main lines and running from a first end of the pair of main lines to a second end of the pair of main lines, and (b) utilizing stitch data to form a series of stitches, the stitch data preparing device comprising:

first storing means for storing a plurality of predetermined embroidery patterns, each predetermined embroidery pattern defined by a line type of at least one of the pair of main lines and a line type of at least one of the pair of sublines and for storing a predetermined stitch path cre-

ation control routine corresponding to each predetermined embroidery pattern;
 second storing means for storing defining points located on an outline of the embroidery area and for storing a plurality of line elements, each line element connecting at least two of the defining points, the plurality of line elements defining the outline;
 line designating means for designating at least one main line and at least one subline of the embroidery area from the plurality of line elements stored in said second storing means for determining the line type of each designated main line and subline;
 determining means for automatically selecting one of the plurality of embroidery patterns for the embroidery area based on the line types of the at least one designated main line and the at least one designated subline designated by said line designating means, and for automatically determining an embroidery stitch path for the embroidery area based on the selected pattern; and
 data utilization means for utilizing stitch data corresponding to said embroidering stitch path to form a series of stitches.

5,379,708
METHOD AND DEVICE FOR FORMING THREE-DIMENSIONAL ENVELOPES
 Philipp Moll, and Hans Behrens, both of Aachen, Germany, assignors to Moll Automatische Naehsysteme GmbH, l.g., Alsdorf, Germany
 PCT No. PCT/EP92/01836, § 371 Date Apr. 12, 1993, § 102(e) Date Apr. 12, 1993, PCT Pub. No. WO93/04228, PCT Pub. Date Mar. 4, 1993
 PCT Filed Aug. 11, 1992, Ser. No. 39,166
 Claims priority, application Germany, Aug. 14, 1991, 4126849; Jul. 29, 1992, 4225008
 Int. Cl.⁶ D05B 3/00
 U.S. Cl. 112-262.3 11 Claims

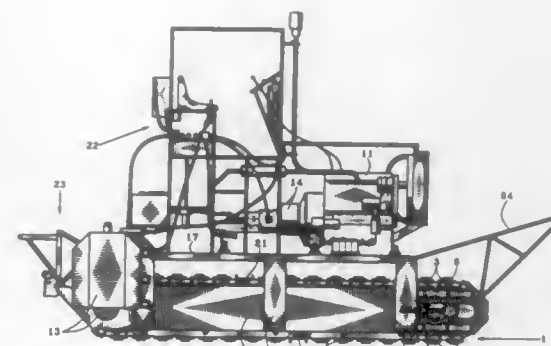


1. A method of forming a three-dimensional envelope from at least two blanks which are sewn together at abutting edge portions while supported upon a carrier body comprising the steps of:

- laying a first blank (11) on a first support surface (54) of a carrier body (14) such that an edge portion (11a) of said first blank (11) projects beyond said carrier body (14),
- laying at least a second blank (13) on a second support surface (56) of said carrier body (14) which extends at an angle with respect to said first support surface (54) with an edge portion (13a) of said second blank (13) protecting at an angle to said second support surface (56) such that the edge portions (11a, 13a) of both blanks (11, 13) jointly

from a double flange portion projecting from said carrier body (14), and
 c) producing a seam (16) to interconnect the edge portions 11a, 13a) by effecting a relative movement between a sewing machine and said double flange portion along a root line (57) formed by kink lines of said edge portions (11a, 13a) of said blanks (11, 13) to thereby form an envelope.

5,379,709
AMPHIBIOUS ALL-TERRAIN TRACKLAYING VEHICLE
 William F. Wilkerson, 100 SW. 4th St., Mulberry, Fla. 33860
 Filed Apr. 26, 1993, Ser. No. 51,700
 Int. Cl.⁶ B60F 3/00
 U.S. Cl. 114-61 37 Claims



1. An amphibious all-terrain tracklaying vehicle comprising: a pontoon hull; two endless tracks surrounding the pontoon hull linearly in juxtaposed relationship; step cleats on the endless tracks extending from proximate each side to proximate a linear center of the pontoon hull; track chains attached to the endless tracks in chain-drive relationship; track-drive sprocket wheels in track-rotation relationship to the track chains and to a rotational power source at an aft end of the pontoon hull; front sprocket wheels in rotational track-support relationship to the track chains at a front end of the pontoon hull; a deck positioned vertically above the pontoon hull such that the endless tracks are traversable between the pontoon hull and the deck; a plurality of at least three track chains on each endless track; at least one scraper cleat having a cleaning orifice extended between each track chain, making a total of at least two scraper blades; and a scraper blade extended from a pontoon side of the scraper cleat at a position proximate a linear-traverse side of each of the cleaning orifices, making a total of at least two scraper blades.

5,379,710
ASYMMETRICAL SAILING CATAMARAN KEELS
 Johann Parnigoni, 522 Halfmoon Road, Brownsburg, QC, Canada JOV 1A0
 Filed Oct. 15, 1993, Ser. No. 136,158
 Int. Cl.⁶ B63B 1/00
 U.S. Cl. 114-61 8 Claims

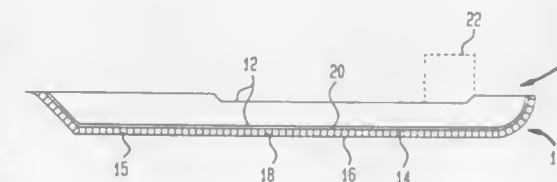
1. A set of sailing catamaran keels having twin hulls, said keels comprising a port keel and a starboard keel, each of said keels having:
 a rounded or shallow angled outboard keel surface which is blended into the shape of the outboard portion of a catamaran's hull for eliminating leeway resistance thereby allowing the catamaran to slip sideways when it is in danger of being overpowered by the heeling force of the wind,
 a vertical or steeply angled inboard keel surface facing

towards the center line of the catamaran, and meeting the catamaran hull at or near the fairbody line for forming an effective leeway preventing surface, said outboard keel surface providing a lateral, non resistance



surface, and said inboard keel surface, providing a lateral, leeway resistance surface, the efficiency thereof being reduced or eliminated by the catamaran's heeling, whereby a portion of the heeling component is converted into a leeway movement.

5,379,711
RETROFITTABLE MONOLITHIC BOX BEAM COMPOSITE HULL SYSTEM
 Eugene C. Fischer, Stevensville, and Roger M. Crane, Arnold, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
 Filed Sep. 30, 1992, Ser. No. 953,620
 Int. Cl.⁶ B63B 25/08
 U.S. Cl. 114-74 A 27 Claims



1. A hull structure, comprising:
 an inner hull having a predetermined compressive strength; an outer hull having a predetermined compressive strength; stand-off means for maintaining separation between said inner hull and said outer hull, said stand-off means including a plurality of stand-off members, each said stand-off member coupling said inner hull and said outer hull; said stand-off means including means for absorbing energy by a predetermined pattern of sequential failure of portions of said stand-off means;
 at least one said stand-off member including a beam, said beam including flanges at opposite ends of a web, said flanges extending from opposite sides of said web, said means for absorbing energy including means for selectively weakening a portion of said beam;
 each said sequential failure occurring at forces less than said predetermined compressive strength of said inner hull and said outer hull and including substantially inelastic deformation of at least two said stand-off members whereby said stand-off means is formed into additional layering which provides increased penetration resistance of said hull structure at the location of each said sequential failure.

5,379,712
METHOD OF EPITAXIALLY GROWING THIN FILMS USING ION IMPLANTATION

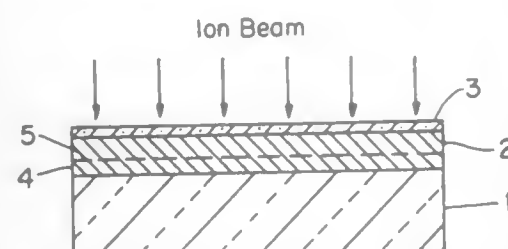
Anthony J. Armini, Manchester, and Stephen N. Bunker, Wakefield, both of Mass., assignors to Implant Sciences Corporation, Wakefield, Mass.

Continuation-in-part of Ser. No. 747,736, Aug. 20, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 51,990

Int. Cl.⁶ C30B 9/00

U.S. Cl. 117—75

19 Claims



1. A method of growing a surface layer of a substance on a substrate, comprising:
coating the substrate surface with a meltable film which has a melting point less than that of a substrate;
melting said film, and
implanting ions of the substance into the melted film to facilitate growth of a surface layer of the substance on the substrate.

5,379,713
STABILIZER
Noriaki Fujimura, 24-3, Matsubara 4-chome, Setagaya-ku, Tokyo 156, Japan

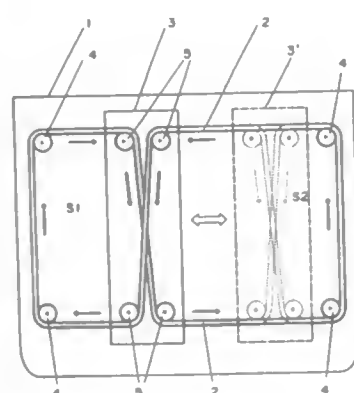
Filed Oct. 22, 1993, Ser. No. 140,327

Claims priority, application Japan, Oct. 28, 1992, 4-329812

Int. Cl.⁶ B63B 39/00

U.S. Cl. 114—122

10 Claims



1. A stabilizer apparatus comprising:
a continuous running body arranged in a continuous loop;
a guide means for supporting said continuous running body and for guiding said continuous running body along a closed loop path;
means for continuously driving said continuous running body around said path; and
track shifting means for moving at least a portion of said guide means, thereby changing the geometric configuration of said path and angular momentum of said continuous running body.

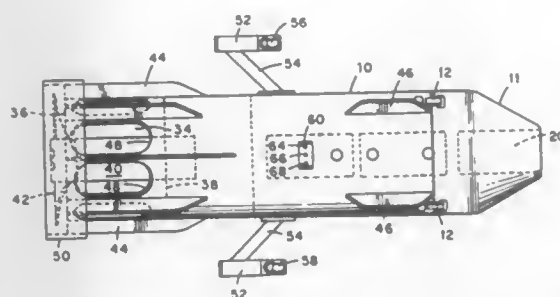
5,379,714
UNDERWATER VEHICLE
James E. Lewis, Johnson City, and Jon R. Johnson, Jonesborough, both of Tenn., assignors to Under Sea Travel, Inc., Johnson City, Tenn.

Filed Oct. 12, 1993, Ser. No. 134,974

Int. Cl.⁶ B63C 11/46

U.S. Cl. 114—315

27 Claims



1. An aquatic vehicle having body means with a plurality of partitioned compartments, propulsion means for thrusting said body means through a body of water, electric motor means for driving said propulsion means, storage battery means for energizing said motor means and switching means for controlling energy flow from said battery means to said motor means, said switching means including water responsive control means for interrupting energy flow from said battery means to said motor means unless sensor elements respective to said water responsive control means are water wetted, and light emitting diode means connected with said battery means whereby a qualitative state of battery charge is reported by selected illumination patterns of said diode means.

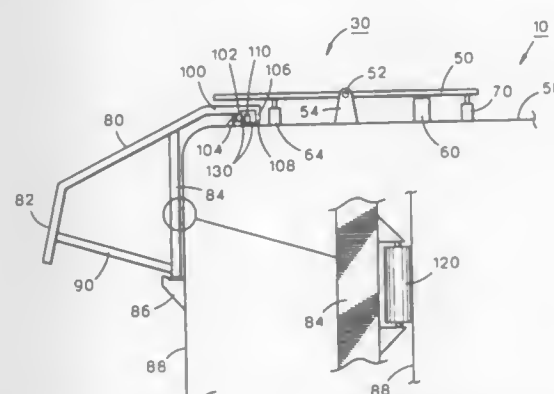
5,379,715
SYSTEM FOR LAUNCHING BARGES FROM SHIPS
Ole Skaarup, Greenwich, and James H. Hara, Ridgefield, both of Conn., assignors to Skarbar, Inc., Greenwich, Conn.

Filed Nov. 10, 1992, Ser. No. 974,260

Int. Cl.⁶ B63B 23/00

U.S. Cl. 114—375

10 Claims



1. A system for launching barges from the deck of a ship, said barges being disposed in spaced apart relationship fore and aft along the deck of said ship, said system comprising:
(a) a track fixedly disposed fore and aft along said deck;
(b) ramp means slidable along said track and selectively positionable along the side of said ship such that a selected one of said barges may be placed on said ramp means and allowed to slide therealong by gravity into water in which said ship is floating; and
(c) a tilt platform on which said selected barge is disposed prior to the launching thereof, said tilt platform and said ramp means being arranged such that said tilt platform is

rotatable so as to cause said barge to slide onto said ramp means prior to said barge sliding into said water.

5,379,716
ARTICULATED, SPRING-BACK POST FOOT FOR ROAD SIGNS, TRAFFIC SIGNALS, SMALLER STREET LIGHTS AND THE LIKE

Egill Helland, Kjellbergveien 14, N-3200 Sandefjord, Norway
PCT No. PCT/NO91/00155, § 371 Date Jun. 18, 1993, § 102(e)
Date Jun. 18, 1993, PCT Pub. No. WO92/11416, PCT Pub. Date Jul. 9, 1992

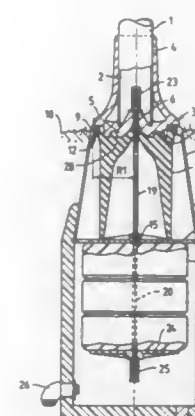
PCT Filed Dec. 10, 1991, Ser. No. 78,167

Claims priority, application Norway, Dec. 18, 1990, 905445

Int. Cl.⁶ E01F 9/01

U.S. Cl. 116—63 R

16 Claims



1. An articulated, spring-back post foot, for road sign posts, information sign posts and traffic light posts, each of said posts having a root part (1), said post foot (3) comprising a lower section (11) and an upper section (14),

said lower section (11) comprising a sleeve element, said sleeve element having an upper edge and a lower end, said lower end forming a bottom plate (14) having a first hole therethrough, and said upper edge having an inwardly facing flange (12),

said upper section (4) having an attachment means for connection to said root part, a lower end of said upper section facing said lower section (11), and having a flexible traction member (19), attached thereto, and a bottom (5) with a central, indented and downward facing section (8), said traction member (19) having a lower free end and a lower locking means (25) for mounting onto said lower free end, said indented and downward facing section (8) having an encircling body (7) of elastic rubber material fastened thereto, said encircling body having an outer diameter corresponding to an inner diameter of said inwardly facing flange,

said post foot (3) further comprising a resilient, compressible body (21) having an upper side and a lower end, and a disc member (24) with a second hole therethrough located at said lower end, said lower section (11) having means for attachment to a stationary location, said flexible traction member (19) extending from top to bottom of said sleeve element and further extending through said first hole in said bottom plate, a central bore in said resilient, compressible body (21) and said second hole in said disc member, said lower locking means (25) of said flexible traction member (19) abutting with said disc member (24), said disc member (24) abutting with said lower end of said resilient, compressible body (21), and said upper side of said resilient, compressible body (21) abutting with said bottom plate (14) of said sleeve element (11).

5,379,717
METHOD OF GROWING SINGLE CRYSTAL OF COMPOUND SEMICONDUCTORS

Seikoh Yoshida, Toride; Shoichi Ozawa, Yokohama, and Toshio Kikuta, Fujisawa, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 751,313, Aug. 28, 1991, abandoned.

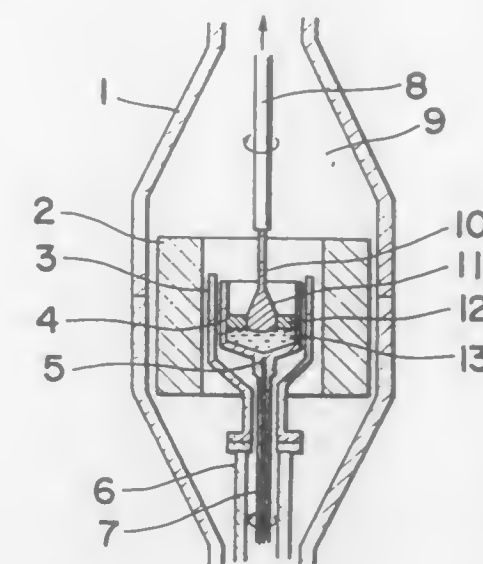
This application May 18, 1993, Ser. No. 63,344

Claims priority, application Japan, Aug. 30, 1990, 2-228822; Oct. 19, 1990, 2-281443; Oct. 19, 1990, 2-281444

Int. Cl.⁶ C30B 15/28

U.S. Cl. 117—14

14 Claims



1. A method of growing a single semiconductor crystal with a flat top using liquid encapsulated Czochralski method comprising the steps of:

heating a melt of raw semiconductor material in a crucible; covering a top surface of said melt with a liquid encapsulant; immersing said melt in a high-pressure inert gas; dipping a seed crystal of a semiconductor compound into a top surface of said melt of raw material;

rotating said crucible at a first rotation velocity; decreasing a temperature of said melt by about 6° to about 12° C. after dipping said seed crystal;

decreasing gradually a temperature of a central portion of said melt by gradually increasing a rotation velocity of said crucible to permit lateral growth of said crystal on said seed crystal;

waiting until a meniscus forms about an entire circumference of said crystal;

after formation of said meniscus, decreasing a temperature-lowering rate of said melt to a first value effective to grow said crystal laterally;

said first value being from about -0.21° to about -0.88° C./min.

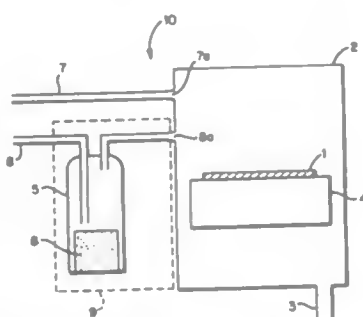
allowing said crystal to attain a lateral growth of from to about 30 to 40 mm²;

further decreasing said temperature-lowering rate of said melt to a second value effective to stop said lateral growth of said crystal;

said second value being from about 0.13° to about 0° C./min; and

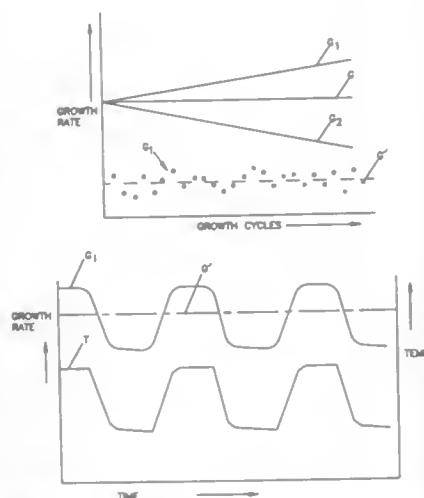
pulling up said crystal at a rate effective to permit said meniscus to remain over said entire circumference, thereby preventing a facet from appearing at a shoulder portion of said crystal.

5,379,718
METHOD FOR FORMING A TITANIUM THIN FILM
 Shigeo Onishi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
 Filed Nov. 15, 1993, Ser. No. 151,427
 Claims priority, application Japan, Dec. 25, 1992, 4-347084
 Int. Cl.⁶ C30B 29/54
 U.S. Cl. 117-88 6 Claims



1. A method for producing a titanium thin film comprising: forming the titanium thin film on a substrate in the presence of water vapor gas by CVD method which uses a material gas containing an organic titanium compound having an aliphatic alkoxide or an aliphatic diketone as a ligand.

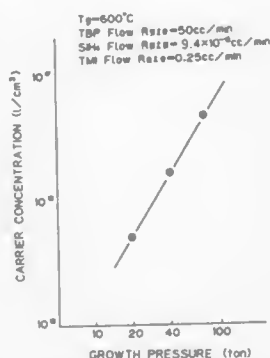
5,379,719
METHOD OF DEPOSITION BY MOLECULAR BEAM EPITAXY
 Scott A. Chalmers; Kevin P. Killeen, and Kevin L. Lear, all of Albuquerque, N. Mex., assignors to Sandia National Laboratories, Albuquerque, N. Mex.
 Filed Jul. 26, 1993, Ser. No. 97,500
 Int. Cl.⁶ C30B 25/02
 U.S. Cl. 117-89 21 Claims



1. A method of molecular beam epitaxial (MBE) deposition with a MBE system having at least one source cell, comprising the following steps:

- varying operating temperatures of each source cell between a first and second temperature so as to yield a plurality of different instantaneous growth rates in each growth cycle and at least two growth cycles for depositing a layer of material on a substrate; and
- controlling the temperature of each source cell such that the average of the different instantaneous growth rates remains substantially constant as a function of time for each growth cycle and from one growth cycle to the next.

5,379,720
PROCESS FOR GROWING SEMICONDUCTOR CRYSTAL
 Akito Kuramata, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
 Continuation of Ser. No. 97,092, Jul. 13, 1993, abandoned, and a continuation of Ser. No. 863,783, Apr. 6, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,099
 Claims priority, application Japan, Apr. 4, 1991, 3-150820
 Int. Cl.⁶ C30B 25/02
 U.S. Cl. 117-104 6 Claims



1. A process for growing a semiconductor crystal, comprising growing a group III-V compound semiconductor containing P as a group V element by metal organic vapor phase epitaxy using tertiary butyl phosphine (TBP) as a source of P constituting a grown layer and doping said semiconductor with a dopant gas during a growth of said semiconductor crystal, characterized in that said source gas and said dopant gas are fed under a condition satisfying a requirement represented by the following formula, to thereby conduct a growth of said semiconductor crystal:

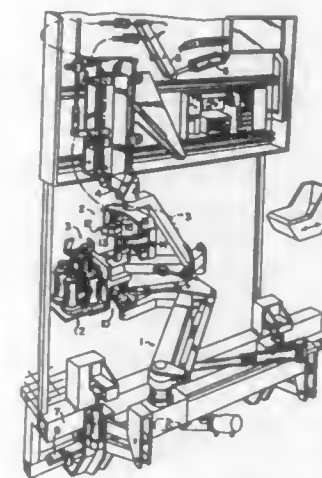
$$n \leq \eta(T) \frac{f_0^2 (P_{TBP}^0 \cdot P_D^0)^{\alpha}}{f_{TBP}^{\beta}} \cdot P_0^{\beta-2}$$

wherein n is a carrier concentration of a growing semiconductor crystal, T is a temperature of the substrate where the semiconductor crystal is grown and of an atmosphere in the vicinity of the substrate, $\eta(T)$ is a function of the temperature T and the flow rate of the group III element of said compound semiconductor, P_{TBP}^0 is an equilibrium vapor pressure of TBP or a decomposition product thereof, P_D^0 is an equilibrium vapor pressure of said dopant gas or a decomposition product thereof, P_0 is a total pressure, f_0 is a total flow rate, f_{TBP} is a flow rate of TBP, and α and β are constants dependant on said dopant gas.

5,379,721
AUTOMATIC MILKING APPARATUS
 Jacobus P. M. Dessing, Nieuw-Vennep; Pieter J. Roodenburg, Leijst; Erik A. Aurik, Amsterdam, and Fokko P. Borgman, Witteveen, all of Netherlands, assignors to Prolion B.V., Netherlands
 Continuation of Ser. No. 701,172, May 16, 1991, abandoned, which is a division of Ser. No. 294,794, Jan. 9, 1989, Pat. No. 5,020,477. This application Jun. 25, 1993, Ser. No. 85,687
 Claims priority, application Netherlands, Jan. 8, 1988, 8800042; Feb. 4, 1988, 8800272; Jul. 13, 1988, 8801785
 Int. Cl.⁶ A01J 3/00
 U.S. Cl. 119-14.08 12 Claims

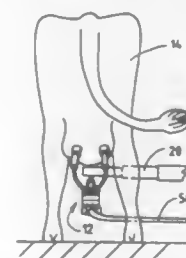
1. An automatic milking device for milking a cow located within a defined area said device for engaging the teats on the cow's udder, said teats and udder being randomly movable with movements of the cow within the area, comprising:

a plurality of milking cups to be placed around the teats on the udder of the cow;
 a robot arm carrying said cups and for moving said cups into operative position with respect to the teats;
 control means for controlling the movement of the robot arm, said control means including apparatus for automatically searching for, finding, following and locating the teats for engagement with the cups carried by the robot arm including a sensor for sensing the position of the teats with respect to said sensor; means responsive to the sensor for producing sensed position information of the teats with respect to a reference; means for modeling expected



position information of the teats with respect to the reference, said means for modeling selectively using a search routine for selecting an accepted as valid earlier sensed position information; means for choosing as valid based upon selected criteria either the sensed position information or the expected position information; and means for causing the robot arm to move to a desired position relative to the teats in response to said selected valid position information; and
 a terminal for providing control information to the robot arm including input means for applying said milking cups to the teats and providing reference data unique to each cow.

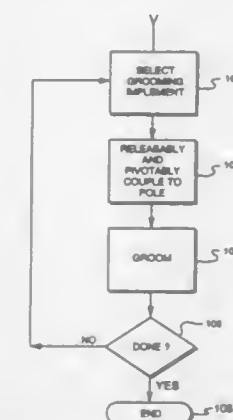
5,379,722
CONTROL FOR A MILKER UNIT SUPPORT
 Larry G. Larson, Holmen, Wis., assignor to Babson Bros. Co., Naperville, Ill.
 Filed Dec. 30, 1993, Ser. No. 175,619
 Int. Cl.⁶ A01J 3/00
 U.S. Cl. 119-14.1 13 Claims



1. In a support for positioning a milker unit beneath a cow, the support having
 a base,
 a shaft vertically movably mounted on the base,
 an arm extending from the shaft and being positionable beneath a cow,

a supply of air under pressure, and
 means for applying pressure from said supply of air to hold the shaft at a desired position,
 an improved control for automatically adjusting the vertical position of the support so that the weight of the milker unit is continuously applied to the cow's teats, comprising:
 a first valve interconnected between the air supply and the shaft, the first valve being movable between a normally closed position and an open position, the first valve in the open position thereof decreasing pressure applied to said shaft whereby the shaft is permitted to lower;
 a second valve interconnected between the air supply and the first valve, the second valve being movable between a normally closed position and an open position, the second valve in the open position thereof permitting air from the supply to move the first valve to the open position thereof; and
 means for mounting the second valve on the support so that force applied to the arm as by the weight of the milker unit moves the second valve to the open position thereof to lower the arm.

5,379,723
ANIMAL GROOMING SYSTEM AND METHOD
 Christine Branley, 97 Derry Rd., Chester, N.H. 03036
 Filed Nov. 10, 1993, Ser. No. 150,230
 Int. Cl.⁶ A01K 13/00
 U.S. Cl. 119-94 7 Claims



1. A method for grooming an animal utilizing a grooming implement pole to which may be releasably and pivotally coupled any one grooming implement selected from among a plurality of grooming implements the method comprising the steps of:

selecting one grooming implement from among said plurality of grooming implements each of said grooming implements including a grooming implement pole coupler; coupling said grooming implement pole coupler of said selected grooming implement to a first end of said grooming implement pole, at least one of said first end of said grooming implement pole and said grooming implement pole coupler of said selected grooming implement including means for releasably decoupling said selected grooming implement from said grooming implement pole, and wherein at least one of said first end of said grooming implement pole and said grooming implement coupler including a grooming implement pivoter, for allowing said grooming implement to at least both rotate about a longitudinal axis that extends parallel to said grooming implement pole, and pivot forward and backwards about an axis orthogonal to said longitudinal axis that extends parallel to said grooming implement pole; and grooming said animal using at least said selected grooming implement releasably coupled to said grooming implement pole about generally the entire surface area of said

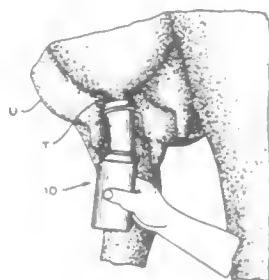
animal such that said first selected grooming implement rotates about said longitudinal axis and pivots about an axis orthogonal to said longitudinal axis which extends parallel to said grooming implement pole to which said first grooming implement is releasably coupled.

5,379,724

ULTRASOUND TEAT DIP

Alejandro Dee, Roselle, and Charles Gradle, Berwyn, both of Ill., assignors to Babson Bros. Co., Naperville, Ill.
Filed Jul. 22, 1993, Ser. No. 96,028
Int. Cl.⁶ A01K 29/00; A61D 11/00
U.S. Cl. 119—158

11 Claims



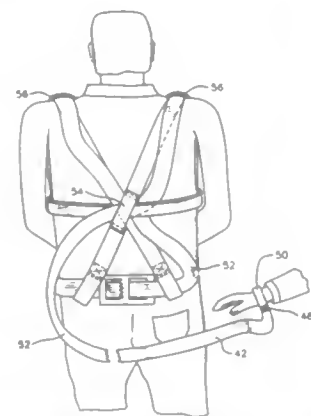
1. An ultrasound portable teat dip comprising: a dip cup of a size to be hand held by a user and having a well adapted to receive a supply of a germicide and an upper opening for receiving a teat to be dipped in the germicide, in use;
- a sonic transducer operatively coupled to the well to sonically vibrate the well to produce cavitation in the germicide supply;
- a storage vessel defining a reservoir for storing a supply of germicide;
- means for operatively securing said storage vessel to said dip cup;
- means for transferring germicide stored in said reservoir to said well to refill said dip cup with germicide; and
- means for connecting said sonic transducer to an electrical supply to drive said transducer.

5,379,725

SAFETY AND RESTRAINING HARNESS

Linda K. Roberson, P.O. Box 1569, Candler, N.C. 28715; Cathy M. Egli, 571 Fagan Dr., Inman, S.C. 29349; Suzanne M. McMillan, P.O. Box 207, Sawannee, Fla. 32602, and Keith J. Mackey, P.O. Box 1569, Candler, N.C. 28715
Filed Nov. 19, 1993, Ser. No. 154,433
Int. Cl.⁶ A62B 35/00; A47D 15/00
U.S. Cl. 119—770

40 Claims



1. A reinforced safety harness for a person comprising a unified vest harness including a front vest, a pair of criss-cross-

ing back straps, a waist belt, a reinforcing belt, a tether belt and an adjustable means

the front vest having a top, bottom and sides sized for covering the upper front torso of the person, the back straps sized for fitting over the back of the person in a criss-crossing fashion from top to bottom and secured to the top of the front vest and releasably secured at the bottom to the waist belt, the waist belt sized for encircling the front and back torso of the person, with the front encircling portion of the waist belt secured to the bottom of the front vest and the back encircling portion of the waist belt adjustably positioned and secured by the adjustable means, the reinforcing belt extending from the adjustable means and being adjustably mounted about the harness to reinforce it, the tether belt extending from the reinforcing belt and terminating either around a guardian's wrist or on a restraining element or releasably secured around the waist belt, the adjustable means allowing the waist belt to be varied in size which varies the length of the reinforcing belt, whereby said harness is put on over the person's head and secured by said adjustable means and said reinforcing belt to help support the person's upper torso, whereby said tether belt can be worn either encircling the waist belt and attached thereon or extending freely to be held by a guardian or releasably secured to a restraining element.

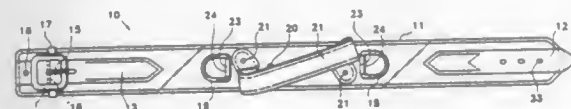
5,379,726

HANDLED DOG COLLAR

Matthew J. Mann, 6 Hulise St., Middletown, N.Y. 10940
Filed Jun. 7, 1993, Ser. No. 73,579
Int. Cl.⁶ A01K 27/00

U.S. Cl. 119—793

17 Claims



1. An animal collar comprising a strap of stiff but flexible material longer than the circumference of the neck of the animal and having a closure means at one end for coaction with the opposing end so as to secure said collar about the neck of the animal, and a handle fixedly attached to said strap at two points along its length to provide a means for the handler to have complete control over the animal, said handle being angled to function equally on the right or left side of the animal.

5,379,727

LOW PROFILE SOOTBLOWER NOZZLE

Sean Kling, Dublin; Mark A. Bunton, Lancaster, and Thomas E. Moskal, Pickerington, all of Ohio, assignors to The Babcock and Wilcox Company, New Orleans, La.
Continuation of Ser. No. 955,115, Oct. 1, 1992, Pat. No. 5,271,356. This application Dec. 17, 1993, Ser. No. 169,350
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.⁶ F22B 37/52

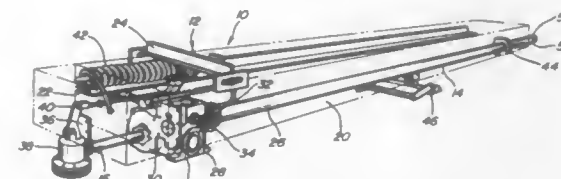
U.S. Cl. 122—392

28 Claims

1. A nozzle for discharging a jet of a compressible fluid cleaning medium from a sootblower lance tube defining a hollow inside passage for cleaning surfaces within a combustion device comprising:

a hollow shell affixed to said lance tube defining an inlet and an outlet for the fluid cleaning medium and said shell having a diverging inside surface with respect to the direction of flow of the fluid cleaning medium through said shell, and

plug means positioned generally coaxially within said shell for forming a converging outer surface with respect to the direction of flow of the fluid cleaning medium through said shell wherein said shell diverging inside surfaces and said plug means outer surface defining a throat for con-



ducting the fluid cleaning medium from within the lance tube inside passage against the combustion device surfaces, said throat having a cross-sectional area for the flow of said fluid cleaning medium which increases in the direction of flow of the fluid cleaning medium through said throat.

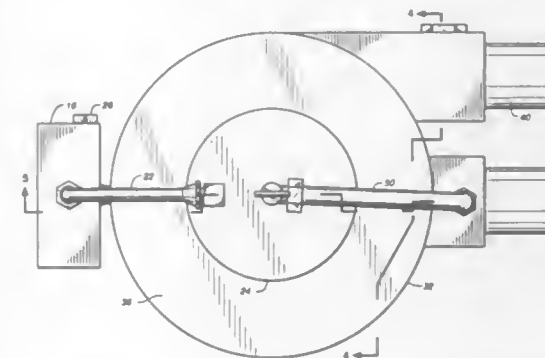
5,379,728

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Syd L. Cooke, Folsom, Calif., assignor to TransGlobal Technologies, Limited, Belize City, Belize
Filed Jun. 1, 1993, Ser. No. 69,391
Int. Cl.⁶ F02B 43/08

U.S. Cl. 123—3

13 Claims



1. Apparatus for use with an internal combustion engine for supplying fuel to said internal combustion engine, said apparatus comprising, in combination:

a fuel chamber defining a chamber interior for holding a quantity of liquid hydrocarbon fuel, said liquid hydrocarbon fuel occupying only a portion of said chamber interior;

means for receiving heated exhaust gases from said internal combustion engine for heating said fuel chamber and liquid hydrocarbon fuel in said chamber interior and for substantially simultaneously introducing said heated exhaust gases into said chamber interior to directly contact the heated liquid hydrocarbon fuel in said fuel chamber interior and vaporize the heated liquid hydrocarbon fuel in said fuel chamber interior to form a mixture of vaporized liquid hydrocarbon fuel and heated exhaust gases within said fuel chamber interior adjacent to said liquid hydrocarbon fuel;

means defining a passageway in communication with said chamber interior for receiving said mixture of vaporized liquid hydrocarbon fuel and heated exhaust gases from said chamber interior; and

means operatively associated with said passageway defining means for receiving heated exhaust gases from said internal combustion engine and directing said heated exhaust

gases into engagement with said passageway defining means to heat the passageway defining means and the mixture of vaporized liquid hydrocarbon fuel and heated exhaust gases in the passageway and reform at least a portion of said mixture of vaporized liquid hydrocarbon fuel and heated exhaust gases to hydrogen gas for combustion in said internal combustion engine.

5,379,729

CYLINDER HEAD COOLING STRUCTURE FOR MULTI-VALVE ENGINE

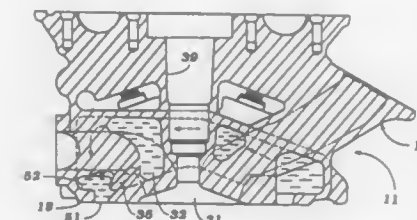
Minoru Yonezawa, and Junkichi Amano, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 13, 1993, Ser. No. 166,215

Claims priority, application Japan, Dec. 11, 1992, 4-352347
Int. Cl.⁶ F02F 1/36

U.S. Cl. 123—41.82 R

21 Claims



1. A cylinder head cooling arrangement for an overhead valve internal combustion engine comprising a cylinder head having a lower surface adapted to be sealingly engaged with a cylinder block around a cylinder bore, said cylinder head lower surface having a portion cooperating with said cylinder bore to form a combustion chamber, at least one valve seat on one side of said cylinder head lower surface portion at one end of a first gas flow passage formed in one side of said cylinder head, at least a pair of valve seats formed on the other side of said cylinder head lower surface portion at the end of respective second and third flow passages formed in the other side of said cylinder head and separated at least in part by a wall, a coolant jacket formed in said cylinder head at least in part around said flow passages and said cylinder head lower surface portion, and a coolant flow passage formed in said cylinder head lower surface and in an area beneath said wall and between said second and third flow passages, and a manifold section extending between said lower surface and the area below said second and third flow passages and communicating with said coolant passage, said coolant flow passage passing substantially all of the coolant flowing through said manifold section in the area beneath said second and third flow passages.

5,379,730

CUP-SHAPED VALVE TAPPET

E. H. Georg Schaeffler, Herzogenaurach, Germany, assignor to Ina Walzinger Schaeffler KG, Germany
Filed Jul. 15, 1994, Ser. No. 275,957

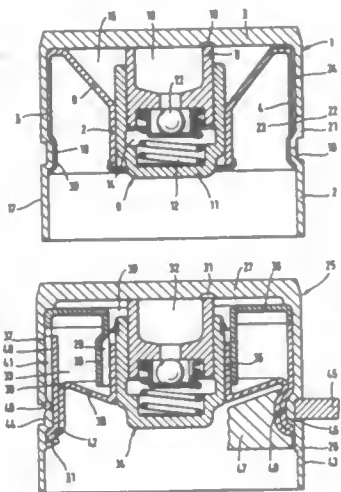
Claims priority, application Germany, Jul. 30, 1993, 4325610
Int. Cl.⁶ F01L 1/24, 1/14

U.S. Cl. 123—90.55

13 Claims

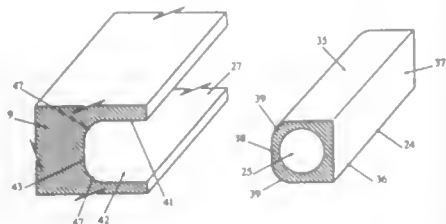
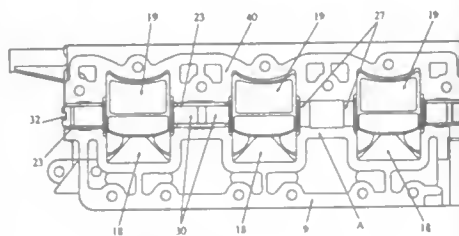
1. A cup-shaped valve tappet (1,25) for actuating a valve of an internal combustion engine, comprising a cylindrical jacket (2,26) closed at one end by a bottom (3,27) and on whose outer peripheral surface (17,43) a circumferential groove (18,44) is formed by non-cutting shaping, while on an inner peripheral surface (5,37) of said cylindrical jacket a sheet metal cylinder (4,39) is guided substantially without play, said valve tappet further comprising a guide sleeve (7,35) in which a hydraulic clearance compensation element (8,34) is received, characterized in that the sheet metal cylinder (4,39) extends at least up to a region of the jacket (2,26) comprising the circumferential

groove (18,44) while a bead (19,46) formed by non-cutting shaping on the inner peripheral surface (5,37) of the jacket



(2,26) bears against a circumferential groove (20,48) of the sheet metal cylinder (4,39).

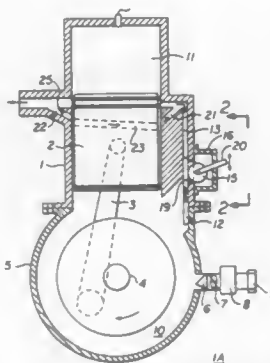
5,379,731
MULTICYCLINDER TWO STROKE CYCLE ENGINE
Christopher N. F. Sayer, Ferndale, Australia, assignor to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia
PCT No. PCT/AU92/00323, § 371 Date Dec. 2, 1993, § 102(e) Date Dec. 2, 1993, PCT Pub. No. WO93/01402, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 1, 1992, Ser. No. 142,480
Claims priority, application Australia, Jul. 2, 1991, PK6965
Int. Cl.⁶ F02B 75/02
U.S. Cl. 123—65 PE 8 Claims



1. A two stroke cycle internal combustion engine having a cylinder block (9) with one or more cylinders (11) and a respective exhaust passage (15) communicating with the or each cylinder (11), and a valve member (19) associated with each exhaust passage (15), said valve members (19) being supported for pivotal movement relative to the respective passages (15) about a common axis (21) extending longitudinally of the block (9), each said exhaust passage (15) extending to a surface (40) on one side of the cylinder block (9) and an exhaust manifold (16) having a complementary surface (44) detachably secured to the cylinder block (9) with said surfaces (40,44) in abutting relation, characterised in that said surface (40) of the cylinder block (9) has a plurality of aligned recesses (27) therein with at least one recess (27) between each two adjacent exhaust pas-

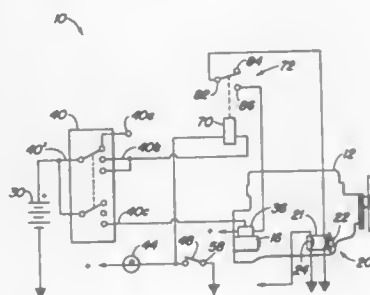
sages (15), a bearing member (24) received in each recess (27), each bearing member (24) having an aperture (25) there-through, said recesses (27) and bearing members (24) being configured so that the bearing members (24) are immovably retained in the recesses (27) by the exhaust manifold (16) with the apertures (25) of the bearing members (24) being co-axial when the exhaust manifold (16) is detachably secured to the cylinder block (9), with the respective surfaces (40,44) in abutting relation, said valve members (15) being rotatably supported in said aligned apertures (25) of the bearing members (24).

5,379,732
CONTINUOUSLY VARIABLE VOLUME SCAVENGING PASSAGE FOR TWO-STROKE ENGINES
Nagesh S. Mavinahally, and Pushpalatha S. Mavinahally, both of 11592 Yarmouth Ave., Granada Hills, Calif. 91344
Filed Nov. 12, 1993, Ser. No. 151,177
Int. Cl.⁶ F01P 1/04
U.S. Cl. 123—73 AA 10 Claims



1. A two-stroke internal combustion engine having a transfer passage which comprises a first duct and a second duct, the length of the transfer passage being variable, by a control means which cause the first duct to slide inside the second duct, in order to vary the volume of the transfer duct according to operating conditions of the engine.

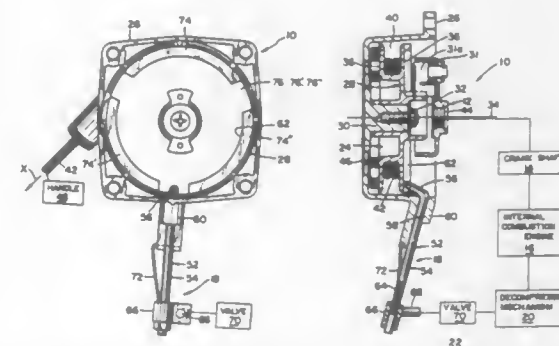
5,379,733
FUEL SHUT-OFF SOLENOID PULL-IN COIL RELAY
Brian J. Haddick, Beaver Dam, and Rudolph A. Peterson, Jr., Horicon, both of Wis., assignors to Deere & Company, Moline, Ill.
Filed Oct. 29, 1993, Ser. No. 145,363
Int. Cl.⁶ F02N 17/00; F02B 77/00
U.S. Cl. 123—179.17 7 Claims



1. In an engine having a source of current, an ignition switch connected to the source, a starter, and a fuel pump system including a solenoid having a pull-in coil for activating fuel flow during start up, a circuit comprising:
a first relay connected to the source through the ignition

switch and to the pull-in coil for selectively supplying pull-in coil current during engine starting;
an oil pressure switch having a first condition when engine oil pressure is below a preselected level and a second condition when the oil pressure is above a preselected level; and
wherein the relay is connected to the oil pressure switch and is responsive to the second condition for interrupting pull-in coil current after the oil pressure reaches a preselected level to thereby prevent overheating of the fuel pump solenoid.

5,379,734
STARTER TO OPERATE A DECOMPRESSION MECHANISM ON AN INTERNAL COMBUSTION ENGINE
Shubei Tsunoda, Misato, and Yoshikazu Iida, Tokyo, both of Japan, assignors to Starting Industry Company Limited and Kloritz Corporation, both of Tokyo, Japan
Filed Sep. 8, 1993, Ser. No. 118,530
Claims priority, application Japan, Sep. 14, 1992, 4-070443[U]
Int. Cl.⁶ F02N 17/08
U.S. Cl. 123—192.1 20 Claims

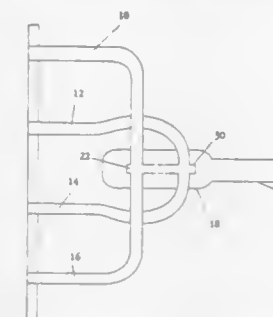


1. An improved starter of the type having a housing to be attached to an internal combustion engine and rotatable means on the housing for rotating a crankshaft on an internal combustion engine to which the housing is attached and having a) an engaged state wherein rotation of the rotatable means in a first direction causes rotation in the first direction of a crankshaft on an internal combustion engine to which the housing is attached and b) a disengaged state, the improvement comprising:
first means for both activating and deactivating a decompression mechanism on an internal combustion engine to which the housing is attached as an incident of the rotatable means being in its engaged state and rotated in the first direction.

5,379,735
TUNED INTAKE SYSTEM
Thomas T. Ma, South Woodham Ferrers, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.
PCT No. PCT/GB92/01034, § 371 Date Dec. 9, 1993, § 102(e) Date Dec. 9, 1993, PCT Pub. No. WO92/22737, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 10, 1992, Ser. No. 162,129
Claims priority, application United Kingdom, Jun. 11, 1991, 9112562
Int. Cl.⁶ F02M 25/06
U.S. Cl. 123—184.42 3 Claims

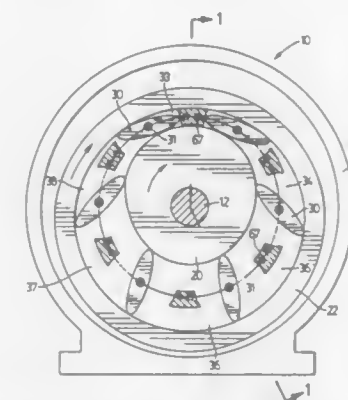
1. An intake system for an internal combustion engine having a plurality of intake tracts (10, 12, 14, 16) of equal length connected in use to extend from individual engine intake ports to a common plenum chamber (18), and a common passage (20) opening into the plenum chamber (18) for supplying air to all the intake ports, wherein the tracts (10, 12, 14, 16) are arranged to open into the plenum chamber (18) in pairs associated with pairs of intake ports, each pair of intake ports having intake

valve events which do not overlap with each other, with the ends of each pair of tracts (10, 16, 12, 14) being disposed within the plenum chamber (18) so as to directly face one another, with the tracts being separated by a gap (22) which is narrower than the diameter of the tracts (10, 12, 14, 16), and with the gap



(22) being sufficiently wide to permit mass air flow between the respective tracts (10, 12, 14, 16) and the common passage (20) but being sufficiently narrow to couple most of any pressure wave energy emanating from one tract (e.g. 10) directly into the facing tract (e.g. 16).

5,379,736
GAS COMPRESSOR/EXPANDER
Stanley R. Anderson, 64 Ravine Park Crescent, West Hill, Ontario, Canada M1C 2M6
Filed Jul. 25, 1994, Ser. No. 279,878
Int. Cl.⁶ F02G 3/00; F01C 1/00; F04C 2/00
U.S. Cl. 123—204 12 Claims



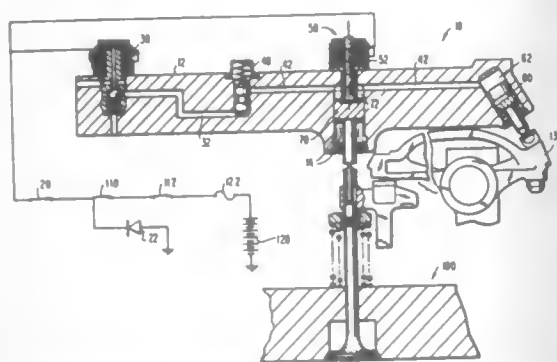
7. A rotary engine having a drive shaft, comprising:
an air compressor attached to the drive shaft, the compressor comprising:
an inner chamberwall-forming member attached eccentrically to the drive shaft and being rotatable with it, an outer chamberwall-forming member attached eccentrically to the drive shaft and being rotatable with it, and a plurality of stator vanes positioned concentrically about the drive shaft between the inner and outer chamberwall-forming members, the stator vanes each being rotatable about an axis extending parallel to the drive shaft, the inner and outer chamberwall-forming members and stator vanes coacting to define a plurality of chambers which vary in size with the rotation of the stator vanes and the chamberwall-forming members;
a stationary end wall for the air compressor providing a stationary end wall for each of the chambers; and
valve means in the stationary end wall for enabling the inflow and outflow of air into and out of each chamber;
a combustion chamber being in flow communication with

the air compressor, the combustion chamber having walls defining a fixed volume, and comprising:
fuel injection means for introducing a combustible fuel into the combustion chamber;
compressed air inlet means connected to the air compressor for introducing compressed air into the combustion chamber concurrently with the injection of fuel into it; ignition means for igniting the air and fuel mixture in the combustion chamber; and
exhaust gas outlet means for exhausting the combusted fuel and air mixture from the combustion chamber; and
a gas expander attached to the drive shaft and being in flow communication with the combustion chamber, and the expander comprising:
an inner chamberwall-forming member attached eccentrically to the drive shaft and being rotatable with it, an outer chamberwall-forming member attached eccentrically to the drive shaft and being rotatable with it, and a plurality of stator vanes positioned concentrically about the drive shaft between the inner and outer chamberwall-forming members, the stator vanes each being rotatable about an axis extending parallel to the drive shaft, the inner and outer chamberwall-forming members and stator vanes coacting to define a plurality of chambers which vary in size with the rotation of the stator vanes and the chamberwall-forming members;
a stationary end wall for the expander providing a stationary end wall for each of the chambers; and
valve means in the stationary end wall of the expander for enabling the inflow and outflow of gas into and out of each chamber;
the gas expander operating to receive compressed exhaust gases from the combustion chamber and to impart rotational motion to the drive shaft through the expansion of such gases therein.

5,379,737
ELECTRICALLY CONTROLLED TIMING ADJUSTMENT FOR COMPRESSION RELEASE ENGINE BRAKES
Haoran Hu, Farmington, Conn., assignor to Jacobs Brake Technology Corporation, Wilmington, Del.
Filed Aug. 26, 1993, Ser. No. 112,771
Int. Cl.⁶ F02D 13/04

U.S. Cl. 123—322

12 Claims



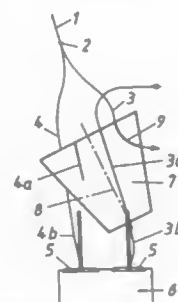
1. In a compression release engine brake for use with an internal combustion engine, said engine brake having a hydraulic circuit including a master piston reciprocable in a master piston bore and a slave piston reciprocable in a slave piston bore which is in hydraulic fluid communication with said master piston bore so that reciprocation of said master piston in said master piston bore causes hydraulic fluid to flow in said hydraulic circuit and reciprocate said slave piston in said slave piston bore, said master piston being reciprocated by a moving part of said engine, and said slave piston contacting a drive train of an exhaust valve of said engine during reciprocation of said slave piston to open said exhaust valve at a time when the

engine would not otherwise open said exhaust valve, the improvement comprising:
a mechanical element at least partly disposed in said slave piston bore and mounted for movement relative to said slave piston bore; and
electrically controlled means for selectively moving said mechanical element relative to said slave piston bore so that said mechanical element selectively contacts said slave piston in order to selectively modify said reciprocation of said slave piston in response to said reciprocation of said master piston.

5,379,738
FOUR-STROKE CYCLE INTERNAL COMBUSTION ENGINE
Franz Laimböck, Walddorfberg 86, A-8051 Thal, Bei Graz, Austria, and Alexander F. W. Fürschiuss, Bochenstrasse 20, A-4481 Asten, Austria
Filed Nov. 15, 1993, Ser. No. 152,831
Claims priority, application Austria, Nov. 16, 1992, A 2262/92
Int. Cl.⁶ F02D 9/08

U.S. Cl. 123—337

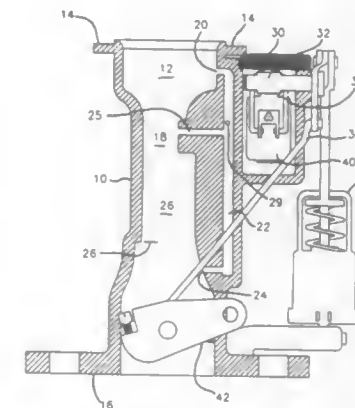
8 Claims



1. In a four-stroke cycle internal combustion engine comprising
at least one cylinder comprising at least two inlet valves, at least one intake line having a junction and at least two branch line sections extending downstream of said junction to respective ones of said intake valves of said cylinder, and
at least one rotary valve, which is disposed in said intake line between said junction and said branch line sections and comprises at least two valve passages, which are associated with respective ones of said branch line sections and is rotatable to a plurality of positions and is arranged in one of said positions to connect said junction through one of said valve passages to the branch line section associated therewith and to shut off said junction from the other of said intake branch line sections,
the improvement residing in that
each of said valve passages is substantially straight, said engine comprises an additional pipe section, and said rotary valve is arranged to connect in a first one of said positions said junction through said pipe section and a predetermined one of said valve passages and the associated branch line section to a predetermined one of said inlet valves and to connect in another one of said positions said junction through said predetermined one and at least one additional one of said valve passages to the branch line sections associated therewith whereas said pipe section is then shut off from said valve passages.

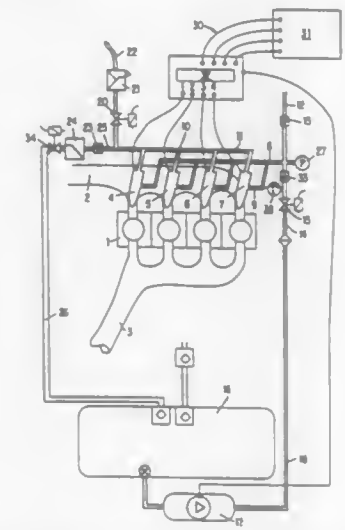
5,379,739
CARBURETOR
Augustin Dombrowski, 5280 Paisley St., Montreal, Que., Canada H1S 1V2
Filed Sep. 25, 1991, Ser. No. 765,193
Int. Cl.⁶ F02M 19/03
U.S. Cl. 123—438

2 Claims



1. In a carburetor having a housing with a wall defining a main air passageway extending between an air inlet and an air outlet and having a narrower venturi portion intermediate said air inlet and said air outlet, and a throttle valve proximate said air outlet, the improvement wherein the carburetor has a second narrower passageway within said wall, said second passageway extending substantially parallel to said main air passageway, said second passageway communicating with and having an air inlet from said main air passageway proximate said air inlet of said main passageway, a fuel inlet to said second passageway downstream from said inlet, a first outlet from said second passageway to said main air passageway proximate said narrower venturi portion, and a second outlet from said second passageway intermediate said venturi portion and the maximum extent of said throttle valve toward said venturi portion said main air passageway having an abruptly expanded wall portion at one side of a downstream end of said venturi portion.

fuel to determine injector timing for the first fuel, and (d) a second control unit using supply characteristics of the second

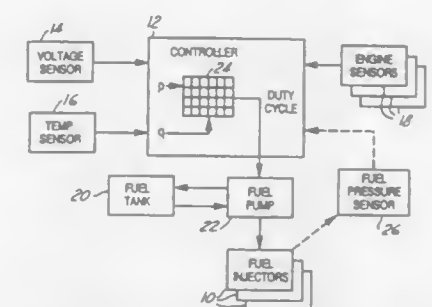


fuel to convert injection timing for the first fuel from the first control unit into injector timing for the second fuel.

5,379,741
INTERNAL COMBUSTION ENGINE FUEL SYSTEM WITH INVERSE MODEL CONTROL OF FUEL SUPPLY PUMP
Edwin J. Matysiewicz, Farmington Hills; Charles I. Rackmil, Ann Arbor, and James C. Smith, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 27, 1993, Ser. No. 173,030
Int. Cl.⁶ F02M 37/04

U.S. Cl. 123—497

4 Claims



5,379,740
DUAL FUEL INJECTION SYSTEM AND A METHOD OF CONTROLLING SUCH A SYSTEM

Christopher P. Moore, Evandale, and Manos Kavarnos, Hallett Cove, both of Australia, assignors to Biocom Pty, Ltd., Australia
PCT No. PCT/AU91/00531, § 371 Date Jul. 9, 1993, § 102(e) Date Jul. 9, 1993, PCT Pub. No. WO92/08888, PCT Pub. Date May 29, 1992

PCT Filed Nov. 20, 1991, Ser. No. 50,465
Claims priority, application Australia, Nov. 20, 1990, PK 3408; Nov. 20, 1990, PK 3409

Int. Cl.⁶ F02M 51/00
U.S. Cl. 123—478

18 Claims

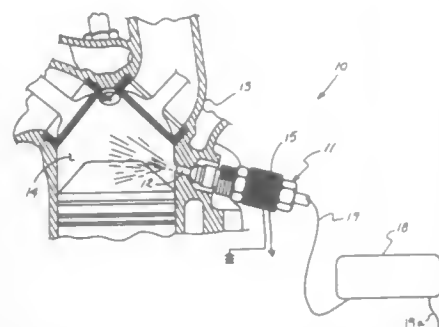
1. A dual fuel injection arrangement for use in an internal combustion engine comprising (a) at least one injector for injecting fuel into an inlet manifold of the engine, (b) a single fuel rail system capable of supplying one of a first fuel and a second fuel to the at least one injector, (c) a first control unit using engine parameters and demand parameters for the first

1. A feedforward control system for an electrically operated fuel injection pump for an internal combustion engine, comprising:
means for determining the required fuel pressure and flow rate to be delivered by the pump;
voltage determination means for using the determined fuel pressure and flow rate to determine a variable operating voltage for the pump; and means for supplying the determined variable operating voltage to the pump with said voltage determination means comprising an arithmetic processor using fuel pressure, fuel flow rate, pump supply voltage, and fuel temperature as independent variables, and having pump operating voltage as its output.

5,379,742
VAPORIZED FUEL INJECTION SYSTEM
 Bura B. Breland, 224 Sargent St., Wiggins, Miss. 39577, and
 Bobby L. Breland, 707 Odell, Cleburne, Tex. 76031
 Filed Apr. 19, 1993, Ser. No. 48,316
 Int. Cl.⁶ F02M 31/00

U.S. Cl. 123—549

3 Claims



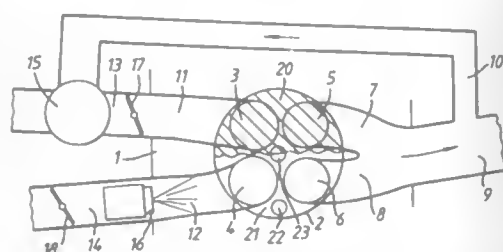
1. A vaporized fuel injection system arranged for preheating fuel directed into a combustion chamber of an internal combustion engine, wherein the system comprises,
 a fuel injector device having an elongate body, and a nozzle arranged for projection within the combustion chamber, and
 a heating jacket arranged in surrounding relationship relative to the body, with a coiled electrical resistance cable directed through the heating jacket in outer communication with a vehicular battery to effect heating of the body of the fuel injector device, and
 a further heating jacket mounted in surrounding relationship relative to the body adjacent to the heating jacket, wherein the further heating jacket includes a coiled conduit tube directed therethrough, and an exhaust conduit, the exhaust conduit having a catalytic convertor with the exhaust conduit arranged in operative communication with an exhaust manifold, the exhaust manifold arranged in securement with the internal combustion engine, and wherein the exhaust conduit is arranged in operative communication with the catalytic convertor to direct heated exhaust gas from said catalytic convertor through said further heating jacket.

5,379,743
SPARK IGNITED INTERNAL COMBUSTION ENGINES
 John Stokes, and Timothy H. Lake, both of West Sussex, England, assignors to Ricardo Consulting Engineers Limited, West Sussex, England
 Filed Oct. 22, 1993, Ser. No. 141,856
 Claims priority, application United Kingdom, Oct. 23, 1992, 9222353

Int. Cl.⁶ F02B 47/08

U.S. Cl. 123—568

12 Claims



1. In a spark ignited engine employing exhaust gas recirculation and stratification of the recirculated exhaust gas, and having at least one cylinder accommodating a piston, at least one inlet port cooperating with an inlet valve for introducing air into said cylinder, a fuel supply for introducing fuel into

said cylinder, and at least one exhaust port cooperating with an exhaust valve for discharging exhaust gas from said cylinder, wherein the improvement comprises:

- an exhaust gas recirculation duct connecting said exhaust port to the first inlet port;
- a diverter valve located at the juncture of said exhaust gas recirculation duct and said first inlet port, and being operable, at low engine loads, to connect said first inlet port to said exhaust gas recirculation duct for introducing solely recirculated exhaust gas through said first inlet port into said cylinder and, at high engine loads, to connect said first inlet port to the atmosphere for introducing air into said cylinder;
- a second inlet port cooperating with a second inlet valve communicating with said cylinder;
- said fuel supply being operative to permit the fuel to be introduced into said second inlet port; and
- said first and second inlet ports being of the tumbling type whereby gas flowing in through said inlet ports swirls within a respective portion of said cylinder about an axis substantially perpendicular to the axis of said cylinder.

5,379,744
METHOD AND APPARATUS FOR CONTROLLING THE AMOUNT OF EXHAUST GAS RECYCLED IN AN INTERNAL COMBUSTION ENGINE

Reiner Pischke, Bad Friedrichshall, and Annette Luther, Weinsberg, both of Germany, assignors to Audi AG, Ingolstadt, Germany

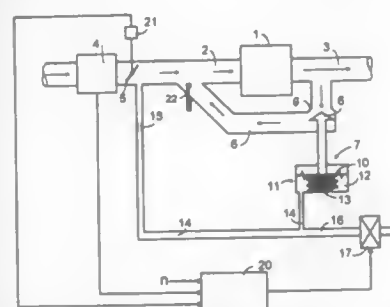
Filed Nov. 23, 1993, Ser. No. 156,015

Claims priority, application Germany, Nov. 26, 1992, 4239773

Int. Cl.⁶ F02M 25/07

U.S. Cl. 123—571

6 Claims



- 1. An internal combustion engine assembly comprising:
 an internal combustion engine having an intake manifold for aspirating air and an exhaust manifold exhausting a gas resulting from combustion therein;
 exhaust gas recycling means for recycling said gas, said exhaust gas recycling means including a pipe extending from said exhaust manifold to said intake manifold, and exhaust valve means for controlling the rate of flow of said gas through said pipe;
 aspirated air mass metering means for metering a mass of said aspirated air through said intake manifold to generate an aspirated air mass signal;
 a throttle disposed in said intake manifold and means for measuring a throttle angle of said throttle;
 an electronic control receiving said aspirated air mass signal and the throttle angle measurement, said control being provided to compare said aspirated air mass signal and the throttle angle measurement to a preselected value to determine if said engine is operating at a certain elevation;
 a memory means for holding said preselected value determined by measuring said aspirated air mass signal and the throttle angle measurement at a preselected elevation;
 said exhaust valve means includes a valve body extending into said pipe and cooperating with a valve seat and a diaphragm controlling the position of said valve body;
 said exhaust valve means further includes a chamber con-

ected to said intake manifold and housing said diaphragm and a spring for biasing said valve body to a preselected position;
 an electric valve connecting said chamber to atmosphere; and
 said electric valve has a duty cycle controlled by said electronic control.

5,379,745
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH HIGH-TENSION SWITCHES

Manfred Vogel, Ditzingen-Helmerdingen, and Werner Herden, Gerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00305, § 371 Date Nov. 16, 1993, § 102(e)
 Date Nov. 16, 1993, PCT Pub. No. WO92/21875, PCT Pub. Date Oct. 12, 1992

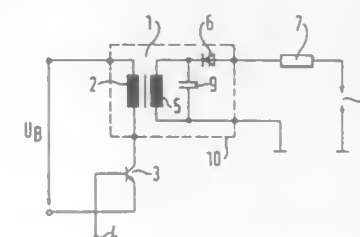
PCT Filed Apr. 14, 1992, Ser. No. 142,311

Claims priority, application Germany, May 31, 1991, 4117808

Int. Cl.⁶ F02P 3/12

U.S. Cl. 123—655

9 Claims



1. An ignition system for internal combustion engines, comprising a plurality of spark plugs; an ignition coil provided for said spark plugs and having a secondary circuit; at least one trigger diode cascade formed as a high voltage semiconductor switch and connected in said secondary circuit of said ignition coil prior to each of said spark plugs so as to change suddenly from a blocking state to a conducting state at a preselected voltage for generating ignition sparks; and a capacitor connected parallel to said secondary winding of said ignition coil between said ignition coil and said trigger diode cascade.

5,379,746
DEVICE FOR MOUNTING A SIGHT ON AN ARCHERY BOW

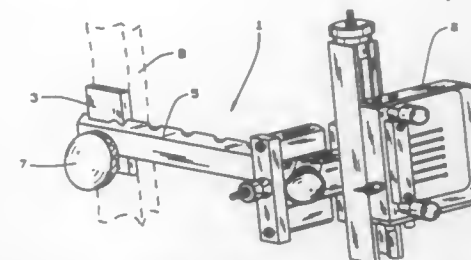
Donald R. Sappington, St. Charles County, Mo., assignor to Toxotics Manufacturing, Inc., Wentzville, Mo.

Filed Jul. 16, 1993, Ser. No. 91,911

Int. Cl.⁶ F41B 5/00

U.S. Cl. 124—87

5 Claims



- 1. A device for mounting a sight on an archery bow comprising:
 a bracket means, said bracket means having a generally rectangular web, said web having upper and lower ends, said web having means thereon for accommodating the attaching of said bracket to a bow, said web having a first flange means at one of a lower end and upper end thereof, and a second flange means at the other of said lower and upper ends thereof, said first flange means having an

integrally formed first bevelled wall bevelled inwardly towards said web means, said second flange having a movable, spring biased member operatively associated therewith, said member forming a second bevelled wall, said first bevelled wall of the web flange and said second bevelled wall of the spring biased member defining a generally trapezoidal shaped channel within said bracket means, said spring biased member capable of being adjustably shifted across said flange and towards said proximate web;

- a bar member, having means on an end thereof for mounting a sight, slidably engaged within said formed trapezoidal shaped channel, said bar means having a generally trapezoidal cross section; and,
- a screw means operatively associated with said second flange means and rotatably disposed therethrough so as to engage and urge said bevelled wall movable member towards the trapezoidal shaped bar member, thereby securing said bar member in fixed position once adjusted.

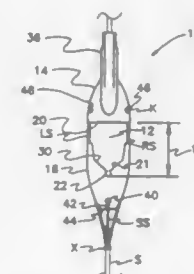
5,379,747
ARCHERY BOW SIGHT
 Eddy D. Morris, Rte. 2, Rocky Mountain Rd., Eufala, Ala. 36072-0086, and Robert L. Coker, 40 Oakwood Ln., Dadeville, Ala. 36853

Filed Sep. 27, 1993, Ser. No. 127,067

Int. Cl.⁶ F41B 5/00

U.S. Cl. 124—87

18 Claims



- 1. A bow string mounted sight for use with archery long bows and compound bows, comprising:
 an upper component and a lower component each having a first surface and an opposite second surface, and left and right peripheral channels providing for the respective installation of left and right strands of a bow string, with the bow string strands providing for the securing of said bow string mounted sight within the bow string;
 said upper component having a lower edge and said lower component having an upper edge, with said lower edge of said upper component and said upper edge of said lower component including a sight window therebetween and respectively defining an upper inner edge and a lower inner edge of said sight window;
 said sight window comprising a first target alignment means and including a second target alignment means disposed along said lower inner edge of said sight window, with said second target alignment means being relatively smaller and more precise than said first target alignment means, whereby;
 said sight window comprising said first target alignment means provides for ease of visual acquisition of a target by an archer under a variety of lighting conditions, with the archer transitioning from said first target alignment means to said relatively smaller and more precise second target alignment means as said bow string mounted sight is angularly and rearwardly displaced toward the eye of the archer due to a drawing of the bow string.

5,379,748

ARCHERY BOW SIGHT

Charles W. Carlson, 2811 - 13 Mile Rd., Rockford, Mich. 49341
Continuation of Ser. No. 919,612, Jul. 27, 1992, abandoned,
which is a continuation of Ser. No. 812,861, Dec. 20, 1991,
abandoned, which is a continuation of Ser. No. 669,930, Mar. 15,
1991, abandoned. This application Nov. 5, 1993, Ser. No. 148,179
Int. Cl.⁶ F41G 1/467

U.S. Cl. 124—87

25 Claims



1. A bow sight adapted for use with a bow having a bow string comprising separable strands, for providing targeting accuracy, said bow sight adapted to be mounted to said bow string and comprising:

- a base portion adapted to be mounted to said bow string, said base portion including a top portion positioned between and engaged by said separable strands of said bow string; said top portion having a top edge wherein substantially all of said base portion is disposed below said top edge, so that a large, open viewing area is provided above said top portion top edge and between said separable strands of said bow string when said top portion is mounted between and engaged by said separable strands of said bow string; said top portion having a width relative to remaining portions of said base portion below said top portion so that the maximum spread of said separable strands along the length of said bow sight occurs along said top portion; a narrow sight pin extending upwardly from said top edge, said sight pin having a height and a width, the width being substantially less than the width of the top portion top edge over substantially the height of the sight pin, and being entirely disposed in said viewing area when said top portion is mounted between and engaged by said separable strands of said bow string; and said bow sight is configured so that a user's line of sight toward a target is substantially unrestricted through said large, open viewing area when said bow string is substantially fully cocked or drawn by said user.

5,379,749

CONDENSATE TRAP FOR MULTI-POISE FURNACE
Larry D. Rieke, Zionsville, and Michael J. Larsen, Danville,
both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 16, 1993, Ser. No. 107,285
Int. Cl.⁶ F24H 3/02

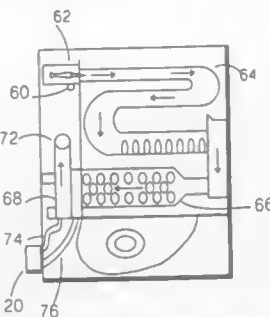
U.S. Cl. 126—110 R

10 Claims

1. In a furnace for supplying circulating heated air to an interior comfort space and having at least one burner wherein an air flow of heated gas is moved by an inducer through a condensing heat exchanger and is exhausted through an exhaust vent to an outside environment, the furnace having a trap for condensate forming in the air flow, said condensate trap simultaneously receiving liquid condensate forming in first and second gaseous environments that are respectively under positive and negative pressure relative to an external gaseous environment; wherein the improvement comprises:

- said trap comprising a container having first and second inlet ports through an upper portion thereof that respectively access the first and second gaseous environments, a first liquid reservoir in a bottom portion thereof, and an outlet

port through a lower portion of said trap for conducting overflow of said first liquid reservoir into said external gaseous environment;
a first duct extending from said first inlet port and terminating in said interior of said container below a surface of said first liquid reservoir; whereby said first liquid reservoir establishes a first liquid seal between said first gaseous environment and said external gaseous environment;
a second duct extending from said second inlet port to an



interior of said container and having a second liquid reservoir in a reflexively directed portion thereof, a portion of said second liquid reservoir being disposed above said outlet port to establish a second liquid seal between said second gaseous environment and said external gaseous environment;
first mounting means disposed on said trap for mounting said trap on a vertical wall of said furnace; and
second mounting means disposed on said trap for alternately mounting said trap on a horizontal wall of said furnace.

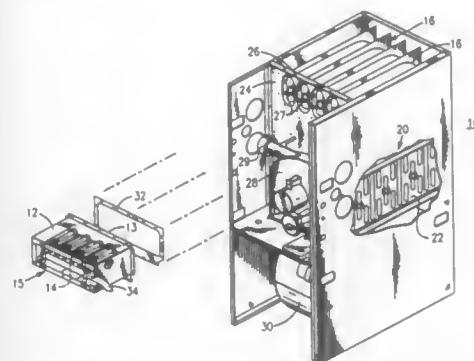
5,379,750

BURNER MOUNTING ASSEMBLY FOR GAS FURNACE
Michael J. Larsen, Danville, and Robert C. Swilik, Jr., Indianapolis, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 16, 1993, Ser. No. 122,148
Int. Cl.⁶ F24H 3/02

U.S. Cl. 126—110 R

10 Claims



1. In a furnace of the type having combustion burners each with an inlet end and a discharge end, the burners for receiving a gas from a manifold orifice and for directing resultant heat into inlet ports of a heat exchanger, the improvement comprising in combination:

- a burner box for receiving and positioning the burners and a gas manifold therein, said burner box having an accessible front end and an open discharge end being securable to the inlet side of the heat exchanger to cover the inlet ports; support means for securely receiving and positioning each of the burners in a predetermined location relative to one another so that the burners are aligned in said support means to form a rigid unitary burner assembly; and

bracket means mounted within said burner box for securely receiving the burner assembly and for positioning the burners within said burner box so that when the burner box is secured to the inlet side of the heat exchanger, each burner is aligned with one of the inlet ports and positioned to receive a corresponding gas manifold orifice whereby when the burners require inspection, the burner assembly is quickly removed from within the burner box through the front end thereof while the burner box remains secured to the inlet side of the heat exchanger.

5,379,751

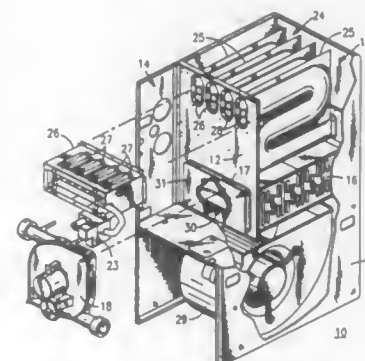
INDUCER COLLECTOR BOX SEAL FOR INDUCTION CONDENSER FURNACE

Michael J. Larsen, Danville; Timothy J. Waterman, Carmel, and Larry D. Rieke, Zionsville, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 20, 1993, Ser. No. 170,016
Int. Cl.⁶ F24H 3/00

U.S. Cl. 126—110 R

6 Claims



1. In an induction type furnace in which an inlet of an inducer fan housing is coupled to an outlet of a heat exchanger element and wherein said inducer fan housing has a substantially planar back wall in which said inlet is centrally disposed and said heat exchanger element has a front wall disposed parallel to said inducer housing back wall and spaced a predetermined short distance therefrom with said heat exchanger element outlet being disposed in said front wall, the improvement, wherein said heat exchanger element outlet and said inducer fan housing inlet is positionally offset from one another and comprising a sealing arrangement surrounding said inlet and said outlet for fluidly and sealably coupling the heat exchanger element to the inducer fan housing and permitting passage of vent gases from said heat exchanger element into said inducer fan housing inlet; the sealing arrangement including first and second congruent continuous skirts each projecting from a respective one of said heat exchanger element front wall and said inducer fan housing back wall and surrounding the associated one of said outlet and said inlet, each said skirt having a tip edge; said first and second skirts mating at associated tip edges thereof, and including means on the respective tip edges to form a gasketless seal therebetween.

5,379,752

LOW SPEED INTERLOCK FOR A TWO STAGE TWO SPEED FURNACE

Hall Virgil, Jr., Brownsburg; Ninev K. Zia, Indianapolis, and Daniel J. Dempsey, Carmel, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

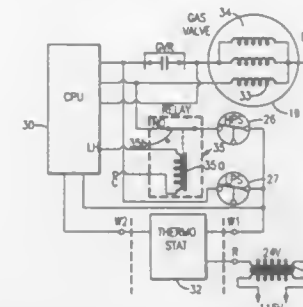
Filed Jul. 12, 1993, Ser. No. 90,332
Int. Cl.⁶ F24H 3/00

U.S. Cl. 126—116 A

4 Claims

1. In a gas-fired forced air furnace for heating air in a comfort space and in which at least one gas burner is disposed in a combustion chamber that is supplied with combustion air and which supplies heated combustion gases to a heat exchanger for heating circulation air that passes through the heat ex-

changer and returns to the comfort space, in which an electrically actuated gas valve supplies fuel gas to said at least one gas burner and is actuatable into a cutoff mode, a partial-flow low-fire mode, and a full-flow high-fire mode, the gas valve having a low-fire input and a high-fire input; and in which a low-fire pressure switch in gas pressure communication with said collector box is operative to connect electrical power to said gas valve low-fire input when said collector box pressure attains a



first predetermined pressure level and a high-fire pressure switch in gas pressure communication with said collector box is operative to connect electrical power to said gas valve high-fire input when said collector box pressure attains a second predetermined pressure level; the improvement which comprises interlock means connected in series with said high fire pressure switch to deny electrical power to said gas valve high-fire input when said gas valve is actuated in its low-fire mode in response to a call for low-fire.

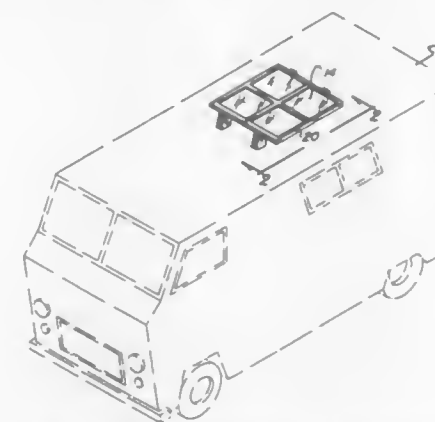
5,379,753

SOLAR PANEL CONTROL APPARATUS

Cecil C. Noennich, 142 Sunset St., Ridgecrest, Calif. 93555
Filed Dec. 13, 1993, Ser. No. 165,176
Int. Cl.⁶ F24J 2/38

U.S. Cl. 126—608

3 Claims



1. A solar panel control apparatus for varying the position of a solar panel mounted upon the roof of a modular home comprising, in combination:

- a solar panel support frame in a generally rectangular configuration and having a horizontal pivot rod mounted there beneath at a central extent thereof with weight means along one edge;
- a vertically receptacle collar having a clevis at its upper end rotatively receiving the pivot rod of the support frame and having a recess extending upwardly from its lower end with internal threads at its lower extent and a cylindrical cavity between the threads and the upper end;
- a rotatable shaft having a threaded upper end cooperatively secured with the threads of the collar and an operator controlled handle at its lower end extending to within the

modular home whereby rotation of the shaft through the handle will act to raise and lower the collar and pivot with the support frame;

- a turret having a downwardly extending cavity having surfaces adapted to receive the collar with a slot and a spline to preclude rotational movement between the turret and shaft;
- a turret support plate with an upper face to support the turret, the turret plate having a downwardly located operator controlled wheel within the modular home to effect rotation of the plate and the turret;
- a bearing assembly between the upper surface of the roof of a modular home and the lower surface of the support plate whereby rotation of the handle will vary the angular orientation of the support structure with respect to the support plate and the roof of a vehicle while rotation of the wheel will vary the rotational position of the solar panel with respect to the horizontal support plate and roof of the modular home; and
- outstanding support members positioned on the support plate to limit the vertical movement of the end of the solar panel support remote from the weight means.

5,379,754

METHOD USING APPROXIMATING APPARATUS FOR HERNIA REPAIR

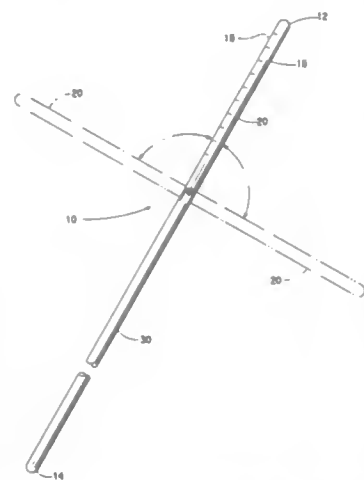
H. Jonathan Tovey, Milford; Douglas J. Cuny, Bethel, both of Conn., and Michael Ciccolella, Lake Carmel, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jul. 30, 1992, Ser. No. 922,259

Int. Cl.⁶ A61B 1/00

U.S. Cl. 128—4

4 Claims



1. A method of facilitating endoscopic hernia repair, comprising the steps of:
 - inserting a cannula into the body;
 - inserting an instrument having a measuring portion into a body cavity through the cannula;
 - manipulating said measuring portion to a position adjacent to the body defect so that a plurality of calibrations are adjacent said body defect;
 - viewing the size of the body defect on a monitor remote from the body defect by comparing calibrations on the measuring portion to the body defect to determine its size;
 - providing prosthetic material based on the determination of the size of the body defect; and
 - inserting the prosthetic material through the cannula for positioning over to the hernia.

5,379,755 DEVICE FOR ATTACHING AND SECURING AN AUXILIARY INSTRUMENT TO A SURGICAL INSTRUMENT

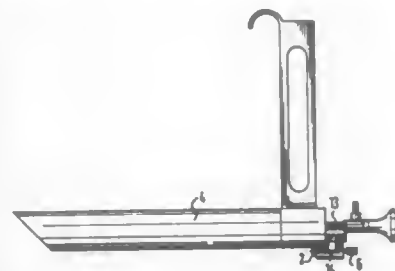
Helmut Hecke, Knittlingen, Germany, assignor to Richard Wolf GmbH, Knittlingen, Germany

Filed Nov. 16, 1992, Ser. No. 976,471

Claims priority, application Germany, Nov. 14, 1991, 4137426 Int. Cl.⁶ A61B 17/32

U.S. Cl. 128—4

4 Claims



1. A device for attaching and securing an auxiliary instrument having a coupling part to a surgical instrument having a shaft through which the auxiliary instrument may be introduced, comprising: a receiver having a longitudinal axis and a passage along the longitudinal axis, in which passage the coupling part of the auxiliary instrument is insertable; a base member connected to the receiver and having an inclined sliding surface; and clamping means for releasably clamping the receiver to the shaft of the surgical instrument, said clamping means including a wedge-shaped clamping element which is movable and slidable relative to the longitudinal axis of the receiver so that the clamping element is able to frictionally rest against the outer periphery of the shaft wall, the wedge-shaped element having a clamping surface extending parallel to the longitudinal axis of the receiver and a sliding surface extending at an angle thereto so as to correspond to the inclined sliding surface of the base member, the inclined sliding surface of the wedge-shaped element being supported on the correspondingly inclined sliding surface in the base member, the wedge-shaped element further having a working surface extending vertically to the longitudinal axis of the receiver, the clamping means further including an adjusting screw rotatably mounted in the base member so as to be arranged eccentrically to the receiver and having a free end which engages the working surface of the wedge-shaped element.

5,379,756 REPLACEABLE LENS ASSEMBLY FOR VIDEO LAPAROSCOPE

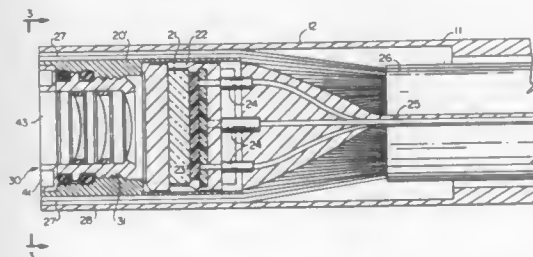
Michael J. Pileski, Skaneateles, and Robert J. Wood, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Sep. 11, 1992, Ser. No. 943,930

Int. Cl.⁶ A61B 1/06

U.S. Cl. 128—6

11 Claims



1. A video laparoscope which comprises an elongated insertion tube in which a camera assembly is disposed at a distal end

5,379,758 HAND HELD SURGICAL RETRACTOR

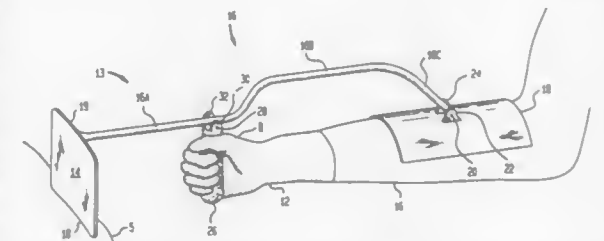
Samuel J. Snyder, 57 Leach Ave., Park Ridge, N.J. 07656

Filed Mar. 23, 1993, Ser. No. 35,403

Int. Cl.⁶ A61B 17/02; B25G 1/00

U.S. Cl. 128—20

17 Claims



1. A hand held surgical retractor, comprising:
 - a blade having one edge for contacting a surgical wound and an opposite edge, said blade lying substantially in a first plane;
 - a handle having one end supported by the opposite edge the blade, said one end extending along a first longitudinal axis, said axis extending substantially normal to said first plane, said handle further having an opposite free end;
 - a brace plate arranged to fit against a forearm of a user and pivotally attached to the opposite free handle end; and
 - a grip for being gripped by the hand of the user, said grip being pivotally attached to the handle between the blade and brace plate.

5,379,757 METHOD OF COMPRESSING ENDOSCOPE IMAGE DATA BASED ON IMAGE CHARACTERISTICS

Keiichi Hiyama, Akishima; Takao Tsuruoka; Kazunari Nakamura, both of Hachioji; Yutaka Konomura, Tachikawa; Masahide Kanno, and Shinichiro Hattori, both of Hachioji, all of Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

Division of Ser. No. 574,401, Aug. 28, 1990, Pat. No. 5,209,220.

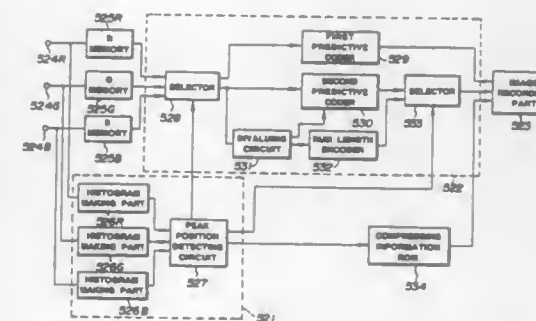
This application Nov. 30, 1992, Ser. No. 983,237

Claims priority, application Japan, Oct. 16, 1990, 2-275437

Int. Cl.⁶ A61B 1/06

U.S. Cl. 128—6

1 Claim



1. A method of compressing input endoscope image data comprising the steps of:
 - analyzing whether said endoscope image data are ordinary image data or dyed image data; and
 - varying the compressing manner by lowering the compressing rate for said dyed image data below the compressing rate for said ordinary image data on the basis of the result of said analyzing step.

5,379,759

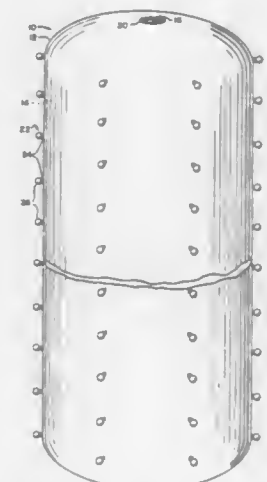
RETRACTOR FOR ENDOSCOPIC SURGERY

Frank K. Sewell, Jr., 1413 N. Elm, Henderson, Ky. 42420
Continuation of Ser. No. 997,655, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 650,049, Feb. 4, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 95,818

Int. Cl.⁶ A61C 3/00

U.S. Cl. 128—20

12 Claims



1. A surgical retractor comprising an elastic skin enclosing a variable volume cavity, said skin being movable through a narrow passageway when said enclosed volume is low, said skin including a plurality of outward projections for cooperation with a mechanical fastening means, and said projection comprising the same material from which the elastic skin is formed.

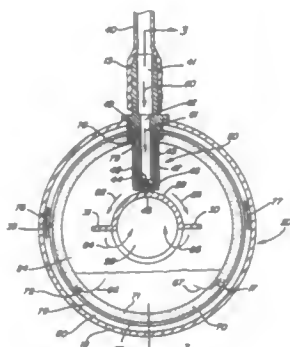
5,379,760
POSITION INSENSITIVE LOW RESISTANCE
ASPIRATOR

Steven L. Ryder, 1334 W. Woodcrest Ave., Fullerton, Calif. 92633

Filed Oct. 26, 1992, Ser. No. 966,689
Int. Cl.⁶ A61M 15/00

U.S. Cl. 128—200.21

9 Claims



1. For use in vaporizing or atomizing a liquid to form a mist to be combined with a primary gas flow, a nebulizer comprising:

- a housing defining an interior cavity for receiving a quantity of to-be-atomized liquid, an interior surface exposed to said interior cavity and an output fitting in communication with said primary gas flow;
- an atomizer supported by said housing and extending into the cavity having an upper nozzle and a lower nozzle, said nozzles having respectively first and second nozzle apertures, said apertures being separated by a film passage, and said film passage being in communication with a liquid transfer passage;
- a secondary gas inlet in communication with said atomizer for forming a secondary gas flow;
- a liquid pervious porous member supported within said interior cavity overlying said interior surface spaced therefrom to form a liquid transfer gap therebetween; said liquid transfer gap and said liquid pervious porous member being in communication with said liquid transfer passage;
- wherein said liquid-to-be-atomized is moved through said liquid pervious porous member by capillary action and wherein said secondary gas flow passes through said atomizer a negative pressure is induced in said liquid transfer passage for aspirating liquid from said liquid pervious porous member and said liquid transfer gap and subsequently into said film passage for atomization.

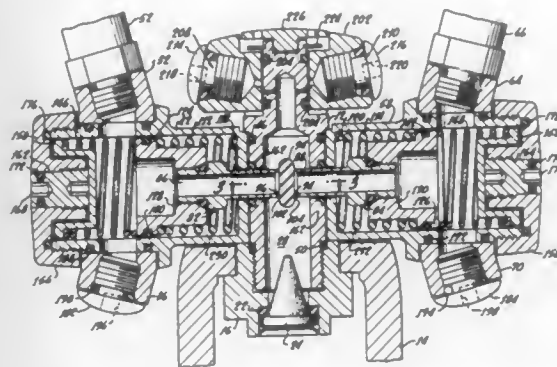
5,379,761
FIRST STAGE SCUBA REGULATOR
Manfred Schuler, 17462 Wayne Ave., Irvine, Calif. 92714
Filed Jul. 21, 1993, Ser. No. 96,011
Int. Cl.⁶ A62B 9/02; F16K 31/122

U.S. Cl. 128—205.24

30 Claims

1. A first stage pressure regulator for use with a high pressure source of breathable gas, said first stage pressure regulator comprising:
- a housing
 - means for attaching said housing to a high pressure source of breathable gas;
 - a first pressure regulated outlet;
 - a second pressure regulated outlet;
 - first means disposed within said housing for delivery to said first pressure regulated outlet a supply of breathable gas at a pressure lower than the high pressure source;
 - second means, disposed within said housing and operationally independent from said first means, for delivering to said second pressure regulated outlet a supply of breath-

able gas at a pressure lower than the high pressure source; and
first spring means for biasing said first piston in order to effect a first regulated valve opening between the first

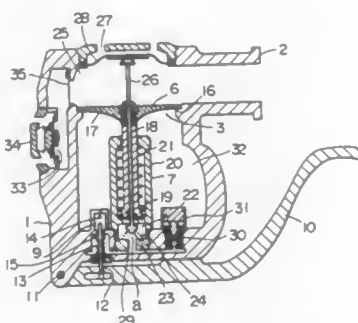


piston open end means and the fixed valve seat member and second spring means for biasing said second piston in order to effect a second regulated valve opening between the second piston open end means and the fixed valve seat member.

5,379,762
MOUTHPIECE UNIT OF DIVING RESPIRATOR
Kazunori Kobayashi, Tokyo, Japan, assignor to Grand Bleu International, Inc., New York, N.Y.
Filed Sep. 3, 1992, Ser. No. 940,298
Claims priority, application Japan, Jul. 2, 1992, 4-197500
Int. Cl.⁶ A62B 18/10

U.S. Cl. 128—201.28

6 Claims



1. A mouthpiece unit of a diving respirator comprising:
- a housing having an inhalation opening;
 - a mouthpiece formed on said housing and selectively communicating with said inhalation opening by an aperture, said mouthpiece having a chamber;
 - a gas supply port for supplying a respirable gas into said housing;
 - a lever pivotably attached to said housing extending to the outside of said housing, said lever movable from a first position to a second position, said lever remaining in said second position only while manually held in said second position by a user;
 - a gas supply valve for opening and closing said gas supply port, said gas supply valve operable by said lever, said gas supply valve being open only when said lever is in said second position and closed when said lever is said first position;
 - an aperture opening means for selectively opening said aperture; and
 - a pilot valve operable by a pressure change in said chamber for applying respirable gas to said aperture opening means, said aperture opening means responsive to the application of gas by said pilot valve.

5,379,763
DISPENSING APPARATUS FOR POWDERED
MEDICAMENTS

Trevor N. Martin, Norfolk, England, assignor to Bepak Plc, Norfolk, United Kingdom

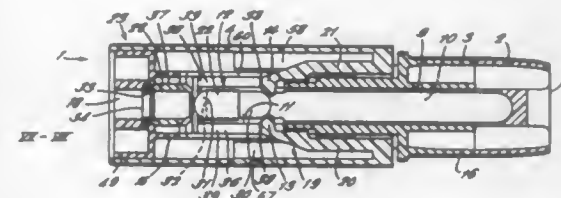
Filed Jul. 16, 1993, Ser. No. 92,430

Claims priority, application United Kingdom, Jul. 28, 1992, 9216038

Int. Cl.⁶ A61M 15/00

U.S. Cl. 128—203.15

27 Claims



1. Dispensing apparatus for use in the inhalation of medicaments supplied in capsules, the apparatus comprising a body having a capsule storage means receiving a number of capsules in use, an actuator movably mounted on the body, a dispensing station defining a dispensing chamber, a feed mechanism operable at successive actuations of the actuator to feed successive capsules from the storage chamber to the dispensing station, capsule opening means operable in response to movement of the actuator to expose at the dispensing station the contents of the capsule within the dispensing chamber and a duct defining an airway communicating between the dispensing chamber and an outlet defined by the body through which air is inhaled in use, wherein the capsule storage means defines a storage chamber having a cylindrical portion to receive capsules arranged in linear array, said cylindrical portion oriented toward said dispensing station, and the feed mechanism comprises at least a first feed member means operable at successive actuations for pushing a capsule longitudinally along the cylindrical portion towards the dispensing station.

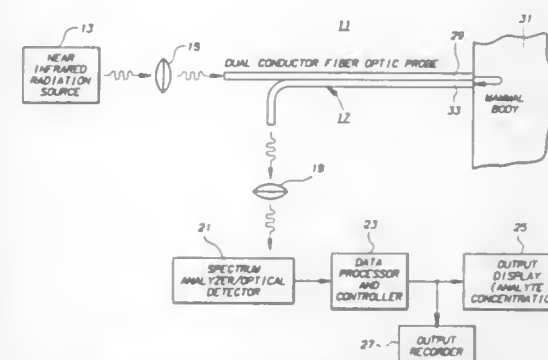
5,379,764
NON-INVASIVE DETERMINATION OF ANALYTE
CONCENTRATION IN BODY OF MAMMALS
Russell H. Barnes, Jimmie W. Brasch, Sr., both of Columbus, Ohio; David L. Purdy, Marion Center, Pa., and William D. Loughheed, Toronto, Canada, assignors to Diasense, Inc., Pittsburgh, Pa.

Filed Dec. 9, 1992, Ser. No. 987,766

Int. Cl.⁶ A61B 5/00

U.S. Cl. 128—633

8 Claims



1. A method of non-invasive determination of the concentration of at least one analyte in the blood of a mammal, comprising the steps of:

(a) projecting near infrared radiation on a portion of the

- body of the mammal, said radiation including a plurality of wavelengths;
- (b) sensing the resulting radiation emitted from said portion of the body;
- (c) deriving from the sensed resulting radiation a first expression for the magnitude of said sensed radiation as a function of wavelength of the sensed radiation;
- (d) pretreating said first expression to minimize the influence of instrument offset and drift to obtain a second expression for the magnitude of said sensed radiation as a function of wavelength; and
- (e) performing multivariate analysis of said second expression to obtain a value for the concentration of said analyte.

5,379,765
MONITORING APPARATUS FOR USE IN OBTAINING
BRONCHIAL ELECTROCARDIOGRAM

Nagao Kajiura, 3-21, Aoki 1-chome, Kawaguchi-shi, Saitama-ken, and Takayoshi Watanabe, 6-6-301, Sarugaku-cho 1-chome, Chiyoda-ku, Tokyo, both of Japan

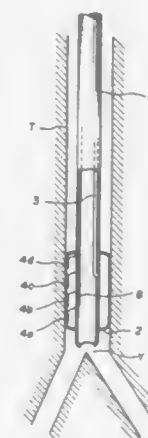
Filed Dec. 4, 1992, Ser. No. 986,039

Claims priority, application Japan, Jun. 12, 1991, 3-360403

Int. Cl.⁶ A61B 5/0402

U.S. Cl. 128—642

12 Claims

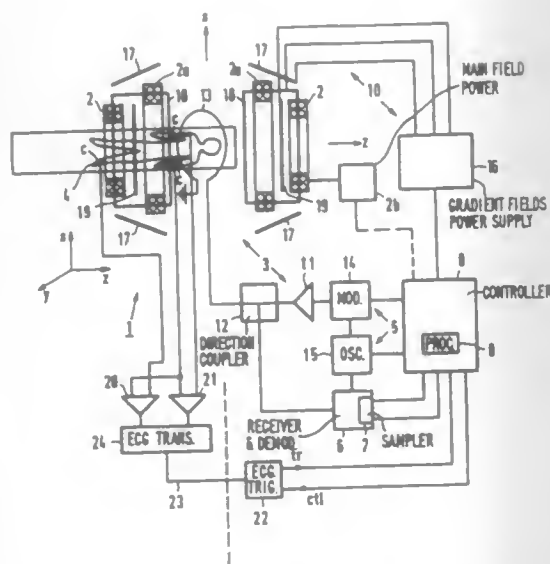


1. Apparatus for obtaining a bronchial electrocardiogram and effecting cardiac pacing, said apparatus comprising:
- an elastic hollow intrabronchial catheter capable of being inserted into the trachea or bronchus, said catheter having a leading end portion,
 - an electrically non-conductive inflatable balloon disposed at the leading end portion of said intrabronchial catheter;
 - two pairs of bronchial ECG electrodes which detect an ECG lead current and effect cardiac pacing, respectively, two of said bronchial ECG lead electrodes being mounted on an inflatable portion of said balloon so as to move outwardly away from said catheter as the balloon is being inflated;
 - the others of said bronchial ECG lead electrodes also being mounted to said balloon;
 - an air tube extending along said catheter and having a leading end connected to said balloon such that air can be introduced into said balloon from said tube; and
 - said balloon being inflatable to a degree at which said balloon can contact an inner wall portion of the trachea or bronchus such that said ECG electrodes can be brought to anatomically prescribed locations on the inner wall portion when the catheter is inserted into the trachea or bronchus and the balloon is inflated to said degree.

5,379,766
MAGNETIC RESONANCE IMAGING METHOD AND DEVICE FOR MONITORING MOTION OF A PART OF AN OBJECT BASED ON STIMULATED ECHOES
 Graeme McKinnon; Stefan Fischer, both of Zürich, and Peter Boesiger, Emmetbaden, all of Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.
 Filed Mar. 30, 1992, Ser. No. 860,620
 Claims priority, application European Pat. Off., Apr. 2, 1991, 91200763.0

Int. Cl.⁶ A61B 5/055
 U.S. Cl. 128—653.2

9 Claims

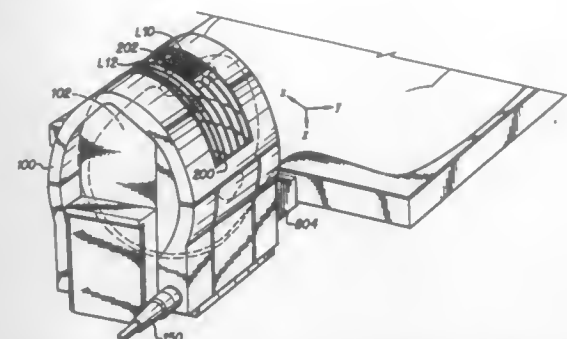


1. A magnetic resonance imaging method for monitoring motion of a part of an object to be imaged, which motion is repetitive in successive motion cycles, said method comprising: receiving a motion signal indicative of the motion cycle of the portion of the object to be imaged; applying pulse and gradient sequences to the object during successive motion cycles, triggered by said motion signal, for producing stimulated echo magnetic resonance signals in the part of the object during a plurality of different phases in the motion cycle; and using the stimulated echo magnetic resonance signals produced during at least one of said phases in successive motion cycles, forming at least one image of the object; wherein said pulse and gradient sequences comprise a tagging section for producing a tagging pattern and an imaging section comprising successive first, second, third and further radio frequency pulses which are arranged for generating said stimulated echo resonance signals after said third and further radio frequency pulses, said third and further pulses being combined with slice selective gradients, phase encoding gradients and readout gradients so as to form imaging subsequences, which are repeated in the successive motion cycles with different time integrals over the phase encoding gradients.

5,379,767
MRI RF COIL USING ZERO-PITCH SOLENOIDAL WINDING
 Kevin A. Derby, San Bruno, and Leon Kaufman, San Francisco, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.
 Filed Sep. 2, 1992, Ser. No. 939,736
 Int. Cl.⁶ A61B 5/055

U.S. Cl. 128—653.5

33 Claims

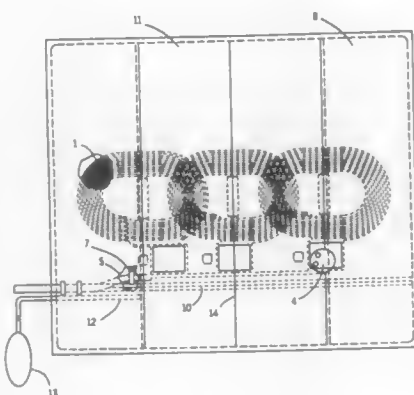


1. A QD MRI RF coil for coupling MRI RF signals from a human head volume to be imaged, said coil comprising: a helmet structure adapted to fit over a human head; and a pair of zero-pitch solenoidal coils disposed in the helmet structure.

5,379,768
ANATOMIC SUPPORT FOR AN MRI-APPARATUS
 Matti Smälén, Klaukkala, Finland, assignor to Picker Nordstar, Inc., Finland
 Filed Nov. 13, 1992, Ser. No. 975,633
 Claims priority, application Finland, Nov. 15, 1991, 915394
 Int. Cl.⁶ A61B 5/055

U.S. Cl. 128—653.5

7 Claims



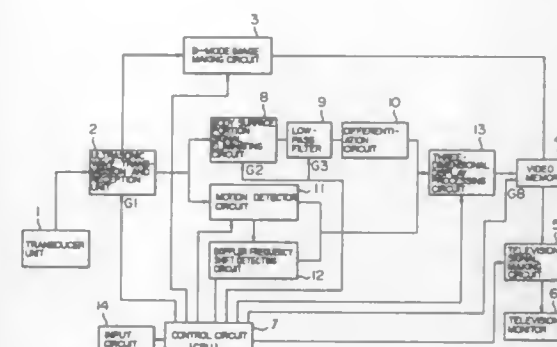
1. A support for supporting a desired portion of the body of a patient undergoing examination in a magnetic resonance imaging apparatus, said support comprising: a flexible RF-imaging coil device having a surface, said surface adapted to be placed in contiguity with the desired portion of the patient's body; and at least one cushion mounted in operative association with said flexible RF-imaging coil device at a location other than said surface, said cushion having at least one chamber to which air may be applied or from which air may be evacuated to inflate or to deflate said cushion, the inflation or deflation of said cushion rendering the surface of the RF-imaging coil device contiguous with the desired portion of the patient's body.

5,379,769
ULTRASONIC DIAGNOSTIC APPARATUS FOR DISPLAYING AN IMAGE IN A THREE-DIMENSIONAL IMAGE AND IN A REAL TIME IMAGE AND A DISPLAY METHOD THEREOF

Yukio Ito, Matsudo, and Yoshihiro Goto, Tokyo, both of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan
 Filed Nov. 29, 1993, Ser. No. 158,226
 Claims priority, application Japan, Nov. 30, 1992, 4-340951; Dec. 2, 1992, 4-345136

Int. Cl.⁶ A61B 8/00, 8/06
 U.S. Cl. 128—660.07

16 Claims



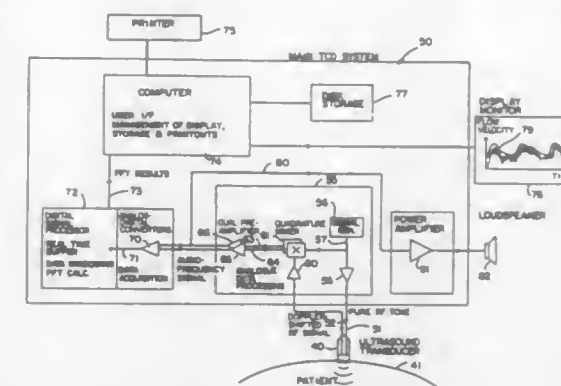
1. An ultrasonic diagnostic apparatus comprising: means for transmitting an ultrasonic wave; means for receiving an echo signal reflected from an inspected object; means for detecting a portion which changes more than a predetermined magnitude in said received echo signal, said portion being a changing point corresponding to a measurement point to be measured within said inspected object; means for measuring an elapsed time until said changing point is detected from a timing point at which said echo signal is detected; means for obtaining luminance values in correspondence with said elapsed time as display luminance values of said measurement point; and means for displaying said measurement point within said inspected object by the luminance values thus obtained.

5,379,770
METHOD AND APPARATUS FOR TRANSCRANIAL DOPPLER SONOGRAPHY
 Barry D. Van Veen, McFarland, Wis., assignor to Nicolet Biomedical, Inc., Madison, Wis.
 Filed Dec. 21, 1993, Ser. No. 172,594
 Int. Cl.⁶ A61B 8/06

U.S. Cl. 128—661.09
 13 Claims

1. A method for carrying out Doppler sonography on a subject comprising the steps of: (a) applying a pulse of ultrasound to the subject; (b) measuring the received ultrasound signal and providing a corresponding received electrical signal; (c) isolating the Doppler frequency components from the received signal; (d) sampling the isolated Doppler frequency components to provide digital data corresponding to the sample; (e) repeating the foregoing steps to provide a set of data for a selected number of samples; (f) determining a power spectrum for the data set by providing multiple window functions for the data set, the window functions determined so that the spectra computed using different windows are approximately statistically independent, applying each of the window functions to the data set to provide windowed data sets and determining a discrete Fourier transform for each of the windowed

data sets, and determining the power spectrum as the averaged sum of the squares of the magnitudes of each of the discrete Fourier transforms of the windowed data sets;

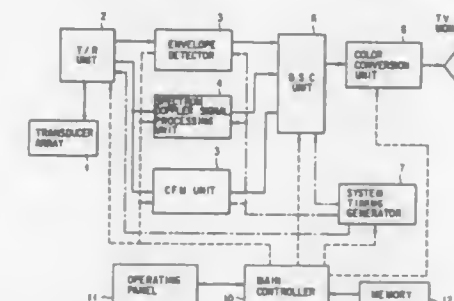


(g) repeating the foregoing steps to provide a power spectra as a function of time.

5,379,771
ULTRASONIC IMAGING APPARATUS
 Shuichi Kawasaki; Masahiko Yano, both of Tochigi, and Jiro Higuchi, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Mar. 29, 1994, Ser. No. 219,718
 Claims priority, application Japan, Apr. 6, 1993, 5-079822
 Int. Cl.⁶ A61B 8/00

U.S. Cl. 128—661.1

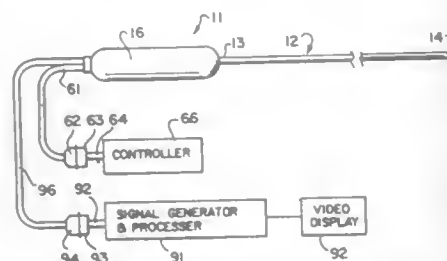
17 Claims



1. An ultrasonic imaging apparatus comprising: an ultrasonic transducer array for transmitting ultrasonic waves to a subject under examination and receiving ultrasonic waves reflected from within said subject under examination; scan control means for controlling said transducer array so as to transmit/receive said ultrasonic waves in the same direction repeatedly and change the transmitting/receiving direction of said ultrasonic waves in a sectional plane of said subject under examination; detecting means for detecting Doppler shifted frequency data at a plurality of points in said sectional plane from a received signal by said transducer array; displaying means responsive to said Doppler shifted frequency data for displaying blood flow of the subject in said sectional plane in color; storage means for storing a plurality of types of patterns having a maximum velocity, a minimum velocity and a number of frames per unit time of blood flow to be detected by said detecting means in various combinations; selecting means for selecting a pattern out of said plurality of types of patterns manually; and control means for setting a parameter for the number of times said ultrasonic waves are transmitted/received repeatedly in the same direction, a parameter for a repetition

period at which said ultrasonic waves are transmitted/received repeatedly, and a parameter for the number of times the direction of transmission/reception of said ultrasonic waves is changed in said scanning plane and controlling said scan control means and said detecting means in accordance with said parameters thus set so as to implement said pattern selected by said selecting means.

5,379,772
FLEXIBLE ELONGATE DEVICE HAVING FORWARD LOOKING ULTRASONIC IMAGING
 Mir A. Imran, Palo Alto, Calif., assignor to Intellwire, Inc., Sunnyvale, Calif.
 Filed Sep. 14, 1993, Ser. No. 122,010
 Int. Cl.⁶ A61B 8/12
 U.S. Cl. 128—662.06 10 Claims

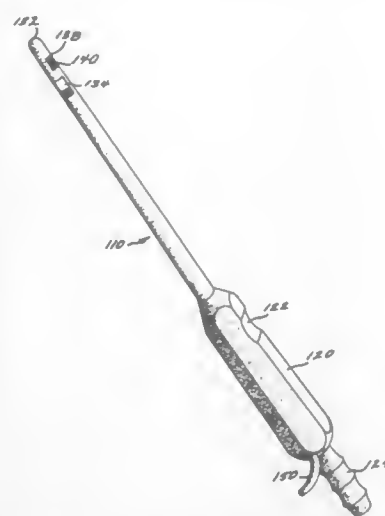


1. A device for insertion into a vessel of a patient comprising a flexible elongate member having proximal and distal extremities and having sufficient flexibility so that it can be advanced into the vessel, means mounted on the distal extremity and having an enclosed cavity therein, a transducer disposed in the cavity and emitting energy, support means for mounting the transducer so that energy emitted from the transducer is propagated in a forward direction, oscillatory means connected to said support means for imparting angular motion to the support means to repeatedly sweep said support means and the transducer carried thereby through an angle in said forward direction, said oscillatory means including at least one shape memory element made from a shape memory alloy and means for repeatedly activating and deactivating the shape memory element.

5,379,773
ECHOGRAPHIC SUCTION CANNULA AND ELECTRONICS THEREFOR
 James J. Hornsby, 695 Valley Vista Dr., Camarillo, Calif. 93010
 Filed Sep. 17, 1993, Ser. No. 124,403
 Int. Cl.⁶ A61B 8/12

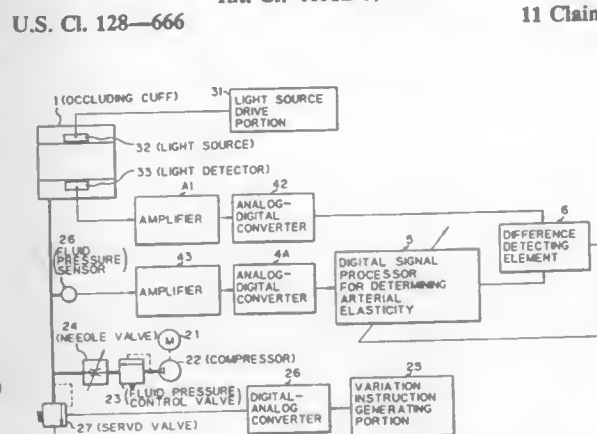
U.S. Cl. 128—662.06 18 Claims
 1. Apparatus for displaying the thickness of adipose tissue between a transducer in a cannula and the patient's dermis, comprising in combination:
 a cannula;
 a transducer in said cannula;
 means for applying periodic spaced-apart bursts of a fixed frequency output to said cannula as send pulses to produce reflected receive pulses by said transducer;
 means for producing a further fixed frequency output;
 means responsive to said pulses for selecting the number of further fixed frequency cycles occurring during the time interval between said transducer send and said transducer receive pulses to develop a count of said cycles which is an absolute measurement of adipose thickness;
 output display means; and,

means for applying said count to the display means to produce a display of bars corresponding in height to the



absolute measured thickness of adipose tissue between the cannula transducer and the patient's dermis.

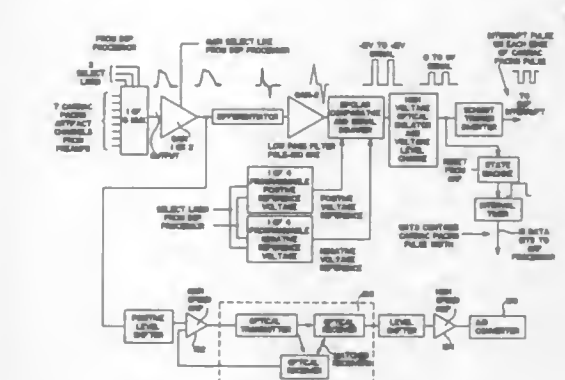
5,379,774
MEASUREMENT OF ARTERIAL ELASTICITY AND THE FREQUENCY CHARACTERISTIC OF THE COMPLIANCE OF AN ARTERY
 Masatoshi Nishimura, Masaaki Takahashi, and Yasushi Orihashi, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
 Continuation-in-part of Ser. No. 695,008, May 3, 1991, abandoned. This application Mar. 25, 1994, Ser. No. 218,022
 Claims priority, application Japan, Oct. 23, 1990, 2-284572
 Int. Cl.⁶ A61B 5/02 11 Claims



1. An apparatus for measuring arterial elasticity and the frequency characteristic of the compliance of an artery to determine the degree of sclerosis of the artery, comprising:
 a cuff member having therein a light source and a light detector for accommodating an object to be measured and for transmitting a light through the object;
 light source drive means connected to said light source for driving said light source;
 a variable fluid pressure generating means connected to a fluid pressure chamber in said cuff member for supplying a varying fluid pressure in the form of random noise to said fluid pressure chamber;
 a fluid passage connected to said fluid pressure chamber;
 a fluid pressure sensor means, coupled to said fluid passage, for detecting the varying fluid pressure in the form of random noise in said fluid passage, the fluid pressure

sensor means providing an output indicative of the detected pressure;
 a digital signal processor means, responsive to a signal corresponding to the output of said fluid pressure sensor means and responsive to a further signal, for delivering a digitally processed signal corresponding to an arterial volume change based on a simulated arterial elasticity; and
 a difference detecting means, responsive to one input signal corresponding to an output of said light detector and another input signal corresponding to the digitally processed output signal of said digital signal processor means, for producing a signal which represents the difference between the two input signals and which is supplied to said digital signal processor means as the further signal; arterial elasticity and the frequency characteristic of the compliance of the artery being derived based on the operation of said digital signal processor means to determine the degree of sclerosis of the artery.

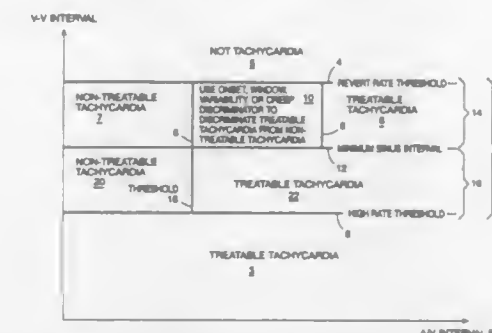
5,379,775
LOW AMPLITUDE PACING ARTIFACT DETECTION APPARATUS AND METHOD USING ISOLATION AMPLIFIER TO MINIMIZE DISTORTION
 John M. Kruse, Columbia Heights, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
 Filed Oct. 15, 1993, Ser. No. 138,158
 Int. Cl.⁶ A61B 5/0402
 U.S. Cl. 128—697 6 Claims



1. An apparatus for driving pacing artifact signals across an electrical isolation barrier, said barrier having an isolated side and a nonisolated side, and wherein said artifact signals are transmitted across said isolation barrier at frequencies up to and above 200 kHz with no distortion, said apparatus comprising:

- (a) sensing means coupled to said isolated side of said isolation barrier for sensing said pacing artifact signals on said isolated side of said isolation barrier;
- (b) high frequency amplifying means coupled to said isolated side of said isolation barrier and further coupled to said sensing means for amplifying said sensed pacing artifact signals at said frequencies up to and above 200 kHz; and
- (c) high frequency isolating means coupled to said high frequency amplifying means for transferring said amplified pacing artifact signals on said isolated side of said isolation barrier to said nonisolated side of said isolation barrier at said frequencies up to and above 200 kHz.

5,379,776
HEART RHYTHM CLASSIFICATION METHOD, AND IMPLANTABLE DUAL CHAMBER CARDIOVERTER/DEFIBRILLATOR EMPLOYING THE SAME
 Anthony J. Murphy, Annandale; David Bassin, Coogee, and David Mason, Kilsyth, all of Australia, assignors to Teletronics Pacing Systems, Inc., Englewood, Colo.
 Filed Dec. 1, 1993, Ser. No. 160,512
 Claims priority, application Australia, Apr. 1, 1993, PL8102
 Int. Cl.⁶ A61B 5/0452
 U.S. Cl. 128—705 8 Claims

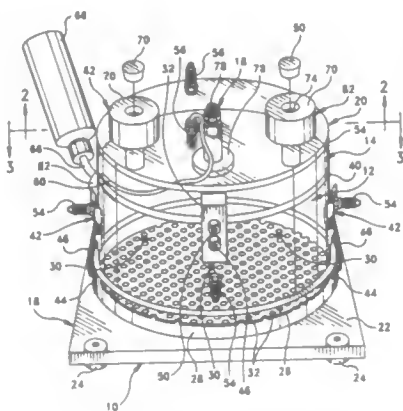


1. A method for monitoring and classifying cardiac rhythms of a patient's heart, comprising the steps of:
 sensing atrial and ventricular events of the heart;
 timing A-A intervals between said atrial events and V-V intervals between said ventricular events;
 determining A/V interval ratios which comprise ratios of said A-A intervals to said V-V intervals; and
 responsive to said sensed events, classifying said rhythms, said classifying step including the sub-steps of (i) providing a first threshold establishing a V-V interval level below which sensed heart rhythms are classified as treatable tachycardia, (ii) providing a second threshold above which sensed heart rhythms are classified as not tachycardia, said first and second thresholds defining therebetween a band of V-V intervals which includes heart rhythms that comprise both non-treatable tachycardias and treatable tachycardias, (iii) providing a third threshold in said band establishing an A/V ratio below which sensed heart rhythms have A-A intervals which are shorter than the V-V intervals thereof and are classified as non-treatable tachycardias, and (iv) providing a fourth threshold establishing an A/V interval ratio above which sensed heart rhythms have V-V intervals which are shorter than the A-A intervals thereof and are classified as treatable tachycardias, said third and fourth thresholds defining therebetween a middle region wherein said A-A intervals and said V-V intervals are approximately the same,
 said classifying step including a further sub-step, responsive to those heart rhythms that fall within said middle region, of discriminating further among said heart rhythms in said middle region in order to classify said rhythms into non-treatable tachycardias and treatable tachycardias.

5,379,777
WHOLE BODY PLETHYSMOGRAPH FOR NON-INVASIVE PULMONARY MEASUREMENTS OF UNRESTRAINED SMALL ANIMALS
 Morton Lomask, Sharon, Conn., assignor to Buxco Electronics, Inc., Sharon, Conn.
 Filed Jan. 7, 1994, Ser. No. 178,964
 Int. Cl.⁶ A61B 5/08
 U.S. Cl. 128—716 12 Claims

1. A whole body plethysmograph comprising:
 a generally cylindrical animal chamber;
 a port in said animal chamber for receiving a transducer lead therein;

means for selectively venting said animal chamber to atmosphere;
 a reference chamber in closely spaced adjacent relation to said animal chamber;
 a port in said reference chamber for receiving a transducer lead therein;

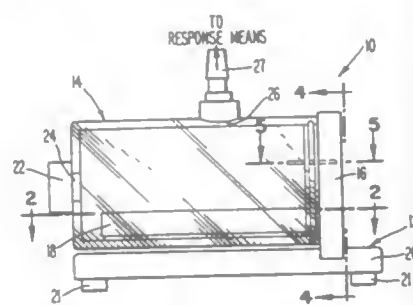


means for selectively venting said reference chamber to atmosphere;
 means for selectively providing a high resistance bleed path between said animal chamber and said reference chamber;
 a pneumotachograph in said animal chamber; and
 an aerosol manifold in said animal chamber for selectively distributing an aerosol in said animal chamber.

5,379,778
PLETHYSMOGRAPHIC APPARATUS
 Theodore J. Century, 702 W. Carpenter La., Philadelphia, Pa. 19119

Filed Jun. 29, 1993, Ser. No. 84,425
 Int. Cl.⁶ A61G 10/00
 U.S. Cl. 128—718

43 Claims



1. A plethysmographic device adapted for receiving a laboratory animal for measuring pulmonary ventilation thereof, the plethysmographic device comprising:

a containment member defining a sealed environment and including as portions thereof at least first and second members and a sealing means comprising a self-supporting radial seal for providing the sealed environment of the containment member, wherein the first member is adapted to releasably engage the second member and the sealing means is provided between the first member and the second member when engaged for providing the self-supporting radial seal defining the sealed environment of the containment member, wherein the second member includes therein a cavity defining an inner surface and the first member includes a receptacle having a back end, a front end and a boss, the front end of the receptacle being generally parallel the back end and the boss defining an outer surface extending generally perpendicularly from the front end of the receptacle, wherein the outer surface of the boss is adapted to slidably engage the inner surface

of the second member upon engagement thereof, with the inner surface of the second member being substantially parallel the outer surface of the boss and the sealing means being provided therebetween for providing the self-supporting radial seal defining the sealed environment of the containment member, the laboratory animal being receivable within the containment member for measuring the pulmonary ventilation thereof, wherein the containment member further includes an inlet and an outlet, supply means for regulating the environment of the containment member in communication with the inlet of the containment member and response means for monitoring the environment of the containment member in communication with the outlet of the containment member whereby the supply means and response means are adapted for measuring the pulmonary ventilation of the laboratory animal.

5,379,779
ZEBRA EXCHANGE GUIDEWIRE
 Christopher A. Rowland, Marlboro; Earl Bardsley, Arlington, and Richard DeMello, Acton, all of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Filed Aug. 16, 1993, Ser. No. 106,829
 Int. Cl.⁶ A61B 5/00

18 Claims



1. An exchange guidewire for positioning and exchanging medical catheters within a bodily passage during a medical procedure which uses an endoscope, said guidewire comprising:

a core wire of a length sufficient for exchange of said catheters through said endoscope, said core wire having a proximal end about 0.01–0.05 inch in diameter and a distal end of a diameter no greater than that of said core wire proximal end;
 a flexible coil about 1–10 cm long and of a diameter between about 0.01 inch and approximately the diameter of said core wire proximal end, at least a portion of at least one of said coil and said core wire distal end being radiopaque, said coil having a proximal end and a distal tip, said coil proximal end fixed to said core wire distal end to produce a wire/coil assembly;
 a low-friction sleeve tightly fitted around and conforming to said wire/coil assembly to cover said wire/coil assembly from said core wire proximal end to said coil distal tip to form a jacketed guidewire; and
 a pattern of indicia along the entire length of said core wire, said sleeve being sufficiently transparent for said pattern to be endoscopically discernable through said sleeve so that the position of said exchange guidewire indicia relative to an optical lens of said endoscope may be monitored.

5,379,780
METHOD AND SYSTEM FOR EXPANDING TOBACCO
 Hiromi Uematsu; Masanori Wakui; Toshio Iden; Toshio Takahashi, and Kensuke Uchiyama, all of Hiratsuka, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan
 Filed Nov. 6, 1991, Ser. No. 788,356
 Claims priority, application Japan, Nov. 7, 1990, 2-299872
 Int. Cl.⁶ A24B 3/18

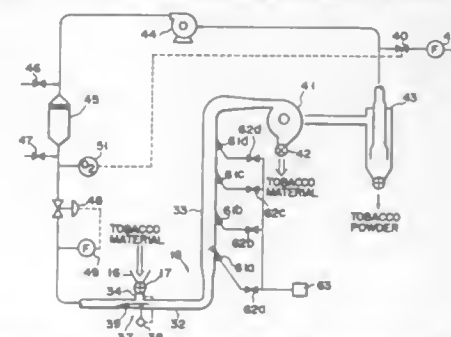
U.S. Cl. 131—291

16 Claims

1. A method for impregnating tobacco with an expanding agent before heating the tobacco to expand the expanding

agent and thereby, expand the tobacco, comprising the steps of:

impregnating tobacco with the expanding agent;
 feeding the tobacco impregnated with the expanding agent into steam or high-temperature gas containing steam, and flowing the tobacco together with the gas;
 injecting steam or water into the gas flow at a position in said gas flow downstream from said tobacco feed position;



lowering the temperature of said gas by the step of injecting steam or water; and
 controlling the heat quantity to be given to the tobacco from the gas at the position where steam or water is injected to prevent degradation of the tobacco and to lower water content of the tobacco.

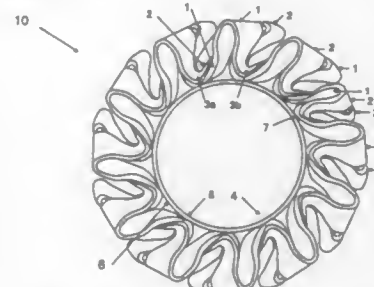
5,379,781

Patent Not Issued For This Number

5,379,782
HAIR FASHION ACCESSORY
 Birdie B. Tabb, Rte. 10, Box. 350, Tallahassee, Fla. 32310
 Filed Oct. 8, 1993, Ser. No. 133,587
 Int. Cl.⁶ A45D 8/24, 8/14

U.S. Cl. 132—275

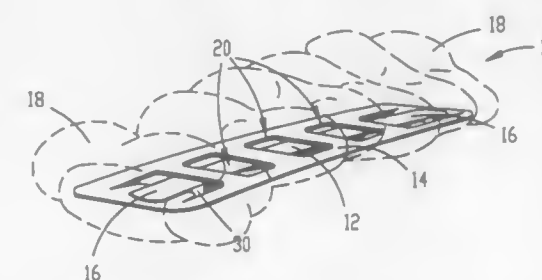
14 Claims



1. A decorative hair fashion accessory comprising:
 a first elongated fabric tube;
 a second elongated fabric tube;
 a hair securement device having a first attachment point, a second attachment point and at least two further attachment points up to an overall total of N attachment points wherein N must be at least 4;
 said attachment points are evenly spaced apart;
 said first elongated fabric tube is secured to said hair securement device at said first attachment point and thereafter to every other attachment point up through either attachment point N if N is odd or attachment point N–1 if N is even;
 said second elongated fabric tube is interlaced with said first elongated fabric tube;
 said second elongated fabric tube is secured to said second attachment point and thereafter to every other attachment point up through either attachment point N if N is even or attachment point N–1 if N is odd; and
 said first elongated tube and said second elongated tube are secured to said hair securement device by an attachment means.

5,379,783
GARLAND ACCESSORY
 Janelle L. Healzer, 200 Estes, Nixa, Mo. 65714, and Gaylen D. Healzer, Nixa, Mo., assignors to Janelle L. Healzer, Nixa, Mo.
 Continuation-in-part of Ser. No. 7,278, Apr. 21, 1993, This application Dec. 2, 1993, Ser. No. 161,225
 Int. Cl.⁶ A45D 8/22, 8/28
 U.S. Cl. 132—279

8 Claims

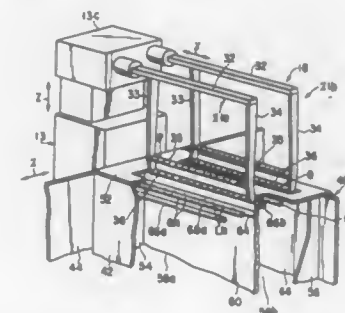


1. A garland accessory comprising:
 a clasp having a pair of opposed ends and presenting an elongated upper beam, a fastening member for securing hair or other material mounted for movement relative to the beam, and a catch for holding the fastening member in position relative to the beam;
 a retaining member projecting from the beam proximate each of the ends;
 a framework of resilient material separable from said clasp, said framework presenting a first opening, a second opening, and at least one additional opening therebetween, each of said openings being sized for receiving and holding a portion of a fabric garland therein and a pair of tabs provided adjacent said first and second openings.
 said tabs releasably attaching said framework to said retaining member in an engagement fit on the opposite side of said beam than said fastening member.

5,379,784
APPARATUS FOR CLEANING CONVEYOR CHUCK
 Mituo Nishi, Kurume; Naoki Shindou, Nirasaki, and Kazuya Yamaguchi, Yame, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Tosu, both of Japan
 Filed Jan. 21, 1994, Ser. No. 183,971
 Claims priority, application Japan, Jan. 23, 1993, 5-027553; Aug. 20, 1993, 5-228136; Dec. 27, 1993, 5-351269
 Int. Cl.⁶ B08B 3/02

U.S. Cl. 134—102.3

20 Claims



20. A system for cleaning a plurality of plate objects together comprising:
 a) a loader section into which a carrier housing therein a plurality of the objects to be processed is transferred;
 b) a chemical washing section for washing a plurality of the objects together by a chemical solution;
 c) a water washing section for washing said plurality of the

- objects together by water after they are washed in the chemical washing section;
- d) a drying section for drying said plurality of the objects together after they are washed in the water washing section;
- e) an unloader section from which a carrier housing therein a plurality of the objects which have been cleaned is transferred;
- f) a unit for conveying the objects between at least some of the loader, chemical washing, water washing, drying and unloader sections, said unit comprising
- a conveyor chuck which includes first and second arms each having a lower traverse rod provided with a plurality of grooves for holding a plurality of the objects at intervals in an elected state and also having an erect rod supporting the traverse rod, and
- elevator means for driving the conveyor chuck up and down while keeping the traverse rods of the first and second arms downward; and
- g) an apparatus for cleaning the conveyor chuck comprising a casing for providing a cleaning space therein and provided with a top opening in the top thereof through which said arms can be driven into and out of the cleaning space in the casing by the elevator means, first and second rows of discharge ports arranged between the arms in the casing and kept substantially horizontal to jet washing liquid to the first and second arms at first and second levels, respectively, means for supplying washing liquid to the first and second rows of discharge ports, third and fourth rows of discharge ports arranged between the arms in the casing and kept substantially horizontal to jet drying gas to the first and second arms at third and fourth levels above the first and second levels, respectively, fifth and sixth rows of discharge ports arranged outside the arms in the casing and kept substantially horizontal to jet drying gas to the first and second arms at fifth and sixth levels above the first and second levels, respectively, and means for supplying drying gas to the third, fourth, fifth and sixth rows of discharge ports, wherein each of said third, fourth, fifth and sixth rows of discharge ports is divided into a first group positioned over the erect rod of each arm in a horizontal direction to be dedicated to said erect rod, and a second group to be dedicated to the traverse rod of said arm, said first group of discharge ports being inclined downward in a vertical plane and directed to substantially converge toward said erect rod in a horizontal plane, and said second group of discharge ports being inclined downward in a vertical plane and directed substantially perpendicular to said traverse rod.

5,379,785

CLEANING APPARATUS

Masashi Ohmori, Itami; Satoru Kotoh, and Shinji Nakajima, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 849,455

Claims priority, application Japan, Oct. 9, 1991, 3-262287

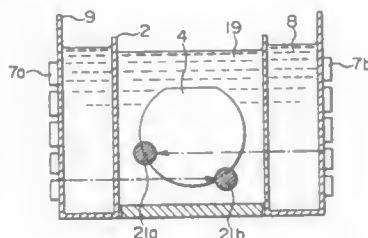
Int. Cl.⁶ B08B 3/10

U.S. Cl. 134—184

13 Claims

1. A cleaning apparatus comprising:
- a tank having a base wall and first and second opposing side walls extending from the base wall;
- at least one ultrasonic oscillator disposed on each of the first and second side walls for generating ultrasonic waves directed into the tank; and
- support means for supporting a plurality of semiconductor wafers within the tank between the first and second side walls with each portion of a face of each wafer disposed along an unobstructed path of ultrasonic waves from one of the ultrasonic oscillators, the support means comprising

first and second supports, each support being disposed at a different distance from the base wall for contacting a peripheral edge of each of the wafers at different, respec-



tive, distances from the base wall with at most one support contacting the peripheral edge of a wafer at any distance from the base wall.

5,379,786

FOLDING WINDBREAK AND SHADE SCREEN SYSTEM

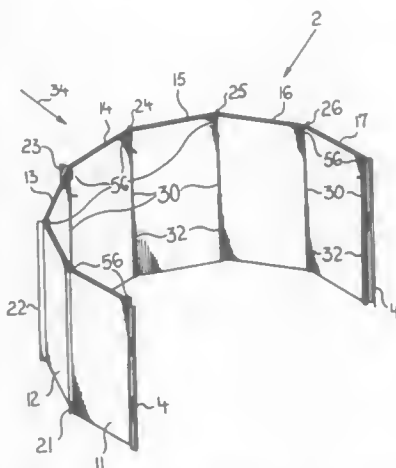
Donald K. Lynam, 2020 S. Atlantic Ave., Daytona Beach Shores, Fla. 32118

Continuation-in-part of Ser. No. 644,113, Jan. 18, 1991, abandoned. This application Aug. 14, 1992, Ser. No. 929,512

Int. Cl.⁶ E04H 15/00

U.S. Cl. 135—87

18 Claims



1. A folding windbreak and shade screen comprising:
- a plurality of sections hinged together,
- at least one lower housing attached to at least one of the sections,
- a ground stake slidably disposed within each said at least one lower housing, and
- U channel attached to two of said plurality of sections, said U-channel comprising two legs connected by a web, said U-channel attached to said two sections solely by means of one of said two legs.

5,379,787

POP-UP ASHTRAY

Richard K. Haines, Elkhart, Ind., assignor to Elkhart Door, Inc., Elkhart, Ind.

Filed Oct. 15, 1993, Ser. No. 137,850

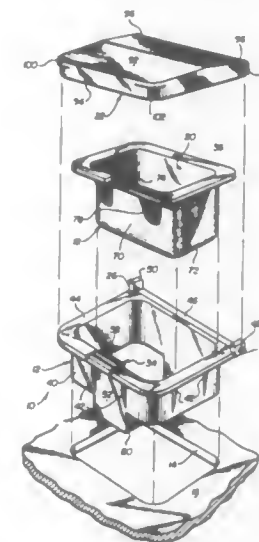
Int. Cl.⁶ A24F 19/02, 19/08

U.S. Cl. 131—242

7 Claims

1. A pop-up ashtray comprising: a receiver member including an outer peripheral wall portion comprising a generally rectilinear tubular structure and an upper peripheral rim portion extending perpendicularly laterally outwardly of an upper edge of said peripheral wall portion; a generally rectilinear ash-pot member comprising an open-topped container and

configured and dimensioned for removable mounting within said rectilinear receiver member; a lid member dimensioned and configured for overlying said open-topped container to provide a closure therefor; cooperative interfitting hinge means formed on said receiver member and on said lid member for hingedly mounting said lid member to said receiver member for movement between a first position for overlying and providing a closure for said ash-pot member and a second position for permitting access to said ash-pot member; resilient



means for urging said ash-pot member in a direction for removal thereof from said receiver member, and releasable clasp means formed respectively on said ash-pot member and said receiver member for overcoming said urging of said resilient means and releasably holding said ash-pot member within said rectilinear receiver member, said releasable clasp means including a resiliently movable clasp member extending from said peripheral wall portion and spaced upwardly of said peripheral rim portion.

5,379,788

MULTIPLES MOKING CIGARETTE SYSTEM

Larry Bowen, Orangeville, Canada; Warren A. Brackmann, Collins, Mo.; Norman Cohen, Scarborough, Canada; George Fazekas, Thornhill, Canada; Joseph Heffernan, Toronto, Canada; Peter P. Kaczmarek, Richmond Hill, Canada, and Stanislaw M. Snajdr, Mississauga, Canada, assignors to Rothmans, Benson & Hedges Inc., North York, Canada

Filed Oct. 29, 1992, Ser. No. 968,591

Claims priority, application United Kingdom, Oct. 30, 1991, 9122935

Int. Cl.⁶ A24D 3/04

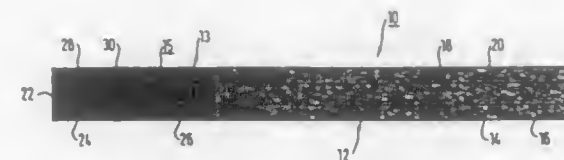
U.S. Cl. 131—331

51 Claims

1. A non-self-extinguishing factory-made cigarette, which comprises:
- a tobacco rod having at least about 14 puffs (as determined by I.S.O. #3308 and 4387 Standard) and which is intended to be smoked for an initial length thereof, extinguished, relit and then smoked for a further length thereof, and
- a filter which is constructed to provide a per-puff delivery profile of tar, nicotine and flavor to the smoker which is approximately the same for both smokings of the cigarette.

5,379,789
COAXIAL FILTER CIGARETTE
Werner Schneider, Quickborn; Bernd-Henrik Müller, and Gert Rudolph, both of Hamburg, all of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Germany
Filed Jul. 22, 1992, Ser. No. 916,685
Claims priority, application Germany, Aug. 19, 1991, 4127420
Int. Cl.⁶ A24D 1/00, 1/02
U.S. Cl. 131—360

15 Claims



1. A coaxial filter cigarette, comprising
- a) a rod portion,
- a1) an inner core of a tobacco material smoldering substantially without residue provided within the rod portion,
- a2) a sheath for the inner core,
- a3) an outer jacket of a tobacco material surrounding the inner core and its sheath, and
- a4) a sheath for the outer jacket, as well as
- b) a filter portion, wherein
- c) the inner core has a diameter of 45 to 80% of the outer diameter of the filter cigarette,
- d) the packing density of the inner core is greater than the packing density of the outer jacket, the packing density of the inner core being 190 to 250 mg/cm³,
- e) the draw resistance per unit length with respect to the packing density is greater in the inner core than in the outer jacket, and is 0.09 to 0.15 (mm Wc) cm²/mg in the inner core,
- f) the air permeability of the sheath of the inner core is less than the air permeability of the sheath of the outer jacket, and
- g) the filter portion has a filter ventilation degree of at least 30% and a retention degree of at least 40%.

5,379,790

VARIABLE RESTRICTION

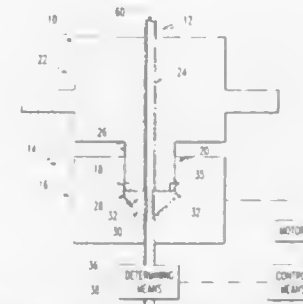
Mark L. Bruce, North Canton, Ohio, and Douglas J. Keebler, Irwin, Pa., assignors to Suprex Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 828,729, Jan. 31, 1992, Pat. No. 5,316,262. This application Mar. 6, 1992, Ser. No. 848,424

Int. Cl.⁶ F16K 7/04

U.S. Cl. 137—1

37 Claims



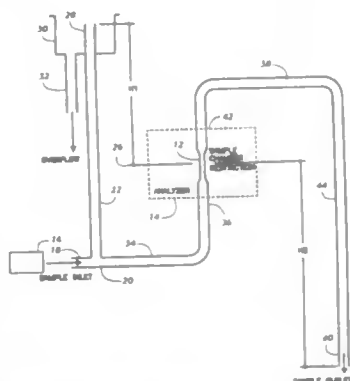
1. An apparatus for restricting supercritical fluid comprising: an elastic tube through which the supercritical fluid flows, said elastic tube comprised of material designed to support supercritical fluid at a pressure of at least 100 atm; and means or a mechanism for adjustably compressing and releasing the elastic tube such that the supercritical fluid at a pressure of at least 100 atm in the elastic tube is restricted a desired amount, said compressing means or mechanism in separable and releasable contact with the tube so the

tube can be removed from the compressing means or mechanism and replaced without damage to the compressing means or mechanism, said supercritical fluid at a pressure of at least 100 atm on one side of the compressing means.

5,379,791
DUAL-HEAD FLOW CONTROLLER AND METHOD
John F. Christopher, 1125 Coleman Rd., Roswell, Ga. 30075
Filed Sep. 3, 1993, Ser. No. 116,336
Int. Cl.⁶ G01N 15/06

U.S. Cl. 137—1

12 Claims



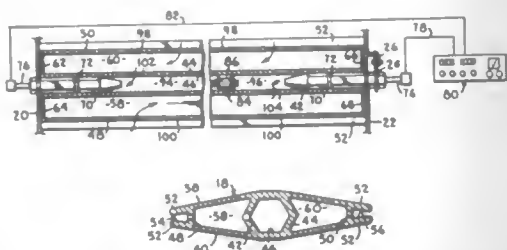
8. A method of supplying a constant rate flow of a fluid to a restriction in a measuring chamber for measuring particles in the fluid, comprising:

- communicating a fluid from a supply to a restriction in a measuring chamber through a positive-head tube having a distal open end with a positive bevel on an interior surface, the positive-head tube extending a first predetermined distance above a mean elevation of the restriction in the measuring chamber for a pressure head of a first amount;
- communicating the fluid through a negative-head tube from the restriction to a distal open end with a positive bevel on an interior surface, a portion of the negative-head tube extending downwardly a second distance below the mean elevation of the restriction in the measuring chamber for a pressure head of a second amount,
- whereby the fluid, being communicated under pressure to the restriction for measuring the particles in the fluid, flows at a constant rate independent of the pressure.

5,379,792
DAMPER WITH BLADE FOR SENSING PRESSURE DIFFERENTIAL

Robert M. Van Becelaere, Lake Lotawana, Mo., assignor to Tomkins Industries, Inc., Dayton, Ohio
Filed Oct. 21, 1993, Ser. No. 140,672
Int. Cl.⁶ F16K 37/00; G01F 1/42
U.S. Cl. 137—12

16 Claims



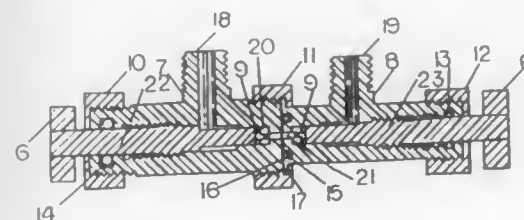
13. A method for determining the relative rate of flow of pressurized gaseous fluid in a stream through a damper with at

least one damper blade having a pair of separate chambers contained in the blade, said method comprising: introducing pressurized fluid into said first chamber of the blade from a first opening in a portion of the blade disposed to receive flow from the stream upstream of the blade, the diameter of the first opening being substantially less than the transverse dimension of said first chamber; introducing pressurized fluid into said second chamber of the blade from a second opening in a portion of the blade disposed to receive flow from the stream downstream of the blade, the diameter of the second opening being substantially less than the transverse dimension of said second chamber; and sensing the pressure in each of said first and second chambers to obtain an indication of said rate of flow.

5,379,793
VENTLESS TRANSFER VALVE AND METHOD FOR USING SAME
Johathan S. Powell, 5094 Tlp Top Rd., Mariposa, Calif. 95338
Filed Sep. 7, 1993, Ser. No. 116,582
Int. Cl.⁶ F16L 37/28

U.S. Cl. 137—15

4 Claims



1. Method for transferring liquid chlorine from a supply cylinder to a small cylinder using a ventless transfer valve wherein the improvements comprise:

- (a), mounting a supply cylinder of chlorine on a rotatable cradle on a wheeled vehicle;
- (b), mounting a weighing scale having a support means for a small chlorine cylinder near said vehicle;
- (c), placing a small chlorine cylinder on said weighing scale;
- (d), connecting a ventless transfer valve to the input of said cylinder;
- (e), connecting the supply cylinder to said transfer valve;
- (f), opening both valves to admit a predetermined weight of chlorine into the small cylinder; and,
- (g), closing both valves before disconnecting and removing the small cylinder.

5,379,794
GAS CONTROL VALVE HAVING POLYMERIC MATERIAL BODY COMBINED WITH THERMALLY RESPONSIVE GAS SHUTOFF VALVE HAVING METALLIC BODY

Bernard T. Brown, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 25, 1994, Ser. No. 186,167
Int. Cl.⁶ F16K 17/40

U.S. Cl. 137—75

7 Claims

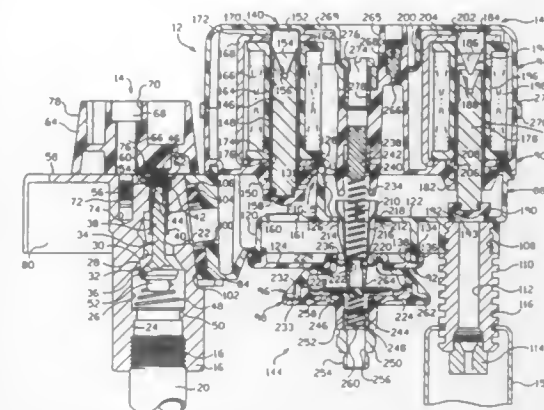
- 1. In a gas valve, a control valve having a valve body made of polymeric material; and a shutoff valve having a metal valve body, said control valve including electrically operated valve means for controlling flow of gas through said control valve, said shutoff valve being connected to said control valve

upstream therefrom and including thermally responsive valve means effective for terminating flow of gas to said

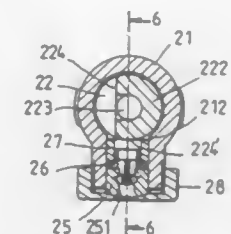
5,379,796
AIR PUMP HEAD CAPABLE OF ENGAGING TIRE AIR VALVE IN TWIST-LOCKING MANNER
Lopin Wang, 5F, No. 1, Lane 85 Kwang Fu North Rd., Taipei City, Taiwan, Prov. of China
Filed Feb. 23, 1994, Ser. No. 200,726
Int. Cl.⁶ F16K 15/20; F16L 29/02

U.S. Cl. 137—231

5 Claims



control valve in response to exposure to an abnormal temperature value.

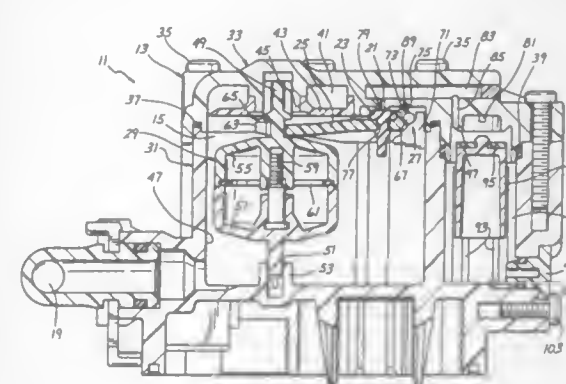


5,379,795
VENTING APPARATUS
E. Dale Hartley, Malibu, and F. Scott Hartley, Camarillo, both of Calif., assignors to Shurflo Pump Manufacturing Co., Santa Ana, Calif.

Filed Dec. 7, 1993, Ser. No. 163,168
Int. Cl.⁶ F16K 31/18

U.S. Cl. 137—202

23 Claims



1. A venting apparatus comprising:

- a housing having a chamber, an inlet through which fluid can be supplied to the chamber, a liquid outlet through which liquid can leave the chamber and a gas vent through which gas can leave the chamber;
- a valve element for opening and closing the gas vent to control the flow of gas through the gas vent;
- a pivot arm, said valve element being carried by the pivot arm;
- a pivot device for mounting the pivot arm for compound movement relative to the housing to move the valve element to open the gas vent, a first portion of said compound movement being about a first fulcrum and a second portion of said compound movement being bodily away from the gas vent and being different from the first portion of said compound movement; and
- a float mounted for movement in said chamber and drivingly coupled to said pivot arm to drive the pivot arm to bring about said compound movement.

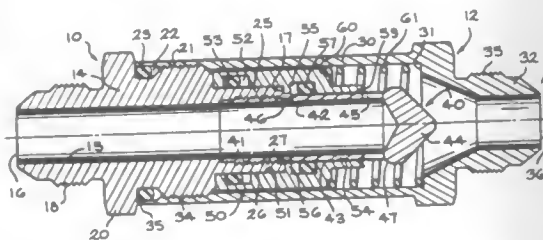
1. An air pump head capable of engaging a tire air valve in a twist-locking manner comprising:

- a housing provided centrally with a first receiving space of columnar construction and a second receiving space of columnar construction and having an axial line forming a predetermined angle of inclination with an axial line of said first receiving space, said first receiving space being greater in size than said second receiving space and in communication with said second receiving space;
- a rotating member disposed in said first receiving space such that one end of said rotating member is connected with a cylindrical body of an air pump and is capable of rotating along with said cylindrical body, said rotating member provided with a cam section corresponding in location to said second receiving space, said rotating member further provided therein with an air duct having one end that is connected with a connection end of said cylindrical body of said air pump, said air duct further having another end that is connected with a surface of said cam section;
- at least two leakproof elements attached respectively to both ends of said rotating member for sealing off said first receiving space;
- an elastic body disposed in said second receiving space and having a tubular body with an open end and with another end that is provided with an end wall having centrally a round hole;
- an opening member disposed in said second receiving space and having one end that is provided with a protruded column adjacent to said elastic body for pushing to open a closing valve of an air valve of a tire, said opening member further having a body provided with a predetermined number of through holes for keeping air in said second receiving space to flow freely;
- a pressing member disposed in said second receiving space and having one end adjacent to said opening member and having another end that is lapped with said cam section of said rotating member, said pressing member further having a body that is provided with a predetermined number of through holes for keeping air in said second receiving space to flow freely, said pressing member capable of being actuated by a rotation of said cam section of said rotating member to move a distance along an axis of said second receiving space toward said elastic body to exert a pressure on said elastic body, which is then caused to deform such that an inner diameter of said tubular body of said elastic body becomes smaller to enable said elastic body to engage securely said air valve of said tire; and
- an end jacket attached to an open end of said second receiving space for preventing said elastic body, said opening member and said pressing member from slipping out of said second receiving space.

5,379,797
HYDRAULIC FUSE
 Russell L. Rogers, Manth, and Gary M. Jenski, Jr., Jackson, Ohio, assignors to Aeroquip Corporation, Maumee, Ohio

Filed Jan. 27, 1994, Ser. No. 188,470
 Int. Cl.⁶ F16K 17/30
 U.S. Cl. 137—503

32 Claims



1. A hydraulic fuse comprising:
 - (a) a first member extending from a first end to a second end, a passageway extending along an axis from said first end to said second end, said second end defining an outlet;
 - (b) a second member having a passageway extending along said axis from an inlet to a leading end positioned within said first member first end, said second member engaged to said first member;
 - (c) a fixed guide having an annular wall with an inlet end joined to said second member leading end, said annular wall defining an axial passageway communicating with said second member passageway and terminating at a closed end wall spaced from said inlet end, said annular wall having exterior surface portions parallel to said axis, a first lateral port in said annular wall in the vicinity of said end wall and a second lateral port in said annular wall axially spaced from said first lateral port;
 - (d) an axially slideable sleeve mounted on said fixed guide extending from a leading end to a trailing end and having an internal surface slideably engaged to said annular wall for movement from a retracted position at which said leading end is axially spaced from said first lateral port to a forward position at which said leading end overlies said first lateral port, said slideable sleeve having an inwardly facing annular seal sealingly and slideably engaged to said fixed guide exterior surface portions and moveable between said second lateral port and said first lateral port; and
 - (e) a spring yieldingly urging said slideable sleeve toward said retracted position, said spring and said slideable sleeve being responsive to fluid pressure of predetermined magnitude introduced through said second lateral port acting on said annular seal to move it and said slideable sleeve toward said forward position.

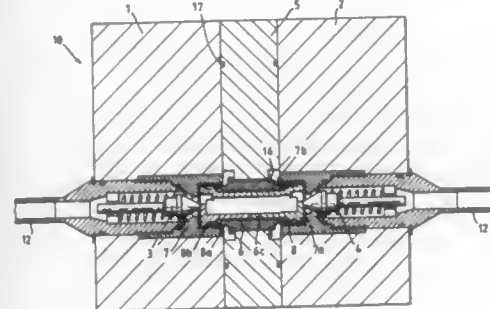
5,379,798
HYDRAULIC COUPLING
 Jan E. Syljeset, Hakon Stromberg, both of Oslo, and Torbjorn Berg, Sorumsand, all of Norway, assignors to Kvaerner Energy A.S., Oslo, Norway
 Filed May 3, 1994, Ser. No. 237,398
 Claims priority, application Norway, May 18, 1993, 931797
 Int. Cl.⁶ F16L 37/28

U.S. Cl. 137—614.04

9 Claims

1. A hydraulic coupling comprising a first part having at least one check valve, a second part having at least one check valve, a seal plate designed to be placed between the first and second parts, orienting members which orient said first part, said second part and said seal plate in relation to one another, and at least one connecting member disposed in the seal plate to form communication between the interdependent check valves, characterized in that in an extension of each check valve there is disposed a cylindrical surface, the centre axis of which coincides with that of the check valves, and said con-

necting member is at each end formed with partial, open spherical cups for external sealing interaction with the cylindrical surfaces, the internal spherical surfaces being subjected to the

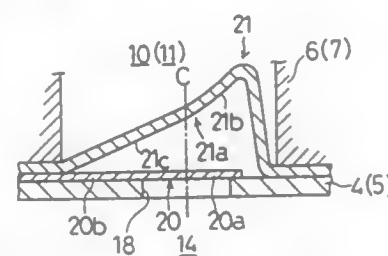


same pressure as that in the medium which passes through the valves and the connecting member for the purpose of actuating the radial forces in the spherical cup.

5,379,799
DISCHARGE VALVE APPARATUS FOR COMPRESSOR
 Katsunori Kawai, Ryo Kato, Akio Saiki, and Yuji Kaneshige, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Kariya, Japan
 Continuation of Ser. No. 926,466, Aug. 7, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 141,901
 Claims priority, application Japan, Aug. 13, 1991, 3-202774
 Int. Cl.⁶ F16K 15/14

U.S. Cl. 137—856

5 Claims



1. A discharge valve apparatus for a compressor, comprising:
 - a valve plate with a port;
 - a reed valve fixed on said valve plate, adapted for swingably opening and closing said port elastically, and having a substantially disk-shaped head portion at one end of a constricted neck portion; and
 - a retainer fixed on said valve plate, and having an inclined surface adapted for regulating the degree of opening of said reed valve, said inclined surface having a curved surface portion and a flat surface portion, the curved surface portion and the flat surface portion being joined at a location where the retainer is contacted by said head portion of said reed valve when the reed valve fully opens said port.

5,379,800
CAM OPERATED VALVE
 Philip A. Mansfield, Bristol, England, assignor to Rolls-Royce plc, London, England
 Filed Feb. 22, 1994, Ser. No. 200,018
 Claims priority, application United Kingdom, Mar. 27, 1993, 9306418

Int. Cl.⁶ F16K 1/16

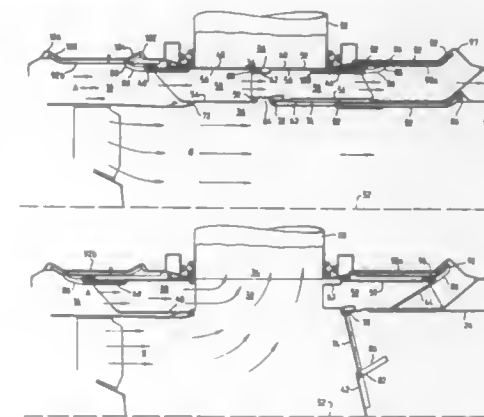
14 Claims

U.S. Cl. 137—875

1. A valve arrangement operative to block a generally cylin-

dric fluid flow duct having a main longitudinal axis comprising:

- an axially translatable annular sleeve member coaxially disposed within the duct,
- an annular array of segmented elements, each one pivotally mounted in relation to the sleeve member about a respective pivot axis orthogonal to the duct axis,



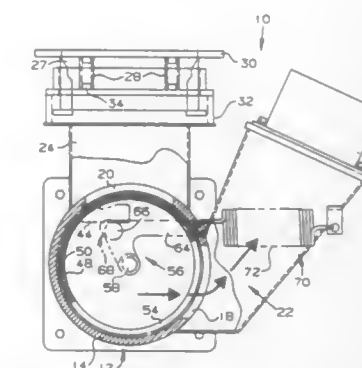
cam means fixed in relation to the duct and extending in the longitudinal direction of the duct, and whereby each of the segmented elements engage the cam means such that translation of the sleeve member along the duct axis causes the segmented elements to rotate from a stowed position to a deployed position thereby to block the duct.

5,379,801
EXHAUST DIRECTING VALVE MECHANISM FOR A VEHICLE

James W. Reinhart, and Richard D. Walker, both of Decatur, Ill., assignors to Caterpillar Inc., Peoria, Ill.
 Continuation of Ser. No. 65,959, May 24, 1993, abandoned. This application May 5, 1994, Ser. No. 239,168
 Int. Cl.⁶ F16K 11/00

U.S. Cl. 137—876

3 Claims



1. A load carrying machine having a dump body movable between a down position and a dump position and structure for directing exhaust to the dump body including a valve mechanism, comprising:

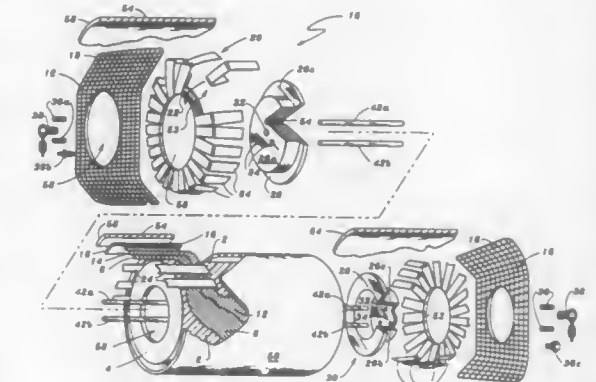
- a valve body having an inlet, the valve body includes a first cylindrical tube aligned with the inlet having a lateral first outlet, an upwardly disposed second outlet in communication with the dump body, and an end cap opposite the inlet;
- a second cylindrical tube rotatably positioned within the first cylindrical tube of the valve body, the second cylindrical tube having an inlet aligned with the inlet of the valve body and an end cap opposite the inlet to close the second

cylindrical tube and an outlet rotatable between a first position and a second position; means for rotating the second cylindrical tube to the second position, the means includes a linkage arrangement connected to the second cylindrical tube and an abutment plate connected to the dump body which contacts and forces the linkage arrangement to rotate and move the second cylindrical tube to the second position; and a spring connected between the valve body and the linkage arrangement to rotate the second cylindrical tube to the first position when the abutment plate is moved away from the linkage arrangement.

5,379,802
PIPELINE STOPPER PLUG
 Gerald J. VanderLans, P.O. Box 758, Lodi, Calif. 95240
 Filed Mar. 6, 1991, Ser. No. 665,585
 Int. Cl.⁶ F16L 55/12

U.S. Cl. 138—89

6 Claims



1. A plug for obturating a conduit having an interior bore, comprising, in combination:
 - a sleeve having an exterior dimension smaller than the bore of the conduit, said sleeve to be received within the bore, said sleeve having first and second ends,
 - a first end wall closing said first end,
 - a second end wall closing said second end,
 - and plug reinforcing means integrally formed on one said end, said plug reinforcing means including means to bind said sleeve to said one said end wall, said binding means emanating from said one said end wall and extending into said sleeve, said binding means integrally formed in both said one end wall and said sleeve whereby said plug reinforcing means enhances the integrity of said plug;
 - and wherein said plug reinforcing means includes a ring having an opening passing centrally therethrough;
 - and wherein said binding means includes a plurality of straps each having a first tip separated from a second tip by an intermediate portion, each said strap fixedly attached to said ring with at least one of said tips integrated with said sleeve.

5,379,803
APPARATUS FOR THE ABANDONMENT OF A BRANCH MAIN

Anthony D. Elgar, Mitcham; Brian T. Sales, Dorking, and Adrian S. Parkes, Burgess Hill, all of United Kingdom, assignors to British Gas plc, London, United Kingdom
 Division of Ser. No. 757,212, Sep. 10, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,045
 Claims priority, application United Kingdom, Sep. 12, 1990, 9019905

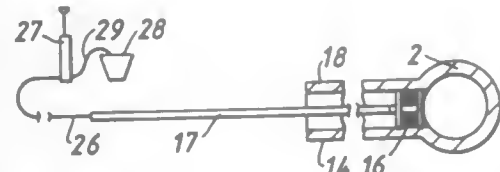
Int. Cl.⁶ F16L 55/10

1 Claim

U.S. Cl. 138—89

1. A device for preventing the flow of fluid along a gas carrying main, comprising:

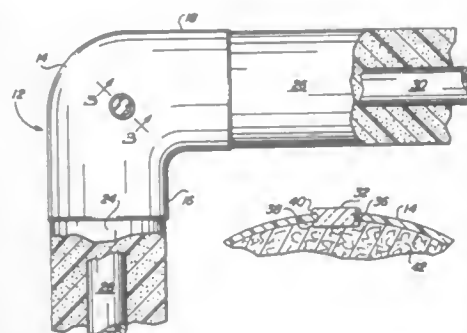
a plug for inserting into and pushing along the bore of the main to a position whereat the plug is to block the bore of the main, the plug having a hollow spindle, two axially spaced discs mounted on the hollow spindle to define a chamber between the discs and having diameters substantially equal to that of the bore, the spindle comprising a circumferential wall which is apertured to provide communication between the hollow interior of the spindle and the chamber, one end of the spindle having, in relation to the direction in which the plug is to be moved through the main, a rear end portion comprising means adapted to connect the plug to the front end of a hollow rod for pushing the plug along the bore of the main to the position where the bore is to be blocked, such connecting means communicating with the hollow interior of the spindle and



wherein the communication to the chamber, via the hollow interior of the rod, the rod connecting means and the hollow interior of the spindle, is such as to permit sealant to be introduced into the chamber, and thus into the main, when the plug is located in the main; and the hollow rod for pushing the plug down the bore of the main, the rod being detachably connectable to the plug via the rod connecting means of the hollow spindle, wherein the front end of said hollow rod includes means cooperating with the connecting means of said plug for connecting the front end of said hollow rod to said plug, and wherein the hollow rod serves as both means via which the sealant is supplied to the hollow spindle for introduction into the chamber and as means for pushing the plug along the bore of the main.

5,379,804
PIPE FITTING COVER
Victor S. Dunn, 76B Phelps Ave., New Brunswick, N.J. 08901, and Raymond J. Bruno, 2 Sugar Mill Rd., Belle Mead, N.Y. 08502

Filed Nov. 5, 1992, Ser. No. 971,883
Int. Cl.⁶ F16L 55/00
U.S. Cl. 138—104



1. A pipe fitting cover for covering a pipe fitting which has been covered with insulation comprising:
a sheet of flexible, resilient, opaque, material having a shape generally corresponding to the external shape of the pipe fitting and larger than the external shape of the pipe fitting to accommodate insulation between the pipe fitting and the pipe fitting cover, the sheet having a hole therein having a substantially circular configuration and dimen-

sions, the hole being located approximately midway between ends of the sheet; and
a clear window secured in the hole whereby insulation covered by the pipe fitting cover can be viewed with the pipe fitting cover in place on the pipe fitting; the clear window comprising an insert having a substantially annular groove corresponding in dimensions and configuration to the dimensions and configuration of the hole; the groove being defined by inner and outer ribs having configurations corresponding to the configuration of the hole and dimensions greater than the dimensions of the hole whereby the ribs extend beyond the hole and in conjunction with the groove form a snap fit, water tight seal with the sheet.

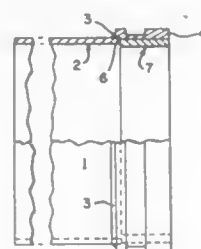
5,379,805
SINGLE SOLID THIN WALL PIPE FOR ABRASIVE MATERIAL HAVING A GRADUAL TRANSITION IN HARDNESS

Robert E. Klemm, Cedarburg, and Gary D. Lehnardt, Cedar-grove, both of Wis., assignors to Construction Forms, Cedar-burg, Wis.

Filed Dec. 16, 1992, Ser. No. 991,118
Int. Cl.⁶ F16L 9/04

U.S. Cl. 138—109

7 Claims



1. A thin wall mild carbon steel pipe for transport of concrete and for concrete placement comprising a single solid tubular wall having a thickness in the range of about 0.150 to 0.200 inches and a composition by weight of carbon in the percentage range of 0.27 to 0.34 carbon, manganese in the range of 0.30 to 0.60 and silicon less than about 0.30, traces of phosphorus and the balance iron, and said single solid tubular wall having an inner hardened wall portion of a thickness in the range of 0.04 to 0.06 inches and an outer highly ductile wall portion including a gradual transition in hardness from said inner hardened wall portion.

5,379,806
FIBER GLASS AIR DUCT WITH COATED INTERIOR SURFACE CONTAINING AN ORGANIC BIOCID
Kent R. Matthews, Littleton; Eric G. Schakel, Sedalia, and Ricardo R. Gamboa, Littleton, all of Colo., assignors to Schuller International, Inc., Denver, Colo.

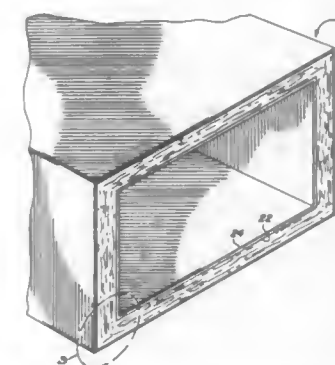
Filed May 26, 1993, Ser. No. 67,769
Int. Cl.⁶ F16L 9/14

U.S. Cl. 138—149

4 Claims

1. A fiber glass air duct for conveying air comprising: a rigid, fiber glass duct formed of duct board having a density of at least 3.5 pounds per cubic foot; said fiber glass duct having an interior surface adapted to be in contact with an air stream; said interior surface of said fiber glass duct having a polymeric coating layer comprising a polymeric coating on a surface of said duct board; said polymeric coating having a dry solids content between 10 and 20 grams per square foot of said duct board surface; said polymeric coating layer having an organic biocide to prevent microbiological growth on said interior surface of said fiber glass duct; and said polymeric coating layer retaining its abrasion strength and puncture resistance

after being subjected to a temperature of 250 degrees Fahrenheit for 60 days whereby said interior surface of said fiber glass



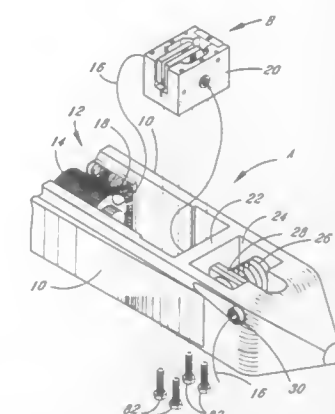
duct can be cleaned without exposing glass fibers to the air stream.

5,379,807
SHUTTLE WEFT YARN CONTROL
Jerry Kelley, and Mike Kelley, both of 1632 Gentry Memorial Hwy., Easley, S.C. 29641

Filed Nov. 22, 1993, Ser. No. 155,599
Int. Cl.⁶ D03D 45/50

U.S. Cl. 139—203

9 Claims



1. A weft thread tension control device for a wide loom shuttle comprising:
a housing having a pair of spaced, stationary eyes adapted to pass weft thread during its passage through said shuttle;
a cutting edge arranged intermediate said eyes and within said housing;
at least one vertically movable thread guide arranged intermediate said eyes and adjacent said cutting edge, a resilient member arranged to engage with said thread guide, said resilient member urging said thread guide into a normal position which maintains said weft thread away from said cutting edge during normal passage of said weft thread through said eyes of said housing; whereby, development of excessive tension in said weft thread during its passage through said thread tension control device forces, said thread guide to be moved from said normal position in which said weft thread is held away from said cutting edge into a position in which said weft thread engages with said cutting edge severing said weft thread.

5,379,808
MULTI-PLY PAPERMAKING FABRIC WITH OVATE BINDER YARNS

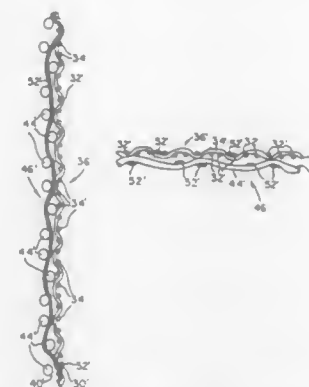
Kai F. Chiu, Brandon, Miss., assignor to Lindsay Wire, Inc., Florence, Miss.

PCT No. PCT/US93/01096, § 371 Date Sep. 8, 1993, § 102(e) Date Sep. 8, 1993, PCT Pub. No. WO93/16221, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 8, 1993, Ser. No. 117,005
Int. Cl.⁶ D03D 13/00

U.S. Cl. 139—383 A

11 Claims



1. A forming fabric for use at the wet end of a paper making machine for receiving wet pulp, said fabric comprising a multi-ply fabric having a width corresponding to the width of the paper-making machine and a length in the form of a continuous loop corresponding to the length of the path of travel of the fabric through the paper machine, and having a top pulp face and a bottom machine face, said top pulp face forming the pulp into a consolidated web by affording discharge of the free water content of the wet pulp from the bottom machine face, said fabric comprising:

a top ply having a self-sustaining weave construction comprising top warp yarns interwoven with top shuttle yarns in a weave pattern on the top face selected to produce a desired surface texture in the paper produced from the web formed on said top pulp face, said top warp yarns having substantially uniform spacing across the width of the fabric and having a warp density to provide channels between the yarns affording said discharge of free water; a bottom side consisting essentially of a series of bottom shuttle yarns; and ovate binder warp yarns interweaving the top ply and the bottom shuttle yarns to form a self-sustaining fabric construction which is characterized by a high degree of porosity, said ovate binder warps having a warp density not greater than the warp density of the top ply, and being so arranged that the binder warps cannot block all of the channels provided in the top ply.
said top warp yarns and said ovate binder warp yarns constituting the only two warp systems in the fabric, said ovate binder warp yarns providing the only components interweaving the bottom shuttle yarns with one another and with the yarns in the upper ply.

5,379,809
WIRE TWISTING DEVICE
Robert M. Waulk, 3315 71st St. North, St. Petersburg, Fla. 33710

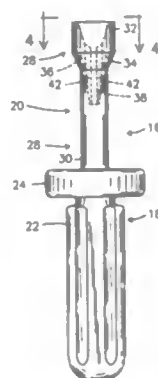
Filed Oct. 13, 1993, Ser. No. 134,890
Int. Cl.⁶ B21F 7/00

U.S. Cl. 140—118

8 Claims

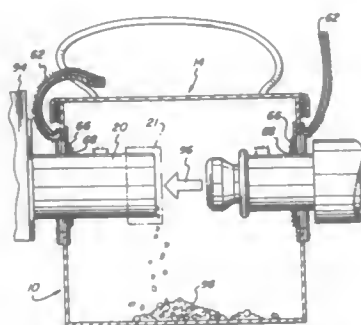
1. A wire twisting device to join the bare end portions of a plurality of insulated electrical wires together in a radially and longitudinally uniform spiral configuration to receive a hollow wire connector or nut on the outer end portions thereon, said

wire twisting device comprises a wire twisting member including a distal and proximal end having a handle attached to the proximal end thereof, said wire twisting member including a centrally disposed frustum conical cavity having an inclined inner side wall, said inclined inner side wall having a plurality of tapered protrusions each including an inner base and an outer edge comprising a cross-section decreasing from said inner base to said outer edge thereof extending from said inclined inner side wall to cooperatively form a corresponding plurality of wire receiving channels between adjacent tapered protrusions, said outer edges disposed in parallel relationship



relative to each other to cooperatively form a centrally disposed cylindrically shaped channel therebetween, said wire receiving channels and said centrally disposed cylindrically shaped channel disposed parallel to each other such that the bare end portions to be joined are placed in a corresponding channel whereby as the wire twisting device is rotated relative to the plurality of electrical wires said wire twisting device moves longitudinally relative to the insulated electrical wires to twist the bare end portions together to form the uniform spiral configuration prior to application of the hollow wire connector or nut thereon.

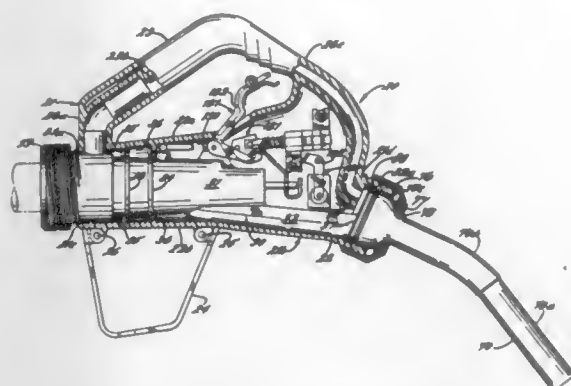
5,379,810
SPILL CONTAINMENT TRANSFER BAG
Thomas F. Marino, 26 Hydeler Ave., Prospect, Conn. 06712
Filed Sep. 9, 1993, Ser. No. 118,958
Int. Cl.⁶ F16L 55/00
U.S. Cl. 141—10 20 Claims



1. A spill containment transfer bag for use about the coupling of a port of a tank and a conduit connected thereto, comprising a flexible and foldable bag member defining an enclosure and having a bottom wall adapted to stably seat on a support surface, a sidewall extending upwardly from the periphery of said bottom wall, and a top wall, said sidewall having a pair of opposed apertures which are adapted to permit passage therethrough of a portion of the associated tank adjacent its port and of the associated conduit, said sidewall about said apertures having expansible means thereon adapted to vary the size of the aperture through the sidewall and seat snugly about the associated tank portion and conduit so as to

provide a seal thereabout, and said top wall providing a disengageable closure for the bag to permit access to the interior.

5,379,811
FUEL DISPENSING NOZZLE
Kenneth W. Dotson; Stewart Mac Harmon, both of Raleigh; Francis B. Weeks, Apex; Chih-Kun J. Shih, Cary, and John L. Johnson, Raleigh, all of N.C., assignors to Emco Wheaton, Inc., Cary, N.C.
Division of Ser. No. 963,581, Oct. 19, 1992, Pat. No. 5,327,949.
This application Dec. 13, 1993, Ser. No. 166,515
Int. Cl.⁶ B65B 1/30; B67C 3/00
U.S. Cl. 141—206 9 Claims

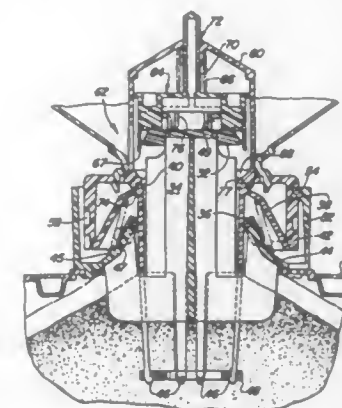


1. A fuel dispensing nozzle characterized by vapor recovery capability, said nozzle comprising:

- (a) a housing having an elongate hollow main body portion open at both ends thereof and an elongate handle portion connected at its opposite ends to said main body portion and having a hand-grip spaced from and generally parallel to said main body portion, said hand-grip being adapted to be grasped by the hand of a user of said nozzle without contact with said main body portion, said housing having a vapor recovery passageway therein communicating with the opposite open ends of said main body portion,
- (b) an elongate nozzle body member removably mounted in said hollow main portion of said housing and including ingress and egress ends thereof disposed in said opposite ends of said main body portion of said housing, said nozzle body member having a fuel passageway extending longitudinally therethrough from said ingress end thereof to said egress end thereof, said ingress end of said nozzle body member being adapted to be connected to a fuel delivery hose on a service station fuel pump having both fuel delivery and vapor recovery conduits therein,
- (c) main valve means mounted in said nozzle body in said fuel passageway for movement between open and closed positions for controlling the flow of fuel through said nozzle,
- (d) main valve actuating means mounted on said main body portion of said housing and connected to said main valve means for moving said valve means between its open and closed positions, said main valve actuating means including trigger means disposed between said main body portion and said handle portion of said housing for manual operation of said main valve actuating means by a user of said nozzle, and
- (e) a spout mounted on said main body portion of said housing at the egress end thereof and extending outwardly therefrom, said spout having a free end portion adapted to be inserted into the fill opening of a vehicle fuel tank, said spout having a fuel dispensing passageway therethrough which is communicatively connected to said fuel passageway in said nozzle body member for receipt of fuel therefrom when said main valve means is in open position and for dispensing that fuel into the vehicle fuel tank and a

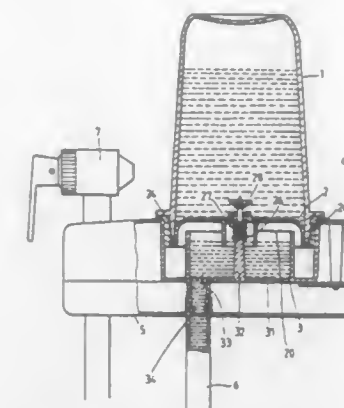
vapor recovery passageway therethrough communicatively connected to said vapor recovery passageway in said housing for removing vapors from the vehicle fuel tank and delivering such vapors to the vapor recovery conduit in the fuel delivery hose.

5,379,812
CLOSED GRANULAR CHEMICAL HANDLING SYSTEM
Myron L. McCunn, Orion, Ill.; Donald K. Landphair, Bettendorf, Iowa; Richard M. Neysinck, Port Byron, Ill.; Richard A. DePauw, Moline, Ill.; William R. Landie, East Moline, Ill.; Douglas P. Brown, Bettendorf, Iowa; Jeffrey A. Hoffman, Westerville, Ohio; Frank D. Tenne, Ivyland, Pa.; Patrick D. Holverson, Ahwatukee, Ariz., and Keith Woodruff, Mountain-side, N.J., assignors to Deere & Company, Moline, Ill. and American Cyanamid, Stamford, Conn.
Continuation of Ser. No. 891,889, Jul. 23, 1992, Pat. No. 5,224,527, which is a division of Ser. No. 747,559, Aug. 20, 1991, Pat. No. 5,125,438, which is a division of Ser. No. 530,705, May 30, 1990, Pat. No. 5,060,701, which is a division of Ser. No. 329,469, Mar. 27, 1989, abandoned. This application Jan. 4, 1993, Ser. No. 72,800
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.⁶ B65D 88/54
U.S. Cl. 141—346 11 Claims



- 6. A dispensing valve comprising:
 - a housing attachable to a dispensing container, and having a passage and a first valve seat;
 - a first valve member slidably mounted in said housing and having an edge which sealingly engages said first valve seat in said housing in a closed position to block the passage;
 - means for biasing said first valve member into the closed position;
 - means for rotatably coupling the housing to a first part of a receiving valve; and
 - means for engaging a second, movable part of the receiving valve to automatically open the receiving valve as the dispensing valve is coupled to the receiving valve and enabling automatic closure of the receiving valve when the dispensing valve is uncoupled from the receiving valve, said first valve member being driven both axially and rotationally relative to said housing during coupling and uncoupling.

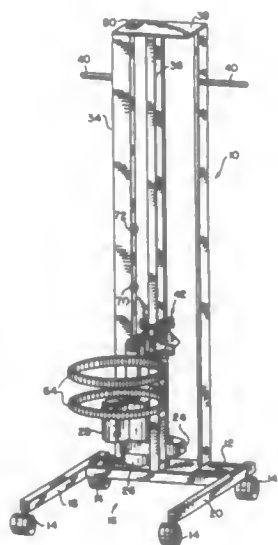
5,379,813
LIQUID DISPENSER
Hwang L. C. Ing, P.O. Box 1750, Taichung, Taiwan, Prov. of China
Filed Sep. 10, 1993, Ser. No. 118,618
Int. Cl.⁶ B65B 3/00
U.S. Cl. 141—351 1 Claim



- 1. A liquid dispenser comprising:
 - a liquid container provided at a bottom portion thereof with outer threads;
 - a cover body provided on an inner edge thereof with inner threads engageable with said outer threads of said liquid container such that said liquid container is fastened securely onto said cover body which is further provided with a protruded seat having centrally a permeating hole and having peripherally a circular groove dimensioned to receive therein securely a leakproof washer;
 - a control pin encased in a coil spring and received movable in said permeating hole of said cover body, said control pin having a wide bottom and a pointed top with a water-checking washer attached thereto securely;
 - a bottom seat provided centrally with a receiving space dimensioned to receive therein said cover body and said bottom portion of said liquid container, said bottom seat further provided with a support rod for actuating said control pin and said water-checking washer, said bottom seat still further provided in a bottom portion thereof with a through hole through which liquid contained in said receiving space of said bottom seat is dispensed via a connection tube which is fastened at one end thereof with a bottom wall of said through hole;
 - a hanging plate attached securely to one side of an underside of said bottom seat for fastening said bottom seat to a wall;
 - a bottom casing dimensioned to hold securely therein said bottom portion of said bottom seat and provided with a through hole corresponding in location to said through hole of said bottom seat;
 - a liquid tapping hose fastened at one end thereof with another end of said connection tube; and
 - a valve fastened securely to another end of said hose for regulating the dispensing flow of said liquid contained in said receiving space of said bottom seat having an indentation of a predetermined shape and a predetermined dimension for holding said valve when said valve is not in use.

5,379,814
WATER BOTTLE LIFTING MECHANISM
Louis M. Postly, 243 Lidy Rd., Dupont, Pa. 18641
Filed Oct. 7, 1993, Ser. No. 135,805
Int. Cl.⁶ B65B 1/04, 3/00
U.S. Cl. 141—351 18 Claims
1. A lifting mechanism for lifting a bottle containing a liquid from a lower upright position to an elevated inverted position comprising:

a frame including a base;
 a motor supported on the base;
 a threaded screw rotatably journaled on the frame and driven by the motor;
 a vertically extending elevator rail supported on the frame;
 a bracket movable on the frame;
 a nut on the bracket meshing with the threaded screw so that rotation of the screw will move the bracket in a vertical direction;
 a sleeve supported on the bracket;

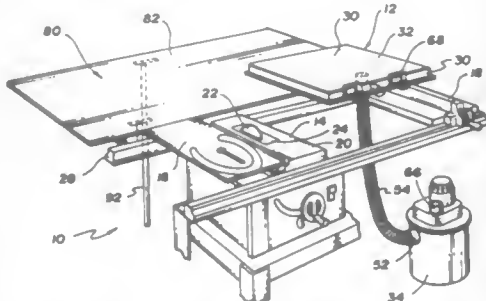


a rotatable rod rotatably supported within the sleeve;
 bottle support means at one end of the rod for embracing and supporting the bottle;
 cam means for cooperating in turning the bottle at the other end of the rod; and
 bearings supported on the frame for engaging the cam means as the bracket is moved vertically to cause the rod to rotate and consequently cause the bottle to turn from its lower upright position to its elevated inverted position.

5,379,815
FOLDABLE EXTENSION TABLE FOR A CIRCULAR TABLE SAW
 Kenneth M. Brazell, 11447 S. 46th St., Phoenix, Ariz. 85044;
 Robert G. Everts, 2050 N. 90th Pl., Chandler, Ariz. 85224,
 and Chi-Kin Chiang, 4519 E. Sandia St., Phoenix, Ariz. 85044
 Filed Aug. 13, 1993, Ser. No. 106,236
 Int. Cl.⁶ B25H 1/00

U.S. Cl. 144—287

17 Claims

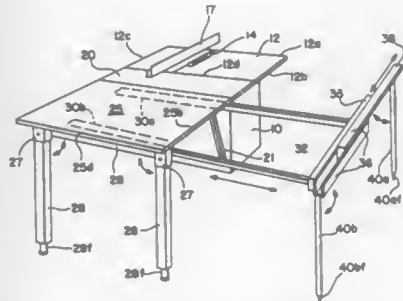


1. A foldable extension table assembly for supporting a workpiece exiting from a table saw, the table saw having a discharge end and a guide rail attached proximate the discharge end, the extension table assembly comprising:
 an extension table having a first end and a second end;
 means for pivotably attaching the first end of the extension

table to the guide rail of the table saw proximate the discharge end of the table saw;
 a leg;
 hinge means for pivotably mounting the leg to the extension table to allow the leg to move between a folded position wherein the leg lies substantially flush with the extension table and an extended position wherein the leg rests on the ground;
 the leg having a length greater than the distance between the first end of the extension table and a point at which the leg is mounted to the extension table; and
 locking means for locking the leg in the extended position.

5,379,816
AUXILIARY SUPPORT DEVICE FOR A POWER TOOL
 Russell T. Charlton, 2565 Spahr Rd., Xenia, Ohio 45385
 Filed Nov. 22, 1993, Ser. No. 155,133
 Int. Cl.⁶ B25H 1/02; B27B 25/00
 U.S. Cl. 144—287

8 Claims



1. An auxiliary support device for use with a power tool having a main work table with an upper support surface and front, rear and side edges, and a cutting tool associated with the main table surface to cut work pieces moved over the surface of the main work table, said auxiliary support device comprising

an auxiliary table having an upper support surface and attached to said main work table adjacent said rear edge, legs on said auxiliary table for supporting said auxiliary table coplanar with the main work table support surface, a guide and support member located on and attached to one side of said auxiliary table, and

means mounting said guide and support member for movement toward and away from said one side of said auxiliary table to provide an outboard support for work pieces moved over the main and auxiliary work tables from the front edge to the rear edge,

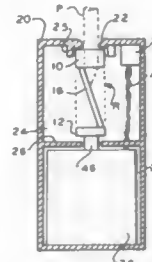
said guide and support member including a sliding extension movable forward into predetermined spaced relation to said one side edge of the main work table.

5,379,817
SHARPENER FOR A SOFT ELEMENT PENCIL
 Edmund O'Neil, 25 Scrivens St., Totowa, N.J. 07512, and Vincent Pace, 465 Long Hill Dr., Short Hills, N.J. 07078
 Filed Mar. 3, 1994, Ser. No. 205,081
 Int. Cl.⁶ B43L 23/00; B27M 1/00
 U.S. Cl. 144—363

27 Claims

1. A sharpener for a soft element pencil comprising:
 a housing having a pencil hole;
 a rotor rotatably mounted in said housing and having (a) a base portion, (b) an annular portion spaced from said base portion, and (c) a blade having a pair of supported ends, said base portion supporting one of said supported ends, the other one of said supported ends being supported by said annular portion, said blade being suspended without external support between said supported ends; and

a drive means mounted in said housing for revolving said rotor, said blade having a skewed cutting edge that re-

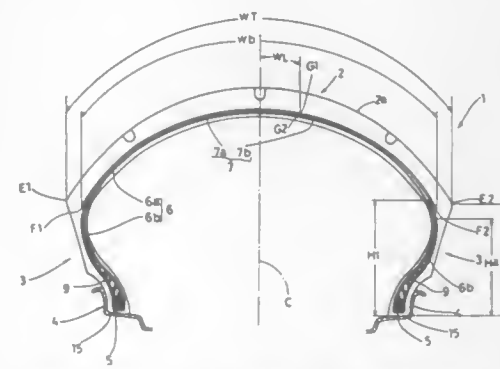


volves around a conical axis to follow and cut a conical surface.

5,379,818
BELTED RADIAL TIRE FOR MOTORCYCLE
 Shigehiko Suzuki, Amagasaki; Itsuo Yasui, Nishinomiya, and Sadaaki Naito, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
 Continuation of Ser. No. 687,015, Apr. 18, 1991, abandoned.
 This application Sep. 17, 1993, Ser. No. 122,171
 Claims priority, application Japan, Apr. 18, 1990, 2-103305;
 Apr. 24, 1990, 2-109349; May 7, 1990, 2-117936
 Int. Cl.⁶ B60C 9/22

U.S. Cl. 152—531

9 Claims

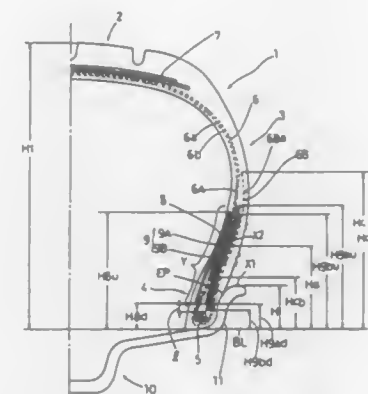


1. A belted radial tire for motorcycles comprising:
 a pair of bead portions, each of said bead portions having a bead core disposed therein;
 a pair of sidewall portions;
 a tread portion having a tread including a pair of tread edges;
 a carcass extending between the bead portions through the sidewall portions and the tread portion of the tire, said carcass having at least one ply of organic fiber cords arranged radially at an angle of 60 to 90 degrees to the tire equator; and
 a belt disposed radially outside said carcass and inside the tread and comprising two laterally adjacent ply pieces, each of said two ply pieces made of at least one spirally wound cord having an elastic modulus of not less than 600 kgf/mm²,
 said tread curved so that the maximum cross section width of the tire is lying between the tread edges,
 each of said two belt ply pieces formed by winding a ribbon of rubber, in which said at least one cord is embedded, spirally around said carcass from the axially outer edge thereof toward the tire equator, wherein
 said two belt ply pieces are extended to a position near the tire equator to be jointed at said position,
 the distance of said joint position measured from the tire equator along the belt is 0.1 to 0.3 times the tread width measured between the tread edges along the tread face, and

the width of said belt measured therealong is 0.7 to 1.0 times said tread width.

5,379,819
PNEUMATIC TIRE WITH REINFORCED BEAD PORTIONS
 Yukishige Adachi, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
 Filed Nov. 26, 1991, Ser. No. 797,993
 Claims priority, application Japan, Nov. 28, 1990, 2-331102
 Int. Cl.⁶ B60C 15/06
 U.S. Cl. 152—542

3 Claims



1. A tire and rim combination comprising
 a wheel rim including a flange having a radially outermost edge, and
 a pneumatic tire, said tire including
 a pair of bead portions, each of the bead portions having a bead core disposed therein,
 a toroidal carcass comprising at least one ply of carcass cords arranged radially at an angle of 75 to 90 degrees with respect to the tire equator, the carcass extending between the pair of bead portions and turned up around each of the bead cores from axially inward to outward thereof to form two turned up portions and a main portion therebetween,
 an axially inner reinforcing layer disposed axially inside the main portion in each of the bead portions, said inner reinforcing layer having a radially inner edge located radially inward of radially outermost edge of the flange, and
 an axially outer reinforcing layer disposed between the main portion and each said turned up portion, said outer reinforcing layer having a radially inner edge located radially inward of the radially outermost edge of the flange,
 each of said turned up portions extending radially outwardly along and adjacently to the main portion from one of the bead portions to a position not lower than a $\frac{1}{4}$ height of the tire section height, each of said turned up portions extends radially outwardly over the radially outer edge of said adjacent outer reinforcing layer,
 each of said inner reinforcing layers comprising one ply of high modulus cords laid at 15 to 50 degrees with respect to the circumferential direction of the tire and extending along an inner face of the main portion at least from a $\frac{1}{4}$ height of the tire section height to one of the bead portions,
 said outer reinforcing layer comprising two cross plies of high modulus reinforcing cords laid at 30 to 60 degrees with respect to the tire circumferential direction, each of said outer reinforcing layers extending at least from said $\frac{1}{4}$ height of the tire section height to one of the bead portions,
 the cord spacing between the adjacent plies in said outer reinforcing layer being 1 to 2 times the reinforcing cord thickness,

wherein between the main portion and each turned up portion, at least from an inner radial position (X1) to an outer radial position (X2), there is only said outer reinforcing layer, the inner radial position (X1) corresponding to the radially outermost edge of the flange, and the outer radial position (X2) corresponding to said $\frac{1}{4}$ height of the tire section height.

5,379,820

TIRE INTENDED FOR HEAVY LOADS AND TO BE INFLATED TO A HIGH PRESSURE

Jean-Pierre Cesar, Sayat, and Antoine Massy, Chamalleres, both of France, assignors to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

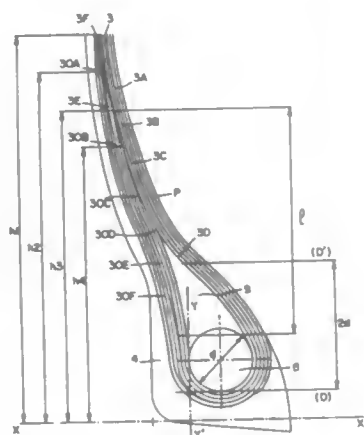
PCT No. PCT/FR91/01081, § 371 Date Jun. 24, 1993, § 102(e) Date Jun. 24, 1993, PCT Pub. No. WO92/12020, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 30, 1991, Ser. No. 81,255

Claims priority, application France, Jan. 14, 1991, 91 00403 Int. Cl.⁶ B60C 9/02

U.S. Cl. 152—546

6 Claims



1. A tire, intended for heavy loads and to be inflated to a high pressure, having a tread, beads containing bead wires, a crown reinforcement and a radial carcass reinforcement comprising at least two axially inner plies of textile cords, wound around a bead wire in each bead from the inside to the outside of the tire and then forming upturns, and at least one axially outer ply of textile cords superimposed on the inner plies below the crown reinforcement and separating said plies in the beads in order to extend along the upturns in the beads, characterized by the fact that each of the outer plies is disposed between the upturns of two adjacent axially inner plies, and by the fact that the ends of the outerplies are disposed axially to the outside of a straight line (YY') perpendicular to the axis of rotation of the tire and tangent to the circle circumscribed on the bead wire at its point axially furthest to the outside, and radially to the outside of a straight line (DD) parallel to the axis of rotation of the tire and tangent to the circles circumscribed on the bead wires at their points closest to the axis of rotation.

5,379,821

SCREEN GUARD, AND SCREEN ASSEMBLY PROVIDED THEREWITH

James Pergolizzi, and Marie D. Pergolizzi, both of 264 Helm La., West Bay Shore, N.Y. 11706

Continuation-in-part of Ser. No. 776,785, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 322,005, Mar. 13, 1989, abandoned. This application May 6, 1992, Ser. No. 879,759 Int. Cl.⁶ E06B 3/30

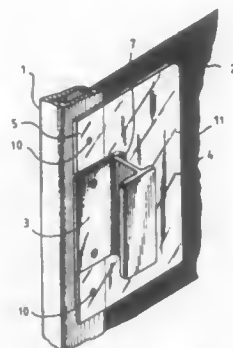
U.S. Cl. 160—371

7 Claims

1. A screen guard assembly for a screen door having a frame

secured about the outer periphery of the screen, with a handle secured to the frame comprising in combination:

a screen door having a screen and having a frame secured about the outer periphery of said screen, said frame having a thickness greater than that of a thickness of said screen, said frame having a handle secured to said frame and said handle overlapping a portion of said screen,



a substantially rectangular guard with a handle recess extending within a rectangular profile of said guard, said guard secured to said frame of said screen door with said handle recess closely received about said handle, and said guard positioned cantilevered in spaced relation away from said screen.

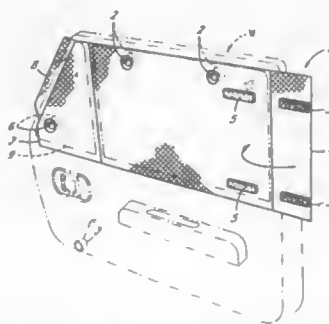
5,379,822

ADJUSTABLE AUTOMOTIVE SIDE WINDOW SHADE

Arlene Lenetz, 19852 Highcrest Cir., Santa Ana, Calif. 92705 Filed Jun. 9, 1993, Ser. No. 73,569 Int. Cl.⁶ B60J 3/00

U.S. Cl. 160—370.21

7 Claims



1. An adjustable automotive side window shade comprising: a first section of shade material having a tapered edge on one side to approximate the side window having a tapered vent area; a second section of shade material attached to the first section, wherein the second section is shaped to approximate the side window having a trapezoidal area; a third section of shade material which is a contiguous portion of the second section, wherein the third section extends beyond the side window and constitutes excess shade material for the side window; securing means for affixing the third section to the second section of the shade; and attachment means affixed to the first and to the second section for securing the shade to the side window.

5,379,823

RAISABLE-CURTAIN DOOR PROVIDING LOW HEAT LOSS

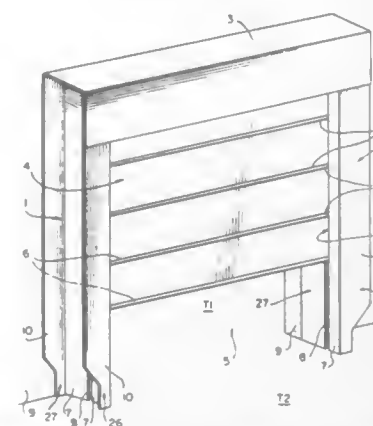
Bernard Kraentler, Dunieres, France, assignor to Nergeco, Dunieres, France

Filed Oct. 27, 1992, Ser. No. 967,117

Claims priority, application France, Oct. 30, 1991, 91 13435 Int. Cl.⁶ E06B 9/17

U.S. Cl. 160—271

17 Claims



1. A raisable-curtain door for closing a door-bay through a wall separating two volumes of air at different respective temperatures, said door comprising:

two vertical side uprights each of which forms a slideway delimited by two vertical edges; and a raisable curtain having side portions that slide in said slideways,

wherein each side upright includes vertical metal first and second bars each forming one of the vertical edges of the respective one of the slideways, said first and second bars in each of said side uprights being separated from each other so as to define a respective slideway extending over substantially the entire height of each said side upright, wherein said first bar is disposed a predetermined distance from said wall and said second bar is disposed in draft-proof contact with the wall, and

wherein said second bar is in substantially draft-proof contact with said curtain over the entire height of the curtain, when said curtain is down.

5,379,824

DOUBLE WINDOW APPARATUS

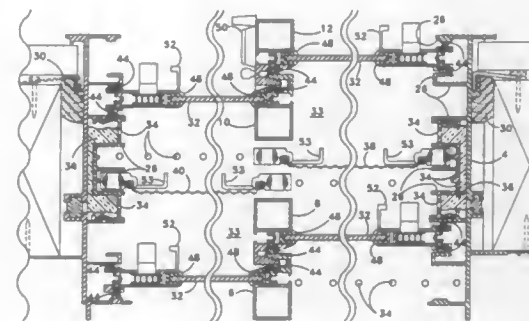
Elmer R. Carvalho, Upland, Calif., assignor to Hegwer Industries, Inc., Ontario, Calif.

Filed Aug. 10, 1993, Ser. No. 104,009

Int. Cl.⁶ E06B 3/32

U.S. Cl. 160—90

28 Claims



1. A double horizontal window apparatus for a building structure, comprising:

a. a generally rectangular shaped common frame having a

top frame member, a bottom frame member and two opposite lateral frame members, the common frame including an exterior frame section, a middle frame section and an interior frame section, each having a pair of transverse parallel elongated tracks;

b. two active exterior window panels positioned in said pair of transverse parallel elongated tracks of said exterior frame section at opposite locations, where the two active exterior window panels can be opened or closed horizontally;

c. two active interior window panels positioned in said pair of transverse parallel elongated tracks of said interior frame section at opposite locations, where the two active interior window panels can be opened or closed horizontally;

d. said two active exterior window panels and said two active interior window panels define an air pressure chamber therebetween;

e. a first slidable insect/solar screen and a second slidable insect/solar screen positioned in said pair of transverse parallel elongated tracks of said middle frame section at opposite locations and located between said two active exterior window panels and said two active interior window panels, where the slidable insect/solar screens can be slid horizontally;

f. said middle frame section having a hollow chamber located all around said middle frame section with a multiplicity of perforations;

g. a multiplicity of weep holes located on said exterior frame section adjacent to said bottom frame member for allowing air to flow through to said air pressure chamber, said air pressure chamber opens to the outside atmosphere through the multiplicity of weep holes, where said air pressure chamber reduces water entry through said two active exterior window panels; and

h. a glass wool material inserted in said hollow chamber of said middle frame section for absorbing sound waves and preventing the flow of foreign material therethrough;

i. whereby when said two active interior window panels are opened and said two active exterior window panels are closed, the heat from the solar energy absorbed by said insect/solar screens can transfer inside said building structure, when said two active interior window panels are closed and said two active exterior window panels are opened, the heat from the solar energy absorbed by said insect/solar screens can dissipate outside of said building structure, when said two active interior window panels and said two active exterior window panels are opened, fresh air can ventilate said building structure, and when said two active interior window panels and said two active exterior window panels are closed, the inside of said building structure is isolated from the outside of said building structure, and any audible vibrations between said two active interior window panels and said two active exterior window panels are partially absorbed by said glass wool material.

5,379,825

WINDOW BLIND BETWEEN TWO PANES OF GLASS

Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.

Filed Aug. 26, 1993, Ser. No. 112,438

Int. Cl.⁶ E06B 3/32

U.S. Cl. 160—107

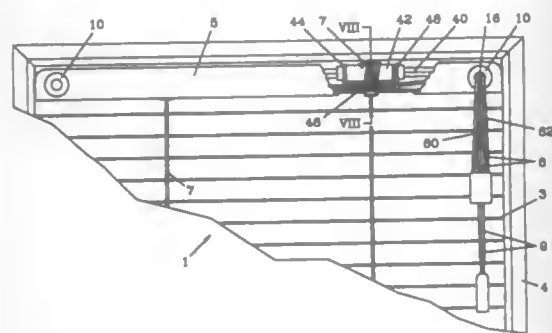
18 Claims

1. A window blind for use between two panes of glass seated in a window frame, one pane of glass having a glass aperture, the window blind comprising:

a. an elongated U-shaped headrail sized to be positioned between the two panes of glass, the headrail having a front side, a back side, a bottom, and a headrail aperture on the front side positioned to align with the glass aperture;

b. a plurality of spaced parallel slats;

- c. at least one lift cord extending from the headrail through the slats to a bottom rail;
- d. a hollow screw passing through the headrail aperture from inside the headrail to outside the headrail, the hollow screw having a first screw channel and a second screw channel through which second screw channel at least one lift cord passes;
- e. a screw duct threaded onto the hollow screw, the screw duct having a threaded inside hole; and
- f. means for tilting the slats about parallel axes, the means comprising
- i) an elongated tiltrod positioned parallel to the slats within the headrail,



- ii) a tilt spool attached to the tiltrod and positioned right behind the hollow screw, adjacent the headrail aperture and within the headrail,
- iii) at least one tilt cord which extends from the tiltrod being secured to and supporting the slats,
- iv) a tilt control cord having a first end attached to and wound clockwise around the tilt spool and a second end wound counterclockwise around the tilt spool, the ends passing through the headrail aperture and the first screw channel side by side, and
- v) at least one support on which the tiltrod is rotatably placed, the support being attached on the bottom of the headrail and positioned within the headrail.

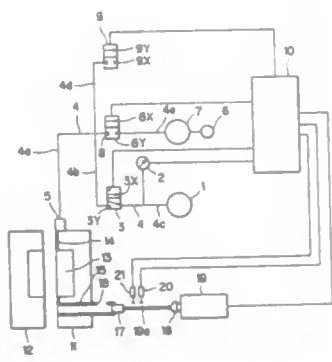
5,379,826
APPARATUS FOR DETECTING DEFECTS AT GAS EXHAUST LINE IN CASTING MACHINE AND METHOD THEREFOR

Tomoyoshi Miwa; Hitoshi Ishida, and Noriyoshi Yamauchi, all of Fuchu, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Oct. 5, 1993, Ser. No. 131,386

Claims priority, application Japan, Oct. 9, 1992, 4-297647
Int. Cl.⁶ B22D 17/32

U.S. Cl. 164-4.1

6 Claims



1. An apparatus for detecting defects at a gas exhaust line in a casting machine, the gas exhaust line being connected through a gas vent valve to a gas vent passage and a mold cavity provided upstream thereof in metal molds, the gas

exhaust line being selectively connectable to the mold cavity by opening and closing motion of the gas vent valve; and the improvement comprising:

- suction means connected to the gas exhaust line for sucking gas in the gas exhaust line when the gas vent valve is closed, and for sucking gas in the gas exhaust line through the mold cavity and through the gas vent valve when the gas vent valve is open;
- a change-over valve connected to the gas exhaust line and positioned between the gas vent valve and the suction means for selectively disconnecting the suction means from the gas vent valve;
- pressure detection means directly connected to the gas exhaust line for detecting pressure within the gas exhaust line; and
- control means connected to the change-over valve for controlling change-over operation thereof and connected to the pressure detection means for judging defects at the gas exhaust line.

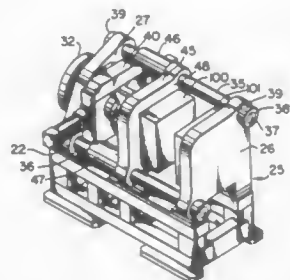
5. A method for detecting defects at a gas exhaust line in a casting machine comprising the steps of: sucking gas in the gas exhaust line connected through a gas vent valve to a gas vent passage and a mold cavity positioned upstream thereof in a metal mold of the casting machine, while the gas vent valve is closed; detecting gas pressure directly from the gas exhaust line through a gas pressure detecting means which is directly connected to the gas exhaust line; and determining that a hole is formed at the gas exhaust line when the pressure in the gas exhaust line does not reach a first predetermined pressure level within a first predetermined period.

5,379,827
DIE CASTING MACHINE
Guldo Perrella, Westmount, and Nicolas Bigler, Morin Heights, both of Canada, assignors to DBM Industries Limited, Quebec, Canada

Filed Mar. 25, 1992, Ser. No. 857,463
Claims priority, application Canada, Jun. 27, 1991, 2045879
Int. Cl.⁶ B22D 17/00, 17/26

U.S. Cl. 164-343

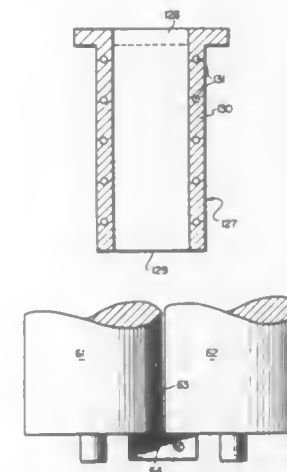
34 Claims



1. A die casting machine having a frame comprising two side platens connected by connecting rods; a moving platen, connecting rod apertures in said moving platen, a moving platen drive and two dies, wherein one side platen is connected to one end of the connecting rods, the other side platen is connected to the opposite end of the connecting rods, the moving platen is guided by said connecting rods for movement towards and away from respective side platens, movement is effected by said moving platen drive, one die mounted on the inside face of the moving platen, and the other die mounted on the inside face of one side platen, characterized by said die casting machine having a solid frame comprising two substantially inextensible connecting rods, the moving platen drive being essentially coincident with the longitudinal centerline of the die casting machine, and the moving platen drive and the dies being in a common plane passing through the longitudinal centerline of the die casting machine.

5,379,828
APPARATUS AND METHOD FOR CONTINUOUS CASTING OF MOLTEN STEEL
Kenneth E. Blazek, Crown Point; Ismael G. Sancedo, Valparaíso, and James E. Kelly, Griffith, all of Ind., assignors to Inland Steel Company, Chicago, Ill.
Continuation of Ser. No. 928,848, Aug. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 865,710, Apr. 8, 1992, Pat. No. 5,178,204. This application Dec. 27, 1993, Ser. No. 172,863
Int. Cl.⁶ B22D 11/04, 11/06, 27/02, 11/07
U.S. Cl. 164-459

36 Claims



1. An apparatus for the rheocasting or conventional continuous casting of molten steel flowing in a downstream direction, said apparatus comprising:

- a mold having open upstream and downstream ends and comprising means for containing said molten steel against flow in a direction transverse to said downstream direction;
- said mold being composed of a non-magnetic mold material which, compared to copper, has the following relative properties: (a) a melting point which, at a minimum, is not substantially lower than the melting point of copper, (b) lower thermal and electrical conductivity, and (c) lower resistance to penetration by a magnetic field;
- said mold having an interior surface that has the same thermal properties from said upstream end of the mold to said downstream end and that is composed of said mold material;
- said mold having a plurality of spaced-apart channel means for circulating cooling fluid at a plurality of spaced locations between said upstream end and said downstream end of the mold;
- said apparatus comprising another surface located outwardly of said interior surface of the mold and outwardly of said channel means;
- said apparatus comprising, at a plurality of locations between said upstream and downstream mold ends, solid structure located between adjacent channel means and extending continuously from (a) said interior mold surface to (b) said other apparatus surface.

2. An apparatus for the continuous casting of molten steel flowing in a downstream direction, said apparatus comprising: a mold having open upstream and downstream ends and comprising means for containing said molten steel against flow in a direction transverse to said downstream direction;
- said mold being composed of a non-magnetic mold material which, compared to copper, has the following relative properties: (a) a melting point which, at a minimum, is not substantially lower than the melting point of copper, (b) lower thermal and electrical conductivity, and (c) lower resistance to penetration by a magnetic field;

said mold comprising at least one rotating roll and a pair of side openings each at a respective opposite end of said roll; said roll having a surface for contacting and solidifying said molten steel;

said surface being composed of said non-magnetic mold material, said mold material extending substantially continuously between said opposite roll ends;

and an electromagnetic containment dam at each opening, said dam comprising means for generating a magnetic field at said side opening for preventing said molten steel from flowing outwardly through said side opening;

said roll comprising means including said mold material, for substantially reducing the attenuation by the roll of the magnetic field generated by said electromagnetic dam, compared to the attenuation caused by a roll composed of copper.

18. A method for the rheocasting or conventional continuous casting of molten steel flowing in a downstream direction, said method comprising the steps of:

providing a casting apparatus comprising a mold having open upstream and downstream ends and which is composed of a non-magnetic material which, compared to copper, has the following relative properties: (a) a melting point which, at a minimum, is not substantially lower than the melting point of copper, (b) lower thermal and electrical conductivity, and (c) lower resistance to penetration by a magnetic field;

introducing molten steel into said mold;

containing said molten steel within said mold against flow in a direction transverse to said downstream direction;

solidifying said steel, at least partially, in said mold;

withdrawing said steel from said downstream end of the mold;

providing said mold with an interior surface that has the same thermal properties from said upstream end of the mold to said downstream end and that is composed of said non-magnetic material;

circulating cooling fluid in said mold, outwardly of the mold's interior surface, at a plurality of spaced cooling locations between said upstream end and said downstream end of the mold;

providing said apparatus with another surface located outwardly of the mold's interior surface and outwardly of said circulating cooling fluid;

and further providing said apparatus, at a plurality of locations between said upstream and downstream mold ends, with solid structure located between adjacent cooling locations and extending continuously from (a) said interior mold surface to (b) said other apparatus surface.

19. A method for the continuous casting of molten steel flowing in a downstream direction, said method comprising the steps of:

providing a mold having open upstream and downstream ends and which is composed of a non-magnetic material which, compared to copper, has the following relative properties: (a) a melting point which, at a minimum, is not substantially lower than the melting point of copper, (b) lower thermal and electrical conductivity, and (c) lower resistance to penetration by a magnetic field;

introducing molten steel into said mold;

containing said molten steel within said mold against flow in a direction transverse to said downstream direction;

solidifying said steel, at least partially, in said mold;

withdrawing said steel from said downstream end of the mold;

providing said mold in the form of at least one rotating roll, with said mold having a pair of side openings each at a respective opposite end of said roll;

generating a magnetic field at each side opening to magnetically dam said side opening and prevent said molten steel from flowing outwardly at said side opening;

providing said roll with a surface for contacting and solidifying said steel;

said surface being composed of said non-magnetic mold

material, said mold material extending substantially continuously between said opposite roll ends; and substantially reducing the attenuation by the roll of said magnetic field compared to the attenuation caused by a roll composed of copper, by employing said mold material as the material of which said roll is composed.

5,379,829 PROCESS OF CONTINUOUS CASTING AND ROLLING METAL STRIP

Francis H. Bricmont, McMurray, Pa., assignor to Bricmanage, Inc., McMurray, Pa.

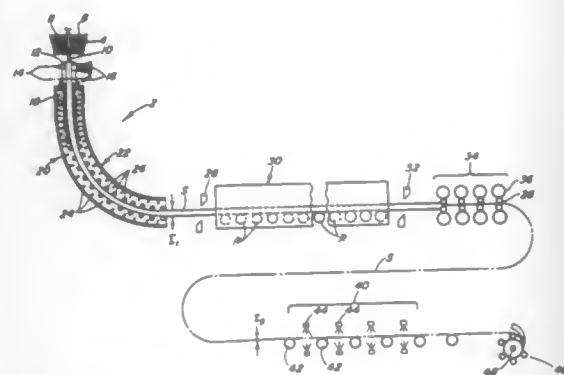
Continuation of Ser. No. 621,638, Dec. 3, 1990, Pat. No. 5,082,047, which is a division of Ser. No. 387,141, Jul. 31, 1989, Pat. No. 4,991,276. This application Aug. 29, 1991, Ser. No. 752,085

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.⁶ B21B 1/46; B22D 11/12

U.S. Cl. 164—476

1 Claim



1. A compact casting and rolling process for producing strip-like metallic workpieces, said process comprising: continuously casting a strip-like metallic workpiece; conveying the workpiece through a furnace by using a plurality of flexible driven roller means, each of said roller means deflecting to a catenary configuration when supporting the weight of the workpiece; simultaneously with conveying the workpiece through the furnace also centering and guiding the workpiece through said furnace using outer surfaces of the plurality of roller means so deflected to said catenary configuration under the weight of said workpiece to guide the workpiece in the furnace while heated to a temperature for hot rolling in a rolling mill; hot rolling the workpiece to a desired hot rolled thickness using a rolling mill train; and cooling and coiling the rolled workpiece.

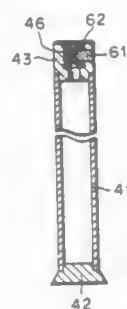
5,379,830
HEAT PIPE AND RADIATING DEVICE
Akira Itoh, Osaka, Japan, assignor to Itoh Research & Development Laboratory Co., Ltd., Osaka, Japan
Filed Jul. 8, 1993, Ser. No. 90,335
Claims priority, application Japan, Sep. 17, 1992, 4-248149
Int. Cl.⁶ F28D 15/02

U.S. Cl. 165—104.27

9 Claims

1. A heat pipe, comprising: a pipe section having a rectangular cross-section; a bottom plate closing a bottom portion of said pipe section; a cap plate closing a top portion of said pipe section to enclose a space in said pipe section, said cap plate having a first aperture extending in a first direction through said cap plate, and a second aperture extending in a second direction from a side surface of said cap plate to said first aperture; a sleeve inserted in said first aperture of said cap plate, said sleeve having a through hole extending in said first direction for communication with said space; and a working

fluid introduced into said space through said through hole of said sleeve said working fluid serving as a heat carrier by



repeated evaporation and condensation, said sleeve being deformed by an impact externally applied through said second aperture, so that said through hole is closed.

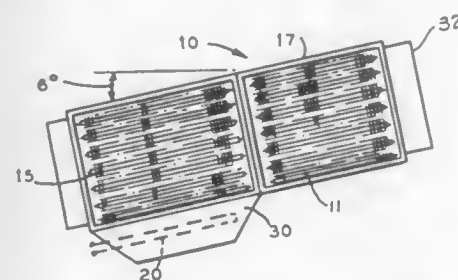
5,379,831
HEAT PIPE HEAT EXCHANGER
Neil N. Carpenter, Katy, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Feb. 22, 1994, Ser. No. 199,420

Int. Cl.⁶ F28D 15/02

U.S. Cl. 165—104.27

3 Claims



1. A method of heating and venting the working fluid within a heat pipe heat exchanger, this heat exchanger having both a hot side and a cold side and a plurality of parallel elongated heat pipe therein, comprising the step of:

- installing heating means in a lower region of the hot side of the heat exchanger adjacent selected heat pipe for maintaining the temperature of the working fluid within said selected heat pipe above freezing temperatures, said heating means being positioned generally parallel to said selected heat pipe and heating said selected heat pipe along its longitudinal axis within said hot side; and,
- venting gas which may accumulate within said selected heat pipe by initially pressurizing said gas by heating the working fluid contained within said selected heat pipe via said heating means.

5,379,832
SHELL AND COIL HEAT EXCHANGER
Jack C. Dempsey, Brown City, Mich., assignor to Aqua Systems, Inc., Hampton Falls, N.H.

Continuation-in-part of Ser. No. 837,283, Feb. 18, 1992, Pat. No. 5,228,505. This application Jul. 20, 1993, Ser. No. 94,941

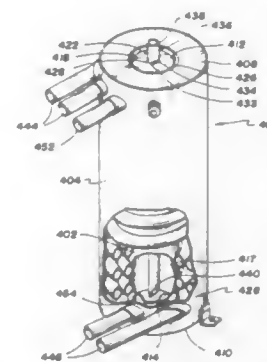
Int. Cl.⁶ F28B 1/02; F25B 39/04, 39/02

U.S. Cl. 165—110

14 Claims

1. A heat exchanger comprising: a shell including a tubular outer wall having first and second ends, a tubular inner wall coaxial with the outer tubular wall and having first and second ends, and first and second end plates attached to the outer and inner tubular walls to form an enclosed tubular shell cavity therebetween and an

enclosed central receiver within the inner wall having first and second ends; means for communicating between the shell cavity and the central receiver; means for communicating a first fluid between the exterior of the shell and the shell cavity;



means for communicating the first fluid between the exterior of the heat exchanger and the central receiver; and coil means having first and second ends sealingly exiting through the shell for carrying a second fluid therebetween and spirally wrapped about the inner wall.

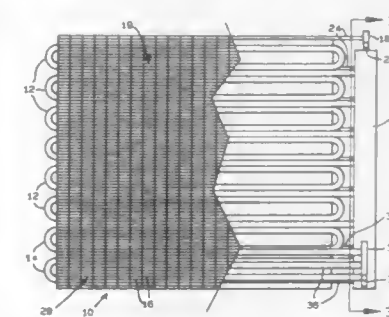
5,379,833
HEAT EXCHANGER WITH INTEGRAL SUBCOOLER
Douglas H. Mathews, Three Rivers, Mich., assignor to Koolant Koolers, Inc., Jackson, Mich.

Filed Dec. 8, 1993, Ser. No. 162,950

Int. Cl.⁶ F25B 1/06; F28B 40/02

U.S. Cl. 165—113

3 Claims

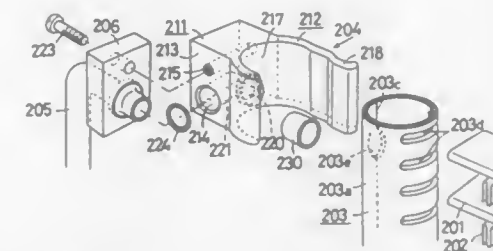


1. A refrigeration circuit heat exchanger for condensing a refrigerant comprising, in combination, a condenser unit having a first set of cooling coils and a second set of cooling coils, said first set of cooling coils having first inlets and first outlets, said second set of cooling coils having second inlets and second outlets, an elongated vertically oriented receiver located adjacent said condenser having an upper region and a lower region, a first elongated inlet manifold mounted on said receiver upper region along the length of said receiver having a gaseous refrigerant inlet, said first inlets being in communication with said first manifold, said first outlets communicating with said receiver upper region, said second inlets communicating with said receiver lower region, a second elongated manifold having a liquid refrigerant outlet mounted upon said receiver lower region along the length of said receiver, said second outlets communicating with said second manifold, the volume within said receiver being at least 15% greater than the volume within said first and second sets of coils.

5,379,834
HEAT EXCHANGER
Toshinori Tokntake, Tochigi, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan
Division of Ser. No. 889,471, May 27, 1992, Pat. No. 5,240,068. This application Aug. 10, 1993, Ser. No. 105,020
Claims priority, application Japan, May 31, 1991, 3-128948
Int. Cl.⁶ F28F 9/04

U.S. Cl. 165—178

8 Claims



1. A heat exchanger comprising: a heat exchanger body composed of at least one header and a plurality of tubes whose ends are connected to the header in fluid communication therewith; at least one connecting member for connecting an external piping to the header in fluid communication therewith; the connecting member tightly adjoined to the header and composed of a block-shaped joint body and a surrounding body which is integral therewith and has a header-surrounding portion; the connecting member further comprising a coolant passageway formed therethrough so as to connect the external piping to the header in fluid communication therewith, wherein the surrounding body is shaped to remain self-retained on the header; a short pipe being inserted between and integrally adjoined to the connecting member and the header, wherein an end of the short pipe fits in the coolant-flow opening of the inner curved surface, with another end of the short pipe thereby being fitted in the coolant-flow opening of the header; and a stepped shoulder being formed in the coolant-flow opening of the inner curved surface of the connecting member, so that an end of the short pipe inserted into the coolant-flow opening of the inner curved surface bears against the stepped shoulder to thereby take a regulated inserted position relative to the connecting member.

5,379,835
CASING CEMENTING EQUIPMENT
Steven G. Strelch, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 26, 1993, Ser. No. 53,127

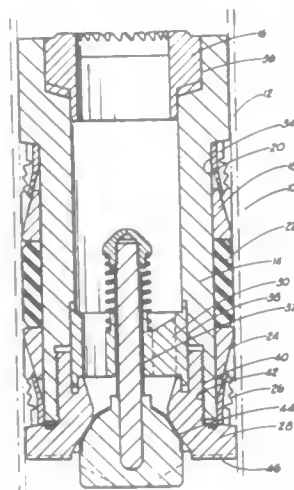
Int. Cl.⁶ E21B 33/12

U.S. Cl. 166—181

14 Claims

1. A well tool adapted to be inserted in casing prior to said casing being run into a well bore, said well tool adapted to be inserted and retained in said casing at any desired location therein, said well tool comprising: an annular body having a recess in one end thereof and a bore therethrough having a portion thereof forming a recess therein and a portion thereof being threaded and having a first larger exterior surface portion and a smaller second exterior surface portion, an insert secured within the recess in the one end of the annular body; an annular upper slip wedge retained about a portion of the smaller second exterior surface portion of the annular body; a plurality of upper slips retained about a portion of the smaller second exterior surface portion of the annular

body having a portion of each slip slidably engaging a portion of the exterior of the upper slip wedge;
 an elastomeric packer element retained about a portion of the smaller second exterior surface portion of the annular body, the elastomeric packer element being retained on the annular body at a location adjacent the annular upper slip wedge;
 an annular lower slip wedge retained about a portion of the smaller second exterior surface portion of the annular body, the annular lower slip wedge being retained on the



annular body at a location adjacent the elastomeric packer element;
 a plurality of lower slips retained about a portion of the smaller second exterior surface portion of the annular body having a portion of each slip slidably engaging a portion of the exterior of the lower slip wedge;
 a valve poppet body retained within the bore having a portion thereof forming recess therein of the annular body; and
 a poppet valve assembly being retained by a portion of the poppet valve body.

5,379,836

CLAMPS FOR USE WITH WELL TUBULARS

Leslie E. Jordan, Inverurie, United Kingdom, assignor to Ecotek Corporation, Plano, Tex.
 PCT No. PCT/GB93/00714, § 371 Date Dec. 3, 1993, § 102(e) Date Dec. 3, 1993, PCT Pub. No. WO93/20327, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 5, 1993, Ser. No. 157,113

Claims priority, application United Kingdom, Apr. 3, 1991, 9207388

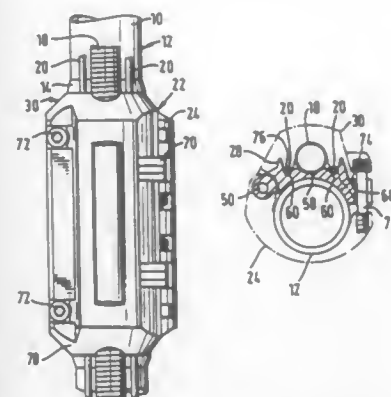
Int. Cl.⁶ F16L 3/10

U.S. Cl. 166—241.6

20 Claims

1. A clamp for mounting a cable or service line in spaced relationship to a tubing string used in producing a well and formed of lengths of tubing joined by a coupling or other type of connection, the clamp comprising first and second clamping elements for clamping around the tubing string, the elements being mutually hinged at one side and provided with releasable fastening means at the opposite side, and a cover hinged at one side of the first element and provided with releasable fastening means for releasably fastening it to the first element at the other

side, the outer surface of the cover and the inner surface of the cover being provided with formations which ensure that the



power and/or service lines are firmly held when the cover is closed against the first element.

5,379,837

LOCKING MEMBER FOR SECURING TO A LOCK STRUCTURE IN A CONDUIT

Michael A. Reid, Aberdeen, Great Britain, assignor to Well-Equip Limited, Aberdeen, United Kingdom

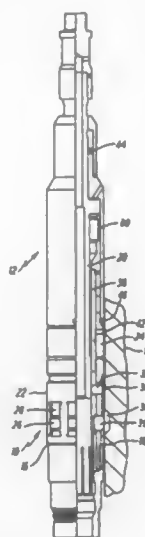
Filed Jan. 4, 1993, Ser. No. 71,255

Claims priority, application United Kingdom, Jun. 9, 1992, 9212162

Int. Cl.⁶ E21B 23/00

U.S. Cl. 166—208

6 Claims



1. A lock member for securing to a lock structure in a conduit, the lock structure having a lock structure shoulder and a locking recess, the lock member comprising a housing; an annular member; a lock member shoulder formed on the annular member; and the lock member shoulder adapted to engage the lock structure shoulder; recess locking means movably mounted on the housing for movement between a first, retracted position and a second, extended position in which the recess locking means enters the locking recess in the lock structure; the annular member being axially movably mounted on the housing between a first position in which, in use, the lock member shoulder bears upon the lock structure shoulder and the recess locking means when in the extended position is disengaged from the surfaces of the locking recess of the lock structure, and a second position in which, in use, the recess

locking means bears upon a surface of the locking recess so as to bear at least a portion of any load applied to an end of the lock member; and shoulder locking means for selectively locking the lock member shoulder in the first position.

5,379,838

APPARATUS FOR CENTRALIZING PIPE IN A WELLBORE

Dennis R. Wilson, Ponca City; Wilber R. Moyer, Blackwell, and Larry K. Moran, Ponca City, all of Okla., assignors to Conoco Inc., Ponca City, Okla.

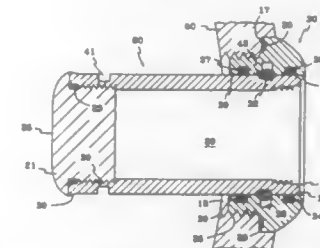
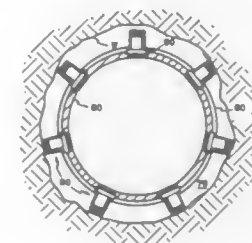
Continuation-in-part of Ser. No. 761,210, Sep. 16, 1991, Pat. No. 5,228,518. This application Apr. 20, 1993, Ser. No. 51,031

The portion of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.⁶ E21B 17/10

U.S. Cl. 166—242

17 Claims



1. An apparatus positioned in the wall of a pipe for use in a wellbore to centralize the pipe in the wellbore wherein guide means in the wall of the pipe has an elongated piston mounted therein for movement from a retracted position within the outer profile of the pipe to an extended position wherein the piston extends outwardly from the wall of the pipe, and latch means are arranged for maintaining the piston in a retracted position while the pipe is being run into the wellbore, the latch means comprising:

a substantially cylindrical guide surface formed transversely in the wall of the pipe;
 an annular guide groove formed in the wall of the pipe around the guide surface in a plane perpendicular to a longitudinal axis of the guide surface;
 an annular piston groove in an outer wall of the piston, said piston groove being in a plane perpendicular to the longitudinal axis of the piston;
 snap ring means mounted in said piston groove and arranged to expand outwardly over the outer surface of said piston into said guide groove when a force is applied to one end of said piston and thereby permit said piston to move from said retracted to said extended position for centralizing the pipe in the wellbore.

5,379,839
WELL TESTING VALVE

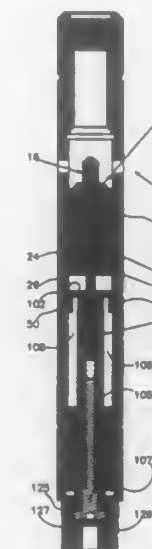
Jack Hisaw, Scott, La., assignor to Specialty Machine & Supply, Inc., Scott, La.

Continuation-in-part of Ser. No. 896,118, Jun. 12, 1992, Pat. No. 5,318,120. This application Dec. 2, 1993, Ser. No. 160,409

Int. Cl.⁶ E21B 34/14

U.S. Cl. 166—250

8 Claims



1. A well testing valve for testing a reservoir comprising:
 a tubular housing having an outer surface, an inner surface, and a port in fluid communication between said outer and inner surface;
 a valve head, slidably disposed within said tubular housing, having a first and second valve face and a valve sidewall, said valve sidewall defining a first and second circumferential recess, said first and second circumferential recesses being spaced a distance apart greater than the diameter of said port, said valve head including a longitudinal aperture in fluid communication between said first and second valve face, and a radial aperture in fluid communication between said longitudinal aperture and a portion of said valve sidewall located between said first and second circumferential recesses;
 an equalizing dart having a portion slidably disposed within said longitudinal aperture of said valve head and means for imparting linear motion to said valve head, said equalizing dart having a first and second dart end and a dart sidewall, said dart sidewall defining a third and fourth circumferential recess, said third and fourth circumferential recesses being spaced a distance apart greater than the diameter of said radial aperture, said equalizing dart including a first and second equalizing aperture, said first equalizing aperture being in fluid communication with said first dart end, said second equalizing aperture being in fluid communication between said first equalizing aperture and a portion of said dart sidewall located between said first dart end and said third circumferential recess, said second end of said equalizing dart being in mechanical connection with a coupling means;
 a coupling means for converting rotational motion into linear motion, said coupling means having a first portion in mechanical connection with said second end of said equalizing dart and a second portion adapted for connection with a source of rotational power;
 a first seal means, disposed within said first circumferential recess, for forming a sliding fluid-tight seal between said inner surface of said tubular housing and said valve sidewall;
 a second seal means, disposed within said second circumferential recess, for forming a sliding fluid-tight seal between

said inner surface of said tubular housing and said valve sidewall;
 a third seal means, disposed within said third circumferential recess, for forming a sliding fluid-tight seal between an inner surface of said longitudinal aperture and said dart sidewall; and
 a fourth seal means, disposed within said fourth circumferential recess, for forming a sliding fluid-tight seal between an inner surface of said longitudinal aperture and said dart sidewall.

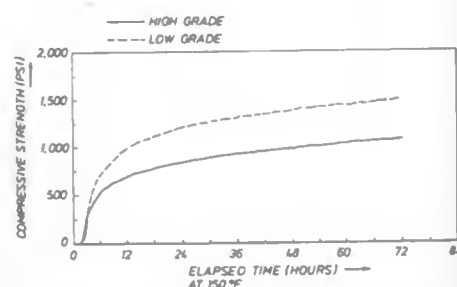
5,379,840

HIGH TEMPERATURE WELL CEMENTING WITH LOW GRADE BLAST FURNACE SLAG

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.
 Filed Aug. 19, 1993, Ser. No. 109,289
 Int. Cl.⁶ E21B 21/00, 33/14

U.S. Cl. 166—292

3 Claims



1. A method of drilling and cementing comprising:
 drilling a borehole with a drill string utilizing a drilling fluid, thus producing a used drilling fluid;
 removing said drill string and disposing a pipe within said borehole, a portion of said used drilling fluid being disposed in said pipe and in an annulus surrounding said pipe;
 combining ingredients comprising blast furnace slag having a slag activity index of less than 100 and water to produce a cementitious slurry;
 introducing said cementitious slurry into said pipe; and
 displacing said cementitious slurry into said annulus wherein said cementitious slurry encounters a temperature in the range of 150°–250° F.

5,379,841

METHOD FOR REDUCING OR COMPLETELY STOPPING THE INFLUX OF WATER IN BOREHOLES FOR THE EXTRACTION OF OIL AND/OR HYDROCARBON GAS

Günter Pusch, Celle, and Mohammad Ranjbar, Clausthal-Zellerfeld, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Apr. 12, 1993, Ser. No. 45,930

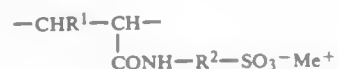
Claims priority, application Germany, Apr. 10, 1992, 4212210
 Int. Cl.⁶ E21B 33/138, 43/12

U.S. Cl. 166—295

23 Claims

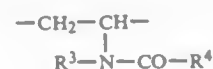
1. A method for reducing or completely stopping the water inflows from a deposit in at least a portion of a borehole for the extraction of oil and/or hydrocarbon gas, which borehole traverses a deposit, an aqueous solution of a copolymer being introduced, starting from the borehole, into that portion of the deposit in which the water inflows are to be reduced or stopped, and the borehole subsequently being put into service for the extraction of oil and/or hydrocarbon gas, the fluids present in the deposit coming into contact with said portion of the deposit containing an adsorbed copolymer, and the oil and/or hydrocarbon gas flowing through said portion of the deposit and reaching the borehole, while the passage of the deposit is reduced, wherein the aqueous solution contains a

copolymer which comprises 5–90% by weight of structural units of the formula



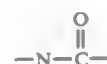
in which

R¹ is hydrogen or methyl,
 R² is C₂–C₁₀-alkylene, and
 Me is ammonium or an alkali metal ion,
 5–95% by weight of structural units of the formula

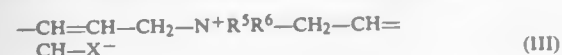


in which

R³ and R⁴, independently of one another, are hydrogen, methyl or ethyl or R³ and R⁴ together are a propylene group which, with the inclusion of a radical



forms a pyrrolidone radical,
 0–90% by weight of structural units of the formula



in which

X is a halogen,
 R⁵ and R⁶, independently of one another, are C₁–C₆-alkyl, and
 0–90% by weight of structural units of the formula



in which

R⁷ is hydrogen or methyl and
 R⁸ is CONH₂, CON(CH₃)₂, cyano, SO₃H, SO₃Me, C₆H₄SO₃H, C₆H₄SO₃Me, CH₂SO₃, H, CH₂SO₃Me, COOH, COOMe or an ester group COOR, R being C₁–C₁₅-alkyl, and optionally further unsaturated monomers.

5,379,842

MATERIAL-HANDLING EQUIPMENT

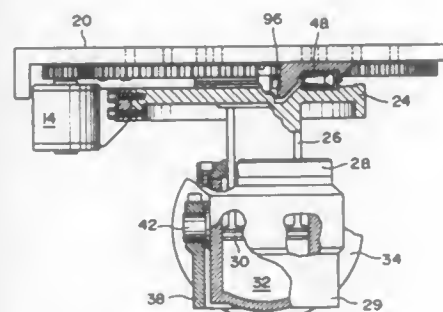
Mel Terry, 1410 Dungeness Way, Sequim, Wash. 98382

Filed Mar. 30, 1992, Ser. No. 859,335

Int. Cl.⁶ B62D 5/02

U.S. Cl. 180—21

6 Claims



1. A wheel module for use in transport devices, comprising:
 a pair of wheels mounted to a trunnion base;

a cylinder with a vertical axis pivotably supporting said trunnion base;
 a piston fitting in said cylinder;
 an upper plate member for supporting a load;
 a vertical shaft connecting said piston to said upper plate member; and
 means for turning said cylinder about said vertical cylinder axis relative to said upper plate member.

5,379,843

SIDE-TRACKING CEMENT PLUG

Vernon E. Unger, Mandeville, La., and Kenneth M. Cowan, Sugar Land, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 964,979, Oct. 22, 1992, abandoned.

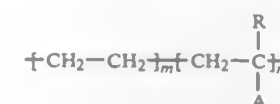
This application Apr. 22, 1994, Ser. No. 232,843

Int. Cl.⁶ E21B 7/06, 33/134

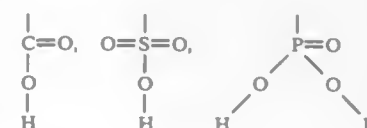
U.S. Cl. 166—295

3 Claims

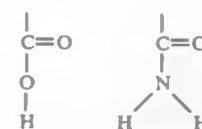
1. A method for altering the path or trajectory of a borehole through placement of a plug which has greater drilling resistance than formations surrounding the borehole, comprising:
 preparing a cementitious slurry comprising
 a proton acceptor metal compound and
 a polymer component of the formula:



wherein A is



or a mixture of



and wherein R is H or a 1–10 carbon atom alkyl radical and the ratio of m to n is within the range of 0:1 to 100:1 and a water source selected from water, brine, seawater, water base drilling fluid, and water emulsion drilling fluid;

circulating the cementitious slurry to a preselected location in the borehole, the cementitious slurry being in direct contact during and after placement with drilling fluid in the borehole;

allowing the cementitious slurry to solidify in situ to form a plug in the wellbore; and
 altering the trajectory or path of the borehole by preferentially drilling the wellbore around the plug, the plug being harder than the wellbore.

5,379,844

OFFSHORE PLATFORM WELL SYSTEM

M. Sidney Glasscock, Houston, Tex., and Gerasime M. Monopolis, Morristown, N.J., assignors to Exxon Production Research Company, Houston, Tex.

Filed Feb. 4, 1993, Ser. No. 13,506

Int. Cl.⁶ E21B 43/013; F21B 7/128

U.S. Cl. 166—358

21 Claims

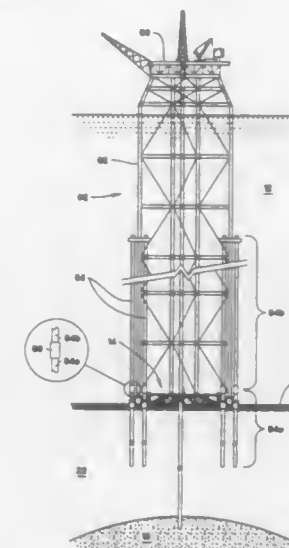
1. A well system for use in producing hydrocarbons from a

subterranean reservoir located beneath a body of water, said well system comprising:

a subsea guide template installed on the seafloor generally above said subterranean reservoir, said subsea guide template having at least one substantially vertical well slot extending therethrough;

an outer casing string installed in said substantially vertical well slot and extending generally downwardly from said subsea guide template to a first predetermined depth less than the depth of said reservoir;

a bottom-founded offshore platform installed generally above said sub sea guide template and extending from said seafloor upwardly to a deck located above the surface of said body of water, said offshore platform being installed after installation of said subsea guide template and said outer casing string;



a wellhead located on said deck of said offshore platform;
 a first intermediate casing string installed inside said outer casing string and extending downwardly to a second predetermined depth deeper than said first predetermined depth but less than the depth of said reservoir;

an inner casing string installed inside said first intermediate casing string and extending downwardly from said wellhead to said reservoir, said inner casing string being installed after installation of said bottom-founded offshore platform; and

a production tubing string installed inside said inner casing string and extending downwardly from said wellhead to said reservoir, whereby hydrocarbons from said reservoir may be produced to said deck of said offshore platform.

5,379,845

METHOD FOR SETTING A WHIPSTOCK IN A WELLBORE

Curtis G. Blount, 251 Gail Drive, Wasilla, Ak. 99654; Charles D. Hailey, Oklahoma City, Okla., and Charles M. Hightower, Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif. and Curtis G. Blount, Wasilla, Ala., a part interest

Filed Jan. 6, 1994, Ser. No. 254,714

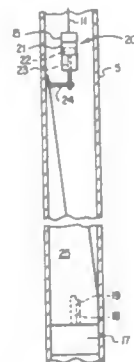
Int. Cl.⁶ E21B 7/00

U.S. Cl. 166—382

6 Claims

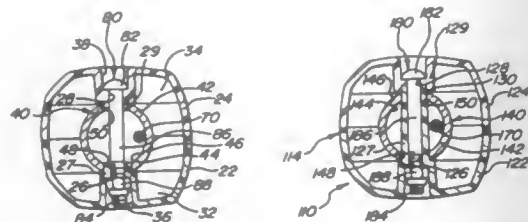
1. In a method for setting a whipstock in a wellbore that extends into the earth from the earth's surface wherein a packer-anchor is first set in said wellbore and said whipstock is thereafter set onto said packer anchor, the improvement comprising providing a wireline unit at the earth's surface having a supply of wireline, said wireline carrying at a first end a setting assembly, said setting assembly carrying a shear member, said shear member being connected to said whipstock, passing said

first end of said wireline with said setting assembly-whipstock combination into said wellbore until said whipstock mates with said packer-anchor, actuating said setting assembly to provide



an impact force to sever said shear member, and removing said wireline and setting assembly from said wellbore thereby leaving said whipstock set onto said packer anchor.

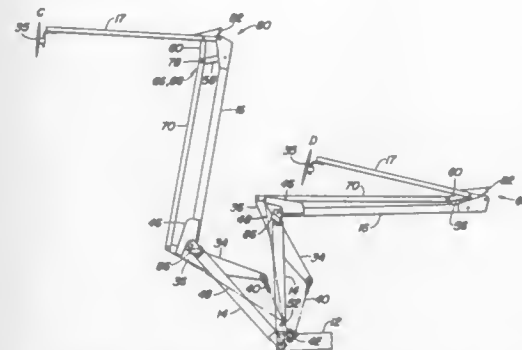
5,379,846
ELECTRICAL APPLIANCE AND HANDLE FOR SAME
Robert P. Wagster, Baltimore; Vernon R. Lacher, Fallston, and John S. Vantran, Baltimore, all of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 7, 1993, Ser. No. 1,148
Int. Cl.⁶ B25G 3/04, 3/32; A01D 34/84
U.S. Cl. 172-15 27 Claims



1. An electrically-powered appliance having a housing, an elongated hollow tubular handle, an elongated electrical cable extending longitudinally within the tubular handle, and attachment means for attaching the tubular handle to the housing, said attachment means including an attachment portion of the housing, a removable portion of the housing, and fastener means for fastening said attachment and removable housing portions to one another with an end portion of the tubular handle clamped therebetween, said end portion of the tubular handle having handle openings extending laterally there-through on laterally-aligned opposite sides thereof, and each of said attachment and removable housing portions having at least one housing opening extending therethrough, said housing openings and said handle openings being laterally aligned with one another to properly position the handle relative to the housing when said attachment and removable housing portions are fastened to one another with said end portion of the handle clamped therebetween, at least one of said attachment and removable housing portions having alignment means thereon for interlockingly engaging at least one of said handle openings to ensure said proper positioning of the handle when said attachment and removable housing portions are fastened to one another with said end portion of the handle clamped therebetween, said alignment means including an alignment member protruding inwardly from said one of said attachment and removable housing portions, said alignment member having a larger portion and a smaller portion stepped-down relative to said larger portion, said stepped-down smaller portion being received within at least one of said handle openings, and said larger portion abuttingly engaging an outer surface of said end portion of said handle when said attachment and removable

housing portions are fastened to one another with said end portion of the handle clamped therebetween.

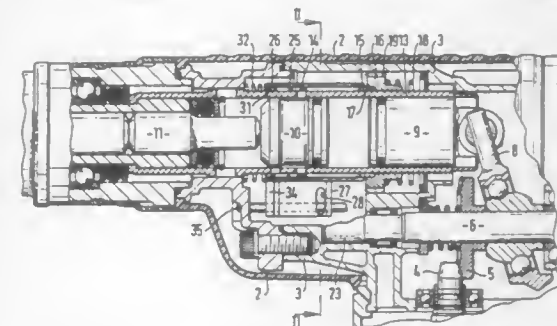
5,379,847
TRI-FOLD ROW MARKER
Michael D. Snyder, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Aug. 24, 1993, Ser. No. 111,370
Int. Cl.⁶ A01B 69/02
U.S. Cl. 172-128 5 Claims



1. A folding row marker for an agricultural implement, the row marker having an extended working position and a retracted storage position, the row marker comprising:
a winglet having a first end and a second end, the first end of the winglet being pivotally mounted to said agricultural implement;
an inner arm having a first end and a second end, the first end of the inner arm being pivotally mounted to the second end of the winglet;
an outer arm having a first end and a second end, the first end of the outer arm being pivotally mounted to the second end of the inner arm;
a surface marking means mounted on the second end of the outer arm for marking a surface when said row marker is in its extended working position;
a first bell crank being mounted to the winglet and extending upwardly from the winglet;
a second bell crank being mounted to the winglet and extending downwardly from the winglet;
a third bell crank being mounted to the inner arm and extending downwardly from the inner arm;
a first pivot link having a first end and a second end, the first end being pivotally mounted to the inner arm;
a second pivot link having a first end and a second end, the first end being pivotally mounted to the outer arm;
a hydraulic cylinder having a first end and a second end, the first end of the hydraulic cylinder being pivotally coupled to said agricultural implement, the second end of the hydraulic cylinder being pivotally coupled to the first bell crank, the hydraulic cylinder having an extended position and a retracted position;
an inner control arm having a first end and a second end, the first end of the inner control arm being pivotally coupled to said agricultural implement, the second end of the inner control arm being pivotally coupled to the third bell crank;
an outer control arm having a first and second end, the first end of the outer control arm being pivotally coupled to the second bell crank, the second end of the outer control arm being pivotally coupled to the second ends of both the first and second pivot links;
whereby retracting the hydraulic cylinder from its extended position to its retracted position pivots the winglet relative to said agricultural implement, the inner arm relative to the winglet and the outer arm relative to the inner arm until the hydraulic cylinder is in its retracted transport

position, in extending the hydraulic cylinder from its retracted transport position to its extended working position, the hydraulic cylinder pivots the winglet relative to said agricultural implement, the inner arm relative to the winglet and the outer arm relative to the inner arm until the hydraulic cylinder is in its extended position.

5,379,848
DRILL HAMMER
Ulrich Rauser, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE92/00873, § 371 Date Jun. 25, 1993, § 102(e) Date Jun. 25, 1993, PCT Pub. No. WO93/07995, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 17, 1992, Ser. No. 78,260
Claims priority, application Germany, Oct. 25, 1991, 4135240
Int. Cl.⁶ B25D 11/04
U.S. Cl. 173-48 5 Claims

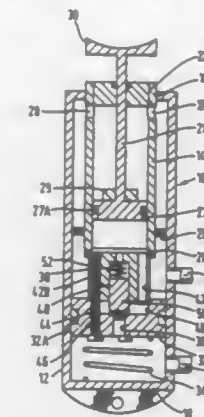


1. A drill hammer, comprising a housing; a rotary drive sleeve having a toothing; a tool holder; a gear unit including a gear wheel engageable with said toothing of said rotary drive sleeve; a torque delivering motor accommodated in said housing and transmitting said torque via said gear wheel of said gear unit and said toothing of said rotary drive sleeve to said rotary drive sleeve and further to said tool holder; switching means for switching from drilling operation to chisel operation and vice versa, said switching means including a sliding sleeve axially displaceable relative to said rotary drive sleeve by an externally operated switch, said gear wheel of said gear unit being disengageable from said toothing of said rotary drive sleeve by said sliding sleeve against a spring acting on said gear wheel in a first direction; a retaining ring axially displaceable relative to said rotary drive sleeve and being acted upon by an additional spring, said additional spring exerting a pressing force on said retaining ring in direction opposite to said first direction, said retaining ring being secured against rotation relative to said housing and carrying a toothing engageable with a corresponding toothing of said rotary drive sleeve.

5,379,849
HYDRAULIC RAM ASSEMBLIES
James B. Russell, 157 Shore Road, Magheramorne, Larne, County Antrim, Great Britain
PCT No. PCT/GB92/00644, § 371 Date Dec. 9, 1993, § 102(e) Date Dec. 9, 1993, PCT Pub. No. WO92/18703, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 129,169
Claims priority, application United Kingdom, Apr. 10, 1991, 9107560
Int. Cl.⁶ B25D 17/06
U.S. Cl. 173-112 24 Claims

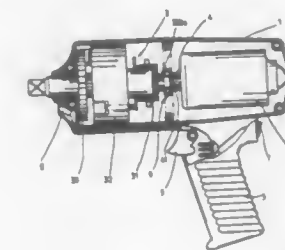
1. A hydraulic ram assembly, comprising:
an outer tubular casing having an apertured end and a closed end,
an inner tubular casing extending inwardly into and through the aperture of the apertured end of the outer casing with an outside of the inner casing being made liquid-tight with the apertured end, the inner casing having its inner end open and its outer end closed and being secured with its open end adjacent the outer casing,
a piston rod of a piston being movable longitudinally

through the closed end of the inner casing with an outer end of the piston rod being adapted for a work purpose, a series of ports being provided in the inner casing to enable fluid communication between the insides of the inner and outer casings,
a floating piston being provided in the outer casing biased away from the closed end thereof, the floating piston



having an axial bore and having secured thereto a formation having an axial passage and a series of axially offset channels, the outer end of the formation adapted to abut and seal against the inner open end of the inner casing, the axial passage of said floating piston housing a floating valve body, the valve body being biased towards and to close off the axial bore at its formation end, and
at least one fluid inlet being provided at or towards the closed end of the outer casing and at least one fluid outlet being provided in the outer casing at or towards the open end of the inner casing.

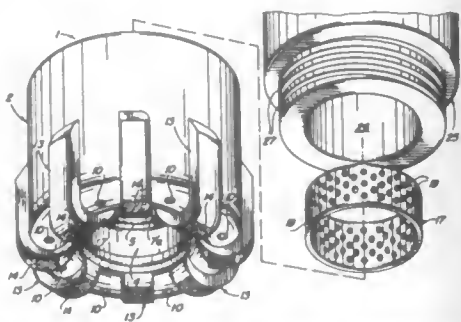
5,379,850
Patent Not Issued For This Number
5,379,851
POWER SCREWDRIVER
Chen S. Huang, 4F, No. 5, Alley 2, Lane 105, Min-An Road, Hsin-Chung City, Taipei Hsien, Taiwan, Prov. of China
Filed Mar. 14, 1994, Ser. No. 213,103
Int. Cl.⁶ B23Q 5/00
U.S. Cl. 173-179 6 Claims



1. A power screwdriver comprising a housing; power means; a screw-driving device comprising a centrifugal clutch,

a rotor, and an engaging set; a transmitting shaft securely connected to the power means at one end thereof and to the screw-driving device at the other end thereof so as to transmit the rotating power from the power means to the screw-driving device; the power means, the screw-driving device, and the shaft being disposed within the housing; and a handle which is securely connected to the housing externally at one end thereof and is mounted with a power trigger to actuate the power means; the centrifugal clutch comprising a connecting tube, a ring slidably fitting over the tube and having two supporting posts securely attached thereto, a pair of springs, a bracket fastened over the tube by a pair of pins which are connected therebetween by the pair of springs, two pairs of strips, a movable pointer, each pair of strips being respectively pivoted to the pair of pins at one end and cooperating at the other end to hold the movable pointer, a pair of weights which are releasably connected to two respective sides of the bracket and contact the strips at one end; the rotor, which securely locks with the centrifugal clutch to cause the centrifugal clutch to rotate in unison with the rotor, comprising two hitting blocks respectively disposed within two slots on a top surface of the rotor and pivotally connected thereto; below each of the slots, the rotor receiving a compressed spring within a dip and the supporting post of the centrifugal clutch within an aperture so that the compressed spring and the supporting post control each corresponding hitting block to do a rocking action; the engaging set comprising a disk with a target block mounted thereon, a spindle which is securely fixed to the center of the disk having a screw chuck attached thereto at a front end thereof, and a connector which is securely engaged with a rear end of the spindle and is receivable within a centered recess of the rotor so that when the power means are triggered by depressing the power trigger, the centrifugal clutch and the rotor are rotated in unison and when the rotating speed increases, the resultant centrifugal force generated as a result of the rotation of the centrifugal clutch moves the weights outward radially to move the strips in such a way to push the movable pointers away from the ring and at the same time elongate the springs and then the compressed springs stretch out to push one side section of the hitting blocks upward to hit the target block on the disk of the engaging set so as to rotate the engaging set and the screw chuck to screw up an engaged working piece and on the other hand, when fastened, the working piece thus acts against the engaging set to slow down the rotation of the rotor and the centrifugal clutch and the restoring force resulting from the stretched springs restores the coupling strips and the pointers back to their original positions and the engaging set stops screwing.

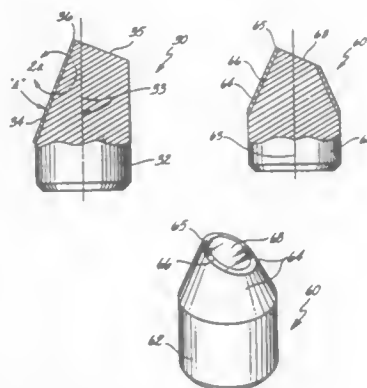
5,379,852
CORE DRILL BIT
William S. Strange, Jr., P.O. Box 1298, Waskom, Tex. 75692
Filed Jan. 10, 1994, Ser. No. 179,083
Int. Cl.⁶ E21B 10/02
U.S. Cl. 175-403 18 Claims



1. A core drill bit for drilling through a subterranean formation and capturing a core of the formation using drilling fluid, comprising a core bit; at least one nozzle means provided in said core bit for directing the drilling fluid against the formation; and screen means provided in said core bit between said

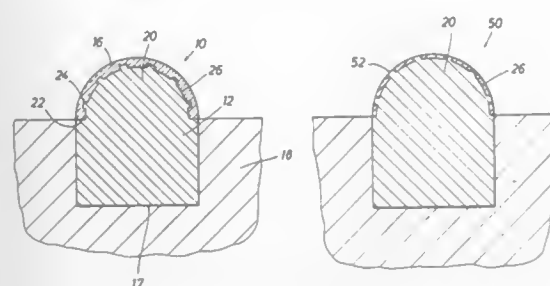
nozzle means and the core for screening said nozzle means from particles in the drilling fluid.

5,379,853
DIAMOND DRAG BIT CUTTING ELEMENTS
Michael C. Lockwood, Heber City; Richard H. Dixon, Provo; Christopher A. Reed, Spanish Fork; Ronald B. Crockett, Provo, all of Utah, and Kenneth W. Jones, Kingwood, Tex., assignors to Smith International, Inc., Houston, Tex.
Filed Sep. 20, 1993, Ser. No. 124,892
Int. Cl.⁶ E21B 10/46
U.S. Cl. 175-428 9 Claims



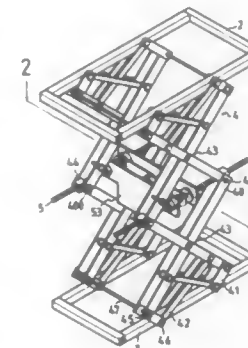
1. An insert stud cutter comprising:
a tungsten carbide cylindrical body, said body forming a first cylindrical base end, said second cutter end having at least one ultra hard layer directly bonded to a pre-formed surface by said second cutter end, said ultra hard layer may comprise one or more layers of tape cast material.

5,379,854
CUTTING ELEMENT FOR DRILL BITS
Thomas M. Dennis, Houston, Tex., assignor to Denois Tool Company, Houston, Tex.
Filed Aug. 17, 1993, Ser. No. 108,071
Int. Cl.⁶ E21B 10/56
U.S. Cl. 175-434 21 Claims



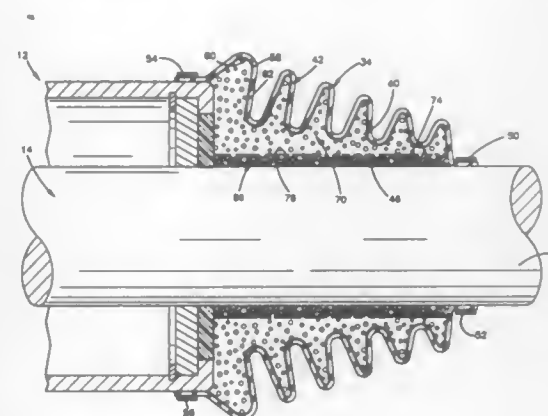
1. A cutting element, comprising:
(a) a metal carbide stud having an outer hemispherical end portion;
(b) a plurality of ridges formed on said outer end portion, wherein each of said ridges has a substantially planar top surface extending outwardly from the outer end portion of said metal carbide stud; and
(c) a layer of polycrystalline material disposed over the ridges and the outer end portion of said metal carbide stud, said polycrystalline material comprising abrasive particles selected from diamond, cubic boron nitride, wurtzite boron nitride, and mixtures thereof, bonded together in a unitary relationship.

5,379,855
ELEVATING MECHANISM
Jenn-Ming Juang, P.O. Box 1750, Taichung, Taiwan, Prov. of China
Filed Jan. 13, 1994, Ser. No. 181,210
Int. Cl.⁶ B66B 11/04
U.S. Cl. 187-269 2 Claims



1. An elevating mechanism comprising a base, a frame disposed in parallel to said base and located above said base, a pair of lazy tong constructions coupled between said base and said frame and including two pairs of pivot axles defining an actuating plane in parallel to said base and said frame, four blocks secured on said pivot axles respectively and each including an inner thread formed therein, a bolt including two end portions having outer thread of different directions for threadedly engaging with said inner threads of said two pairs of blocks such that said pairs of blocks are caused to move toward each other or to move away from each other when said bolt is rotated, said lazy tong constructions being extended or retracted when said pairs of blocks are moved toward each other or moved away from each other, and means for rotating said bolts so as to move said pairs of blocks toward each other or to move said pairs of blocks away from each other, whereby, said frame is caused to move up and down relative to said base.

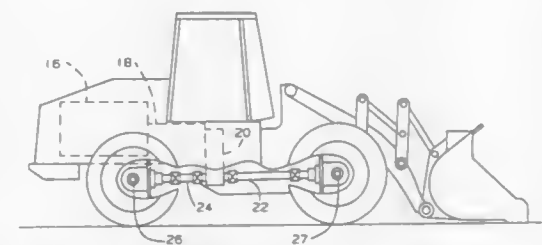
5,379,856
RACK AND PINION STEERING GEAR ASSEMBLY
Timothy J. Blee, Troy, Mich., assignor to TRW Inc., Lyndhurst, Ohio
Filed Oct. 12, 1993, Ser. No. 135,020
Int. Cl.⁶ B62D 5/22; F16J 15/50
U.S. Cl. 180-148 21 Claims



1. A rack and pinion steering gear assembly for use in turning a steerable vehicle wheel, said rack and pinion steering gear assembly comprising:
a housing;
rack means at least partially enclosed by and movable rela-

tive to said housing, said rack means being movable relative to said housing to turn the steerable vehicle wheel;
bellows connected with one end portion of said housing and one end portion of said rack means, a portion of said rack means being enclosed by said bellows; and
a body of liquid permeable material disposed within said bellows and enclosing a portion of said rack means, said body of liquid permeable material containing lubricating liquid which is applied to said rack means.

5,379,857
DRIVE CONFIGURATION FOR A WHEELED MACHINE
Kent J. Niederhofer, Naperville, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Jul. 13, 1993, Ser. No. 90,866
Int. Cl.⁶ B60K 17/348
U.S. Cl. 180-248 2 Claims



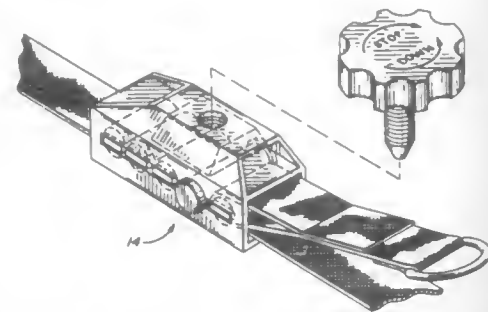
1. A wheel loader, comprising:
a frame;
a first drive axle supported by a front portion of the frame and being sufficient for mounting a first pair of tires on each of an opposite end thereof, said tires being of a first preselected diameter;
a second drive axle supported by a rear portion of the frame and being sufficient for mounting a second pair of tires on each of an opposite end thereof, said second pair of tires being of a second preselected diameter smaller than that of the first pair of tires;
a powertrain supported by the frame and having a drive output portion that is positioned between said first and second drive axles; and
a driveline extending between the drive output portion of the powertrain and each of the first and second axles to transmit driving rotation therebetween, said driveline being positioned along a plane that extends between the longitudinal centerlines of the first and second drive axles and is positioned at an angle with respect to a horizontal plane, said angle being substantially parallel to the frame.

5,379,858
COMPACT EMERGENCY DESCENDER SYSTEM
Alfredo R. Sandoval, Casilla 303, Tacna, Peru
Filed Sep. 20, 1993, Ser. No. 123,786
Int. Cl.⁶ A62B 1/20
U.S. Cl. 182-7 14 Claims

1. A descender system comprising in combination:
(a) an elongated strap of sufficient length to lower a person from a danger area to a safe area, an upper end portion of the strap being adapted for attachment to a stationary object;
(b) a harness adapted to support the person;
(c) a compact descender mechanism having a channel through which the strap passes, the compact descender mechanism including
(1) a connecting element securely connecting the harness to the compact descender mechanism;
(2) parallel, cylindrical first, second and third pins non-rotationally supported in side-by-side alignment in the channel, the strap passing through a first end of the

channel around a portion of the first pin and between the first pin and the second pin, around a portion of the second pin and between the second pin and the third pin, and around a portion of the third pin, and through a second end of the channel;

- (3) a support structure holding the first pin stationary in the compact descender mechanism and allowing movement of the second and third pins either toward or away from the first pin;
- (4) a camming surface engaging a portion of a cylindrical surface of the third pin opposite to the second pin;

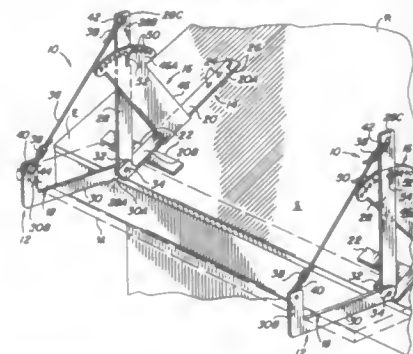


- (5) a camming surface adjustment element adapted to move the camming surface in sliding, leveraged engagement with the third pin to force the third pin toward the second pin, increasing pressure of the first, second, and third pins on the strap, increasing frictional drag on the strap by the first, second, and third pins, and
- (6) a manual control element connected in leveraged relationship to the camming surface adjustment element to allow the person to adjust the speed of descent of the compact descender mechanism and harness.

5,379,859
ADJUSTABLE ROOF SCAFFOLD SUPPORT ASSEMBLY
Steven O. Pigman, 1315 Bonacker Ave., Hamilton, Ohio 45011
Filed Jun. 21, 1993, Ser. No. 79,402
Int. Cl.⁶ E04G 27/00

U.S. Cl. 182-45

18 Claims

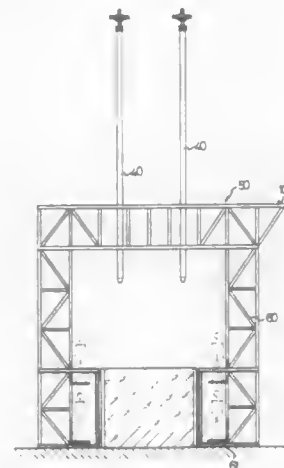


1. An adjustable roof scaffold support assembly, comprising:
 - (a) first means for defining a load platform adapted to support an elongated scaffold member;
 - (b) second means, generally flat having spaced upper and lower end portions, for attaching said first means on a surface of a pitched roof, said first means being pivotally connected to said second means at said lower end portion such that said load platform can extend outwardly from an edge of the roof; wherein said first means is a brace subassembly which includes: a vertical adjustment member; and a horizontal member defining said load platform, said vertical adjustment member and said horizontal load platform-defining member being movably connected at adjacent ends to said second means; and
 - (c) Third means supported by said second means defining a

plurality of arcuately displaced positions and releasably connected to said vertical adjustment member so as to dispose said first means at a selected one of said arcuately displaced positions which accommodates the pitch of the roof so as to maintain said load platform of said first means in a substantially horizontal plane.

5,379,860
CARRIER FOR CONSTRUCTION OF BUILDINGS
I-Shya Tang, No. 20, Wu Chuan W. Road, Taichung, Taiwan, Prov. of China
Filed Aug. 2, 1993, Ser. No. 101,543
Int. Cl.⁶ E04G 21/00
U.S. Cl. 182-145

7 Claims



1. A carrier comprising:
 - a frame comprising a middle portion transversely formed between two lateral portions attachable to and detachable from a layer of wall formed between two shutters, the lateral portions having a length more than twice as great as the height of the shutters;
 - a rectilinear elevator having a ladder slidably inserted through a tubular climber attached to the middle portion of the frame so that the frame is slidable upwards and downwards by means of the elevator,
- the operator moving itself upwards relative to the frame when the lateral portions of the frame are attached to a first layer of wall so that the frame carries workers who install shutters between which concrete is grouted for a second layer of wall, the elevator moving the frame upwards relative thereto when the second layer of wall solidifies so that the lateral portions of the frame can be detached from the first layer of wall and attached to the second layer of wall and that the elevator can move itself upwards relative to the frame, thus, it being possible to grout concrete between shutters for higher layers of wall by repeating the above-defined steps.

5,379,861
AUTOMATICALLY ADJUSTABLE TREE CLIMBING STAND
Joseph A. Amacker, 1212 Main St., Delhi, La. 71232
Filed Jan. 8, 1992, Ser. No. 818,120
Int. Cl.⁶ A01M 31/02

U.S. Cl. 182-187

21 Claims

1. An apparatus for climbing an upright columnar member, comprising:
 - a first climbing member for accommodating the body of a user, said first climbing member including:
 - an inner frame having a first means for gripping said columnar member and a pair of inner arms connected to said first

gripping means and adapted to extend outwardly from said columnar member;

an outer frame having a second means for gripping said columnar member on the side of said columnar member, opposite the side gripped by said first gripping means;

a pair of extendable outer arms connected to said second gripping means and adapted to extend outwardly from said columnar member;

said inner and outer frames pivotally connected at ends of said arms;

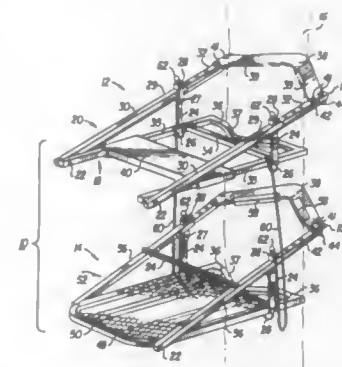
a pair of connectors for connecting said inner and outer frames and for maintaining the relationship between said frames,

means for engaging and disengaging said extendable arms to permit extension and retraction of said extendable arms; and

elastic means, releasably attached external to said extendable arms and independent of said first gripping means, for biasing said second gripping means against said columnar member;

an attachment device connected to said elastic means for externally securing said elastic means to said extendable arms, said attachment device being readily attached and detached from said extendable arms while said climbing apparatus is in use;

a second climbing member for accommodating the feet of a user, said second climbing member including:



an inner frame having a third means for gripping said columnar member and a pair of inner arms connected to said third gripping means and adapted to extend outwardly from said columnar member, an outer frame having a fourth means for gripping said columnar member on the side of said columnar member opposite the side gripped by said third gripping means and a pair of extendable outer arms connected to said fourth gripping means and adapted to extend outwardly from said columnar member;

a pair of connectors for connecting said inner and outer frames and for maintaining the relationship between said frames;

a cross bar mounted on said outer frame adapted to be engaged by the feet of the user;

a footrest mounted on said inner frame;

means for engaging and disengaging said extendable arms to permit extension and retraction of said extendable arms; and

elastic means, releasably attached external to said extendable arms, for biasing said fourth gripping means against said columnar member;

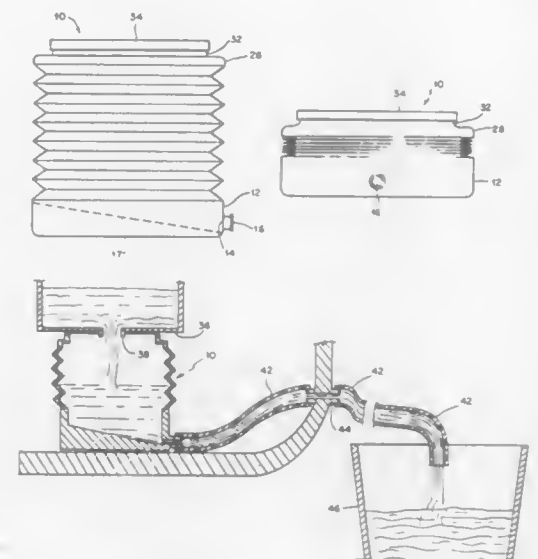
an attachment device connected to said elastic means for externally securing said elastic means to said extendable arms, said attachment device being readily attached and detached from said extendable arms while said climbing apparatus is in use;

said first and second climbing members adapted to be used stepwise in tandem fashion to ascend or descend an upright columnar member.

5,379,862
QUICK CHANGE EXPANDABLE OIL PAN
Barry Schmidt, 116 Brandy Run Rd., and Larry Metzler, 132 Whippoorwill Rd., both of Brando, Miss. 39042
Filed Nov. 8, 1993, Ser. No. 119,539
Int. Cl.⁶ F16N 31/00

U.S. Cl. 184-106

1 Claim



1. An expandable pan for trapping and directing oil from an engine within a boat, comprising a bottom member of rectangular cross section with walls forming a well within, collapsible sidewalls having top and side edges extending up from the sides of said bottom joined along their respective side edges forming interior space for accommodating said oil, a top member engaging the top edges of said sidewalls for enclosing said space, said top member having walls extending downwardly to engage said top edges of side walls and a lip extending inwardly at right angles to and from the tops of said top member walls and forming an upwardly directed extension surrounded by said lip for providing access to the interior of said pan, an outlet formed within a wall of said bottom member, said outlet communicating with a hose fixture on the outside of said bottom member for engagement with a length of hose, said bottom member having a false bottom within said well sloped to direct any entering oil to said opening, so that oil entering said pan is directed through said outlet and said length of hose to a waiting container for recovery and recycling, said sidewalls being expanded upwardly when oil is to be collected and collapsed for removal and storage of said pan.

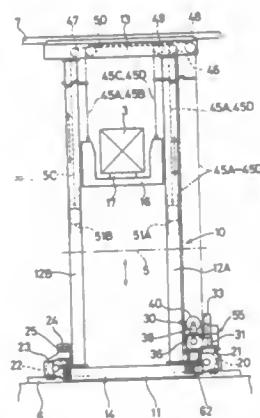
5,379,863
CRANE
Tomokatsu Sugawara, and Koji Jinno, both of Komaki, Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Filed Sep. 23, 1993, Ser. No. 125,916
Claims priority, application Japan, Jan. 26, 1993, 5-010360; May 31, 1993, 5-127667; Jun. 30, 1993, 5-160776
Int. Cl.⁶ B66B 11/04

U.S. Cl. 187-233

21 Claims

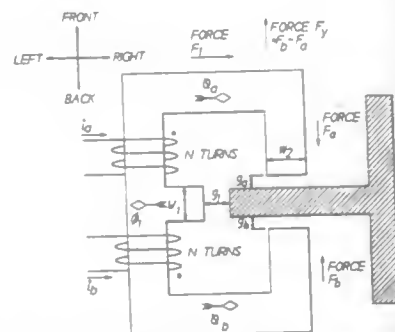
1. A handling apparatus comprising:
 - a traveling body including a lower frame a support post extending upwardly from the lower frame, and an upper frame mounted on top of the support post;
 - an upward and downward movable carriage mounted on one side of the post as viewed in the direction of movement of the traveling body;
 - a vertical run drive unit mounted on the other side of the post for driving the carriage to move upward and downward;
 - said vertical run drive unit including a pair of sheaves ar-

ranged in vertically spaced relation and having shafts extending in a direction traversing said moving direction of said traveling body;
said vertical run drive unit further including a vertical run drive mechanism disposed on a side of said sheaves opposite to a side on which said sheaves are disposed adjacent



to said post, said vertical run drive mechanism being interlockingly connected to one of the sheaves; and a wire passed over the upper one of the sheaves and trained about the lower sheave from opposite directions, the wire being connected at one end to the carriage, the other end of the wire being connected to a counterweight.

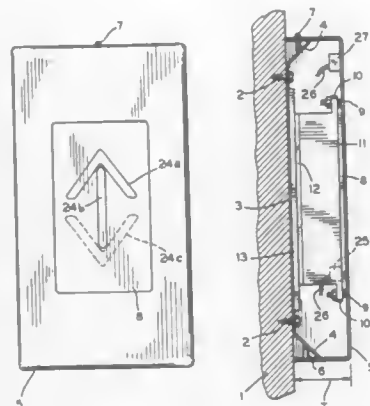
5,379,864
MAGNETIC SYSTEM FOR ELEVATOR CAR LATERAL SUSPENSION
Roy S. Colby, Tariffville, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed Nov. 19, 1993, Ser. No. 155,961
Int. Cl.⁶ B66B 7/04
U.S. Cl. 187—393 12 Claims



1. An electromagnet actuator for actuating an elevator against a hoistway rail, comprising:
an electromagnet core having an E-shape for coupling magnetic flux between the core and a blade of the rail; and
a pair of coils wound on the core for providing the flux, wherein the E-shape of the core forms an E with outer arms having serifs.

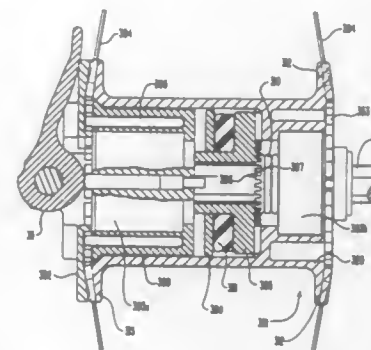
5,379,865
SURFACE MOUNTED INDICATING ELEMENT FOR ELEVATORS

Edward Berdich; Peter Draper, both of Honeybrook, Pa., and Timothy Shea, Little Falls, N.J., assignors to Inventio AG, Hergiswil, Switzerland
Continuation of Ser. No. 736,084, Jul. 26, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 204,803
Int. Cl.⁶ B60B 3/00
U.S. Cl. 187—398 9 Claims



1. A surface mounted indicating element for elevators having indicating devices which are located in a housing and signal the operational state of an associated elevator comprising:
a generally rectangular box-shaped housing having at least one open side, a front side with an opening formed therein and side walls attached to said front side and surrounding said open side, said housing including a filter plate set into said opening in said front side and a plurality of threaded bolts attached to and extending rearwardly from said front side of said housing;
a generally flat indicating device having a lens carrier mounted in said housing, said lens carrier having a front wall with at least one lens formed therein and a printed circuit board forming a rear wall spaced from said front wall of said lens carrier, and wherein said lens is positioned behind said filter plate in said opening in said front side of said housing, is shaped as a desired symbol and is encircled by a protruding lens housing formed on and extending from a rear face of said lens carrier front wall, and a plurality of luminescent diodes mounted on said printed circuit board and electrically connected to form the desired symbol, said diodes extending into said lens housing for generating light which is transmitted in focus by said lens to said filter plate;
a plurality of nuts and wherein said lens carrier has a plurality of straps formed thereon, said bolts extending through apertures formed in said straps and threadably engaging said nuts for retaining said lens carrier against said filter plate;
a base plate having means for attachment to a wall surface; and
means for detachably coupling said housing to said base plate at said one open side of said housing including a pair of opposed bent ends formed on said base plate and at least one setscrew and at least one pin attached to said housing side walls for releasably engaging associated ones of said bent ends of said base plate whereby when said base plate is mounted on a wall surface, said base plate extends into said open side of said housing and said housing is drawn against the wall surface by rotating said setscrew into engagement with said associated one of said bent ends.

5,379,866
LIGHT-WEIGHT WHEEL ASSEMBLY AND STATIC BRAKE FOR WHEELCHAIRS
Tony M. Pearce, Alpine; Terry V. Pearce, Sandy; Robert K. Rasmussen, Alpine, and Herbert Madrow, Kaysville, all of Utah, assignors to Genesis Composites, Inc., Salt Lake City, Utah
Filed Jul. 20, 1993, Ser. No. 94,718
Int. Cl.⁶ B60T 1/06
U.S. Cl. 188—2 F 17 Claims

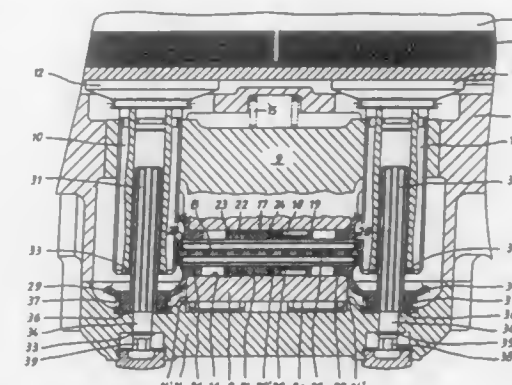


1. A lightweight wheel assembly comprising:
(a) a rim,
(b) a wheel hub comprising a hollow cylindrical shell having an interior and an exterior, said hub interior being adapted for receiving brake components therein,
(c) a plurality of spokes attachable to said rim and to said wheel hub, each of said spokes comprising:
(i) a shaft having a longitudinal axis,
(ii) means for attaching the spoke to said rim at the rim end of the spoke, and
(iii) means for attaching the spoke to said wheel hub at the hub end of the spoke,
(d) a push ring comprising:
(i) a generally circular ring portion having a cross section comprising a body portion and two protruding side portions attached to said body portion to form a gap between said side portions, the cross section being at a 90 degree angle to a tangent at a point on said circular ring, and
(ii) means for attaching said ring portion to said rim, wherein said push-ring is mountable to said rim, and
(e) a static brake comprising:
(i) an axle projectable through said wheel hub, said axle being mountable in a fixed position with respect to a wheelchair frame,
(ii) bearings installable at said wheel hub about said axle, said wheel hub being rotatably movable with respect to said axle on said bearings, and
(iii) means for exerting a positive-engaging static braking force on said wheel hub interior and locking said wheel hub in a fixed position with respect to said axle; wherein the components of said static brake are substantially contained within said wheel hub.

5,379,867
RE-ADJUSTING MECHANISM FOR A DISC BRAKE
Wlodzimierz Macke, Viernheim; Hellmut Jäger, Edingen-Neckarhausen, and Rainer Baumgärtner, Mannheim, all of Germany, assignors to Deutsche Perrot-Bremse GmbH, Mannheim, Germany
Filed May 7, 1993, Ser. No. 57,756
Claims priority, application Germany, May 8, 1992, 4215200; Mar. 5, 1993, 4307017; Mar. 24, 1993, 4244673
Int. Cl.⁶ F16D 13/75, 55/16, 65/56
U.S. Cl. 188—71.9 20 Claims

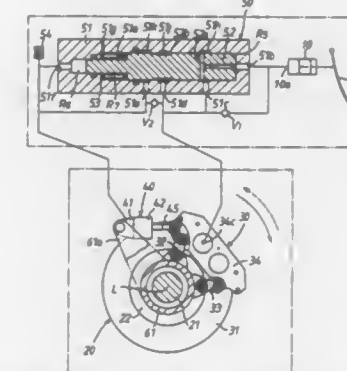
1. An operating mechanism for a sliding caliper disc brake having a caliper housing a thrust element slidably mounted in

said housing for reciprocating movement toward and away from a brake disc, at least two thrust spindles rotatably mounted in screw threaded engagement in said thrust element and each having one end abutting against a brakehead, brake linings on said brakehead for engaging against said brake disc when the brake is actuated, a brake shaft rotatably mounted in said housing so that rotation of said brake shaft about an axis of rotation thereof in an actuating direction moves said thrust element toward said brake disc and rotation in the opposite direction retracts said thrust element away from said brake



disc, and a force dependent free-wheeling clutch drive rotationally coupled on one side thereof to said brake shaft and on the other side thereof to said at least two thrust spindles, said operating mechanism comprising:
a recess in said brake shaft; and
operating means for rotationally coupling said clutch drive to said at least two thrust spindles comprising an operating shaft extending through said recess concentrically to said axis of rotation of said brake shaft and engageable with said clutch drive.

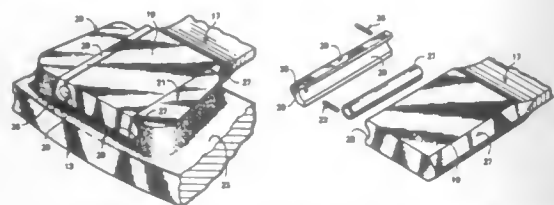
5,379,868
DISC BRAKING DEVICE WITH AUTOMATIC BOOST
Ryoichi Kurasako, Gotenba, and Hidetoshi Shimizu, Mishima, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Apr. 16, 1993, Ser. No. 46,990
Claims priority, application Japan, Apr. 16, 1992, 4-096693
Int. Cl.⁶ B60T 13/02
U.S. Cl. 188—72.2 11 Claims



1. A braking device for an automotive vehicle having a master cylinder to be operated by depression of a brake pedal for producing master cylinder pressure and a wheel brake assembly movably mounted to a road wheel to be operated by the master cylinder pressure applied thereto for applying a braking force to the road wheel in accordance with the depression force of the brake pedal, comprising:
a hydraulic servo unit mounted on an axle housing of the

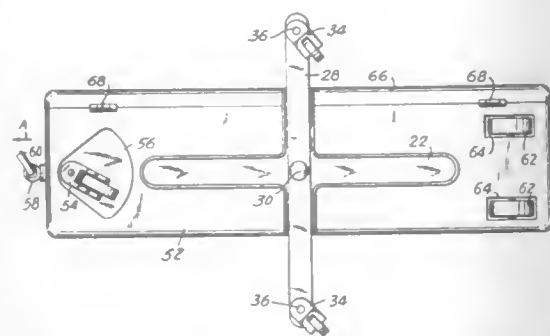
road wheel and operatively connected to said wheel brake assembly for generating a servo-pressure in a first predetermined relationship with the braking force in response to movement of said wheel brake assembly; and a hydraulic control device arranged to apply the servo-pressure to said wheel brake assembly when increasing master cylinder pressure exceeds a second predetermined relationship with increasing servo-pressure.

5,379,869
BRAKING DISCS
Michael Fox, Heswall, England, assignor to Sab Wabco Holdings BV, Heerhugowaard, Netherlands
Filed Jun. 3, 1993, Ser. No. 70,526
Claims priority, application United Kingdom, Jun. 4, 1992, 9211865
Int. Cl.⁶ F16D 65/10
U.S. Cl. 188—218 XL 15 Claims



1. A braking disc comprising a hub member and an annular braking disc member, the hub member being attachable to a wheel and having at least two outwardly extending spokes, a free end region of each spoke being engageable between two lugs provided on a face of the annular braking disc member, the opposite face of the annular braking disc member forming the braking area of the disc, the two lugs having facing profiled surfaces which extend generally radially of the annular braking disc member, part of a spoke engaging the profiled surface of one lug to be retained thereby whilst part of an intermediate member engages the profiled surface of the other lug to thus be retained thereby, spring means being located between said spoke and said intermediate member to press said spoke and said intermediate member against the respective profiled surfaces and to thus retain the spoke between the lugs whilst allowing for radial movement between the spokes and said annular braking disc member.

5,379,870
ANTI TIP-OVER DEVICE FOR WHEELED LUGGAGE
Bernard D. Sadow, Chappaqua, N.Y., assignor to Imports by Brian Incorporated, Mt. Kisco, N.Y.
Continuation of Ser. No. 881,401, May 11, 1992, abandoned.
This application Aug. 12, 1993, Ser. No. 105,782
Int. Cl.⁶ A45C 5/14
U.S. Cl. 190—18 A 12 Claims

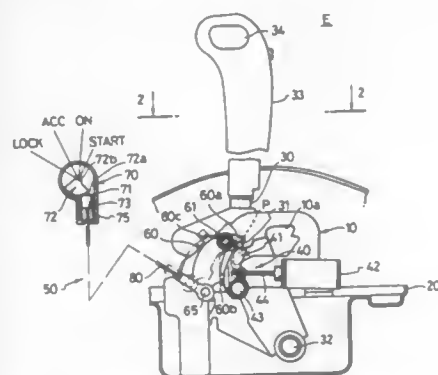


1. In combination with an article of wheeled luggage of the type including a substantially rectangular base, side walls, and

end walls, and ground engaging wheels attached to said substantially rectangular base adjacent one end thereof, providing for towing of said article of luggage, an anti tip-over device for said article of wheeled luggage comprising:

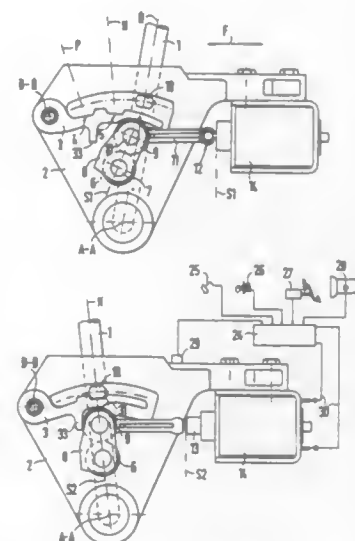
at least one bar supported on said substantially rectangular base at a position spaced from said ground engaging wheels for movement between a first position in which said bar is positioned entirely within the confines of said base, and a second position in which said at least one end of said bar is extended laterally beyond a side wall of said article of wheeled luggage, said at least one end of said bar supporting a castor wheel engageable with a ground surface over which said article of wheeled luggage is to be towed.

5,379,871
SHIFT LEVER APPARATUS
Yasushi Asano; Norio Togano, both of Kosai, and Shunsuke Ikushima, Kawasaki, all of Japan, assignors to Fujikiko Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Kanagawa, both of Japan
Filed Jul. 26, 1993, Ser. No. 97,287
Claims priority, application Japan, Jul. 28, 1992, 4-201539
Int. Cl.⁶ B60K 41/26
U.S. Cl. 192—4 A 9 Claims



1. A shift lever apparatus provided in a vehicle, comprising: a positioning plate with a parking position and a running position; a shift lever pivotally supported on a vehicle body; a positioning pin arranged on said shift lever, said positioning pin being movable between the parking position and a running position; a pin-lock member positionable at a pin-lock position and a pin-lock release position, said pin-lock position being set to restrict the movement of said positioning pin positioned at the parking position, said pin-lock release position being set to allow said positioning pin to move freely, said pin-lock member being under the positioning pin when in its pin-lock position; a restrict member positionable at a restrict position at which the restrict member abuts against the pin-lock member to prevent said pin-lock member from moving from the pin-lock position toward the pin-lock release position, said restrict member being over the positioning pin when in its restrict position; and control means for positioning said pin-lock member at the pin-lock position and for positioning said restrict member at the restrict position when said positioning pin is positioned at the parking position.

5,379,872
LOCKING ARRANGEMENT FOR A SELECTOR LEVER OF AN AUTOMATIC MOTOR VEHICLE TRANSMISSION
Konrad Dörr, Helibronn; Albrecht Reustle, Walheim, and Alfred Jozefiak, Kieselbronn, all of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Germany
Continuation of Ser. No. 901,595, Jan. 19, 1992, abandoned.
This application Aug. 2, 1993, Ser. No. 100,209
Claims priority, application Germany, Jun. 20, 1991, 4120379
Int. Cl.⁶ B60K 41/26
U.S. Cl. 192—4 A 15 Claims

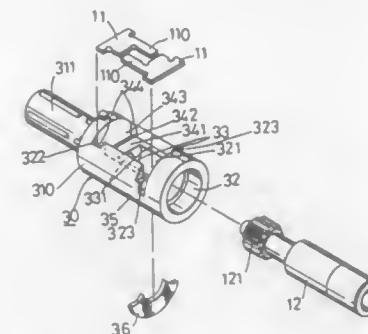


1. A locking arrangement comprising: a selector lever of an automatic motor vehicle transmission, the selector lever being pivotable about a selector lever pivot axis; a locking member arranged on the selector lever; and an adjustable pawl pivotable around a pawl pivot axis, the pawl pivot axis and the selector lever pivot axis being parallel, the adjustable pawl having indentations into which the locking member form-lockingly engages when a brake is not operated so that the selector lever is locked in neutral positions, the pawl having steeply extending flanks which bound the indentations and on which the locking member rests when the selector lever is locked and an actuating force is applied to the selector lever, the actuating force being introduced into the flanks of the pawl via contact surfaces on the locking member of the selector lever at a contact point of the flanks, said flanks determining a substantially horizontal force component and a substantially vertical force component of the actuating force.

5,379,873
RATCHET MECHANISM HOUSING ASSEMBLY FOR A RATCHET SCREWDRIVER
Hsuan-Sen Shiao, No. 36, Lane 30, Sec. 2, Pei-Ping Road, Taichung City,
Filed Mar. 22, 1993, Ser. No. 35,050
Int. Cl.⁶ B25B 23/00; F16D 41/18
U.S. Cl. 192—43 9 Claims

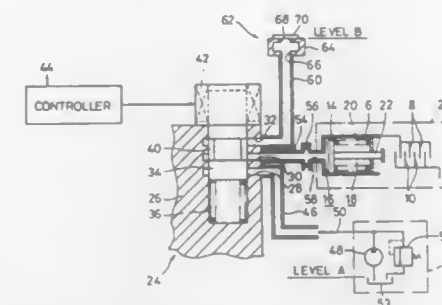
1. A ratchet mechanism housing assembly for a hand tool, including an elongated housing having an outer surface, an axially extending cavity with a closed end and an opposite open end, and an axially extending peripheral slot in said outer surface and with a pair of first corners adjacent to said closed end and which are respectively formed with a circumferentially extending first notch, and a pair of second corners adjacent to said open end and which are

respectively formed with a circumferentially extending second notch, said peripheral slot being defined by a pair of opposing walls which have a respective longitudinal shoulder projecting therefrom, a rotatable drive shaft having a ratchet wheel mounted thereon, said drive shaft extending into said cavity via said open end such that said ratchet wheel is positioned operatively within said housing about midway along said peripheral slot, and two ratchet pawls positioned in said peripheral slot and supported on said longitudinal shoulders of said opposing



walls, said ratchet pawls engaging selectively said ratchet wheel, one of said pawls, having a wide end portion with two distal end sections that extend respectively into said first notch, the other one of said ratchet pawls having a wide end portion with two distal end sections that extend respectively into said second notch, said shoulders supporting said ratchet pawls in said peripheral slot; whereby, said ratchet pawls abut tightly said shoulders to prevent inclination and deformation of said ratchet pawls when said ratchet pawls engage said ratchet wheel and to permit generation of a large torsional force.

5,379,874
FLUID PRESSURE CONTROL DEVICE FOR AN AUTOMATIC TRANSMISSION IN A VEHICLE
Kenjiro Fujita, Kusatsu; Akihiro Kondo, Kyoto; Toyoji Ohnishi, Kameoka; Yoshio Hasegawa, and Mitsuru Yage, both of Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 14, 1993, Ser. No. 60,993
Claims priority, application Japan, May 19, 1992, 4-126036
Int. Cl.⁶ F16D 25/14
U.S. Cl. 192—85 R 37 Claims



1. A fluid pressure control device for an automatic transmission in a vehicle, the automatic transmission having a frictional engagement element and a reservoir section for storing hydraulic fluid to be supplied to the frictional engagement element, said fluid pressure control device comprising: supply means for supplying the hydraulic fluid from the reservoir section to the frictional engagement element,

said supply means including a supply passage connecting the reservoir section and the frictional engagement element;

a discharge passage, discharging the hydraulic fluid from the frictional engagement element, said discharge passage having a discharge port which is positioned radially upward from a liquid level of the reservoir section;

a change-over valve, selectively connecting one of the supply passage and the discharge passage with the frictional engagement element, said change-over valve being located radially upward from the liquid level of the reservoir section; and

a check valve, movable in response to hydraulic fluid pressure changes, allowing discharge of the hydraulic fluid only through the discharge port of the discharge passage and preventing air from entering said discharge passage through the discharge port.

5,379,875

COIN DISCRIMINATOR AND ACCEPTOR ARRANGEMENT

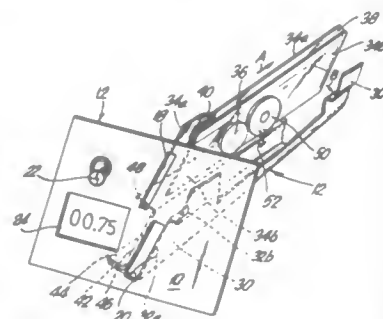
Howard Shames; William Carswell, both of Whitehall, N.Y.; Ronald Roberts, Fair Haven, Vt.; Larry Shulman, Queensbury, N.Y., and Gerald W. Smith, Vacaville, Calif., assignors to EB Metal Industries, Inc., Whitehall, N.Y.

Continuation of Ser. No. 916,191, Jul. 17, 1992, abandoned. This application Apr. 14, 1994, Ser. No. 227,498

Int. Cl.⁶ G07D 5/08

U.S. Cl. 194—317

38 Claims



1. A technique of discriminating between acceptable and unacceptable coins deposited in a coin receiving slot associated with a vending machine, comprising:

guiding a deposited coin along a first guide path having a bottom for supporting the coin on its circumference as it travels said guide path;

arranging first coil means in a frequency determining part of an oscillator circuit, said oscillator circuit being operative over a test frequency range;

positioning a face of the first coil means at a side of the first guide path and at a determined height relative to the bottom of the first guide path such that only certain coins of at least a minimum diameter among coins in a given coin set in which some coins have diameters less than said minimum diameter, will operatively interact with flux produced by the first coil means when the coil means is excited by the oscillator circuit and said certain coins pass the face of the first coil means;

arranging said guide path so that a deposited coin is urged to present a side of the coin against the side of the guide path on which the first coil means is positioned as the coin moves past the face of the first coil means;

detecting the presence of a deposited coin of at least said minimum diameter, by monitoring a test amplitude of said oscillator circuit while operating in said test frequency range, and initiating a coin data acquisition mode when more than a preset difference in said test amplitude is monitored;

measuring an amplitude value and a frequency value each corresponding to operation of the oscillator circuit in said test frequency range (1) in the absence of a proximate

coin, and (2) when a deposited coin is at positions along the first guide path which are in proximity with the first coil means and said coin data acquisition mode has been initiated;

first determining a degree of shift in said amplitude value between measurements made at (1) and (2) in said measuring step;

second determining a degree of shift in said frequency value between measurements made at (1) and (2) in said measuring step;

comparing the degrees of shift obtained in the first and the second determining steps with known shift limits for acceptable coins; and

judging an accept condition for a deposited coin according to a result obtained by said comparing step, including rejecting genuine coins of said given coin set which coins have less than said minimum diameter.

5,379,876

COIN DISCRIMINATION APPARATUS

Les Hutton, Rochdale, England, assignor to Coin Controls Limited, Oldham, England

PCT No. PCT/GB91/00685, § 371 Date Apr. 28, 1993, § 102(e) Date Apr. 28, 1993, PCT Pub. No. WO91/18372, PCT Pub. Date Nov. 28, 1991

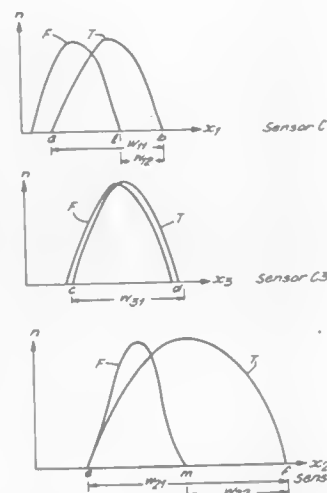
PCT Filed Apr. 30, 1991, Ser. No. 949,241

Claims priority, application United Kingdom, May 14, 1990, 9010766

Int. Cl.⁶ G07D 5/08

U.S. Cl. 194—319

10 Claims



8. A method of discriminating between coins comprising the steps of:

performing first and second tests upon a coin so as to develop first and second coin signals in dependence upon the coin under test;

storing data for a first window and a second window for respectively providing both a first and a second window width, wherein the first window width corresponds to the width of a distribution of coin signals associated with acceptable coins of a particular denomination, and the second window width corresponds to the width of said distribution but excludes therefrom a range of values corresponding to fraudulent coins;

comparing said first and second coin signals with said first and second windows; and

accepting a coin upon the coin signals falling either within a first or a second acceptance condition, wherein said first acceptance condition is achieved when the value of the first coin signal falls within said first window width of said

first window and the value of the second coin signal falls within said second window width of said second window, and wherein said second acceptance condition is achieved when the value of the first coin signal falls within said second window width of said first window and the value of the second coin signal falls within said first window width of said second window.

5,379,877

HANDRAIL DRIVE FOR ESCALATORS, MOVING SIDEWALKS OR THE LIKE

Peter Hoefling, Dortmund, Germany, assignor to O&K Orenstein & Koppel AG, Berlin, Germany

PCT No. PCT/EP93/00190, § 371 Date Oct. 18, 1993, § 102(e) Date Oct. 18, 1993, PCT Pub. No. WO93/15015, PCT Pub. Date Aug. 5, 1993

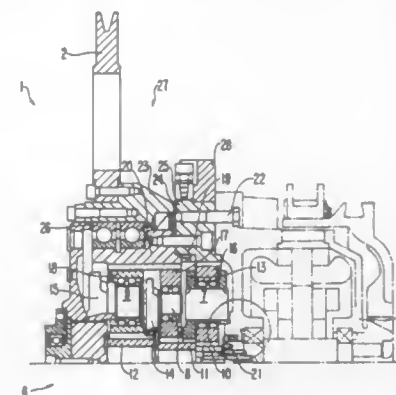
PCT Filed Jan. 28, 1993, Ser. No. 137,038

Claims priority, application Germany, Jan. 29, 1992, 4202346; Jan. 21, 1993, 4301512

Int. Cl.⁶ B65G 21/00

U.S. Cl. 198—330

15 Claims



1. A handrail drive located at a reversal region of a driven handrail of a people mover system, comprising:

a motor-gear assembly including an electric motor and a multistage planet gear assembly; and

a handrail wheel having a drive region connected with said motor-gear assembly, said drive region and said motor-gear assembly being co-axially located.

5,379,878

TWO-WAY GATHERER

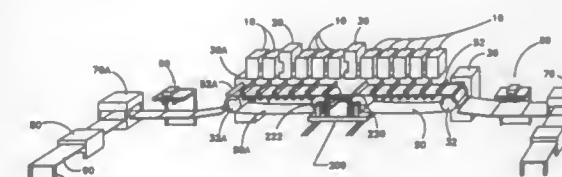
Jason A. Rohde, Star Rte., Box 75, Maurertown, Va. 22644

Filed Dec. 30, 1993, Ser. No. 175,540

Int. Cl.⁶ B65G 37/00

U.S. Cl. 198—366

6 Claims



6. A method of improving the efficiency of a sequence of assembly machines fed by a single endless power conveyor chain with a drive means having a rotating direction comprising the steps of:

providing two adjacent idler wheels compatible with the single power conveyor

breaking the single conveyor chain into two separate, shorter, conveyor chain pieces;

wrapping a first of said two separate conveyor chain pieces about one of said two adjacent idler wheels and the exist-

ing drive means to form a first, shorter, endless conveyor driven in the same direction;

providing a second drive means rotating in an opposite direction;

wrapping the other of said two separate conveyor chain pieces about the other of said two adjacent idler wheels and said second drive means to form a second endless conveyor driven in the opposite direction;

feeding a portion of the machines the original direction with said first endless conveyor; and

feeding the remaining portion of the machines in the opposite direction with said second endless conveyor.

5,379,879

POSITIONING DEVICE FOR A PIECE GOOD

Gianni Mantovani, Bologna, Italy, and Joachim Seefeldt, Neuffen, Germany, assignors to bielomatik Leuze GmbH & Co., Neuffen, Germany

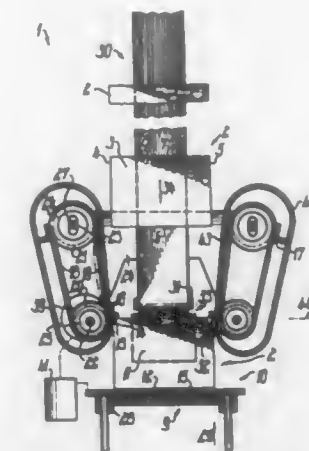
Filed Oct. 21, 1993, Ser. No. 139,785

Claims priority, application Germany, Oct. 21, 1992, 4235413

Int. Cl.⁶ B65G 47/24

U.S. Cl. 198—382

30 Claims



1. A positioning device for making available at least one piece good (2) in an aligned orientation aligned with respect to at least two perpendicular spacial axes, the piece good having piece faces (3-7), including a base face (3) and first and second side faces (4,5,7), oriented transversely to the piece base face (3), the first piece side faces (4,5) being oriented transverse to the second piece side face (7), said device comprising:

a device base (9);

a motion path (30) including an aligning path (35) for conveying the piece good (2) by conveying motion in a conveying direction (34) transverse to the second piece side face (7), and substantially parallel to the first piece side faces (4, 5), and

at least one aligning member (15-17) having aligning faces (13,14), including a shifting face (13) provided to engage said first piece side faces (4, 5), with a contact tension oriented transverse to said first piece side faces (4,5), and to shift the piece good (2) by an aligning motion in at least one aligning direction (38) transverse to said first piece side faces (4,5) into said aligning orientation,

wherein on at least a partial section of said motion path (30,35) said shifting face (13) when free of said contact tension is oriented along an unstressed orientation, and wherein while advancing on at least said partial section of said motion path, said shifting face (13) is displaceable counter to said aligning direction (38) and out of said unstressed orientation under action of a reaction force created by said contact tension, said aligning faces including at least one advance face (14) provided for engaging said second piece side face (7) over at least part of said

aligning path (35), said advance face (14) positively driving said piece good (2) in said conveying direction and providing a motion face (14) for movably engaging said at least one second piece side face (7), while said piece good (2) moves in said aligning direction (38).

5,379,880
METHOD AND APPARATUS FOR ELECTROSTATIC COATING OF ARTICLES

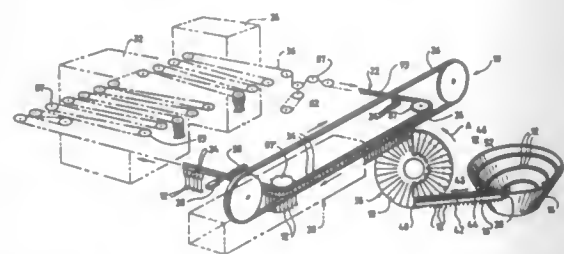
James W. Stone, Northbrook; Frederick A. Kish, Wheeling; John Wojcik, Long Grove; Donald L. Van Erden, Wildwood; David E. Fredericksen, Hoffman Estates, and Parimal M. Vadhar, Buffalo Grove, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 16, 1993, Ser. No. 18,144

Int. Cl.⁶ B65G 41/24

U.S. Cl. 198—396

4 Claims



1. A continuous automated method of transporting articles from unoriented bulk to an oriented state for processing, comprising the steps of:
providing a plurality of articles in an unoriented bulk state, each article having an end portion which substantially forms a point on said article;
orienting and transporting each of said articles into a desired position;
transferring each of said articles in succession from said desired position to a moving conveyor;
suspending each of said articles on said conveyor from said point of said end portion;
shielding each article from direct contact with said conveyor with endless belt means for shielding; and
conveying said articles for processing.

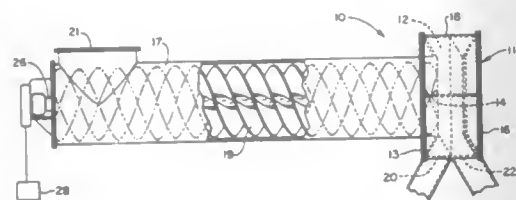
5,379,881
STREAM SPLITTING APPARATUS
Gregory R. Kohler, Williamsport, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed Apr. 22, 1994, Ser. No. 231,118

Int. Cl.⁶ B65G 25/00

U.S. Cl. 198—601

23 Claims



1. An apparatus for splitting a conveyed stream of material, comprising:
a stationary housing having a central axis, opposite first and second walls, a side wall, a material inlet formed in the first wall to receive a flow of said stream of conveyed material, and axially spaced first and second material outlets,
an impeller to fit in the housing, the impeller including a central shaft, a plurality of blades extending radially from the shaft and defining therebetween and with said first and

second side walls a first set of material receiving chambers and a second set of material receiving chambers in the housing, the first and second sets of material receiving chambers to receive material at a predetermined ratio of average overall flow rates from the material inlet in the housing, and guide means in each of the plurality of material receiving chambers for guiding material in the first set of material receiving chambers through only the first material outlet and for guiding material in the second set of material receiving chambers through only the second material outlet upon rotation of the impeller, and means on the shaft for attachment to a source for rotationally driving the impeller.

20. A method of splitting a stream of material having a variable flow rate into at least two streams having a predetermined ratio of flow rates, comprising:

feeding the material into a stream splitting apparatus which includes a stationary housing with a material-receiving impeller disposed therein, the housing having a central axis, opposite first and second walls, a side wall, a material inlet formed in the first wall, and axially spaced first and second material outlets, the impeller including a rotatably driven central shaft, a plurality of blades extending radially from the shaft defining a first set of material receiving chambers and a second set of material receiving chambers in the housing, the first and second sets of material receiving chambers to receive a predetermined ratio of flow rates of material from the material inlet in the housing, and guide means in the plurality of material receiving chambers for guiding material in the first set of material receiving chambers through the first material outlet and for guiding material in the second set of material receiving chambers through second material outlet upon rotation of the impeller.

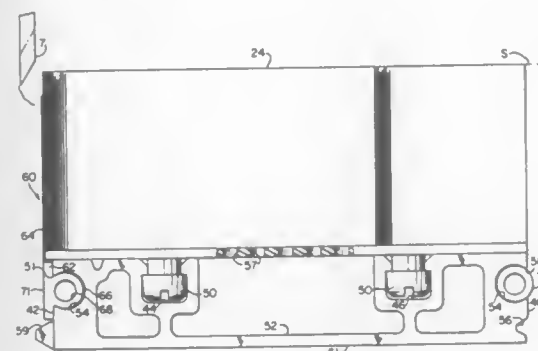
5,379,882
JOINTED BARRIER STRIP
Richard Kuchta, Tolland; Richard S. Szewczyk, Madison; Joseph R. Vivirito, South Windsor; Thomas King, Norwich, and Ivan Markowitz, Glastonbury, all of Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Sep. 21, 1993, Ser. No. 124,803

Int. Cl.⁶ B65G 13/02

U.S. Cl. 198—689.1

11 Claims



1. An apparatus for supporting and advancing sheet material comprising:
a frame;
an endless conveyor belt supported on the frame for movement along a given line of travel through two horizontally spaced apart rotatable end units about which said belt is trained to define a path of movement for said belt with an upper run and a lower run each extending between said end units;
said belt comprising a plurality of elongate generally rectangular support members each having a length dimension and a width dimension with the length dimension extend-

ing transversely of the belt line of travel and said width dimension extending parallel to said line of travel and being defined by first and second opposite faces;
said support members being arranged in succession along said path by means connecting said support members to one another in succession to form said belt,
each of said support members when positioned in said upper run having a flat upwardly facing horizontal sheet material support surface defined by a plurality of bristle blocks;
barrier strip means having means for connecting to said support members to prevent seepage of vacuum from one support member to those support members which are juxtaposed relative to it; and
each of said support members having at least one means formed in one of said first and second faces for cooperating with said connecting means of said barrier strip means to effect connection therebetween.

5,379,883
CHAIN LINK CONVEYOR
Poul E. Damkjær, Vejle Øst, Denmark, assignor to Maskinfabrikken Bæltix A/S, Vejle Øst, Denmark

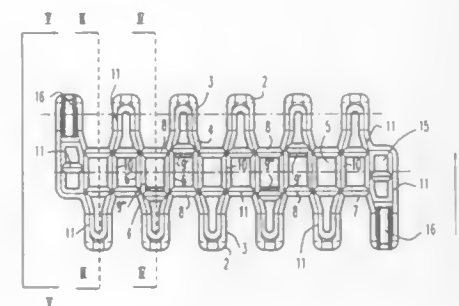
Filed Jan. 21, 1994, Ser. No. 183,769

Claims priority, application Denmark, Jan. 21, 1993, 0073/93; Nov. 26, 1993, 1329/93

Int. Cl.⁶ B65G 17/06

U.S. Cl. 198—853

7 Claims



1. Chain link conveyor comprising a plurality of identical plastic chain links with eye-shaped hinge parts disposed along opposite side edges, said chain links being adapted to be coupled together with corresponding hinge parts in neighboring chain links by a pin or axle inserted through transverse openings provided in the eye-shaped hinge parts, said eye-shaped hinge parts on the opposite side edges of each chain link are mutually displaced with respect to each other, said hinge parts on the opposite side edges of each chain link being connected with each other by first connecting parts extending in a conveying direction of the respective chain link and second connecting parts extending transversely to said first connecting parts, said first and second connecting parts being arranged so as to define a top and bottom surface of the respective conveyor links fashioned as a fine-meshed grate structure, said first and second connecting parts being molded in one piece with said eye-shaped hinge parts and extending substantially perpendicular to the top and bottom surfaces of the respective chain links, the respective first and second connecting parts have a decreasing thickness terminating in an edge constituting the top surface and bottom surface, and wherein the respective edges of the first and second connecting parts are substantially knife-edged.

5,379,884
PAGER BACK-UP BATTERY HOLDER
Jeffrey J. Bigott, 1972 Rollins Ct., Naperville, Ill. 60565

Filed Feb. 18, 1994, Ser. No. 198,850

Int. Cl.⁶ B65D 85/38; A45G 11/00; A45F 5/00

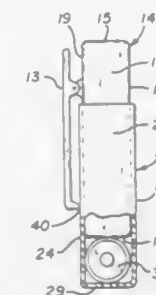
U.S. Cl. 206—37

11 Claims

1. A spare battery holder for a portable battery operational pager device of the type enclosed in a housing having a lower

portion, which pager device can be releasably carried in the pocket attached to the clothing of a user, said holder comprising:

a sleeve of rubber-like elastic sheet material sized and shaped to fit over the housing and engage the lower portion of the pager housing with sufficient attachment so as to not pull or fall off from the housing during normal wear or use but



being capable of easy manual removal therefrom by a user, said sleeve extending below the pager and forming a pocket for holding a spare battery,
whereby the pager may be used or worn with the spare battery holder attached carrying a spare battery and when desired the holder easily removed from the housing and when desired the spare battery easily removed from the pocket.

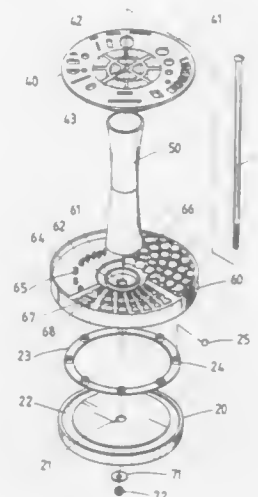
5,379,885
ROTARY TOOL CARRIER ASSEMBLY
Pi-Chi Chen, No. 1-1, Lai-Tsuo E. Lane, North Area, Taichung, Taiwan, Prov. of China

Filed Oct. 13, 1993, Ser. No. 135,535

Int. Cl.⁶ B65D 85/24

U.S. Cl. 206—216

2 Claims



1. A rotary tool carrier assembly comprising:
a) a base including a top portion, an annular groove formed in the top portion, and a ball race disposed within the annular groove;
b) a tool carrier unit secured to the base for rotation relative to the base, the tool carrier unit including a bottom tool carrier supported on the ball race, a top tool carrier and an upright support connecting the bottom and top tool carriers;
c) the top tool carrier including a plurality of holes for hanging tools and a plurality of chambers for storing fasteners; and

d) the bottom tool carrier including a plurality of spaced upright stop rods for holding drill gimlets within the spaces defined therebetween, the stop rods being provided with raised portions for retaining the drill gimlets within the spaces, a plurality of linked sloping cells for maintaining different tool bits, and a plurality of recessed holes formed gradually deeper toward one end for maintaining different sockets, and each recessed hole having a pair of projecting strips for retaining a socket therein.

5,379,886
PACKAGE INCLUDING A SEPARATELY FORMED PREMIUM TRAY

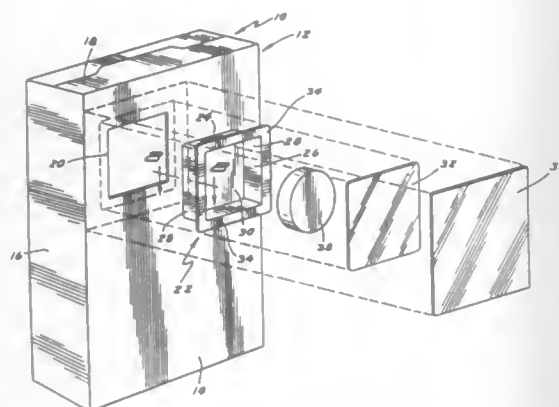
Arne H. Brauner, Minnetonka; Stuart N. Bernard, Anoka, and Francis M. Snee, Brooklyn Park, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 23, 1993, Ser. No. 155,893

Int. Cl.⁶ B65D 77/00

U.S. Cl. 206—216

21 Claims



1. Package for a product and a promotional device comprising, in combination: a carton containing the product and including at least one panel having a thickness; an opening formed in the panel of the carton; a tray including a basket and a flange, with the basket having an open end and a depth substantially larger than the thickness of the panel and of a size for receipt into the opening formed in the panel and for receipt of the promotional device, with the flange extending from the open end for abutting with the panel outside of the opening; a first label of a size which does not extend outside of the flange and which is secured to the flange for retaining the promotional device in the basket independent of the securement of the basket and the flange to the panel; and a second label of a size larger than the flange for securement to the panel outside of the opening and the flange for retaining the tray with the promotional device retained in the basket by the first label to the panel.

5,379,887
METHOD AND APPARATUS FOR MANAGING SEWING MACHINE SPARE PARTS

Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to MIM Industries, Inc., Miamisburg, Ohio

Filed Dec. 7, 1993, Ser. No. 163,445

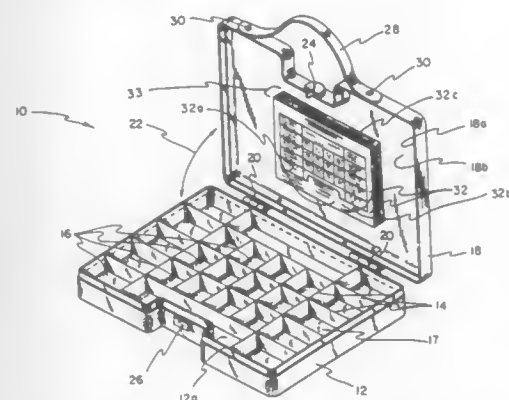
Int. Cl.⁶ B65D 69/00, 71/00

U.S. Cl. 206—232

32 Claims

1. A sewing machine spare parts kit comprising:
a base having a plurality of compartments; each of said plurality of compartments being suitable for receiving at least one sewing machine spare part, said at least one sewing machine spare part being arranged in said plurality of compartments in a predetermined order;
a lid associated with said base;
a plurality of record members each having a plurality of

record areas which are arranged thereon to generally correspond to said predetermined order; and



an order indicator associated with each of said plurality of record areas for facilitating the identification of said at least one sewing machine spare part when said at least one sewing machine spare part needs to be replaced.

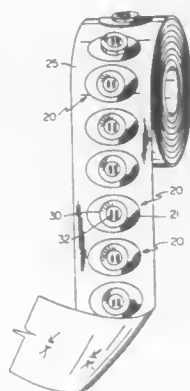
5,379,888
SEW FREE BUTTON ASSEMBLY
Margaret A. Rentos, 6201 Henryk Woods Rd., Cicero, N.Y. 13039

Filed Jan. 31, 1994, Ser. No. 188,896

Int. Cl.⁶ A44B 1/18, 7/00; B65D 85/24

U.S. Cl. 206—265

8 Claims



1. A sew-free button assembly for use with an article of clothing, said assembly comprising:
a fabric section having a front face and a back face,
an adhesive tape applied to the back face of said fabric section,
a releasable backing sheet applied to said adhesive tape that can be peeled away from said adhesive tape to expose an adhesive surface on said fabric section,
a button mounted on the front face of said fabric section and being attached to both said fabric section and the backing sheet by a common thread member whereby the thread member tears away from the backing sheet when the backing sheet is peeled away from said adhesive tape.
7. A sew free button assembly in association with a garment having a plurality of spaced apart button holes aligned along one edge of a garment closure provided on said garment, said assembly including:
a fabric section having a front face and a back face,
an adhesive tape applied to the back face of said fabric section,
a releasable backing sheet applied to the adhesive tape so that said fabric section can be removed from the backing

sheet without degrading bonding properties of said adhesive tape,
a series of buttons mounted in spaced apart alignment upon the front face of the fabric section, the button spacing being equal to that of button hole spacing formed in a preselected garment,
each of said buttons being attached to both said fabric section and the backing sheet by a common thread member whereby the thread member tears away from the backing sheet as it is peeled from the fabric section.

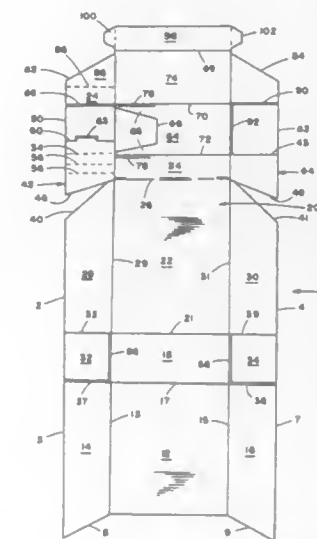
5,379,889
CIGARETTE PACKAGE
Larry D. Cobler, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 22, 1993, Ser. No. 142,253

Int. Cl.⁶ B65D 85/10

U.S. Cl. 206—268

5 Claims

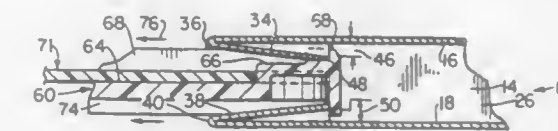


1. A blank for a hinged lid cigarette package, the blank comprising:
a) a front body panel, with front body side panels on each side thereof;
b) a bottom panel at one end of the front body panel;
c) a rear panel attached to the bottom panel and including
(i) a rear body panel and,
(ii) a rear lid panel;
d) the rear body panel having a rear body side panel with a bottom flap attached to each side thereof;
e) the rear lid panel having rear lid side panel with top flaps attached to each side thereof;
f) attached to the rear lid panel is a top panel;
g) attached to the top panel is a front lid panel having front lid side panel attached to each side thereof; wherein said top panel has a cutout therein and at least one of the rear lid side panels having a plurality of parallel perforated lines, one of such perforated lines separating the rear lid side panel from said top flap, said top flap having a notched tab cut.

5,379,890
JACKET FOR A COMPACT DISC
Steven Mahler, Bayside, N.Y., assignor to Shorewood Technologies, Inc., Wilmington, Del.
Division of Ser. No. 548,225, Jun. 29, 1990, Pat. No. 5,088,599.
This application Jan. 3, 1992, Ser. No. 796,752
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.⁶ B65D 85/57

U.S. Cl. 206—310

2 Claims



1. A container for a compact disc having front and rear surfaces comprising:
a carrier having length, width, and thickness and including a compartment for receiving and retaining a compact disc in a generally flat-lying position with one of its surfaces completely exposed;
jacket means defining a generally rectangular space dimensioned for receiving said disc carrier for sliding movement in a direction perpendicular to its thickness, said rectangular space having a forward opening permitting said disc carrier to slide outwardly of said jacket means; and
retaining means including a first component on said jacket projecting toward said carrier near said forward opening and a second component on said disc carrier projecting in the direction of the thickness thereof toward said jacket near the rear of said disc carrier for preventing, through the engagement of said components, the forward sliding movement of said disc carrier beyond a point at which a portion of the disc remains within said jacket means, but the disc may be tilted in the direction of its thickness and removed from said compartment, said retaining means permitting forward sliding movement of said disc carrier up to that point, whereby said carrier may be slid out of said jacket means for removal of said disc, without exposing the entire disc.

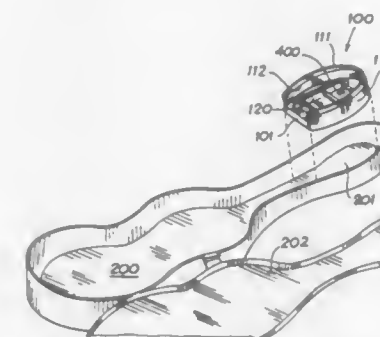
5,379,891
FOOTSTOOL APPARATUS ADAPTED FOR BEING CARRIED IN A GUITAR CASE, AND GUITAR CARRYING CASE APPARATUS WITH SAME
Jeffrey A. Coieman, 5121 W. Camino de la Amapola, Tucson, Ariz. 85745

Filed Nov. 24, 1993, Ser. No. 156,691

Int. Cl.⁶ A45C 11/00

U.S. Cl. 206—314

4 Claims



1. A guitar carrying case apparatus, said apparatus comprising:
(a) a carrying case member having a neck-end portion;
(b) a footstool member in combination with said carrying

case member for use by a guitar player, said footstool member being a removable structure formed for being stored within said neck-end portion, said footstool member comprising a platform portion, and a first leg structure attached to said platform portion, said first leg structure delineating a compartment beneath said platform portion; and

(c) a second leg structure disposed within said compartment, said second leg structure comprising an elevation adjustment mechanical arrangement for accommodating said guitar player's desired playing position.

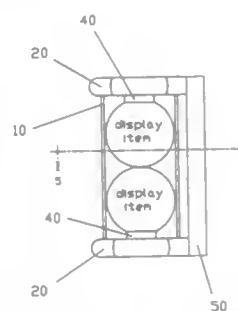
5,379,892
PROTECTIVE DISPLAY CASE FOR COLLECTIBLE ITEMS

William H. Reams, 19200 Geeting Rd., Keedysville, Md. 21756, and Charles K. Bird, 5307 Sovereign Pl., Frederick, Md. 21701

Filed Oct. 7, 1993, Ser. No. 132,891
Int. Cl.⁶ B65D 85/00

U.S. Cl. 206—315.9

1 Claim



1. A display case for the storage and display of a plurality of collectible items, said case comprising:
a transparent cylindrical tube,
two end caps, each end cap having a diameter larger than the diameter of the cylindrical tube, said end caps each having a cavity centrally located on one side of the end cap,
a pair of cylindrical resilient spacers, each spacer being held in a fixed position central to one of said end caps by said cavity in the end cap, each spacer located on the side of the end cap opposite from the cavity,
a mount having a length longer than the length of the cylindrical tube and having keyhole slots on the exterior side to permit the display case to hang in a vertical or horizontal orientation, each of said end cap mounted to one end of said mount by screws,
said transparent cylindrical tube disposed between said two end caps which are held in a fixed position at each end of the transparent tube by said mount, said end caps attached to the mount by the screws which are readily removable to disengage the display case to allow for replacement and rearrangement of the items within the display case, and the length of the tube and the thickness of the spacers being chosen such that each said resilient spacer will compress when engaging the collectible items causing a biasing force against the collectible items to prevent motion of the items in the display case.

5,379,893
ATTACHE CASE HOUSING LAPTOP COMPUTER
Armando Ruiz, 5825 Collins Ave., Apt. 12E, Miami Beach, Fla. 33140

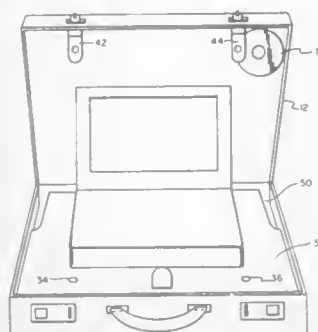
Filed Nov. 15, 1993, Ser. No. 151,934
Int. Cl.⁶ B65D 3/02

U.S. Cl. 206—320

10 Claims

1. An attache case for housing a laptop computer, said case comprising a bottom half and a top half connected to the

bottom half by a hinge, and a carrying handle connected to the bottom half,
a pair of folding braces for limiting opening movement of the top half with respect to the bottom half to about 90°,
a partition hingedly connected to the upper half of the case along a hinge line spaced at least an inch from the top of the case, thereby defining a volume between the partition and the top of the case sufficient to receive a laptop computer,



means for removably attaching a computer to the upper surface of the partition,
manually releasable fasteners for securing the free edge of the partition to the top half of the case, and
at least two stops affixed to the bottom half of the case for limiting downward movement of the partition when the fasteners are released and the partition is lowered, whereby the computer is disposed substantially above the volume of the lower half of the case when it is in use.

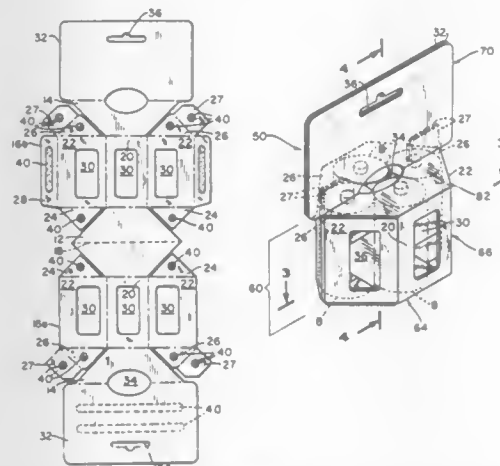
5,379,894
PAPERBOARD PACKAGE
Janice Haas, Bethlehem, Conn.; Patrick J. O'Brien, Hackensack, N.J., and Larry D. Durham, Terre Haute, Ind., assignors to Ivy Hill Corporation, New York, N.Y.

Filed Mar. 25, 1993, Ser. No. 37,603

Int. Cl.⁶ B65D 73/00

U.S. Cl. 206—333

26 Claims



1. An ecologically-acceptable and easy-to-open package formed exclusively of paperboard for the display and sale of a plurality of cylindrical articles as a unit, said package comprising:

(A) base means for maintaining a plurality of cylindrical articles upright and parallel in a compact, non-linear, horizontally-aligned configuration, said base means including a base top, a base bottom, and a base sidewall connecting said base top and said base bottom and being defined by a pair of base half-sidewalls disposed in an

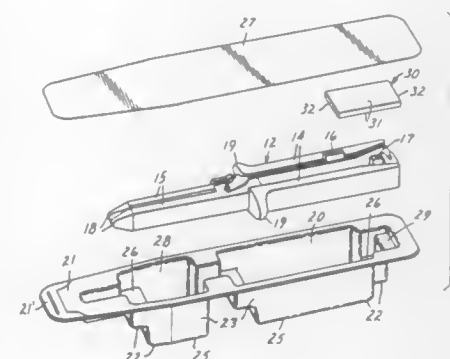
opposed relationship and a pair of side seal flaps, each side seal flap extending from a given base half-sidewall and being secured to another base half-sidewall; and
(B) header means for extending upwardly from said base top; said base means additionally including extension means for overlapping, being disposed in and being adhered to said header means.

5,379,895
PACKAGE FOR SURGICAL DEVICE
Floyd L. Foslien, Troy, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 120,296, Sep. 13, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 203,702

Int. Cl.⁶ B65D 81/02

U.S. Cl. 206—363

24 Claims



1. A package for a surgical instrument comprising:
a top portion,
a bottom portion recessed from the top portion, sidewalls extending between the top portion and the bottom portion which define a cavity adapted to receive the surgical instrument,
bearing surfaces adapted to abut the surgical instrument when the surgical instrument is placed in the cavity,
a flexible cover releasably attached to the top portion, and adapted to be removed from the top portion by being manually peeled from the top portion to afford access to the surgical instrument, and
a conformable member situated between the cover and the surgical instrument which deforms about at least a portion of the surgical instrument to hold the surgical instrument relative to the package when the cover is attached to the top portion.

17. In combination, a sterile surgical stapler comprising a handle portion and a jaw portion, and a sterile package comprising:

a top portion,
a bottom portion recessed from the top portion, sidewalls extending between the top portion and the bottom portion which define a cavity that receives the stapler, bearing surfaces abutting the stapler,
a flexible cover releasably attached to the top portion, and adapted to be removed from the top portion by being manually peeled from the top portion to afford access to the stapler, and
a conformable member situated between the cover and the stapler which deforms about at least a portion of the stapler to hold the stapler relative to the package.

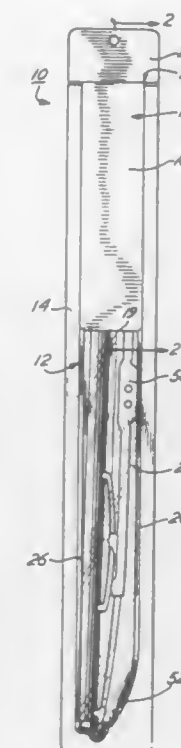
5,379,896
DISPLAY CONTAINER WITH RECLOSABLE TOP FOR WINDSHIELD WIPERS

Gary L. Snow, Rock Falls, and Michael L. Getzendaner, Polo, both of Ill., assignors to Stant Corporation, Deerfield, Ill.
Filed Mar. 17, 1993, Ser. No. 32,782

Int. Cl.⁶ B65D 73/00

U.S. Cl. 206—470

12 Claims



1. Apparatus comprising, in combination:
a windshield wiper assembly; and
a recloseable display container for said windshield wiper assembly, said container comprising:
(a) a backing strip having a top portion;
(b) an elongate blister covering said backing strip, said blister containing said windshield wiper assembly, said blister comprising
(i) a front wall having a flat upper portion and a lower portion, said lower portion having a concave recessed region separating said flat upper portion from said lower portion,
(ii) first and second side walls, and
(iii) an open top for receiving therethrough said windshield wiper assembly; and
(c) a flap closing said open top of said blister, said flap comprising a header portion fixed to said top portion of said backing strip, a cover portion integral with said header portion covering said open top of said blister, and an elongate tongue portion integral with said cover portion having a length substantially greater than the length of said cover portion, said elongate tongue portion covering said flat upper portion of said front wall, said tongue portion having a bottom portion releasably adhered to said flat upper portion of said front wall of said blister, said tongue portion and said cover portion of said flap foldable relative to said header portion to permit said windshield wiper assembly to be removed from and inserted into said display container without damage to said display container.

UM I

c) subjecting the coal-emulsion mixture to froth flotation, thereby forming floating clean coal fraction in the form of a froth and a tailing containing mineral matter;

- d) dewatering the froth to produce dewatered clean, agglomerated coal; and
e) drying the dewatered clean coal to form a reconstituted dust-less product.

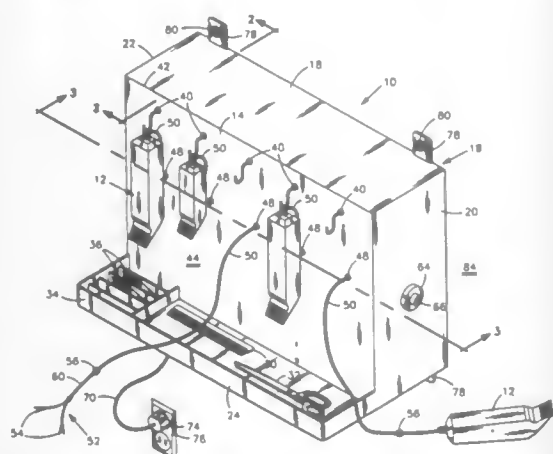
in position urged toward the backwall, wherein the improvement comprises:
the front restraint comprising:
an elongated member;

5,379,903
ELECTRIC HAIR CLIPPER UTILITY BOARD
William L. Smith, 21757 Lake Vista Dr., Lake Forest, Calif. 92630

Filed Jan. 24, 1994, Ser. No. 185,403
Int. Cl.⁶ A47F 7/00

U.S. Cl. 211-13

16 Claims



1. An apparatus for holding one or more barber electric hair clippers in a ready to use position when any of said one or more hair clippers are not being used, said holding apparatus comprising:

- a plate having one or more hooks for enabling the hanging of a like number of barber hair clippers in a ready to use position;
- a corresponding number of electrical cords extending outwardly through corresponding apertures formed through said plate relatively adjacent to said one or more hooks, an outwardly extending, distal end of each of said electrical cords being configured for being electrically connected to a conventional electric hair clipper for the operation thereof;
- automatic cord retracting means connected to each of said one or more electric cords rearwardly of said plate for enabling the withdrawing of an electric cord when a hair clipper to which the cord is connected is unhooked from one of said hooks on said plate for use and for automatically retracting said cord when said hair clipper is rehanging on said hook;
- a cord stop attached to each one of said one or more electrical cords forwardly of said plate so as to limit the amount of electric cord that is automatically retracted when an electric hair clipper connected to the cord is hung up on one of said one or more hooks; and
- means for electrically connecting each of said one or more electrical cords to a source of operating voltage.

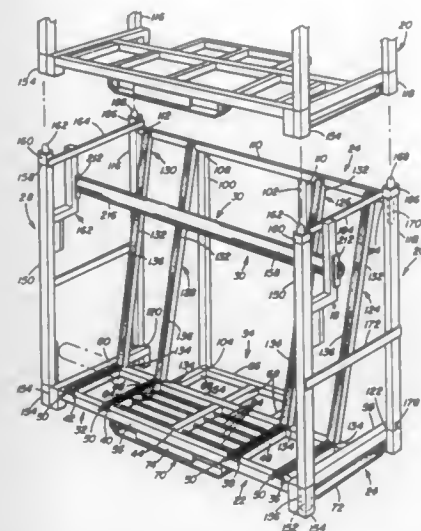
5,379,904
RESTRAINT SYSTEM FOR A SHEET SHIPPING RACK
William J. Brown, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1993, Ser. No. 39,717
Int. Cl.⁶ A47F 7/00

U.S. Cl. 211-41

20 Claims

1. In a sheet shipping rack of the type having a base, and a backwall secured to the base, to maintain the sheets on edge in a vertical position, and a front restraint for securing the sheets



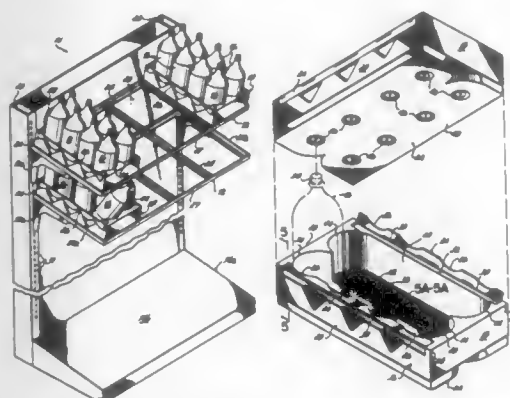
a hollow member mounted on said elongated member and sized to allow the hollow member to rotate about the elongated member;
sheet engaging means secured to the hollow member; and
means for mounting the elongated member spaced from the backwall and movable toward the base.

5,379,905
MERCHANDISING DISPLAY SYSTEM INCLUDING GRAVITY FEED TRAY
Rafael T. Bustos, Alpharetta; Leslie King, Snellville, and Joseph M. Battaglia, Douglasville, all of Ga., assignors to L&P Property Management Company, Chicago, Ill.

Filed Apr. 2, 1993, Ser. No. 41,935
Int. Cl.⁶ A47F 7/00

U.S. Cl. 211-59.2

50 Claims



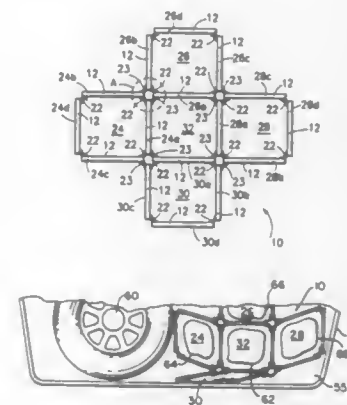
1. A tray for the transport, storage and gravity feed dispensing of beverage bottles comprising:
a base having an upper surface and a lower surface;
a pair of upstanding opposed end walls each having a top edge spaced from a bottom edge, each said bottom edge being mounted to said base;
a pair of upstanding opposed side walls having a top edge spaced from a bottom edge, said bottom edge being mounted to said base;
a pair of flaps having a plurality of arcuate recesses therein adapted to receive a side wall of a beverage bottle;
means for pivotally coupling one of said flaps to each said

side wall top edge, said coupling means permitting said flap to pivot between a beverage bottle storage position generally perpendicular to said side wall and a beverage bottle dispensing position generally parallel with said side wall.

5,379,906
FOLDABLE ORGANIZER
Lev J. Levin, 107 Van Buskirk Ave., Stamford, Conn. 06902, and Semyon Krislav, 18 Eliot La., Stamford, Conn. 06903
Continuation-in-part of Ser. No. 911,054, Jul. 9, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 27,039
Int. Cl.⁶ A47F 5/00

U.S. Cl. 211-195

21 Claims



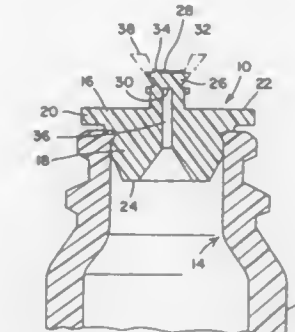
1. A foldable organizer, comprising:
a) a plurality of compartments, each compartment having at least four sides;
b) a plurality of hinge means for hingedly coupling said at least four sides, each of said at least four sides being hingedly coupled to two other of said at least four sides and being hinged through a range of at least ninety degrees; and
c) at least one coupling means for coupling one corner of a first one of said plurality of compartments to one corner of a second one of said plurality of compartments, said first one of said plurality of compartments not sharing a common side with said second one of said plurality of compartments, wherein each of said plurality of compartments independently collapses at its respective hinges without necessitating the collapse of any other of said plurality of compartments.

5,379,907
STOPPER FOR MEDICATION CONTAINER
John J. Niespial, Princeton Junction, N.J.; Ronald B. Vacek, Rochester, N.Y., and Rafael DeJesus, Rio Piedras, P.R., assignors to Sterling Winthrop Inc., Malvern, Pa.
Filed Mar. 3, 1993, Ser. No. 25,480
Int. Cl.⁶ B65D 39/00

U.S. Cl. 215-247

8 Claims

1. An elastomeric stopper for a medication container, said stopper comprising
an elastomeric plug adapted to make a friction fit in an opening of the medication container, the plug having an exterior surface and an interior surface, the exterior surface of said plug comprising a tear-away member formed integrally with and from the same material as said plug, the tear-away member being designed to be removed in its entirety from the plug and comprising a wing-shaped portion extending beyond the exterior surface of the plug and having an exterior surface and an interior surface, the interior surface of the plug having a blocked passageway which opens away from the exterior surface of the plug



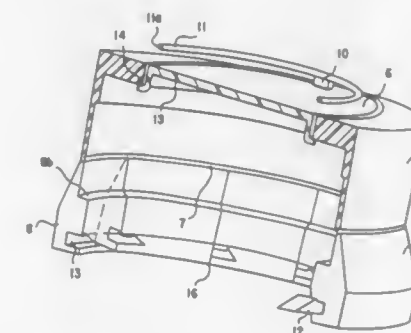
5,379,908
PLASTIC CLOSURE CAP, IN PARTICULAR FOR GLASS CONTAINERS

Karlhelz Rohe, Bad Driburg, Germany, assignor to F.E.S. Kunststoff GmbH, Paderborn, Germany
Filed Jun. 28, 1993, Ser. No. 83,976

Claims priority, application Germany, Oct. 28, 1991, 4135470
Int. Cl.⁶ B65D 41/40

U.S. Cl. 215-249

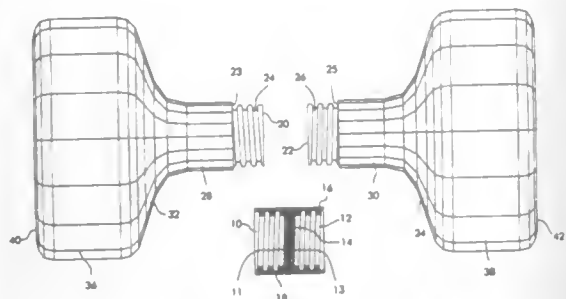
12 Claims



1. A plastic closure cap for a container with a bottle neck, comprising:
a sleeve part surrounding the bottle neck of the container;
a lid part attached to said sleeve part to be pulled off exposing an opening defined by said sleeve part;
grippers being secured on said sleeve part and pivotal about a substantially horizontal axis at material weak points at said sleeve part, said grippers abutting one another in flush fashion in a closing position and being joined to make a closed surface encompassing the bottle neck, each of said grippers having first and second sides, said first side of said grippers pointing toward said second side of a respectively adjacent gripper, and said grippers being rectangular as seen in the elevation view and curved as seen in horizontal cross section in the closing position;
tabs associated with said first sides of said grippers; said tabs having a tab profiling;
said second sides of said grippers having recesses formed therein for receiving said tabs in the closing position, said recesses having a profiling complementing said tab profiling for nesting said tabs in respective ones of said recesses; and
said first and second sides of said grippers being beveled

radially inwardly and tightly abutting one another in the closing position.

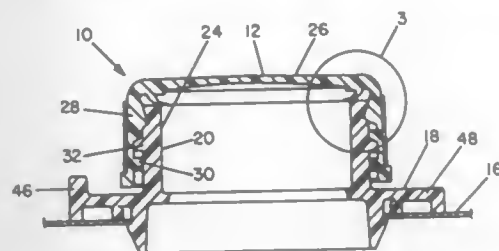
5,379,909
FILLABLE HAND HELD EXERCISE DEVICE
COMPRISED OF ONE DUAL SIDED CLOSURE AND AT
LEAST ONE CONTAINER
 Carlton Roark, 5580 La Jolla Blvd. #300, La Jolla, Calif. 92037
 Continuation-in-part of Ser. No. 632,419, Dec. 24, 1990,
 abandoned, which is a continuation-in-part of Ser. No. 465,791,
 Jan. 16, 1990, abandoned. This application Sep. 15, 1992, Ser.
 No. 946,010
 Int. Cl.⁶ B65D 41/00; A63B 21/00
 U.S. Cl. 215—329 3 Claims



1. A container and closure in combination, said container comprising a base portion with an enclosed side wall extending upwardly from said base portion, a substantially cylindrical first neck portion having a substantially uniform outer surface along its entire length extending upwardly from a transition portion, said transition portion comprising a top wall extending radially inwardly to said first neck portion, said enclosed side wall comprising a perimeter substantially larger than the circumference of said first neck portion, said first neck portion being substantially centered above the enclosed side wall and transition portion, said container narrowing from said transition portion to said first neck portion, a second neck portion extending from said first neck portion, said second neck portion comprising an externally threaded annular sleeve, the outer surface of said externally threaded annular sleeve being spaced radially inwardly from said outer surface of said first neck portion so as to form an annular ledge between said first and second neck portions, said container being formed as a one piece unit;

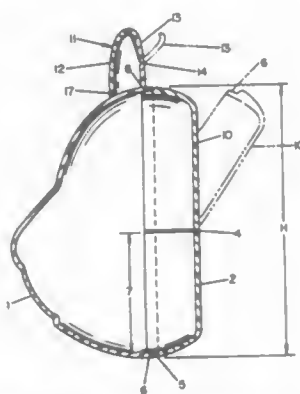
said closure comprising a sleeve having a substantially uniform and substantially cylindrical external surface along its entire length, the closure sleeve having an interior, the length of said interior having a midpoint, said closure sleeve having a central longitudinal axis, said closure sleeve further comprising a transverse dividing wall at the interior midpoint, said dividing wall positioned perpendicularly to said central longitudinal axis, said dividing wall separating the interior of the sleeve into two substantially identical bore portions, each bore portion being substantially identically internally threaded and threadably attachable to said second neck portion, said closure sleeve being bounded by opposed ends, said closure external surface having substantially the same diameter as said first neck portion, said closure sleeve and each internally threaded bore of the closure comprising a length such that when one of said internally threaded bores is secured to said externally threaded annular sleeve of said second neck portion of said container, said closure and said first neck portion presents a substantially cylindrical handle having a substantially uniform cross section except for any gap that may exist between said ledge and a respective end of said closure sleeve, the other of said internally threaded bores being provided for attachment in the same manner to a substantially identical container.

5,379,910
APPARATUS FOR SEALING A CONTAINER AND
CLOSURE
 Gary V. Montgomery, Evansville, Ind., assignor to Sunbeam
 Plastics Corporation, Evansville, Ind.
 Filed Dec. 16, 1992, Ser. No. 991,595
 Int. Cl.⁶ B65D 53/00
 U.S. Cl. 215—346 18 Claims



1. A package including a container and closure, comprising:
 a container having a deformable neck with an opening defining a substantially annular first sealing surface and having closure receiving threads on said neck,
 a closure having an annular second sealing surface and inner threads complementary to said closure receiving threads, said threads being engageable with each other to permit axial and radial movement of said closure relative to said container, and
 centering and sizing means on said closure and said container including first and second radially extending annular flanges on said closure and container, respectively, said flanges being spaced from said sealing surfaces, each of said flanges having an apex engageable with each other upon threading of said closure on said container to force said substantially annular first sealing surface on said container into an accurate circular sealing surface for sealing engagement with said annular second sealing surface on said closure, said flanges at a lowermost point thereof each extending upwardly and radially outwardly.

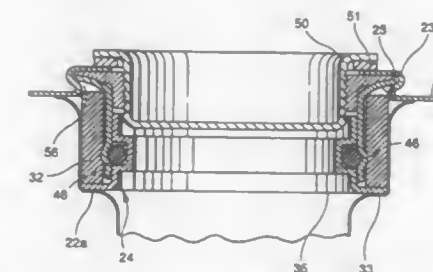
5,379,911
MOLDED BAG FOR CHILDREN
 Fumio Goto, 829-4 Kushida, Kurashiki-City, Okayama Prefecture 710-01, and Yasumasa Kasahara, 195-3, Yasue, Kurashiki-City, Okayama Prefecture 711, both of Japan
 Filed Jul. 21, 1992, Ser. No. 859,436
 Claims priority, application Japan, Ser. 27, 1990, 2-255286
 Int. Cl.⁶ A45F 3/02
 U.S. Cl. 220—339 8 Claims



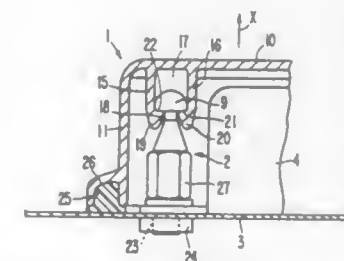
1. A molded bag for children comprising:
 a front half portion and a rear half portion respectively molded by molds having complicated contours, said front and rear half portions forming together a main body of the bag.

said front half portion and said rear half portion having circumferential edges for engaging each other, said front half portion and said rear half portion being connected to each other through a portion of said circumferential edges, said rear half portion constituting a lid in an area not connected to said front half portion, said lid being openable and closable through a hinge integrally molded with said rear half portion, said lid, when closed and locked on the top of the bag, permitting said main body of the bag to form a box construction to safely accommodate articles, and ears for receiving small articles, said ears having a front part attached to said front half of said main body and a rear part attached to said front part and being openable and closable with a plastic hinge.

tube such that said lip extension axed said lip are generally coextensive with each other, said lip and said lip extension



5,379,912
CONNECTING ARRANGEMENT FOR A COVER PANEL
 Thomas Wolf, Stuttgart, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Germany
 Filed Sep. 7, 1993, Ser. No. 116,757
 Claims priority, application Germany, Sep. 5, 1992, 4229718
 Int. Cl.⁶ B65D 25/24
 U.S. Cl. 220—481 4 Claims



1. An arrangement for connecting a cover panel for an electrical apparatus with a body structure of a vehicle by locking bolts, comprising:

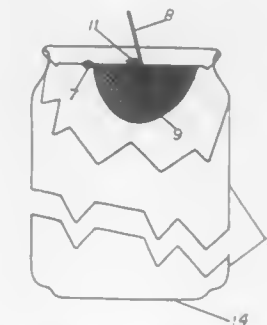
a cover panel that has a bottom wall, two opposing side walls and at least two locking rails attached to an interior side of said bottom wall; and
 bolts having snap-in heads, the bolts being connected with the body structure and clampingly insertable into the locking rails to thereby fix the cover panel while allowing the cover panel to be slid longitudinally off the snap-in heads to remove the cover panel;

wherein said at least two locking rails are arranged adjacent to each of said opposing side walls of the cover panel, said two locking rails extending in parallel to said side walls and aligned behind one another;
 wherein the locking rails have two elastically bendable walls that are parallel to one another and form between one another a receiving space for the snap-in head, wherein the receiving space has a narrowed insertion opening which is directed to the bolt.

5,379,913
FLANGE EXTENSION FOR EXTERNALLY
DETACHABLE DRUM LINER
 Todd M. Rieke, and David S. Rieke, both of Auburn, Ind., assignors to Rieke Corporation, Auburn, Ind.
 Filed Dec. 8, 1992, Ser. No. 987,198
 Int. Cl.⁶ B65D 25/16
 U.S. Cl. 220—601 6 Claims

1. In combination:
 a drum lid having a raised boss;
 a seal tube having a generally cylindrical main body and an outwardly radiating, frustoconical lip extension; and
 a drum plug flange having a generally cylindrical main body and an outwardly radiating, frustoconical lip, said drum plug flange being sized and shaped to fit within said seal

5,379,914
FILTER FOR DRINKING CONTAINER
 Alvaro F. Martins, 18328 Clarkdale Ave., Artesia, Calif. 90701
 Filed Nov. 29, 1993, Ser. No. 158,527
 Int. Cl.⁶ B65D 17/34; A47G 19/22
 U.S. Cl. 220—719 1 Claim



1. A filtering protector for a drink opening in a liquid container comprising:

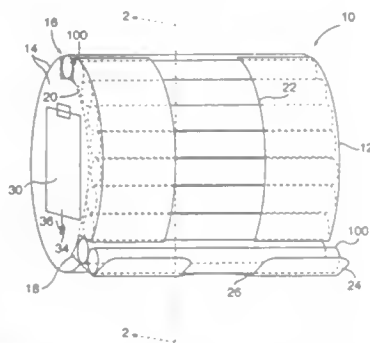
a lid on the container having a top surface and a bottom surface, a shearable tab closure in said lid, and a tab actuator fastened to said top surface of said lid, wherein said tab actuator is pivotably raised to displace said shearable tab closure from the lid and form the drink opening in said lid; and
 a concave net filter extending downwardly into the container from said lid, said net filter conforming generally in size to the drink opening of the container, and said net being fastened to said bottom surface of said lid by a plurality of rivets.

5,379,915
APPARATUS FOR STORING AND DISPENSING CHALK
 Brett A. Hudspeth, and Earl L. Hudspeth, both of 126 Margaret Dr., Beaver Falls, Pa. 15010
 Filed Aug. 31, 1993, Ser. No. 114,769
 Int. Cl.⁶ B65H 9/04
 U.S. Cl. 221—172 5 Claims

1. Apparatus for storing and dispensing generally cylindrical pieces of chalk, the apparatus comprising:

a container including an outside surface having an input port sized for receiving only one piece of chalk at a time and an output port sized for dispensing only one piece of chalk at a time formed therein such that the output port is positioned other than directly beneath the input port;
 a chalk channel free of any vertical sections, positioned within the container and connecting the input port to the output port such that the input port is located at a highest

point of the channel and the output port is located at a lowest point of the channel, the channel having a width so as to allow each piece of chalk within the channel to contact no more than two other pieces of chalk in the channel, whereby each piece of chalk is substantially at all times afforded vertical support by the channel throughout passage within the channel; and



a dispensing rack extending from the outside surface of the container proximate to the output port sized for holding only one piece of chalk such that one piece of chalk at a time enters the dispensing rack under a gravitational force.

5,379,916

METHOD AND SYSTEM FOR CONTROL AND MONITORING OF BEVERAGE DISPENSING

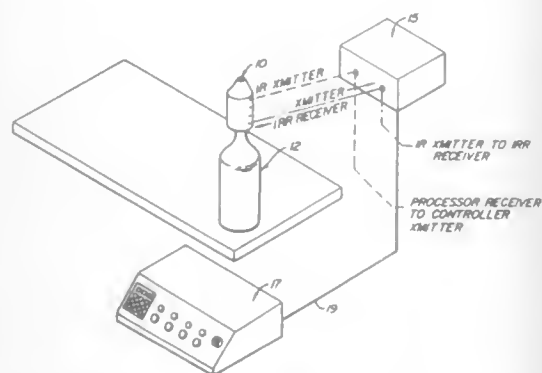
Richard A. Martindale; William A. Martindale, both of Vacaville; Matthew Straddeck, Davis, all of Calif., and Gregory J. Osborne, Reno, Nev., assignors to Automatic Bar Controls, Vacaville, Calif.

Continuation-in-part of Ser. No. 965,978, Oct. 22, 1992, Pat. No. 5,318,197. This application Sep. 21, 1993, Ser. No. 124,912. The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.⁶ B67D 5/30

U.S. Cl. 222—1

19 Claims



1. A method for beverage dispensing control and monitoring comprising attaching a bottle control cap to a bottle, said control cap including a micro processor positioned in said bottle control cap containing means for identifying that control cap from others in a system of control caps, each of said others containing means for identifying that control cap from the others in the system of control caps; programming said micro processor to open and close a flow passage in said control cap in response to a command signal from a system control processor located at a remote location, said micro processor being also programmed to request said command signal; activating power means in said control cap to activate said microprocessor to initiate a request signal from said micro processor to said system control processor; and receiving the request signal at the system control processor and returning the command signal to said micro processor

including signals to a valve means for opening and closing the flow passage in said control cap to permit a predetermined flow of beverage from said bottle through the control cap.

5,379,917

DUAL SOAP AND FRAGRANCE DISPENSER

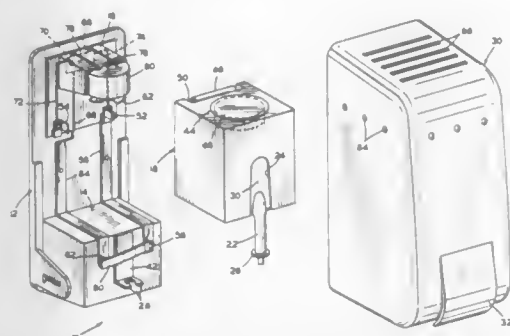
Douglas S. Brown; David F. Scherger, both of Toledo; George C. Heilman, Northwood, and Robert B. Brown, Toledo, all of Ohio, assignors to Fresh Products, Inc., Toledo, Ohio

Filed Mar. 1, 1993, Ser. No. 24,448

Int. Cl.⁶ B67D 5/00

U.S. Cl. 222—4

39 Claims



1. A dual dispenser for soap and fragrance comprising a mounting plate for mounting the dispenser on a surface in a washroom, said mounting plate having a lower support and an upper support, a box containing a flexible bag of soap supported on said lower support, said bag having a flexible tube extending out of said box, a container of fragrance gel above said box, a motor mounted on said upper support, a fan driven by said motor, a battery, switch contacts in circuit with said motor and said battery, a cover for said mounting plate, and a hand-operated actuating plate carried by said dispenser, said actuating plate being effective to squeeze said tube to dispense soap and to close said contacts to operate said fan said actuating plate is moved.

5,379,918

COUPLING WITH A VALVE FOR DISPENSING LIQUIDS

Kunihiko Goto, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

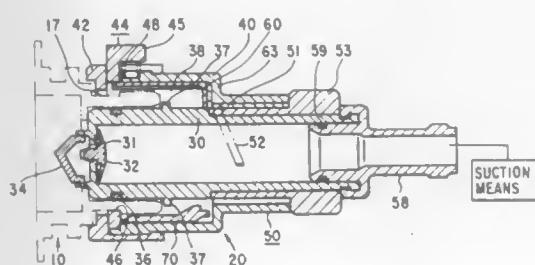
Filed Jun. 17, 1993, Ser. No. 77,453

Claims priority, application Japan, Jun. 19, 1992, 4-049100[U]

Int. Cl.⁶ B67D 5/00

U.S. Cl. 222—82

5 Claims



1. A coupling comprising:
a plug having an engaging groove in an outer peripheral surface of a plug cylinder, the groove being engageable with lock means, and a thin film for sealing an opening, the plug being connected to a container; and
a socket including
a socket outer cylinder having lock means straddling an axis of the socket and being slidable in a direction perpendicular

lar to the axis of the socket to engage with the engaging groove; and
a socket inner cylinder being axially movable within the socket outer cylinder,
said socket inner cylinder comprising
a cutter section, having a liquid passage hole and provided on a front end portion of the socket inner cylinder, for breaking the thin film when the plug is connected to the socket,
another liquid passage hole provided in rear of the cutter section,
liquid passageway forming means provided in rear of said another liquid passage hole, and
an O-ring, provided on an outer peripheral surface of the socket inner cylinder, for maintaining sealing between an inner peripheral surface of the plug cylinder and the outer peripheral surface of the socket inner cylinder,
wherein said socket inner cylinder is engaged with a smaller-diameter rear portion of the socket outer cylinder, and is movable within the socket outer cylinder while being rotated,
two stoppers are formed between the socket inner cylinder and the socket outer cylinder and situated within an annular space for engagement with the plug cylinder,
one of the stoppers restricts forward movement of the socket inner cylinder relative to the socket outer cylinder, in the state in which the socket is separated from the plug,
the other of the stoppers moves forward in accordance with the forward movement of the socket inner cylinder relative to the socket outer cylinder, in the state in which the socket is connected to the plug, thereby fixing the lock means, and
the plug cylinder of the plug is engaged with the annular space of the socket, whereby the plug is connected to the socket.

5,379,919

UNIT FOR DISPENSING AT LEAST ONE FLUID PRODUCT, IN PARTICULAR, A COSMETIC OR PHARMACEUTICAL PRODUCT, HAVING A PRESSURE ACTUATED, SELF-SEALING CLOSURE OUTLET

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

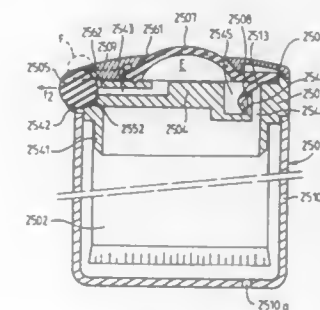
Division of Ser. No. 916,256, Jul. 21, 1992, Pat. No. 5,301,850, which is a division of Ser. No. 556,546, Jul. 24, 1990, Pat. No. 5,154,328. This application Jan. 3, 1994, Ser. No. 176,885

Claims priority, application France, Jul. 25, 1989, 89 10000; Feb. 1, 1990, 90 400269

Int. Cl.⁶ B65D 35/56

U.S. Cl. 222—105

11 Claims



1. In a unit for dispensing at least one fluid product, said unit comprising:
(a) a container;
(b) a dispensing head;
(c) said dispensing head including means defining at least one dispensing duct for said at least one fluid product to be dispensed, said dispensing duct having a first and a second end;

(d) closing means situated at said second end of the said at least one dispensing duct;
(e) said closing means comprising an obturator which forms part of a first component of the dispensing head made of an elastically deformable material and at least one seat which forms part of a second component of the dispensing head;
(f) said obturator being adapted to be in contact with said seat when no dispensing is taking place, but to move away from said seat by elastic deformation under pressure of the product being dispensed and to reenter into contact with said seat by elasticity when dispensing stops;
the improvement comprising:
(g) said at least one dispensing duct comprising a first duct portion extending parallel to the longitudinal axis of the dispensing unit, said first duct portion communicating with the container, and said closing means comprising a second duct portion extending at an angle relative to said first duct portion to define a lateral outlet, said second duct portion having a longitudinal axis, said second duct portion terminating in said second end of said dispensing duct and which is remote from said first duct portion; said seat comprising a peripheral groove formed in said head and said obturator comprising a ring of elastic material carried at least partially in said groove, said second duct portion intercepting said groove so that said ring of elastic material will be moved elastically in a direction parallel to said longitudinal axis of second duct portion under the influence of the pressure of the product being dispensed.

5,379,920

LIQUID CONTAINMENT SYSTEM

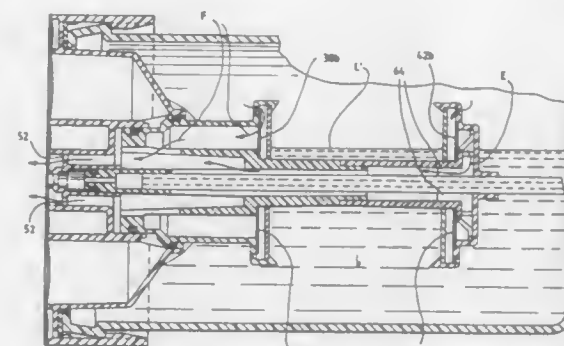
Stephen P. Lisak, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala. and American Sterilizer Company, Erie, Pa.

Filed Jul. 23, 1993, Ser. No. 96,466

Int. Cl.⁶ B67D 5/56

U.S. Cl. 222—129

12 Claims



1. A container for storing and dispensing fluid, comprising:
a housing having a primary fluid storage cavity for primary fluid therein; a movable member within said housing; a reservoir chamber formed within said housing and normally isolating a second fluid within said chamber from said cavity and contact with said primary fluid, said chamber and said movable member including cooperating detent structure for interference coupling and maintenance of a seal therebetween and enabling selective movement and uncoupling of said movable member to relieve said seal and to form a pathway at said uncoupling for flow communication from said chamber into said cavity allowing intermixture of said primary fluid and secondary fluid.

5,379,921

NOZZLE AND VALVE ASSEMBLY

John E. Divall, Wantage, United Kingdom, assignor to Odin Developments Limited, United Kingdom

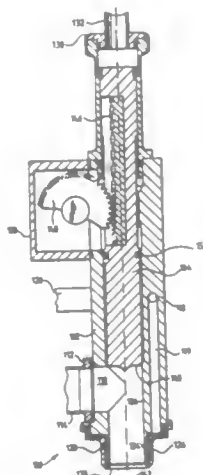
Filed May 19, 1992, Ser. No. 977,513

Claims priority, application United Kingdom, May 24, 1991, 9111266

Int. Cl.⁶ B62d 1/08

U.S. Cl. 222—148

9 Claims



7. A method of supplying a particulate product and a liquid to a container, said method comprising the steps of:

- providing a nozzle and a valve assembly comprising a cylinder having an open end, a first inlet leading into the interior of the cylinder, a second inlet, a piston having a free end and being mounted for reciprocating movement in the cylinder at least between a first position and a second position, the piston permitting communication between the first inlet and the open end of the cylinder when the piston is in the first position, said free end of the piston moving past the first inlet as the piston moves from the first position to the second position so as to prevent communication between the first inlet and said open end of the cylinder, a liquid deflecting surface portion formed on said free end of the piston, means on the cylinder in the region of said open end for directing liquid inwardly and on to the liquid deflecting surface portion when the piston is in the second position, and means for connecting the second inlet with the liquid directing means;
- positioning a container beneath the open end of the cylinder;
- supplying a particulate solid product to the first inlet and a liquid to the second inlet when the piston is in the first position;
- moving the piston from the first position to the second position after amounts of the particulate solid product and the liquid have been supplied to the container; and
- supplying the liquid to the second inlet with the piston still in the second position.

5,379,922

TUBULAR CONTAINER WITH AN ADJUSTABLE OPENING

Ronald I. Paradossi, 808 Phyllis Ln., St. Louis, Mo. 63141

Filed Aug. 27, 1993, Ser. No. 113,620

Int. Cl.⁶ B67D 5/32

U.S. Cl. 222—153

18 Claims

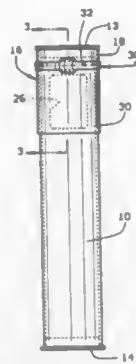
11. A container with an adjustable opening for dispensing contents of an interior volume of the container, the container comprising:

- a tubular body having an axial length and a hollow interior volume extending through its axial length, the body having axially opposite closed ends and at least one side open-

ing through the tubular body adjacent one of the opposite ends;

a pair of abutments secured to the tubular body adjacent the opposite ends, one abutment being secured adjacent the side opening and the one of the opposite ends;

a collar mounted on the tubular body for sliding movement of the collar over the tubular body between the pair of abutments, the pair of abutments and the collar being dimensioned to limit the sliding movement of the collar over the body to sliding movement between the pair of



abutments, and the collar having an axial dimension that causes the collar to cover over the side opening of the tubular body with the collar moved into abutting engagement with the one abutment; and,

a frangible connection between the collar and the one abutment that maintains the collar in engagement with the one abutment until the frangible connection is broken, whereby the collar is free to slid axially over the tubular body between the pair of abutments when the frangible connection is broken.

5,379,923

HOPPER FOR A WEIGHING MACHINE

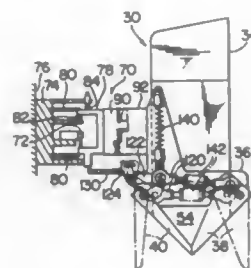
Javier Sagastegui, Danville; George A. Puricelli, Pleasanton, and William E. Halopoff, Morgan Hill, all of Calif., assignors to Eagle Packaging Corp., Oakland, Calif.

Filed Jun. 17, 1992, Ser. No. 899,776

Int. Cl.⁶ B65D 47/00

U.S. Cl. 222—181

8 Claims



1. A hopper for receiving and discharging product in a weighing machine comprising:

a hopper container having a charging opening in an upper container portion for receiving product and a discharge opening in a lower container portion for discharging product;

a first discharge door pivotally mounted on the hopper container adjacent the discharge opening and movable between an open position to discharge product from the container and a closed position to retain product in the container; and

an operating linkage mounted on the hopper container for moving the discharge door between the open and closed

positions, the linkage including a pair of toggle links coupled to one another at a common connecting point and extending between a pivot point on the container where one of the toggle links is connected and a pivot point on the door where the other of the toggle links is connected, the toggle links being movable through a toggle position as the door approaches the closed position to a locking position as the door reaches the closed position, in the toggle position the common connecting point of the toggle links passing through a centerline extending between the pivot points and one of the toggle links having a compliant link portion for maintaining the links in the locking position.

5,379,924

AEROSOL CONTAINER CAP AND ACTIVATOR BUTTON ASSEMBLY

Brent Taylor, 119 W. Fourth, Hermann, Mo. 65041

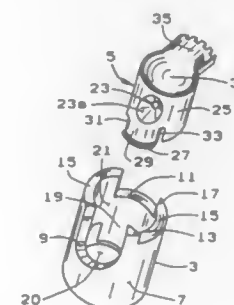
Continuation of Ser. No. 1,847, Jan. 8, 1993, abandoned. This

application Mar. 16, 1994, Ser. No. 214,034

Int. Cl.⁶ B65D 83/22

U.S. Cl. 222—402.11

8 Claims



1. In an aerosol container having a container body and a valve for controlling the dispensing of material under pressure from the container, a cap and activator button assembly for activating the valve comprising:

a housing having means thereon for securing said housing to an end of the container, said housing having an outer wall and an inner wall with a bore defined by said inner wall extending therethrough;

an activator button within said bore having an orifice formed therein and a positioning member opposite said orifice and extending therefrom to facilitate the rotation and movement of said button within said housing between a dispensing and non-dispensing position, said button having an axially downwardly extending flexible segment; and

a detent formed on said flexible segment to rotatably and slideably engage under a lower radial surface of said inner wall of said housing thereby securing said button within said housing during assembly and during use.

5,379,925

GLASS CARAFE FOR STORING A BREWED BEVERAGE

Georg Muthrath, Gelnhausen, and Andreas Peter, Kronberg, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed Dec. 14, 1993, Ser. No. 166,696

Claims priority, application Germany, Dec. 18, 1992, 4242987

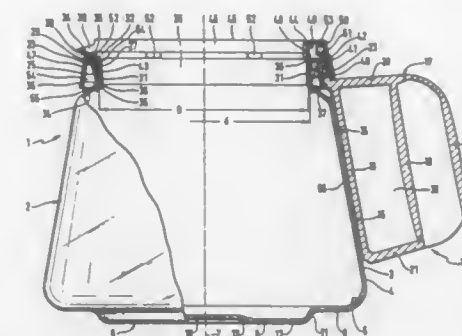
Int. Cl.⁶ A47G 19/14

U.S. Cl. 222—475.1

6 Claims

1. A glass carafe for storing a brewed beverage, comprising a glass vessel having at its upper end an opening bounded by a rim to which a plastic ring structure provided with a pouring spout is affixed, the plastic ring structure being composed of a first, second and third ring, the third ring serving as an outer boundary for the opening, the second ring bearing against the rim of the glass vessel from above, and the first ring including

one or more resilient fastening elements formed at one end thereof, said first ring engaging from above within the opening of the glass vessel by means of the one or more resilient fastening elements, wherein an annular circumferential neck is formed on the glass vessel below the rim, wherein the one or more fastening elements resiliently engage the inside of the



neck from above, resting flush against an inner wall in the area of the neck and arranged to bias the plastic ring structure through the opening into the neck, and wherein both the third ring and the first ring extend from the rim toward the neck when the plastic ring structure is seated down onto the rim of the glass vessel.

5,379,926

DISPENSING CLOSURE WITH A TWIST SLEEVE AND TWO INTERNAL PASSAGES

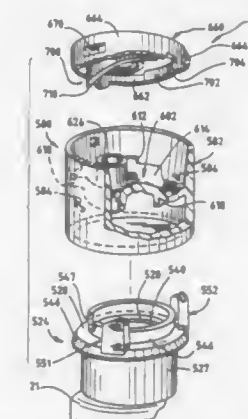
Bruce M. Mueller, Brookfield; Richard J. Daniels, Caledonia, both of Wis., and John Elliott, Waukegan, Ill., assignors to AptarGroup, Inc., Crystal Lake, Ill.

Filed Mar. 26, 1993, Ser. No. 38,909

Int. Cl.⁶ B67D 3/00

U.S. Cl. 222—507

14 Claims



1. A dispensing closure for an opening to a container, and closure comprising:

a body that can be located on said container over said opening, said body having a transverse end wall defining an outlet passage through said end wall for communicating with said container opening;

a sleeve mounted on said body for rotation relative to said body about a rotation axis defined by said sleeve, said sleeve having a transverse deck over said body end wall, and said deck defining a discharge passage through said deck offset from said rotation axis for being moved in an arc relative to said body outlet passage when said sleeve is rotated;

an actuator mounted on said sleeve for rotation therewith to occlude flow through said discharge passage from said container when said actuator means is in a closed, non-dis-

pending position and to permit flow through said discharge passage from said container when said actuator is tilted about a pivot axis to an open, dispensing position; and
engaging means defined by said body and said actuator for tilting said actuator between said closed position and said open position while said actuator is rotated with said sleeve.

5,379,927

NEW PACKAGE FOR INSTANT ADHESIVES

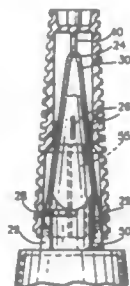
Robert E. Montenieri, Southington, Conn.; Maurice T. O'Connell, Dublin, Ireland; Alan T. Crampton, Dublin, Ireland; Geoffrey F. Seymour, Dublin, Ireland; Richard C. Edstrom, New York, N.Y., and Bryon J. Bourgeois, St. Albans, Vt., assignors to Loctite Corporation, Hartford, Conn.

Filed Mar. 11, 1994, Ser. No. 209,805

Int. Cl.⁶ B65D 47/00

U.S. Cl. 222—546

20 Claims



17. An improved package, for storing and dispensing liquids of the type in which a body comprising a nozzle with an orifice and a chamber, has a cap which fits snugly over the nozzle, the cap also having an interior pin which fits into the orifice of the nozzle keeping the nozzle from clogging, the improvement being a plurality of guide ribs equidistantly spaced around the upper portion of the nozzle, parallel to the axis of the package.

5,379,928

ADJUSTABLE BREAKAWAY NECK LEASH

John P. Mikkelsen, Santa Monica, Calif., assignor to Dermalabs Research, Inc., Minneapolis, Minn.

Continuation of Ser. No. 16,494, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 895,198, Jun. 5, 1992, abandoned, which is a continuation of Ser. No. 633,166, Dec. 27, 1990, abandoned, which is a continuation of Ser. No. 309,092, Feb. 10, 1989, abandoned. This application Oct. 19, 1993, Ser. No. 138,897

Int. Cl.⁶ A45F 3/00

U.S. Cl. 224—257

7 Claims

1. A safety leash for holding a portion of an object of predetermined size, comprising:
flexible cord means defining an outer surface and having first and second ends;
holder means comprising object holding means sized to receive and retain the portion of said object and a member having an opening with inner walls formed therethrough, the first and second ends of the cord means being insertable through said opening with the inner walls of said opening frictionally engaging the outer surface of the cord means, allowing the positioning of the holder means at a selected point along said cord means to form an adjustable noose which can be worn around the neck of the user, said object holding means comprising a receptacle having interior substantially vertical walls sized to receive and hold the portion of the object and allowing the object to hang substantially below the holder means while said holder means hangs substantially below said noose when properly worn; and
retaining means releasably secured to at least one of said first

and second ends of the cord means, said retaining means being larger than said opening and being disconnectable from the cord means in the presence of a force of predetermined magnitude to permit withdrawal of the cord means from said opening, the retaining means comprising a clip having first and second members hingedly joined together



along an adjacent edge, said first member having a protruding post, said second member having a slot sized to receive and frictionally hold said protruding post when said first member is hingedly folded over upon said second member around at least one of said two ends of said cord means, frictionally holding at least one of said two ends of said cord means therebetween.

5,379,929

MULTI-FUNCTION AUTOMOBILE VISOR UNIT

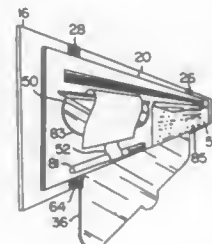
Ezra D. Eskandry, 1925 Brickell Ave. D901, Miami, Fla. 33129

Filed Feb. 23, 1994, Ser. No. 200,644

Int. Cl.⁶ B60R 7/00

U.S. Cl. 224—312

14 Claims



1. In combination with an automobile having a window and a window visor adjacent thereto, said visor being rotatably mounted in said automobile with respect to said window, said visor having a predetermined thickness, an accessory carrier mountable on said visor comprising:
a three layer, generally planar, composite carrier having a thickness substantially the same as said predetermined visor thickness, said carrier having first and second outer layers and an intermediate layer, said first outer layer disposed adjacent said visor when said carrier is mounted thereto, said intermediate layer being intermediate said first outer layer and said second outer layer, said first and second outer layers being joined together along peripheral regions thereof and being substantially coextensive with each other;
said intermediate layer being a divider for an interior space defined by said first and second outer layers and completely dividing said interior space into first and second interior compartments;
a tinted, planar viewing screen laterally extendable from a position substantially within said first interior compartment of said carrier through a complementary longitudinal

nal slot in said first outer layer to a position substantially outside said first compartment, in said outside position, said viewing screen forming a tinted shade for an occupant of said automobile, said viewing screen being stored within said first compartment when said viewing screen is substantially within said first compartment, said viewing screen having an outboard segment which is always exposed to the exterior of said carrier, said outboard segment defining an operator interface for pulling said viewing screen from said stored position;
said viewing screen having opposing sawteeth longitudinally extending from opposing sides of said viewing screen, said sawteeth interactive with terminal ends of said complementary longitudinal slot in said first outer layer;
a closable, longitudinal slot on said second outer layer, said closable longitudinal slot defining a mouth for said second interior compartment within said carrier;
pocket flaps attached to said second outer layer which define at least two pockets for storage of accessories by said occupant on said carrier; and,
at least one strap large enough to encircle said visor, said strap attached to said composite carrier such that said carrier can be detachably mounted on said visor.

5,379,930

TORCH SPECIALLY ADAPTED TO GASOLINE-OXYGEN CUTTING MACHINE AND CUTTING MACHINE PROVIDED WITH SAID TORCH

Guangqi Liang, 403-2-7, Xiwangzhuang, Wudaokou, Haidian District, Beijing 100083, China

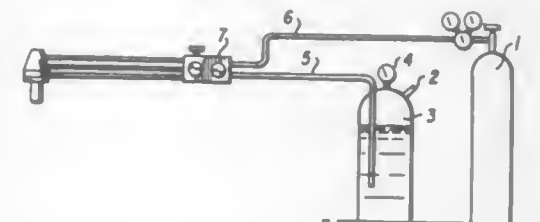
Filed Jun. 25, 1993, Ser. No. 81,179

Claims priority, application China, Jun. 27, 1992, 92225731

Int. Cl.⁶ B23K 7/00

U.S. Cl. 266—74

15 Claims



1. A cutting torch for a gasoline-oxygen cutting machine comprising a cutting torch body (7); a gasoline tube (17), a preheating oxygen tube (18) and a cutting oxygen tube (19); a gasoline adjusting valve (8), a preheating oxygen adjusting valve (9) and a cutting oxygen adjusting valve (10) fitted to the cutting torch body (7); and a cutting head (11); said gasoline tube (17), said preheating oxygen tube (18) and said cutting oxygen tube (19) communicating with a main oxygen tube (6) and a main gasoline tube (5), respectively, through the gasoline adjusting valve (8), the preheating oxygen adjusting valve (9) and the cutting oxygen adjusting valve (10), respectively, and further communicating with an oxygen bottle (1) and a gasoline tank (3) through the main oxygen tube (6) and the main gasoline tube (5), respectively, the other ends of said gasoline tube (17), said preheating oxygen tube (18) and said cutting oxygen tube (19) communicating with the cutting head (11), wherein said cutting head (11) comprises a cutting oxygen passage (16), at least one preheating oxygen passage (12), at least one gasoline passage (13) and a combustion cover (15), said cutting oxygen passage (16) being located at the center of the cutting head (11), said gasoline passage (13) being located at the outside of said cutting oxygen passage (16), and said preheating oxygen passage (12) being located at the outermost side, said combustion cover (15) being screwed on one end of the cutting head (11), and the other end of the cutting head (11) being connected with the cutting torch body (7), said gasoline passage and said preheating oxygen passages having cross-sectional

tional dimensions sufficiently small so as to induce atomization of gasoline flowing through said torch head.

5,379,931

SOLDERING APPARATUS WITH IMPROVED CONFIGURATION OF SOLDER STREAMS

Michiel J. Van Schaik, Breda, Netherlands, assignor to Soltec B.V., Oosterhout, Netherlands

PCT No. PCT/NL93/00003, § 371 Date Aug. 26, 1993, § 102(e)

Date Aug. 26, 1993, PCT Pub. No. WO93/13904, PCT Pub.

Date Jul. 22, 1993

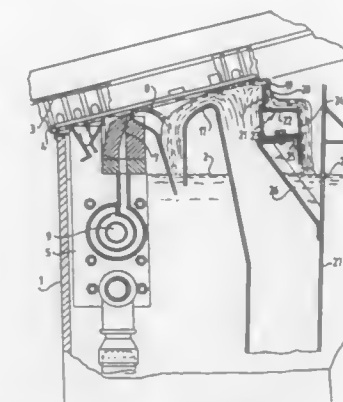
PCT Filed Jan. 7, 1993, Ser. No. 108,593

Claims priority, application Netherlands, Jan. 14, 1992, 9200060

Int. Cl.⁶ B23K 3/06

U.S. Cl. 228—37

11 Claims



1. In a soldering device comprising:
a vessel opened on top for filling with solder;
a succession of at least two solder towers placed in the vessel, each of said towers being adapted for delivering a flow of solder from an upper end thereof; and
a transporting member for carrying objects to be soldered along a transport path above the solder towers for treatment by said flow of solder, the improvement comprising:
means for shielding said objects from solder splashing up from an underlying pool of solder into which said flow of solder returns, said shielding means comprising:
at least two of the solder towers adapted for generating respective flows of solder directed such that said respective solder flows intersect to provide an overhead cover for said underlying pool before contacting said pool of solder in the vessel; and
at least one of said respective solder flows being a jet of solder which is self-supporting after leaving a corresponding tower and before contacting the object for soldering.

5,379,932

TENSIONING APPARATUS FOR A WEB THREADING ENDLESS ROPE

Kenneth L. Bracken, Franklin, Ohio, assignor to Wespatt, Inc., Springfield, Ohio

Continuation of Ser. No. 783,425, Oct. 28, 1991, Pat. No.

5,263,623. This application Nov. 22, 1993, Ser. No. 155,211

The portion of the term of this patent subsequent to Nov. 23,

2010, has been disclaimed.

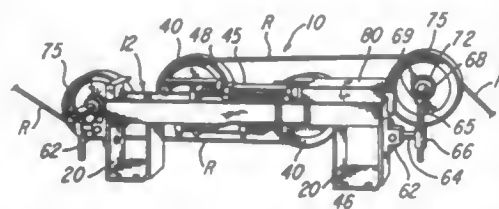
Int. Cl.⁶ B65H 59/38

U.S. Cl. 226—92

12 Claims

1. Apparatus for tensioning an endless rope used for threading a web in a papermaking machine and for taking up stretch which develops in the rope over a period of use, comprising a frame including an elongated beam having longitudinally extending and outwardly projecting opposite flange portions, said beam also including means projecting laterally from said

flange portions for reinforcing said flange portions and to provide said flange portions with substantial rigidity, at least one carriage including a base member disposed adjacent and substantially parallel to said flange portions, a set of guide members mounted on said base member and engaging said opposite flange portions with said flange portions extending



between said guide members to support said carriage for longitudinal movement along said beam, power operated means extending longitudinally of said beam and connected to said carriage for moving said carriage along said flange portions, and a guide sheave supported by said base member for free rotation and positioned to engage the rope.

5,379,933

ARCuate APPARATUS FOR APPLYING TWO-PART SURGICAL FASTENERS

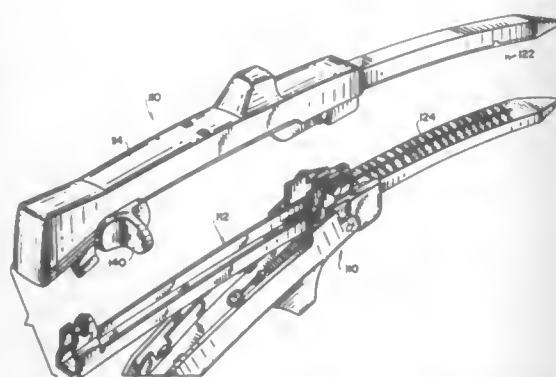
David T. Green, Westport; Henry Bolanos, East Norwalk; Robert J. Geiste, Milford, all of Conn.; Wayne P. Young, Brewster, N.Y.; Stephen W. Gerry, Bethel, and Frank M. Rende, III, Stamford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 692,177, Apr. 26, 1991, Pat. No. 5,156,315, which is a continuation-in-part of Ser. No. 583,867, Sep. 17, 1990, abandoned. This application Jun. 15, 1993, Ser. No. 898,801

Int. Cl. 6 A61B 17/04

U.S. Cl. 227-176

17 Claims



1. In combination with an apparatus for applying a plurality of fasteners to body tissue, the apparatus including advancement means for driving said fasteners into the body tissue, an improvement in combination therewith which comprises a manually operable member adapted to be operatively connected to said advancement means, said manually operable member insertable into a first side of said advancement means whereby said member is removable from said first side and insertable into a second side of said advancement means so as to facilitate manual operation on either of at least two sides.

5,379,934

CLOSABLE TRAY

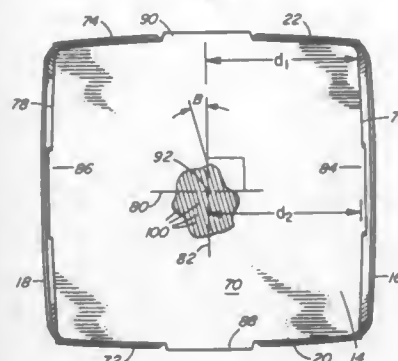
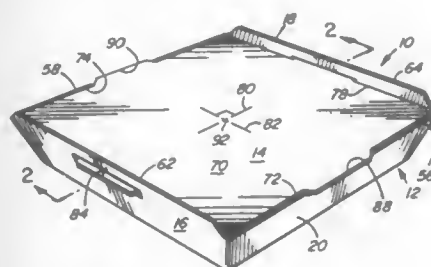
Achim R. Lorenz, Borns, Tenn., assignor to MacMillan Bloedel Limited, Vancouver, United Kingdom

Filed Feb. 7, 1994, Ser. No. 193,751

Int. Cl. 6 B65D 43/04

U.S. Cl. 229-125.28

18 Claims



1. A closable tray structure comprising a tray bottom having a bottom wall and a first pair of opposed side walls and a second pair of opposed side walls flaring upwardly from said bottom wall to provide a tray, free edges at the edges of said side walls remote from said bottom wall outlining the sides of a substantially rectangular top opening of said tray, a pair of elongated tongue receiving slots, one of said pair of tongue receiving slots formed in each wall of said first pair of side walls, each said tongue receiving slot having a bottom supporting edge spaced from and substantially parallel to said bottom wall, a support surface formed on each of said walls of said second pair of walls, said support surfaces being substantially parallel to said bottom wall, said bottom supporting edges and said support surfaces all being spaced from said bottom wall substantially the same distance, a discrete co-operating top closure comprising a substantially planar top wall having a first pair of tongues planar with said top wall and projecting outwardly one from the center of each edge of one pair of opposite side edges of said top wall and a second pair of tongues substantially planar with and extending outwardly one from the center of each edge of a second pair of opposed side edges of said top wall in the direction substantially perpendicular to the direction of extension of said first pair of tongues from said top wall, said second pair of side edges being substantially perpendicular to said first pair of side edges, said edges of said first and said second pairs of edges each being bowed outwardly at its center to form convex shaped edge, said top wall and said tongues being proportioned relative to said top opening of said tray so that said tongues of said first pair of tongues are received one in each of said tongue receiving slots in said first pair of opposed side walls and said first pair of edges apply greater pressure to their respect adjacent one of said first pair of opposed side walls adjacent to the center of their respective adjacent one of said first pair of side walls and said tongues of said second pair of tongues are supported one by each of said supporting surfaces when said top closure is in position closing said tray.

5,379,935

Patent Not Issued For This Number

5,379,936

FLOW CONTROL VALVE ASSEMBLY

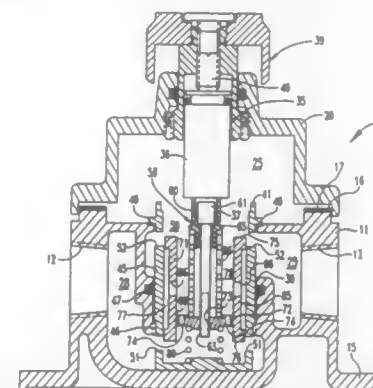
Kevin B. Kline, Indianapolis, Ind., assignor to Lawler Manufacturing Co., Inc., Indianapolis, Ind.

Filed Nov. 19, 1993, Ser. No. 154,965

Int. Cl. 6 G05D 23/13

U.S. Cl. 236-12.2

20 Claims



1. A temperature control valve assembly for a carbonated beverage dispenser, comprising:

a valve body defining:
a warm fluid inlet;
a chilled fluid inlet;
a fluid mixing chamber; and
a fluid outlet communicating with said fluid mixing chamber;

a cylindrical liner disposed within said valve body, said liner defining a warm fluid opening in communication with said warm fluid inlet and a chilled fluid opening in communication with said chilled fluid inlet;

a flow control member for controlling flow of a warm fluid from the warm fluid opening and a relatively chilled fluid from the chilled fluid opening to said fluid mixing chamber, said flow control member defining a number of primary flow passageways between the fluid openings and said mixing chamber and a number of secondary flow passageways between the openings and said mixing chamber;

said flow control member disposed within said valve body and moveable between positions in a normal operating condition in which substantially all flow from the fluid openings is directed through said primary flow passageways, and moveable to a failure condition in which substantially all flow from the openings is directed through said secondary passageways; and

a condition responsive actuator disposed at least partially within said fluid mixing chamber and movable in response to a temperature of fluid in said mixing chamber, said actuator connected to said flow control member to move said member in the normal operating condition when fluid flows through both the first fluid opening and the second fluid opening, and to move said member to the failure condition when flow through one of either of the warm fluid opening or the chilled fluid opening ceases.

5,379,937

NUCLEATOR ASSEMBLY FOR SNOWMAKING APPARATUS

Charles E. Rothe, Saugerties, N.Y., assignor to Rothe Welding and Fabrication, Inc., Saugerties, N.Y.

Filed Jan. 18, 1994, Ser. No. 181,799

Int. Cl. 6 F25C 3/04

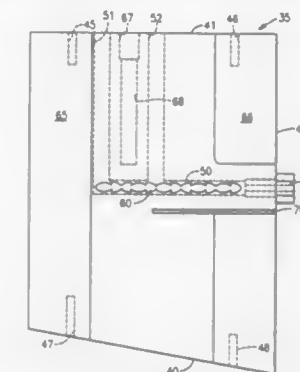
U.S. Cl. 239-14.2

10 Claims

1. In snowmaking apparatus wherein an extended tubular housing has opposite coaxial inlet and outlet ends with air

displacement means mounted within the housing remote from its outlet end for forcing an air stream through the housing and with water injection means downstream from the air displacement means for ejecting water into said air stream, a nucleator assembly comprising

a) at least one body element downstream from the air displacement means fixed with respect to the housing axis and having upstream and downstream portions,
b) said body element defining at least one interior mixing chamber and respective air and water supply bores adapted to communicate said chamber with external sources of pressurized air and water respectively,



c) a nozzle on the downstream portion of the body element spaced radially from the housing axis to be directly in the air stream flow and communicating with the mixing chamber for ejecting an admixture of pressurized air and water into the air stream,

d) turbulence-creating mixing means within said mixing chamber for enhancing the mixing of the air and water ejected through the nozzle, and

e) means for preventing freezing of the water mixed with the air within and adjacent to said nozzle.

5,379,938

SEAL FOR AIRLESS SPRAY GUN

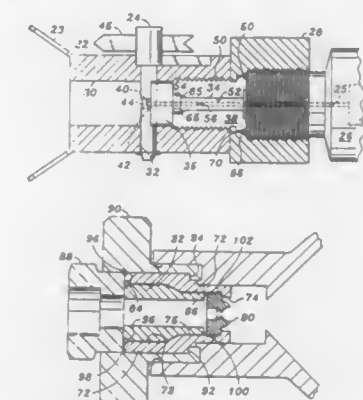
Robert J. Perret, Jr., Newport Beach, Calif., assignor to A. S. M. Company, Inc., Orange, Calif.

Filed Aug. 16, 1993, Ser. No. 73,333

Int. Cl. 6 B05B 15/02

U.S. Cl. 239-119

11 Claims



1. An assembly for high pressure fluid spraying, said assembly having components including a housing having a barrel including a bore opening to a discharge end thereof, a conduit for supplying fluid under pressure from a source through said bore of said barrel for discharge from said discharge end thereof, valve means for controlling the flow of said pressurized fluid, a spray nozzle removably carried at said discharge end of said barrel, an adapter member for attaching said spray

nozzle on said barrel and means for securing said spray nozzle on said adapter member, said adapter member having a through-running bore for fluid communication between the discharge end of said barrel and said spray nozzle and a larger diameter, threaded counter bore extending part way through said adapter member to provide an internal annular shoulder therein which threadably receives the discharge end of said barrel against said internal annular shoulder, an annular groove and resilient sealing means received in said groove between said internal annular shoulder and said barrel, said resilient sealing means consisting of a compressible sealing ring received in said annular groove, said sealing ring being inert to fluid being sprayed and having a compression ratio effective to maintain a fluid tight seal between components when said sealing ring is subjected to manually generated compressive force, whereby, in the assembled state, said sealing ring is compressed between the discharge end of said barrel and said shoulder and exerts compressive force thereagainst to provide a seal between said adapter member and said barrel, said spray nozzle including a spray tip body with a longitudinal through-running bore opening to front and rear faces of said body, and a spray tip comprising a spray guard and an orifice member for defining a spray pattern for said pressurized fluid.

5,379,939

SINGLE PIECE SPRAY TIP

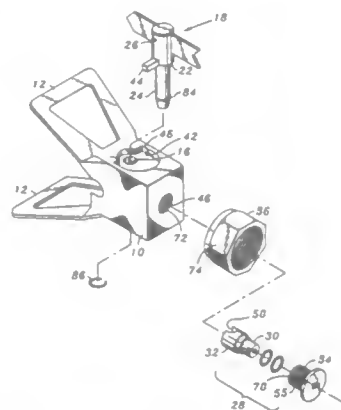
Robert J. Perret, Jr., 2163 Pacific Ave., Costa Mesa, Calif. 92627

Continuation of Ser. No. 961,448, Oct. 15, 1992, Pat. No. 5,280,853. This application Dec. 14, 1993, Ser. No. 166,649. The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.⁶ B05B 15/02

U.S. Cl. 239—119

6 Claims



1. A spray tip consisting of:

- a housing and spray guard having a housing longitudinal passageway with internal threads at one end to provide an internally threaded portion and a housing cylindrical chamber orthogonal to, and intersecting, said housing longitudinal passageway;
- a turret member subassembly of a cylindrical holder rotationally received within said housing cylindrical chamber, said cylindrical holder having a transverse chamber aligned with said housing longitudinal passageway, an orifice tip member mounted within said transverse chamber of said holder, orifice tip retainer means securing said orifice tip member within said transverse chamber, and holder retainer means securing said holder in said housing cylindrical chamber;
- a seal retainer comprising an externally threaded shaft having a threaded end portion threadably received within said threaded portion of said housing longitudinal passageway and extending with one end exteriorly of said housing, a retainer through bore longitudinally coextensive said retainer, an outwardly radial flange at said one end of

said shaft, and an annular shoulder on said threaded end portion of said shaft received within said housing longitudinal passageway;

- a seal member slidably received within said longitudinal passageway and having an arcuately concave face at one end sealingly engaged against said cylindrical holder and having its opposite end received against said threaded end portion of said shaft of said seal retainer;
- resilient means received between said seal member and said annular shoulder on the threaded end portion of said shaft to bias said seal member into said housing, urging its concave face against said cylindrical holder; and
- an internally threaded retainer nut having an inwardly turned flange at one end with said seal retainer received within said retainer nut and captured therein by its annular flange.

5,379,940

SPREADER APPARATUS FOR SPREADING MANURE

Stanley W. Knight; William M. Saunders, both of Brodhead, and Ric Joranlien, Monroe, all of Wis., assignors to Knight Manufacturing Corp., Brodhead, Wis.

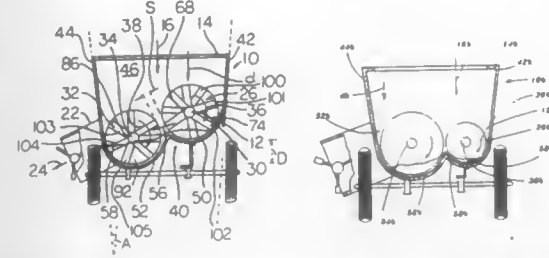
Continuation of Ser. No. 56,568, May 3, 1993, Pat. No. 5,275,335, which is a continuation of Ser. No. 831,835, Feb. 6, 1992, abandoned. This application Nov. 18, 1993, Ser. No. 154,581

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.⁶ A01C 15/00

U.S. Cl. 239—675

9 Claims



1. A spreader apparatus for spreading manure, said apparatus comprising:

- a container defining an opening for the reception therein of the manure, said container also defining an outlet for the discharge therethrough of the manure;
- a rotatable feed means disposed within and co-operating with said container for feeding the manure through said container, said feed means having an axis of rotation extending through said container;
- a rotatable discharge means disposed within said container and co-operating with said container and said feed means for moving the manure towards said outlet, said discharge means having a further axis of rotation extending through said container, said further axis of rotation being disposed spaced and parallel relative to said axis of rotation of said feed means;

said container further including:

a base;

said base including:

- a first portion which co-operates with said feed means; and
- a second portion which co-operates with said discharge means, said second portion being disposed at a lower elevation relative to said first portion, the arrangement being such that when said feed means and said discharge means are rotating and when a residue of the manure is disposed adjacent to said first portion, rotation of said feed and discharge means moves said residue in a direction from said first portion immediately towards said second portion, the manure being fed by said feed means from said feed means to said discharge means even when the level of the manure drops below the top of said discharge

means so that all of the manure within said container is fed at a substantially constant rate towards said outlet.

5,379,941

ELECTROMAGNETIC FEED DEVICE FOR VARIABLE FORWARD MOTION OF SOLDER WIRE OR WELDING WIRE IN A SOLDERING IRON OR WELDING GUN

Robert Partel, Postfach 34 19, CH 3600 Zug, Switzerland

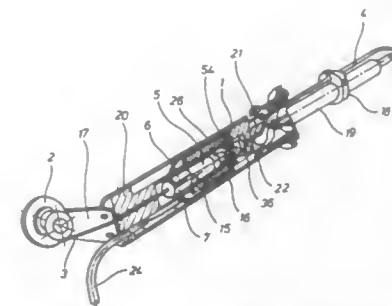
Filed Dec. 16, 1992, Ser. No. 991,651

Claims priority, application Germany, Dec. 16, 1991, 9115533[U]

Int. Cl.⁶ B23K 3/06

U.S. Cl. 228—33

7 Claims



1. An electromagnetic feed device in a soldering or welding gun, wherein solder or welding wire is disposed on a supply drum on the rearward end of the soldering or welding gun and beginning from the supply drum the soldering or welding wire is guided into the interior of the soldering or welding gun to the feed device, wherein the feed device grasps the solder or welding wire and carries it intermittently, via a delivery tube, to a tip of the soldering or welding gun,

said feed device comprising:

an electrical coil having a longitudinally movable plunging armature therein;

said plunging armature having clamping means for grasping and moving the solder or welding wire relative to the soldering or welding gun in a feed direction when the plunging armature is actuated to move by an electric current flowing through the electrical coil,

wherein said clamping means comprises:

a retaining part fixed on said plunging armature, and a clamping part resiliently supported on said plunging armature,

wherein said clamping part (6) grasps and presses the solder or welding wire against said retaining part when the clamping part is magnetized by said electric current, wherein the plunging armature (5) comprises a soft iron material and has a central bore (28) for guiding the solder or welding wire (3), and the electrical coil (15) has a pulsating direct current flowing through it.

5,379,942

METHOD FOR PRODUCING A SEMICONDUCTOR MODULAR STRUCTURE

Reinhold Kuhnert, and Herbert Schwarzbauer, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 24, 1993, Ser. No. 157,915

Int. Cl.⁶ B23K 20/00, 20/16

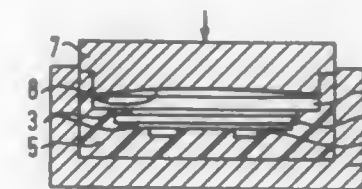
U.S. Cl. 228—106

4 Claims

1. A method for producing a semiconductor modular structure, which comprises:

placing semiconductor bodies, a ceramic substrate with metallizing, and a metal base plate, in an elastomer compression mold;

placing a heatable pressure ram with a surface being concave relative to the base plate, on the base plate; and



convexly deforming and joining at least the base plate and the ceramic substrate with pressure exerted by the pressure ram, at a temperature above room temperature.

5,379,943

HOT AIR CIRCULATION APPARATUS AND METHOD FOR WAVE SOLDERING MACHINES

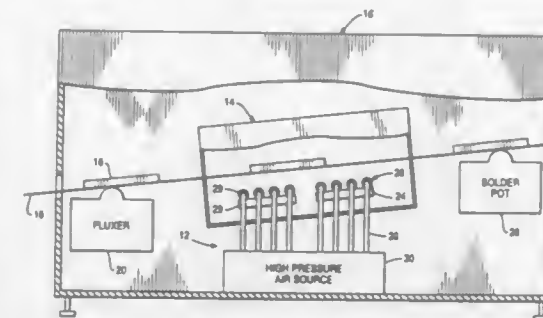
David E. Gibson, Roswell, Ga., assignor to NCR Corporation (nka AT&T Global Information Solutions Company), Dayton, Ohio

Filed Oct. 19, 1993, Ser. No. 137,550

Int. Cl.⁶ B23K 3/04

U.S. Cl. 228—20.1

23 Claims



1. A hot air circulation apparatus for drying water-based flux on a printed circuit board moving through a wave soldering machine comprising:

a pressurized air source; and

a device coupled to the pressurized air source which heats the pressurized air and directs it at the water-based flux on the printed circuit board.

5,379,944

HEAVY DUTY ARTICLE CARRIER

James T. Stout, Ellijay, Ga., and James B. DeMaio, Henderson, Nev., assignors to The Mead Corporation, Dayton, Ohio

Filed May 26, 1994, Ser. No. 249,748

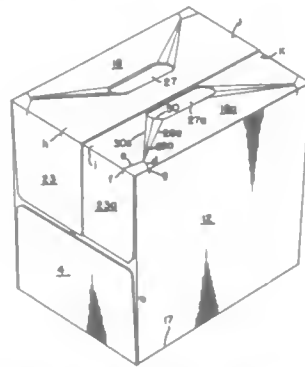
Int. Cl.⁶ B65D 5/46

U.S. Cl. 229—117.13

7 Claims

1. An article carrier comprising a bottom wall, a top wall having side and end edges, side walls having end, top and bottom edges and being foldably joined along their bottom edges to side edges of said bottom wall and foldably joined along their top edges to an adjacent side edge of said top wall, end walls having bottom, top and side edges and being foldably joined along their bottom edges to end edges of said bottom wall and foldably joined along their side edges to end edges of the adjacent side and end wall, opposed side edges of said top wall being foldably joined to the top edges of said side walls respectively and having opposed end edges foldably joined respectively to the top edges of said end walls, at least one finger receiving hand hole aperture having opposed ends formed in said top wall, a plurality of converging score lines having converging ends and formed in said top wall and extending from an end of said aperture toward each corner of

said top wall and having ends spaced from the associated corner of said top wall, a pair of intersecting divergent cut lines



formed in said top wall and extending respectively from the region of said converging ends of said score lines into the adjacent side and end wall.

5,379,945 SHEETS OF CORRUGATED PAPER FOR PRODUCING PACKAGES

Hachiro Kataoka, Nagoya, Japan, assignor to Chuoh Pack Industry Co., Ltd., Aichi, Japan

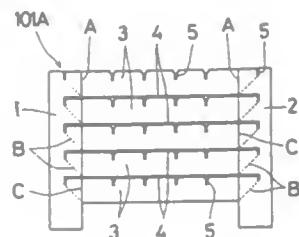
Filed Apr. 21, 1992, Ser. No. 871,688

Claims priority, application Japan, Jun. 19, 1991, 3-176214; Sep. 2, 1991, 3-078770[U]; Oct. 9, 1991, 3-290675; Oct. 18, 1991, 3-299947; Oct. 22, 1991, 3-304124

Int. Cl.⁶ B65D 25/04

U.S. Cl. 229—120.26

2 Claims



1. Sheet material for producing a container, which comprises first and second flat sheets (101A and 101B) that are adapted to be folded and fitted together, each sheet including
 - (i) spaced apart side wall members (1 and 2),
 - (ii) spaced apart partition wall members (3) having top and bottom edges extending between and at right angles to said spaced apart side wall members (1 and 2), said partition wall members being separated from each other by narrow openings (4) extending parallel to said partition wall members,
 - (iii) a plurality of slits (5) provided in each partition wall member (3) and equaling in number the number of the partition wall members (3) of the other sheet (101A or 101B) plus two, the outermost slits in each partition wall member (3) defining the outermost ends of that partition wall member (3),
 - (iv) a first pair of creases (A) formed adjacent the opposite ends of each partition wall member (3), said creases (A) being parallel to said side wall members (1 and 2), and
 - (v) a second pair of creases (B) formed in each partition wall member (3), each such crease (B) being on a 45° angle that extends between the bottom of one of said outermost slits and one end of one of said first pair of creases (A) wherein in the first sheet (101A) all of the slits (5) are formed in the top edge of the partition wall member (3) and in the second sheet (101B) the slits (5), other than said outermost

slits, are formed in the bottom edge of the partition wall member 3.

5,379,946 STAND ALONE FOLDING BOTTLE PACKS

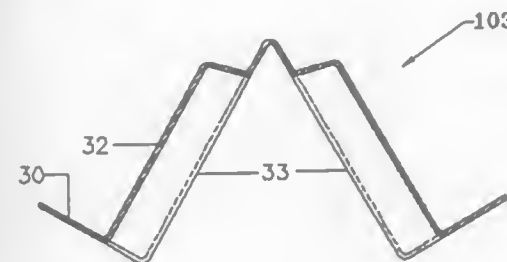
Roy W. Emery, 1 Donino Ct., Toronto, Ontario, Canada M4N 2H6

Filed May 20, 1994, Ser. No. 246,799

Int. Cl.⁶ B65D 25/04

U.S. Cl. 229—120.38

8 Claims



1. A stand alone folding bottle pack for use in a container having a bottom wall and four side walls, said bottle pack serving to separate and protect from contact with each other the individual bottles in at least two rows of bottles with at least two bottles in each row, said bottle pack being comprised of:
 - at least two vertical panels hingedly connected in pairs at their top edges to stand upright in said container, each of said vertical panels having at least one outwardly directed vertical rib;
 - at least two horizontal panels to rest flat on said bottom wall of said container, each of said bottom panels being connected at at least one of its edges to at least one of said vertical panels;
 whereby to form a continuously connected series of at least two of said horizontal bottom panels and at least one pair of said vertical panels.

5,379,947 PROCESS FOR PRODUCING A POWDER COATING COMPOSITION

Charles F. Williams, Rochester Hills, and Michael A. Gessner, West Bloomfield, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Nov. 9, 1993, Ser. No. 149,425

Int. Cl.⁶ B02C 23/18

U.S. Cl. 241—21

20 Claims

1. A process for producing a powder slurry coating composition comprising
 - (a) preparing a powder coating extrudate;
 - (b) chilling and forming the coating extrudate into a sheet;
 - (c) reducing the extrudate to a coating flake;
 - (d) jet milling the flake to a powder, wherein at least 50% of the particles have a particle size of between 3 and 10 microns;
 - (e) adding a wetting agent to water to reduce the surface tension of the water to <30 dynes/cm; and
 - (f) adding the powder from (d) to the water and wetting agent, to form a powder slurry coating composition.

5,379,948 METHOD FOR MILLING CLAY WITHOUT SUBSTANTIAL GENERATION OF POWDER

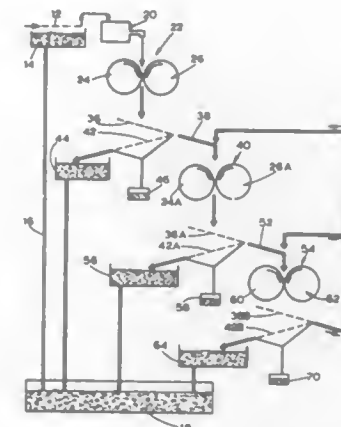
Maynard Teppo, Belle Fourche, S. Dak., assignor to American Colloid Company, Arlington Heights, Ill.

Filed Jan. 6, 1994, Ser. No. 177,938

Int. Cl.⁶ B02C 23/14

U.S. Cl. 241—24

14 Claims



5,379,951

COMMINUTING APPARATUS

John H. Hughes, Montesano, Wash., assignor to ComCorp, Inc.,
Montesano, Wash.

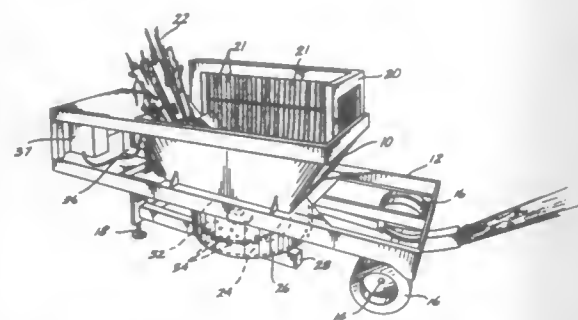
Continuation of Ser. No. 634,234, Dec. 26, 1990, abandoned.

This application Jun. 22, 1992, Ser. No. 905,148

Int. Cl.⁶ B02C 13/286

U.S. Cl. 241—60

18 Claims



1. A comminuter for reducing solid material to particulate form comprising:

- a frame;
- a tub rotatably mounted on said frame, said tub including a cylindrical sidewall and a bottom wall consisting of an annular portion affixed to said sidewall and perpendicular thereto, and a central, circular portion mounted on said frame and separated from said annular portion but lying in the same plane as the annular portion;
- a first drive means mounted on said frame and drivingly connected to said sidewall and said annular portion for rotating said sidewall and said annular portion in a first direction;
- a disk mounted within said tub, in a plane parallel to and spaced above the plane of said annular portion and said circular portion;
- a drive motor mounted on said frame and drivingly coupled to said disk to rotate said disk in a second direction; and
- a plurality of tooth members mounted on said disk and projecting from said disk into said tub, the orientation of each tooth member being individually adjustable independent of the orientation of each other tooth member.

5,379,952

AGITATOR MILL

Armin Geiger, Bichwil, Switzerland, assignor to Bühler AG,
Uzwil, Switzerland

Filed Feb. 23, 1994, Ser. No. 200,220

Claims priority, application Switzerland, Feb. 25, 1993,
00572/93

Int. Cl.⁶ B02C 17/16

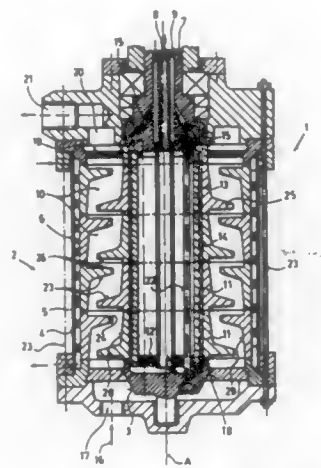
U.S. Cl. 241—65

14 Claims

1. An agitator mill for continuous grinding and dispersing of material suspended in a liquid comprising a ring shaped grinding chamber defined by front sides of inner and outer corresponding wall means, wherein

- said outer wall means is a stator and said inner wall means is a rotor with a central rotor axis and
- at least one of said corresponding wall means is at least partially built up by ring means lined up along said rotor axis, wherein
- at least some of said ring means comprise agitator members projecting radially into said grinding chamber,
- said ring means have a rear side opposite to said front side,
- said agitator members are located at said inner and at said outer wall means in groups of corresponding agitator members, said agitator members including shear surfaces oriented radially to said rotor axis wherein said shear surfaces of corresponding agitator members are essentially parallel and leave under rotation a gap in the direction of

said rotor axis smaller than the length of said agitator members, and



said agitator members have a greater axial thickness at said wall means than at the free end of said agitator means.

5,379,953

CHOPPING AND MIXING DEVICE FOR MULTI-PURPOSE FOOD PROCESSOR

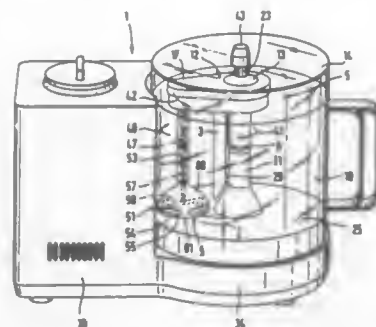
Antonio Rebordosa, Oberursel, and Jürgen Golob, Friedrichsdorf, both of Germany, assignors to Braun AG, Frankfurt, Germany

Filed May 6, 1993, Ser. No. 58,322

Claims priority, application Germany, May 16, 1992, 4216335
Int. Cl.⁶ A47J 43/06; B02C 18/08, 18/24, 23/02

U.S. Cl. 241—101.2

17 Claims



1. A chopping and mixing device for use in a multi-purpose food processor that includes a motor, a main shaft driven by the motor, and a bowl having a bottom, said device comprising a gear arrangement adapted to be rotatably mounted in said bowl, said gear arrangement including a gear arm, an input shaft adapted to be rotated by the main shaft, and an output shaft mounted on said gear arm outside said input shaft and engageable with at least one processing tool rotary about its axis for performing food processing operations, said processing tool including rotary cutter structure and a feed and expel device that rotates about said axis, said feed and expel device including a plate structure arranged above the rotary cutter structure, said plate structure having a leading end portion extending away from the bottom of the bowl and a trailing end portion extending towards the bottom of the bowl.

5,379,954

GRATER WITH CLEANING BRUSH

Peter Funke, Sundern, Germany, assignor to Gebrüder Funke
KG, Sundern, Germany

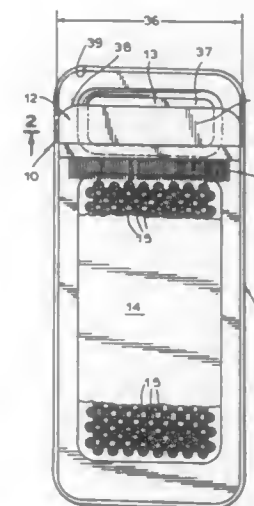
Filed Sep. 9, 1993, Ser. No. 118,491

Claims priority, application Germany, Feb. 5, 1993,
9301607[U]; Jul. 9, 1993, 9310232[U]

Int. Cl.⁶ A47J 43/25

U.S. Cl. 241—101.2

17 Claims



1. A grater assembly for foodstuffs, the assembly comprising:

- a grater board having an outer frame and a central panel, the central panel being formed with an array of small, throughgoing, sharp edge grater holes;
- a brush having a rigid handle and an array of bristles projecting therefrom; and
- a socket formed in the frame and formed complementarily to the brush handle to interfit with the handle of the brush to retain the brush on the frame.

5,379,955

INFEEED HOPPER WITH PIVOTABLE THROAT FOR SHREDDER OR GRANULATOR

Peter S. McGraw, Severna Park, Md., assignor to The United
States of America as represented by the Secretary of the Navy,
Washington, D.C.

Filed Sep. 24, 1993, Ser. No. 125,714

Int. Cl.⁶ B02C 23/02

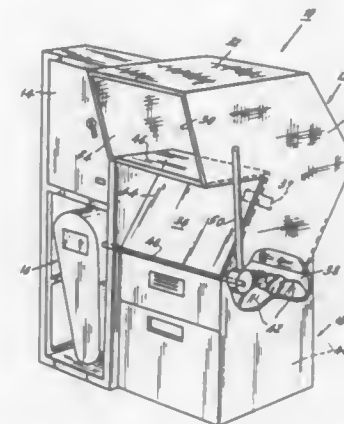
U.S. Cl. 241—186.2

13 Claims

1. A hopper for feeding material to be processed into a processing device, said hopper comprising:

- an inlet for receiving the material to be processed from outside said hopper;
 - a feed path for guiding the material from said inlet toward the processing device; and
 - an outlet for discharging the material from said feed path into the processing device,
- wherein said feed path has a movable section, said movable section including a pivotable throat portion of said feed path, said pivotable throat portion having a first position in which it guides the material from said inlet toward the processing device, said pivotable throat portion being movable from said first position to a second position for applying force to the material to force the material through said outlet toward the processing device, and further wherein said feed path includes a top wall and side walls, said top wall being spaced away from said pivotable throat portion, said side walls extending substantially at right angles from side edges of said top wall to said pivotable throat portion so that said pivotable throat portion

extends between lower ends of said side walls such that said top wall, side walls and pivotable throat portion



together defining said feed path from said inlet to said outlet for material fed into said inlet.

5,379,956

SPOOL HOLDER FOR THREAD SPOOLS

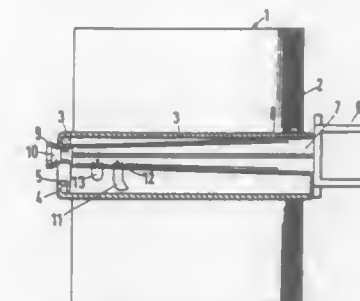
Peter Schmuck, Obertshausen, Germany, assignor to Karl
Mayer Textilmaschinenfabrik GmbH, Obertshausen, Ger-
many

Filed Nov. 29, 1993, Ser. No. 158,521

Claims priority, application Germany, Dec. 3, 1992, 4240663
Int. Cl.⁶ B65H 49/06, 67/04

U.S. Cl. 242—130

9 Claims



1. A spool carrier for supporting thread spools having either a cylindrical or conical core, said core having an inner core wall terminating in a distal edge, comprising:

- a carrier arm, adapted to be used in a horizontal orientation by being cantilevered to extend outwardly, and having a support surface for supporting the inner core wall in an outwardly extended orientation, said carrier arm having an abutment for engaging the distal edge of the core, the abutment having an inclined surface which diverges in a distal direction along said carrier arm; and
- at least one support element for interacting with a bottom portion of the inner core wall, the support element including:
- at least one freely hanging lever having an upper end hinged in the carrier arm and being sized in length to interact with the inner core wall in response to the distal edge of the core climbing the abutment.

5,379,957

SPINNING REEL HAVING BALANCER

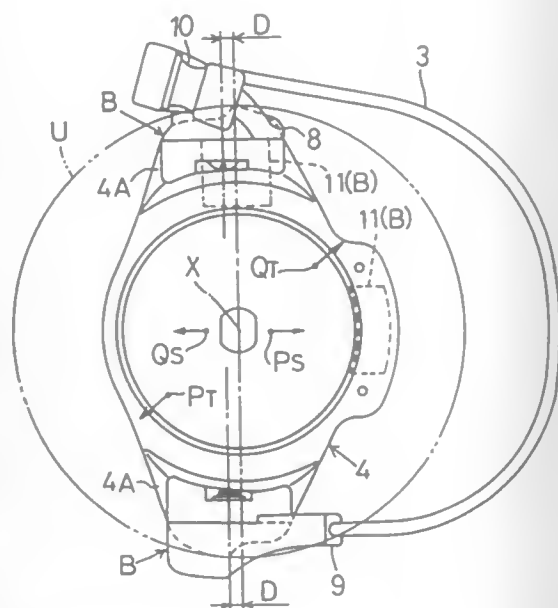
Yoshiyuki Furumoto, Osaka; Hideo Noda, Sakai; Noboru Sakaguchi, Tondabayashi, and Osamu Yoshikawa, Sakai, all of Japan, assignors to Shimano Inc., Osaka, Japan
Filed May 12, 1992, Ser. No. 881,790

Claims priority, application Japan, May 14, 1991, 3-033214[U]; Jul. 25, 1991, 3-184988; Jul. 25, 1991, 3-184989; Nov. 14, 1991, 3-298634

Int. Cl.⁶ A01K 89/01

U.S. Cl. 242—230

29 Claims



1. A spinning reel comprising:
 - a reel body (2);
 - a spool mounted on said reel body;
 - a rotor attached to said reel body, said rotor being rotatable about a rotor axis (X), said rotor including:
 - a base end portion;
 - a first arm portion extending from said base end portion, said first arm portion being substantially parallel to said rotor axis, said first arm portion having a top end; and
 - a second arm portion having a top end, said first and second arm portions being on opposite sides of said rotor axis;
 - a handle for rotating said rotor, said handle being attached to said reel body;
 - a first pivotal arm (9) attached to said top end of said first arm portion, said first pivotal arm being rotatable about a first transverse axis;
 - a second pivotal arm (9') attached to said top end of said second arm portion, said second pivotal arm being rotatable about a second transverse axis;
 - a bail extending between said first and second pivotal arms (9, 9'), said bail being pivotable with said pivotal arms between retrieving and releasing positions, and wherein said bail projects radially away from said rotor axis (X) in said retrieving position, said bail in said retrieving position being located on a first side of a reference plane in which said rotor axis (X) lies; and
 - a bail balancer (20) for facilitating counterbalancing of said bail in said retrieving position, said balancer being located at said base end portion of said rotor, and the center of gravity of said balancer being located on said first side of said reference plane.

5,379,958

FISHLINE GUIDE MECHANISM IN SPINNING REEL FOR FISHING

Shinji Takeuchi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 696,560, May 9, 1991, Pat. No. 5,193,762. This application Oct. 13, 1992, Ser. No. 960,103

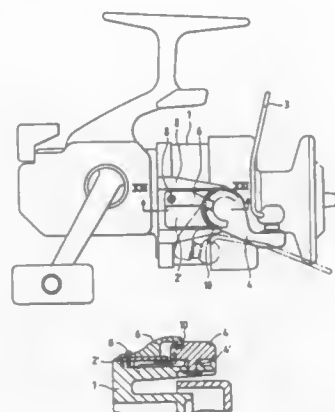
Claims priority, application Japan, May 11, 1990, 2-48589; May 25, 1990, 2-54117

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.⁶ A01K 89/01

U.S. Cl. 242—232

5 Claims



1. A fishline guide mechanism in a spinning reel for fishing, comprising:
 - a bail attaching arm provided on a rotor, said rotor having an axis of rotation;
 - a bail supporting member having a first end attached to a bail and a second end pivotally coupled to an end portion of said bail attaching arm by an attaching shaft so as to invert from one of a fishline releasing position and a fishline winding position to the other of a fishline releasing position and a fishline winding position; and
 - an anti-tangling member bridged between said bail supporting member and said bail attaching arm, said anti-tangling member is fixed with respect to said bail attaching arm and extends radially outward to at least a peripheral portion with respect to said axis of rotation of said second end of said bail support member.

5,379,959

FISHING REEL HAVING ONE-WAY BRAKE

Jun Sato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Sep. 10, 1993, Ser. No. 118,639

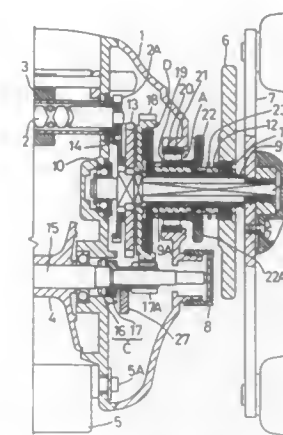
Claims priority, application Japan, Sep. 11, 1992, 4-063679[U]
Int. Cl.⁶ A01K 89/033

U.S. Cl. 242—299

8 Claims

1. A fishing reel comprising:
 - a reel body;
 - a spool for taking up a fishing line;
 - a handle for transmitting drive to said spool;
 - a transmission shaft for transmitting drive from said handle to said spool;
 - a one-way brake for preventing rotation of said transmission shaft in a fishing line feeding-out direction, said one-way brake including a rolling element disposed between an inner race and an outer race, said outer race being unrotatably supported by said reel body, said inner race being rotatably fitted on said transmission shaft; and
 - an engageable member movable in a direction parallel to a longitudinal axis of said transmission shaft between a

connecting position wherein said engageable member connects said inner race to rotate integrally with said



transmission shaft and a separating position wherein said inner race rotates relative to said transmission shaft.

5,379,960

TAPE CASSETTE CASING HAVING AN ATTACHING CYLINDRICAL PORTION WITH AT LEAST ONE RIB FOR RETAINING A REEL SPRING

Hiroshi Kaneda, Saku, and Kenji Hashizume, Miyota, both of Japan, assignors to TDK Corporation, Tokyo, Japan

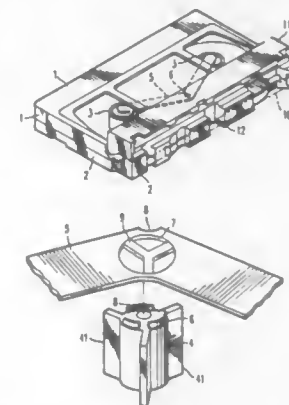
Filed Jun. 4, 1993, Ser. No. 71,271

Claims priority, application Japan, Jun. 4, 1992, 4-044389

Int. Cl.⁶ G11B 15/32

U.S. Cl. 242—345.2

6 Claims



1. A tape cassette which includes a case comprising synthetic resin upper and lower cases which are integrally combined and provided with rotatable tape reels wound with a tape-like medium and a reel spring for restricting a vertical motion of said tape reels, said tape cassette comprising:
 - an attaching cylindrical portion for retaining said reel spring, said attaching cylindrical portion protruding from an inner face of one of said upper or lower cases, an end face of said attaching cylindrical portion comprising a plurality of circumferentially spaced apart ribs which are each insertable into corresponding engaging holes in said reel spring so as to tack said reel spring to said one of said upper or lower cases and permit a simultaneous welding of said plurality of ribs, the upper case and the lower case.

5,379,961

WINDING MACHINE FOR WINDING WEBS OF MATERIAL, PARTICULARLY PAPER OR CARDBOARD WEBS

Ernst-Günther Urban, Neuss, and Reinhard Hehner, Haan, both of Germany, assignors to Jagenberg Aktiengesellschaft, Düsseldorf, Germany

PCT No. PCT/EP92/02155, § 371 Date Apr. 15, 1993, § 102(e)
Date Apr. 15, 1993, PCT Pub. No. WO93/08110, PCT Pub. Date Apr. 29, 1993

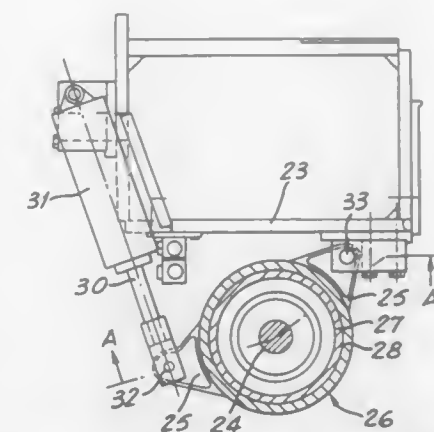
PCT Filed Sep. 18, 1992, Ser. No. 39,310

Claims priority, application Germany, Oct. 19, 1991, 4134648

Int. Cl.⁶ B65H 18/16, 23/26

U.S. Cl. 242—525.7

7 Claims



1. A device for winding up of paper or cardboard material web transported along a web path, the device comprising:
 - slitting means along a web path for subdividing the web into individual longitudinal strips;
 - a driven support roller downstream of the slitting means rotatable about a support axis and receiving the strips;
 - a pair of winding stations spaced radially from the support axis to opposite sides thereof for withdrawing the strips from the support roller, each of the winding stations including:
 - a respective winder bracket for each individual strip and movable relatively to the web,
 - a respective guide head mounted on the winder bracket, and
 - a respective rotary drive operatively connected with the guide head for rotatably driving a respective winding roll winding up a respective strip from the support roll; and
 - pressure means downstream of the slitting means along the web path and juxtaposed with the support roller for controlling a tensile stress at each of the winding stations in response to the build up of the web thereon, the pressure means comprising:
 - a bend-resistant crossrail extending across a work width of the support roller,
 - an elastically bendable continuous axle mounted on the crossrail and extending parallel to the support axis,
 - a plurality of individual roller segments mounted in a row on said bendable axle, each of the roller segments being provided on respective opposite axial ends thereof with a respective pair of radial bearings supporting the roller segment on the bendable axle, and
 - a plurality of piston and cylinder units mounted on the crossrail and operatively connected with the bendable axle between neighboring roller segments and forcing the axle toward the support cylinder to engage individual strips over the work width by the respective roller segments driven by the strips upon contact therewith.

5,379,962

HEATED WEB KNIFE

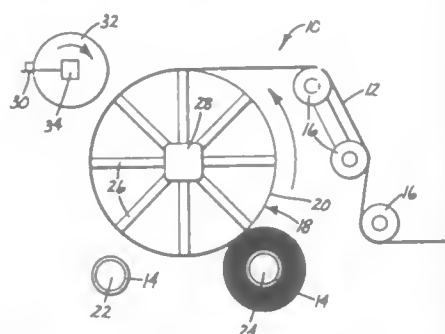
James L. Albrecht, Wahpeton, N. Dak., and Leonard M. Volin, Grant Township, County of Washington, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 21, 1992, Ser. No. 823,665

Int. Cl.⁶ B65H 35/08

U.S. Cl. 242—527.7

13 Claims



1. A cutter for cutting a web of material having a backing and an adhesive layer disposed on the backing, the cutter comprising:

- (a) means for invasively cutting the web, and
- (b) means for heating said invasive cutting means to a temperature between
 - (i) the temperature at which the adhesive loses tack, and
 - (ii) the temperature at which the adhesive carbonizes, to prevent adhesive from sticking to said invasive cutting means;

whereby to cut the web, said invasive cutting means penetrates, in order, (i) the adhesive layer and (ii) the backing.

5,379,963

PROCESS AND APPARATUS FOR CHANGING, TRANSFERRING AND TEMPORARILY STORING PRINTED PRODUCT ROLLS

Hans-Ulrich Stauber, Grüt, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

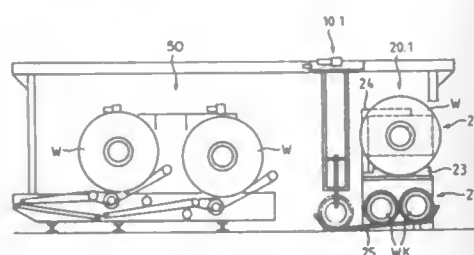
Filed Jul. 31, 1992, Ser. No. 922,504

Claims priority, application Switzerland, Aug. 13, 1991, 02400/91-7

Int. Cl.⁶ B65H 19/12, 19/30

U.S. Cl. 242—533.8

23 Claims



1. A process for exchanging empty roll cores and printed product rolls on a winding-up station, each printed product roll comprising a roll core with printed products wound thereon, and for storing printed product rolls and empty roll cores in storage locations, the method comprising the steps of, with a first manipulation and transportation means, depositing empty roll cores on a winding-up station, removing printed product rolls from the winding-up station, transporting the printed product rolls to a stationary transfer location, the transfer location having a winding station side for exchange of printed product rolls and empty roll cores with a winding station and a storage

side for exchange of printed product rolls and empty roll cores with a storage location and having a first position for printed product rolls and a second position for empty roll cores, and depositing the printed product rolls at the winding station side of the first position of the transfer location, and

removing empty roll cores from the winding station side of the second position of the transfer location for transportation to the winding-up station;

providing a second manipulation and transportation means having a manipulation tool movable reciprocatingly along a path, the second manipulation and transportation means comprising a fork lift truck having two forks movable toward and away from each other and being movable together along the path, the forks being moved toward each other to clamp a printed product roll or empty roll core between the forks;

with the second manipulation and transportation means, depositing empty roll cores at the transfer location including separating the forks to release the roll cores, moving the forks along the path and then toward each other to clamp printed product rolls, transporting the rolls to the storage location, separating the forks to release the rolls at the storage location, and moving the forks together to clamp empty roll cores at the storage location, removing printed product rolls from the storage side of the transfer location, transporting and depositing printed product rolls at a storage location, and taking empty roll cores from the storage location for delivery to the transfer location,

said first and second positions of the transfer location being disposed vertically relative to each other so that the manipulation tool of the second manipulation and transportation means need only move along said path from the first position to the second position to deposit empty rolls and remove printed product rolls at the transfer location.

5,379,964

COMPOSITE EXPANDABLE SHAFT

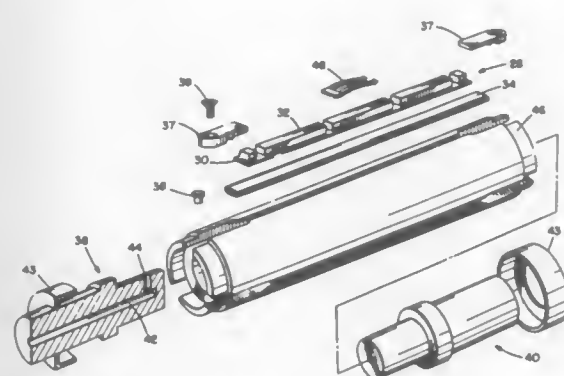
Alessio G. Pretto, Pawling, N.Y.; Louis J. Keester, and Richard S. Hansen, both of Lincoln, Nebr., assignors to Addax, Inc., Lincoln, Nebr. and Goldenrod, Inc., Prospect, Conn., a part interest

Filed Aug. 10, 1993, Ser. No. 103,900

Int. Cl.⁶ B65H 75/24

U.S. Cl. 242—571.2

9 Claims



1. An expandable shaft comprising a cylindrical core; a plurality of elongated rails located on the outer surface of said core and spaced to provide slots extending parallel with the core axis; said rails being formed of a composite fibrous material in which the fibers extend substantially parallel with the axis of said core;

elongated pressure protrusion means located within each slot and adapted to be moved radially outward; elongated inflatable means located in each slot radially inward from the elongated pressure protrusion means to move said elongated pressure means radially outward when the elongated inflatable means inflated.

5,379,965

PLASTIC REEL FOR MATERIAL WINDING

Herbert Ialer, Staufen, Switzerland, and Karl-Gunter Schmidt, Coburg, Germany, assignors to Swil-Technik AG, Niedererlinsbach, Switzerland

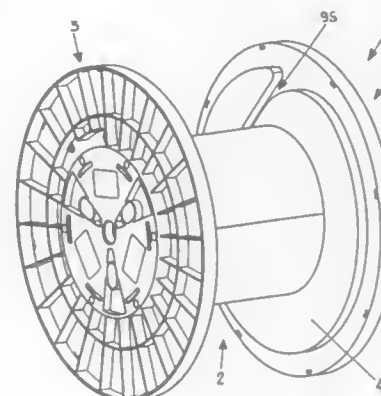
Filed Feb. 4, 1993, Ser. No. 13,946

Claims priority, application Switzerland, Feb. 5, 1992, 336/92

Int. Cl.⁶ B65H 75/22, 75/28

U.S. Cl. 242—586.6

9 Claims



1. A reel made of plastic for winding material such as cables, comprising:

- a hollow cylindrical core (2), formed of at least two core parts (6), the outside surfaces having circular cylindrical shapes,
- a flange (3) disposed on each of the two face ends of the core (2), each flange directly engaging the respective ends of the core (2) in the radial and circumferential directions, each flange being formed with a groove (30) open to one face end of core (2), said groove (30) having a substantially circular cylindrical outer flank (31) and an unround inner flank (32) adapted to the inside contour of said core (2) and wherein at least a first face side of the core (2) is inserted into the groove (30), and
- at least two removable connection elements (74) for each core part (6) on both sides thereof directly connecting the flange (3) with the core (2) in the axial direction.

5,379,966

WEAPON GUIDANCE SYSTEM (AER-716B)

Robert A. Simeone, and Marvin C. Bean, both of Arlington, Tex., assignors to Loral Vought Systems Corporation, Grand Prairie, Tex.

Filed Feb. 3, 1986, Ser. No. 825,295

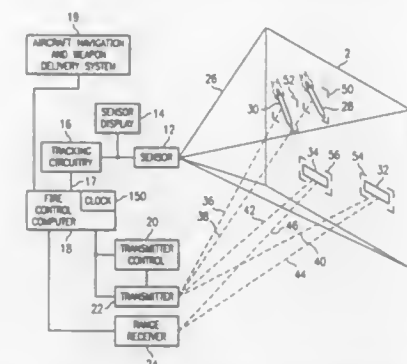
Int. Cl.⁶ F42B 15/00

U.S. Cl. 244—3.11

17 Claims

1. A missile guidance system comprising: sensor means for detecting and tracking at least one target and for detecting and determining the position of at least one missile, the thus determined position for each missile being relative to the target at which the missile was fired; fire control processing means for computing trajectories for each missile to its target, and for determining any variation of an actual position of the respective missile from a computed trajectory position for that missile; transmitter means for providing guidance information to each of the missiles, the guidance information being in the form of single pulses each occurring at calculated times during predetermined guidance update intervals; and flight control processing means aboard each missile, respon-

sive to said guidance information for the respective missile for determining the time between the beginning of a predetermined guidance update interval and the time at which the pulse representing guidance information for the



respective missile is received by that missile and for computing an updated trajectory for the respective missile in response to said guidance information for the respective missile.

5,379,967

DAY/NIGHT OPTICAL GUIDING APPARATUS

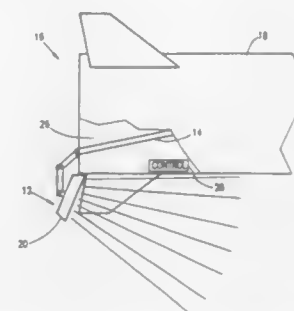
Zohar Shachar, Haifa, Israel, assignor to State of Israel Ministry of Defense Armament Development Authority Rafael, Haifa, Israel

Filed Apr. 30, 1993, Ser. No. 55,707

Int. Cl.⁶ F41G 7/00

U.S. Cl. 244—3.16

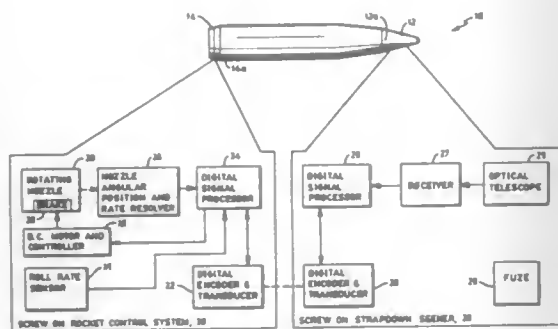
15 Claims



1. A day/night guided weapon comprising: a chassis; a guided chassis driver operative to provide guided driving of the chassis; an intensified CCD camera mounted on the chassis for providing optical target acquisition; a retractable platform mounted on the chassis for mounting auxiliary guiding or target acquisition equipment; and a light source mounted on the chassis for providing illumination of at least a selected area of the target, wherein the light source has an intensity sufficient to illuminate the selected area to the extent required for the camera to provide an image of the selected area, and wherein the light source is mounted on the retractable platform.

5,379,968
MODULAR AERODYNAMIC GYRODYNAMIC
INTELLIGENT CONTROLLED PROJECTILE AND
METHOD OF OPERATING SAME
 Vincent A. Grosso, Hopkinton, Mass., assignor to Raytheon
 Company, Lexington, Mass.
 Filed Dec. 29, 1993, Ser. No. 175,090
 Int. Cl.⁶ F42B 15/01
 U.S. Cl. 244—3.21

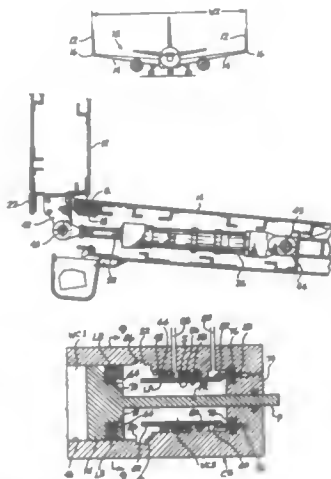
3 Claims



1. A spinning projectile comprising:
 - (a) a body having a fore section and an aft section;
 - (b) a seeker, connected to the fore section, for providing guidance signals;
 - (c) a rocket control system, connected to the aft section, for controlling the course of the spinning projectile; and
 - (d) means for acoustically coupling through the body the guidance signals from the seeker to the rocket control system.

5,379,969
HYDRAULIC ACTUATOR WITH MECHANICAL LOCK
AND INSTALLATION
 Alan D. Marx, Seattle; Michael E. Renzelmann, Woodinville,
 and Mark H. Smith, Vashon Island, all of Wash., assignors to
 The Boeing Company, Seattle, Wash.
 Continuation-in-part of Ser. No. 828,308, Jan. 30, 1992, Pat. No.
 5,201,479. This application Apr. 12, 1993, Ser. No. 45,901
 Int. Cl.⁶ B64C 3/56
 U.S. Cl. 244—49

66 Claims

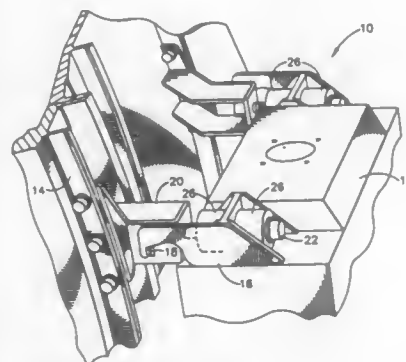


1. A hydraulic actuator, comprising:
 - (a) an elongated cylinder body including a sidewall and end walls together defining an interior space;
 - (b) a piston including a piston head within said interior space, said piston head dividing the interior space into two working chambers, one on each side of the piston head, each

working chamber adapted to communicate with a pressure source for moving the piston axially within the cylinder body; and
 a releasable lock for locking the piston in position relative to the cylinder body, said releasable lock comprising:
 at least one radially extendible/retractable lock bolt carried by said piston head, said lock bolt being normally freed for retraction;
 a complementary lock-bolt cavity within the cylinder body, and
 a locking piston including a bolt block,
 wherein said actuator includes a lock position in which it is desired to lock the piston to the cylinder body, and wherein when the actuator is in such lock position, the lock bolt is extendible radially outwardly into the lock-bolt cavity, and the locking piston is movable axially of the actuator to place the bolt block radially inwardly of the lock bolt, to in such position block the lock bolt against a radial inward movement out from the lock-bolt cavity, the locking piston being axially movable by means of a pressure source separately controllable from the pressure source in communication with the two working chambers.

5,379,970
MOUNTING BRACKET ARRANGEMENT
 Steven E. Linthicum, Fairfield, and Wilson T. Guy, Cincinnati,
 both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
 Filed Apr. 2, 1993, Ser. No. 42,183
 Int. Cl.⁶ B64D 27/00
 U.S. Cl. 244—54

5 Claims



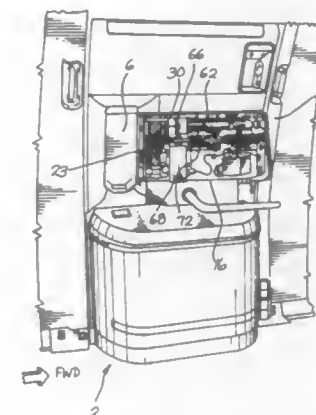
1. A mounting means comprising:
 - (a) a hook attached to a component and adapted to suspend the component in a first position;
 - (b) a bracket attached to a frame, the bracket including:
 - a nut plate;
 - a protrusion adapted to receive the hook and hold the component in the first position such that the nut plate is aligned with a mounting bolt on said component; and
 - the mounting bolt being adapted to draw the component to a second position as the mounting bolt is tightened.

5,379,971
EMERGENCY POWER SYSTEM FOR DOOR
 Sun G. Kim, Redmond, Wash.; Donald K. Franklin, Tulsa,
 Okla., and Michael P. Conner, Danville, Vt., assignors to The
 Boeing Company, Seattle, Wash.
 Filed Dec. 22, 1993, Ser. No. 172,606
 Int. Cl.⁶ B64C 1/14
 U.S. Cl. 244—129.5

14 Claims

1. A system for providing powered movement of a door, comprising:
 - (a) first and second sprockets adapted to be fixed to a door and an adjacent door frame, respectively;

a chain extending around said sprockets and having opposite ends; and
 a fluid pressure operated linear motor mounted between said opposite ends of said chain; said motor comprising a cylinder defining a motor axis and having opposite end walls, a piston positioned in said cylinder to slide axially therein and having an axial opening therethrough, and a rod extending axially through said cylinder and said opening in said piston and having an abutment confronting a first face of said piston and opposite ends connected to said opposite ends of said chain, respectively;



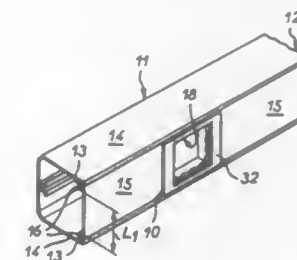
said motor being operable to move said piston against said abutment and from a position closely adjacent to one of said end walls to a position closely adjacent to the other of said end walls, when fluid pressure is introduced into said cylinder opposite said first face, to move said rod and said chain and thereby move the door from a first position to a second position; and said motor allowing said rod to slide through said opening and the door to be moved from said first position to said second position in response to a manual force exerted on the door in the absence of fluid pressure acting on said piston.

5,379,972
EQUIPMENT SUPPORT ADAPTED TO BE ATTACHED
TO THE BODY OF TRUNKING WITH INWARDLY
FACING LIPS

Bertrand Decore, La Chapelle St. Aubin, and Francois Perrignon de Troyes, Le Mans, both of France, assignors to LE-GRAND, Limoges, France
 Filed Dec. 1, 1993, Ser. No. 159,544
 Claims priority, application France, Dec. 1, 1992, 92 14441
 Int. Cl.⁶ G12B 9/00

U.S. Cl. 248—27.1

14 Claims



1. Equipment support adapted to be attached to the body of trunking having two inwardly facing lips, said support having groove means adapted to be engaged on said lips on each edge of each of two mutually orthogonal pairs of opposite edges, wherein at least one elastically deformable blade member is provided in the groove means on at least one of two cheeks

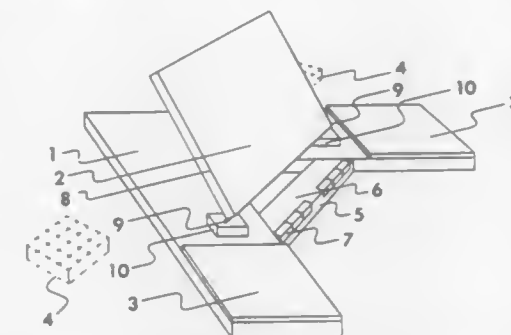
defining said groove means and projecting towards the other of the two cheeks.

5,379,973
DESKTOP CONSOLE WITH ARMRESTS FOR SPLIT
KEYPAD USAGE, AND A TILTABLE WORK CENTER IN
BETWEEN

Thomas F. Rader, 38 Grant Ave., Manitou Springs, Colo. 80829
 Filed Mar. 24, 1993, Ser. No. 36,526
 Int. Cl.⁶ B43L 15/00

U.S. Cl. 248—118.1

14 Claims



1. A desktop console accessory unit for workstation operation atop desks, comprising:
 - (a) a "V" shaped platform base having a left wing and a right wing with top surface extremities being armrests;
 - (b) a rectangular shaped work surface board having top, bottom, front, back, and side surfaces;
 - (c) said work surface board tiltably attached by a front bottom edge of said work surface board to said top surface of said "V" shaped platform base;
 - (d) padding on said top surface extremities of said left and right wings of said "V" shaped platform base providing said armrests being padded;
 - (e) said padding on said armrests mounted on a base plate having a bottom surface of rigid plate material and a top surface of said padding, said base plates slidably attached to said top surface extremities of said left and right wings of said "V" shaped platform base to permit forward and backward movement of said base plates in a direction parallel to said side surfaces of the tiltably attached rectangular said work surface board;
 - (f) adjustment means for positioning and holding the tiltably attached said work surface board in a desired position:
 - spacer blocks for adjustably mounting the height of the tiltably attached said work surface board to said "V" shaped platform base;
 - a compartment having front, back, top and bottom surfaces, said compartment positioned between said right and left wings of said "V" shaped platform base; and
 - a plurality of ball bearing cups partially recessed in said top surface extremities to provide a bearing surface, and a respective slit in each of said top surface extremities, said slits positioned in a direction parallel to said side surfaces of the tiltably attached said work surface board to receive mounting of said base plates.

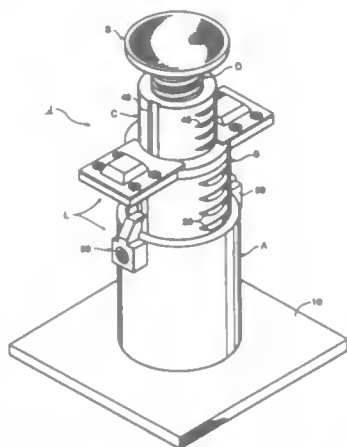
5,379,974
ALIGNMENT AND LOCKING MECHANISM FOR
EXTENDIBLE JACK STAND
 Clyde E. Slay, Santa Ana, and Harry H. Arzonman, Corona Del Mar, both of Calif., assignors to Safe-T-Jack, Inc., Huntington Beach, Calif.
 Filed Apr. 23, 1992, Ser. No. 872,432
 Int. Cl.⁶ F16M 11/00

U.S. Cl. 248—161

2 Claims

1. An extendible stand comprising:
 - (a) first, second, and third cylindrical frames normally arranged

in vertically telescoping relationship, said first frame having an outer wall;
 releasable locking means including a locking finger fixedly secured to an outer surface of the upper end of said first frame and extending vertically upwardly therefrom, a latch guide secured on the upper end of said second frame and extending radially outwardly therefrom, and a latch plate supported on said latch guide and extending radially inwardly over the upper end of said second frame, said latch plate being slidable in said latch guide;
 a circumferential groove on the outer surface of said third frame near its lower end;
 spring means coacting between said locking finger and said latch plate to urge said latch plate inwardly over the upper end of said second frame and against the outer surface of said third frame for engaging said circumferential groove when said third frame is in its position of maximum extension relative to said second frame, so as to lock said third frame in said position;



said locking finger and said latch plate cooperatively providing camming means responsive to longitudinal movement of said second frame relative to said third frame for either locking or unlocking said third frame;
 said third frame also having a longitudinal groove therein, said latch guide having a protrusion which extends into said longitudinal groove of said third frame for maintaining the rotational alignment of said third frame relative to said second frame;
 said second frame also having a longitudinal groove therein; said locking finger having a widened base with an opening therein, and said wall of said first frame having an opening aligned with said opening in said locking finger;
 removable key means occupying said opening in said locking finger and extending into said longitudinal groove of said second frame for maintaining the rotational alignment of said second frame relative to said first frame; and
 removable stop means at the bottom of said longitudinal groove of said third frame for permitting said third frame to be disassembled from said latch guide protrusion and hence from said second frame.

5,379,975

INTERMATING TABLE LEGS

Alan J. Berkowitz, Elliott W. Baum, and Lucian N. Chires, all of St. Louis, Mo., assignors to Berco Industries, St. Louis, Mo.

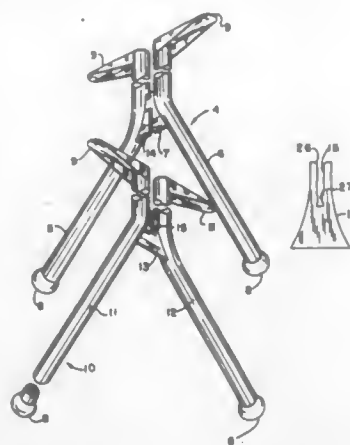
Filed Apr. 15, 1993, Ser. No. 46,300
 Int. Cl.⁶ F16M 11/20

U.S. Cl. 248—188.8

6 Claims

1. A table, including a table surface, and having a pair of intermating table legs for forming a pedestal for said table, said legs comprising a pair of table legs, each table leg having a foot portion, and a mounting plate provided at the upper end of each table leg, said mounting plate extending substantially

perpendicularly from said table leg, a connector means provided intermediate the pair of table legs, said connector means having means provided therein for securing with the connector of an additional pair of like table legs, said means for connecting the first of said table legs comprising a vertical slot formed within said connector means, and the additional pair of table legs having a connector means provided therebetween, and also incorporating a vertical slot therein, for intermating with the connector means of the first pair of table legs, so as to orient the two pair of table legs at a perpendicularity with respect to each other when the table is assembled, the first and additional pairs of table legs vertically sliding together with respect to each other for providing for interconnecting of their connector means together, to form the pedestal table legs for



support of the table surface thereon, each vertical slot of a pair of legs having a reduced portion provided therein, so as to provide for snugness when the table legs are assembled together and to provide tightness in their interconnection when one pair of table legs are vertically slid into connection with the additional pair of table legs in forming said table pedestal, said mounting plate provided at the upper end of each table leg extending perpendicularly outwardly therefrom, each mounting plate having a flattened surface upwardly disposed, said flattened surface arranged for accommodating the support of the table surface thereon, for providing the fabricated table, each mounting plate having a tapering flange extending downwardly therefrom, providing structural support for the mounting plate in its securement of the table surface thereon.

5,379,976

WALL MOUNTING SYSTEM

Nicola DeGirolamo, 28 Winslow Rd., Martinsville, N.J. 08836, assignor to Nicola DeGirolamo, Martinsville, N.J.

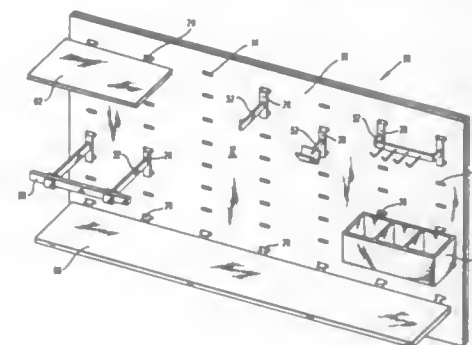
Filed Aug. 13, 1993, Ser. No. 106,426
 Int. Cl.⁶ A47K 1/00

U.S. Cl. 248—221.2

16 Claims

1. A wall mounting system comprising:
 a bracket means for supporting at least one article thereon, said bracket means including a central member extending in a vertical plane, said central member having an inner side and an outer side, a plurality of mounting members attached to said central member at spaced locations thereon and having at least a horizontally extending portion thereof extending inwardly from said inner side thereof in a horizontal plane generally transverse to said central member, each of said mounting members having a generally planar surface defining a predetermined width thereacross, and an article support member attached to said central member and extending outwardly from said outer side thereof; and
 wall fixture means for supporting said bracket means thereon, said wall fixture means comprising an internal surface and an external surface and a plurality of elongate apertures extending therebetween for

receiving corresponding ones of said plurality of mounting members, said plurality of elongate apertures having a width substantially corresponding to said predetermined



width of said planar surfaces of said corresponding mounting members so that said bracket means is firmly mounted on said wall fixture means when arranged in assembled position.

5,379,977

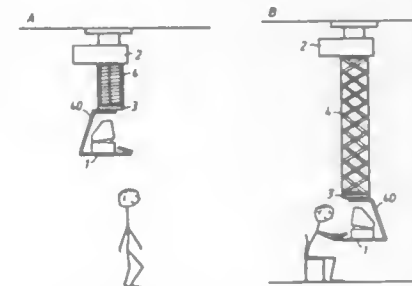
ARRANGEMENT FOR RAISING AND LOWERING A VERTICALLY SUSPENDED UNIT

Per G. Rönn, Bålsta, and Lelf Svedberg, Kungsängen, both of Sweden, assignors to Per Gunnar Rönn AB, Kungsängen, Sweden

Filed Jan. 8, 1993, Ser. No. 1,861
 Claims priority, application Sweden, Jan. 10, 1992, 9200067-8
 Int. Cl.⁶ E04G 3/00

U.S. Cl. 248—277

5 Claims



1. An arrangement for vertically raising and lowering a unit suspended from a support, the arrangement comprising:
 a retractable member having at least two ends and at least three interconnected lazy tongs linkages having each interconnected rodlike elements, said lazy tongs linkages forming angles at said interconnections, said elements having apertures, two outer apertures being spaced a predetermined distance from each other and at least one intermediate aperture being symmetrically disposed between said outer apertures, and pivot means in said outer and intermediate apertures for connecting said lazy tongs linkages to each other at said pivot means,
 an attachment connected to one of said retractable member ends and to the support,
 another attachment connected to the other end of said retractable member and to the unit,
 connectors pivotally secured at said angles formed between

each two interconnected lazy tongs linkages, thereby interconnecting at least three lazy tongs linkages to form said retractable member,

means for retracting and extending the unit, said retraction and extension means being provided at each of said retractable member ends and in both of said respective attachments, blocks having bores formed therein, and shafts received in said respective bore members, whereby said shafts extend towards the center of said respective attachments.

5,379,978

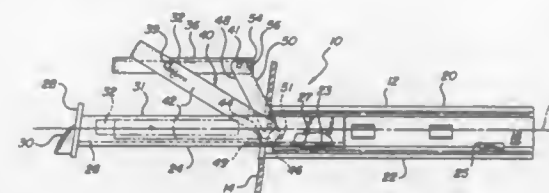
VEHICULAR CONVERTIBLE CUPHOLDER

Dennis Patel, Markham, and Felix Chang, Willowdale, both of Canada, assignors to Manchester Plastics, Troy, Mich.

Filed Feb. 4, 1994, Ser. No. 191,476
 Int. Cl.⁶ A47F 5/00

U.S. Cl. 248—311.2

5 Claims



1. A convertible container holding assembly (10) comprising:

- a housing (12) securable to a structure (14);
- a base plate (24) telescoping between a retracted position inside said housing (12) and an extended position outside said housing (12);
- container stabilizing means (32) extendable between a collapsed position adjacent said base plate (24) when in said retracted position and a container stabilizing position spaced above said base plate (24) as said base plate (24) telescopes out of said housing (12) into said extended position for stabilizing a container supported on said base plate (24) when said base plate (24) is in said extended position;
- a primary link (42) extending between said base plate (24) and said container stabilizing means (32);
- a secondary link (50) extending between said base plate (24) and said container stabilizing means (32) such that said base plate (24) and said container stabilizing means (32) are parallel in said extended position; and
- a torsion spring (52) forcing said secondary link (50) away from said base plate (24) to extend said container stabilizing means (32) out and away from said base plate (24).

5,379,979

DEVICE FOR SUPPORTING RING BINDERS

Joern Due, Rugmarken 63, DK-9670 Løgstør, Denmark
 PCT No. PCT/DK92/00145, § 371 Date Oct. 25, 1993, § 102(e)

Date Oct. 25, 1993, PCT Pub. No. WO92/19459, PCT Pub. Date Nov. 12, 1992

PCT Filed May 5, 1992, Ser. No. 133,173

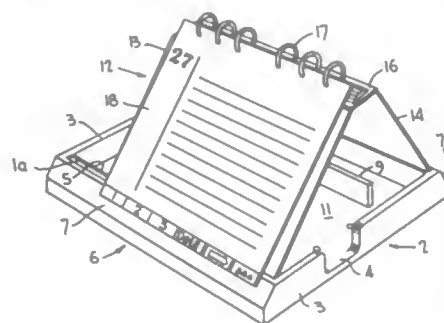
Int. Cl.⁶ A47B 19/00

U.S. Cl. 248—441.1

10 Claims

1. Device for supporting ring binders in a position where the spine of the ring binder faces upwards with at least one of the ring binder covers disposed at an angle of between 30° and 90° relative to its horizontal orientation, wherein the device comprises a bottom plate which is provided with two grooves that are made to engage with the edge areas farthest away from the ring spine of a ring binder, the width of each of said grooves being defined by opposed side walls spaced apart a distance slightly greater than the thickness of the cover, the length of

each of said grooves being greater than the cover, and the depth of each of said grooves being so designed that the edges



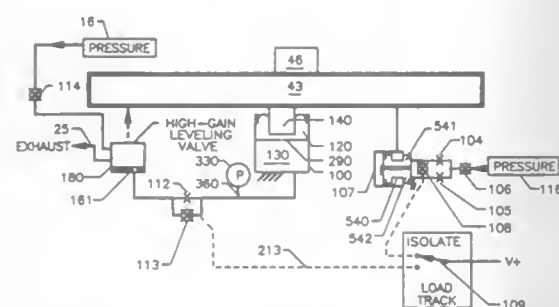
of the sheets of the ring binder, when the ring binder is placed in the device, do not contact the bottom plate.

5,379,980 STABILIZATION SYSTEMS FOR VIBRATION ISOLATORS

Worthington B. Houghton, Jr., Newport Beach; Richard P. Eddy, Gardena, and Jay R. McCoy, San Juan Capistrano, all of Calif., assignors to Newport Corporation, Irvine, Calif.
Continuation-in-part of Ser. No. 812,731, Dec. 23, 1991, abandoned. This application Nov. 27, 1992, Ser. No. 982,504
Int. Cl.⁶ F16M 13/00

U.S. Cl. 248—550

22 Claims



1. A method of providing intermittent stabilization of a load table supported by pneumatic vibration isolators, comprising in combination:

- supplying gas to said vibration isolators for pneumatic vibration isolation of a load;
- determining a load shift condition;
- increasing passage of gas to said pneumatic vibration isolators and preventing oscillation of said pneumatic vibration isolators by imposing damping on said load table in response to said load shift condition; and
- discontinuing said damping and reducing said passage of gas to said pneumatic vibration isolators for pneumatic vibration isolation of a load after cessation of said load shift condition.

5,379,981
HOLDING DEVICE FOR A STORAGE TANK
Hermann Leiderer, Worth/Donau, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Aug. 17, 1993, Ser. No. 106,950
Claims priority, application Germany, Aug. 17, 1992, 4227189
Int. Cl.⁶ F16M 13/00

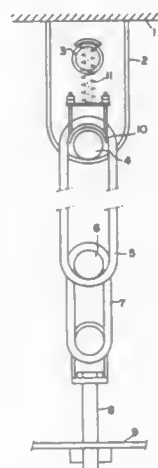
U.S. Cl. 248—550

18 Claims

1. In a device for holding a tank by tensile stress inside a movable object, wherein said tank is used to store liquid or gaseous fluids exhibiting temperature differences of at least 10° C. with respect to the temperature outside said object, the

improvement wherein the holding device contains a molded part made of a shape memory alloy, which under high mechanical stress induces an increase of tensile stress, and under smaller mechanical stress induces a reduction of tensile stress, and

wherein said holding device comprises two straps, a first pipe, a second pipe, at least one other pipe, a first eyelet, a second eyelet, a fastening means and a cap; said two straps are fastened to said tank at a distance from



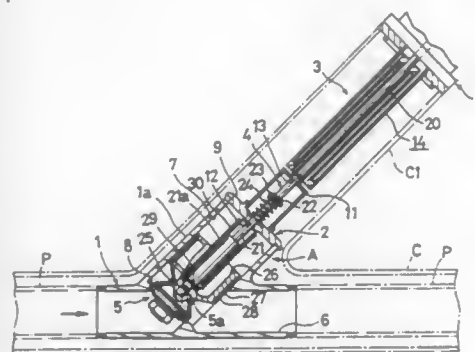
one another, said straps receiving said first pipe near said tank and said second pipe distant from said tank; said second pipe engaging said first eyelet; said first eyelet being connected to said movable object via said at least one other pipe, said second eyelet, and said fastening means, wherein said fastening means is said molded part made of a shape memory alloy; and between said first eyelet and said second pipe said cap is positioned, said cap being connected by an elastic element to said first pipe.

5,379,982 CONTROL VALVE

Mutsunori Koyomogi; Yukio Minami; Masahiko Nakazawa; Kazuhiro Yoshikawa, and Tetsuya Kojima, all of Osaka, Japan, assignors to Fujikin Incorporated, Osaka, Japan
Filed Mar. 14, 1994, Ser. No. 209,903
Claims priority, application Japan, May 7, 1993, 5-107008
Int. Cl.⁶ F16K 49/00

U.S. Cl. 251—77

7 Claims



1. A control valve comprising:
a valve body having a fluid channel and a valve seat;
a valve operating part;
a valve stem supporting member having its upper end fixed to the valve operating part and its lower end fixed to the valve body;

a valve stem penetrating the valve stem supporting member and having its upper end part connected to the valve operating part and its lower end part entering the valve body, the valve stem being moved upward or downward by the valve operating part; and
a valve element attached to the lower end of the valve stem; the valve element being moved upward or downward by moving the valve stem upward or downward, the valve element being brought into contact with and seated in the valve seat to close the fluid channel as the element is moved downward, the valve element being detached from the valve seat to open the fluid channel as the element is moved upward,

characterized in that the valve stem comprises an upper bar-shaped member connected to the valve operating member and a lower bar-shaped member to which the valve element is attached, the upper and lower bar-shaped members being movable upward from a lower end position where the valve element comes to be in a fully closed state, the lower bar-shaped member being stopped from moving upward at an upper end position where the valve element comes to be in a fully open state, an upward moving distance of the upper bar-shaped member from a lower end position being made longer than a moving distance of the lower bar-shaped member from the lower end position to the upper end position.

5,379,983
SHUT-OFF VALVES FOR PIPELINES
Friedrich Geiser, Nüziders, Austria, assignor to VAT Holding AG, Haag, Switzerland
Filed Dec. 21, 1993, Ser. No. 171,598
Int. Cl.⁶ F16K 3/00

U.S. Cl. 251—167

6 Claims



1. A shut-off slide valve for use in pipelines or for closing a container aperture, said shut-off slide valve comprising a housing, a shut-off member displaceable in said housing; and an actuation member for displacing said shut-off member in said housing,

wherein said shut-off member comprises a sealing plate and a counter element spaced from said sealing plate; wherein said actuation member has a portion extending between said sealing plate and said counter element; wherein at least one of said sealing plate and said counter element has a collar substantially bridging the space between said sealing plate and said counter element, so that said shut-off member has a shape similar to that of a lid-covered can;

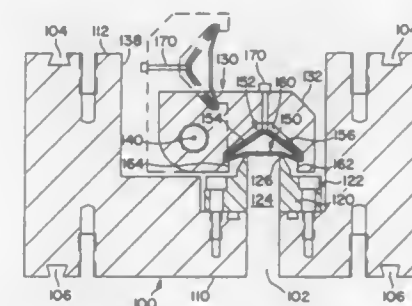
wherein said shut-off slide valve further comprises spring means for connecting said sealing plate and said counter element with each other and for pulling said sealing plate and said counter element toward each other, and spread-

apart means arranged between said sealing plate and said counter element for spreading said sealing plate and said counter element away from each other; and
wherein said spring means comprises a leaf spring, said leaf spring having a major portion thereof extending substantially in a displacement direction of said actuation member, and has an end portion protruding beyond an end of said shut-off member remote from said actuation member, said end portion having an end jutting out relative to said end of said shut-off member.

5,379,984
GATE VALVE FOR VACUUM PROCESSING SYSTEM
George L. Coad, Lafayette, and George Matthias, Fremont, both of Calif., assignors to Intevac, Inc., Santa Clara, Calif.
Filed Jan. 11, 1994, Ser. No. 180,205
Int. Cl.⁶ F16K 1/18

U.S. Cl. 251—298

18 Claims



1. A vacuum gate valve comprising:
a valve body having an opening therethrough and a valve seat surrounding the opening;
a swing gate assembly rotatable about a pivot axis between an open position wherein said opening is unobstructed and a closed position wherein said opening is sealed, said swing gate assembly comprising a swing gate body and a seal gasket, said seal gasket comprising a resilient sheet mounted to said swing gate body so as to sealingly engage said valve seat in the closed position, said seal gasket being pressed into engagement with said valve seat in the closed position by a differential pressure between opposite sides of said valve body, said swing gate assembly including a spreader for applying tension to said seal gasket and flattening said seal gasket at least in a region that engages said valve seat; and
means for rotating said swing gate assembly about said pivot axis between said open position and said closed position.

5,379,985
VALVE
Petrus B. A. Walj, Amsteddelt, and Petrus N. R. J. Van De Wiel, 2, NL-1674 NH, Opperdoes, both of Netherlands, assignors to V. O. F. Walj and Van De Wiel, ZG Opperdoes, Netherlands
Filed Aug. 18, 1993, Ser. No. 107,764
Claims priority, application Netherlands, Mar. 5, 1991, 9100393

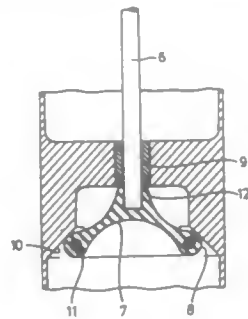
Int. Cl.⁶ F16K 1/00

U.S. Cl. 251—358

8 Claims

1. A valve, comprising:
a valve stem;
a valve seat; and
a valve disc being displaceable between an open and closed position and having a unattached peripheral edge comprised of a relatively rigid material arranged to seal in conjunction with the valve seat, the valve disc comprising a part of deformable material positioned between the valve stem and the peripheral edge such that the peripheral edge is resiliently displaceable relative to the valve

stem, wherein the part of deformable material has a resiliency such that the valve stem can be displaced between at least two retracted closed positions while the peripheral edge remains substantially stationary including a first less retracted position wherein a first volume is defined by the



peripheral edge, the part of deformable material, and the valve stem and a second more retracted position wherein a second volume is defined by the peripheral edge, the part of deformable material and the valve stem, wherein the second volume is substantially smaller than the first volume.

5,379,986

STAKE EXTRACTOR DEVICE WITH A DOUBLE-HANDED CROSS HANDLE

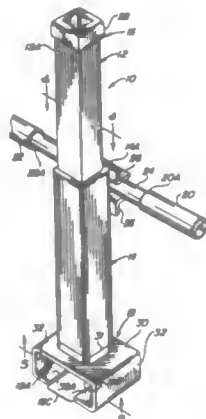
Alain M. Perez, and Ignacio Perez, both of 2835 SW, 6th St., Miami, Fla. 33135

Filed Aug. 9, 1993, Ser. No. 103,868

Int. Cl.⁶ B23P 19/04; B66F 15/00

U.S. Cl. 254—19

14 Claims



1. A stake extractor device, comprising:

- (a) an elongated inner tube having upper and lower ends;
- (b) an elongated outer tube fitted over said inner tube and slidable therealong between said upper and lower ends of said inner tube;
- (c) stop means for limiting upward movement of said outer tube relative to said lower tube;
- (d) means for coupling said lower end of said inner tube to an object to be pulled, said coupling means including lower coupler element having a C-shaped configuration formed by a top portion and a pair of opposite side portions defining an elongated channel extending between a pair of opposite open ends of said lower coupler element and a pair of edge portions on said opposite side portions extending toward one another and defining an elongated slot communicating with said elongated channel and extending between said opposite open ends of said lower coupler element, said elongated slot being narrower in width than said elongated channel so as to adapt said lower coupler element to receive an enlarged head portion of an object

to be pulled through said elongated channel and to receive a shaft portion of the object being smaller in cross-sectional size than the enlarged head portion through said slot, said coupling means also including a closure element secured to said coupler element so as to extend across one of said opposite open ends and block said one end of said elongated slot and channel and prevent removal of the enlarged head portion and shaft portion therethrough; and (e) handle means secured to said outer tube and disposed on opposite lateral sides thereof, said handle means being adapted for gripping by both hands of a user to move said outer tube relative to said inner tube and against said stop means in order to pull an object coupled by said coupling means to said lower end of said inner tube.

5,379,987

ADAPTER FOR A JACKING DEVICE

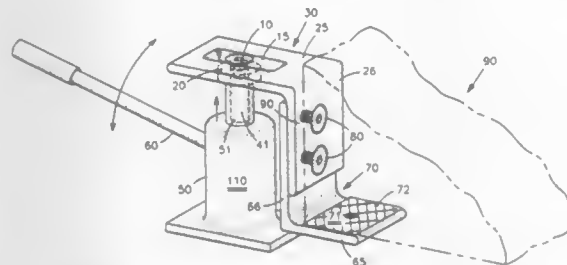
Joseph W. Cleary, 43150 Tyler St., Aguanga, Calif. 92536

Filed Dec. 9, 1993, Ser. No. 165,080

Int. Cl.⁶ B66F 11/00

U.S. Cl. 254—134

8 Claims



1. An adapter for a jacking device of the type having a first, generally horizontal, lifting surface for lifting a load vertically, the adapter comprising a first, and a second L-shaped portions, each providing a horizontal plate and a vertical plate, the horizontal plate of the first L-shaped portion providing means for engagement with the first lifting surface of the jacking device, the horizontal plate of the second L-shaped portion providing a second lifting surface, the two vertical plates having means for selective mutual engagement such that the second lifting surface is adjustably positionable at a height substantially below the first lifting surface, wherein the means for engagement of the first L-shaped portion includes a rod extending downwardly from the horizontal plate for engagement with a vertical hole in the first lifting surface such that the adapter is angularly positionable on the jacking device, the rod free to rotate within said vertical hole whereby the second lifting surface is caused to move vertically for lifting the load in response to operation of the jacking device.

5,379,988

PLANT FOR EXTRACTING SUBSTANCES IN GAS OR MIST FORM FROM A FLOW OF GAS

Göran Almlof, Malung, and Folke Lilliehöök, Skanör, both of Sweden, assignors to Bal AB, Malung, Sweden

Filed Jul. 23, 1993, Ser. No. 94,010

Claims priority, application Sweden, Feb. 1, 1991, 9100324

Int. Cl.⁶ C22B 7/00

U.S. Cl. 266—206

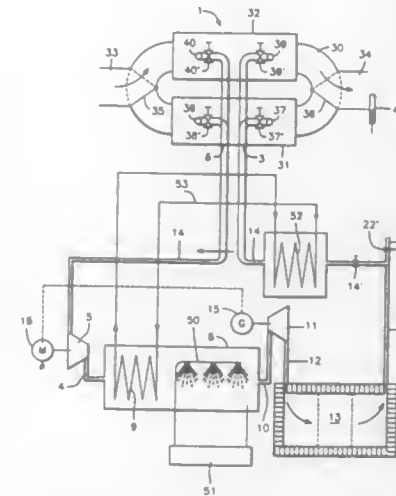
6 Claims

1. A plant for separating substances in a gas or mist form from a gas flow, especially such substances as mercury and other environmentally harmful heavy metals released when incinerating batteries or consumed solvents or other volatile substances released from chemical and metallurgical processes, said plant comprising

in a series connection

a chamber for initially collecting the gas flow containing the substances to be separated;

a heat exchanger which is connected to an outlet of said chamber and which functions to lower the temperature of the gas flow; a compressor which pressurizes the gas flow; and an expansion device through which the gas flow passes while rapidly lowering the pressure and temperature of said gas so that at least a part of the substances to be



separated condense and are separated in solid or fluid state in a separation chamber which is connected to the outlet of said expansion device and which is provided with an outlet for the remaining gas flow, the outlet of the separation chamber being connected to a throttleable inlet of the collecting chamber such as to form a gas-circulation circuit, and being also connected to a throttleable residual gas outlet to atmosphere.

5,379,989

TUNDISH WITH IMPROVED FLOW CONTROL

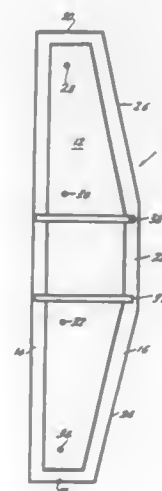
Lawrence J. Heaslip, and James D. Dorricott, both of Ontario, Canada, assignors to Premier Refractories and Chemicals Inc., King of Prussia, Pa.

Division of Ser. No. 934,296, Aug. 24, 1992, Pat. No. 5,246,209, which is a continuation of Ser. No. 691,142, Apr. 25, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 111,306

Int. Cl.⁶ C21B 3/00

U.S. Cl. 266—229

9 Claims



1. In combination, a baffle and a tundish, the baffle comprising: a flow control wall for defining a flow receiving space in the

tundish, said flow control wall including a first quadrant and an opposite second quadrant, said flow control wall being disposed in said tundish so that a line extending along the length of said tundish and passing through said second quadrant also passes through an outlet provided in the tundish; a passageway for allowing flow from said flow receiving space to the outlet of the tundish, the passageway disposed in said first quadrant of said flow control wall, and being closer to a bottom of said flow control wall than to a top thereof; and means for preventing flow from the flow receiving space to the outlet except through said passageway disposed in said first quadrant of said flow control wall.

5,379,990

SHOCK ABSORBER DEVICE FOR A PORTABLE ELECTRONIC APPARATUS

Nobuhiko Ando, Tokyo, and Takashi Hishinuma, Kanagawa, both of Japan, assignors to Sony Corporation, Japan

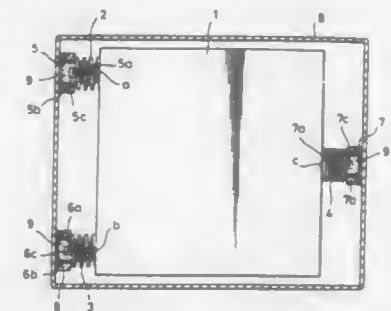
Filed Aug. 12, 1993, Ser. No. 106,346

Claims priority, application Japan, Aug. 18, 1992, 4-219378; Sep. 30, 1992, 4-285223

Int. Cl.⁶ B60G 11/58; G11B 25/04

U.S. Cl. 267—34

9 Claims



1. A shock absorbing device comprising:

- (a) chassis;
- (b) a frame covering said chassis; and
- (c) a plurality of supporting means for resiliently supporting the entire weight of said chassis from said frame at opposing points of attachment on one side of said chassis and an opposing side of said chassis, wherein said supporting means each comprise a rod, a damper formed of a damper body having an engagement concave portion into which said rod is fitted, and a coil spring surrounding said rod and being disposed between said chassis and said frame under a compressed state; wherein each coil spring has a spring constant in the shearing direction proportional to the partial weight of said chassis at said point of attachment; and said plurality of supporting means spring-bias said chassis.

5,379,991

HORIZONTALLY AND VERTICALLY ACTING VISCOUS VIBRATION DAMPER

Heinz Delam, and Frank-Michael Weber, both of Berlin, Germany, assignors to Gerb Schwingungsisolierungen GmbH & Co. KG., Berlin, Germany

Filed Feb. 12, 1993, Ser. No. 16,930

Claims priority, application Germany, Feb. 12, 1992, 4204129

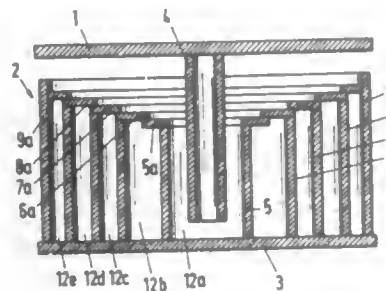
Int. Cl.⁶ F16M 1/00; F16F 11/00

U.S. Cl. 267—136

8 Claims

1. A horizontally and vertically acting viscous vibration damper for damping vibrations of large masses exhibiting large amplitudes, comprising a pot-shaped damper casing including a base and filled with a viscous damping medium, a damper plunger protruding into the damper casing and a plurality of tubes disposed between an inner wall of the damper casing and

the damper plunger, which tubes are disposed coaxially to and at a distance from the damper plunger and freely movable parallel to the base of the damper casing, wherein each of the tubes, at ends facing away from the base of the damper casing and the circumferential wall of the damper casing, is allocated a supporting part configured as an annular flange, by means of



which the tubes are supported in the axial direction against the damper casing, wherein the annular flange of an innermost tube is aligned outwards and the annular flanges of the remaining tubes are aligned inwards, the diameters of free peripheral rims of the annular flanges being dimensioned such that a free peripheral area of each annular flange bears against an adjacent annular flange or its free peripheral area.

5,379,992

MAIL SORTING DEVICE

Lawrence B. Holmes, Hunt Valley, Md.; Roberto Facciolo, Genoa, Italy; Andrea Faure, Genoa, Italy; Nedo Gennari, Genoa, Italy, and Vincenzo Priolo, Genoa, Italy, assignors to Finmeccanica S.p.A., Italy

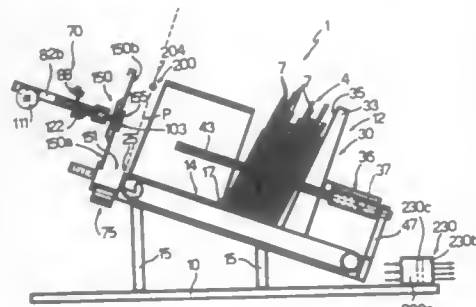
Filed Jul. 20, 1993, Ser. No. 95,164

Claims priority, application Italy, Aug. 10, 1992, TO9-2A000693

Int. Cl.⁶ B15H 1/02

U.S. Cl. 271-2

32 Claims



1. A sorting device for flat, rectangular items (7), characterized by the fact that it comprises:
at least one supporting surface (14) for supporting a pile (4) of said items (7);
gripping means (70; 70') facing an end edge (20) of said supporting surface (14) and having at least one gripping head (103; 103') designed to releasably engage the front surface of said items (7);
first handling means (30) activated by first drive means (52), having at least one portion (33) cooperating with said pile (4), and which provide for pushing said items (7) towards said edge (20); and
sensor means (27a, 27b, 200; 27) for detecting the position of said item (7) in relation to a gripping plane (P);
said sensor means (27a, 27b, 200; 27) being designed to emit a signal for activating said gripping means (70; 70') upon said item (7) being positioned in said gripping plane (P); and
said gripping means (70; 70') being moved by second drive

means (89; 29') between at least a first position, wherein said head (103; 103') is positioned facing said item (7) and substantially coplanar with said gripping plane (P), and a second unloading position wherein said head (103; 103') is so positioned as to unload said item (7).

5,379,993

AUTOMATIC DOCUMENT FEEDER

Kazutaka Takemura, Osaka; Akiyoshi Johdal, Toyokawa, and Hirokazu Matsuo, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

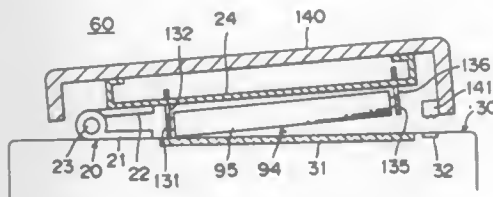
Filed Jan. 8, 1993, Ser. No. 73,307

Claims priority, application Japan, Jan. 16, 1992, 4-156530

Int. Cl.⁶ B65H 85/00

U.S. Cl. 271-3

7 Claims



1. An automatic document feeder comprising:
a main frame;
conveying means for conveying a document on a platen glass;
hinge means for supporting the main frame such that the main frame is capable of pivoting on the hinge means toward the platen glass;
supporting means for movably mounting the conveying means the main frame such that the conveying means is movable in a vertical direction to the main frame at least on a hinge means side; and
regulating means for regulating a space between the conveying means and the platen glass;
wherein the regulating means includes a first member attached to said supporting means on the hinge means side of the conveying means and a second member fixed to said supporting means on the opposite side of said conveying means;
wherein the first and the second members are fixed to the conveying means on the hinge side and on the opposite side respectively.

5,379,994

SHEET SUPPLY DEVICE FOR ALIGNING A SHEET AT A REFERENCE POSITION

Tsuyoshi Kushida, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 7, 1993, Ser. No. 86,901

Claims priority, application Japan, Jul. 23, 1992, 4-197054

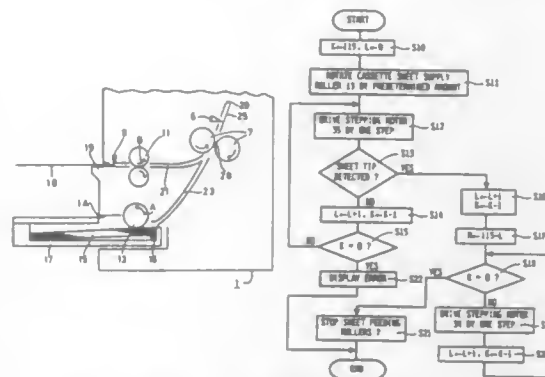
Int. Cl.⁶ B65H 3/44, 7/02

U.S. Cl. 271-9

20 Claims

1. A sheet supply device comprising:
a sheet supply;
a sheet passage extending from said sheet supply to a completion position;
a sheet feed mechanism located in said sheet passage and defining a contact point upstream of the completion position;
a drive mechanism coupled to said sheet feed mechanism;
a memory storing sheet feed data including data relating to a distance between the contact point and the completion position;
a sheet detector located in said sheet passage between said contact point and the completion position and spaced from said contact point by a distance, said sheet detector outputting a signal when a sheet edge is detected; and
a controller coupled to said memory, said drive mechanism

and said sheet detector, said controller determining a sheet feed amount for said drive mechanism to feed a sheet to the completion position based on the distance between the



contact point and the sheet detector determined by the signal output from said sheet detector and based on the distance between the contact point and the completion position stored in said memory.

5,379,995

SHEET FEED DEVICE FOR AN IMAGE RECORDER

Kenji Endo, Fukushima, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

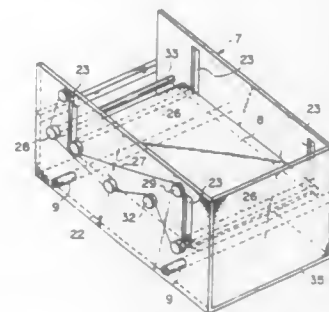
Continuation-in-part of Ser. No. 998,686, Dec. 30, 1992, abandoned. This application Sep. 21, 1993, Ser. No. 124,007

Claims priority, application Japan, Jan. 10, 1992, 4-2529; Dec. 3, 1992, 4-324409

Int. Cl.⁶ B65H 3/44

U.S. Cl. 271-9

11 Claims



1. A sheet feed device for feeding a sheet to an image recorder which records an image on said sheet, comprising:
a table disposed below and operatively connected to the image recorder;
a plurality of trays, each of said trays being received in said table and capable of being loaded with a stack of sheets, said trays each comprising a base and an elevation plate mounted on said base for vertical movement;
a sheet feed mechanism for feeding the sheets from any one of said plurality of trays to the image recorder; and
moving means associated with each of said plurality of trays for moving said base in predetermined directions over predetermined displacements within the tray,
wherein said predetermined directions comprise a sheet feed direction in which the sheets are fed from any one of said plurality of trays, and a direction perpendicular to said sheet feed direction and having two directional senses, including a sensor for sensing the displacement of said base in the perpendicular direction, and control means for correcting an error in the displacement of said base occurring when a directional sense of said perpendicular direction is changed.

5,379,996

PAPER FEEDING DEVICE AND PAPER CURLING CORRECTING DEVICE

Makoto Egi; Masao Otsuka, both of Osaka; Hiroki Morishita, Nara; Masanobu Maeshima, Habikino; Junya Sasabe, Kobe, and Kazuhiro Taguchi, Hirakata, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 943,471, Sep. 11, 1992, Pat. No. 5,292,115.

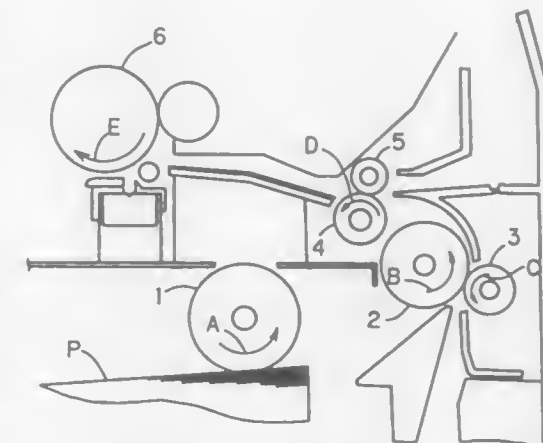
This application Dec. 13, 1993, Ser. No. 165,346

Claims priority, application Japan, Sep. 17, 1991, 3-267294

Int. Cl.⁶ B65H 3/52

U.S. Cl. 271-122

2 Claims



1. In a paper curling correcting device in an image forming apparatus in which a paper conveying path from a paper stock section to a registration roller is curved in a U shape, a pair of paper separation rollers is provided halfway in said paper conveying path, said pair of paper separation rollers comprises a forward roller which is rotated and driven in the direction in which paper sheets are fed from said paper stock section to said registration roller and a reverse roller which is rotated and driven in the direction in which paper sheets are returned from said registration roller to said paper stock section, and said forward roller is arranged inside of the curve of said paper conveying path and said reverse roller is arranged outside of the curve of said paper conveying path, wherein, in the paper curling correcting device

a curling correcting roller which is in contact with said forward roller and is rotated and driven in the direction in which paper sheets are returned from said registration roller to said paper stock section is provided upstream from said reverse roller,
said reverse roller being provided with a first torque limiter for releasing transmission of power from a driving source to said reverse roller when load torque exerted on said reverse roller is not less than a first predetermined regulated torque,
said curling correcting roller being provided with a second torque limiter for releasing transmission of power from a driving source to said curling correcting roller when load torque exerted on said curling correcting roller is not less than a second predetermined regulated torque, and
said second regulated torque being larger than said first regulated torque, and the force of paper return produced by said curling correcting roller in a case where said second regulated torque is taken as the driving torque applied to said curling correcting roller is smaller than the force of paper feeding produced by the forward roller.

5,379,997 CASSETTE

Yasunori Ohta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

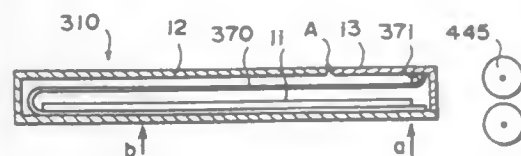
Filed Mar. 31, 1993, Ser. No. 40,988

Claims priority, application Japan, Mar. 31, 1992, 4-075078; Apr. 16, 1992, 4-096573; Apr. 30, 1992, 4-111256; Jul. 1, 1992, 4-174192; Jul. 2, 1992, 4-175340

Int. Cl. B65H 1/00

U.S. Cl. 271-145

18 Claims



1. A cassette comprising:

- i) a box member for housing a sheet-shaped image recording medium therein, the box member being provided with an opening, through which the image recording medium is to be fed into and out of the box member, at a portion, and
- ii) a cover member, which is mounted on the box member via a swing axis approximately parallel to the image recording medium having been housed in the box member and which opens and closes the opening by swinging around the swing axis, wherein the improvement comprises the provision of:
 - a) a movable member, which is supported on the box member and can move in a direction normal to the swing axis,
 - b) an engaging means combined integrally with said movable member,
 - c) an urging means for urging said movable member to one side of the direction along which said movable member moves,
 - d) a stopper secured to the box member in order to receive said urged movable member and to hold it at a locking position,
 - e) an engaged means, which is mounted on the cover member, which is engaged with said engaging means of said movable member located at said locking position and locks the cover member, such that the cover member cannot swing, when the cover member is located at a cover closed position, and which is disengaged from said engaging means when said movable member moves a predetermined distance in a direction opposite to the direction of the urging of said movable member, and
 - f) a cover opening mechanism constituted of a pushing member, which is mounted on said movable member, and a pushed member, which is mounted on the cover member, at least either one of said pushing member and said pushed member having a slant surface inclined with respect to the direction along which said movable member moves, said pushing member pushing said pushed member in order to swing the cover member in a direction that opens the cover member when said movable member moves in the direction opposite to the direction of the urging of said movable member.

6. A cassette comprising:

- i) a box member for housing a sheet-shaped image recording medium therein, the box member being provided with an opening, through which the image recording medium is to be fed into and out of the box member, at a portion, and
- ii) a cover member, which is mounted on the box member via a swing axis approximately parallel to the image recording medium having been housed in the box member and which opens and closes the opening by swinging around the swing axis, wherein the improvement comprises the provision of:
 - a) a catch shaft, which is located in the vicinity of the opening of the box member and which extends approximately parallel to the swing axis, and
 - b) an image recording medium feed-out member, which is

flexible, which has one end secured to a position on the over member, that is spaced apart from the swing axis, and the other end secured to the box member, which is turned up so as to sandwich an inner end of the image recording medium, said inner end of said image recording medium being located on the side opposite to the opening, said feed-out member extending around said catch shaft to be pulled along said catch shaft when the cover member is opened.

5,379,998

MANUAL SHEET FEEDING APPARATUS HAVING MANUAL SHEET FEEDING SWITCH NEAR SHEET GUIDE

Shin Nakagawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

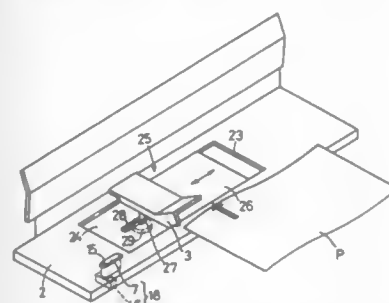
Continuation of Ser. No. 970,830, Nov. 3, 1992, abandoned. This application May 26, 1994, Ser. No. 249,660

Claims priority, application Japan, Nov. 6, 1991, 3-319925

Int. Cl. B65H 9/16

U.S. Cl. 271-248

10 Claims



1. A manual sheet feeding apparatus for manually feeding a cut sheet into a printer, comprising:
 - a) a paper pan having a surface for supporting said cut sheet manually inserted to a predetermined position;
 - b) a sheet guide provided on said paper pan for guiding said cut sheet along one edge thereof;
 - c) sheet advancing means disposed ahead of said paper pan, for advancing said cut sheet manually inserted, from said predetermined position along a feed path in a sheet advancing direction parallel to said one edge, in contact with said cut sheet;
 - d) operator-controlled commanding means for starting an operation of said sheet advancing means to advance said cut sheet, said operator-controlled commanding means including an operating surface for contact with a hand of an operator for activating said sheet advancing means; and
 - e) said operating surface of said operator-controlled commanding means being different from said surface of said paper pan for supporting said cut sheet and spaced from said sheet guide and said feed path of said cut sheet in a direction which is perpendicular to said sheet advancing direction and parallel to said surface of said paper pan, such that a distance between nearest points of said operating surface and said sheet guide is a maximum of 15 cm.

5,379,999

SHEET MEDIA HANDLING APPARATUS

Bijan Barzideh, W. Henrietta; Timothy Lewis, Hilton, and Dean Smith, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1993, Ser. No. 97,348

Int. Cl. B65H 5/00

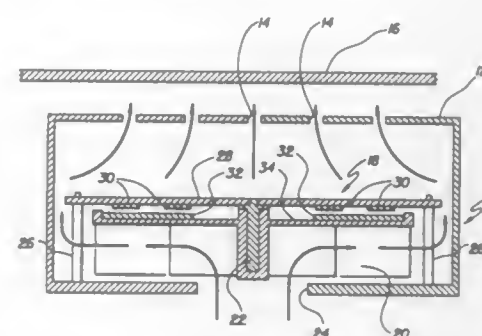
U.S. Cl. 271-264

5 Claims

1. A sheet media handling apparatus, comprising:

- a) an air plenum having a first set of openings for passing air in the vicinity of a sheet of media being handled, and a second opening;

- b) a fan including a flat brushless DC motor mounted adjacent said second opening, and a centrifugal impeller having backward curved blades attached to said motor and positioned so as to move air through said second opening when rotated by said motor;



- c) an instrument for sensing atmospheric pressure and generating a signal representative thereof; and
- d) motor drive circuit connected to said motor and responsive to said pressure signal for controlling the speed of said motor as an inverse function of atmospheric pressure.

5,380,000

DELIVERY MACHINE OF FOLDER UNIT

Kinitiro Ohno, Machida, Japan, assignor to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan

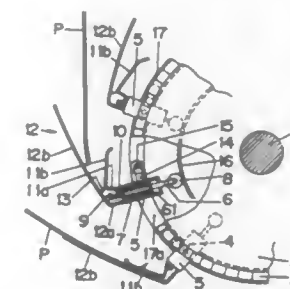
Continuation of Ser. No. 60,917, May 13, 1993, abandoned. This application Jun. 30, 1994, Ser. No. 268,731

Claims priority, application Japan, Sep. 28, 1992, 4-281091

Int. Cl. B65H 5/02, 29/04

U.S. Cl. 271-277

2 Claims



1. A delivery machine of a folder unit comprising:
 - a) endless transfer means disposed to pass in proximity to a downstream side of a discharge portion of a folding machine for discharging folded paper sheets one-by-one, and passing around guide wheels driven in synchronism with the operation of said folding machine;
 - b) openable/closable folded paper sheet holding means sequentially disposed on said endless transfer means with predetermined gaps between each said folded paper sheet holding means, wherein each said folded paper sheet holding means comprises a block rotatably supported by said endless transfer means and a sliding shaft protruding through one end of said block, said sliding shaft having a follower roller rotatably fitted onto said protruding end of said sliding shaft, wherein said block contains a coil spring urging said folded paper sheet holding means to a closed state when said spring is in a compressed state by movement of said sliding shaft; and
 - c) folded paper sheet holding operation means for bringing said folded paper sheet holding means at least from an open state to a closed state in proximity to the downstream side of the discharge portion of said folding machine to allow said folded paper sheet holding means to hold said folded paper sheets discharged sequentially from the discharge

portion of said folding machine one-by-one attitude control means for changing the attitude of said folded paper sheet holding means inside a predetermined transfer movement zone of said folded paper sheet holding means, said folded paper sheet holding operation means causing said follower roller to move said sliding shaft and compress said coil spring to urge said folded paper sheet holding means to an open state inside said predetermined transfer movement zone.

5,380,001

BASEBALL BATTING AID

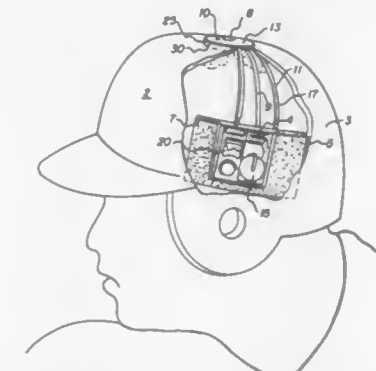
Roger Socci, Reston, Va., and Mark A. Lacko, Garrison, N.Y., assignors to Creative Sports Design, Inc., Reston, Va.

Filed Feb. 1, 1993, Ser. No. 12,261

Int. Cl. A63B 69/00

U.S. Cl. 273-26 C

7 Claims



1. A training device which can be worn by a user to teach the correct body positioning when hitting a baseball comprising:

- a) a baseball helmet having a top center and a sidewall and fitted within said sidewall with an adjustable sensing mechanism to sense vertical movement of the batter's head in relation to his shoulders during a swing, the adjustable sensing mechanism comprising a motion sensor, the training device further including a signal sensitivity adjustment switch mounted on the top center of the helmet and connected to the adjustable sensing mechanism by a mechanical connection for physically adjusting the position of the motion sensor in the adjustable sensing mechanism to sense a varying degree of sensitivity on a plane from vertical to horizontal;
- b) an audible sounding device connected to the sensing mechanism to alert the batter when his head is not correctly positioned in relation to his shoulders during the swing; and
- c) an electrical power supply integrated with the sensing mechanism and the audible sound device and wherein said electrical power supply has sufficient voltage to activate the audible sound device.

5,380,002

VARIABLE-WEIGHT PLAY PIECES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 743,279, Aug. 9, 1991, Pat. No. 5,335,907. This application Dec. 11, 1992, Ser. No. 989,353

The portion of the term of this patent subsequent to Aug. 9, 2011, has been disclaimed.

Int. Cl. A63B 37/06, 37/08, 59/00

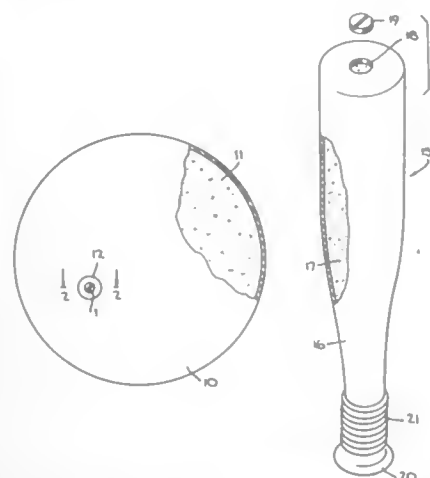
U.S. Cl. 273-58 H

8 Claims

1. A variable weight play piece whose weight depends on the amount of water dispersed therein comprising:
 - (a) an outer casing formed of water-impermeable material and having a shape determined by the nature of the piece,

said casing being provided with a port having a removable closure, at least a section of the casing being flexible, whereby the section may be manually pressed in the section and resuming its original form when pressure is released;

(b) an internal compressible body within the confines of the casing and having the same shape, the body being formed



of open-cell, flexible foam plastic material having sponge-like properties, whereby to add water to the piece and thereby increase its weight, the port is opened and the flexible section pressed in to expel air from the body through the port, water then introduced through the open port then being sucked into and absorbed by the body when pressure is released, the port then being closed to retain the water within the piece.

5,380,003

BASEBALL BAT

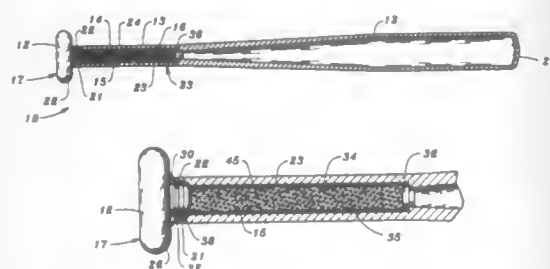
Paul A. Lancot, 520 Sand Hill Rd., Scotts Valley, Calif. 95066

Continuation-in-part of Ser. No. 5,007, Jan. 15, 1993, abandoned. This application Jan. 12, 1994, Ser. No. 180,535. The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.

Int. Cl.⁶ A63D 59/06

U.S. Cl. 273-72 R

14 Claims



I. A ball bat, comprising:

an elongated body with a free end portion of one diameter tapering to a handle portion of a reduced diameter, said handle portion having an outer surface and an inner surface and a cavity therein; the handle portion including a detachable knob adapted to be secured in said cavity in the handle portion; said detachable knob having an expanded portion and an elongated portion, said elongated portion including a chamber therein; the elongated portion of the detachable knob having an outer surface and an inner surface;

a tubular member having all upper surface and an inner surface inserted into said handle portion of said bat and including a first end and a second end, said first end hav-

ing an opening therein and including means for securing said tubular member to said detachable knob; a transfer cylinder operably inserted into said free end portion of said elongated body; said transfer cylinder being attached to the tubular member by fastening means; a plurality of particles interiorly disposed within said tubular member; and a fluid interiorly situated within said tubular member.

5,380,004

IRON-TYPE GOLF CLUB SET

Mitsutake Teramoto; Takaharu Okumoto, and Hideyo Asabuki, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

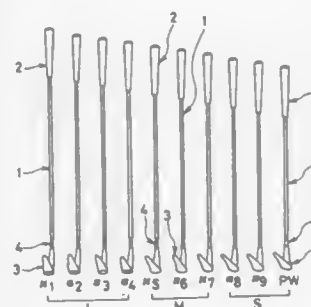
Filed May 18, 1993, Ser. No. 62,228

Claims priority, application Japan, May 28, 1992, 4-035888[U]; May 28, 1992, 4-035897[U]

Int. Cl.⁶ A63B 53/00

U.S. Cl. 273-77 A

8 Claims



1. An iron-type golf club set comprising a plurality of consecutively numbered golf clubs, each club having a shaft and a club head having a sole and a ball-hitting face, said clubs being divided into three groups of clubs, said groups of clubs comprising

a long iron-type club group including a plurality of long iron-type clubs having lower club numbers, a middle iron-type club group including a plurality of middle iron-type clubs having intermediate club numbers, and a short iron-type club group including a plurality of short iron-type clubs having higher club numbers; each of the club heads of the long iron-type clubs of the long iron-type club group having the sole thereof made of a metal material, an outer shell portion containing the ball-hitting face made of a fiber-reinforced material and a core portion made of a foamed material enclosed within the outer shell;

each of the club heads of the middle iron-type clubs of the middle iron-type club group having the ball-hitting face thereof made of a fiber-reinforced resin with the remainder of the club head including the sole being made of a metal material; and

each of the club heads of the short iron-type clubs of the short iron-type club group including the sole and the ball-hitting face thereof being made of a metal material.

5,380,005

IRON GOLF CLUB HEADS

Henry Y. C. Hsu, P.O. Box 1750, Taichung, Taiwan, Prov. of China

Filed May 16, 1994, Ser. No. 243,580

Int. Cl.⁶ A63B 53/02

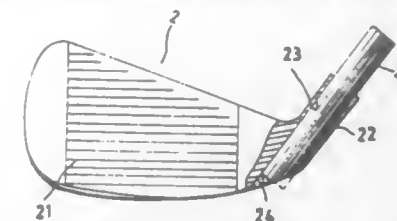
U.S. Cl. 273-80.8

5 Claims

1. An iron golf club comprising:

a head provided on one side thereof with a striking blade having an inclination, said head further provided at a neck end thereof with a hosel defining a bore, with one end of the bore extending to a sole of said head; and a shaft fastened to said head;

wherein said head is provided with a tail seat located at a heel portion of said head such that said tail seat partially peels off a bottom end of said bore of said hosel, said tail seat connected with an inner side wall of said bore, an



upper end surface of said tail seat arranged laterally relative to the inner side wall, said upper end surface supporting and locating the bottom end of said shaft, a bottom end surface of said tail seat united with said sole.

5,380,006

Patent Not Issued For This Number

5,380,007

VIDEO LOTTERY GAMING DEVICE

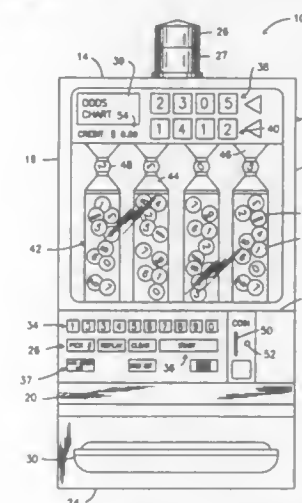
Christopher P. Travis, 7603 141 St., and Richard C. Travis, 7635 141 St., both of, Seminole, Fla. 34646

Filed Jan. 21, 1994, Ser. No. 185,426

Int. Cl.⁶ A63F 5/00

U.S. Cl. 273-138 A

10 Claims



1. An electronic game apparatus, comprising: a video screen for displaying computer-generated images; a mechanical housing for said video screen; means for generating a simulated plurality of transparent housings on said video screen; means for generating a simulated plurality of numbered balls within each of said simulated housings; means for simulating an apparently upwardly flowing air-stream within each of said housings to provide an apparent means for mixing said balls and hence said numbers; means for maintaining an apparent number on each of the numbered balls in an orientation facing a player at all times; means for simulating a first ball-trapping means atop each simulated housing; means for simulating a second ball-trapping means in spaced apart relation to each of said first ball-trapping means; a random number generating means; means for displaying a simulated ball and its associated number between each of said first and second ball-trapping means after the passage of a predetermined amount of time; said random number generating means controlling the means

for displaying the simulated balls between the first and second ball-trapping means; mechanical means connected to said mechanical housing for enabling a player to select a random series of numbers; means for matching numbers selected by said player with numbers generated by said random number generating means; and mechanical means for dispensing a predetermined amount of money to the player if the numbers selected by the player match the numbers generated by the random number generating means.

5,380,008

ELECTRONIC GAMING APPARATUS

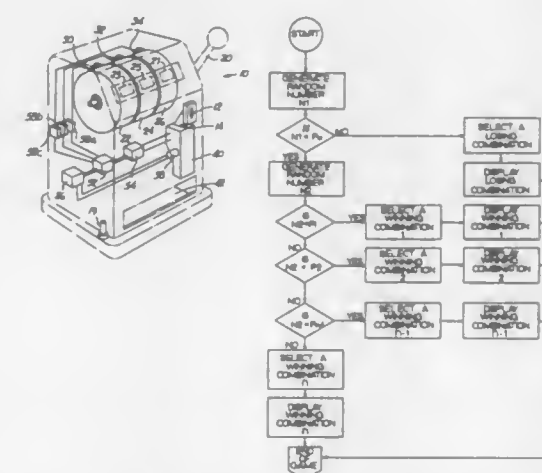
Ricard M. Mathis, Wellington, and Richard E. Michaelson, Lemmon Valley, both of Nev., assignors to Spintek International, Chattanooga, Tenn.

Filed Dec. 3, 1993, Ser. No. 162,501

Int. Cl.⁶ A63F 5/04

U.S. Cl. 273-143 R

19 Claims



1. Gaming apparatus comprising, a plurality of reels mounted for rotation about an axis, said reels having peripheral surfaces on which indicia are disposed indicative of angular positions of the respective reel, means for starting rotation of said reels, means for assigning a preselected hit frequency value representative of the probability of a winning game, means for generating a first random number, means for comparing said random number with said hit frequency value to determine whether the game played is a winning game or is not a winning game, means for stopping rotation of said reels at angular positions displaying indicia representing a losing game when the game played is determined not to be a winning game, means for generating a second random number whenever said game played is determined to be a winning game, means for assigning a plurality of numbers defined as win probabilities each representative of the probability of winning a respective win value, means for comparing said second random number in sequence with said win probabilities to determine the value of a win if the game played when a winning game, and means for stopping rotation of said reels at angular positions displaying indicia representing the value of the win.

5,380,009

NOTCHED GOLF CLUB FACE

Randy D. Henry, and Ross D. Henry, both of Hayden, Id., assignors to Henry-Griffitts, Inc., Hayden, Id.

Filed Mar. 30, 1994, Ser. No. 220,365

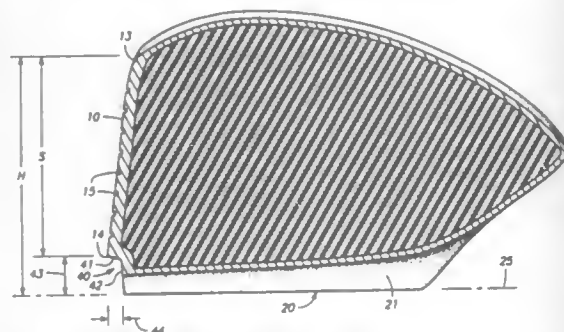
Int. Cl.⁶ A63B 53/04

U.S. Cl. 273-167 A

10 Claims

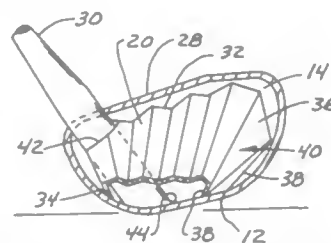
1. A golf club head in the form of a hollow structural shell, the exterior of the shell comprising:

a club face extending between transversely spaced side edges and having an upright span extending between upper and lower edges;
 a sole surface for guiding the club head through a lie as a golf ball is being struck by the club face, the sole surface presenting a supporting plane from which the height of the club face is measured;
 an upper surface extending rearwardly from the upper edge of the club face;
 outer and inner upright toe and heel surfaces extending rearwardly from the respective side edges of the club face and joining a back surface; and



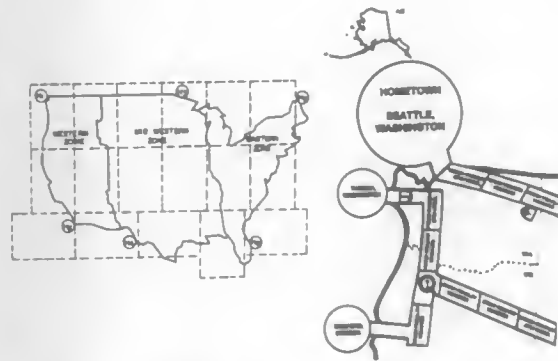
a continuous recessed wall having an exterior surface in the form of a forwardly-facing transverse notch extending transversely across the lower edge of the club face and through both of the toe and heel surfaces, the recessed wall being joined across the sole surface behind the club face to thereby reduce the upright span of the club face without modifying its overall height;
 the thickness dimensions of the shell across the club face and across the recessed wall being greater than the thickness dimensions of the remaining club head elements.

5,380,010
GOLF CLUB HEAD CONSTRUCTION
 Frank D. Werner, Box SR9, Jackson, Wyo. 83001, and Richard C. Greig, Jackson, Wyo., assignors to Frank D. Werner, Tetoo Village, Wyo.
 Filed Oct. 28, 1993, Ser. No. 144,676
 Int. Cl.⁶ A63B 53/04
 U.S. Cl. 273—167 H 20 Claims



1. A golf club head comprising a face plate having a strike face, a structural support comprising a shell structure circumscribing an interior space, and having a first end and a second end, the first end of the shell structure being joined to a side of the face plate opposite from the strike face near the perimeter of the strike face, the shell structure having a cross sectional shape approximating the shape of the perimeter of the strike face, the second end of said shell structure terminating at a location spaced from the face plate in a direction extending away from the strike face, and an element for attaching a shaft joined to the shell structure.

5,380,011
TRANSPORTATION GAME
 Gregg L. Jarvis, 17 Goldenrod Ct., Hamilton Square, N.J.
 Filed May 27, 1993, Ser. No. 69,355
 Int. Cl.⁶ A63F 3/04, 9/18
 U.S. Cl. 273—254 36 Claims



1. A game including:
 a map of a given area having a plurality of cities located thereon and road routes interconnecting them, the routes being divided into segments;
 certain cities being respectively designated as home bases;
 a plurality of pieces, wherein the cities that are designated as home bases are coded in different colors, and said pieces respectively have the same colors;
 a plurality of contract cards, each of which has designated thereon a city at which a load is to be picked up, a city to which the load is to be delivered and the amount to be paid for hauling a load from one city to the other;
 means for randomly determining the number of segments a piece is to be moved; and
 play money.

5,380,012
METHOD FOR PLAYING A CARD GAME
 Daniel A. Jones, 5520 W. Del Rey, Las Vegas, Nev. 89102, and Albert J. Ethier, 10339 Scott Ave., Whittier, Calif. 90603
 Continuation-in-part of Ser. No. 74,301, Jun. 9, 1993, which is a continuation-in-part of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,836,553. This application Oct. 21, 1993, Ser. No. 140,688
 Int. Cl.⁶ A63F 1/00
 U.S. Cl. 273—292 58 Claims

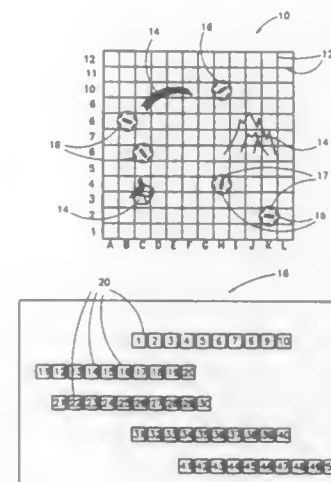
1. A method of playing a card game, comprising the steps of:
 providing a deck of playing cards including a plurality of different card suits with each suit including a plurality of cards having different point values;
 dealing at least two initially incomplete player hands to at least two players, said player hands each consisting of a first predetermined number of cards;
 providing an option to either place a forced minimum bet or fold to said players;
 dealing a second predetermined number comprising at least one more card to each remaining player hand to form complete hands, wherein each of the remaining player completed hands consist of the same number of cards;
 adding the point values of each remaining player hand according to predetermined card point values to determine a

total point count value for each remaining player hand; and



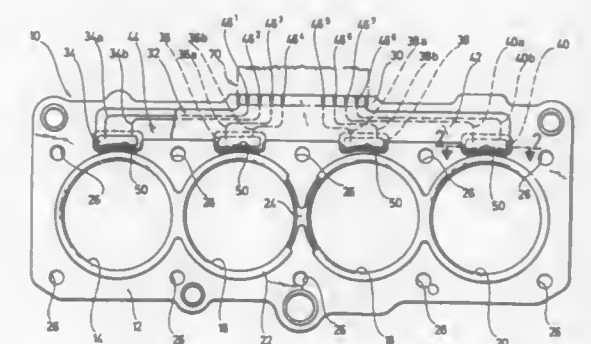
comparing point count total values of said remaining player hands to determine the winning player(s) between the remaining players.

5,380,013
APPARATUS FOR BOARD GAMES
 David Nacht, Hashofim 20/15, Kiryat Gat 82000, Israel
 Filed Jul. 21, 1993, Ser. No. 94,419
 Int. Cl.⁶ A63F 3/00
 U.S. Cl. 273—287 14 Claims



1. A board game requiring one or more players to reach a conclusion based on collected clues, comprising:
 (a) an upper board including a plurality of openings and further including movement markings to facilitate movement of a playing piece across said upper board; and
 (b) a lower board, including clue markings, said lower board being movable relative to said upper board such that a different set of said clue markings is aligned with said plurality of openings in said upper board for different relative positions of said upper board and said lower board, at least some of said set of aligned markings being, or being related to, clues needed to arrive at the conclusion.

5,380,014
CYLINDER HEAD GASKET
 Heinrich Schäperkötter, Dettingen, Germany, assignor to Elring Dichtungswerke GmbH, Fellbach, Germany
 PCT No. PCT/EP91/00879, § 371 Date Jan. 8, 1992, § 102(e) Date Jan. 8, 1992, PCT Pub. No. WO91/18198, PCT Pub. Date Nov. 28, 1991
 PCT Filed May 11, 1991, Ser. No. 809,495
 Claims priority, application Germany, May 11, 1990, 4015109
 Int. Cl.⁶ F16J 15/32
 U.S. Cl. 277—2 23 Claims



1. A generally rectangular, plate-like cylinder head gasket for sealing a gap between an engine block and a cylinder head of a multi-cylinder internal combustion engine having several combustion chambers, said gasket having two main surfaces, two longitudinal edges and two lateral edges and comprising:
 a) a group of substantially circular combustion chamber orifices;
 b) web-like areas between said combustion chamber orifices, each of said web-like areas being substantially symmetrical to an imaginary center plane oriented substantially perpendicular to said main surfaces;
 c) a generally rectangular sealing plate having at least one opening defined by an internal edge of said sealing plate and accommodating said combustion chamber orifices;
 d) screw holes for cylinder head screws, said screw holes being arranged approximately at said center planes and along lines extending parallel to said longitudinal edges; and
 e) at least one combustion chamber sealing element surrounding and thereby defining said combustion chamber orifices, said combustion chamber sealing element being fixed to the sealing plate at said internal edge of the sealing plate;
 wherein, for a cylinder-specific detection of movements of said gap perpendicular to said main surfaces caused by pressure changes within the respective combustion chamber,
 f) said sealing plate is provided with sensor elements associated with said combustion chamber orifices, said sensor elements being responsive to said pressure changes;
 g) each of said sensor elements, with respect to the combustion chamber orifice associates with said sensor element, being arranged radially outwardly of the combustion chamber sealing element of said orifice;
 h) said sensor elements being disposed between said screw holes; and
 i) said sensor elements being selected from the group consisting of piezoelectric sensors, piezoresistive sensors, capacitive sensors and glass fiber light guide sensors with transmission losses changeable by bending the glass fiber light guide.

5,380,015
MACHINED SHAFT SEAL ENCASED IN AN ELASTOMERIC SLEEVE

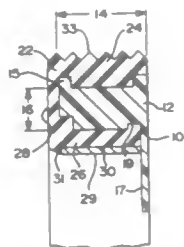
William O. Laflin, Grass Lake, and Stanley N. Smith, Farmington, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 17, 1993, Ser. No. 169,446

Int. Cl.⁶ F16J 15/32

U.S. Cl. 277—37

7 Claims



1. A shaft seal, comprising:
 - an annular sealing element formed of a plastic material, said annular sealing element comprising a tubular wall portion and a sealing lip extending radially inwardly from said tubular wall portion, said tubular wall portion having an inner surface and an outer surface;
 - an annular elastomeric sleeve encircling said tubular wall portion, said sleeve comprising an outer sleeve section extending along the outer surface of the tubular wall portion, and an inner sleeve section extending along the inner surface of the tubular wall portion; and
 - an annular rigid reinforcement band extending along the inner sleeve section in radial alignment with said tubular wall portion, said band being engaged with said inner sleeve section so that said inner sleeve section is compressed between said band and said tubular wall portion, said outer sleeve section of the elastomeric sleeve being oversized with respect to a housing bore in which the shaft seal is to be mounted, whereby said outer sleeve section is compressed between said tubular wall portion and the housing bore when the shaft seal is installed in the bore.

5,380,016
RADIAL LIP SEAL

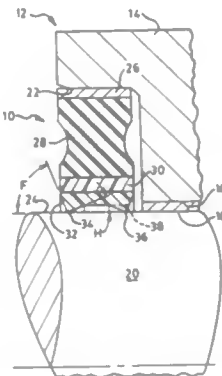
Harold L. Reinsma, Dunlap, and Alan M. Dickey, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 12, 1992, Ser. No. 974,635

Int. Cl.⁶ F16J 15/32

U.S. Cl. 277—152

20 Claims



1. A high load radial lip seal for sealing a cylindrical surface, comprising:
 - a seal ring having an elongated axial length with opposite ends, a radially inwardly projecting seal lip adjacent one

end thereof and a radially inwardly projecting stabilizer lip adjacent the opposite end thereof;

a tension ring secured about said seal ring, said tension ring being constructed of a material of sufficient tensile modulus to exert a high radial force of at least 20N/cm of circumference along the length of said seal ring upon being stretched to a predetermined elongation factor within a range of from about 0.5% to about 2.5%; and

a flex ring secured about said tension ring, said flex ring being constructed of a highly resilient, easily deformable material to allow said seal ring to follow limited amounts of radial and axial displacements of the cylindrical surface.

5,380,017
SEALING RING FOR SEALING AGAINST FLUID FLOW IN EITHER DIRECTION BETWEEN INNER AND OUTER PIPES

Ewout Leeuwenburg, Dordrecht, and Robert J. Van Kooij, Zwijndrecht, both of Netherlands, assignors to Nyloplast Europe B.V., 's-Gravendeel, Netherlands

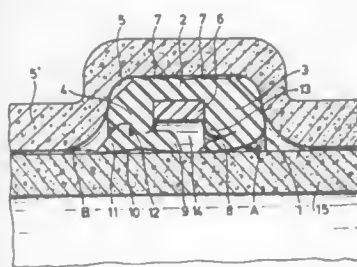
Filed Apr. 2, 1991, Ser. No. 679,243

Claims priority, application Netherlands, Apr. 12, 1990, 9000881

Int. Cl.⁶ F16J 15/32

U.S. Cl. 277—207 A

3 Claims



1. A sealing ring of an elastic material for sealing against the flow of fluid between an inner and an outer pipe between which pipes said sealing ring is disposed, said sealing ring being circular and having a central axis and first and second radially inwardly extending annular lips defining an annular open space between said lips, said first lip having a configuration such that a said inner pipe, when inserted into said sealing ring in one direction, deforms said first lip radially outwardly into sealing contact with said inner pipe, said second lip having a radially outwardly disposed first portion and a radially inwardly extending second portion so disposed that a said inner pipe moving in said one direction slides past said first portion and contacts said second portion and deflects said second portion in said one direction thereby pivoting said first portion of said second lip radially inwardly into sealing contact with said inner pipe, said first lip and said first portion of said second lip, when in sealing contact with said inner pipe, presenting to said open space surfaces such that upon an increase in fluid pressure in said open space due to leakage past said first lip in said one direction, said first portion of said second lip is pressed with increased pressure into sealing contact with said inner pipe to prevent flow of fluid from said open space in said one direction past said sealing ring, and upon an increase in fluid pressure in said open space due to leakage past said second lip in a direction opposite to said one direction, said first lip is pressed with increased pressure into sealing contact with said inner pipe to prevent flow of fluid from said open space in said opposite direction, said surfaces presented by said first sealing lip and said first portion of said second sealing lip to said open space meeting said inner pipe at acute angles oppositely directed to said axis.

5,380,018
PISTON RING HAVING A NON-UNIFORM RADIAL PRESSURE DISTRIBUTION

Heinrich-Christian Mader, Burscheid; Albin Mierbach, and Wolfgang Schmelter, both of Leverkusen, all of Germany, assignors to Goetze AG, Burscheid, Germany

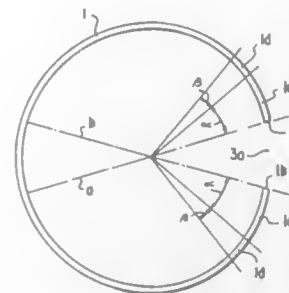
Filed Dec. 4, 1992, Ser. No. 985,907

Claims priority, application Germany, Dec. 6, 1991, 4140232

Int. Cl.⁶ F16J 15/32

U.S. Cl. 277—216

13 Claims



1. In a piston ring having a gap defined by ring gap faces oriented toward one another and a nominal outer radius assumed by the piston ring in a closed position in which the piston ring is in an installed state in an engine cylinder having a radius equalling the nominal outer radius of the piston ring; the improvement wherein said piston ring has first length portions extending from both ring gap faces and having a central angle of at least 15° and less than 25° and second length portions immediately adjoining each respective first length portion and having a central angle of approximately 10°; in a free, non-installed state the first length portions having a radius of curvature equalling said nominal outer radius and the radius of curvature of the second length portions being less than the radius of curvature of the first length portions, whereby all circumferential points of the piston ring engage the cylinder light-tight and a radial pressure distribution of the piston ring in the installed state is substantially zero at the ring gap and increases in opposite directions from the ring gap to a maximum value in the second length portions; said maximum value being in excess of 200% of an average circumferential radial pressure distribution of the piston ring in the installed state.

5,380,019
SPRING SEAL

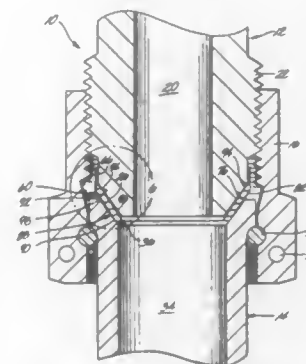
Frank E. Hillery, Cypress, and Christel C. Goy, Hacienda Heights, both of Calif., assignors to Furon Company, Laguna Niguel, Calif.

Filed Jul. 1, 1992, Ser. No. 907,396

Int. Cl.⁶ F16J 15/08

U.S. Cl. 277—236

23 Claims



1. A seal for use with a tube coupling assembly, the assembly

comprising a male fitting, a female fitting, and means for drawing the male and female fittings tightly together;

the male fitting comprising a cylindrical tube having a beveled conical surface on the outside of its end, the bevel being at a selected angle with the outside surface of the cylinder wall;

the female fitting comprising a cylindrical tube having a beveled conical surface on the inside of its end, the bevel being at a selected angle with the inside surface of the cylinder wall, wherein the selected angle for the bevels on the male and female fittings are the same, and the inside diameters of the male and female fittings are such that, when the fittings are drawn together, at least a portion of the male bevel surface is in registry with the female fitting bevel surface;

the seal comprising a seal body of spring metal and a coating of a relatively soft sealing material on the seal body, the seal body and coating configured to include:

- (a) a cylindrical skirt portion having inner and outer parallel surfaces defining the cylindrical skirt thickness, the skirt comprising means for providing an interference fit between the inner skirt surface and the outside cylindrical surface of the male fitting; and
- (b) a conical portion extending from the cylindrical skirt portion toward the skirt axis and having inner and outer flat parallel surfaces defining the conical portion radial thickness, wherein the angle between the skirt and the outside surface of the conical portion is different from the selected angle of the bevels on the male and female fittings.

5,380,020
IN-LINE SKATE

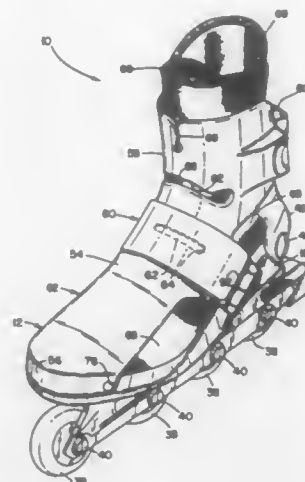
Michel D. Arney, Needham; Carl L. Madore, Brighton, both of Mass., and Andrzej M. Malewicz, Minneapolis, Minn., assignors to Rollerblade, Inc., Minneapolis, Minn.

Filed Jan. 28, 1993, Ser. No. 10,604

Int. Cl.⁶ A63C 17/04

U.S. Cl. 280—11.22

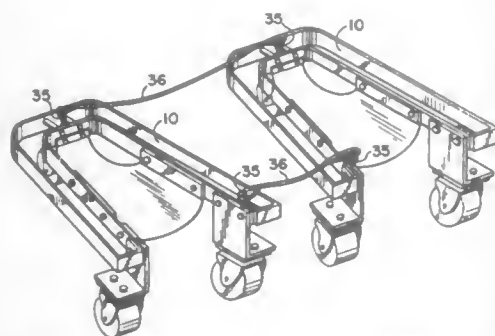
5 Claims



1. A boot for an in-line skate, said boot comprising:
 - a molded boot lower and a molded boot upper;
 - said boot lower including a sole portion and a heel portion, said sole portion sized to receive the bottom of a foot of a user and said heel portion sized to substantially cover and surround a heel of said user, said boot lower further including sidewalls extending upwardly from said sole;
 - a rear cuff secured to said sidewalls adjacent said heel portion and sized to surround a back portion of a leg of said user;
 - said upper portion including an instep portion and a forward cuff portion with said forward cuff portion sized to par-

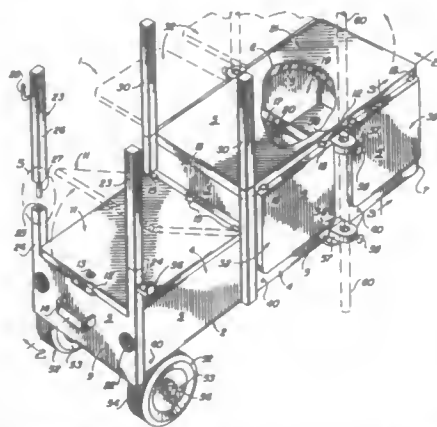
tially surround said rear cuff with means for releasably urging said forward and rear cuffs to securely grab a lower leg of said user; a forward end of said boot upper secured to a toe end of said boot lower; and means for releasably securing said instep portion to said boot lower.

5,380,021
MOBILE KNEE SUPPORT APPARATUS
David B. Doherty, 1287 Plymouth Pl., Jacksonville, Fla. 32205
Filed Jul. 1, 1993, Ser. No. 86,558
Int. Cl.⁶ A01D 67/04
U.S. Cl. 280—32.5 20 Claims



1. A pair of mobile knee supports comprising two identical wheeled vehicles, each designed to receive and support a human knee; each said support including an outer U-shaped strip and an inner U-shaped strip spaced concentrically apart, three spaced casters located respectively at the center of said strips and at both ends of said strips; a rigid support for each said caster depending downwardly from at least one of said strips; and a flexible knee support sheet material suspended from said inner strip and adapted to receive said knee and to suspend the knee above the lowest level of said casters.

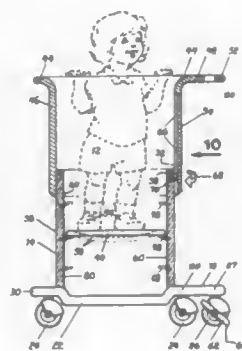
5,380,022
UTILITY CART
Macy S. Dennis, 221 N. Demanade, Lafayette, La. 78503
Filed Sep. 21, 1992, Ser. No. 949,074
Int. Cl.⁶ B62B 3/12
U.S. Cl. 280—47.35 5 Claims



1. A utility cart comprising a frame having a front end and a rear end; a pair of rear wheels fixedly mounted on the rear end of said frame in rotatable relationship; a front wheel pivotally and rotatably carried by a front wheel bracket pivotally mounted to the front end of said frame; a towing handle having a pair of parallel extension members slidably supported by said front wheel bracket, each extension member having a forward extension portion and a rearward extension portion interconnected by a hinge, stop means provided on a rearward end of each said rearward extension portion, and grip means connected between opposite forward ends of said forward extension portions for guiding and towing said utility cart; at least one ice chest compartment provided in said front end of said frame and an ice chest compartment lid hingedly carried by said ice chest compartment for selectively opening and closing said ice chest compartment; at least two table tops hingedly carried by said frame on each side of said ice chest compartment and table top support means pivotally carried by said ice chest compartment for selectively engaging said table tops and supporting said table tops in extended, substantially horizontal, functional relationship; a storage compartment provided on said rear end of said frame and a storage compartment lid hingedly carried by said frame for selectively opening and closing said storage compartment; and a plurality of chair supports disposed in upward-standing relationship on said frame, with at least two of said chair supports characterized by a fixed segment carried by said frame and a removable segment removably carried by said fixed segment, for supporting and carrying chairs on said utility cart, said frame, said front wheel, said towing handle, said ice chest compartment, said ice chest compartment lid, said storage compartment, said storage compartment cover, said chair supports and said table tops being constructed of an expanded foam material sandwiched between molded plastic sheets.

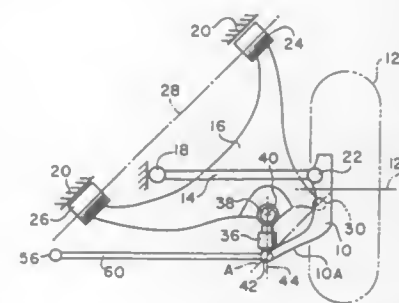
ected by a hinge, stop means provided on a rearward end of each said rearward extension portion, and grip means connected between opposite forward ends of said forward extension portions for guiding and towing said utility cart; at least one ice chest compartment provided in said front end of said frame and an ice chest compartment lid hingedly carried by said ice chest compartment for selectively opening and closing said ice chest compartment; at least two table tops hingedly carried by said frame on each side of said ice chest compartment and table top support means pivotally carried by said ice chest compartment for selectively engaging said table tops and supporting said table tops in extended, substantially horizontal, functional relationship; a storage compartment provided on said rear end of said frame and a storage compartment lid hingedly carried by said frame for selectively opening and closing said storage compartment; and a plurality of chair supports disposed in upward-standing relationship on said frame, with at least two of said chair supports characterized by a fixed segment carried by said frame and a removable segment removably carried by said fixed segment, for supporting and carrying chairs on said utility cart, said frame, said front wheel, said towing handle, said ice chest compartment, said ice chest compartment lid, said storage compartment, said storage compartment cover, said chair supports and said table tops being constructed of an expanded foam material sandwiched between molded plastic sheets.

5,380,023
CHILD'S VEHICLE FOR INCREASED VISUAL INTERACTION
Beverlee McBee, 1776 S. Jackson, Ste. 403, Denver, Colo. 80210
Filed Mar. 15, 1993, Ser. No. 31,318
Int. Cl.⁶ B62B 7/04
U.S. Cl. 280—87.01 15 Claims



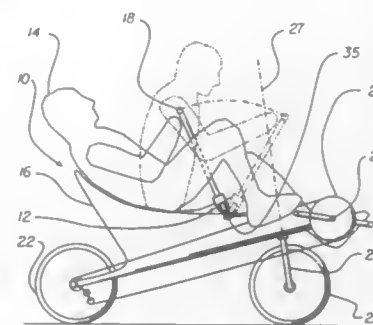
1. A vehicle for holding a small child upright in a standing position so that the child has increased visual interaction with the surrounding environment, the vehicle comprising: a first upright hollow cylinder dimensioned in size for receiving a lower portion of the child therein; an elevated flexible floor suspended inside said first upright hollow member for providing a "shock absorber" type suspension for the child's joints, muscles and weight when the child stands and jumps thereon; adjustment means for suspending said flexible floor at a plurality of different elevations within said first upright hollow cylinder; and a base frame having a plurality of wheels mounted thereon, said first upright hollow member mounted on top of said base frame.

5,380,024
DOUBLE WISHBONE TYPE SUSPENSION HAVING
A-TYPE ARM COMBINED WITH PIVOTED
EXPANSIBLE/CONTRACTIBLE CONNECTION LINK
AND LATERAL LINK
Hiroshi Hayami, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed May 26, 1994, Ser. No. 249,932
Claims priority, application Japan, Jan. 7, 1993, 5-163122
Int. Cl.⁶ B60G 3/00
U.S. Cl. 280—96.1 9 Claims



1. A double wishbone type suspension comprising a carrier for supporting a vehicle wheel to be rotatable about an axis of rotation, an upper arm extending substantially in a lateral direction of a vehicle to have an inboard end pivotally connected with a body of the vehicle and an outboard end pivotally connected with a first portion of said carrier, a lower arm having at least two inboard ends spaced apart from one another in a longitudinal direction of the vehicle and pivotally connected with the body of the vehicle and an outboard end pivotally connected with a second portion of said carrier, a longitudinally expandable and contractible connection link having a first end connected with a portion of said lower arm substantially distant from said outboard end thereof to be pivotable relative thereto about a substantially vertical axis and a second end opposite to said first end pivotally connected with a third portion of said carrier substantially distant from said second portion thereof, and a lateral link having an inboard end pivotally connected with the body of the vehicle and an outboard end pivotally connected with one of a fourth fourth a portion of said carrier substantially distant from said second portion thereof in at least the longitudinal direction of the vehicle and said second end of said connection link.

5,380,025
TILT STEERING MECHANISM FOR A RECUMBENT BICYCLE
Richard B. Thorpe, 2855 Pinetree Dr. #C108, Costa Mesa, Calif. 92626
Filed Feb. 2, 1994, Ser. No. 190,346
Int. Cl.⁶ B62K 21/18
U.S. Cl. 280—270 8 Claims

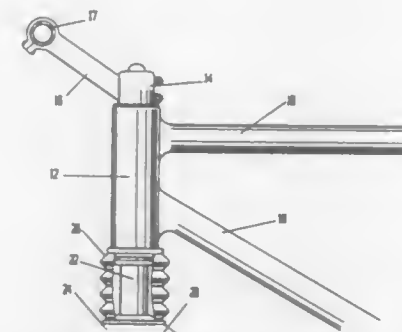


1. A tilt steering mechanism for use in connection with a bicycle comprising a foot pedal driving means rotatable about

an axis and a front steerable wheel whereby the axis of said foot pedal driving means is located forwardly of the rear most point of said front wheel, said tilt steering mechanism comprising:

- a fore aft tilt body adapted to be rotatably mounted on said bicycle whereby said fore aft tilt body is located completely rearward of the axis of said foot pedal driving means and said fore aft tilt body is pivotal about a pivot axis which is substantially parallel to the axis of said foot pedal driving means;
- a steering lever body rotatably connected to said fore aft tilt body by a rotational antifriction bearing whereby said steering lever body is pivotal about a rotational antifriction bearing axis which is substantially orthogonal to said fore aft tilt body axis; and
- a device: comprising, a joint having at least two degrees of rotational movement about separate distinct joint axes, said device mounted on said steering lever body whereby rotational manipulation of said steering lever body will cause said device to move in an orbital fashion about said rotational antifriction bearing axis and wherein one of said separate distinct joint axes is coincident with said fore aft tilt body pivot axis when said steering lever body is located in a substantially neutral steering position.

5,380,026
BICYCLE SHOCK ABSORBER
Russell Robinson, P.O. Box 417, Silverado, Calif. 92676
Continuation of Ser. No. 749,571, Aug. 26, 1991, abandoned, and a continuation of Ser. No. 491,461, Mar. 9, 1990, Pat. No. 5,350,185. This application Aug. 5, 1993, Ser. No. 102,579
Int. Cl.⁶ B62K 21/20
U.S. Cl. 280—276 12 Claims



1. In a front suspension for a bicycle having a frame supporting front and rear wheels with a front end which includes a head tube and a support shaft rotationally received therein and supporting on its lower end a fork frame which rotationally supports the front wheel, and at its opposite end, a handle bar support member, the improved support shaft which comprises: a. a first cylinder of uniform, first diameter rotationally received within said head tube and fixedly secured at its upper end to said handle bar support member; b. a second cylinder of uniform, second diameter with its upper end slidably engaged with said first cylinder in a concentric and telescopic assembly and fixedly secured at its lower end to said fork frame; c. rotational indexing means between said first and second cylinders including a longitudinal bearing track therebetween; d. a plurality of rolling surface bearings in rolling reception in said bearing track; and e. resilient compressive means within said first cylinder and located between said first and second cylinders to bias said cylinders in an extended telescoping position.

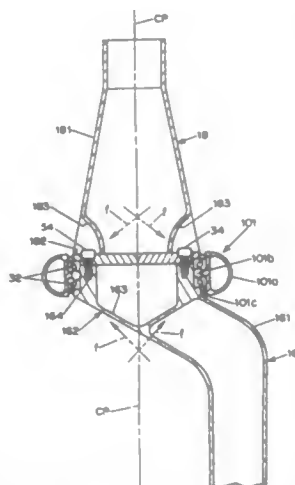
5,380,027

BICYCLE HEADSET

Alex Pong, Langley, and Skooks Pong, Freeland, both of Wash., assignors to Cannondale Corporation, Georgetown, Conn.
Filed Sep. 16, 1993, Ser. No. 122,097
Int. Cl.⁶ B62K 19/32, 21/06

U.S. Cl. 280—279

8 Claims



1. A bicycle comprising a frame having a sleeve portion adapted to support a headset assembly and having an annular opening having an axis located substantially in a vertical-longitudinal center plane of the bicycle, the opening having an internal bearing seat surface, a thin wall large diameter angular contact bearing having an outer race received on the internal bearing seat surface of the opening, a handlebar support member, a front wheel-mounting leg member, the handlebar support member and front wheel-mounting leg member having ends abutting each other, removable fasteners connecting the front wheel-mounting leg member to the handlebar support member, at least one of the handlebar support member and the front wheel-mounting leg member having an external bearing seat surface receiving an inner race of the thin wall large diameter angular contact bearing.

5,380,028

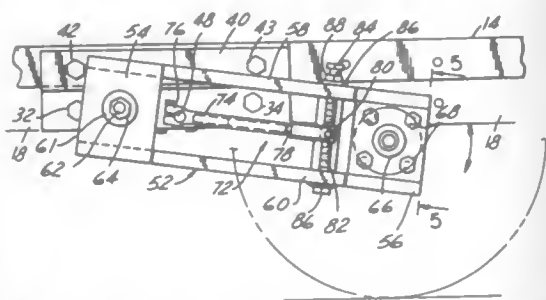
DEMOUNTABLE TRAILER SUSPENSION SYSTEM

John R. Ferris, 30329 Bristol La., Birmingham, Mich. 48010, and Thomas P. Daniels, 755 N. Allen Rd., Port Huron, Mich. 48060, assignors to John R. Ferris, Birmingham and Thomas P. Daniels, Port Huron, both of Mich.

Continuation-in-part of Ser. No. 874,096, Apr. 27, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 73,879
Int. Cl.⁶ B60G 11/20, 11/10, 11/16

U.S. Cl. 280—405.1

23 Claims



19. A torsion bar suspension system for a trailer having a trailer frame, said system comprising:
suspension means including means for rotatably mounting a wheel at one end thereof,

means for mounting said suspension means to the trailer frame to pivot about an axis spaced from said one end, torsion bar means including means for mounting said torsion bar means to the trailer frame between said one end and said pivot axis, and
a coupling arm operatively connecting said suspension means to said torsion bar means such that torque at said torsion bar means resists pivoting of said suspension means about said axis, said coupling arm including means for permitting a length of said coupling arm to vary during use to accommodate changing pivot radius of said suspension means with respect to said torsion bar as said suspension means pivots about said pivot axis while maintaining torsional coupling of said suspension means to said torsion bar means.

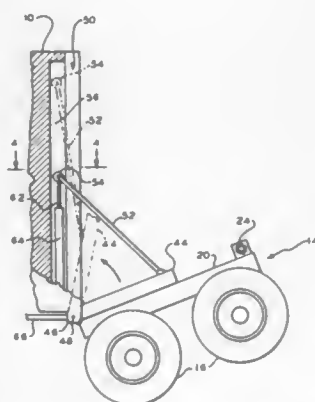
5,380,029

CARRIER FOR TRANSPORTING GOODS

Mario Portilla, 28 Lombard Dr., West Caldwell, N.J. 07006
Filed Nov. 17, 1993, Ser. No. 153,045
Int. Cl.⁶ B60P 3/42; B60G 9/02

U.S. Cl. 280—414.5

29 Claims



1. A carrier for transporting goods comprising:
a compartment having an underside and adapted to hold said goods;
a crane peripherally mounted near the underside of said compartment for articulating about a pivot axis between an upright position and a level position;
a carriage having a plurality of wheels and adapted to slide under said compartment and on said crane, said crane being adapted to: (a) engage and articulate with said carriage, and (b) disengage and articulate independently of said carriage; and
actuation means for: (a) sliding said carriage between said compartment and said crane, and (b) hoisting and lowering said carriage with said crane.

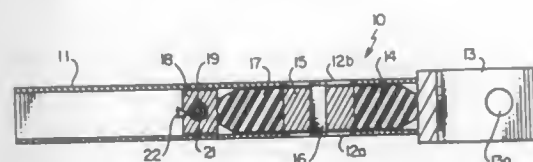
5,380,030

ENERGY DAMPENING DRAWBAR

Russell C. Gullickson, 1001 W. 4th St., Laurel, Mont. 59044
Filed Feb. 16, 1993, Ser. No. 18,368
Int. Cl.⁶ B60D 1/00

U.S. Cl. 280—486

12 Claims



1. An energy dampening drawbar for connecting a trailer to a towing vehicle, comprising:

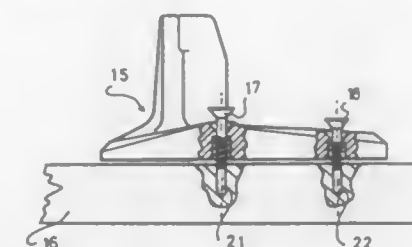
5,380,031

DEVICE FOR ASSEMBLING AN ACCESSORY ON A SKI
Hervé Vitall, Bonneville, and Jean-Pierre Reynier, Rumilly, both of France, assignors to Salomon S.A., Chavanod, France
Filed Mar. 12, 1993, Ser. No. 30,883

Claims priority, application France, Mar. 12, 1992, 92 03182
Int. Cl.⁶ A63C 9/00

U.S. Cl. 280—611

9 Claims



1. Device for assembling an accessory to a ski using at least one screw, said accessory comprising a base (13) provided with at least one assembly hole (7, 19, 20) adapted to receive a screw (1, 17, 18) used for assembly to said ski, said at least one assembly hole and said at least one screw cooperating by screw-prepositioning means, so that, when said base is positioned on said ski, said at least one screw is held in place in said at least one assembly hole with a tip of said at least one screw protruding beneath a lower surface (12) of said base by a first length (l), in order to be inserted in a second assembly hole (21, 22) provide in said ski, said at least one screw (1) having a threaded lower end portion (4) with a first outside-to-outside diameter (D) and a second length (L), then, between said threaded lower end portion and a head (2) of said at least one screw, a smooth portion (3) having a second diameter (D') smaller than said first diameter (D) and a third length (L'), and said at least one assembly hole (7) in said base has an upper part comprising a portion (9) having a minimum diameter of between said first and second diameters (D, D') and a height smaller than said third length (L'), and a lower part comprising a portion (10) having dimensions greater than said first diameter (D) and a height corresponding to said second length less said first length (L-l).

5,380,032

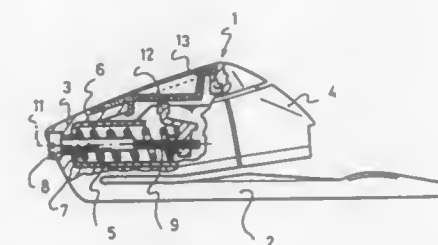
SUB-ASSEMBLY EFFECTING THE ELASTIC RETURN OF THE POSITION-RETENTION DEVICE BELONGING TO A SKI BINDING

Christian Challande, Cruseilles, and Pierre Desarmaux, Evires, both of France, assignors to Salomon S.A., Chavanod, France
Filed Apr. 12, 1993, Ser. No. 45,132

Claims priority, application France, Apr. 10, 1992, 92 04590
Int. Cl.⁶ A63C 9/22

U.S. Cl. 280—634

5 Claims

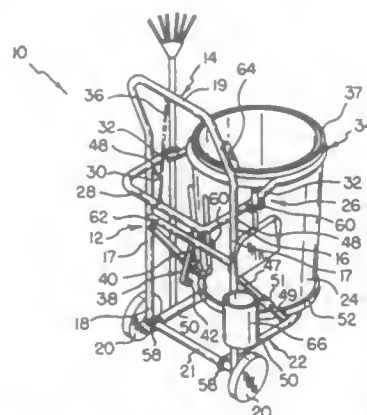


1. Ski binding comprising a position-retention element and a device for effecting elastic return of said position-retention element, said device comprising a compression spring (6) comprising turns, an adjustment screw (7) passing completely through said spring, a nut (10) forming a support stop for one of the ends of said spring and screwed on a threaded end (9) of said screw, and a device (5) connected to said position-retention element.

tion element and movable parallel to a longitudinal axis of said spring in conjunction with movements of said position-retention element, said device (5) connected to said position-retention element housing said spring (6) and opposing an elastic return force of said spring, wherein said screw has a central portion comprising a shoulder (16) against which said nut (10) abuts in an end compression position of said spring, and, in said end compression position, the turns of said spring remain spaced apart, said nut (10) being made of plastic material and being partially enclosed by a circular metal ring (19) which prevents expansion of said nut when said nut abuts against said shoulder (16) of said screw in said end compression position of said spring.

5,380,033
FOLDING UTILITY CART APPARATUS
Richard L. Harling, 746 Kippy Dr., Colton, Calif. 92324
Filed Jan. 21, 1994, Ser. No. 183,860
Int. Cl.⁶ B62B 1/12, 1/14, 1/16
U.S. Cl. 280—654

14 Claims

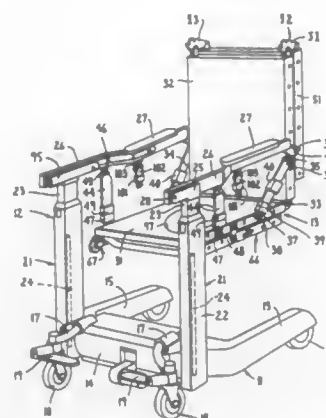


1. A new and improved folding utility cart apparatus, comprising:
- a vertical support assembly which includes a top portion adapted to serve as a handle, a middle portion below said top portion, and a bottom portion below said middle portion,
 - a pair of wheels connected to said bottom portion of said vertical support assembly,
 - a container support assembly rotatably connected to said bottom portion of said vertical support assembly, said container support assembly adapted to support a container by a bottom of the container,
 - a limit assembly, connected between said vertical support assembly and said container support assembly, for limiting rotation of said container support assembly around said bottom portion of said vertical support assembly,
 - a container top guide assembly rotatably supported by said middle portion of said vertical support assembly, said container top guide assembly including a first lever arm portion, a fulcrum portion connected to said first lever arm portion and rotatably connected to said middle portion of said vertical support assembly, a second lever arm portion connected to said first lever arm portion, and a guide ring assembly connected to said second lever arm portion,
 - a pulling-tension-exerting assembly connected between said top portion of said vertical support assembly and said first lever arm portion of said container top guide assembly, said pulling-tension-exerting assembly capable of exerting a clamping force between said guide ring assembly of said container top guide assembly and a top of a container, and
 - a locking assembly which includes a first end connected to said middle portion of said vertical support assembly below said connection of said fulcrum portion of said container top guide assembly to said middle portion of

said vertical support assembly, said locking assembly including a second end adapted to be selectively connected to said first lever arm portion of said container top guide assembly.

5,380,034
WHEELCHAIR WITH CONVERTIBLE SEAT-STRETCHER
Harold R. Wilson, Holland, Mich., assignor to Love Lift, L.P., Holland, Mich.
Filed Sep. 11, 1992, Ser. No. 943,829
Int. Cl.⁶ B62B 3/02
U.S. Cl. 280—657

21 Claims



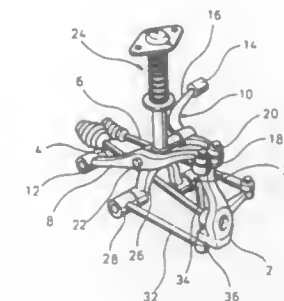
1. A patient or invalid transporter, comprising:
- a wheeled base;
 - a pair of vertically extendible uprights mounted on and projecting upwardly from said base adjacent opposite sides thereof, each said upright including a lower part fixed to said base and an upper part vertically movably supported on the lower part, said upper parts defining a pair of generally parallel and horizontally elongate arms disposed adjacent opposite sides of said transporter;
 - drive means coupled to said uprights for causing synchronous vertical raising or lowering of said upper parts, including said arms, between raised and lowered positions;
 - a seat assembly supported by said upper parts, said seat assembly including seat and backrest portions joined at adjacent edges by a horizontal hinge, said seat portion when in a seating position being disposed generally between but spaced downwardly a predetermined distance below said arms;
 - support means pivotally connected between said upper parts and said seat assembly for normally supporting said seat assembly in said seating position wherein said seat portion is disposed downwardly a substantial distance below said arms and said backrest portion projects upwardly in transverse relationship from adjacent a rear edge of said seat portion, said support means and said seat assembly defining a four-point pivotal support arrangement disposed adjacent each side of said seat assembly for permitting said seat assembly to be vertically displaced from said seating position into a raised stretcher position wherein the seat and back portions are both disposed in generally horizontally aligned relationship within a substantially single horizontal plane disposed at an elevation closely adjacent said arms with said four-point pivotal support arrangement causing said seat portion to be both vertically raised and linearly shifted horizontally forwardly relative to said base during movement from said seating position to said stretcher position;
 - means cooperating between said upper parts and said seat assembly for maintaining said seat assembly in said stretcher position; and
 - a seat/stretcher converting mechanism coacting between

said seat assembly and said uprights for effecting automatic vertical movement of said seat assembly from said seating position to said stretcher position in response to vertical raising of the upper parts of said uprights.

5,380,035
VEHICLE SUSPENSION SYSTEM FOR FRONT WHEELS
Un-Koo Lee, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
Filed Sep. 23, 1993, Ser. No. 125,202
Claims priority, application Rep. of Korea, Dec. 30, 1992, 92-26769

Int. Cl.⁶ B60G 3/00
U.S. Cl. 280—691

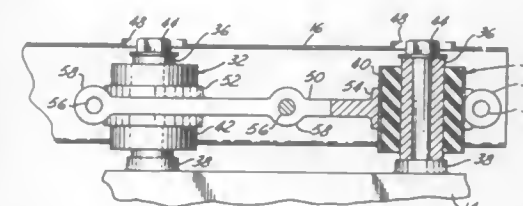
5 Claims



1. A vehicle suspension system for a steerable drive wheel comprising:
- a wheel carrier having a tie rod for steering a wheel;
 - a pair of upper arms each having one end connected to a vehicle body and the other end connected to said wheel carrier;
 - connecting means for connecting said upper arms to said vehicle body and said wheel carrier;
 - a strut arm connected to said connecting means, wherein a lower section of said strut arm forks to form two separate ends; and
 - a pair of lower arms each having one end connected to one of said strut arm ends and the other end connected to said wheel carrier.

5,380,036
VEHICLE REAR SUSPENSION SYSTEM
David J. Perkins, Ann Arbor; Bruce T. Siekkinen, Clarkston, and Frederick J. Winsor, Birmingham, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Jul. 14, 1993, Ser. No. 91,849
Int. Cl.⁶ B60G 11/22
U.S. Cl. 280—716

10 Claims



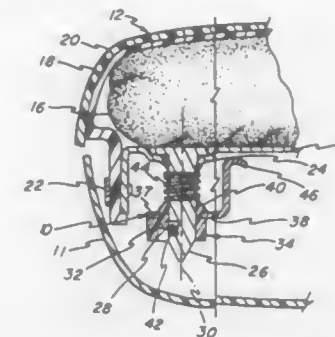
1. For use on a vehicle chassis including side rails and a tubular axle having wheel support members on the ends thereof, a vehicle rear suspension system comprising a pair of trailing arms each having one end thereof pivotally connected to a respective side rail, and a pair of resilient bushings having parallel axes and operatively connected between each wheel support member and the other end of each trailing arm for urging said one end of each trailing arm into its normal condition during roll conditions.

5,380,037
SNAP-IN INFLATABLE RESTRAINT MODULE MOUNTING MECHANISM INCLUDING LATCH ELEMENTS

Barry C. Worrell, Centerville; Paul M. Landis, Englewood; Harold W. Morgan, Miamisburg, and Larry E. Flora, Laura, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1993, Ser. No. 140,821
Int. Cl.⁶ B60R 21/20
U.S. Cl. 280—728 A

5 Claims



1. In combination with a vehicle steering wheel having an open hub portion and an inflatable restraint module, an inflatable restraint module mounting mechanism comprising:
- a support plate attached to said steering wheel and having opposing front and rear faces and a plurality of apertures therethrough,
 - a plurality of elongated mounting members attached to said inflatable restraint module, each said mounting member including a distal end and means defining a slot at said distal end, said distal ends extending through said apertures,
 - a plurality of elongated resilient members mounted to said rear face, each said resilient member traversing across at least two of said apertures and engaging with at least two of said slots to thereby retain said distal ends within said apertures,
 - springs extending between said inflatable restraint module and said support plate for biasing said inflatable restraint module away from said hub portion,
 - contact members extending from said support plate for contact with said inflatable restraint module, and
 - wherein said slots have a larger dimension than said resilient members in a direction parallel to a longitudinal axis of said mounting members such that said mounting members are movable along said longitudinal axis a predetermined amount relative to said resilient members, said contact members contacting said inflatable restraint module when said mounting members are moved in a direction toward said support plate to complete a circuit for actuating a horn.

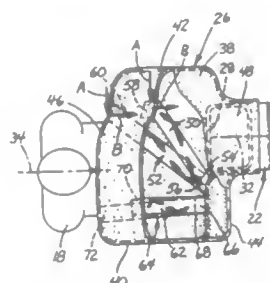
5,380,038
OFFSET INFLATABLE RESTRAINT SYSTEM
Laura A. Hawthorn, Vandalia, and Michael W. Donegan, Bellbrook, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 1, 1993, Ser. No. 143,891
Int. Cl.⁶ B60R 21/22

13 Claims

2. In a vehicle body having a passenger seating position and having an inflatable restraint system including an inflatable restraint module mounted to the vehicle body, the module including a module opening through which an inflatable restraint cushion deploys, the module including an inflator for discharging gas out through the module opening to inflate the cushion, and the cushion including a forward wall and a rearward wall, the improvement comprising:

the longitudinal centerline of the module opening being offset in a lateral offset direction from the longitudinal centerline of the passenger seating position so that initial cushion inflation occurs offset of the centerline of the passenger seating position;

a first tether means extending diagonally from the forward wall in the lateral offset direction to the rearward wall to provide a lateral force to laterally steer further cushion inflation in a direction opposite the lateral offset direction and to provide a forward force to limit cushion inflation offset of the centerline of the passenger seating position



and to define the spacing between the forward and rearward walls of the cushion;

and a second tether means extending between the forward wall and the rearward wall of the cushion and laterally spaced apart from the module opening in the direction opposite the lateral offset direction to further define the spacing between the forward and rearward walls of the cushion;

whereby upon deployment of the cushion from the module, the first and second tether means cooperatively position and shape the cushion for providing restraint to a passenger seated in the passenger seating position.

5,380,039

AIR BAG INFLATOR

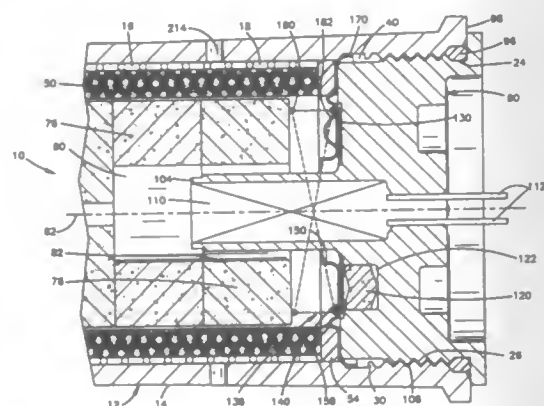
Jerome W. Emery, Gilbert, Ariz.; Alex G. Medovsky, Warren, Mich.; Thomas L. Ruhlman, North Branch, Mich., and Thomas Osentoski, Marysville, Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Sep. 29, 1993, Ser. No. 129,455

Int. Cl.⁶ B60R 21/26

U.S. Cl. 280—741

23 Claims



1. Apparatus for inflating an inflatable vehicle occupant restraint comprising:

a housing defining a chamber having an opening at one end; inflator parts disposed in said chamber including gas generating material for, when ignited, generating gas for inflating the occupant restraint;

a closure member engageable with said housing for closing said opening of said chamber, said closure member being

movable relative to said housing from a first condition in which said closure member is spaced apart from said housing and said chamber is open to a second condition in which said closure member is engaged with said housing and closes the opening of said chamber; and

a retainer disposed in said chamber adjacent said opening, said retainer having a first part interlocking with a second part on said housing when said closure member is in the first condition to block movement of said retainer and of said inflator parts relative to said housing toward said opening of said chamber when said closure member is in the first condition.

5,380,040

SECURITY ASSEMBLY FOR SEPARABLE COUPLING DEVICE, PARTICULARLY FOR MOTOR VEHICLE STEERING COLUMNS

Olivier Perichon, and Patrick Ponchet, both of Vendome, France, assignors to NACAM, Vendome, France

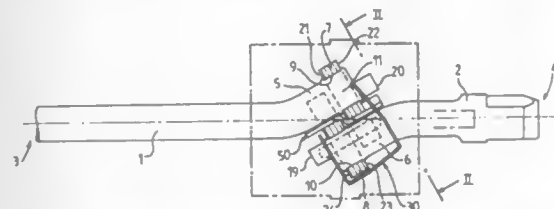
Filed Apr. 19, 1993, Ser. No. 49,570

Claims priority, application France, Feb. 26, 1993, 93 02271

Int. Cl.⁶ B62D 1/19

U.S. Cl. 280—777

7 Claims



1. A safety assembly for a separable connecting device for separably coupling two shaft sections of a motor vehicle steering column which have end portions offset with respect to a common geometric axis and said end portions disposed in overlapping relationship; said connecting device comprising: two plates oppositely disposed, each fixedly mounted on a respective one of said end portions extending in a direction transversely thereof;

a forked clip having two oppositely disposed fork portions having inner surfaces spaced from each other disposed overlying respective opposite outer sides of the two oppositely disposed plates;

a plurality of connecting pins extending through openings in the plates in a longitudinal direction of the offset end portions;

one set of said connecting pins having respective ends fixed to one of said plates and opposite ends thereof coupled to a fork portion of said forked clip disposed opposite the outer side of the other plate;

another set of said connecting pins having respective ends fixed to said other plate and opposite ends thereof coupled to the other fork portion of the forked clip disposed opposite the outer side of said one plate;

said plates, said forked clip and said plurality of connecting pins effectively coupling the two end portions for steering of the vehicle;

and said forked clip effectively precluding axial separation of the two plates when the vehicle is subjected to a frontal impact force at slow speeds and permitting axial separation when said vehicle is subjected to a frontal impact at a high speed.

5,380,041

PROTECTIVE BOOT FOR HEEL ENDS OF SKIS

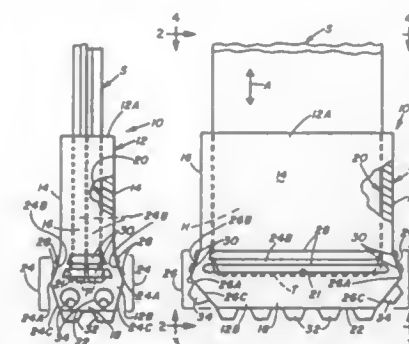
Robert G. Bowman, 3233 S. Dexter, Denver, Colo. 80222

Filed Oct. 6, 1993, Ser. No. 132,537

Int. Cl.⁶ A63C 11/02

U.S. Cl. 280—815

18 Claims



1. A boot for protecting heel ends of a pair of skis, comprising:

(a) a pocket-shaped body forming a cavity open at a top end for receiving and releasing heel ends of a pair of skis when moved in a first direction relative to said body into and from the cavity, said body being made of a material sufficiently flexible and resilient to stretch and releasably fit over the heel ends of the skis and to grip surfaces on the skis, said body having a bottom end opposite said top end, said bottom end defining a bottom of said cavity and having an exterior bottom surface section and a pair of opposite exterior side surface sections, said exterior side surface sections having respective middle portions spaced below said top end of said body and above said exterior bottom surface section of said bottom end of said body and located nearer to said bottom surface section of said bottom end than to said top end of said body, said middle portions protruding in opposite directions outwardly from said body proximate the elevation of said bottom of said cavity above said exterior bottom surface section; and

(b) a plurality of raised members formed on said outwardly protruding middle portions of said body and extending in a second direction oriented in a transverse relationship to the first direction, said raised members being adapted to be gripped by a user to pull said body over and from the heel ends of the skis.

5,380,042

PROTECTIVE CAGE FOR FUEL TANK INSTALLED BETWEEN VEHICLE SIDE MEMBERS

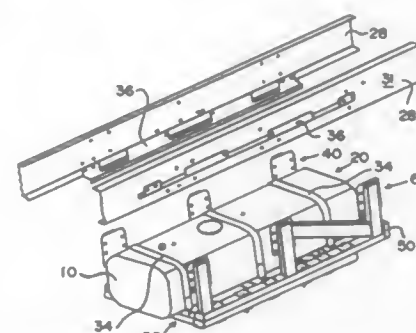
Brad A. Hively; Patrick G. Gerardot, and Michele M. Wegscheid, all of Fort Wayne, Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Dec. 20, 1993, Ser. No. 170,541

Int. Cl.⁶ B60K 15/07

U.S. Cl. 280—834

18 Claims



1. In combination with a vehicle of the type having a pair of

longitudinally extending side members each having an inwardly extending flange and a vertically extending web section connected to said flange that presents an outwardly facing vertical surface to which a fuel tank mounting and protective cage is secured, a fuel tank mounting and protective cage, comprising:

a right side structure having a generally rectangular shape and including flat mounting plates that are secured to an outwardly facing vertical surface of a side member, said right side structure having a lower longitudinal edge;

a left side structure having a generally rectangular shape and including flat mounting plates that are secured to an outwardly facing vertical surface of the other side member, said left side structure having a lower longitudinal edge;

a shelf structure having a generally rectangular shape; said right and left side structures and said shelf structure being weldments constructed mainly from low carbon, high strength steel tubing having a rectangular cross-section;

the lower longitudinal edges of said right and left side structures, extending below said side members, formed from said steel tubing and having flat downwardly facing surfaces;

said shelf structure including longitudinal extending edges formed of said steel tubing and having flat upwardly facing surfaces;

said shelf structure being dimensioned such that said flat upwardly facing surfaces align with said flat downwardly facing surfaces of the right and left side structures; and securing devices, accessible from beneath said shelf structure, releasably securing said flat upwardly facing surfaces flush against said flat downwardly facing surfaces to form bend resisting joints between the longitudinal extending edges of said shelf structure and the lower longitudinal edges of said right and left side structures.

5,380,043

HYPERTEXT BOOK ATTACHMENT

David C. Schwartz, Southborough, Mass., assignor to Productive Environments, Framingham, Mass.

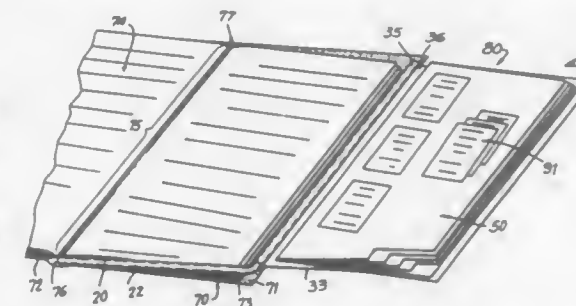
Filed Mar. 16, 1989, Ser. No. 324,417

The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.

Int. Cl.⁶ B42D 1/00, 3/00

U.S. Cl. 281—15.1

10 Claims



1. A frame attachment for a book, said frame attachment comprising:

a frame member capable of being pivotably attached to said book comprising at least a first arm and a second arm, each arm having a length, said first and said second arms being substantially orthogonal to one another, said first arm further comprising a length adjustment means for allowing the changing of the length of said first arm;

an orientation structure pivotably attached at a first end thereof to an attachment location on said second arm of said frame member; and

a mounting surface pivotably attached to said orientation structure at a second end of said orientation structure, said

mounting surface having a face and perimeter features; wherein:

said orientation structure enables said mounting surface to be placed in any of two substantially coplanar, non-overlapping and adjacent positions, said positions being on either side of said attachment location, with preservation of orientation of said face and perimeter features of said mounting surface in both positions.

5,380,044

IDENTIFICATION CARD AND METHOD OF MAKING SAME

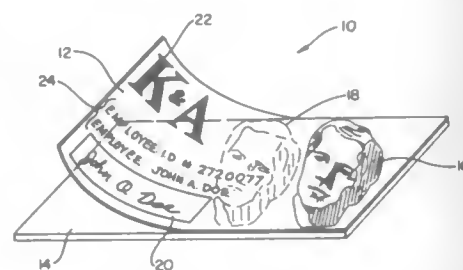
Robert K. Aitkens, Cranford, N.J.; Paul F. Gloser, Souderton, Pa., and George F. Keelty, Edison, N.J., assignors to K & A Industries, Inc., Bridgewater, N.J.

Filed Apr. 16, 1992, Ser. No. 869,731

Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—67

9 Claims



1. A method of creating a card for displaying information comprising the steps of: printing information with a printing agent on a first side of at least one transparent vinyl laminate; and fusing said first side of said at least one transparent vinyl laminate to a plastic substrate, wherein said printing agent becomes encapsulated between said at least one transparent vinyl laminate and said plastic substrate; wherein said printing agent is printed on said at least one transparent vinyl laminate at a density that is less dense than a desired density and said printing agent spreads to said desired density as said at least one transparent vinyl laminate is fused substrate.

5,380,045

METHOD FOR IDENTIFYING AN OBJECT AND THE RESULTING STRUCTURE

Tyler K. Comann, 312 Walnut St., San Francisco, Calif. 94118

Continuation of Ser. No. 887,617, May 22, 1992, abandoned.

This application Sep. 16, 1993, Ser. No. 122,735

Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—70

4 Claims

1. A method by which a person is able to identify wine in a bottle which comprises:

placing on the wine bottle a label including a removable portion containing selected information for identifying the wine, said information including the name of the winery, the type of wine and the year of the wine, the same information being placed on another portion of the label;

removing the removable portion of the label from the wine bottle; and



retaining the removable portion of the label when the wine bottle is discarded thereby enabling the wine to be identified after the wine bottle has been discarded.

5,380,046

SECURED PERSONAL INFORMATION PACKET

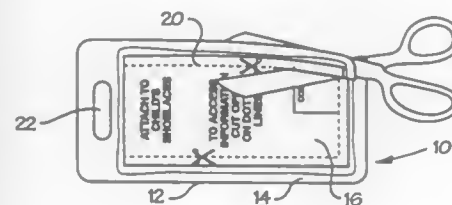
Gregory W. Stephens, P.O. Box 472266, Charlotte, N.C. 28247

Filed Aug. 30, 1993, Ser. No. 114,138

Int. Cl.⁶ B42D 15/10

U.S. Cl. 283—75

2 Claims



1. A personal information packet to be carried by a person to provide identification and relevant information concerning the person in an emergency, the packet comprising a card bearing visually perceptible written information concerning the person on only one side thereof and bearing on the opposite side thereof a visually perceptible notice that personal information is enclosed and indicia for emergency opening of the packet, the card being folded upon itself along a transverse fold line into two parallel face abutting planar plies of equal size with the opposite side of the card facing outwardly from each ply to cover the written information from view without unfolding the card while leaving the notice and emergency opening indicia outwardly perceptible, and a transparent plastic envelope having two plastic leaves laminated about the folded card to adhere each plastic leaf to a respective ply of the card to sealably enclose the card against outward view of the written information and to secure the card against removal without breaking the sealed integrity of the envelope, with the notice and emergency opening indicia being visible through the envelope, the emergency opening indicia comprising a generally continuous guide line extending from adjacent one end of the fold line along the perimeter of one ply of the folded card to adjacent the other end of the fold line to serve as a guide line for cutting open the laminated envelope without destroying the concealed information on the opposite side of the folded card.

5,380,047

AUTHENTICATION SYSTEM

Warren F. Molee, Laguna Niguel, and Stuart M. Ellis, Carlsbad, both of Calif., assignors to The Upper Deck Company, Carlsbad, Calif.

Continuation-in-part of Ser. No. 954,114, Sep. 30, 1992, Pat. No.

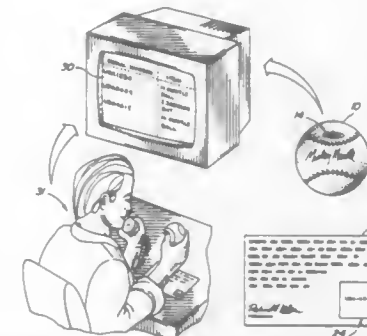
5,267,756. This application Jan. 16, 1993, Ser. No. 78,735

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.⁶ B42D 15/00

U.S. Cl. 283—86

20 Claims



1. An authentication system for an article comprising: a. an article for which authentication is desired; b. a first image-bearing medium affixed to the article with an adhesive to be tamper proof, the medium having imprinted thereon a unique code number; c. a certificate of authenticity for the article, and including thereon a second image-bearing medium with an identical unique code number; and d. a list of unique code numbers with a statement of the respective product to which each unique code number applies.

5,380,048

TUBE JOINT

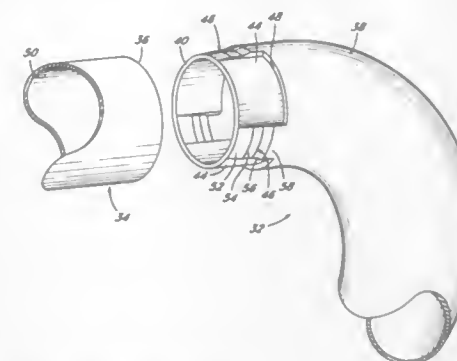
Kenneth E. Vogel, Yuma, Ariz., assignor to Russell A Division of Ardeo, Inc., Brea, Calif.

Filed Aug. 18, 1992, Ser. No. 931,852

Int. Cl.⁶ F16L 13/08

U.S. Cl. 285—22

19 Claims



1. A tube joint comprising: a female tube having an open end, a male tube having an area of reduced exterior diameter at one end and fitting within said female tube to create an axial overlap, and radially outwardly extending bosses spaced around said reduced area, the bosses providing the sole contact between said tubes, each of said bosses having one or more surfaces adjacent said female tube open end to limit the axial overlap between the tubes, to create an annular radial space between a mouth of said male tube and the interior of said female

tube, and to allow the two tubes to be pressed together in an interference fit.

5,380,049

PIPE COUPLING

Mark Smowton, South Woodham Ferrers, Gabon, assignor to Ford Motor Company, Dearborn, Mich.

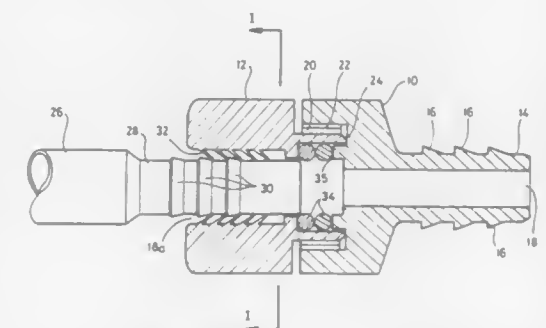
Filed Aug. 19, 1992, Ser. No. 930,536

Claims priority, application United Kingdom, Jun. 27, 1990, 9014248

Int. Cl.⁶ F16L 37/12

U.S. Cl. 285—169

11 Claims



1. A pipe coupling assembly, comprising: a first and second pipe, said second pipe having a plurality of radially extending ridges at one end thereof; a first and second body part, said first body part having a first end for connection to said first pipe and a second end for connection to said second body part; said second body part having a first end for connection to said first body part and a second end forming a socket for receiving said second pipe therein, in a push-in manner; said first and second body parts having a through bore for the passage of fluid between said first and second pipes; said first and second body parts molded from plastics materials; said second body part further comprising a sealing means and latching means for cooperating with said radially extending ridges on said second pipe, said latching means on said second body part comprising integrally-formed, internally-directed ribs which allow said second pipe to be pushed into said socket with said ribs yielding to allow said ridges to pass, but which prevent said second pipe from being pulled out, and said sealing means between said second body part and said second pipe comprising two O-rings seated in an annular recess on said second body part, said sealing means and latching means being arranged relative to one another so that as said second pipe is pushed into said socket, latching occurs between said second body part and said second pipe before sealing occurs between said second body part and said second pipe; and wherein said second body part is connected with and detachable from the first body part, such that said sealing means remains with said second body part when said second body part is detached from said first body part.

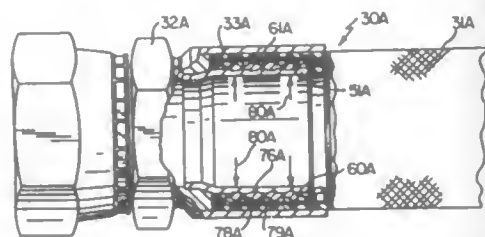
5,380,050
HOSE CONSTRUCTION, COUPLING THEREFORE AND METHODS OF MAKING THE SAME

John D. Sanders, Springfield, Mo.; Homer N. Holden, Sylva, N.C., and Randy C. Foster, Springfield, Mo., assignors to Dayco Products, Inc., Dayton, Ohio
 Division of Ser. No. 988,983, Dec. 11, 1992, Pat. No. 5,297,822, which is a division of Ser. No. 875,865, Apr. 29, 1992, Pat. No. 5,199,752, which is a division of Ser. No. 693,109, Apr. 25, 1991, Pat. No. 5,129,686, which is a division of Ser. No. 408,161, Sep. 15, 1989, Pat. No. 5,037,143. This application Nov. 9, 1993, Ser. No. 149,585

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
 Int. Cl.⁶ F16L 33/213

U.S. Cl. 285—256

20 Claims



1. In a hose construction comprising a tubular hose having an inner peripheral surface means and an outer peripheral surface means, and a coupling secured to one end of said tubular hose, the improvement wherein said inner peripheral surface means of said tubular hose comprises an inner corrugated hose made of polymeric material and having inwardly directed projections with recesses therebetween and extending from said one end of said tubular hose to the other end thereof and wherein said coupling has an insert means disposed in said one end of said tubular hose and being radially outwardly expanded into sealing relation with said inner corrugated hose, said insert means having an outer peripheral surface means defined by a plurality of outwardly directed projections with recesses therebetween, said projections of said insert means being respectively received in said recesses of said inner hose and said projections of said inner hose being respectively received in said recesses of said insert means whereby the interior of said tubular hose is substantially sealed to the interior of said coupling, said projections of said insert means each having a transverse cross-sectional configuration of a certain length that is different from the transverse cross-sectional length of each of said recesses of said inner hose.

5,380,051
FORCE ASSISTED TUBE CONNECTOR
 Ronald G. Breuhan, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 86,067
 Int. Cl.⁶ F16L 37/084

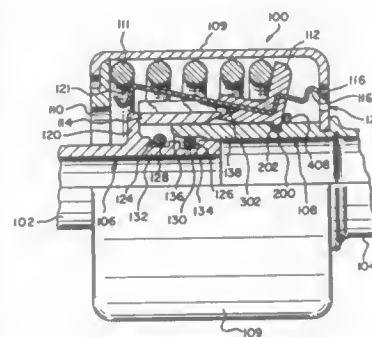
U.S. Cl. 285—307

20 Claims

1. A connector for coupling a first tube and a second tube, said connector comprising:

a first connector member attachable to an end of the first tube and a second connector member attachable to an end of the second tube, said second connector member being adapted to receive said first connector member when introduced one into the other; and
 force means, attachable to one of said connector members,

for applying an axial force to assist an assembler in moving said first and second connector members together upon



introduction of said first connector member into said second connector member.

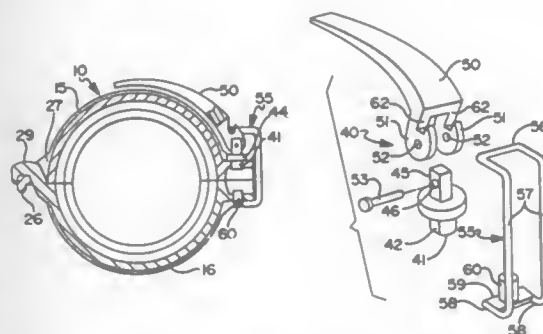
5,380,052
RELEASABLE HANDLE-TYPE FASTENER FOR PIPE COUPLINGS

Thomas R. Hendrickson, Pelkie, Mich., assignor to Quikcoup, Inc., Houghton, Mich.

Filed Dec. 27, 1993, Ser. No. 172,720
 Int. Cl.⁶ F16L 23/08

U.S. Cl. 285—364

6 Claims



1. A handle-type, releasable fastener for use in place of a fastener bolt which is normally used in a pipe coupling having curved segments which are arranged end-to-end around a central axis to encircle the adjacent end portions of a pair of co-axially aligned pipes for clamping said pipe end portions within the coupling, and with the adjacent ends of the segments being fastened together, and including a means for fastening at least one pair of adjacent segment ends together comprising radially outwardly extending upper and lower bolt lugs formed upon each of the adjacent segment ends, with the lugs having aligned bolt receiving openings through which a conventional bolt may be inserted for securing the two adjacent lugs together, said fastener comprising:

a pin having an upper pin part and a lower pin part, respectively, arranged within the aligned bolt holes in said lugs in place of a normally used fastener bolt, with the upper pin part having a head formed thereon for engaging the hole in its respective upper lug, and a pivot formed on said head;

an elongated lever having an end pivotally connected to the head pivot;

a stiff clamp member attached to the lever near the pivotal connection between the lever and the head pivot and extending along the lugs and having a portion which carries the lower pin part for positioning the lower pin part within the bolt hole of its respective lower lug and which engages the exterior of the lower lug;

the lever being normally positioned adjacent an exterior surface of the upper lug segment, but being normally

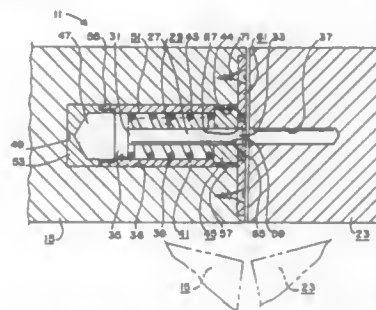
swingable about its pivotal connection with the head, away from such segment for releasing said clamp member engagement and to remove the lower pin part from the bolt hole in the lower lug, for thereby permitting manual movement of the upper pin part endwise out of the upper lug bolt hole to unfasten said adjacent segment ends for unclamping pipe end portions within the coupling and to permit inserting pipe ends within the coupling.

5,380,053
INTUMESCENT FIRE DOOR LOCK MECHANISM
 Joseph N. Saino, Memphis, Tenn., assignor to F. L. Saino Manufacturing Co., Memphis, Tenn.

Filed Jul. 26, 1993, Ser. No. 96,371
 Int. Cl.⁶ E05C 1/06

U.S. Cl. 292—144

7 Claims



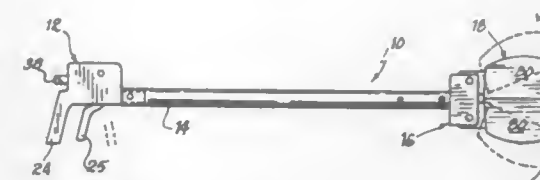
1. A lock mechanism for a door assembly including at least one movable door member for movement between an opened position and a closed position; said lock mechanism comprising:

- a) latch means coupled to the movable door member for movement between an extended position in which the movable door member is locked in the closed position and a retracted position in which the movable door member is allowed to move between the opened and closed positions;
- b) holding means for normally holding said latch means in said retracted position; and
- c) intumescent means for forcing said latch means to said extended position in the event of a fire adjacent the door assembly.

5,380,054
HANDHELD DEVICE FOR PICKING UP OBJECTS
 Misael Galvis, 4062 Ashford St., San Diego, Calif. 92111
 Filed Mar. 31, 1994, Ser. No. 220,750
 Int. Cl.⁶ A01K 29/00; E01H 1/12

U.S. Cl. 294—1.4

8 Claims



1. A handheld device for picking up objects comprising: a handgrip assembly having a front end, a rear end, a left side, a right side and a bottom side, a handgrip handle extends downwardly from the rear end of said handgrip assembly, an elongated trigger member having a top end and a bottom end is secured to said handgrip assembly; an elongated tubular member having a front end and a rear end; means connecting the rear end of said tubular member to the front end of said handgrip assembly; a combination plunger and double bellcrank assembly comprising: an elongated plunger having a front end and a rear

end, a head portion formed at said front end, a shank portion extends rearwardly from said head portion; said head portion having a left side having a first cam surface formed adjacent its front end and a first protrusion formed adjacent its rear end and a principal recess formed intermediate said first cam surface and said protrusion; said head portion having a right side having a first cam surface formed adjacent its front end and a first protrusion formed adjacent its rear end and a principal recess formed intermediate said first cam surface and said protrusion; a left side bellcrank having a front end, a rear end, a left side and a right side, said right side having in sequence from front to rear a primary recess, a protruding cam surface and a secondary recess; a right side bellcrank having a front end, a rear end, a left side and a right side, said left side having in sequence from front to rear a primary recess, a protruding cam surface and a secondary recess;

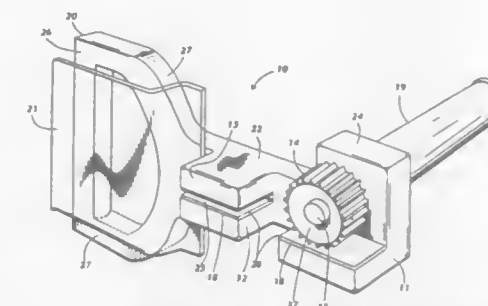
means connecting the front end of said tubular member to said combination plunger and double bellcrank assembly; an elongated rod having a front end and a rear end; means for detachably securing said rear end to said trigger member and means for detachably securing the front end of said rod to the rear end of said plunger so that when said trigger is pulled rearwardly the plunger will also be pulled rearwardly and cause the front ends of said bellcranks to pivot toward each other.

5,380,055
SHEET MATERIAL PULLER
 Roderick A. Suarez, 4768 Stillwood Cove, Forest Park, Ga. 30050

Filed Apr. 7, 1993, Ser. No. 45,026
 Int. Cl.⁶ B66C 1/48

U.S. Cl. 294—16

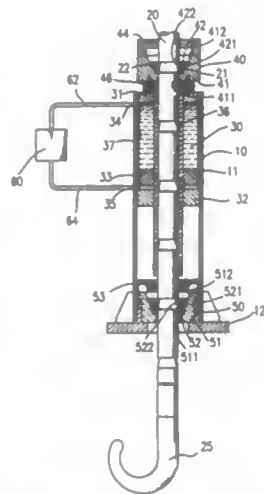
8 Claims



1. A sheet puller comprising a frame having a pressure plate with a top surface, a guide support base also with a top surface, said guide support base top surface being in the same plane as said pressure plate top surface, a guide support top placed above said guide support base defining a slot between them so as to receive the sheet in said slot between them, a rotatable offset cam affixed to a shaft supported by the frame, said cam having a lobe with a circumference and teeth, said teeth being on the circumference of said cam, at least at said lobe, said cam being placed above said pressure plate top surface, said teeth being designed to engage the sheet when brought into contact with the sheet, said puller having handle means to facilitate moving the puller so that when the puller is moved in one direction, said cam is rotated to move said lobe towards the sheet so that the teeth engage the sheet so the puller and the sheet can be moved together, and when the puller is moved in the opposite direction said lobe is moved away from the sheet so that the teeth become disengaged from the sheet thereby releasing the sheet from the puller.

5,380,056
VERTICAL HYDRAULIC HOIST DEVICE
 Tain-Lai Wu, 7th Fl., No. 6, Shang Chih St., Ling Ya Dist.,
 Kaohsiung, Taiwan, Prov. of China
 Filed Aug. 20, 1993, Ser. No. 110,103
 Int. Cl.⁶ B66C 1/34; B66F 3/25
 U.S. Cl. 294—82.15

6 Claims



1. A vertical hoist device comprising:

- a base;
- a tubular member with a lower end securely mounted on the base;
- a hoisting rod extending through said tubular member and said base, including a plurality of vertically spaced annular recesses each of which defines an upper edge and an annular surface which tapers downward;
- an actuating means mounted in an upper section of said tubular member, including upper and lower caps and a hollow actuating tube extending through said upper and lower caps, defining an annular chamber therebetween in which working fluid is received, a piston being mounted in said chamber, upper and lower openings being respectively formed in upper and lower sections of the tubular member, and means for effecting upward and downward movements of said piston, said hollow actuating tube being securely connected to said piston to move therewith;
- a lifting means secured to said hollow actuating tube to move therewith, said lifting means engaging with said upper edge of one of said recesses to effect upward movement of said piston; and
- a stop means allowing upward movement of said hoisting rod and preventing downward movement of said hoisting rod.

5,380,057
VEHICLE SUN VISOR
 Thomas J. Wevers, 535 Strathdee Place, Victoria, British Columbia, Canada V9C 2R7
 Filed Jun. 15, 1993, Ser. No. 76,841
 Int. Cl.⁶ B60J 3/02

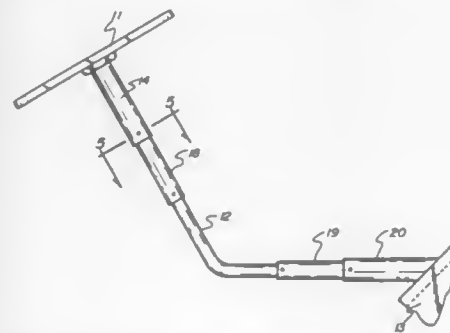
3 Claims

U.S. Cl. 296—97.11

1. A vehicle sun visor comprising:

- a visor;
- a base mounting plate having a first pair of spaced screw holes extending therethrough to facilitate, said first screw holes being operable to receive threaded fasteners to secure said base mounting plate to a portion of a vehicle, said base mounting plate having a center aperture positioned between said first pair of screw holes;
- a mounting tube rotatably secured to said base mounting plate between said screw holes and extending at least partially through said center apertures, said tube project-

- ing substantially orthogonally from said base mounting plate;
- a first slidable tube movably positioned at least partially within said mounting tube, said first slidable tube being substantially hollow;
- a first set screw directed through said mounting tube and into engagement with said first slidable tube for securing a position of said first slidable tube relative to said mounting tube;
- a supporting arm extending at least partially into said first slidable tube, said supporting arm including a first portion and a second portion with said first portion extending from said first slidable tube and integrally continuing into said second portion, wherein said second portion is oriented at an oblique angle relative to said first portion;
- a second slidable tube movably positioned at least partially over said second portion of said supporting arm;
- a third slidable tube movably positioned at least partially over said second slidable tube, said third slidable tube having an outer distal end;
- a second set screw directed through said third slidable tube and into engagement with said second slidable tube for



- securing a position of said second slidable tube relative to said third slidable tube;
- a flat extension having a front face and a back face and projecting from said outer distal end of said third slidable tube, said flat extension having a second pair of spaced screw holes extending therethrough;
- a first fastening clip positioned into abutting relation with said back face of said flat extension over one of said second pair of screw holes;
- a second fastening clip positioned into abutting relation with said back face of said flat extension over another of said second pair of screw holes;
- a backing plate mounted to said outer distal end of said third slidable tube, said backing plate comprising a substantially flat planar member having a third pair of spaced screw holes aligned with said second pair of screw holes, said backing plate being positioned into abutting relation with said front face of said flat extension; and,
- a pair of bolts extending through said visor and through both an individual one of said third pair of screw holes and an individual one of said second pair of screw holes to threadably engage with an individual one of said fastening clips.

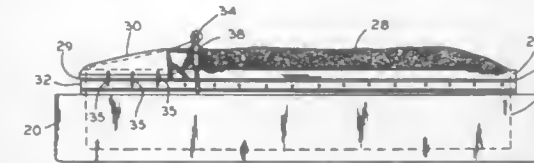
5,380,058
HOLD COVER FOR A VEHICLE ESPECIALLY ONE FOR TRANSPORTING PARTICULATE MATTER
 Rodney A. Short; Daniel T. Dunn, both of Decatur, Ill.; John D. Cook, Foley, Mo., and William O. Boyd, Collinsville, Ill., assignors to Archer Daniels Midland Company, Ill.
 Filed Apr. 8, 1993, Ser. No. 44,635
 Int. Cl.⁶ B60P 7/04; B63B 19/21

U.S. Cl. 296—98

14 Claims

1. A hold cover and associated deployment mechanism for use on vehicles especially during the storage or transportation

of a product, said hold cover and mechanism comprising straight and horizontally oriented tracks adapted to be mounted on opposite sides of said vehicle with a hold for receiving said product between said tracks, said straight tracks adapted to extend linearly along substantially the entire length of said hold on opposite sides of said vehicle, opposing support means mounted on said tracks for movement along each of said tracks, a roller extending between and carried by said opposing



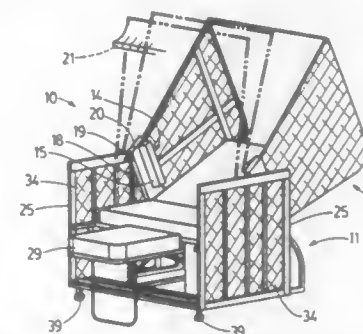
support means, a hold cover wound on said roller to be unwound to cover or wound to uncover said hold as said support means moves linearly and longitudinally along said straight horizontal tracks, one end of said cover adapted to be attached to an end of said hold, means for bringing said roller into a weather proof contact with the other end of said hold, and means adapted to be distributed along the length of said hold for securing edges of said cover in a weather proof manner to opposite sides of said hold.

5,380,059
KNOCK-DOWN SHELTERING LOUNGE WITH CENTER PIVOT

Gerald J. Felling, 230 Arroyo Rd., Lagunitas, Calif. 94938
 Filed Jun. 9, 1992, Ser. No. 896,052
 Int. Cl.⁶ A47C 7/62

U.S. Cl. 297—184.15

23 Claims



1. A knocked-down sheltering lounge in kit-form adapted to be assembled on-site for sunbathing comprising:

- a base frame comprising a sub-frame having lateral sides and a horizontally disposed top adapted to retain a seating cushion thereon, said top comprising a plurality of longitudinally spaced and laterally extending cross-struts adapted to be connected and disconnected between the lateral sides of said sub-frame for mounting said seating cushion thereon, and a pair of base side panels adapted to extend vertically above the lateral sides of sub-frame to form arm rests and to confine said seating cushion in said sub-frame,
- a pair of substantially flat canopy side panel frames and a plurality of individual cross-struts adapted to be spaced one-from-another and have opposite ends thereof attached to said canopy side panel frames to form a canopy frame, open at a frontal side thereof and adapted to be pivotally and removably mounted onto said base frame for permitting said canopy frame to be moved through an infinite number of locking positions between a normal upright position to form a seating arrangement and a fully lowered position placing the back of said canopy frame in at least general horizontal alignment with the top of said base frame to form a bed, one of said cross-struts having pivot

means thereon for pivoting said canopy frame on said base frame, and

actuating means, adapted to be interconnected between said canopy frame and said base frame, for selectively moving said canopy frame to a selected position between its upright and fully lowered positions, each of said base side panels, said canopy side panel frames and said cross-struts being adapted to be connected to and completely disconnected from each other and being at least substantially flat and sized to be compactly packaged with component parts of said sub-frame to provide a knocked-down sheltering lounge in kit form having a volume that is not more than approximately one-fourth of the erected form of said sheltering lounge for shipping purposes.

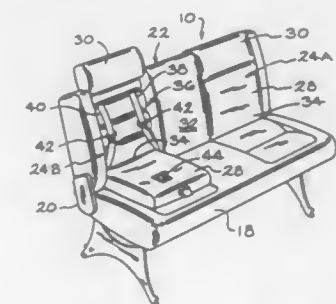
5,380,060
VEHICLE SEAT ASSEMBLY WITH FOLDING SEAT BACK AND INTEGRAL CHILD SEAT AND INTERLOCK MECHANISM

Karl G. Sponsler, Plymouth, and Kurt Seibold, Dearborn Heights, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Jul. 12, 1993, Ser. No. 89,446
 Int. Cl.⁶ A47C 15/00

U.S. Cl. 297—238

16 Claims



1. A seat assembly for use in a motor vehicle comprising:
 a generally horizontal adult seat cushion having front and rear ends;

an adult seat back including a back panel with upper and lower ends, said back panel being movable between a first use position in which said back panel extends generally upward from the rear end of said seat cushion and a first stowed position, said adult seat cushion and said adult seat back providing seating surfaces for an adult seat occupant at a seating position;

releasable latch means for retaining said back panel in said first use position, said releasable latch means being releasable for permitting movement of said back panel from said first use position;

a child seat providing seating surfaces for a child seat occupant at said seating position including a child seat member movable between a second stowed position and a second use position, said child seat member enabling use of said seat assembly at said seating position by a child when said child seat member is in said second use position and said child seat member enabling use of said seat assembly at said seating position by an adult when said child seat member is in said second stowed position; and

interlock means between said releasable latch means and said child seat member for preventing release of said latch means when said child seat member has been moved from said second stowed position to said second use position whereby said back panel can not be moved from said first use position when said child seat member has been moved from said second stowed position, said interlock means including a lock member movable to a lock position in which said lock member is engagable with said latch means to prevent release of said latch means thereby preventing movement of said back panel from said first

use position and cable means including a cable having a pair of ends with a first end being coupled to said child seat member and a second end being coupled to said lock member for moving said lock member to said lock position when said child seat member is moved from said second stowed position whereby said back panel is retained in said first use position.

5,380,061

BICYCLE SEAT SECURITY RING

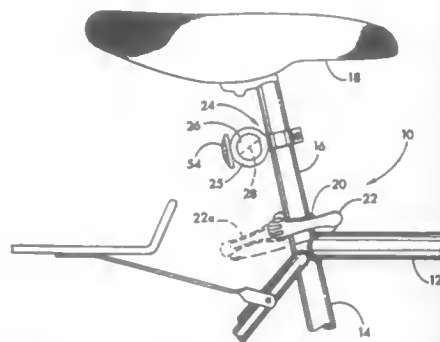
Robert C. Pendleton, 4271 Sheridan Ave. South, Ste. 304, Minneapolis, Minn. 55410

Filed Jun. 6, 1993, Ser. No. 86,312

Int. Cl.⁶ B62J 1/00

U.S. Cl. 297—195.1

12 Claims



1. A bicycle seat security device for preventing the theft of a bicycle seat and bicycle seat post from a bicycle frame by securing the seat to a bicycle lock comprising, a bicycle security ring for being supported on the bicycle seat post, a mounting means for securing a connection between the security ring and the bicycle seat post, said security ring having a center opening therein that is of sufficient size for receiving the lock to permit fastening said lock to the ring, said security ring being permanently closed upon itself and free from gaps so as to encircle the bicycle lock when the lock is passed through the security ring so that the security ring cannot be removed therefrom when the lock is locked, said security ring and mounting means being directly and fixedly joined together at their respective circumferences, said mounting means for securing the security ring to the bicycle seat post with the ring opening oriented in a position in which the lock can be passed through the security ring for locking the bicycle seat and bicycle seat post, thereby allowing the seat to be locked to the bicycle frame or other object after the seat is removed from the bicycle frame.

5,380,062

CHILD'S TILTABLE CAR SEAT

Yves Nania, Tignieu-Jamezieu, France, assignor to Renolux, Charvieu-Chavagneux, France

Filed Jun. 23, 1993, Ser. No. 79,890

Claims priority, application France, Jun. 30, 1992, 92 08291

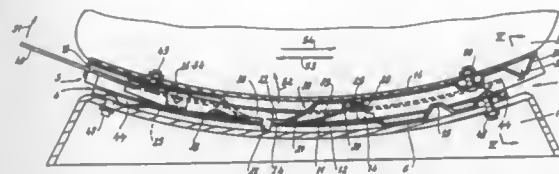
Int. Cl.⁶ B60N 2/28

U.S. Cl. 297—256.13

15 Claims

1. A seat for a child adapted to be removably attached to a vehicle seat, comprising: a base for attachment to a vehicle seat, said base having a first curved slide part; a body having a second curved slide part, said first curved slide part and said second curved slide part slidably coupled together to mount said body for tilting with respect to said base, wherein said first curved slide part has a generally C-shaped cross section including a center part having a rack formed

of a plurality of longitudinally arranged spaced openings, a pair of opposed arms extending from said center part, and a pair of facing flanges each extending from one of said opposed arms, wherein each of said facing flanges, each of said opposed arms and said center part define a groove, and wherein said second curved slide part has a generally Ω-shaped cross section including a generally U-shaped web and a pair of flanges extending outwardly therefrom, said outwardly extending flanges being slidably received in said grooves of said first curved slide part, said second curved slide part also having a control lever extending



from an end thereof and a hook with two ends pivotally coupled to said second slide part about a transverse pivot axis, one end of said hook having a tip that engages one of said openings in said rack and the other end being coupled to said control lever, said control lever controlling pivoting of said hook; and a spring having two ends, one end pivotally coupled to said second slide part and the other end coupled to said hook, wherein said hook has a transverse hole therein, said other end of said spring engaging said transverse hole, and said one end of said spring pivotally coupled to said web of said second slide part.

5,380,063

CHAIR WITH SEAT DEPTH ADJUSTMENT

Friedrich W. Dauphin, Offenhausen, Germany, assignor to Dauphin Entwicklungs- u. Beteiligungs-GmbH, Neukirchen, Germany

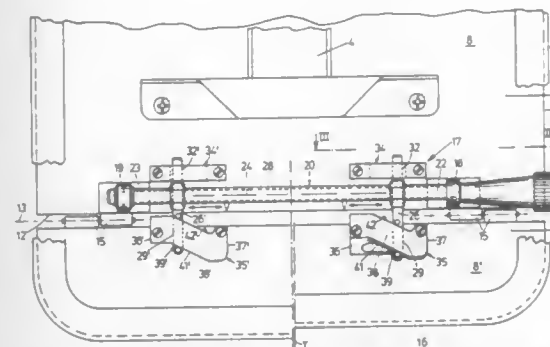
Filed Aug. 17, 1993, Ser. No. 107,008

Claims priority, application Germany, Aug. 18, 1992, 4227329

Int. Cl.⁶ B60N 2/02

U.S. Cl. 297—284.11

8 Claims



1. A chair, in particular an office chair, with a chair frame (1,3), a seat (5) supported thereon and a backrest (7), the seat comprising a base portion (11) forming the main seating face and a rim portion (14) supported on the latter's front rim (12) which rim portion (14) is pivotable about a horizontal transverse axis (13) and forms the front rim section of the seating face, the rim portion (14) being adjustable into different pivoted positions relative to the base portion by means of an adjusting mechanism (17), wherein the adjusting mechanism (17) comprises an adjusting spindle (20) with a spindle axis (24), which adjusting

spindle is rotatably supported in parallel to the transverse axis (13) underneath the seat (5) on the base portion (11) and on which a two-armed adjusting lever (26, 26') comprising a bracket (29) and a guide arm (32, 32') and extending at right angles to the adjusting spindle (20) is supported to be transversely displaceable by a spindle rotation in the direction of the spindle axis (24), and wherein said bracket (29), facing the rim portion (14) of the adjusting lever (26, 26') is articulated with the rim portion (14) and wherein said guide arm (32, 32') facing the base portion (11) of the adjusting lever (26, 26') engages with an inclined guideway (33) of a guide link (34, 34') on the base portion (11), wherein the adjusting lever (26, 26'), when being transversely displaced by a spindle rotation, is pivoted about the adjusting spindle (20) due to engagement of the adjusting lever with the inclined guideway (33), thereby pivoting simultaneously the rim portion (14) about horizontal axis (13).

5,380,064

ROTATABLE SEAT

Eiichi Yamano; Toru Kondo, and Masami Yonekura, all of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

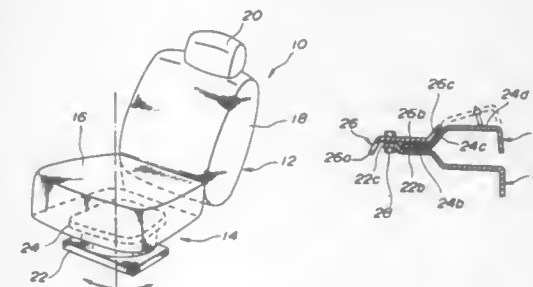
Filed Nov. 29, 1993, Ser. No. 158,202

Claims priority, application Japan, Nov. 30, 1992, 4-340953

Int. Cl.⁶ A47C 3/18

U.S. Cl. 297—344.22

3 Claims



1. A rotatable seat mounted on a floor, comprising: a seat proper; a lower base member mounted on the floor, said lower base member having a first annular portion; an upper base member mounting thereon said seat proper, said upper base member having an annular flange portion and a second annular portion which is truncated conical in shape, said annular flange portion being rotatably put on said first annular portion of said lower base member such that said upper base member is rotatable relative to said lower base member; and a retaining member for retaining said upper base member on said lower base member, said retaining member being secured to said lower base member and having third and fourth annular portions, said third annular portion being opposed to and spaced from said first annular portion of said lower base member such that an annular groove for receiving therein said annular flange portion of said upper base member is defined therebetween, said fourth annular portion being truncated conical in shape and opposed to and spaced from said second annular portion of said upper base member such that a certain clearance is provided therebetween and that, when said upper base member receives a force to separate said upper base member from said lower base member, deformation of said upper base member is substantially suppressed by that said second annular portion of said upper base member is brought into abutment with said fourth annular portion of said retaining member.

5,380,065

MECHANICAL LINKAGE FOR AN ARM REST

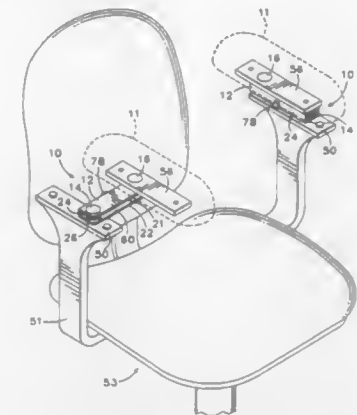
Daniel F. Rohrer, Powell Butte, Oreg., assignor to Reimers Furniture Mfg., Inc., Hillsboro, Oreg.

Filed Dec. 22, 1993, Ser. No. 173,201

Int. Cl.⁶ A47C 7/54

U.S. Cl. 297—411.37

8 Claims



1. A mechanical linkage for adjustably coupling an arm rest to an arm rest base in a chair, comprising: (a) an elongate component having first and second ends; (b) first attachment means for connecting said elongate component rotatably to said arm rest base proximate said first end; (c) second attachment means for connecting said elongate component rotatably to said arm rest proximate said second end; and (d) single pressure adjustment means for simultaneously applying a variable amount of resistance against the rotation of both said first and second attachment means.

5,380,066

BELT RETRACTOR WITH PUSH BUTTON CONTROLLED LOCKING BAR

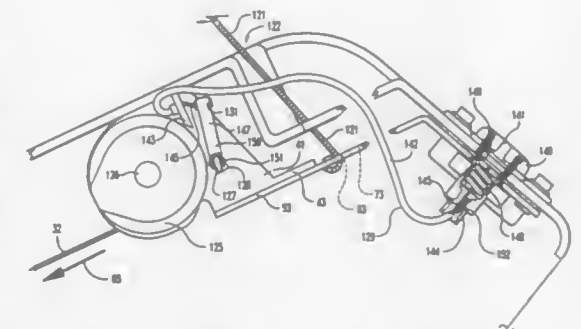
Michael A. Wiseman, Indianapolis; Allan R. Lortz, Noblesville, and David Merrick, Indianapolis, all of Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Continuation-in-part of Ser. No. 897,872, Jun. 12, 1992, abandoned. This application Feb. 5, 1993, Ser. No. 14,111

Int. Cl.⁶ A47C 31/00

U.S. Cl. 297—476

8 Claims



2. A retractor for use with a child seat having a harness, an interengaged combination tongue and seat belt buckle comprising: a frame; a spool for rotatably receiving a portion of the harness and having an axle and end walls at least one of which is configured as a ratchet wheel with said spool rotatably mounted to said frame;

a first spring mounted to said frame and normally urging said spool to rotate to a retracted position whereat a portion of said harness is wrapped thereon;

a locking bar parallel to said axle and mounted to said frame to be movable between a removed position whereat said locking bar is unlocked from said ratchet wheel and a locking position whereat said locking bar lockingly engages said ratchet wheel limiting movement of said spool; and

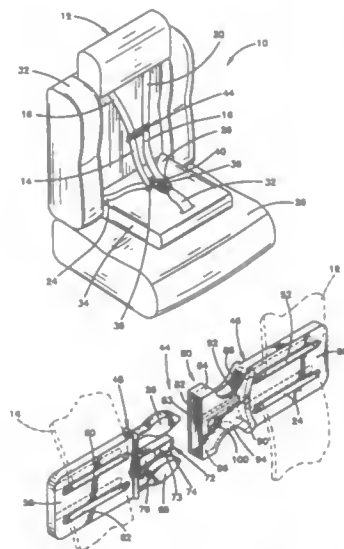
operator means including manual push button means mounted to said locking bar and movable independent of operation of said interengaged combination of said tongue and seat belt buckle from a first position whereat said locking bar is in said locking position, to a second position where said operator means moves said locking bar to said removed position and holds said locking bar in said removed position until said push button means is manually released, said operator means including additional means extending between said locking bar and said manual push button means to transfer motion of said manual push button means to said locking bar, said spool enabling said harness to rotate to extend or retract at all times whenever said locking bar is moved to said removed position by said operator means.

5,380,067
CHEST HARNESS FOR USE IN A CHILD RESTRAINT SYSTEM

William W. Turvill, Almont, and Bob L. McFalls, Shelby Township, Macomb County, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Jan. 21, 1993, Ser. No. 6,738
Int. Cl.⁶ B60R 22/10

U.S. Cl. 297—484

15 Claims



1. An apparatus for use with a safety belt, said apparatus comprising:

a tongue member;

a buckle member for receiving said tongue member to interconnect said buckle member and tongue member; and

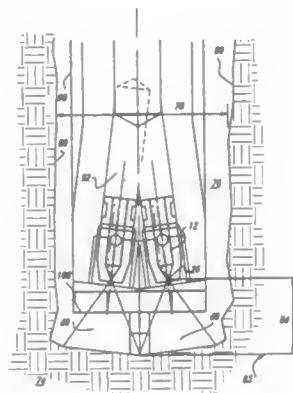
indicator means for indicating when said members are interconnected, said indicator means including first and second indicia connected with a first one of said members and surface means forming an opening connected with a second one of said members, said first indicia being viewable through said opening when said tongue member is less than fully inserted into said buckle member, only said second indicia being viewable through said opening when said tongue member is fully inserted into said buckle member.

5,380,068
DEEP KERFING IN ROCKS WITH ULTRAHIGH-PRESSURE FAN JETS

Chidambaram Raghavan, Kent, Wash., assignor to Flow International Corporation, Kent, Wash.
Filed Dec. 8, 1992, Ser. No. 987,460
Int. Cl.⁶ E21C 25/60; B05B 1/04

U.S. Cl. 299—17

17 Claims



11. A method for cutting a kerf in a porous material comprising:

mounting a nozzle that generates a high pressure fluid fan jet in ultrahigh-pressure tubing;

forcing pressurized fluid through the tubing and the nozzle; traversing a rock surface to be cut with the ultrahigh-pressure fan jet; and

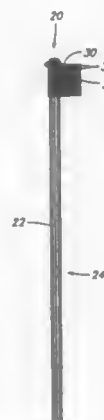
controlling a feed-in rate of the nozzle to maintain a standoff of between 0.25 and 0.375 inch.

5,380,069
PLEATED PANEL STRIP BRUSH CONSTRUCTION

Ronald W. Klinkhammer, One Renton Pl., 555 S. Renton Village Pl., Renton, Wash. 98055-3225
Continuation-in-part of Ser. No. 664,487, Mar. 4, 1991, which is a continuation-in-part of Ser. No. 145,771, Jan. 19, 1988. This application Apr. 14, 1992, Ser. No. 869,233
Int. Cl.⁶ A46B 9/04

U.S. Cl. 300—21

30 Claims



1. A brush, comprising:

a tubular shaft;

a plurality of bristle panels mounted transversely upon the shaft in relative longitudinal juxtaposition to form a brush head; said bristle panels each having a plurality of flexible bristles thereon; a plurality of said bristle panels being connected together in a strip and pleated onto the shaft;

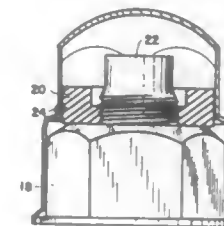
an anchor piece which extends into an interior of the tubular shaft and retains the bristle panels upon the shaft.

5,380,070
LUG NUT COVERS

David J. FitzGerald, San Leandro, Calif., assignor to Wheel Masters, Inc., San Leandro, Calif.
Filed Aug. 9, 1993, Ser. No. 103,534
Int. Cl.⁶ B60B 7/14

U.S. Cl. 301—37.37

6 Claims



1. A lug nut cover for vehicles having wheel lug bolts with threads extending from the lug nut, said lug nut cover comprising:

a tubular housing having first and second ends, said first end having an interior cross section dimension that permits rotation of a vehicle lug nut within said first end, said second end having an exterior cross section configuration substantially identical to that of said lug nut; and

a threaded jam nut permanently secured by a pin in said second end and coaxially positioned to said lug nut for engagement with the threads that extend from said lug nut and for tight contact with said lug nut.

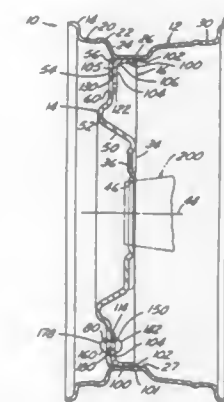
5,380,071
VEHICLE WHEEL AND METHOD OF MANUFACTURE OF THE SAME

Charles E. Kier, Jr., Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Mar. 15, 1993, Ser. No. 31,272
Int. Cl.⁶ B60B 3/00

U.S. Cl. 301—63.1

14 Claims



1. A multi-piece non-take-apart vehicle wheel construction comprising a single piece drop-center-well rim having an in-board bend seat and an outboard bead seat for mounting of a pneumatic tire thereon, said rim having mounting flange means affixed thereto and extending radially inwardly of the rim, and a wheel mounting disc having a center pilot opening and a circular row of wheel mounting bolt holes encircling said center pilot opening for receiving wheel mounting fasteners for fixing said wheel to the wheel mounting structure of a vehicle, said disc having a generally radially extending annular rim mounting portion radially overlapping said rim mounting

flange means in assembly therewith, said disc having a first set of mounting holes formed in said disc mounting portion, said rim mounting flange means having a second set of mounting holes formed therein, said first and second set of assembly fastener mounting holes having their axis extending axially and parallel to the wheel axis and being disposed in general registry with one another in assembly, the diameter of each hole of one of said sets of assembly holes being preformed to a predetermined dimension slightly larger than the diameter of each of the holes of the other of said sets of assembly holes, and fasteners means being constructed and arranged to individually extend through individually registering ones of said first and second sets of assembly holes to permanently interconnect said disc and rim together in assembled relation with said disc and rim, said fastener means each having a shank having a diameter sized to fit tightly in the smaller diameter set of assembly holes and at least initially loosely in the larger diameter set of assembly holes to permit misalignment of the axes of the first set of assembly holes with the axes of the second set of assembly holes, the final permanent assembly of said disc and rim providing a final predetermined precision permanently fixed orientation of the axis of the center pilot opening of the disc and the axis of the circle of bolt holes of the disc relative to the average axis of the bead seats of the rim within the range of possible misalignment of the axes of said first and second set of assembly holes.

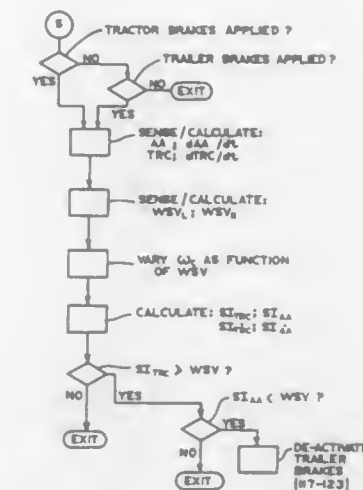
5,380,072
TRAILER STABILITY SYSTEM AND METHOD

Michael T. Breen, Garden City, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 21, 1994, Ser. No. 184,798
Int. Cl.⁶ B60T 7/20

U.S. Cl. 303—7

4 Claims



1. A trailer stability brake control method for an articulated vehicle of the type including a tractor and a trailer connected at an articulating connection, defining a pivot axis about which the trailer is pivotable relative to the tractor, an articulation angle (AA) of said vehicle being defined by the included angle defined by a longitudinally-extending axis of the trailer passing through said pivot axis relative to a longitudinally-extending axis of the tractor passing through said pivot axis; said tractor including at least first and second axles having at least first and second left wheels, and first and second right wheels; a tractor brake system including a tractor brake control means and a trailer brake system including a trailer brake control means, said control method characterized by:

(a) determining a value indicative of at least one of tractor turning radius of curvature (TRC) and a time derivative of tractor turning radius of curvature (dTRC/dt) for each of said first and second tractor axles;

- (b) determining a value indicative of at least one of said articulation angle (AA) and a time derivative of said articulation angle (dAA/dt);
- (c) determining a value (WSV) indicative of wheel speed variance (WSV_L) between said first and second left wheels, and of wheel speed variance (WSV_R) between said first and second right wheels;
- (d) providing signal processing means to determine a value indicative of a stability indicator (SI_T, SI_A) for each of the values determined in steps (a) and (b) above, wherein each signal processing means includes filter means having a cut-off frequency (Ω_c), the cut-off frequency is a function of wheel speed variance (WSV), such that, the cut-off frequency (Ω_c) decreases as the wheel speed variance (WSV) increases, and vice-versa; and
- (e) de-actuating said trailer brake control means whenever said stability indicator (SI_A) for one of said articulation angle (AA) and said time derivative (dAA/dt) thereof becomes less than said wheel speed variance (WSV).

5,380,073

DUAL CIRCUIT BRAKE VALVE SYSTEM

Peter Bartscher, Hanover; Gerhard Martini, Gehrden; Wolfgang Pohl, Garbsen, and Jürgen Sandmann, Wennigsen, all of Germany, assignors to WABCO Standard GmbH, Hanover, Germany

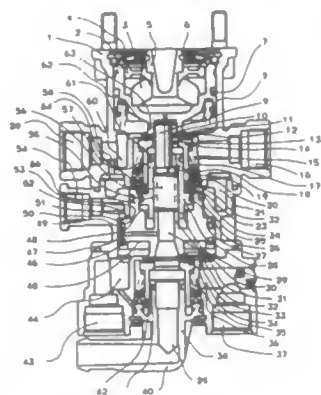
Filed Sep. 21, 1993, Ser. No. 125,068

Claims priority, application Germany, Sep. 25, 1992, 4232146

Int. Cl.⁶ B60T 8/30

U.S. Cl. 303—9.72

13 Claims



1. A dual circuit brake valve system for a motor vehicle braking system comprising
- a first brake circuit,
 - a first combined inlet and outlet valve through which a first braking pressure is delivered to said first brake circuit,
 - a first piston operatively connected to said first combined inlet and outlet valve which controls the delivery of said first braking pressure to said first brake circuit, said first piston being actuated by an actuating power, said first braking pressure being dependent on the magnitude of said actuating power,
 - a second brake circuit,
 - a second combined inlet and outlet valve through which a second braking pressure is delivered to said second brake circuit,
 - a second piston operatively connected to said second combined inlet and outlet valve which controls the delivery of said second braking pressure to said second brake circuit, said second piston being actuated by said first braking pressure which serves as a control pressure therefor, said second braking pressure being dependent on said first braking pressure,
 - a compression spring located and secured on said second piston so that said compression spring bears with one end upon said second piston and with a second end upon a

component which is in mechanical contact with said first piston,

a third piston disposed between said first and second pistons and having means for moving said component against the force of said compression spring, said third piston having an active area which is subject to said first braking pressure, said active area being located on a side of said third piston which faces away from said second piston.

5,380,074

HYDRAULIC BRAKE SYSTEM REGULATOR

Ed F. Jones, P.O. Box 9880, Spokane, Wash. 99209

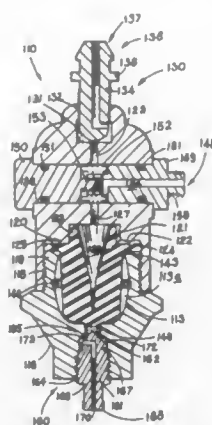
Continuation of Ser. No. 805,851, Dec. 10, 1991, Pat. No. 5,265,942, which is a continuation of Ser. No. 491,706, Mar. 12, 1990, Pat. No. 5,074,625. This application Nov. 12, 1993, Ser. No. 152,438

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.⁶ B60T 17/00; F16L 55/04

U.S. Cl. 303—87

26 Claims



1. A hydraulic brake system regulator, comprising:
- a housing having a first part and a second part, the first and second parts being detachably connected;
 - a cavity substantially enclosed within the housing;
 - at least one brake fluid communication passageway formed through said housing;
 - a resilient deformable member mounted within said housing for expansion and contraction relative to said cavity in response to increasing and decreasing brake fluid pressure applied against said resilient deformable member through said at least one brake fluid communication passageway;
 - said resilient deformable member being constructed to separate said cavity into an interior chamber supplied with brake fluid from a restraint chamber containing a compressible gas;
 - at least one restraint member positioned within the restraint chamber; said at least one restraint member being made of a compressible elastic material to elastically restrain the resilient deformable member as the resilient deformable member expands in response to increased brake fluid pressure applied through said at least one brake fluid communication passageway.

5,380,075

FOOTED WHEEL FOR IRRIGATION APPARATUS

Spencer K. Haws, P.O. Box 318, Mesa, Wash. 99343

Filed Feb. 23, 1994, Ser. No. 200,062

Int. Cl.⁶ B60B 15/20

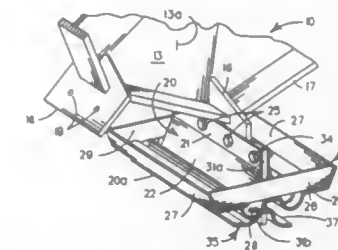
U.S. Cl. 305—5

10 Claims

1. A footed wheel for support of transiting irrigation apparatus comprising in combination:
- a rigid wheel having a web defining a medial hub with means

for releasable fastening on an axle and polygonal periphery with a rim extending from the periphery;

plural foot supports carried by the wheel web to extend radially outwardly at each vertex of the polygonal periphery of the wheel web, each foot support having spaced outwardly flaring legs defining outermost pivot elements extending perpendicularly to the hub;



wheel feet articulatingly carried by each foot support, each wheel foot having a bottom defining medial, spaced, laterally and radially outwardly extending pivot grooves to receive the outermost pivot elements of the associated foot support for pivotal support; and

fastening means communicating between each wheel foot and the associated foot support to maintain the wheel foot in articulating interconnection with the foot support.

5,380,076

RUBBER CRAWLER BELT OF A TRACKED VEHICLE

Kazutoshi Hori, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/00169, § 371 Date Aug. 12, 1992, § 102(e) Date Aug. 12, 1992, PCT Pub. No. WO91/12165, PCT Pub. Date Aug. 22, 1991

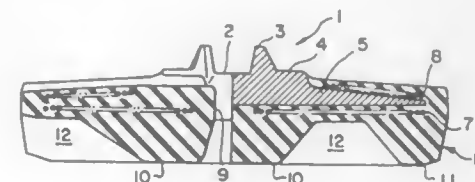
PCT Filed Feb. 13, 1991, Ser. No. 920,306

Claims priority, application Japan, Feb. 14, 1990, 2-33371; Feb. 14, 1990, 2-33372; Feb. 14, 1990, 2-33373; Feb. 27, 1990, 2-47002

Int. Cl.⁶ B62D 55/24

U.S. Cl. 305—38

17 Claims



1. A rubber crawler belt for a tracked vehicle, wherein core members are embedded in said rubber crawler belt and arranged so as to engage serially with every tooth of a drive wheel, and engaging holes for engaging with said drive wheel are formed between neighboring core members and in a width-wise central portion of said rubber crawler belt, and at least one lug is formed on the ground contact surface of said rubber crawler belt so that at least a portion of one of said at least one lug extends across the right side portions of the projection planes of a plurality of adjacent core members and the gaps therebetween and at least a portion of one of said at least one lug extends across the left side portions of the projection planes of a plurality of adjacent core members and the gaps therebetween.

5,380,077

MACHINING DEVICE FOR MACHINING PRECISION, IN PARTICULAR DENTAL, WORKPIECES IN A MACHINING CHAMBER SURROUNDED BY A HOUSING

Georg Püschner, Leutkirch, and Herbert Lott, Bad Wurzach, both of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach Riß, Germany

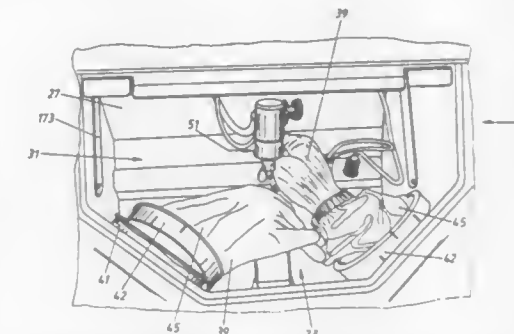
Filed Jul. 8, 1992, Ser. No. 910,576

Claims priority, application Germany, Jul. 11, 1991, 4123014

Int. Cl.⁶ A61G 11/00; A61B 19/02

U.S. Cl. 312—1

12 Claims



1. A device for machining workpieces said device comprising:
- a housing defining a chamber for workpieces to be machined, there being an inspection window on the housing to allow viewing of the housing chamber;
 - first and second spaced gripping holes defined in the housing;
 - first and second gloves associated one each with the first and second gripping holes,
 - at least one of said gloves including a free collar edge region;
 - means for mounting the at least one glove to the housing around the gripping hole,
 - wherein the mounting means includes a first and a second coaxial clamping ring with the first coaxial clamping ring insertable into the second coaxial clamping ring to capture the free collar edge region of the at least one glove between the first and second clamping rings,
 - said clamping rings being formed by short sleeve members;
 - means for affixing one of the first and second clamping rings to the housing around the gripping hole; and
 - the other one of the first and second clamping rings being movable relative to the one clamping ring,
 - the movable clamping ring having inner and outer circumferential ends with circumferentially-spaced slits axially extending from both the inner and the outer ends to approximately the mid-point between the inner and the outer circumferential ends,
 - whereby the slits on the inner end are laterally offset from the slits on the outer end and the inner circumferential end slits and outer circumferential end slits extend past the midpoint between the inner and outer circumferential ends to be in overlapping relation to one another.

5,380,078

RETRACTABLE GLOVES FOR HANDLING OBJECTS IN ISOLATION

Carole A. Baczowski; Margaret A. Goldwater, both of Elkton, Md.; Celia R. Ingram, Newark; Douglas B. McKenna, Wilmington, both of Del., and Evelyn C. Yurcovic, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jan. 22, 1993, Ser. No. 81,459

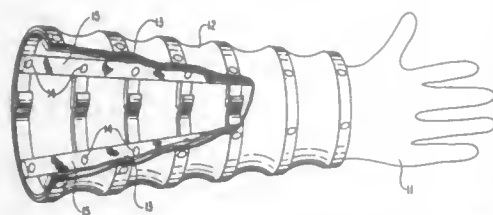
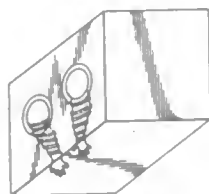
Int. Cl.⁶ A61G 11/00

U.S. Cl. 312—1

2 Claims

1. A retractable glove for handling objects in a closed chamber comprising

a hand portion and a sleeve portion connected to the glove portion;
the hand portion being elastomeric so as to adapt to fit tightly over a hand;
the sleeve portion shaped to receive an arm, the sleeve portion having a series of stiff concentric rings affixed inside the sleeve spaced circumferentially and of progres-



sively larger diameter from a wrist area to a shoulder area in order to provide ease of entry of an arm, the rings being connected by a series of spaced elastic strips running from the ring nearest the wrist to a ring near the elbow, said strips constructed and arranged to hold the sleeve in a retracted position at rest.

5,380,079

STORING DEVICE HAVING UPPER AND LOWER ROD SEPARATORS

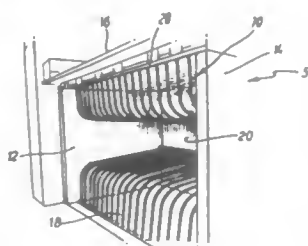
C. E. Hamilton, 2 Old Market Place, Altrincham, Cheshire WA14 4NP, United Kingdom

Filed Apr. 7, 1993, Ser. No. 44,283

Int. Cl.⁶ A47B 81/06, 63/02, 63/04

U.S. Cl. 312—9.55

13 Claims



1. A storing device for storing a plurality of substantially flat articles in a generally vertical orientation, the storing device comprising: a cabinet having a bottom, a top, a rear portion and an open front, an upper separator situated adjacent to the top and extending downwardly within the cabinet, a lower separator situated adjacent to the bottom and extending upwardly within the cabinet but vertically spaced from the upper separator, each separator comprising a plurality of horizontally spaced rods extending from substantially the open front of the cabinet to the rear of the cabinet, each rod having a forward and a rearward end separated by a 90° bend, the rearward end of each rod being spaced from both the top and the bottom of the cabinet, a vertically middle portion of the cabinet between the upper and lower separator being unobstructed so that any of the articles may be easily removed from the storing device.

5,380,080

REFLECTION-AUGMENTING DISPLAY CASE

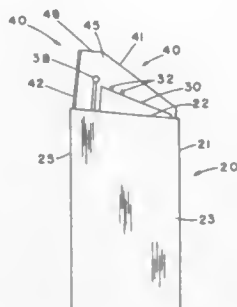
Robert I. Rublin, St. Louis; Wayne P. Drewes, Creve Coeur, and Jean Boelhauf, Woodson Terrace, all of Mo., assignors to Jewelry Works, Inc., St. Louis, Mo.

Filed Jun. 1, 1993, Ser. No. 69,533

Int. Cl.⁶ A47F 3/06

U.S. Cl. 312—128

4 Claims



1. A display case for a plurality of light-reflective articles, comprising:
a base,
a display ramp upon and supported by said base and sloping upward-and-aft, whereby those articles positioned thereon aft of others will be at a level higher than articles forward thereof,
a downward-and-aft sloping mirrored surface extending from a level higher than the highest portion of said ramp and downward to at least partly aft of said display ramp, and
the ramp up-slope from horizontal is at an angle of 18° to 30° and the downward-and-aft slope of the mirrored surface is at an angle of 5° to 12° from vertical,
an enclosure for said display ramp and said mirrored surface, said enclosure having transparent forward and top surfaces, whereby at least parts of light-reflective articles displayed on said ramp will be so reflected in said mirrored surface that both the displayed articles and their mirror reflections are simultaneously visible from above and in front of said ramp.

5,380,081

HOLDING DEVICE FOR SACKS OR THE LIKE

Peter Vogt, Dannebergplatz 9, 1030 Vienna, Austria

Continuation of Ser. No. 678,103, Apr. 1, 1991, abandoned. This application Jan. 24, 1994, Ser. No. 186,311

Claims priority, application Austria, Apr. 3, 1990, 766/90

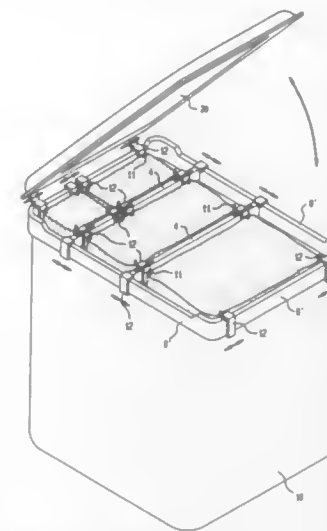
Int. Cl.⁶ A47G 29/14

U.S. Cl. 312—212

10 Claims

1. A holding device for sacks or the like; comprising:
an enclosed frame assembly having an open top;
holding means for supporting a sack along an upper edge defining a feed opening of the sack, said holding means bridging said open top and being supported in said frame assembly for movement in the direction of a first axis; and
sack securing means for allowing detachable securement of the upper edge of the sack to said holding means, said sack securing means being attached to said holding means for

allowing movement along a second axis perpendicular to said first axis so as to enable the feed opening of the sack



to self-adjust along said first and second axes in dependence on the degree of filling.

5,380,082

ASPHALT DRUM MIXER WITH CURVED SCOOP-LIKE MIXING TIPS

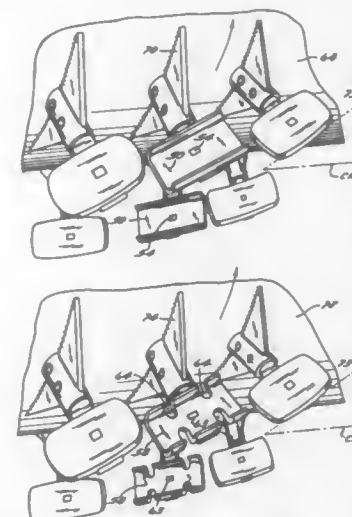
John Milstead, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Nov. 23, 1993, Ser. No. 156,431

Int. Cl.⁶ B28C 5/46, 5/14

U.S. Cl. 366—25

17 Claims



1. A drum mixer for heating and drying stone aggregate in the continuous production of asphalt paving composition, said drum mixer comprising:

an elongate hollow rotatable drum having a length and defining a central axis, said elongate hollow rotatable drum comprising a plurality of outlet openings for the heated and dried stone aggregate, said plurality of outlet openings being formed about a periphery of said hollow rotatable drum at a lower axial end of said elongate hollow rotatable drum;
a burner which is located adjacent the lower axial end of said elongate hollow rotatable drum and which directs a flame axially into said elongate hollow rotatable drum;
a fixed sleeve mounted coaxially about at least a portion of

the length of said hollow rotatable drum and so as to define an annular chamber between said hollow rotatable drum and said fixed sleeve, said annular chamber defining an average residence time of hot mix asphalt in said annular chamber, said fixed sleeve comprising a discharge opening for hot mix asphalt, said discharge opening being formed adjacent an upper end of said fixed sleeve;
a liquid asphalt supply pipe connected to said annular chamber for introducing liquid asphalt into the annular chamber so that liquid asphalt combines with, and is mixed with, the heated and dried stone aggregate to create hot mix asphalt; and
means for mixing hot mix asphalt in said annular chamber, said means comprising curved scoop mixing tips mounted on said drum in said annular chamber and spaced apart from said fixed sleeve, said mixing tips defining means for lifting said hot mix asphalt up in a direction perpendicular to a direction of forward travel so as to increase the residence time of said hot mix asphalt in said annular chamber over said average residence time.

5,380,083

MULTIFACETED MODULAR ENCLOSURE FRAME WITH INTEGRAL SUB-PANEL GUIDE SYSTEM

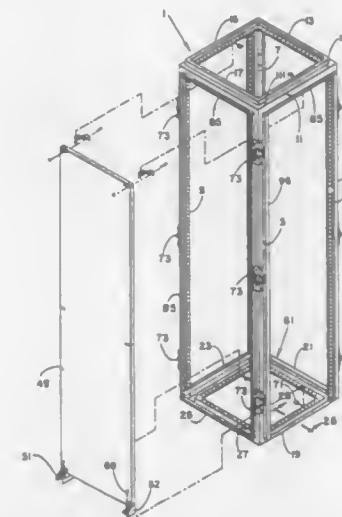
Trent T. Jones, White Bear Lake, and Marc T. Fuller, Minneapolis, both of Minn., assignors to Federal-Hoffman, Inc., Anoka, Minn.

Filed Nov. 27, 1991, Ser. No. 799,408

Int. Cl.⁶ A47B 47/00

U.S. Cl. 312—265.3

11 Claims



1. A modular frame for the mounting of various wall panels of an enclosure assembly which receives a sub-panel mounting board therein, wherein said modular frame comprises:

a plurality of upper, lower and side frame sections having identical cross-sectional configurations and being interconnected to form a modular frame, each said frame section further comprising
an elongated generally L-shaped exterior corner flange element defined by first and second normally disposed rigid arm members, said arm members having connecting ends connected to each other and extending normally therefrom to opposite terminal ends of said arm members, a generally U-shaped elongated rigid channel guide member having a pair of spaced legs with opposite ends interconnected at one end by a web portion, said opposite end of one of said legs being connected to said terminal end of said first arm of said corner flange element and extending from said first arm substantially normal thereto in a direction opposite the direction in which said second arm member extends relative to said first arm member, and

a second rigid flange member connected to said terminal end of said second arm member of said corner flange element and extending normally therefrom in a direction opposite the direction in which said first arm member of said corner flange element extends relative to said second arm member.

5,380,084

ASPHALT DRUM MIXER WITH SELF-SCOURING DRUM

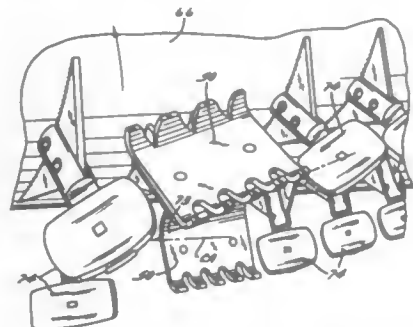
John Milstead, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Nov. 23, 1993, Ser. No. 156,436

Int. Cl.⁶ B28C 5/46

U.S. Cl. 366—25

15 Claims



1. A drum mixer for heating and drying stone aggregate as part of a process of continuous production of asphalt paving composition, said drum mixer comprising:

an elongate hollow rotatable drum having a length and an outer surface, said elongate hollow rotatable drum defining a central axis,

a sleeve having an inner surface, said sleeve being mounted coaxially with said elongate hollow rotatable drum about said central axis and around at least a portion of the length of said elongate hollow rotatable drum and so as to define an annular chamber having an entire distance between said outer surface of said elongate hollow rotatable drum and said inner surface of said sleeve, and

means for mixing hot mix asphalt in said annular chamber comprising rake flights mounted on said outer surface of said elongate hollow rotatable drum and in said annular chamber comprising scouring means for lifting hot mix asphalt up from a lower portion of said annular chamber along said inner surface of said sleeve through said annular chamber and onto an upper portion of said outer surface of said elongate hollow rotatable drum, said scouring means comprising a plurality of shaped scouring fingers extending radially toward said outer surface of said elongate hollow rotatable drum so as to break-up hot mix asphalt and allow hot mix asphalt to fall through said rake flights and onto said upper portion of said outer surface of said elongate hollow rotatable drum, thereby scouring said outer surface of said elongate hollow rotatable drum.

5,380,085

CONCRETE MIXER WITH RECIPROCATING DISCHARGE CHUTE

Robert C. Millek, 6560 Stones Throw Dr., Omaha, Nebr. 68152

Filed Apr. 12, 1994, Ser. No. 226,501

Int. Cl.⁶ B28C 5/20, 7/16; B01F 15/02

U.S. Cl. 366—44

9 Claims

1. A concrete batch mixer comprising:

a horizontally disposed, hollow cylindrical mixer drum having first and second end walls at the opposite ends thereof;

said first end wall having an inlet opening formed therein for introducing concrete materials into said mixer drum;

said second end wall having a discharge opening formed

therein for discharging the mixed concrete from said mixer drum;

means for rotating said mixer drum in a first mixing direction and a second discharge direction;

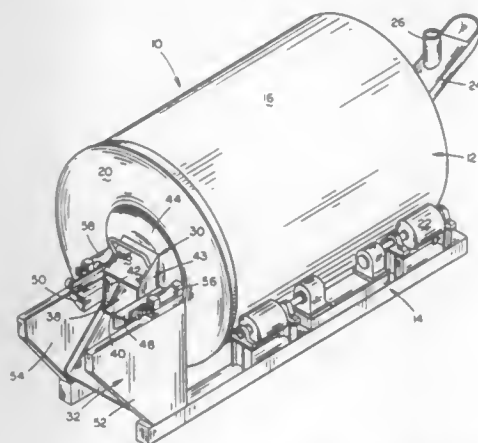
said mixer drum having mixing blades provided in the interior thereof for mixing the concrete materials therein when said mixer drum is rotated in its said first mixing direction;

said mixer drum including means in the interior thereof for transferring the mixed concrete materials towards said second end wall when said mixer drum is rotated in said second discharge direction;

a discharge chute selectively movably positioned in said discharge opening and including inner and outer ends;

said discharge chute being selectively movable from a first non-discharge position to a second discharge position;

said discharge chute including a vertically disposed inner end plate, a chute member extending outwardly from said inner end plate, and a vertically disposed outer end plate;



said chute member extending outwardly through said outer end plate;

said chute member having an open upper end between said inner and outer end plates for receiving mixed concrete materials therein when said discharge chute is in its said discharge position;

said inner end plate closing said discharge opening when said discharge chute is in its said non-discharge position; said outer end plate being positioned adjacent said discharge opening when said discharge chute is in its said discharge position;

said open upper end of said chute member being positioned inwardly of said discharge opening when said discharge chute is positioned in its said discharge position;

and means provided in the interior of said mixer drum adjacent said second end wall for delivering the mixed concrete into said open upper end of said chute member when said mixer drum is rotated in its said second discharge direction, so that the mixed concrete is discharged from said mixer drum outwardly through said discharge chute.

5,380,086

MULTIPURPOSE FOOD MIXING APPLIANCE SPECIALLY ADAPTED FOR KNEADING DOUGH

Thomas D. Dickson, Highland, Utah, assignor to K-Tec, Inc., London, Utah

Filed Aug. 27, 1992, Ser. No. 938,012

Int. Cl.⁶ B29B 7/18, 7/74; B01F 7/20

U.S. Cl. 366—97

15 Claims

14. A food mixing appliance adapted to knead dough comprising:

an electric motor;

a mixing receptacle;

kneading implement means for kneading dough within the mixing receptacle;

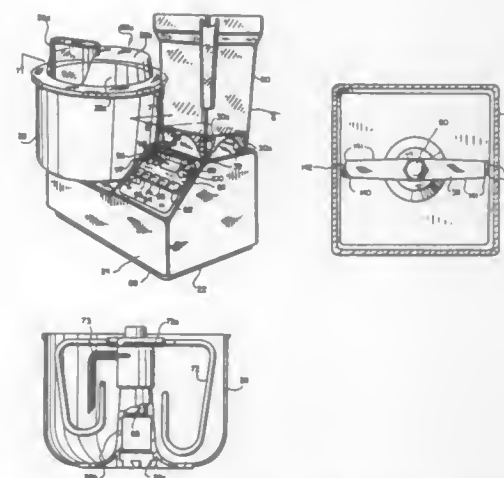
drive means coupling the electric motor to the kneading implement means;

sensing means for sensing the load on the motor as it drives the kneading implement means during kneading of dough;

means for stopping operation of the motor when the sensing means senses that the load on the motor begins to decrease after a period of increasing load;

blender drive means coupled to the electric motor;

a blender receptacle for mounting on the appliance with blender blade drive means engaging the blender drive means; and



blade means rotatably mounted in said blender receptacle for rotation therein, wherein said blade means includes an elongate blade mounted for rotation midway along its length and having leading edges extending along portions thereof in the direction of rotation of the blade, the blade being beveled downwardly toward the bottom of the blender receptacle along the leading edges, and upwardly extending blade tips at the ends of the blade, the upwardly extending blade tips having leading edges in the direction of rotation of the blade with the leading edges being beveled outwardly.

5,380,087

PHARMACEUTICAL MIXING CONTAINER WITH ROTATIONALLY MOUNTED HOUSING

Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Sep. 23, 1992, Ser. No. 949,596

Int. Cl.⁶ B01F 11/00, 9/00

U.S. Cl. 366—130

13 Claims

10. A Pharmaceutical mixing container for storing a liquid with a miscible component, said container comprising:

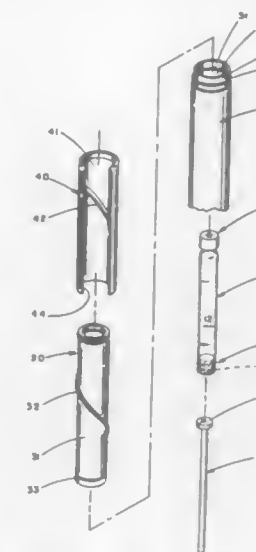
an outer sleeve having a hollow interior with an inner surface;

a cartridge housing positioned at least partially within said outer sleeve and arranged for relative motion with respect thereto, said cartridge housing having a first end, a second end, an outer surface and a wall structure defining an inner volume;

a closure member at said first end providing a fluid seal; means for providing a second fluid seal adjacent said second end so that said inner volume is closed; and

means for imparting rotational motion to said cartridge housing when said outer sleeve is translated relative to the cartridge housing so that the liquid and the miscible component can be admixed by the rotational motion of said cartridge housing, said rotational motion imparting means

comprising a mating land and groove, the groove being formed on said inner surface of said outer sleeve and the



land being coupled to said outer surface of said cartridge housing.

5,380,088

MIXING DEVICE FOR SMALL FLUID QUANTITIES

Markus Fleischli, Zürich, and Felix Streiff, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 887,717, May 22, 1992, abandoned.

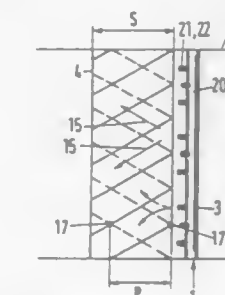
This application Jan. 21, 1994, Ser. No. 183,926

Claims priority, application Switzerland, Jul. 30, 1991, 02275/91

Int. Cl.⁶ B01F 5/04, 5/06

U.S. Cl. 366—174

14 Claims

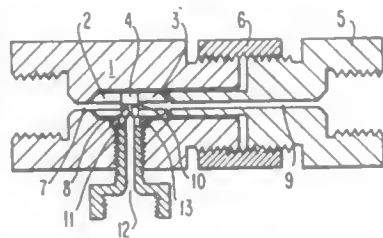


1. A device for uniformly mixing a small quantity of a first fluid to be mixed into a main large flow of second fluid, the main large flow of second fluid flowing from upstream to downstream through a conduit parallel to an axis, the device for uniformly mixing located in said conduit and including an injection system for introducing the small quantity of said first fluid to be mixed and at least one static mixing unit for uniformly mixing the introduced small quantity of said first fluid and the main large flow of said second fluid, said static mixer arranged downstream from said injection system and occupying an inlet cross section across said conduit substantially normal to fluid flow in said conduit, said device for uniformly mixing comprising:

at least one static mixer in said conduit having a plurality of layers, each said layer of said static mixer defining a plurality of discrete channels disposed at an angle to the axis of flow of said main large flow of second fluid through said conduit, the discrete channels of one layer being

disposed at intersecting angles with respect to the discrete channels of adjacent layers;
 said plurality of layers of said discrete channels includes said discrete channels having channel side walls;
 the side walls of the discrete channels of one layer intersect the side walls of the discrete channel of another layer at intersection points;
 the length of the at least one static mixer being between one and two times as great as a spacing of two adjacent channel side wall intersection points parallel to the main flow direction;
 the inlet cross section of the static mixing unit divided into sub-areas defined by the inlet to said discrete channels at said inlet cross section; and,
 the injection system comprises at least one main metering manifold for metering said small quantity of first fluid with a plurality of metering outlets which are directed at the sub-areas, the metering outlets communicated to said manifold and each having a length and a diameter directed to the sub-areas being dimensioned such that said metering outlets having a length of which is at least half as great as their diameter and said metering outlets further being dimensioned such that the volumetric flow of the first fluid passing through the metering outlets are proportional to the volumetric flow of the main large flow of second fluid through the corresponding sub-areas.

5,380,089
EMULSIFYING APPARATUS FOR SOLID-LIQUID MULTIPHASE FLOW AND NOZZLE FOR SOLID-LIQUID MULTIPHASE FLOW
 Yukihiro Karasawa, 3-27, Oaza-Minami-Nakano, Ohmiya-shi, Saitama 330, Japan
 Filed Jul. 28, 1993, Ser. No. 98,502
 Claims priority, application Japan, Jul. 29, 1992, 4-202695
 Int. Cl.⁶ B01F 15/02
 U.S. Cl. 366—176



1. An emulsifying apparatus for emulsifying and dispersing a solid-liquid multiphase flow, wherein there is provided in a high pressure vessel an emulsifying unit comprising a plate member, said plate member having a through-hole, said through-hole having a diameter smaller than the diameter of the inflow passage of the metal seal contacting with the plate member, an outlet perpendicular to the through-hole communicating with a side of said plate member of the emulsifying unit at the center of said through-hole of the emulsifying unit, and wherein fluids supplied from opposite directions through said through-hole of the emulsifying unit collide with each other of said fluids at the center of the emulsifying unit and further wherein said fluids are emulsified.

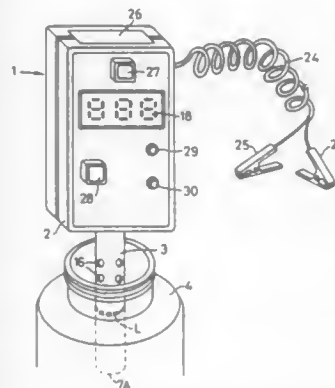
5,380,090

Patent Not Issued For This Number

5,380,091
INDICATING DEVICE
 Nigel Buchanan, Cupar, United Kingdom, assignor to Alba Tools Limited, Fife, United Kingdom
 Continuation of Ser. No. 122,646, Sep. 17, 1993, which is a continuation of Ser. No. 768,853, Dec. 4, 1991, abandoned. This application May 9, 1994, Ser. No. 239,855
 Claims priority, application United Kingdom, Apr. 8, 1989, 8907948

Int. Cl.⁶ G01N 25/08
 U.S. Cl. 374—16

23 Claims



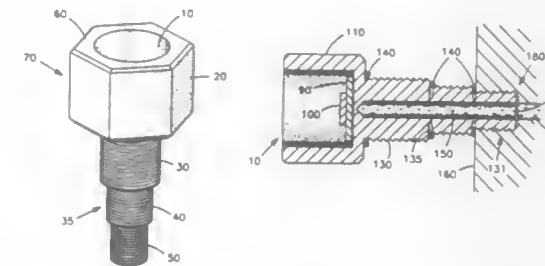
1. An apparatus for use in indicating the boiling point of fluid, especially a hygroscopic fluid such as hydraulic fluid, said apparatus comprising a meter having a portable handheld type probe portion for insertion into a body of fluid in a fluid reservoir for in situ testing of fluid in the fluid reservoir, heating means disposed in said probe portion for heating fluid in which the probe portion is disposed, and temperature monitoring means for monitoring a rise in the temperature of fluid heated by said heating means for use in determining the boiling point of the fluid; wherein said probe portion comprises a casing in which a substantially enclosed chamber is provided at a lower end of the probe the holding a portion of said body of fluid, said heating means and a temperature sensor of said monitoring means being disposed in said chamber; wherein said chamber is sufficiently enclosed at all sides as to cause fluid in the chamber to be in a substantially static state prior to the on-set of boiling of the fluid and to produce reflux-type fluid flow paths within the chamber once boiling of the fluid has commenced, port means being provided in a peripheral wall of said casing in proximity to an upper end of the chamber and at a lower end of the probe portion for allowing only limited flow to and from said chamber.

5,380,092
FLUID TEMPERATURE INDICATOR
 George Alala, #2, 4035 Ogden Rd., Calgary, Alberta, Canada T2G 4N9
 Filed Oct. 7, 1993, Ser. No. 132,791
 Int. Cl.⁶ G01K 11/06, 1/14, 13/02
 U.S. Cl. 374—160

6 Claims

1. A device for indicating if the temperature of a fluid within a machine has surpassed a critical temperature comprising: an integrally formed supporting means of a material able to withstand the critical temperature including:
 a head providing first engagement means to enable a tool to engage the head in order to turn same, and a cavity formed within the head;
 an engagement shaft extending from the head, providing second engagement means, enabling engagement of the shaft within an engagement aperture in the machine, the shaft further including an axial bore within, extending from a distal end of the shaft, through the shaft, and terminating adjacent to the cavity within the head, the

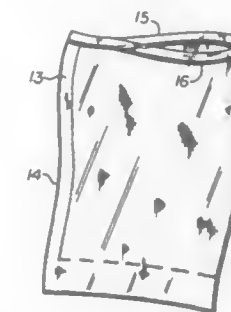
bore being separated from the cavity so that the fluid cannot move between the bore and the cavity;
 a temperature indicator means of a material having a melting temperature equal to the critical temperature, the indicator means bonded within the cavity such that the support means and the indicator means are in good thermal contact, the indicator means not being in direct contact with the fluid;



wherein the fluid of the machine flows into and fills the axial bore such that the temperature of the indicator means is maintained at the temperature of the fluid without being in direct contact therewith, so that should the fluid exceed the critical temperature, the indicator means will melt, indicating that the fluid had reached the critical temperature.

5,380,093
VEGETABLE DRAINING AND STORAGE BAG
 Robert I. Goldman, 6658 Cibola Rd., San Diego, Calif. 92120
 Filed Oct. 18, 1993, Ser. No. 136,900
 Int. Cl.⁶ B65D 30/22, 33/01
 U.S. Cl. 383—38

13 Claims



1. A device for draining vegetables and other washable goods which comprises:
 a bag made of a pliable sheet material, said bag defining a chamber having an open top and a sealed bottom and sealed lateral edges;
 a reservoir formed along the bottom edge and separated from the chamber by a permeable barrier; and
 means for draining a fluid from said reservoir; wherein said means draining comprises a channel running from said reservoir toward said open top and terminating at an end located a distance above said permeable barrier.

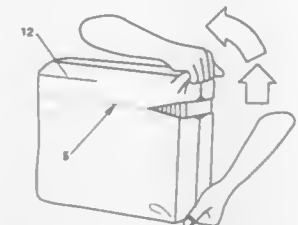
5,380,094
EASY OPEN FEATURE FOR POLYMERIC PACKAGE WITH CONTENTS UNDER HIGH COMPRESSION
 Edward H. Schmidt, Cincinnati, Ohio, and Joseph B. Mercer, Hickory, N.C., assignors to The Procter & Gamble Company, Cincinnati, Ohio
 Filed Feb. 3, 1994, Ser. No. 191,238
 Int. Cl.⁶ B65D 30/18
 U.S. Cl. 383—209

1 Claim

1. An easy open substantially rectangular flexible bag of

compressed flexible articles, said flexible articles being arranged in a stack and held in compression in a direction substantially parallel to their thickness, said bag of articles comprising:

- a top half, a bottom half, a front and a back panel connected to one another by a pair of side panels, each of said side panels including a side seal, a bottom panel and a top panel, all of said panels being comprised of flexible material, said front, back, and side panels forming the sides of said bag, wherein said sides define a perimeter of said bag;
- a stack of compressed flexible articles with top and bottom portions, each of said articles having a pair of opposed, substantially planar surfaces, said articles being oriented so that said substantially planar surfaces are aligned substantially parallel to the side panels of said bag, said side panels and said front and back panels being subject to tension imposed by said stack of compressed flexible articles, said top and bottom panels being in a substantially untensioned condition; and
- an easy open device comprising a substantially continuous line of weakness located around the perimeter of said bag in the top half of said bag,



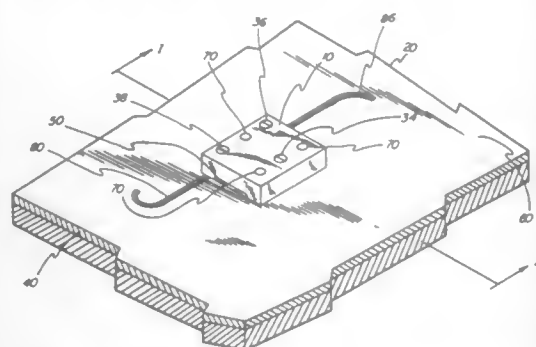
said line of weakness comprising serrations in said flexible material, said serrations passing completely through said front, back, and side panels, said serrations in said front panel further lying essentially on top of said serrations in said back panel when said bag is flat and unopened before said bag is loaded with said stack of compressed flexible articles, said easy open device further comprising a pair of notches in said side seals to facilitate the opening of said bag at said side seals, said notches passing completely through said side seals and into said side panels,
 said substantially continuous line of weakness defining a predetermined portion of said top half of said bag to be at least partially separated from the remainder of said bag without releasing the tension in the remainder of said bag, whereby said predetermined portion of said top half is at least partially separated from the remainder of said bag by applying a grasping force to said predetermined portion of said bag to propagate tears along said line of weakness, whereupon the top portion of the stack of articles is exposed for easy dispensing while the bottom portion of said stack coinciding with the remaining tensioned portion of said bag is retained in a substantially compressed condition.

5,380,095
BEARING ARRANGEMENT HAVING MAGNETIC ATTRACTION BETWEEN SLIDERS AND CLEARANCE MECHANISM
 Paul L. Pryor, 10 Lonsdale Ave., Dayton, Ohio 45419
 Filed Nov. 16, 1992, Ser. No. 977,273
 Int. Cl.⁶ F16C 17/00
 U.S. Cl. 384—8

20 Claims

1. A slide mechanism comprising:
 a first slide defining a first surface having at least a portion thereof made of a magnetic material;
 a second slide defining a second surface adjacent to the first surface of the first slide, the second surface having at least a portion thereof comprising a magnetic material, the

magnetic material of the second surface and the magnetic material of the first surface attracting each other; and at least two means for adjusting a distance between the first and second surfaces, each means for adjusting having a set screw and at least one bearing on said set screw, each



means for adjusting disposed in one of the first and second slides, the bearing of the means for adjusting resting against one of the first and second surfaces of the first and second slides in which the means for adjusting is not disposed.

5,380,096

LINEAR MOTION ROLLING GUIDE UNIT WITH FLOW VALVE IN COMMUNICATING OIL GROOVE

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

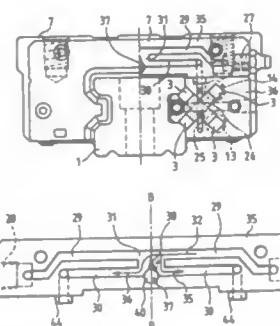
Filed Oct. 12, 1993, Ser. No. 134,811

Claims priority, application Japan, Oct. 12, 1992, 4-076968[U]

Int. Cl.⁶ F16C 33/10, 29/06

U.S. Cl. 384—13

6 Claims



1. In a linear motion rolling guide unit comprising:
a track rail having first raceway surfaces formed one on each longitudinally extending side wall surface thereof;
a casing slidable relative to the track rail and having second raceway surfaces formed at positions facing the first raceway surfaces;
the casing also having return passages formed therein, the first raceway surfaces of the track rail and the second raceway surfaces of the casing forming raceways therebetween;
end caps mounted to the longitudinal ends of the casing, each of the end caps having direction changing passages; and
rolling elements rolling and circulating through the raceways, the direction changing passages and the return passages;
said linear motion rolling guide unit characterized in:
that each of the end caps is formed with oil supply ports for introducing lubricating oil, with oil grooves extending from the oil supply ports to the central portion of the end cap, with communicating oil grooves merging the oil grooves at the central portion, and with branching oil

grooves for branching the communicating oil grooves and connecting them to the raceways on both sides; and that flow regulating valves are installed in the communicating oil grooves to distribute lubricating oil to the branching oil grooves that communicate with the raceways.

5,380,097

LINEAR MOTION ROLLING GUIDE UNIT WITH OPEN-CLOSE PLUGS IN THE BRANCHING OIL GROOVES

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

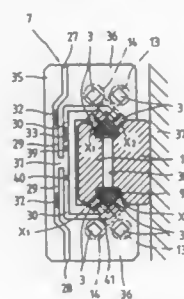
Filed Nov. 8, 1993, Ser. No. 148,363

Claims priority, application Japan, Nov. 12, 1992, 4-084028

Int. Cl.⁶ F16C 33/10, 29/06

U.S. Cl. 384—13

5 Claims



1. A lubricating device for a linear motion rolling guide unit comprising:
a track rail having first raceway surfaces formed on longitudinally extending sidewall surfaces thereof, the track rail being mounted to a base in such a way that the side surfaces of the track rail are disposed at vertically spaced positions;
a casing mounted astride and slidable relative to the track rail and having second raceway surfaces formed at positions facing the first raceway surfaces, the casing also having return passages formed therein;
raceways formed between the first raceway surfaces of the track rail and the second raceway surfaces of the casing; end caps attached to the longitudinal ends of the casing and having direction changing passages formed therein;
rolling elements circulating through the raceways, the direction changing passages and the return passages;
a slider including the casing, the end caps and the rolling elements, the slider being mounted astride the track rail in such a way that the side surfaces of the slider are disposed at vertically spaced positions;
communication through-holes formed transversely through the track rail and longitudinally spaced apart from each other to allow the raceway surfaces on both sides of the track rail to communicate with each other;
oil supply ports formed in the sides of each of the end caps for introducing lubricating oil;
oil passages extending from the oil supply ports to the center of each of the end caps;
communication oil passages formed at the center of each of the end caps and communicating with the oil passages;
branch oil passages formed in the end caps and branching from the communication oil passages to communicate with the raceway surfaces on both sides of the track rail; and
open-close means provided in each of the branch oil passages.

5,380,098

SLIDING UNIT

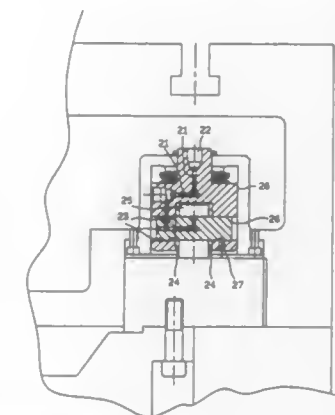
Rong-Hong Huang; Kun-Lung Tsai; Hsi-Yen Chen; Chuck Chen, and Tju-Yin Chang, all of Hsinchu, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Nov. 4, 1993, Ser. No. 147,840

Int. Cl.⁶ F16C 21/00

U.S. Cl. 384—25

22 Claims



1. A sliding unit comprising:
a load-receiving device for permitting a load to be received thereon;
a guiding device slidably mounting thereon said load-receiving device for permitting a direct relative sliding motion therebetween; and
a load-sharing device mounted between said load-receiving device and said guiding device and capable of being in a rolling motion therebetween for resulting in a rolling contact effect therebetween.

5,380,099

LINEAR BEARING AND ITS PRODUCTION METHOD

Hiroshi Teramachi, Tokyo, Japan, assignor to THK Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01186, § 371 Date Jul. 16, 1993, § 102(e) Date Jul. 16, 1993, PCT Pub. No. WO93/06377, PCT Pub. Date Apr. 1, 1993

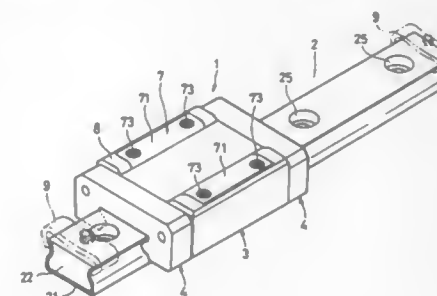
PCT Filed Sep. 17, 1992, Ser. No. 50,374

Claims priority, application Japan, Sep. 19, 1991, 3-266962

Int. Cl.⁶ F16C 29/06

U.S. Cl. 384—45

4 Claims



1. A linear bearing, comprising:
a rail having ball channels; and
a slider having load ball channels cooperating with said ball channels of said rail to sandwich a plurality of balls therebetween, in order to guide a movable body secured to said slider along a path of said rail, said slider including,
(a) a ball plate in which said load ball channels are formed,
(b) a mounting plate having mounting portions for support-

ing the movable body and a fixed portion connected to said mounting portions, and
(c) a resin molding material at least partially surrounding said ball plate and said mounting plate, wherein said fixed portion of said mounting plate is embedded in said resin molding material.

5,380,100

SQUEEZE FILM DAMPER COVERED BY TORUS SHELLS

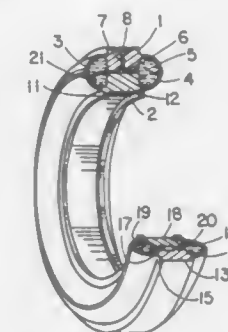
Han J. Yu, 9312 Notre Dame Ave., Chatsworth, Calif. 91311

Filed Feb. 4, 1994, Ser. No. 191,594

Int. Cl.⁶ F16C 27/00

U.S. Cl. 384—99

9 Claims



1. A squeeze film damper comprising
a damper outer ring having an outside surface, an inside surface, a first side surface, and a second side surface,
a damper inner ring having an outside surface, an inside surface, a first side surface, and a second side surface, whereby the damper outer ring inside surface is proximate the damper inner ring outside surface so that a clearance of the squeeze film is provided,
and a pair of torus shells, one connecting the first side surface of the damper outer ring and the first side surface of the damper inner ring, and one connecting the second side surface of the damper outer ring and the second side surface of the damper inner ring, so that the torus shells provide the stiffness within the clearance of the squeeze film, separate the damping fluid from its environment, and serve as a damping fluid reservoir.

5,380,101

ROTARY TRANSMISSION MECHANISM

Chai Cheng-Chung, No. 6, Lane 301, Sec. 2, Honan Rd., Taichung,

Filed Jan. 5, 1993, Ser. No. 738

Int. Cl.⁶ F16C 32/06

U.S. Cl. 384—100

1 Claim

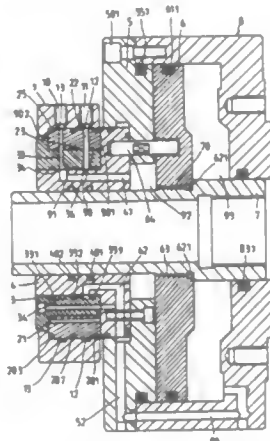
1. A rotary transmission mechanism comprising:
a cylindrical mount having two inside annular flow guide grooves spaced around the inside wall, two air holes with a respective pipe connector for guiding a flow of compressed air or hydraulic fluid to the inside annular flow guide grooves;
an intermediate ring inserted in said cylindrical mount, the intermediate ring having three outside annular grooves spaced around the outside wall and respective mounting with a respective seal ring, two series of guide holes respectively disposed in communication with the inside annular flow guide grooves on said cylindrical mount, an inside annular flow guide groove around the inside wall, and an even number of equidistantly spaced, longitudinal through holes intersected with the inside annular flow guide groove;
a stepped inner socket inserted into said intermediate ring inside said cylindrical mount, the stepped inner socket having two symmetrical series of inlet holes in radial

direction, a plurality of equiangularly spaced, longitudinal pin holes, into which a screw bolt each is respectively inserted, three inside annular grooves around the inside wall respectively mounted with a respective seal ring, two annular flow guide grooves spaced between either two of the three inside annular grooves and respectively disposed communication with either series of the inlet holes;

a flow guide made from a headed tube inserted in said stepped inner socket, the flow guide having two inside annular grooves around the inside wall respectively mounted with a respective seal ring, two opposite flow guide holes through its head, two outside annular grooves on its head respectively mounted with a respective seal ring, and a plurality of screw holes spaced through its head in longitudinal direction;

a rear packing member covered on said flow guide over said cylindrical mount at one end, the rear packing member having a plurality of screw holes respectively connected to the pin holes on said stepped inner socket and the screw holes on said flow guide, an annular flow guide groove on the inside, a flow guide hole extended from the annular flow guide groove to the outside, and an outside annular groove around a peripheral wall thereof mounted with a seal ring;

a front packing member made in the shape of a cap fastened to said rear packing member by screws with a holding space defined therebetween, the front packing member



having a flow guide hole in communication with the flow guide holes on said flow guide, an inside annular groove on a center through hole thereof mounted with a seal ring;

a slide ring movably disposed inside the holding space within said front and rear packing members, the slide ring having a plurality of bolt equiangularly spaced on one side and respectively and movably inserted through holes on said rear packing member into holes on said guide member, an outside annular groove mounted with a seal ring stopped against said front packing member, and a center through hole with an inner thread;

a spindle inserted through said front packing member, said slide ring, said rear packing member, said flow guide, said stepped inner socket, said intermediate ring and said cylindrical mount, the spindle having an outer thread threaded into the inner thread on said slide ring, an outside annular groove mounted with a seal ring stopped against the inside wall of the center hole of said slide ring, a center through hole through its length, and an inner thread on one end of the center through hole; and

whereby compressing a flow of compressed through either inlet hole on said cylindrical mount causes said slide ring to be moved forwards or backwards and simultaneously causes said spindle, said flow guide, said stepped inner socket, and said rear and front packing members to be floated concentrically without producing any friction resistance.

5,380,102 SHAFT JOURNAL BEARING ASSEMBLY IMPROVED SEAL WEAR RING

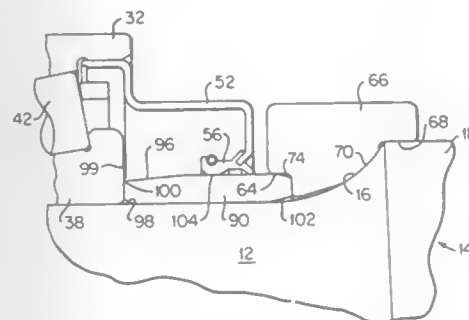
Danny R. Sink, Richmond, Va., assignor to Brenco Incorporated, Petersburg, Va.

Filed Nov. 2, 1993, Ser. No. 144,511

Int. Cl.⁶ F16C 33/78

U.S. Cl. 384—484

16 Claims



1. In combination with an axle having a shoulder spaced from a free end and a journal of smaller diameter extending from the shoulder to the free end, an improved bearing assembly fitted onto the journal and retained thereon by an end cap mounted on said free end to permit relative rotation between the axle and an element supported by the bearing, said bearing assembly comprising an inboard bearing cone and an outboard bearing cone mounted on said journal in axially spaced relation to one another, each said cone defining an outwardly directed, tapered inner raceway and each having an inner diameter providing an interference fit on said journal, a cylindrical spacer element mounted on said journal between said bearing cones and maintaining said bearing cones in axially spaced relation, a bearing cup defining a pair of inwardly directed tapered outer raceways located one in radially outward spaced relation to each of said inner raceways, rolling elements located between the inner and outer raceways, a backing ring mounted on said journal and engaging said shoulder in a manner to radially fix the backing ring on the axle, a first seal wear ring mounted on said journal and having a first end surface engaging said backing ring and a second end surface engaging said inboard bearing cone and a second seal wear ring mounted in contact with the said outboard bearing cone and said end cap, and a pair of annular seal elements interposed one between said bearing cup and each of said seal wear rings forming a lubricant barrier at each end of the bearing, said first seal wear ring having an inner generally cylindrical surface extending over a major portion of its axial length, said generally cylindrical inner surface having a diameter providing an interference fit with said journal and terminating at each end in a smoothly curved, outwardly flared surface portion.

5,380,103 SELF TIGHTENING VENTING END CAP FOR VEHICLE WHEEL BEARING

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1993, Ser. No. 140,941

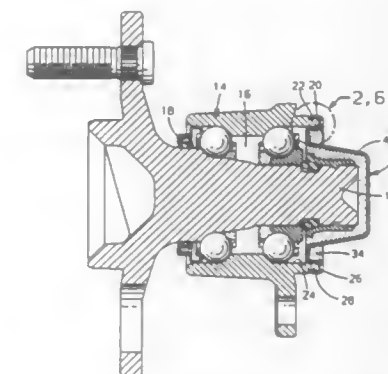
Int. Cl.⁶ F16C 33/78

U.S. Cl. 384—489

1 Claim

1. A wheel bearing and end cap assembly, comprising, an inner spindle and coaxial outer hub having an annular edge including a cylindrical inner surface defining a bearing interior space that is subject internal pressure fluctuations relative to the outside pressure, an end cap integrally formed of a flexible material and including a first, radially outer channel of generally U shaped cross section facing axially inwardly of said hub and sized so as to tightly grip and seal against said annular edge,

a second, radially inner channel of generally U shaped cross section facing axially outwardly of said hub and having a cylindrical wall shared with said outer channel and sized so as to closely abut said hub edge inner cylindrical surface when said end cap is in a free, unstressed state, said second channel also having a generally annular base which, in a free state, slopes radially outwardly at a slight angle relative to plane that is perpendicular to said hub, and,



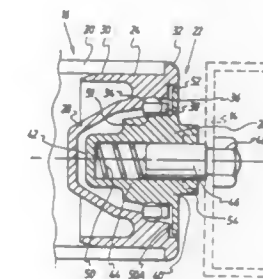
a central cup opening axially inwardly of said hub and forming the innermost wall of said second channel and exposed on the outside to ambient pressure and on the inside to internal bearing pressure,

whereby, when said internal pressure is lower than ambient, said cup is forced axially inwardly, tending to flatten said base and bend said shared channel wall outwardly and into tighter sealing abutment with said hub, and when said internal pressure is higher, said cup is forced axially outwardly, tending to bend said shared channel wall inwardly and away from said hub to allow venting.

5,380,104
BEARINGS FOR ROLLERS
David M. Garnett, Ilkley, United Kingdom, assignor to BNL Limited, Knaresborough, United Kingdom
PCT No. PCT/GB92/00070, § 371 Date Jul. 9, 1993, § 102(e)
Date Jul. 9, 1993, PCT Pub. No. WO92/13204, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 14, 1992, Ser. No. 87,689
Claims priority, application United Kingdom, Jan. 15, 1991, 9100772

Int. Cl.⁶ F16C 13/00, 33/80

U.S. Cl. 384—546



1. A rolling bearing suitable for use in a roller or roller decking, comprising inner and outer races with rolling elements therebetween, the outer race being in the form of a blanking cup suitable for fitting into the end of a sleeve, and the inner race being provided with or for connection to a mounting shaft extending away from the end of the sleeve in which the rolling bearing is to be received, characterized in that the bearing has a flow path between the races enabling water

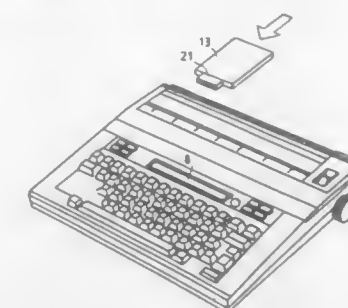
which enters the bearing to flow past the rolling elements without obstruction to drain from the blanking cup.

5,380,105
SPELL CHECK MODULE WITH INTERNAL CPU
Naoki Shimada, Tokyo; Kiyoshi Katano, and Hiroyuki Ueda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 951,950, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 860,126, Mar. 31, 1992, abandoned, which is a continuation of Ser. No. 466,489, Jan. 17, 1990, abandoned. This application Mar. 10, 1993, Ser. No. 29,352

Claims priority, application Japan, Jan. 26, 1989, 1-15088
Int. Cl.⁶ G06F 3/02, 7/02

U.S. Cl. 400—63

58 Claims



1. A document processing apparatus comprising:
first, internal determining means for verifying the spelling of a word referring to first correct spelling information stored in a first, internal spelling dictionary, said first, internal determining means comprising a first central processing unit;
section determining means detachably connectable to said apparatus for verifying the spelling of a word different from those stored in the first spelling dictionary referring to second correct spelling information stored in a second spelling dictionary detachably connectable to said apparatus, said second determining means comprising a second central processing unit; and
a connection unit for detachably connecting said second determining means and the second spelling dictionary to the apparatus main body.

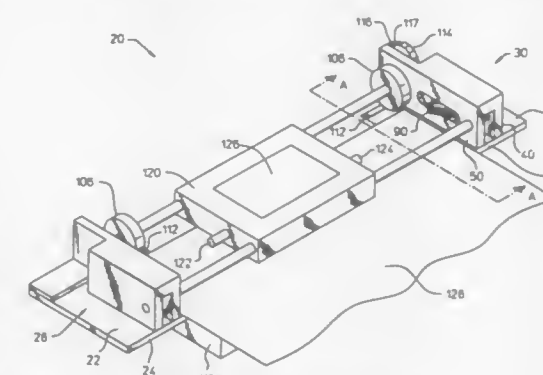
5,380,106
SINGLE MOTOR SCANNING-HEAD PRINTER
William J. West, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 27, 1993, Ser. No. 53,640

Int. Cl.⁶ B41J 23/34

U.S. Cl. 400—185

12 Claims



1. A scanning-head printer comprising:

frame means for defining a paper path;
 a motor supported by said frame means;
 a carriage connected to said frame means for reciprocating motion along a carriage path having first and second extreme positions, said carriage path being generally perpendicular to said paper path, said motor being connected to said carriage to selectively drive said carriage along said carriage path;
 print means fixed to said carriage for applying print to paper positioned on said paper path; and
 a paper advancement assembly, supported on said frame means, for advancing said paper positioned along said paper path when said carriage reaches said first extreme position, said paper advancement assembly including
 (a) an extensible pivoting hinge pivotable between a retracted condition and an extended condition, said extensible pivoting hinge being disposed such that movement of said carriage into said first extreme position elongates said extensible pivoting hinge,
 (b) a sliding member secured to said extensible pivoting hinge to be linearly displaced upon pivoting of said extensible pivoting hinge, and
 (c) means for advancing said paper along said paper path in response to displacement of said sliding member.

5,380,107

BASE FABRIC FOR INK RIBBON

Nobutake Hiroe, Shiga, and Tetsuya Kato, Aichi, both of Japan, assignors to Toray Industries, Inc., Japan
 PCT No. PCT/JP93/00171, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO93/15913, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 10, 1993, Ser. No. 122,464

Claims priority, application Japan, Feb. 13, 1992, 4-026969
 Int. Cl.⁶ B41J 31/02, 31/04

U.S. Cl. 400—241

8 Claims

1. A base fabric for an ink ribbon comprising woven warp and well yarns wherein at least one yarn of the warp or the weft of the base fabric comprises core/sheath-type composite fibers wherein the sheath component is a polymer having a melting point that is lower than that of the core component.

5,380,108

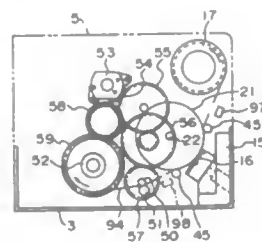
MULTI-PASS THERMAL PRINTER

Kenichi Fukahori; Shuji Sato; Masaki Shimohara; Hideki Ito, all of Kanagawa; Shin Iima, Tokyo, and Mutsuko Narita, Kanagawa, all of Japan, assignors to Sony Corporation, Japan
 Filed Oct. 6, 1992, Ser. No. 957,088

Claims priority, application Japan, Oct. 24, 1991, 3-275897
 Int. Cl.⁶ B41J 35/36

U.S. Cl. 400—247

13 Claims



1. A printer comprising:
 a housing;
 a chassis forming a base for said housing;
 a thermal head fixedly mounted in said housing;
 a platen roller rotatably supported in said chassis and movable relative to said thermal head;
 first platen driving means for swingably moving said platen between a plurality of orientations relative to said thermal head;
 second platen driving means for driving said platen to rotate

in clockwise and counterclockwise directions in association with movement of said first platen driving means;
 a receptacle for receiving an ink ribbon cartridge containing an ink ribbon;
 extracting means for extracting the ink ribbon from the ink ribbon cartridge;
 ink ribbon guide means guiding the ink ribbon extracted by said extracting means around said platen so as to extend between said platen and said thermal head;
 take-up means for retaining the ink ribbon which is extracted from said ink ribbon cartridge;
 control means for controlling operation of said first and second platen driving means, said ink ribbon guide means and said take-up means for effecting printing operation on a sheet of printing medium such that aligned overprinting is accomplished on the sheet of printing medium according to movement of the sheet of printing medium via said first platen driving means in conjunction with rotation by said second platen driving means, the aligned overprinting comprising at least a first printing operation corresponding to one extracted position of the ink ribbon from the ink ribbon cartridge and a second printing operation on the sheet of printing medium in alignment with the first printing operation and corresponding to another extracted position of the ink ribbon from the ink ribbon cartridge, said first platen driving means effecting separation between the sheet of printing medium and said thermal head between the first and the second printing operations; and
 break sensing means for detecting a breakage of the ink ribbon and for generating a signal indicative thereof to said control means, said control means being responsive to said signal so as to activate rewinding means, operatively engaged with a supply reel of the ink ribbon cartridge, and said take-up means so as to wind respective portions of the broken ink ribbon thereon.

5,380,109

MAILING MACHINE INCLUDING SHORT SHEET LENGTH DETECTING MEANS

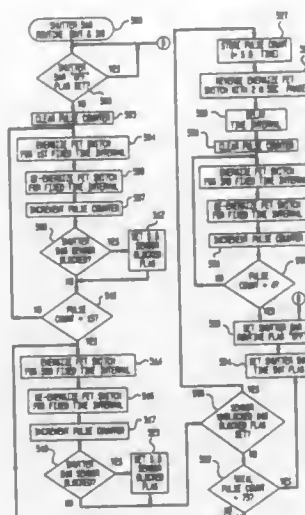
Alton B. Eckert, Jr., New Fairfield; Dennis M. Gallagher, Danbury; Thomas M. Pfeiffer, Bridgeport, and Richard P. Schoonmaker, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 25, 1992, Ser. No. 841,912

Int. Cl.⁶ B41J 29/48

U.S. Cl. 400—708

8 Claims



1. A mailing machine comprising:
 (a) means for feeding a sheet in a path of travel, a fence for defining a direction of the path of travel and against which

an edge of a sheet is normally registered for alignment thereof in the path of travel;
 (b) means for printing postage indicia on a sheet in the path of travel, the printing means including a rotary postage indicia printing drum, the printing means including means for driving the drum;
 (c) means for controlling the sheet feeding and drum driving means, the controlling means including a microprocessor, the controlling means including means for sensing a sheet in the path of travel and providing a signal to the microprocessor when a sheet is fed into and out of blocking relationship with the sensing means, the signal having a first magnitude when a sheet is not disposed in blocking relationship with the sensing means, the signal having a second magnitude when a sheet is disposed in blocking relationship with the sensing means, the second signal magnitude having a time duration corresponding to an overall length of a sheet as measured in the direction of the path of travel; and
 (d) the microprocessor programmed for
 1. commencing a count when a sheet is fed into blocking relationship with the sensing means of a predetermined time interval corresponding to a minimum overall sheet length acceptable for printing purposes,
 2. determining whether the sheet is still in blocking relationship with the sensing means at the end of the count, and
 3. causing the drum driving means to commence driving the drum for printing the indicia if the sheet is still in blocking relationship with the sensing means at the end of the count and implementing a shut-down routine if the sheet is not in blocking relationship with the sensing means at the end of the count.

5,380,110

PACKET CONTAINING TREATMENT LIQUID WITH APPLICATOR AND METHOD

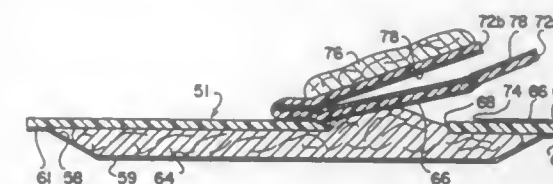
Joseph F. Festa, 770 Northrup St., Suite 5, San Jose, Calif. 95126

Filed Jan. 21, 1993, Ser. No. 7,113

Int. Cl.⁶ A47L 23/04; A45D 34/00

U.S. Cl. 401—132

11 Claims



1. In a packet for use with a human hand in treating a surface, the packet being generally planar in conformation, an applicator formed of a plastic sheet material and having at least one hole therein and having first and second sides, means forming a reservoir of a liquid on the second side of the applicator, plastic sheet means overlying the first side of the applicator and the hole therein, a first inner heat seal circumscribing said hole and bonding said plastic sheet means to said applicator, a removable plastic pull tab sheet, and a second inner heat seal securing said pull tab sheet to said plastic sheet means and forming a liquid-tight seal, said second inner heat seal being disposed within said first inner heat seal and circumscribing said at least one hole, an opening being provided in said plastic sheet means along said second inner heat seal when said pull tab sheet is lifted off of said plastic sheet means to expose said hole, whereby the packet can be grasped by the hand and the liquid carried within the liquid reservoir expelled by the finger of said hand through the opening for application to the surface to be treated.

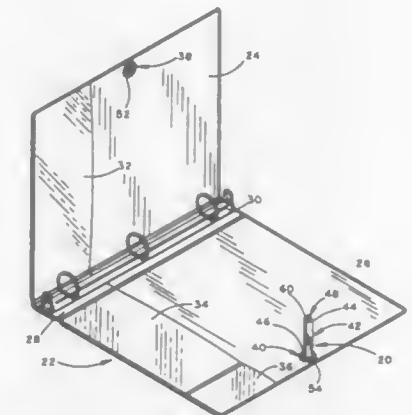
5,380,111

RELEASABLE SPACER ASSEMBLY FOR BINDERS

S. John Westrom, 25 NW. 44th Ave., Des Moines, Iowa 50313
 Filed Dec. 20, 1993, Ser. No. 170,147
 Int. Cl.⁶ B42F 13/00

U.S. Cl. 402—74

17 Claims



1. Releasable spacing means in combination with a binder, said binder having cover members, said releasable spacing means allowing for the spacing of said cover members in a substantially parallel relationship for even stacking and standing of several binders while maintaining said cover members in a closed position when said releasable spacing means are in place, said releasable spacing means comprising:

- a first cover securement means located on and attached to a first cover member of said binder;
- a second cover securement means located on and attached to a second cover member of said binder; and
- a longitudinal spacer member having a first end and a second end for location between said first and second cover securement means, said spacer member further comprising first spacer securement means located on and integral with said first end of said spacer member for releasable attachment to said first cover securement means add second spacer securement means located on and integral with said second end of said spacer member for releasable attachment to said second cover securement means.

5,380,112

ASSEMBLY FOR CONCENTRICALLY POSITIONING A CASING RELATIVE TO A SHAFT

Rudolf Schicktz, Wolftratshausen, and Hans-Georg Scherer, Geretsried, both of Germany, assignors to Feodor Burgmann Dichtungswerke GmbH & Co., Wolftratshausen, Germany

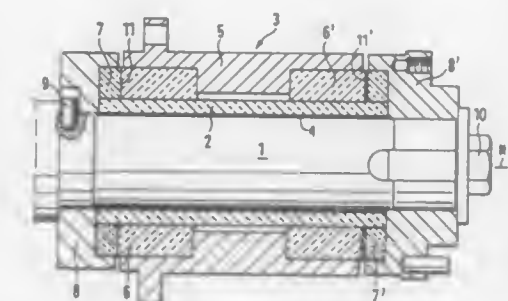
Filed Mar. 31, 1993, Ser. No. 40,602

Claims priority, application Germany, Mar. 31, 1992, 9204349

Int. Cl.⁶ F16C 17/22

U.S. Cl. 403—28

6 Claims



1. An assembly comprising a second part concentrically positioned within a first part, said parts being made from mate-

rials with different coefficients of thermal expansion wherein radial clearance is maintained between said parts, and wherein said first part is centrally supported along its length by portions facing radially away from said second part at an abutment arrangement which is concentric relative to said second part, said abutment arrangement being made of material having substantially the same thermal expansion characteristics as said first part;

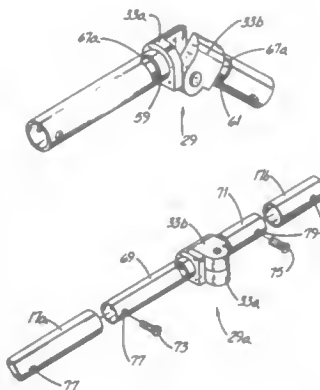
wherein said abutment arrangement is comprised of a pair of axially spaced, ring-shaped support elements made from a material with substantially the same coefficient of thermal expansion as that of said first part; and wherein said support elements are held by holding means for holding said support elements, said holding means being concentrically attached to said second part and being made from a material with substantially the same coefficient of thermal expansion as that of said second part, said support elements being held along portions thereof facing substantially radially away from said first part, but not substantially along portions thereof facing radially towards said first part.

5,380,113 FOLDING FISH LANDING NET WITH IMPROVED HINGE MECHANISMS

George L. Boehm, P.O. Box 605, Ennis, Mont. 59729
Division of Ser. No. 72,256, Jun. 7, 1993, Pat. No. 5,339,556.
This application Jan. 10, 1994, Ser. No. 179,064
Int. Cl.⁶ F16C 11/00

U.S. Cl. 403-102

5 Claims



1. A hinge-like mechanism joining elongate first and second tube-like pieces, each piece having a central long axis coincident with a reference plane, the mechanism including:

a first link member attached to the first tube-like piece and a second link member attached to the second tube-like piece;

and wherein:

the first and second link members are pivotably pinned to one another and each link member has a substantially-flat face in substantially coplanar sliding contact with the face of the other member;

the link members are mounted for rotatable movement between first and second positions relative to the pieces; in the first position, the faces are substantially normal to the reference plane and the mechanism forms a beam-like structure; and

in the second position, the faces are substantially coincident with the reference plane and the pieces are held relatively rigidly in the reference plane.

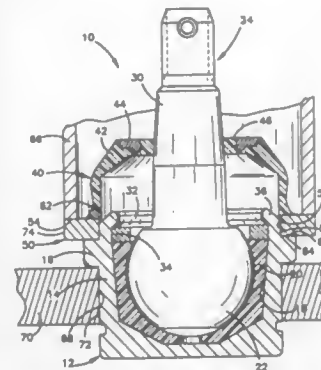
5,380,114 BALL JOINT ASSEMBLY AND METHOD OF MOUNTING

Brian A. Urbach, Rochester Hills, Mich., assignor to TRW Inc.,
Lyndhurst, Ohio

Filed Jan. 25, 1993, Ser. No. 8,695
Int. Cl.⁶ F16C 11/00

U.S. Cl. 403-140

6 Claims



1. A ball joint assembly to be pressed into an opening in a receiving member by a press-in-tool, said ball joint assembly comprising:

a housing defining a chamber having an opening, said housing having a flange on the outside of said housing;

a ball stud having a ball portion disposed in said chamber and a shank portion projecting through the opening; and

seal means for sealing the opening, said seal means including a flexible seal wall portion connected with said shank portion of said ball stud and retainer ring means for connecting said flexible seal wall portion with said housing, said retainer ring means being disposed in engagement with said flange, said retainer ring means extending outward of said flange to enable the press-in-tool to press against said retainer ring means to press said housing into the opening in the receiving member;

said flange having an annular side surface facing toward said shank portion of said ball stud, said retainer ring means having a first annular side surface which is disposed in engagement with said annular side surface of said flange and a second annular side surface which faces toward said shank portion of said ball stud, said second annular side surface of said retainer ring means having an outside diameter which is greater than an outside diameter of said annular side surface of said flange.

5,380,115 HIP CORNER PLATE CONNECTION

Karen W. Colonias, Pleasant Hill, Calif., assignor to Simpson Strong-Tie Co., Inc., San Leandro, Calif.

Filed Oct. 14, 1993, Ser. No. 136,789
Int. Cl.⁶ F16B 9/00

U.S. Cl. 403-170

4 Claims

1. A hip corner plate connection in a building structure comprising:

a. a hip rafter having a bottom edge, a top edge and generally parallel first and second side faces;

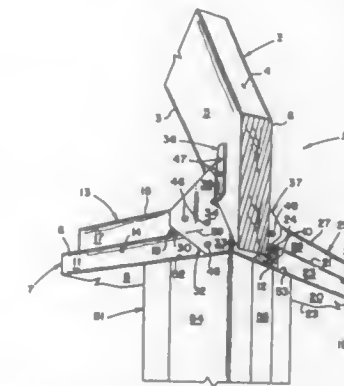
b. support means having first and second upper faces, and first and second outer side faces;

c. a first top plate member having, a first lower face in registration with a portion of said first upper face of said support means, a top facet inner and outer side edges, and an end edge;

d. a second top plate member having, a first lower face in registration with a portion of said second upper face of said support means, a top face, inner and outer side edges and an end face;

e. a single element sheet metal hip corner plate connector having:

1. a first base member including a lower portion in close registration with a portion of said first outer side face of said support means, a mid portion in close registration with a portion of said end face of said second top plate member, and an upper portion;
2. a first hip rafter flange integrally connected to said upper portion of said first base member extending at an angle thereto, and dimensioned and positioned for registration with a portion of said first side face of said hip rafter;
3. a second base member integrally connected to said first base member at a generally right angle including a lower portion in close registration with a portion of said second outer side face of said support means, a mid portion in close registration with a portion of said outer side edge of said second top plate member, and an upper portion;
4. a second hip rafter flange integrally connected to said upper portion of said second base member extending at an angle thereto in generally parallel relation to said first hip rafter flange, and dimensioned and positioned



for registration with a portion of said second side face of said hip rafter, and

5. a seat edge formed in said hip corner plate connector extending between said first and second hip rafter flanges and dimensioned and positioned for receiving a portion of said bottom edge of said hip rafter;
- g. first fastener means penetrating said lower portion of said first base member and said first outer side face of said support means;
- h. second fastener means penetrating said mid portion of said first base member and said end face of said second top plate member;
- i. third fastener means penetrating said first hip rafter flange and said hip rafter;
- j. fourth fastener means penetrating said lower portion of said second base member and said second outer side face of said support means;
- k. fifth fastener means penetrating said midportion of said second base member and said outer side edge of said second top plate member; and
- l. sixth fastener means penetrating said second hip rafter flange and said hip rafter.

5,380,116

HIP RIDGE CONNECTION

Karen W. Colonias, Pleasant Hill, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Filed Oct. 14, 1993, Ser. No. 136,693

Int. Cl.⁶ E04B 1/00

U.S. Cl. 403-232.1

6 Claims

1. A hip ridge connection in a building structure comprising:
 - a. a ridge member having an end face, a top face and first and second side faces;
 - b. a first hip rafter having an end face abutting said end face of said ridge member at a lateral angle and vertical angle

thereto, and having a top face, first and second side faces, and a bottom face;

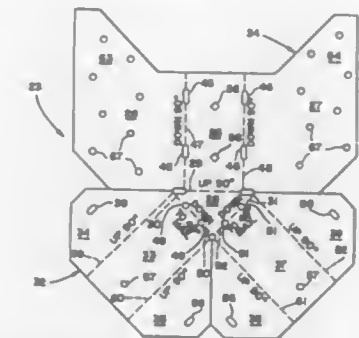
c. a second hip rafter having an end face abutting said end face of said ridge member at a lateral angle and a vertical angle thereto, and having a top face, first and second side faces, and a bottom face;

d. a single element sheet metal hip ridge connector having:

1. a base having a center portion for registration with a portion of said end face of said ridge member, and first and second flanges integrally connected thereto for registration with said first and second side faces of said ridge member;

2. a base extension member integrally and angularly connected to said base member along a line and having a first base extension end and a second base extension end;

3. a first seat member including a first hip seat integrally connected to said base extension member along said first base extension end and first and second hip flanges integrally connected to said first hip seat and angularly related thereto and positioned and dimensioned for



registration with said first and second side faces of said first hip rafter, and

4. a second seat member including a second hip seat integrally connected to said base extension member along said second base extension end and third and fourth hip flanges integrally connected to said second hip seat and angularly related thereto and positioned and dimensioned for registration with said first and second sides of said second hip rafter;
- e. first fastener means joining said first flange of said base to said ridge member;
- f. second fastener means joining said second flange of said base to said ridge member;
- g. third fastener means joining said first hip flange to said first hip rafter;
- h. fourth fastener means joining said second hip flange to said first hip rafter;
- i. fifth fastener means joining said third hip flange to said second hip rafter; and
- j. sixth fastener means joining said fourth hip flange to said second hip rafter.

5,380,117

APPARATUS FOR THE DETACHABLE COUPLING OF GRIPPING DEVICES OR CORRESPONDING TOOLS ON ROBOT ARMS

Joachim Buschulte, Schwarze Ewaldstrasse 20, 4600 Dortmund 41, Germany

Continuation of Ser. No. 635,187, Jan. 4, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 99,769

Claims priority, application Germany, Jan. 16, 1989, 8907348[U]

Int. Cl.⁶ B25G 3/20

U.S. Cl. 403-323

9 Claims

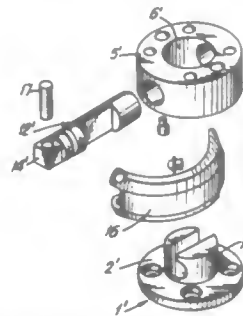
1. An apparatus for detachably coupling one of a gripping device and a corresponding tool on a robot arm, said apparatus comprising:

a first flange element fastenable to the one of a gripping

device and a corresponding tool, said first flange element having a lower plane support surface and an engagement element extending from said lower support surface;

a second flange element fastenable to the robot arm, said second flange element having a recess for receiving said engagement element of said first flange element in a coupled position of the one of a gripping device and a corresponding tool on the robot arm, and an upper plane support surface, which is being abutted by said lower plane support surface of said first flange element in the coupled position;

a locking pin for penetrating said second flange element in the coupled position of the one of a gripping device and a corresponding tool on the robot arm;



wherein said engagement element has a groove for overlapping said locking pin in the coupled position, and a substantially widened cylindrical bore hole into which said overlapping groove passes;

wherein said cylindrical bore hole is arranged slightly eccentrically relative to said locking pin in the coupled position;

wherein said locking pin is formed as a semicylinder element for swiveling into said cylindrical bore hole in order to apply a clamping force for locking said first and second flange elements to each other; and

wherein said locking pin is located substantially in an effective center of the robot arm in the coupled position.

5,380,118

SHAFT COUPLING FOR BOTTOM CYLINDERS OF DRAFTING UNITS ON SPINNING MACHINES

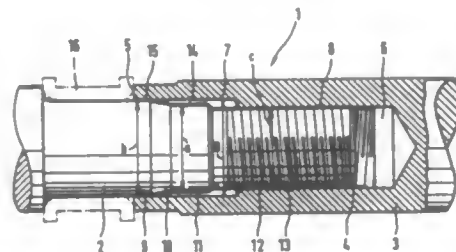
Hans Stahlecker, and Gerhard Fetzner, both of Süssen, Germany, assignors to Spinnfabrik Süssen, Schurr, Stahlecker & Grill GmbH, Germany

Filed Dec. 22, 1992, Ser. No. 993,594

Claims priority, application Germany, Feb. 21, 1992, 4205322
Int. Cl.⁶ D01H 1/00, 5/00; F16D 1/00

U.S. Cl. 403-343

21 Claims



1. A spinning machine drafting unit bottom cylinder shaft coupling, comprising:

a first shaft with a plurality of shaft sections of different diameters at one of its ends, said diameters diminishing toward said end, and

a second shaft with a plurality of bore sections at one of its ends, which are adapted to the respective shaft sections of different diameters of the first shaft so as to accommodate insertion of said end of the first shaft into said end of the second shaft,

wherein one shaft section of said first shaft and one bore

section of said second shaft have interengageable screw threads for connecting said shafts in a form-locking driving power transmission connection,

wherein two unthreaded cylindrical sections of said first shaft and bore sections of said second shaft are provided with respective fits for forming centering surfaces, and wherein one of said fits is a clearance fit and the other of said fits is a press fit, said press fit and said interengageable screw threads being the only frictional connections of the shaft coupling.

5,380,119

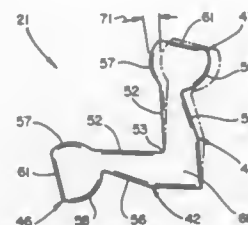
RESILIENTLY YIELDABLE PICTURE FRAME CORNER INSERT

David M. Hadden, 241 N. Clark Ave., Los Altos, Calif. 94022
Filed Jun. 21, 1993, Ser. No. 80,193

Int. Cl.⁶ G09F 1/12

U.S. Cl. 403-402

26 Claims



1. A picture frame corner construction comprising first and second elongate frame parts extending at right angles to each other and having juxtaposed end portions and longitudinal axes, each of the end portions having a hole therein extending perpendicular to the longitudinal axis of the frame part and a slot extending from the hole and through the end portion of the frame part, and a corner insert secured to the juxtaposed end portions of the first and second frame parts for retaining the juxtaposed end portions in contact with each other, the corner insert being formed as one piece and having first and second web portions disposed in the slots, the web portions forming means for applying yieldable forces tending to urge the juxtaposed end portions into engagement with each other.

5,380,120

GREENHOUSE, PROVIDED WITH A PROFILE FRAME FOR GUIDING A FOIL AND ALSO PROVIDED WITH A SNAP-ON FRAME FOR THE AFFIXING THEREOF, AS WELL AS A PROFILED FRAME, A SNAP-ON FRAME, A CLAMPING CONSTRUCTION AND A PROFILED BEAM

Arnoldus H. A. Vermeulen, Terheyden, Netherlands, assignor to Rolloos Sorensen B.V., Raamdonksveer, Netherlands
PCT No. PCT/NL91/00262, § 371 Date Sep. 30, 1992, § 102(e)
Date Sep. 30, 1992, PCT Pub. No. WO92/10086, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 4, 1991, Ser. No. 916,004

Claims priority, application Netherlands, Dec. 6, 1990, 9002687

Int. Cl.⁶ B25G 3/00; A47H 13/00

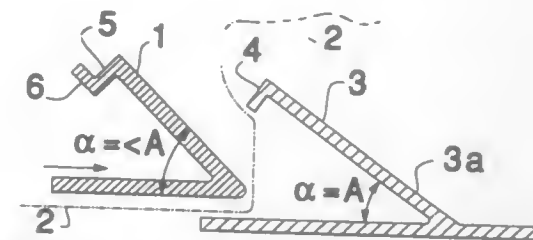
U.S. Cl. 403-405.1

11 Claims

1. In a means for fastening a foil to a greenhouse, said fastening means comprising at least one strip of substantially rigid profiled frame within which a strip of flexible snap-on frame is receivable to clamp said foil therebetween, said profiled frame and snap-on frame strips each being V-shaped in cross-section and having first and second legs joined at an apex to define an interior angle of said profiled frame and an exterior angle of said snap-on frame, said first leg of said profiled frame having an edge extending toward said second leg thereof so as to provide an abutment engageable by said first leg of said snap-

on frame, and said angle of said snap-on frame in an unflexed condition being greater than said angle of said profiled frame in order to effect a snap fit of said snap-on frame within said profiled frame, the improvement comprising:

said snap-on frame being substantially uniform in thickness throughout, and



said first and second legs of said snap-on frame being substantially equal in length to each other, in order to provide identical functioning of said fastening means in clamping said foil for opposite lengthwise orientations of said snap-on frame strip relative to said profiled frame strip.

5,380,121

SLOTTED DRAIN

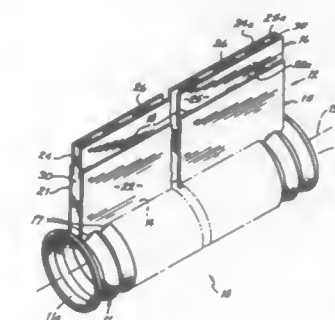
James C. Schluter, Franklin, Ohio, assignor to Contech Construction Products, Inc., Middletown, Ohio

Filed Apr. 7, 1993, Ser. No. 43,572

Int. Cl.⁶ E02B 5/08; E01C 11/22

U.S. Cl. 404-14

12 Claims



8. A method of manufacturing a slotted drain comprising a drain pipe and a grate assembly, the method comprising the steps of:

forming an elongated slot lengthwise along a top surface of said drain pipe,

rigidly securing a lower grate to said elongated slot,

telescopically connecting an upper grate to said lower grate such that said upper grate may be vertically and angularly adjusted with respect to said drain pipe,

adjusting the height and angle of said upper grate with respect to said drain pipe to a predetermined height and angle, and

rigidly securing said upper grate to said lower grate at said predetermined height and angle.

5,380,122

JOINT FORMS FOR CONCRETE SLABS AND METHOD FOR INSTALLATION OF JOINT FORMS

Todd A. Rambo, Powder Springs, Ga., and G. P. Trigg, Farmers Branch, Tex., assignors to BoMetals, Inc., Marietta, Ga.

Filed Sep. 28, 1993, Ser. No. 127,830

Int. Cl.⁶ E01C 11/02

U.S. Cl. 404-47

23 Claims

1. A joint form unit for concrete slabs, comprising:

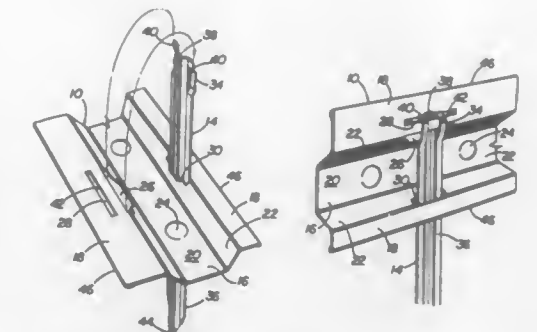
(a) an elongated screed which includes:

a key channel that extends substantially longitudinally in the screed;

at least one facing portion which extends substantially longitudinally in the screed and is connected to the key channel;

a plurality of stake ear slots formed in the screed, each for receiving at least one ear of a stake;

a plurality of locking slots formed in the facing and substantially aligned laterally of the screed with the stake ear slots, each for receiving at least one locking tab of a stake;



(b) a plurality of stakes connected to the screed, each comprising:

an elongated body having a penetrating end and a screed connection end;

at least one ear formed in the screed connection end and inserted into a stake ear slot in the screed; and

at least one locking tab formed in the screed connection end, a portion of which is captured in a locking slot in the screed.

5,380,123

METHOD FOR BUILDING A ROAD BED AND THE USE OF THE SAME

Seppo Ryyänen, Kouvola, Finland, assignor to Gesertek Oy, Kouvola, Finland

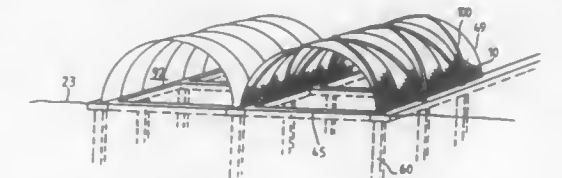
Continuation of Ser. No. 39,102, Apr. 8, 1994. This application Apr. 29, 1994, Ser. No. 235,183

Claims priority, application Finland, Oct. 9, 1990, 904959

Int. Cl.⁶ E01D 7/00; E04B 1/32

U.S. Cl. 404-82

17 Claims



17. A method of building a road bed, comprising the steps of:

(a) placing a support in a vaulted structure form at a road bed site, wherein the vaulted structure includes a plurality of individual concrete-holding reinforcement braces which extend over the vaulted structure;

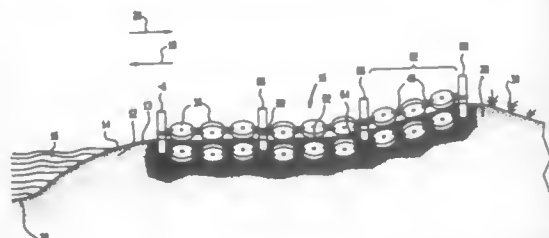
(b) shotcreting concrete onto each one of the plurality of reinforcement braces to define a plurality of separate concrete-filled reinforcement braces over the vaulted structure form and integral therewith;

(c) allowing the shotcreted concrete to set in the braces;

(d) continuing the shotcreting so as to form a concrete casing in the vaulted structure form.

5,380,124
BEACH STABILIZER HAVING PILE GUIDES
 Frank G. Cacoma, and Kenneth F. Cacoma, both of Livingston, N.J., assignors to Sand & Sea Corporation, Livingston, N.J.
 Filed Jun. 14, 1993, Ser. No. 76,585
 Int. Cl.⁶ E02B 3/12, 3/06
 U.S. Cl. 405—16

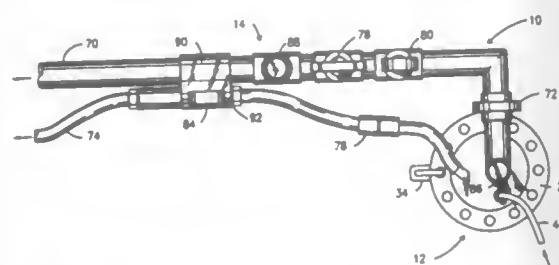
20 Claims



1. A beach stabilizer for building layers of sand and minimizing erosion of a beach comprising:
 a plurality of elements having first and second spaced apart surfaces relative to a center plane therethrough;
 element connector means for connecting said plurality of elements to form at least one string of said elements, said at least one string comprising a plurality of sections, adjacent ones of said plurality of sections being flexible with respect to each other, said at least one string being arranged on a surface defined by said sand so that said center planes of adjacent ones of said elements are disposed transversely relative to each other, said adjacent ones of said elements being further arranged to form alternating obtuse and acute angles with respect to said surface;
 pile means having a vertical axis therethrough and extending partially above said surface and being partially submerged within said sand; and
 securing means associated with said at least one string and said pile means for preventing movement of said plurality of sections of said at least one string with respect to said pile means in at least one direction substantially parallel with said surface of said sand, but permitting independent slideable movement of said plurality of sections in a direction defined by said vertical axis of said pile means.

5,380,125
FLUID EXTRACTION DEVICE
 Richard L. Croy, 3201 Masters Dr., Clearwater, Fla. 34621
 Filed May 14, 1993, Ser. No. 26,536
 Int. Cl.⁶ B09B 3/00
 U.S. Cl. 405—128

11 Claims

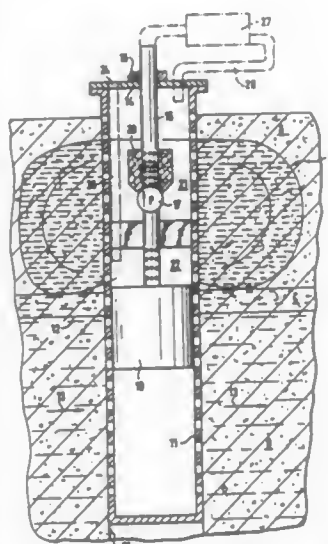


1. A fluid extraction device to remove fluid contaminants from the vadose zone of unsaturated subsurface area by selectively evacuating liquid and gas therefrom comprising a lower well screen assembly coupled to a vacuum source through an upper fluid conduit structure including a fluid flow control to separately extract liquid and vapor from the vadose zone, said lower well screen assembly comprises an elongated hollow extraction housing including an upper vapor extraction section and a lower liquid extraction section each having a plurality of vertically disposed elongated evacuation apertures formed therethrough, a vapor extraction tube is disposed within the

interior of said elongated hollow extraction housing coupled to said upper fluid conduit structure, a vapor extraction depth control means comprising an inflatable member is movably disposed within the interior of said upper vapor extraction section coupled to an air source by an air supply tube, a liquid extraction tube disposed within the interior of said elongated hollow extraction housing is coupled to said upper fluid conduit structure, and a liquid extraction depth control comprising a buoyance means movably coupled to the lower portion of said liquid extraction tube by a plurality of radial arms and a collar within the interior of said lower liquid extraction section to selectively control the depth of said liquid extraction depth control means relative to the water table to control the evacuation or withdrawal of oil and other contaminants through said liquid extraction tube.

5,380,126
METHOD OF AND ARRANGEMENT FOR RINSING OUT IMPURITIES FROM GROUND
 Bruno Bernhardt, Reutlingen, Germany, assignor to IEG Industrie-Engineering GmbH, Reutlingen, Germany
 Filed May 19, 1993, Ser. No. 63,988
 Claims priority, application Germany, Jan. 3, 1992, 4218255
 Int. Cl.⁶ E03B 3/12, 3/15
 U.S. Cl. 405—128

13 Claims

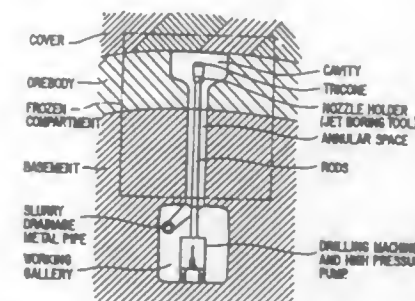


1. A method of rinsing out impurities from ground located above a ground water level, comprising the steps of:
 forming a well shaft in the ground which extends down below a ground water saturated zone;
 placing in the well shaft a well tube, said well tube having water permeable portions at a lower and an upper region thereof;
 placing a sealing means in said well shaft to separate the upper and lower well tube regions, and placing a channel, accommodating a liquid feed pump, through said sealing means to provide communication between the upper and lower regions, the sealing means and associated channel and pump being vertically adjustable through the well tube;
 allowing ground water to enter the lower well tube region through the lower permeable portion, and pumping the water upward through the channel to the upper well tube region, where it exits to the ground through the upper permeable portion and circulates through the ground toward the ground water saturated zone, thus tending to raise the ground water above its natural level;
 raising the sealing means and associated channel and pump to raise the level of liquid circulation;

arranging a cleaning device in a path of the circulation to remove said impurities from the water.
 7. Apparatus for rinsing out impurities from ground located above a ground water level, comprising:
 a well tube located in a well shaft, said well tube having water permeable portions at a lower and an upper region thereof, said well tube having an uppermost portion with a greater diameter than a remaining portion, and a connecting ring wall between said uppermost portion and remaining portion, said connecting ring wall being liquid permeable over a majority of its surface;
 a well tube insert assembly located within said well tube, said well tube insert assembly comprising:
 a wall means to separate said well tube into upper and lower well tube regions;
 a pipe means, accommodating a liquid pump, through said wall means to provide communication between the upper and lower well tube regions;
 a sealing means mounted to the pipe means below said wall means to prevent liquid flow downward beyond the sealing means.

5,380,127
NON-ENTRY METHOD OF UNDERGROUND EXCAVATION IN WEAK OR WATER BEARING GROUNDS
 Clovis Caleix, Saint-Cloud, France, and Jean-Luc Narcy, Netherlands, assignors to Cigar Lake Mining Corporation, Saskatchewan, Canada and Cogema, France
 Filed Mar. 15, 1993, Ser. No. 31,617
 Int. Cl.⁶ E02D 19/14
 U.S. Cl. 405—130

20 Claims

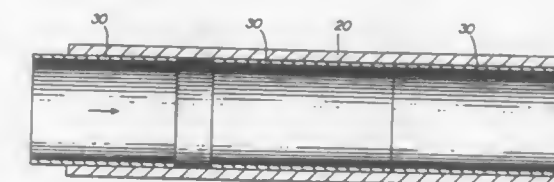


1. A method of excavating an underground area liable to flooding or collapsing during excavation, wherein said area is susceptible to disaggregation by high pressure fluid and is located above rock of strength suitable for drifting a gallery, which method comprises:

- drifting a gallery in the rock of strength beneath the area,
- drilling a plurality of freeholes from the gallery upwardly through the rock of strength, the area and beyond the area to be excavated, said plurality of freeholes being sufficient in number and location to support freezing at least a perimeter of the area,
- freezing at least the perimeter of the area to form a frozen perimeter,
- while sustaining said frozen perimeter, drilling a borehole upwardly to within the frozen parameter and excavating material from within the frozen perimeter using a high pressure fluid, forming a slurry of excavated material,
- directing said slurry downwardly into a slurry conduit and
- conveying the slurry away from the excavation area.

5,380,128
METHODS OF, COATINGS AND LININGS FOR WATER INTAKE SYSTEM COMPONENTS AND OTHER EQUIPMENT EXPOSED TO A MARINE ENVIRONMENT
 Clois D. Fears, 487 Cole Rd., Murrysville, Pa. 15668
 Continuation-in-part of Ser. No. 790,259, Nov. 8, 1991. This application Mar. 2, 1992, Ser. No. 844,502
 Int. Cl.⁶ F16L 1/26
 U.S. Cl. 405—157

6 Claims



1. A method of substantially minimizing both detrimental adherence to and buildup of living marine organisms on the inner surface of a pipe submerged in a fluid medium containing said living marine organisms, wherein said living marine organisms restrict flow of said fluid medium through said pipe, said method of substantially minimizing both detrimental adherence to and buildup of living marine organisms on an inner surface of said pipe comprising the steps of:

retrofitting a predetermined lining material adjacent to said inner surfaces in said pipe which resists both said detrimental adherence to and buildup of said living marine organisms on said inner surface of said pipe, said retrofitting of said predetermined lining material includes the steps of:

- determining an inner diameter of said pipe submerged in said fluid medium containing said living marine organisms to be lined with said preselected lining material,
- installing a first section of said preselected lining material within said pipe submerged within said fluid medium containing said living marine organisms and adjacent to one of an inlet end and an outlet end thereof, said first section of said lining material having a first predetermined length, a first predetermined outer diameter, which is at least one of substantially equal to and less than said inner diameter of said pipe, and a first predetermined inner diameter,
- securing said first section of said preselected lining material, installed in step (b), against lateral movement within said pipe submerged in said fluid medium containing said living marine organisms,
- installing another section of said preselected lining material within said pipe submerged in said fluid medium containing said living marine organisms and in abutting engagement with a previously installed section of said preselected lining material, said another section of said preselected lining material having a second predetermined length, a second predetermined diameter, which is at least one of substantially equal to and less than said first predetermined inner diameter of said pipe, and a second predetermined inner diameter of said pipe and a, second predetermined inner diameter,
- repeating step (d) until substantially an entire length of said pipe submerged in said fluid medium containing said living marine organisms has been lined with said preselected lining material,
- determining a length required for a final section of said preselected lining material to be installed within said pipe submerged in said fluid medium containing said living marine organisms,
- providing said final section of said preselected lining material to said length, determined in step (f), said final section of said preselected lining material having a third predetermined outer diameter, which is at least one of substantially equal to and less than said first predetermined

mined inner diameter of said pipe, and a third predetermined inner diameter,

- (h) installing said final section of said preselected lining material within said pipe submerged in said fluid medium containing said living marine organisms and adjacent an opposite one of said inlet end and said outlet end having said first section of preselected lining material installed therein, one end of said final section of said preselected lining material being placed in abutting engagement with a last previously installed section of said preselected lining material installed in step (e), and
- (i) securing said final section of said preselected lining material, installed in step (h), against lateral movement within said pipe submerged in said fluid medium containing said living marine organisms.

5,380,129

METHOD FOR LAYING TUBULAR CONDUITS

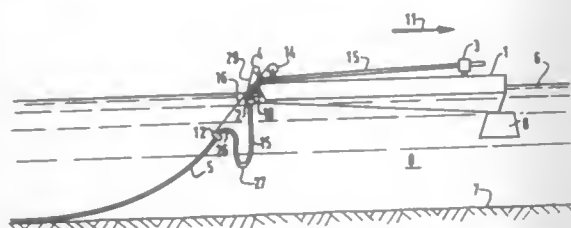
René Maloberti, Champigny; Alain Coutarel, Paris, both of France, and Philippe Espinasse, Houston, Tex., assignors to Coflexip, France
PCT No. PCT/FR91/00261, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO91/15695, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 2, 1991, Ser. No. 927,294

Claims priority, application France, Mar. 30, 1990, 90 04099
Int. Cl.⁶ F16L 1/16

U.S. Cl. 405—166

8 Claims



1. A method for laying a pipeline formed of joined flexible tubular conduits and rigid tubular conduits, onto a bottom located at a depth P, in particular an ocean bed, which comprises the steps consisting of:

loading a length, greater than the depth P, of flexible tubular conduit onto a first floating support;
laying a length of rigid tubular conduit (5), the terminal end of which is held by said first floating support, onto the bottom, from a first floating support (1);
connecting a first end of said flexible tubular conduit (15) having a length greater than the depth of the water P to the free terminal end of said rigid tubular conduit (5);
simultaneously lowering the terminal end of the rigid tubular conduit (5) and the flexible tubular conduit (15);
continuing the lowering until the first end of the flexible tubular conduit connected to the terminal end of the rigid tubular conduit is located on the bottom (7) and whereat the second end of the flexible conduit (15) is still located on board the first floating support (1);
transferring said second end of the flexible tubular conduit (15) onto a second floating support (24), to connect the end of another flexible tubular conduit (15') to said second end of the flexible tubular conduit (15) and laying the section of pipeline comprising said flexible tubular conduits (15, 15') onto the bottom (7).

5,380,130

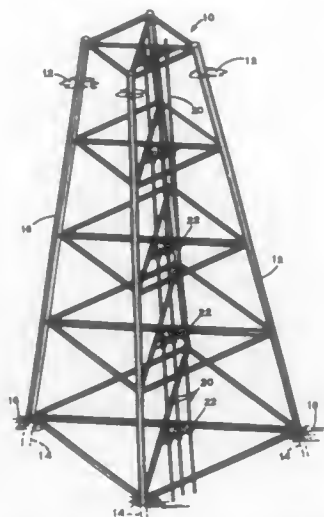
PREINSTALLED ADJUSTABLE CONDUCTOR GUIDE

Kerry J. Kensler, Kenner, and Roger G. Smith, Lafayette, both of La., assignors to Kerr-McGee Corp., Oklahoma City, Okla. and McDermott International, Inc., New Orleans, La.
Filed Sep. 20, 1993, Ser. No. 123,663

Int. Cl.⁶ E02B 17/00

U.S. Cl. 405—195.1

6 Claims



1. A preinstalled, adjustable conductor guide for offshore platforms, comprising:

a. a conductor guide attached to the offshore platform and sized to receive a conductor, said conductor guide having at least three apertures through the conductor guide wall that are equally spaced apart around the circumference of said conductor guide;

b. a rectangular tube, open at each end, attached to said conductor guide at each aperture such that said tube extends upwardly from said conductor guide at an angle, said rectangular tube being provided with a plurality of offset slotted holes on opposing sides of said rectangular tube;

c. a slide sized to be received in each of said rectangular tubes so as to be movable between a first retracted position and a second inserted position, said slide being provided with a plurality of offset holes along its length that match the spacing of the offset holes in said rectangular tube; and

d. means received through the offset holes in said rectangular tubes and said slides for selectively retaining said slides in either their first or second positions.

5,380,131

SYSTEM FOR CORROSION PROTECTION OF MARINE STRUCTURES

David W. Crawford, Houston, Tex., assignor to MPT Services, Inc., Houston, Tex.

Filed Feb. 25, 1993, Ser. No. 22,513

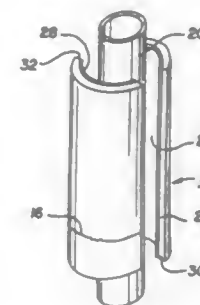
Int. Cl.⁶ E02D 5/60, 31/06

U.S. Cl. 405—216

23 Claims

1. A system of corrosion protection for a corrosion susceptible item adapted for use in a marine environment, said system comprising a layer of a cured marine resistant epoxy composition applied uncured onto a select surface portion of the item, a cladding formed of rigid individual sections applied juxtaposed to each other against the epoxy when uncured for substantially encapsulating said layer collectively and clamping

means operative when said epoxy is uncured to secure the floor in a metal workpiece, said bit having a central bit axis and cladding sections in a compressive relation against said epoxy a bit diameter and comprising



with a level of compressive force sufficient to cause a quantity of the uncured epoxy to exude past said cladding.

5,380,132

DEPTH ADJUSTING SYSTEM FOR A POWER TOOL

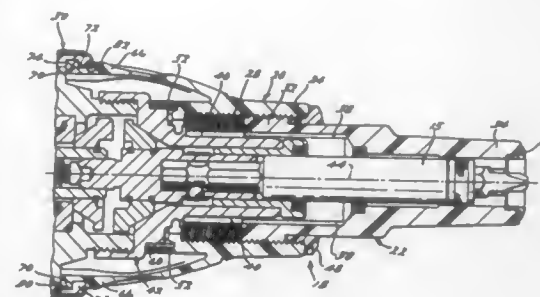
James R. Parks, Timonium, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 10, 1993, Ser. No. 119,767

Int. Cl.⁶ B25B 21/00

U.S. Cl. 408—113

15 Claims



1. A depth adjusting system for a power tool having a housing and a circular opening in a forward portion of the housing defining an axis, said depth adjusting system comprising an adjustment collar rotatably coupled to the opening in the housing of the tool and a depth locator threadably connected to said adjustment collar and constrained from rotating relative to the housing so that rotation of said adjustment collar causes axial displacement of said depth locator; the improvement wherein said adjustment collar includes at least one rearwardly extending cantilevered spring finger having a hook member located thereon for releasably engaging a circumferential groove formed proximate to the opening in said housing, such that when said hook member is engaged with said circumferential groove said adjustment collar is rotatable relative to the housing but constrained against axial movement, and further wherein said adjustment collar is removable from said housing by depressing said spring finger radially inwardly to release said hook member from said circumferential groove.

5,380,133

DRILL BIT OF THE TWIST DRILL TYPE

Walter Schimmer, Munich, Germany, assignor to Emhart Inc., Newark, Del.

Filed Jan. 18, 1994, Ser. No. 182,864

Claims priority, application Germany, Jan. 19, 1993, 4301261

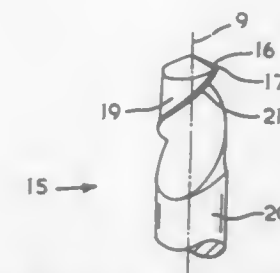
Int. Cl.⁶ B23B 51/02

U.S. Cl. 408—199

9 Claims

1. A rotary drill bit adapted for high speed drilling of a blind counterbore having a substantially flat to slightly concave

a shank;
a center web extending from said shank along said bit axis toward a drilling end;
at least one helical turn extending around and along said center web, said turn having a front surface facing in the direction of rotation of said bit and a free face at the end thereof;



said front surface and said free face forming a cutting edge therebetween, said cutting edge having a leading edge angle defined by said front surface and said free face; said cutting edge being formed in a straight line beginning at said bit axis and extending outwardly therefrom and lying in a common plane with said bit axis, the angle between said cutting edge and said bit axis being from 87.5° to 90°; and
the maximum dimension of said center web in a plane perpendicular to said bit axis being less than one-half of said bit diameter.

5,380,134

MACHINE TOOL

Josef Preis, Amöneburg, Germany, assignor to Hevliigenstaedt GmbH & Co. KG, Giessen, Germany

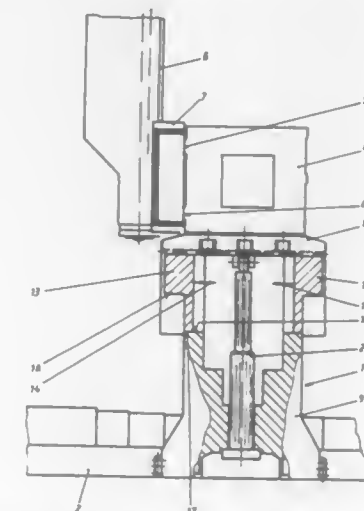
Filed Nov. 1, 1993, Ser. No. 143,789

Claims priority, application Germany, Oct. 30, 1992, 4236648

Int. Cl.⁶ B23C 1/06

U.S. Cl. 409—235

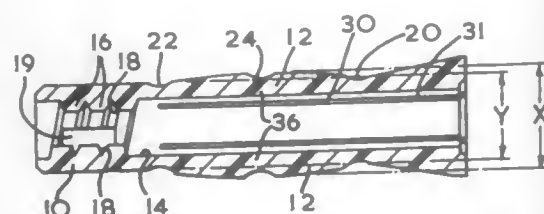
7 Claims



1. A machine tool comprising a vertically moveable cross-rail, which exhibits horizontal guideways and projects beyond a workpiece to be machined, which is held by at least one vertical column and on which a tool unit can be moved horizontally, wherein the cross-rail is firmly connected to an upper section of the column; and the upper section of the column is moved vertically by means of a lifting mechanism and attached to a bottom section of the column; and it has means to shape-

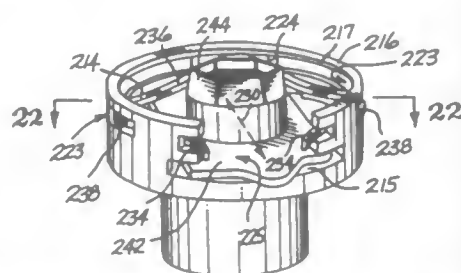
locking connect the upper section to the bottom section at at least two different heights.

5,380,135
UNIVERSAL PLUG
Robert P. Anquetin, Etrenchy, France, assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 5, 1993, Ser. No. 26,725
Claims priority, application United Kingdom, Mar. 10, 1992, 9205192; Mar. 16, 1992, 9205693
Int. Cl.⁶ F16B 13/04, 13/06
U.S. Cl. 411—38 5 Claims



1. A plug for use in securing a screw in a previously formed hole in a work piece comprising a head portion, a tail portion of substantially the same external diameter as the head portion, and legs interconnecting the tail portion and the head portion, wherein the tail portion comprises a body having a central bore from a leg end to an opposite open end, said leg end being connected to said legs, a first helical land of at most one turn being formed in said bore near said leg end, a second helical land of at most one turn being formed in said bore near said open end, each helical land having a start and an end being in a first plane containing a central longitudinal axis of the plug, inclined arcuate grooves being formed in said bore between said lands, and two openings in either side of said cylindrical portion connecting with said bore, each opening having a first side coincident with said plane and a second parallel side on opposite sides of said plane, a second plane being defined by said axis and lying perpendicular said first plane, said second sides of each opening each having a profile the same as the profile in said second plane of said grooves in the bore, said helical lands and said arcuate grooves constituting a thread formation such that a screw of appropriate dimensions can drive through said formation substantially without cutting the material of the plug.

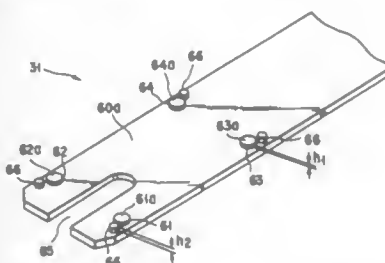
5,380,136
ANCHOR NUT MOUNT
Charles M. Copple, Kent, and Leonard F. Reid, Bellevue, both of Wash., assignors to Fatigue Technology, Inc., Seattle, Wash.
Filed Sep. 14, 1993, Ser. No. 121,077
Int. Cl.⁶ F16B 37/00, 37/04, 39/28
U.S. Cl. 411—183 21 Claims



1. A nut mount for use with an anchor nut having a nut base and an internally-threaded tubular neck upstanding from the nut base, the nut mount comprising:
a mount base having a base plate and a pair of laterally-spaced base sidewall portions projecting from the base

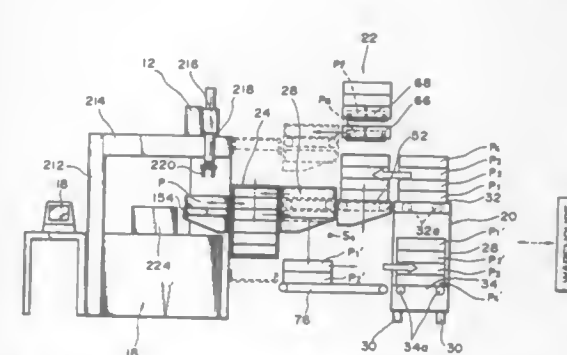
plate and, together with the base plate, defining a nut channel having first and second ends, the base sidewall portions including outer side regions having snap ring-receiving slots that are spaced from the base plate; and a snap ring having side portions within the snap ring-receiving slots and a closed end at the first end of the nut channel, the closed end extending from one base sidewall portion to the other base sidewall portion and forming a closure for the first end of the nut channel, the snap ring also including a pair of ring end knobs at the second end of the nut channel, the ring end knobs projecting from the base sidewall portions laterally into the nut channel and defining between them a nut avenue, the snap ring being openable by contact with the tubular neck of the nut as the nut is snap moved into or snap moved out from the nut channel.

5,380,137
WAFER TRANSFER DEVICE
Athushi Wada, Tokyo, Japan, assignor to Tokyo Electron Sanyo Ltd., Kanagawa, Japan
Division of Ser. No. 907,545, Jul. 2, 1992, Pat. No. 5,275,521.
This application Sep. 27, 1993, Ser. No. 126,882
Claims priority, application Japan, Jul. 3, 1991, 3-188339; Jul. 3, 1991, 3-188340; Jul. 3, 1991, 3-188341
Int. Cl.⁶ B65G 65/00 16 Claims



1. A heat processing system of the vertical type for processing wafers, comprising:
(a) a process chamber for housing a plurality of wafers at a time;
(b) means for heating the wafers housed in the process chamber;
(c) a wafer boat supporting the wafers in the process chamber with an interval between adjacent two wafers in a vertical direction;
(d) boat conveying means for loading and unloading the boat into and out of the process chamber with the wafers supported on the boat;
(e) an arm apparatus for transferring the wafers into and out of the boat, which is set substantially in a vertical state, at a transfer position outside the process chamber, the arm apparatus comprising,
an arm main body having a wafer handling face,
driving means for driving the main body in a horizontal plane,
a plurality of supporting protrusions arranged on the handling face of the main body and having wafer supporting top portions, respectively, to support one of the wafers, the supporting protrusions being formed separately from and attached to the main body, and
a CVD coating layer coating the top portion of each of the supporting protrusions, the coating layer being made of a material containing Si therein and having a high hardness such that the coating layer does not contaminate the wafer with dust generated therefrom and impurities contained therein.

5,380,138
AUTOMATIC ARTICLE FEEDING SYSTEM
Shozo Kasai; Takeo Tanita; Masateru Yasuhara, all of Kawasaki; Yasaku Azuma; Tohshiro Yamamoto, both of Yokohama; Norio Nikaido; Tsuchiura; Ryobei Inaba, Yokohama, and Mitsuo Arai, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 701,007, May 13, 1991, abandoned, which is a continuation of Ser. No. 227,307, Aug. 2, 1988, abandoned. This application Oct. 25, 1993, Ser. No. 140,964
Claims priority, application Japan, Aug. 7, 1987, 62-196469; Aug. 7, 1987, 62-196473; Aug. 7, 1987, 62-196482; Aug. 7, 1987, 62-196483; Oct. 29, 1987, 62-271722
Int. Cl.⁶ B65G 1/06
U.S. Cl. 414—277 58 Claims

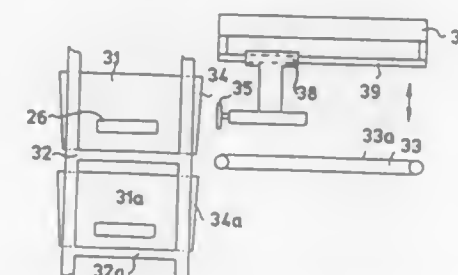


54. An article feeding apparatus which feeds articles to a robot, comprising:
temporary storing means for temporarily storing a plurality of containers in a stack, each container retaining a plurality of articles; and
stocking means for stocking a plurality of containers supplied from said temporary storing means, the plurality of containers being vertically separated from each other so that any one container can be removed from and replaced in said stocking means without moving the other stocked containers, wherein
said temporary storing means includes a vertically movable table on which the plurality of containers are stacked, separating means for separating a designated container from the other containers in the stack of containers on said table by moving the stacked containers relatively to the designated container, and replacing means replacing an empty container in said stocking means with a full container from said temporary storing means, and wherein
said stocking means includes means for removing a designated container out of said stocking means so that the robot may access the removed container, and for replacing the removed container back into said stocking means so that a next designated container can be removed from said stocking means.

5,380,139
LOAD HANDLING METHOD AND SYSTEM
Jukka Pohjonen, Helsinki; Pekka Heikkilä, and Jouko Tolonen, both of Vantaa, all of Finland, assignors to Kone Oy, Helsinki, Finland
Continuation-in-part of Ser. No. 630,806, Dec. 24, 1990, Pat. No. 5,129,777, which is a continuation of Ser. No. 298,198, Jan. 17, 1989, abandoned, which is a continuation of Ser. No. 68,088, Jun. 30, 1987, abandoned. This application Jul. 10, 1992, Ser. No. 910,880
Claims priority, application Finland, Jun. 30, 1986, 862777
Int. Cl.⁶ B65G 1/04 10 Claims

1. A system for handling a plurality of loads in a warehouse shelving arrangement having a plurality of shelves for storing respective loads, said system comprising:

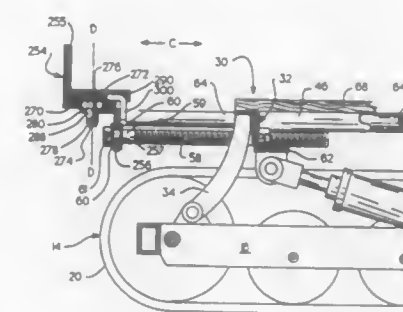
(a) a travelling base laterally displaceable with respect to said shelving arrangement;
(b) elevating means disposed on said travelling base;
(c) a transport base operably mounted on said elevating means, said transport base being laterally and vertically displaceable by means of said travelling base and said elevating means, respectively, between operative positions opposite respective storage shelves, said transport base including:
(c1) a conveyor drivably mounted on said transport base for movably supporting a load;
(c2) an engagement unit operatively disposed above said conveyor for movably engaging the load;



(c3) an engagement member movably mounted on said engagement unit for linear movement in a direction toward and away from the storage shelf;
(c4) at least one engagement means disposed on said engagement member, said engagement means being operatively engageable with a surface of the load for moving the load between said transport base and a respective shelf; and
(c5) position detecting means disposed on said transport base for detecting a position of the load on said conveyor with respect to said transport base, said position detecting means being vertically displaceable with respect to said conveyor means for detecting a height of the load on said conveyor.

5,380,140
MOBILE MATERIAL HANDLING APPARATUS FOR TRANSPORTING AND MANIPULATING A LOAD AND METHODS FOR USING SAME
Gerald B. Johnson, 35 Salisbury St., Meyersdale, Pa. 15552
Continuation-in-part of Ser. No. 848,896, Mar. 10, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 47,095
Int. Cl.⁶ B60P 1/16 21 Claims

U.S. Cl. 414—421



1. A material handling apparatus for transporting and manipulating a load on a surface, comprising:
a mobile carrier having a frame;
load supporting means attached to said carrier frame for pivotal movement about a lateral axis, said load supporting means constructed to move between a first position adjacent to said carrier frame and a second position

wherein it is substantially perpendicular to said carrier frame;
means for selectively moving said load supporting means between said first and second positions; and
vertical support means movably attached to said load supporting means for selectively supporting said load at a predetermined height with respect to the surface when said load supporting means is in said second position, said vertical support means being pivotally attached to said load supporting means for pivotal movement about an axis which is substantially perpendicular to said lateral axis for selectively supporting said load at a predetermined angle with respect to the surface when said load supporting means is in said second position.

5,380,141

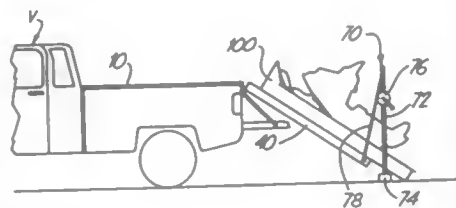
PLATFORM AND METHOD FOR LIFTING AND TRANSPORTING VEHICLES

Gary Flowers, Litchfield, Minn., assignor to Custom Products of Litchfield, Litchfield, Minn.

Filed Mar. 12, 1993, Ser. No. 31,170
Int. Cl.⁶ B60P 1/44, 3/06

U.S. Cl. 414-462

10 Claims



1. A system for loading and unloading a recreational vehicle onto a transport vehicle comprising:
 - a) a frame member affixed to the transport vehicle, the frame member including first rail means;
 - b) second rail means cooperating with the first rail means, the second rail means being moveable along the first rail means from a storage position to a deployment position wherein the second rail means extend rearwardly of the frame;
 - c) support means carried adjacent a rearward end of the second rail means, the support means being moveable relative to said second rail means between a storage position and a support position wherein the support means extends supportively between the second rail means and the ground; and
 - d) platform means slidable along the first and second rail means between a first position wherein the platform means is disposed above a bed of the transport vehicle and a second position wherein the platform means is disposed rearwardly of said bed.

5,380,142

DROP CHUTE EXTENSION FOR A SHUTTLE DUMPING TRANSPORT VEHICLE FOR HARVESTED COTTON

Donald F. Hornung, Dodge City; Thomas A. Klenke, Spearville, and Melvin L. Burge, Dodge City, all of Kans., assignors to CrustBuster/Speed King, Inc., Dodge City, Kans.

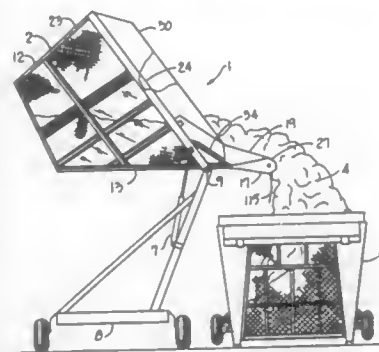
Filed May 24, 1993, Ser. No. 67,356
Int. Cl.⁶ B60P 1/16, 1/36

U.S. Cl. 414-491

10 Claims

1. A vehicle for transporting and dumping loads of particulate material and comprising:
 - a) a vehicle frame having spaced, ground engaging wheels extending therefrom, and angularly upstanding spaced frame members projecting upward from said vehicle frame;
 - b) a dump basket operative to contain said loads of particulate material therein, said dump basket situated between

said spaced frame members and having spaced end walls, a first side wall, and a dump side wall, said spaced end walls, said first side wall and said dump side walls each having respective upper edges, the respective junctures of said upper edges forming spaced, upper corners, said dump basket having hinge connections to said frame members at said upper corners of said upper edges of said end walls and said dump side wall for upward rotation, tilting and dumping of said loads of particulate material of said dump basket;



- c) an extension portion swingably connected to said dump basket by hinges and extending along said upper edge of said dump side wall;
- d) a conveyor movable over a basket interior surface of said dump side wall and said extension portion for engaging and transporting said contents out of said dump basket; and
- e) power fluid rams for causing swinging of said extension portion about said hinges and retraction and extension of said extension portion relative to said dump basket.

5,380,143

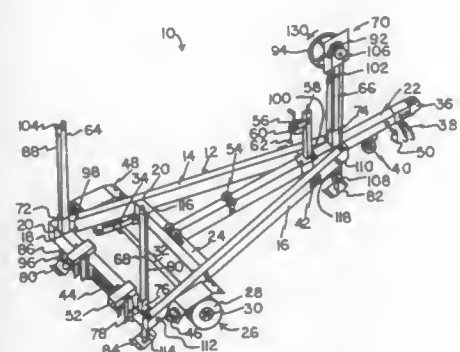
LIGHTWEIGHT COMBINATION BOAT TRAILER AND LIFT

Phillip Mohan, 5882 Hunters Gate, Troy, Mich. 48098

Filed Mar. 17, 1993, Ser. No. 32,302
Int. Cl.⁶ B60P 3/10

U.S. Cl. 414-495

16 Claims



1. A lightweight combination boat trailer and lift for transporting a boat and elevating the boat above a body of water, said lightweight combination boat trailer and lift comprising:
 - a) a lightweight support frame for carrying the boat during transporting and elevating, said lightweight support frame including positioning members to position the boat upon the lightweight support frame, wherein the boat is detachably positioned on the lightweight support frame;
 - b) an axle and hitch assembly, said axle and hitch assembly secured to the lightweight support frame to enable the lightweight support frame to be transported on wheels rotatably attached to the axle assembly;

at least three adjustable support legs, said adjustable support legs adjustably secured to the lightweight support frame; and

elevating means for elevating the lightweight support frame, said elevating means including three cables and a winch assembly, said cables and winch assembly operable to simultaneously move the adjustable support legs either upward or downward in a same direction, wherein the adjustable support legs are moved downward so that the lightweight support frame is elevated upward to carry the boat above the body of water or wherein the adjustable support legs are moved upward above a plane parallel with the wheels so that the lightweight support frame is lowered downward to carry the boat into the body of water to either enable the boat to float free from the lightweight support frame or to enable the boat to maneuver the lightweight combination boat trailer and lift in a floatable manner about the body of water.

5,380,144

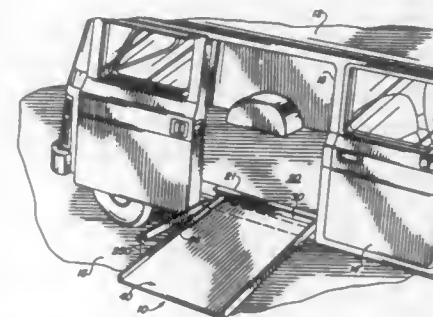
DEPLOYABLE VEHICLE ACCESS RAMP

Bert R. Smith, Sun Lakes, and Derold L. Kelley, Phoenix, both of Ariz., assignors to Care Concepts, Inc., Phoenix, Ariz.

Filed Sep. 10, 1993, Ser. No. 119,953
Int. Cl.⁶ B60P 1/00

U.S. Cl. 414-537

11 Claims



1. An access ramp assembly for a vehicle having a floor and a door for accessing such vehicle, said ramp assembly comprising:
 - (a) a housing mountable adjacent the vehicle floor;
 - (b) a platform having a front and a rear and slidable within said housing between a retracted to a deployed position in which the platform extends from the vehicle;
 - (c) a carrier secured to the rear of said platform and carrying a boom member which extends outwardly of the vehicle when said ramp is deployed;
 - (d) drive means for driving said carrier to move said platform between said retracted and deployed positions;
 - (e) guide means for guiding the sliding movement of said platform and carrier; and
 - (f) lift means for selectively raising and lowering the front of said platform, said lift means including a cable extending between said boom member and platform and selectively operable pulley means operable to pay out cable when the platform reaches a predetermined deployed position to provide an inclined support surface and selectively operable to take-up cable to raise said platform to a substantially horizontal position to permit said platform to be moved to said retracted position.

5,380,145

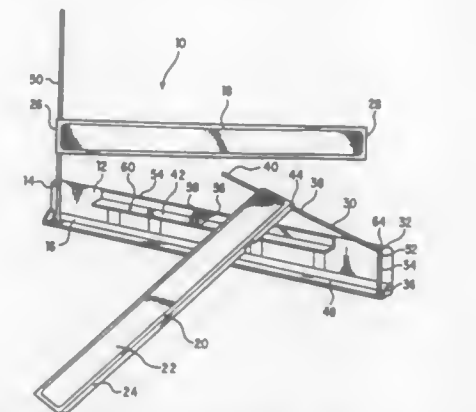
ADJUSTABLE WIDTH LOADING RAMP MECHANISM

Alfred Czaplewski, 4835 J St., Lincoln, Nebr. 68510

Filed Oct. 1, 1993, Ser. No. 130,660
Int. Cl.⁶ B65G 67/02

U.S. Cl. 414-537

7 Claims



1. A loading ramp mechanism for attachment to the rear end of the cargo bed of a vehicle having a cargo bed and a centerline, the mechanism comprising
 - a) a rectangular ramp member having a generally flat surface and being movable from a deployed position wherein one edge of said ramp member is in close proximity to the rear edge of the vehicle cargo bed and said ramp member extends toward a surface, to a storage position wherein said ramp member is outside of the cargo bed and the flat surface of said ramp member is normal to the centerline of the vehicle, and
 - b) a first rod shaped member secured in a vertical position for supporting said ramp member in said storage position, and a second rod shaped member flexibly joined to the first rod shaped member and movable from a vertical to a horizontal position to support said ramp member in said deployed position, and
 - c) means for allowing the lateral placement of said ramp member when in said deployed position.

5,380,146

MACHINE WITH HANDLING ASSEMBLIES TO PACKAGE LAYERS OF BARS

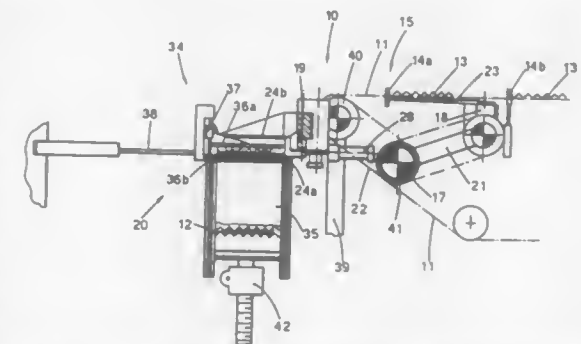
Giuseppe Bordignon, Bicinico; Rolando Paolone, Buttrio, and Ferruccio Tomat, Udine, all of Italy, assignors to Daniell & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Apr. 8, 1993, Ser. No. 43,924

Claims priority, application Italy, Apr. 30, 1992, 92A 000079
Int. Cl.⁶ B65G 57/081

U.S. Cl. 414-791.4

10 Claims



1. Machine with handling assemblies to package layers of bars, the machine cooperating with a feeder conveyor and

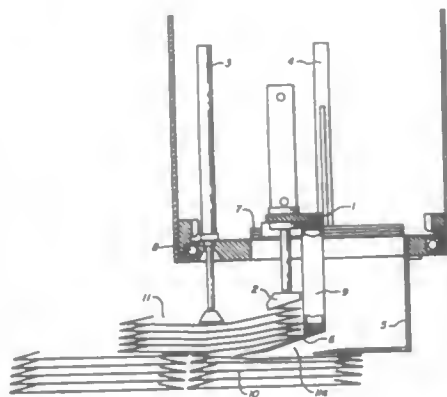
with collection and discharge means, the feeder conveyor comprising a first coordinated plurality of stationary abutments to position a layer to be engaged containing "N" or "N-1" bars alternately and a second coordinated plurality of movable abutments to position momentarily a waiting layer containing "N-1" or "N" bars, the machine comprising a drive shaft located below the plane of, and at a terminal end of, the feeder conveyor and at a right angle to the direction of feed of the feeder conveyor; a plurality of non-inverting rotary arms operably connected to and set in rotation by the drive shaft, each of the rotary arms bearing a non-inverting handling assembly always kept substantially horizontal, the non-inverting handling assemblies having a first layer engagement and conveying position and a second delivery and retracted position; a plurality of rotary spindles extending parallel to the drive shaft and operably connected to the drive shaft such that the rotary spindles can be set in rotation by the drive shaft; a plurality of inverting handling assemblies, each inverting handling assembly being operably connected to and set in rotation by a respective one of the plurality of rotary spindles, each inverting handling assembly comprising first and second claws which have a first position for layer engagement, conveying and inverting, and a second position for delivery and retraction, the plurality of spindles being positioned below the feeder conveyor and in a position substantially between a layer engagement zone and a layer delivery zone, the non-inverting handling assembly and the inverting handling assembly having alternately a position coordinated with the layer engagement zone and with the layer delivery zone.

5,380,147

DEVICE FOR PICKING UP BENDABLE FLAT PARTS
Frank-Jürgen Hess, Kierspe; Torsten Schreiber, Dortmund, and Frank Wollboldt, Isertohn, all of Germany, assignors to Fraunhofer Gesellschaft Zur Förderung Der Angewandten Forschung e.v., Munich, Germany
Filed Jul. 17, 1992, Ser. No. 915,444
Claims priority, application Germany, Jul. 19, 1991, 4124077
Int. Cl.⁶ B65G 59/02

U.S. Cl. 414—796

3 Claims



1. A lifting device for manipulating a plurality of flat objects, having a movable support frame, comprising:
 - a first compression device having a first axis and comprising a first end and a second end for compressing said plurality of flat objects via extension of said second end along said first axis;
 - gripper comprising:
 - a second compression device having a second axis parallel to said first axis of said first compression device and having a compression foot extending substantially orthogonal to said second axis of said second compression device toward said first compression device for compressing a portion of said plurality of flat objects,

thereby dividing said plurality of flat objects into at least a first and a second discrete group,

- a lifting arm proximate said second compression device and moveable in a direction orthogonal to said second axis of said second compression device along a track mounted on said support frame, comprising a tongue element insertable between said first and said second discrete groups to isolate a stack of objects to be manipulated as a subset of said plurality of flat objects, wherein said tongue element comprises a rigid insertion arm flexibly attached to a mounting element and pretensioned toward said second discrete group of flat objects, and
- a displaceable clamp for exerting compressive force against said first discrete group of flat objects for securing said stack of objects between said clamp and said tongue element; and

at least one retainer acting along an axis substantially parallel to said first axis, compressing said second discrete group of flat objects,

said support frame comprising a rotatable mounting point about which said frame rotates after said frame raises sufficiently high to disengage said at least one retainer from said plurality of flat objects, thereby removing said first discrete group of flat objects from said plurality of flat objects.

5,380,148

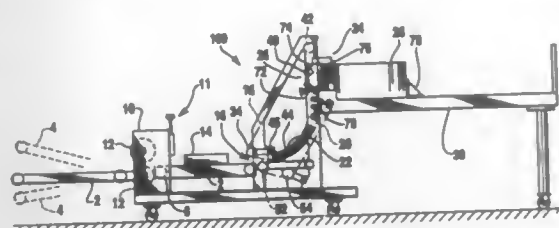
STACKING MACHINE WITH QUICK RELEASE MOUNTS

Jerry L. Bates, Redlands, and Everardo Garza, Highland, both of Calif., assignors to Baldwin Technology Corporation, Rosemont, Ill.

Filed Jan. 27, 1993, Ser. No. 9,774
Int. Cl.⁶ B65H 29/14

U.S. Cl. 414—798.2

10 Claims



1. A stacker apparatus for the formation of aligned stacks of signatures from one or more incoming streams of partially overlapping signatures in shingled form comprising:
 - a.) an outer framework having an input end and an output end; and
 - b.) means for accepting at least one stream of partially overlapping signatures in shingled form at the input end and passing said signatures to compression conveyor means; and
 - c.) said compression conveyor means being adjacent to and in line with the input end of the outer framework; said compression conveyor means comprising first and second floating conveyor belt means in compressing opposition to one another; said compression conveyor means following an upward arcuate path from the input end to the output end defined by a plurality of idler rollers mounted in juxtaposition to one of said first and second conveyor belt means; each of said idler rollers having first and second ends, each of the first ends being mounted for rotation at a first portion of the outer framework and each of the second ends being mounted for rotation at a second portion of the outer framework by quick release mounting means, wherein upon release of the quick release mounting means, the second ends disengage from and are separable from the second portion of the outer framework; said compression conveyor means being capable of transfer-

ring said partially overlapping signatures in shingled form from said input end to said output end between said first and said second conveyor belt means; and

- d.) a receiving station located adjacent to and in line with the compression conveyor means at the output end of the framework, said receiving station guiding successive signatures into aligned stacking registry with one another; and
- e.) means for driving the compression conveyor means along said path.

5,380,149

WIND TURBINE CROSS WIND MACHINE

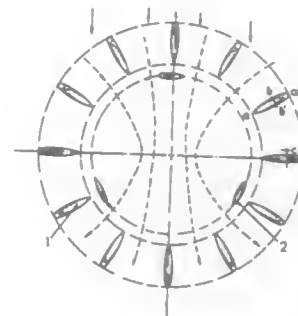
Michael Valsamidis, 16 Pythagora Street, Pireaus, Greece 185 33

Filed May 29, 1992, Ser. No. 889,899
Claims priority, application WIPO, May 30, 1991, PCT/GR91/00007

U.S. Cl. 415—2.1

Int. Cl.⁶ F03D 7/06

18 Claims



1. A cylindrical turbine machine for generating power by the rotation of a generally cylindrical rotor which is rotated about an elongated axis by a fluid stream moving relative to the rotor, comprising, a first number of generally equally spaced fluid guide vanes having front and rear surfaces, inner and outer elongated edges and upper and lower ends, a second number of elongated rotor blades which are generally equally spaced around the periphery of the rotor and having inner and outer elongated edges, front and rear surfaces and upper and lower ends, said first number of guide vanes being greater than said second number of rotor blades, said rotor blades being mounted at their upper and lower ends to a first pair of opposing upper and lower plate means, the rotor having a central area defined between said first pair of upper and lower plate means and centrally of said rotor blades, said central area forming a cylindrical space between said rotor blades, said rotor blades defining open passageways for directing fluid generally centrally of and through said open cylindrical space, said guide vanes being oriented in surrounding relationship to said rotor blades, said upper and lower ends of the guide vanes being carried by a second pair of opposing upper and lower plate means, means for rotatably mounting said first pair of plate means relative to said second pair of plate means so that the rotor is rotatable with respect to said guide vanes, at least first and second fluid flow ducts through each of said guide vanes and said rotor blades, each of said first fluid flow ducts extending between an inlet in said front surfaces of said guide vanes and said rotor blades and adjacent the outer edges thereof to an outlet in said rear surfaces adjacent said inner edges thereof, and said second fluid flow ducts extending from an inlet in said rear surface of said guide vanes and said rotor blades adjacent said outer edges through to an outlet in said front surface adjacent said inner edges thereof.

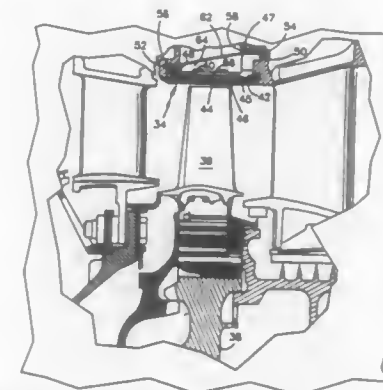
5,380,150

TURBINE SHROUD SEGMENT

Matthew Stahl, College Station, Tex., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 8, 1993, Ser. No. 151,258
Int. Cl.⁶ F01D 11/08, 9/00; F02C 7/12
U.S. Cl. 415—139

8 Claims



1. A shroud segment for use in a gas turbine engine, the gas turbine engine being disposed about a longitudinal axis, the gas turbine engine including support structure and a fluid passage defining a flow path for working fluid, the segment being arcuate and having an installed condition wherein the segment is retained to the support structure and extends in a circumferential direction about the longitudinal axis, the segment including:

a substrate having a central axis, a flow surface, and a radially outer surface, the flow surface facing radially inward in the installed condition such that the flow surface is exposed to the working fluid, the radially outer surface facing radially outward in the installed condition and exposed to fluid which is relatively cooler than the working fluid, wherein the temperature difference between the flow surface and the radially outer surface encourages the arcuate segment to distort away from the circumferential direction;

means to retain the segment to the support structure, the retaining means including a center hook which blocks radially inward movement of the region about the central axis of the substrate, and wherein the retaining means permits distortion of the installed segment such that the lateral ends of the segment move radially outward.

5,380,151

AXIALLY OPENING CYLINDRICAL BLEED VALVE

Richard A. Kostka, Thornhill, and Vittorio Bruno, Mississauga, both of Canada, assignors to Pratt & Whitney Canada, Inc., Longueuil, Canada

Filed Oct. 13, 1993, Ser. No. 135,710
Int. Cl.⁶ F01D 17/00

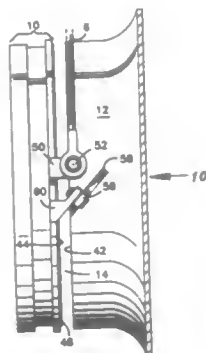
U.S. Cl. 415—145

3 Claims

3. A gas turbine engine having one or more axial compressor stages and a centrifugal compressor downstream from the axial compressors, said compressors housed within a segmented housing, said segmented housing having a first housing segment and a second housing segment, forming a gas flow path through the compressor stages, said segmented housing having a bleed valve positioned coaxially about the central axis of the engine and downstream from the axial compressor stages, said bleed valve causing at least one segment of the housing to move in an axial direction creating an opening in the periphery of the housing permitting bleed off of pressurized fluid wherein the improvement comprises:

said segmented housing including a moveable segment having at least one arm and one or more rollers attached thereto;

a stationary segment having one or more paths in which the rollers travel;
a mechanical connection for applying a tangential force to



the arm thereby causing the rollers to move along the path or said paths resulting in the first housing segment to move axially away from the second segment creating said opening in the periphery of the casing.

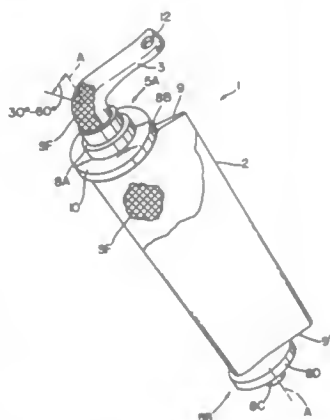
5,380,152 ADJUSTABLE GUIDE VANE FOR TURBINES, COMPRESSORS, OR THE LIKE

Siegfried Sikoraki; Michael Schober, and Reinhold Schoenacher, all of Munich, Germany, assignors to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Germany
Filed Oct. 28, 1993, Ser. No. 144,575

Claims priority, application Germany, Nov. 3, 1992, 4237031
Int. Cl.⁶ F01D 9/02

U.S. Cl. 415—160

15 Claims



1. An adjustable guide vane for an axial guide baffle of an axial flow engine having a rotational axis, comprising a guide vane body having a longitudinal adjustment axis extending radially relative to said rotational axis of said engine, an adjustment lever (3) extending at an angle away from said adjustment axis and forming an integral one piece component with said vane body, said integral one piece component comprising at least one bearing journal positioned at an axially outer end of said integral one piece component, said bearing journal extending coaxially to said adjustment axis, said adjustment lever merging into said bearing journal, said vane body, bearing journal and lever being made of a fiber composite material so that fibers of said adjustment lever extend at least partly into said vane body to form a composite bond with fibers in said vane body.

5,380,153 METHOD AND APPARATUS FOR INSTALLATION OF HONEYCOMB CORE SEALS

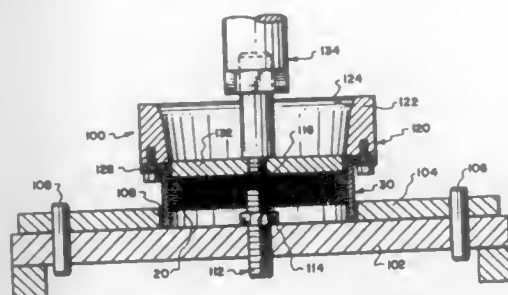
James R. Campbell, 31301 Camel Point Dr., South Laguna, Calif. 92677

Division of Ser. No. 807,497, Dec. 16, 1991, Pat. No. 5,224,644.
This application May 18, 1993, Ser. No. 63,039

Int. Cl.⁶ F04D 29/08

U.S. Cl. 415—170.1

2 Claims



1. In a seal construction for a rotary turbine-blade assembly, the combination of: a cylindrical honeycomb core seal having a plurality of radially oriented cells; a cylindrical mounting ring in which said seal is mounted with the axes of its cells disposed radially of said ring; and a brazed securement joint uniformly deposited across the interface between the outer ends of said cells at the OD of said seal and the ID of said ring to secure said seal in operative relation with said ring.

5,380,154 TURBINE NOZZLE POSITIONING SYSTEM

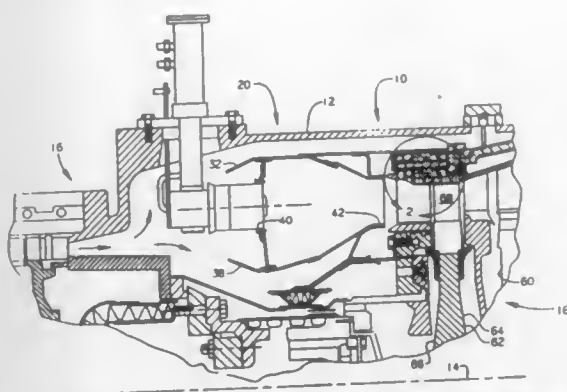
Paul F. Norton, San Diego, Calif., and James E. Shaffer, Maitland, Fla., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Mar. 18, 1994, Ser. No. 215,439

Int. Cl.⁶ F04D 29/60

U.S. Cl. 415—209.2

9 Claims



1. A system for positioning a nozzle guide vane assembly within a gas turbine engine having a central axis, a combustor and a turbine assembly positioned therein, said system positioning the nozzle guide vane assembly in radially spaced relationship to the central axis and the turbine assembly and in axially spaced relationship to the combustor, said system for positioning comprising:

an outer shroud defining an outer surface and having a mounting leg extending radially outwardly therefrom, said mounting leg having an opening therein, said outer shroud being positioned adjacent the combustor;
a tip shoe ring defining an inner surface being radially positioned about the turbine assembly and an outer surface having a mounting member extending radially outwardly therefrom, said mounting member having an opening

therein being axially aligned with the corresponding opening in the mounting leg;
a nozzle support ring being positioned in contacting relationship to the tip shoe ring and having a plurality of holes therein;
a plurality of pins being positioned in the opening in the mounting leg, the opening in the mounting member and in at least a portion of each of the plurality of holes in the nozzle support ring, said plurality of pins positioning the outer shroud, the tip shoe ring and the nozzle support ring in a ring shaped structure and;
means for retaining the plurality of pins from axial movement.

5,380,155

COMPRESSOR STATOR ASSEMBLY

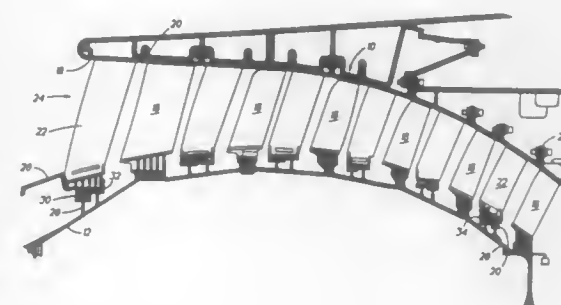
David A. Varsik, Manchester; Jeffrey S. LeShane, Glastonbury, both of Conn., and Brian Selfors, Boston, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 1, 1994, Ser. No. 203,958

Int. Cl.⁶ F04D 29/60

U.S. Cl. 415—209.3

8 Claims



1. A stator assembly defining a compressor axial flowpath comprising:

a full ring seal support ring, having a radially outwardly facing surface and a radially inwardly facing surface;
an abradable air seal secured to the radially inwardly facing surface of said seal support ring;
an outer vane support structure;
a circumferential row of vanes, the outer end of each vane rigidly secured to said outer vane support structure;
a plurality of arcuate inner shroud sections, each having a plurality of vane receiving pockets, each pocket having a bottom;
said vanes extending into said pockets and imbedded in a potting compound within said pockets;
a plurality of circumferentially extending ribs integral with the radial inside of each bottom and extending radially inwardly therefrom; and
the radially inward end of said ribs adhesively bonded to said seal support ring at a bond location.

5,380,156

CEILING FAN BALANCE APPARATUS

Robert Iacovino, 8404 8th St., Converse, Tex. 78109-2611

Filed Apr. 12, 1993, Ser. No. 44,756

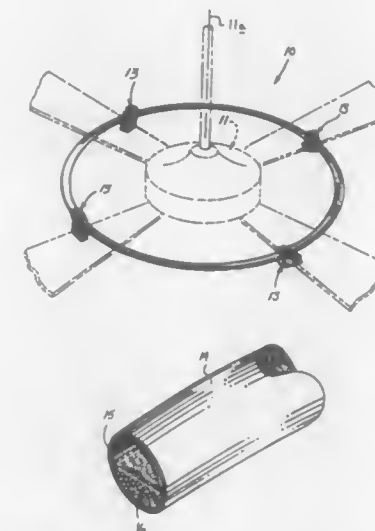
Int. Cl.⁶ F04D 29/66

U.S. Cl. 416—5

4 Claims

1. A ceiling fan balance apparatus, comprising:
a fan assembly, having a plurality of fan blades, said fan assembly being adapted to rotate said fan blades about a fan assembly rotation axis, and
a plurality of clamp members, wherein an individual clamp

member is arranged for removable securement to a corresponding individual one of said fan blades, and
a continuous annular balance tube removably mounted to the clamp members, said clamping members being adapted to orient said balance tube concentrically and orthogonally relative to said rotation axis, the balance tube having a continuous cavity directed through the balance tube, and the continuous cavity having a predetermined first volume, and
a viscous fluid contained within the continuous cavity, with the viscous fluid having a second volume less than the first volume,



wherein each said fan blade is disposed at an angle to a first plane perpendicular to said rotation axis and each said clamp member includes a first portion for engaging said annular balance tube and a second portion oriented at an angle to said first portion for engaging one edge of said corresponding fan blade disposed at an angle such that said first portion is disposed in a second plane perpendicular to said first plane when engaging said balance tube and the angle made by said second portion relative to said first portion is complementary to both said first and second planes.

5,380,157

CERAMIC BLADE ATTACHMENT SYSTEM

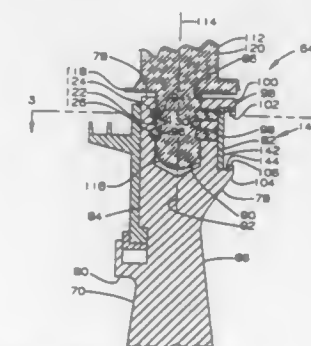
James E. Shaffer, Maitland, Fla., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Nov. 29, 1993, Ser. No. 159,021

Int. Cl.⁶ F01D 5/32

U.S. Cl. 416—220 R

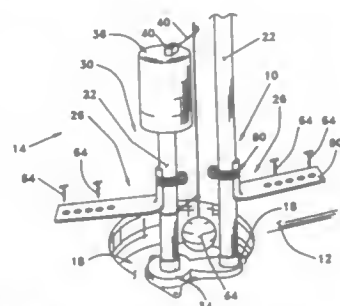
12 Claims



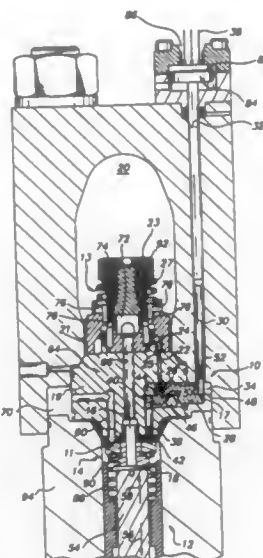
1. A turbine assembly comprising:

5,380,158
APPARATUS AND METHOD FOR HOLDING A SUMP PUMP
 Daniel R. Gerbitz, 1432 S. Mosley, Wichita, Kans. 67211
 Filed Dec. 9, 1993, Ser. No. 163,505
 Int. Cl.⁶ F04B 17/02
 U.S. Cl. 417—40 5 Claims

1. A pump and discharge assembly comprising a pump having a cylindrical neck with a cylindrical neck outer surface and coupled to a pump suction assembly; a cylindrical discharge conduit with a cylindrical discharge conduit outer surface and coupled to the pump suction assembly for conducting water from a hole in a basement of a structure; a first support bracket engaged to the cylindrical neck, said first support bracket having a structure defining a first base plate with a plurality of apertures and a first support neck bound to said first base plate and having a first inner arcuate surface flushed against the cylindrical neck outer surface; a first clamp member circumscribing the cylindrical neck and the first support neck for firmly securing the cylindrical neck to the first support neck of the first support bracket; a second support bracket engaged to the cylindrical discharge conduit, said second support bracket having a structure defining a second base plate with a plurality of apertures and a second support neck bound to said second base plate and having a second inner arcuate surface flushed against the cylindrical discharge conduit outer surface; a second clamp member circumscribing the cylindrical discharge conduit and the second support neck for firmly securing the cylindrical discharge conduit to the second support neck of the second support bracket.

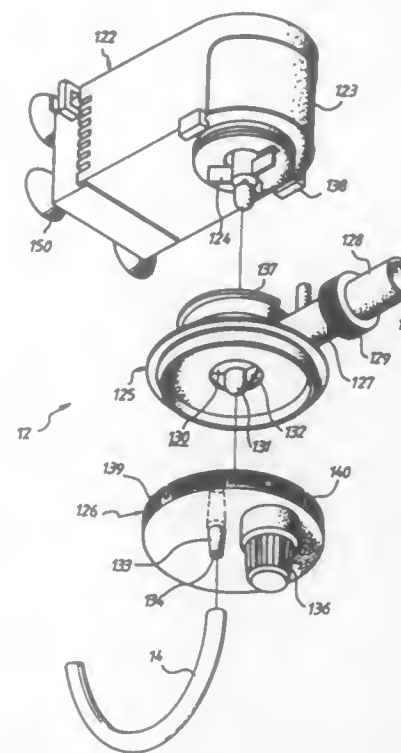


5,380,159
PRESSURE COMPENSATION DEVICE FOR HIGH-PRESSURE LIQUID PUMP
 John H. Olsen, Vashon; Olivier L. Tremoulet, Jr., Edmonds, and Chidambaram Raghavan, Kent, all of Wash., assignors to Flow International Corporation, Kent, Wash.
 Continuation of Ser. No. 73,584, Jun. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,780, Aug. 17, 1992, abandoned. This application Jun. 16, 1994, Ser. No. 261,693
 Int. Cl.⁶ F04B 49/08 27 Claims
 U.S. Cl. 417—53



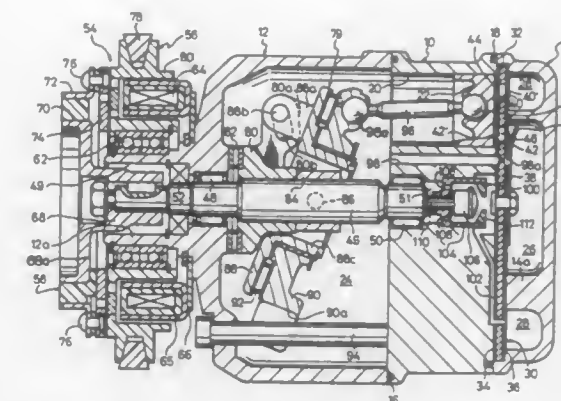
1. A high-pressure pump comprising:
 a pressurization chamber;
 a plunger coupled to the pressurization chamber for reciprocation within the pressurization chamber, the plunger having an intake stroke and a pumping stroke;
 at least one inlet port for introducing a volume of fluid into the pressurization chamber, the plunger drawing fluid into the pressurization chamber during the intake stroke and pressurizing the fluid on the pumping stroke;
 a valve assembly having an inlet check valve and an outlet check valve, the valve assembly being coupled to the pressurization chamber such that pressurized fluid may pass from the pressurization chamber to the outlet check valve, the outlet check valve selectively allowing the pressurized fluid to pass to an outlet chamber; and
 a pressure compensation device including an outlet pin having a first end and a second end, the second end of the outlet pin exerting a force upon a lever when the first end of the outlet pin is acted upon by the pressurized fluid in the outlet chamber, a compensation pin having a first end and a second end, the second end of the compensation pin exerting a control force on the lever when the first end of the compensation pin is acted upon by a control pressure, and an inlet pin having a first end and a second end, the first end of the inlet pin being in contact with the lever, the second end of the inlet pin being in contact with the inlet check valve, wherein the force from the compensation pin acting on the lever is balanced by the force from the outlet pin acting on the lever, and wherein an increase in pressure of the pressurized fluid in the outlet chamber above a preset level causes the outlet pin to exert a force on the lever that overcomes the force exerted by the compensation pin on the lever, thereby causing the lever to pivot and act upon the first end of the inlet pin, such that the second end of the inlet pin holds the inlet check valve open, thereby preventing further pressurization of the fluid in the pressurization chamber.

5,380,160
POWER HEAD ASSEMBLY FOR A PROTEIN SKIMMER
 Chi-Der Chen, No. 1-4, Lane 147, Hsia-Men St., Taipei, Taiwan, Prov. of China
 Division of Ser. No. 915,120, Jul. 17, 1992, Pat. No. 5,282,962.
 This application Sep. 23, 1993, Ser. No. 126,046
 Int. Cl.⁶ F04F 1/00
 U.S. Cl. 417—65 2 Claims



1. A power head for a protein skimmer comprising:
 a pump body having
 a bottom end and positioning members at the bottom end; a motor, having a shaft, mounted within the body;
 an impeller being mounted at the end of the shaft of the motor;
 an impeller housing being provided with securing protrusions for engaging with the positioning members of the body; a water inlet being provided in a bottom surface of the impeller housing; and the bottom surface of the housing being provided with a water tube for the discharging of water having fine bubbles;
 a housing plate including an enclosure having a plurality of spaced slots on the top surface thereof for engaging the engaging protrusion, a strainer being provided at a bottom surface of the housing plate to serve as a water inlet;
 an air hose
 a mixing chamber enclosing the impeller defined by a bottom and an upper peripheral wall of the impeller housing and the bottom surface of the body; and
 an air inlet tube provided at the bottom of the housing plate, an external end of the air inlet tube extending from the bottom surface of the housing plate a distance and to which one end of the air hose is connected, the other end of the air hose extending to ambient air, an inner terminal of the air inlet tube extending through the water inlet and into the mixing chamber as the housing plate is engaged with the impeller housing, and the distance between the inner terminal of the air inlet tube and the impeller is in the range of 1 to 2 cm.

5,380,161
VARIABLE CAPACITY SWASH-PLATE COMPRESSOR WITH ELECTROMAGNETIC CLUTCH
 Kenji Takenaka; Hideki Mizutani; Shigeyuki Hidaka; Osamu Hiramatsu; Toru Takeichi, and Hiroaki Kayakawa, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan
 Filed Dec. 9, 1993, Ser. No. 164,259
 Claims priority, application Japan, Dec. 11, 1992, 4-331606; Dec. 18, 1992, 4-338558; Dec. 25, 1992, 4-345881; Jan. 22, 1993, 4-009204
 Int. Cl.⁶ F04B 49/02
 U.S. Cl. 417—222.2 8 Claims

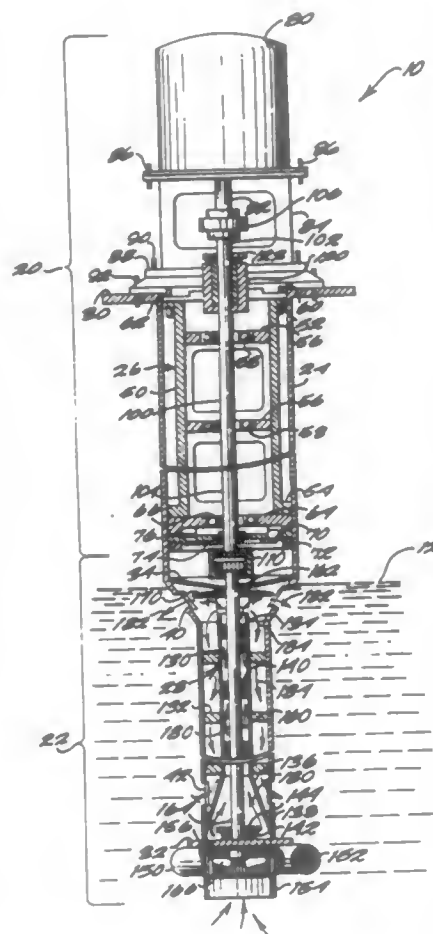


1. A swash-plate compressor comprising:
 a cylinder block having a plurality of cylinder bores;
 a plurality of pistons slidably received in the respective cylinder bores;
 a first housing combined with said cylinder block to define a crank chamber;
 a second housing combined with said cylinder block to define a suction chamber and a discharge chamber;
 a drive shaft extended through said crank chamber;
 an electromagnetic clutch means associated with said drive shaft for selectively transmitting a rotational drive force from a drive source to said drive shaft; and
 a conversion means for converting a rotational movement of said drive shaft into a reciprocation of each piston in the corresponding cylinder bore such that a suction stroke and a discharge stroke are alternately executed therein, a fluid being introduced into said cylinder bore during the suction stroke, and during the compression stroke, the introduced fluid being compressed in and discharged from said cylinder bore into said discharge chamber, said conversion means being constituted such that a stroke length is shortened in response to an increase of pressure in said crank chamber, and vice versa;
 a first passage means for communicating said crank with said suction chamber;
 a second passage means for communicating said crank chamber with said discharge chamber; and
 a control valve means provided in said first passage means, wherein said control valve means is magnetically actuated by electrical energization of said electromagnetic clutch means to open said first passage means, and wherein said control valve means is actuated by electrical deenergization of said electromagnetic clutch means to close said first passage means, so that the pressure in said crank chamber is increased by flow of the fluid into said crank chamber from said discharge chamber through said second passage means.

5,380,162
SPLIT DRIVESHAFT PUMP FOR HAZARDOUS FLUIDS
 Thomas P. Evans, II, Alken, S.C.; Jwalit J. Purohit, Evans, Ga., and John M. Fazio, Orchard Park, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
 Filed Jun. 11, 1993, Ser. No. 75,900
 Int. Cl.⁶ F04B 49/00

U.S. Cl. 417-223

20 Claims



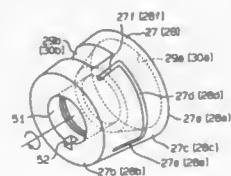
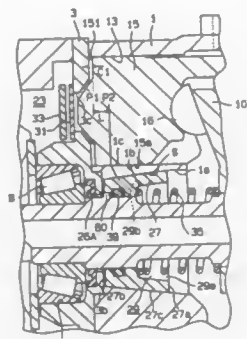
1. An apparatus for use in pumping a hazardous fluid, said apparatus for use with a motor having a motor shaft, said apparatus comprising:
 - a casing;
 - a first driveshaft having a first end and a second end, said second end positioned within said casing;
 - means in said casing for supporting said first driveshaft in spaced relation to said casing;
 - a second driveshaft within said casing, said second driveshaft having a first end and a second end;
 - means in said casing for supporting said second driveshaft in spaced relation to said casing;
 - an impeller rotatably carried by said second driveshaft and in fluid communication with said hazardous fluid; and
 - means the releasably connecting said first end of said second driveshaft to said second end of said first driveshaft, said connecting means holding said second driveshaft coaxially with said first driveshaft,
- so that, when said first end of said first driveshaft is connected to said motor shaft and said casing is partially immersed in said hazardous fluid, said impeller can pump said fluid when said second driveshaft rotates.

5,380,163
GAS GUIDING MECHANISM IN A PISTON TYPE COMPRESSOR

Toshiro Fujii; Hiromi Kitayama; Hitoshi Inukai, and Koichi Ito, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
 Continuation-in-part of Ser. No. 195,366, Feb. 10, 1994, which is a continuation-in-part of Ser. No. 154,279, Nov. 18, 1993, which is a continuation-in-part of Ser. No. 103,888, Aug. 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 102,588, Aug. 5, 1993, which is a continuation-in-part of Ser. No. 101,927, Aug. 4, 1993, which is a continuation-in-part of Ser. No. 101,178, Aug. 3, 1993. This application Feb. 22, 1994, Ser. No. 199,812
 Claims priority, application Japan, Feb. 23, 1993, 5-033711
 Int. Cl.⁶ F04B 49/00

U.S. Cl. 417-242

10 Claims



1. A piston type compressor comprising:
 - a housing including a cylinder block;
 - a gas suction chamber formed in said housing, for receiving uncompressed gas;
 - a rotatable drive shaft mounted in said housing to extend into said cylinder block, said cylinder block having a plurality of axial cylinder bores formed around said drive shaft;
 - a plurality of pistons respectively disposed in said cylinder bores, each of said pistons defining a compression chamber in the associated cylinder bore and being capable of reciprocating between a top dead center position where a volume of the associated compression chamber is at a minimum and a bottom dead center position where said volume of the associated compression chamber is at a maximum;
 - a piston driving mechanism for causing said pistons to reciprocate in cooperation with said drive shaft;
 - a discharge chamber formed in said housing, for receiving compressed gas contained in said compression chambers outside the compressor;
 - a valve receiving chamber formed around said drive shaft in said cylinder block and having an inner wall surrounding said drive shaft;
 - a rotary valve fittingly received in said valve receiving chamber and having an outer surface urged contacting relationship with said inner wall of said valve receiving chamber, said rotary valve being supported on said drive shaft to rotate in synchronism with the rotation of said drive shaft, said rotary valve having a suction passage formed therein for providing gases contained in said gas suction chamber to a compression chamber during said chamber's gas suction stroke;
 - a plurality of communication passages formed in said cylinder block in association with said compression chambers,

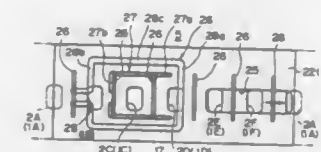
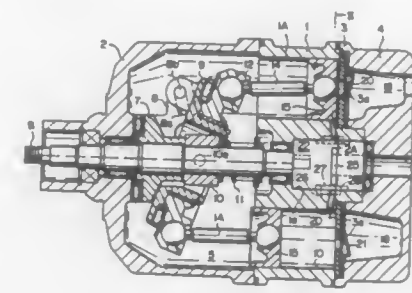
for providing gas communication between said compression chambers and said valve suction passage; each of said communication passages having a first port open to the interior of one of said cylinder bores and a second port open to an interior of said valve receiving chamber and communicable with said valve suction passage, said first port being located at a position (P2) apart by a predetermined distance (L) from a top dead center position (P1) of one of said pistons, wherein before said piston reaches said top dead center position, said first port is closed by an outer surface of said piston; and said rotary valve having a bypass passage formed therein for permitting one communication passage, isolated from both said compression chambers and said gas suction chamber by said outer surface of the associated piston and said outer surface of said rotary valve, to communicate with another communication passage corresponding to a compression chamber in a compression stroke.

5,380,165
RECIPROCATING-PISTON TYPE REFRIGERANT COMPRESSOR WITH AN IMPROVED ROTARY-TYPE SUCTION-VALVE MECHANISM

Kazuya Kimura; Shigeyuki Hidaka; Chieichi Kawamura; Hiroaki Kayakawa; Masafumi Ito, and Yoshihiro Fujisawa, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan
 Filed Oct. 4, 1993, Ser. No. 131,453
 Claims priority, application Japan, Oct. 2, 1992, 4-264977
 Int. Cl.⁶ F04B 1/12

U.S. Cl. 417-269

9 Claims



5,380,164
TWO-STAGE PUMP FOR A CONTINUOUS INK JET PRINTER

Andrew R. Fry, and Jeremy J. Turner, both of Royston, United Kingdom, assignors to Domino Printing Sciences PLC, United Kingdom

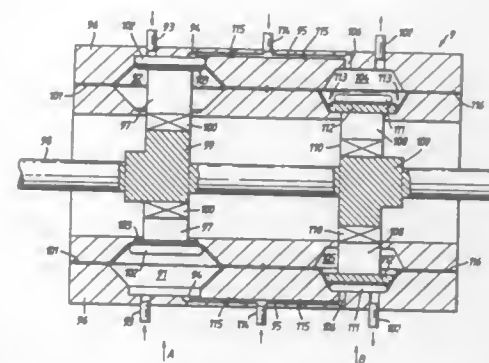
PCT No. PCT/GB91/01872, § 371 Date Mar. 16, 1993, § 102(c)
 Date Mar. 16, 1993, PCT Pub. No. WO92/08052, PCT Pub. Date May 14, 1992

PCT Filed Oct. 25, 1991, Ser. No. 30,329
 Claims priority, application United Kingdom, Oct. 30, 1990, 9023552

Int. Cl.⁶ F04B 43/02

U.S. Cl. 417-250

8 Claims



1. A two-stage two-phase pump, for use in a continuous ink jet printing system, comprising a first stage including a chamber having an inlet and an outlet via at least one non-return valve to a channel, the first stage chamber being divided by a dished diaphragm fixed to and movable by a first cylinder which is mounted on a pump shaft; a second stage comprising a chamber having an inlet from the channel and an outlet, the second stage chamber being divided by a rolling diaphragm fixed to and movable by a second cylinder which is mounted on a pump shaft wherein the channel between the two stages has an inlet for a bleed from a printhead; the cylinders being arranged to be driven, and thus drive their respective diaphragms, 180° out of phase; whereby in use ink and air enters the first stage chamber, is pressurized by the first cylinder and passed through the channel to the second stage chamber, and is further pressurized and passed out of the outlet of the second stage chamber.

1. A reciprocating-piston-type refrigerant compressor provided with a body including a cylinder block having a central bore extending axially about a central axis, a plurality of axial cylinder bores formed in the cylinder block of the body and arranged around the central axis of the cylinder block, a crank or swash plate chamber formed in the body as an independent chamber separate from the cylinder bores of the cylinder block, an axial drive shaft extending through the crank chamber and rotatably supported in the body, the axial drive shaft having one end disposed in the central bore of the cylinder block, at least one suction-gas-receiving chamber formed in the body for receiving refrigerant gas before compression, and a plurality of reciprocating pistons axially slidably received in the plurality of cylinder bores and reciprocated by a piston drive mechanism arranged in the crank chamber so as to be driven by the drive shaft, comprising:

- a rotary valve means connected to the one end of the drive shaft so as to rotate together with said drive shaft, the rotary valve means having a generally cylindrical outer circumference thereof, and a suction passageway for permitting the refrigerant gas before compression to be pumped from the suction-gas-receiving chamber into respective ones of said cylinder bores in a timed relationship with the reciprocation of said reciprocating pistons during rotation of said rotary valve means;
- means for defining a recessed chamber in the central bore of the cylinder block for rotatably receiving said rotary valve means, the recessed chamber being surrounded by an inner wall area being in sealing contact with the cylindrical outer circumference of the rotary valve means;
- a first means for receiving a part of the compressed refrigerant gas leaking from the respective cylinder bores in the phase of compressing and discharging operation into a contacting area between the inner wall area of the recessed chamber and the outer circumference of the rotary valve means; said first means being comprised of a plurality of axial grooves formed in said inner wall area of said recessed chamber, each of said plurality of axial grooves being arranged between two neighboring communication passageways of said plurality of communication passage-

ways of said cylinder block and able to define a closed cavity in cooperation with said outer circumference of said rotary valve means, for receiving the compressed gas, and a second means for routing the part of the compressed refrigerant gas received by the first means into the respective cylinder bores in the phase of an initial stage of a compressing operation immediately after the suction phase.

5,380,166

PISTON TYPE REFRIGERANT COMPRESSOR

Kiyoshi Terauchi, Iseaki, Japan, assignor to Sanden Corporation, Gunma, Japan

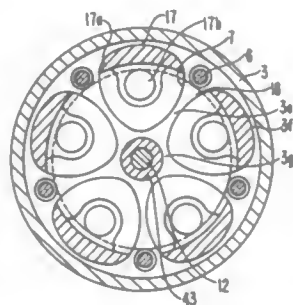
Filed Nov. 24, 1993, Ser. No. 156,692

Claims priority, application Japan, Nov. 26, 1992, 4-316907

Int. Cl.⁶ F04B 1/12

U.S. Cl. 417-269

8 Claims



1. A piston type refrigerant compressor comprising: a compressor housing enclosing a crank chamber, a suction chamber, and a discharge chamber said compressor housing including a cylinder block; a plurality of cylinder bores formed in said cylinder block; a plurality of pistons slidably disposed within said cylinder bores, each of said pistons having a longitudinal axis; a drive shaft rotatably supported in said cylinder block; a plate having an angle of tilt and tiltably connected to said drive shaft; a bearing coupling said plate to said pistons, so that said pistons reciprocate within said cylinder bores upon rotation of said plate; at least one working chamber defined by an end of each of said pistons and an inner surface of said corresponding cylinders; a support portion disposed coaxially with said drive shaft and tiltably supporting a central portion of said plate; a tilt control device driving said support portion axially along said drive shaft to move said central portion of said plate axially along said drive shaft to change the angle of tilt of said plate, said pistons reciprocating in said cylinder bores in accordance with changes in the angle of tilt of said plate; and said cylinder bores including a cross-sectional plan defined by a plane perpendicular to said drive shaft, said cross-sectional plan of each of said cylinder bores having an outline defining a closed curve, wherein said closed curve is composed of a plurality of curves having varying radii of curvature.

5,380,167 SWASH PLATE COMPRESSOR WITH UNITARY BEARING MECHANISM

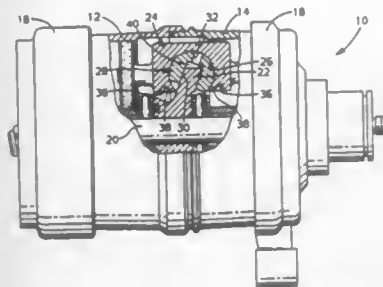
Michael J. Burkett, Lockport, and Nikolaos A. Adonakis, Grand Island, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1994, Ser. No. 199,441

Int. Cl.⁶ F04B 4/42

U.S. Cl. 417-269

2 Claims



1. An air conditioning compressor, comprising, a swash plate rotatable about an axis and having an annular edge and a predetermined axial thickness, a plurality of pistons, each of which has a body in which a single, integral semi spherical socket is formed, and, a unitary, solid spherical bearing member in and directly contacting said socket having an outside diameter that closely matches said socket and a central, flat sided slot cut partially therethrough which receives the edge of said swash plate axially closely and with sufficient radial clearance to allow said annular edge to clear said slot as said swash plate rotates, whereby, as said swash plate rotates, said swash plate edge slides through said bearing member slot, said bearing member twists within said socket, and said piston is axially reciprocated.

5,380,168

AXIAL MULTI-PISTON COMPRESSOR HAVING ROTARY VALVE FOR ALLOWING RESIDUAL PART OF COMPRESSED FLUID TO ESCAPE

Kazuya Kimura; Hideo Mizutani; Shigeyuki Hidaka, and Toru Takeuchi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Aichi, Japan

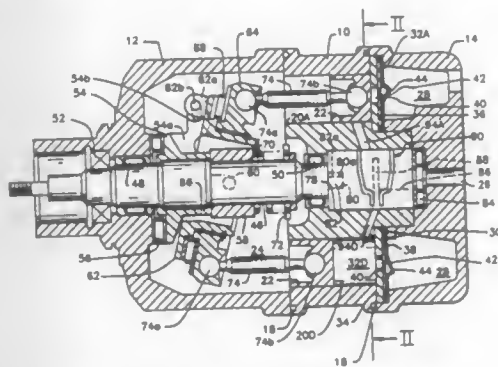
Filed Jan. 24, 1994, Ser. No. 185,710

Claims priority, application Japan, Jan. 25, 1993, 5-010165

Int. Cl.⁶ F04B 1/12

U.S. Cl. 417-269

7 Claims



1. An axial multi-piston compressor comprising: a drive shaft; a cylinder block having cylinder bores formed therein and surrounding said drive shaft; a plurality of pistons slidably received in the respective cylinder bores;

a conversion means for converting a rotational movement of said drive shaft into a reciprocation of each piston in the corresponding cylinder bore such that a suction stroke and a discharge stroke are alternately executed therein, during the suction stroke, a fluid being introduced into the cylinder bore concerned, and during the compression stroke, the introduced fluid being compressed and discharged from the cylinder bore concerned, such that a residual part of the compressed fluid is inevitably left in the cylinder bore concerned when the compression stroke is finished; and

a valve means for allowing the residual fluid to escape from the cylinder bore concerned into two other cylinder bores disposed adjacent to each other and subjected to the compression stroke, whereby a practical suction volume of the fluid in the cylinder bore concerned, can be made close to a theoretical suction volume even during high speed running of the compressor.

5,380,169

SUCTION-CONTROLLED RING GEAR PUMP

Siegfried A. Eisenmann, Concheastrasse 25, 7960 Aulendorf, Germany

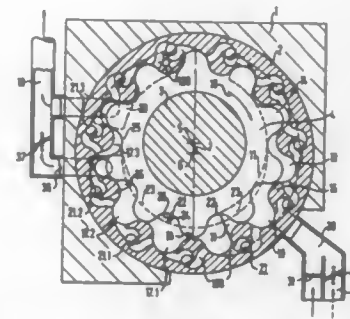
Filed Mar. 22, 1993, Ser. No. 34,296

Claims priority, application Germany, Mar. 20, 1992, 4209143

Int. Cl.⁶ F04B 49/00

U.S. Cl. 417-284

5 Claims



1. A suction-controlled ring gear pump, in particular oil and/or hydraulic pump for motor vehicle engines and/or transmissions, comprising a housing, a hollow gear, having a plurality of teeth, arranged rotatably in a gear chamber of the housing, a pinion meshing with the hollow gear and having a plurality of teeth one less in number than the teeth of the hollow gear, the teeth of the pinion forming together with the teeth of the hollow gear alternately increasing and then diminishing displacement cells for a fluid being pumped that are sealed by the teeth with respect to each other, and each displacement cell being connected to the adjacent displacement cells by respective overflow passages provided in at least one of the hollow gear and the pinion, check valves in the overflow passages which counteract a flow of the fluid opposite to a delivery direction, the delivery direction being the direction of flow of the fluid being pumped, inlet and outlet passages arranged in the housing for the supply and discharge of the fluid which open into the gear chamber on both sides of the point of deepest tooth engagement, the end of a first mouth of the outlet passage remote from the point of deepest tooth engagement being disposed so close to the point of deepest tooth engagement that between said end and the peripheral point at which the displacement cells start to diminish a plurality of diminishing displacement cells are continuously located, and a variable throttle arrangement provided in the inlet passage, wherein at least one further mouth connected to the outlet passage is

arranged spaced in from of the first mouth of the outlet passage in the peripheral direction of the pump and is connected via a conduit to the outlet passage, the flow through said conduit is controllable by means of a throttle element and a control means is provided for the throttle arrangement and the throttle element.

5,380,170

SCROLL COMPRESSOR OIL PUMPING SYSTEM

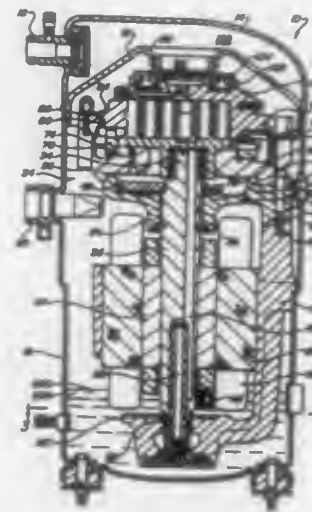
Gary K. Fain, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Oct. 12, 1993, Ser. No. 134,059

Int. Cl.⁶ F01C 1/04, 21/04; F04B 35/04; H02K 9/00

U.S. Cl. 417-410.5

12 Claims



1. A scroll machine comprising: a shell; a first scroll member disposed within said shell, said first scroll member having on one side a first spiral vane; a second scroll member disposed within said shell, said second scroll member having a second spiral vane disposed in interengaging relationship with said first spiral vane so that as said first scroll member orbits with respect to said second scroll member, moving pockets of changing volume are formed by said vanes; a drive member disposed within said shell for causing said scroll members to orbit with respect to one another; a lubricant sump containing a supply of lubricant disposed in the lower portion of said shell; a stationary cover plate disposed within said supply of lubricant, said cover plate including a plurality of radially extending slots which work in conjunction with said drive member to continuously circulate said supply of lubricant around said drive member to facilitate cooling of said drive member.

5,380,171

TURBO VACUUM PUMP

Takashi Nagaoka, Tsukuba; Shinjiro Ueda, Abiko; Seiji Sakagami; Akira Nishinchi, both of Ibaraki, and Hirofumi Sakurai, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1993, Ser. No. 103,806

Claims priority, application Japan, Aug. 19, 1992, 4-219992

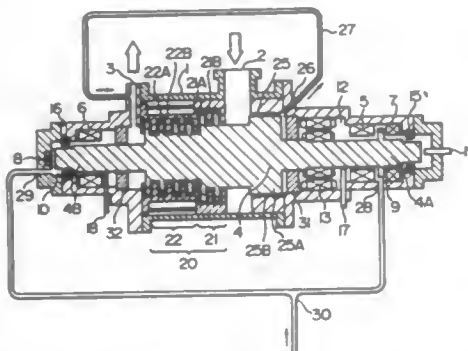
Int. Cl.⁶ F01D 1/36

U.S. Cl. 417-423.4

10 Claims

1. A turbo vacuum pump comprising: a housing provided with a suction port and a discharge port;

an evacuation pump housed in said housing and carried by a rotor for compressing a gas suctioned through said suction port and for discharging the compressed gas through said discharge port;
a motor including a rotor carried by said rotor of said evacuation pump for driving said evacuation pump;

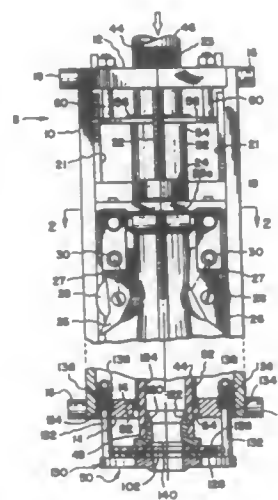


bearing means for supporting opposite axial end portions of said rotor of said evacuation pump in said housing; and spiral grooved dynamic seal means provided in a vicinity of said suction port at an opposite side of said suction port to said evacuation pump.

5,380,172
PERISTALTIC ACTION PRECISION PUMP FILLER
Otmar Uibing, 212 East St., Pittsford, N.Y. 14534
Filed Dec. 29, 1993, Ser. No. 174,743
Int. Cl.⁶ F04B 43/08

U.S. Cl. 417-476

26 Claims



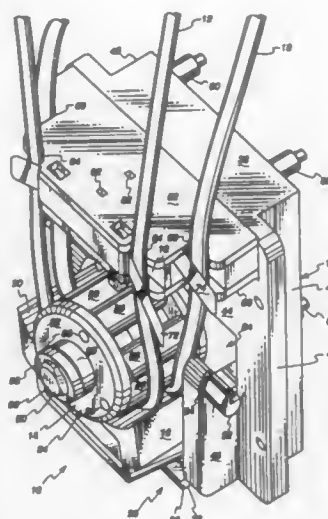
1. A peristaltic action pump filler for accurately measuring and dispensing a pre-determined amount of fill material into containers disposed therebelow, comprising:

- a support frame having upper and lower ends, said ends including mounts thereon;
- an elongate, elastic flexible fill tube having a fill end and a discharge end, said tube being generally disposed between said upper and lower ends of said support frame;
- a flexible, non-elastic tubular member disposed about said elastic tube so as to closely encompass same, said flexible non-elastic tubular member including mounting means for mounting to said upper end mount and said lower end mount of said support frame;
- a carriage member cooperatively mounted to said support frame for reciprocating longitudinal movement therealong between said upper and lower mounts, said carriage member including pivoting roller means disposed so as to

be positioned on opposite sides of said flexible, non-elastic tubular member and pivotal toward and away therefrom;
e) means cooperatively mounted to said support frame and said member for imparting said reciprocating longitudinal movement of said support member;
f) valve means mounted to said lower end of said support frame adjacent said discharge end of said flexible fill tube and pivotable between open and closed positions; and
g) actuating means mounted to said support frame and to said carriage member and coupled to said pivoting roller means and said valve means such that actuation of said actuating means causes said oppositely disposed rollers to pivot toward engagement with or away from said flexible non-elastic tubular member and said valve means to pivot to either an open or closed position.

5,380,173
PERISTALTIC PUMP
Steven P. Hellstrom, Roselle, Ill., assignor to Cole-Parmer Instrument Company, Niles, Ill.
Filed Sep. 20, 1993, Ser. No. 123,807
Int. Cl.⁶ F04B 43/08
U.S. Cl. 417-477.3

12 Claims



1. A peristaltic pump comprising:

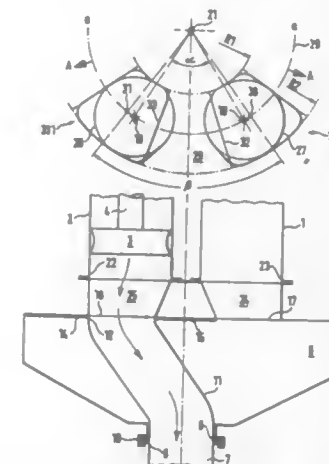
- a base,
 - a rotor supported on said base, said rotor comprising a support structure and a plurality of rollers mounted thereon; and
 - an occlusion bed supported on said base so as to be pivotable about a fixed axis perpendicular to the axis of said rotor and adjacent said base between an open position in which said occlusion bed is spaced from said rotor by a relatively large distance to enable loading and unloading of tubing, and a closed position in which said occlusion bed is spaced from said rotor by a relatively small distance to enable peristaltic pumping upon rotation of said rotor, with only a minor angular displacement of said occlusion bed being needed to shift said occlusion bed between said open and closed positions;
- wherein said occlusion bed is a one-piece structure comprising an integral latch lever, and wherein said base includes a latch plate for cooperation with said latch lever to provide a snap-action lock mechanism for selectively maintaining said occlusion bed in said closed position.

5,380,174
PUMP FOR THICK MATTER HAVING DELIVERY CYLINDERS, IN PARTICULAR A TWO-CYLINDER CONCRETE PUMP
Friedrich Schwing, Gelsenkirchen, Germany, assignor to Friedrich Wihl. Schwing GmbH, Herne, Germany
Filed Mar. 24, 1993, Ser. No. 35,431
Claims priority, application Germany, Mar. 24, 1992, 4209471.2

Int. Cl.⁶ F04B 15/02

U.S. Cl. 417-519

9 Claims



1. In a two cylinder pivoting valve thick matter pump in which a valve pivots between a first position in which a first cylinder is connected by the valve to an outlet and a second position in which the second cylinder is connected to the outlet by the valve and the first cylinder is open to the hopper, characterized in that a first flow passage connects the first cylinder to the hopper and a second flow passage connects the second cylinder to the hopper, the first and second flow passages having openings at the hopper, the flow passage openings at the hopper and an opening at a first end of the valve being similarly shaped in cross-sectional area to selectively connect the first and second cylinders to the outlet, the flow passages being shaped differently from the first and second cylinders so that the flow passage openings have a different cross-sectional shape than the cylinders such that the shape of a web region defined between the openings of the first and second flow passages at the hopper minimizes simultaneous overlap of the openings of the first and second flow passages and the opening at the first end of the valve during movement of the first end of the valve between the first and second positions.

5,380,175
FLUID FEED PUMP WITH VALVED PISTON DEVICE
Katsushi Amarume, Ebina, Japan, assignor to Fuji Xerox, Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,554
Claims priority, application Japan, Sep. 2, 1992, 4-234807
Int. Cl.⁶ F04B 21/04

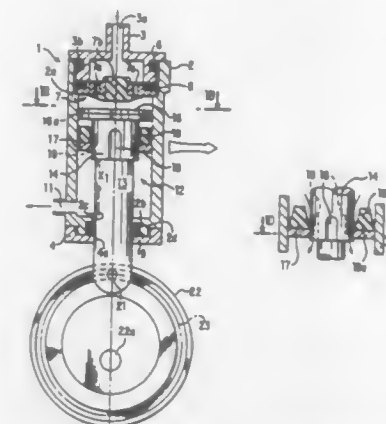
U.S. Cl. 417-553

4 Claims

- A fluid feed pump, comprising:
- a cylinder having an inlet port and an outlet port formed at one and an other end portions thereof and defining a piston accommodating chamber therein between said inlet port and said outlet port;
- a piston having a suction/discharge contacting portion and a fluid moving contacting portion disposed in spaced relationship from each other in an axial direction thereof and fitted in said cylinder for reciprocal movement in a sucking/discharging direction and a fluid moving direction opposite to the sucking/discharging direction;
- a tubular enclosing member having an upper and lower

portion and disposed between an outer circumferential face of said piston and an inner face of said cylinder between said suction/discharge contacting portion and said fluid moving contacting portion, said tubular enclosing member moving in the sucking/discharging direction together with said piston in a condition wherein said upper portion of said tubular enclosing member remains in contact with said suction/discharge contacting portion and in the fluid moving direction together with said piston in another condition wherein said lower portion of said tubular enclosing member remains in contact with said fluid moving contacting portion;

radial expansion means comprising a V-shaped section formed on the lower portion of the tubular enclosing member for radially expanding said tubular enclosing member so that, when said upper portion of the tubular enclosing member remains in contact with said suction/discharge contacting portion, a fluid pressure from fluid adjacent the outlet port end portion acts to expand the lower portion of the tubular enclosing member in a radial



direction so that an outer circumferential face and an inner circumferential face of said expanded lower portion of said tubular enclosing member form a fluid-tight connection with the inner face of said cylinder and the outer circumferential face of said piston and when said lower portion of said tubular enclosing member remains in contact with said fluid moving contacting portion said lower portion of said tubular enclosing member remains in a radially unexpanded shape;

fluid movement controlling means for establishing fluid communication in the axial direction in the inside of said cylinder when said lower portion of said tubular enclosing member is in contact with said fluid moving contacting portion of said piston; and

a check valve for allowing movement of fluid into said piston accommodating chamber of said cylinder through said inlet port when said piston moves in the sucking/discharging direction and for preventing fluid from flowing through said inlet port when said piston moves in the fluid moving direction.

5,380,176
VALVED DISCHARGE MECHANISM IN A REFRIGERANT COMPRESSOR
Yasuo Kikuchi, Atsushi Mabe, and Kiyoshi Terachi, all of Iesaki, Japan, assignors to Sanden Corporation, Iesaki, Japan

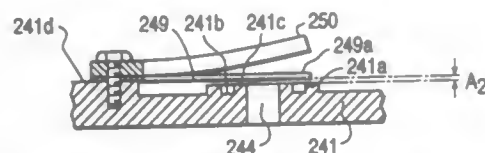
Filed Sep. 21, 1993, Ser. No. 124,619
Claims priority, application Japan, Sep. 21, 1992, 4-274846
Int. Cl.⁶ F04C 29/00; F16K 15/16

U.S. Cl. 418-55.1

10 Claims

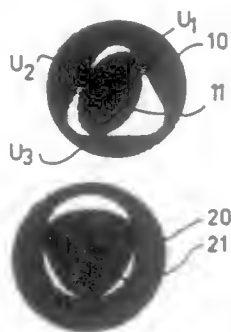
- A refrigerant compressor comprising:
- a compressor housing divided at least partially by a valve

plate into a first chamber and a second chamber, said second chamber comprising a discharge chamber; linking means for linking said first chamber to said discharge chamber, said linking means including a conduit communicating said first chamber with said discharge chamber, said conduit having an end opening through which a refrigerant gas may exit said conduit; a valve seat comprising a raised cylindrical extension extending from said valve plate and at least partially surrounding said end opening of said conduit, wherein an annular



groove is formed in said valve seat at an end surface thereof; an elastic valve member capable of bending to open and close said end opening of said conduit, said valve member having a predetermined spring constant such that said end opening of said conduit remains blocked until a pressure in said first chamber reaches a predetermined value; limiting means for limiting the bending movement of said valve member in the direction in which said refrigerant gas exits said end opening of said conduit, said limiting means including a retainer member.

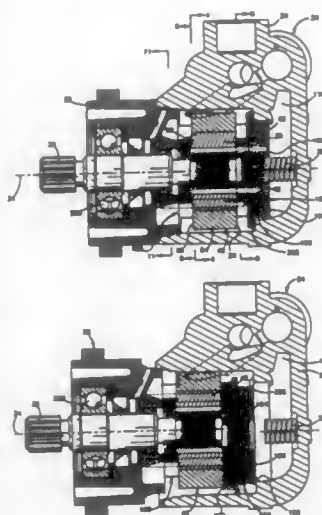
5,380,177
POSITIVE DISPLACEMENT MACHINE WITH PLANETARY MOTION AND HYPERTROCHOIDAL GEOMETRY
Andre Leroy, 64 Chaussee de Binche, B 7030 Mons, Belgium, and Flamme, Jean Marie, 23 Boulevard Richard Lenoir, F 75011 Paris, France
Filed Oct. 23, 1992, Ser. No. 965,923
Claims priority, application France, Oct. 23, 1991, 91 13531
Int. Cl.⁶ F01C 1/10, 1/22, 21/08, 21/10
U.S. Cl. 418—61.2 6 Claims



1. A positive displacement machine including a cylindrical mechanism, essentially constituted by a cylindrical piston (male device) having an integral order of symmetry s_p with respect to its axis, a cylindrical enclosure that surrounds it (female device), having an integral order of symmetry s_c with respect to its axis, and a third device physically embodying two axes, parallel to those of the cylindrical surfaces defining the shape of the piston and enclosure, this third device being in rotoidal connection about its axes with the piston and the enclosure, respectively, the orders of symmetry s_p and s_c differing from each other by one and the geometries of the piston and enclosure being defined so that these devices are in direct contact, characterized in that one of the devices, male or female, has a directrix D_1 which is identified with a curve that is uniformly distant (the uniform distance optionally being zero) from a closed hypertrochoid, excluding hypertrochoids degenerated into hypotrochoids, peritrochoids and epitro-

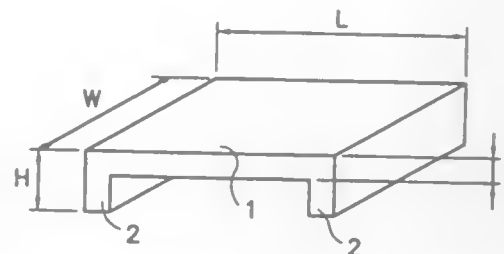
choids or with curves uniformly distant from these hypotrochoids, peritrochoids and epitrochoids, this hypertrochoid having neither a double point nor a retrogressive point, the other device having a directrix D_2 which is the envelope of D_1 in a relative planetary motion defined by two circles C_1 and C_2 , having respective centers and radii (O_1, R_1) and (O_2, R_2) , which are respectively solid with the directrices D_1 and D_2 and roll on one another without slipping, by internal contact, $|O_1O_2|$ specifying the center distance between the axes of the third device.

5,380,178
ROTARY DEVICE AND METHOD OF ASSEMBLY
Bruce C. Noah, West Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio
Filed Feb. 10, 1994, Ser. No. 194,410
Int. Cl.⁶ F01C 19/08
U.S. Cl. 418—133 22 Claims



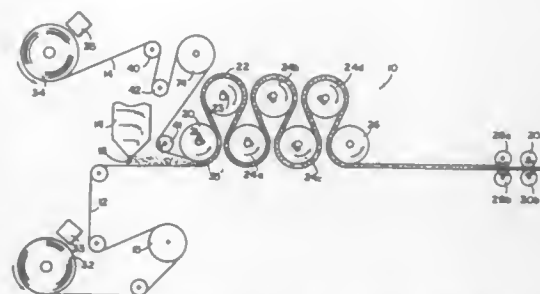
1. A rotary device for use with fluid, said device comprising: a rotor; a shaft connected with said rotor; a housing enclosing said rotor, said housing having an end wall defining first and second spaced apart alignment openings and a shaft opening; and an end plate which is disposed between said rotor and said end wall of said housing and cooperates with said rotor and housing to conduct fluid flow, said end plate defining first and second spaced apart alignment openings and a shaft opening, said end plate being movable relative to said housing during assembly of said rotary device between an aligned orientation and a misaligned orientation, said first and second alignment openings and said shaft opening in said end plate being aligned with said first and second alignment openings and said shaft opening in said housing when said end plate is in the aligned orientation to thereby enable assembly of said rotary device, said shaft opening in said end plate being offset from said shaft opening in said housing when said end plate is in the misaligned orientation and said first and second alignment openings in said end plate are aligned with said first and second alignment openings in said housing to cause said end wall and said end plate to prevent assembly of said rotary device.

5,380,179
BINDER SYSTEM FOR USE IN THE INJECTION MOLDING OF SINTERABLE POWDERS AND MOLDING COMPOUND CONTAINING THE BINDER SYSTEM
Kimihiro Nishimura, Chiba, and Kenji Yoshino, Tokyo, both of Japan, assignors to Kawasaki Steel Corporation, Japan
Filed Mar. 16, 1993, Ser. No. 33,094
Claims priority, application Japan, Mar. 16, 1992, 4-058088; Oct. 8, 1992, 4-270097
Int. Cl.⁶ B22F 1/00
U.S. Cl. 419—36 12 Claims



1. An injection moldable binder system for a sinterable powder that comprises:
(a) 3–80 wt % of an olefinic polymer and/or copolymer with a molecular weight in excess of 2000 that has at least one epoxy group in the molecule; and
(b) 20–80 wt % of an organic compound with a molecular weight of not more than 2000.

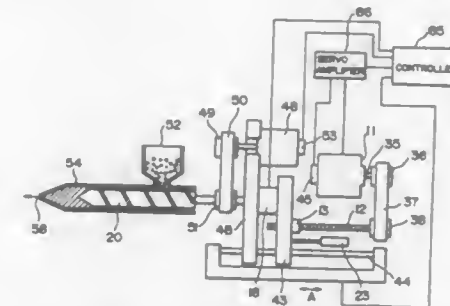
5,380,180
APPARATUS FOR MAKING PRESSBOARD FROM POLY-COATED PAPER USING RELATIVE MOVEMENT OF FACING WEBS
Vernon L. Lamb, Sr., Sparta, Mich., assignor to Fortifiber Corporation, Los Angeles, Calif.
Division of Ser. No. 584,595, Sep. 18, 1990, Pat. No. 5,137,668, which is a continuation-in-part of Ser. No. 383,208, Jul. 21, 1989, abandoned. This application Dec. 17, 1991, Ser. No. 809,437
Int. Cl.⁶ B29C 43/00
U.S. Cl. 425—111 5 Claims



1. Apparatus for continuously fabricating pressboard with a filler comprising shredded paper coated with a thermoplastic material and a pair of webs comprising:
web advancing means for advancing first and second webs toward each other;
means for placing thermoplastic coated shredded paper between said webs to form a composite with said webs, said composite having a thickness; and
processing means for applying heat to said composite and for simultaneously shifting said first and second webs linearly back and forth relative to each other and to said shredded paper to smear said thermoplastic for bonding said composite together;
said processing means including a plurality of heated rolls for operation at a predetermined peripheral speed, and

defining a serpentine path through which said composite is passed, such that around each one of said heated rolls one of said webs is in engagement with the said one heated roll to form an inner web which is pulled forwardly to move relative to the other webs;
press rolls downstream of said heated rolls, and defining a gap through which said composite passes to reduce said thickness to a desired caliper; and
drive means for causing a greater peripheral speed of said press rolls than said peripheral speed of said heated rolls to produce an overdrive relation relative to said heated rolls, resulting in a differential pulling action on said webs to thereby cause said webs to move linearly relative to each other.

5,380,181
CONTROL DEVICE FOR AN ELECTRIC INJECTION MOLDING MACHINE
Kazuo Hiraoka, and Katsuhiko Taniguchi, both of Chiba, Japan, assignors to Sumitomo Heavy Industries, Ltd., Japan
Filed Jun. 21, 1993, Ser. No. 79,286
Int. Cl.⁶ B29C 45/77
U.S. Cl. 425—145 5 Claims

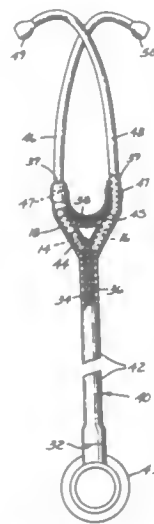


1. A control device for an electric injection molding machine designed to advance and retract a screw in a heating cylinder by an injection motor, said control device comprising:
(a) a screw position detector for detecting a screw position to output a screw position detection signal;
(b) a speed pattern generator for generating a speed setting pattern signal which indicates a relation between a time and a screw speed;
(c) integration means for integrating the speed setting pattern signal to obtain a stroke of said screw;
(d) generation means for generating a position instruction signal on the basis of the stroke and the screw position when injection is initiated;
(e) means for subtracting the screw position detection signal from the position instruction signal, as a manipulated variable of feedback, to generate a position deviation signal; and
(f) means for adding the speed setting pattern signal to the position deviation signal, as a manipulated variable of feed forward, and for generating a speed instruction signal.

5,380,182
MOLD HAVING ELASTOMERIC MOLD MEMBER THEREWITH
Thomas J. Packard, Somerset, Wis., and James H. Quackenbush, Eden Prairie, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 821,459, Jan. 15, 1992, abandoned, which is a division of Ser. No. 360,473, Jun. 2, 1989, Pat. No. 5,111,904. This application Apr. 5, 1994, Ser. No. 223,311
Int. Cl.⁶ B29C 41/14, 41/38
U.S. Cl. 425—275 8 Claims

1. A mold having structural integrity to form a dip molded article from a plastisol, comprising:
a plastisol dip molding mold member comprising a fluoro-

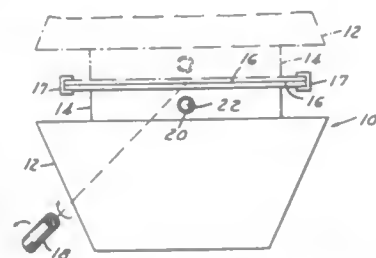
carbon elastomeric material having structural integrity after being exposed to both article formation temperatures of from about 175° C. to about 290° C. and a plastisol



having a high solvating aromatic plasticizer, and having a Shore A Hardness of from 5 Shore A to about 95 Shore A, wherein said mold member remains embedded in the article after plastisol dip molding.

5,380,183

VENTING DEVICE FOR ROTOCASE SHELL MOLDS
Charles L. Piazza, Somersworth, and Edward E. Therrien, Newington, both of N.H., assignors to Davidson Textron, Inc., Dover, N.H.
Continuation of Ser. No. 504,388, Apr. 4, 1990, abandoned. This application Mar. 18, 1991, Ser. No. 670,932
Int. Cl.⁶ B29C 33/10, 41/04; 249 141
U.S. Cl. 425—434



1. A roto-case shell mold assembly comprising a first mold, a first neck connected thereto, a first flanged neck plate formed on the end of the neck away from said mold, and a second mold, a second neck and a second flanged neck plate secured to the first neck plate in an abutting relationship, and a venting device including an opening formed in each of the first and second necks, and a single hollow continuously open vent tube of a predetermined length mounted in each of said openings such that the vent tube extends a predetermined length into the interior of each neck to relieve the pressure within the molds and thereby prevent warpage of either or both said first and second flanged neck plates to eliminate frequent milling thereof.

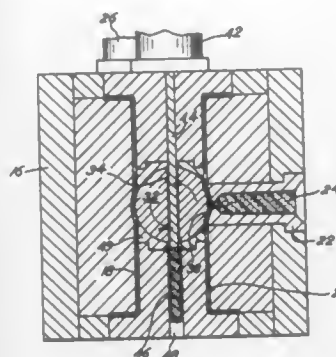
5,380,184 INJECTION MOLD HAVING A ROTATABLE SPRUE MEMBER

John W. Von Holdt, Sr., 6864 Lexington La., Niles, Ill. 60648
Division of Ser. No. 966,715, Oct. 26, 1992, Pat. No. 5,275,778, which is a division of Ser. No. 781,907, Oct. 24, 1991, Pat. No. 5,169,655, which is a continuation of Ser. No. 532,749, Jun. 4, 1990, abandoned. This application Aug. 18, 1993, Ser. No. 108,391

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.⁶ B29C 45/38

U.S. Cl. 425—547

9 Claims



1. In an injection mold which defines a first mold part and a second mold part which together define a mold cavity between them; means for moving said mold parts between engaging, mold cavity-forming relation and spaced relation to alternately mold and to remove a product molded therein; and sprue means to provide molten molding compound to said mold cavity, the improvement comprising, in combination: said sprue means comprising a first sprue conduit communicating between a source of molten compound and a second sprue conduit, said second sprue conduit communicating between the first sprue conduit and the mold cavity, said second sprue conduit comprising a passageway extending centrally through a rotatable member; means for rotating said rotatable member between a first rotary position in which said passageway is in communication between the first sprue conduit and the mold cavity, and a second rotary position in which said passageway is out of said communication, said rotatable member being substantially spherical in shape; and plunger means for removing molding compound from said passageway while the rotatable member is in the second rotary position.

5,380,185

BALL FOR BALL GAME AND MOLDING APPARATUS FOR FORMING THE SAME

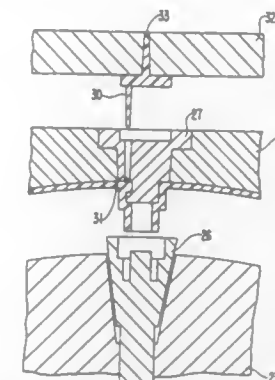
Hideomi Shishido; Shigeo Doi; Masanori Hirakichi, and Hajime Okimoto, all of Hiroshima, Japan, assignors to Molten Corporation, Hiroshima, Japan
Division of Ser. No. 962,331, Oct. 16, 1992, Pat. No. 5,306,001. This application Jul. 22, 1993, Ser. No. 95,419
Int. Cl.⁶ B29C 45/36, 45/40

U.S. Cl. 425—556

2 Claims

1. A molding surface for injection-molding a hemispherical hollow body formed of a thermoplastic elastomer and having a valve formed integrally therewith, said apparatus comprising a first mold having a hemispherical convex molding surface, a second mold having a hemispherical concave molding surface larger in size than said hemispherical convex molding surface, on which said second mold is superposed said first mold to form a cavity for said hemispherical hollow body, a first valve mold removably mounted at the center of said hemispherical convex molding surface of said first mold, for forming an outer form of said valve and an inside and small-diameter portion of a valve rubber insertion hole of said valve, a second valve mold removably mounted at the center of said hemispherical con-

cave molding surface, for forming an intermediate and large-diameter portion of said valve rubber insertion hole and an outside and small-diameter portion thereof while forming a cavity for said valve in cooperation with said first valve mold, and a plurality of gates formed in the periphery of said outside and small-diameter portion of said valve rubber insertion hole



associated with said second valve mold, for injecting therethrough a plasticized or molten thermoplastic elastomer into said cavities, and wherein said second valve mold includes a means for downwardly pushing the formed hollow body when said second valve mold is engaged to said second mold after said second valve is removed from said second mold.

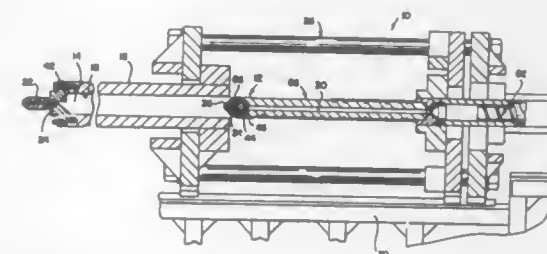
5,380,186

FLOW REGULATING ASSEMBLY FOR A PLASTIC INJECTION MACHINE

Sleebolt Hettinga, and James K. Ober, both of 2123 NW. 111th St., Des Moines, Iowa 50325
Filed Feb. 14, 1992, Ser. No. 836,985
Int. Cl.⁶ B29C 45/02

U.S. Cl. 425—557

12 Claims



1. A flow regulating assembly for restricting plastic material from flowing directly into an accumulator cavity of a plastic injection machine and instead directing said plastic material towards the wall of said accumulator cavity thereby providing a scouring effect and reducing build-up of said plastic material on said wall of said accumulator cavity, said regulating assembly comprising:

- means for delivering said plastic material to said accumulator cavity, said plastic material delivery means having a central chamber therein for the flow of said plastic material therethrough;
- a valve member located between said plastic material delivery means and said accumulator cavity, said valve member which blocks said plastic material from flowing directly from said plastic material delivery means into said accumulator cavity;
- a central opening in said valve member for receiving said plastic material therein, said central opening located proximate to and in corresponding alignment with said central chamber of said plastic material delivery means;
- at least two branch passageways extended from said central opening to external openings in an outer edge of

said valve member, said outer edge of said valve member which is concentric with and proximate to said wall of said accumulator cavity, said branch passageways allowing for the flow of said plastic material from said central opening to said outer edge of said valve member; and
(e) said at least two branch passageways leading to a circumferential groove in said outer edge of said valve member, said circumferential groove directing the flow of said plastic material circumferentially between said outer edge of said valve member and said wall of said accumulator cavity.

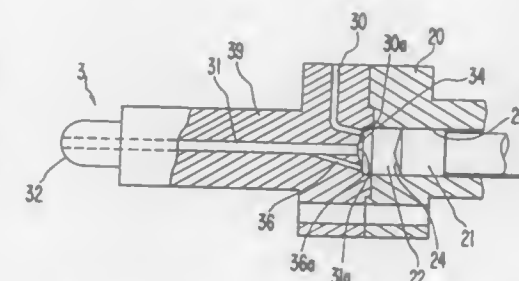
5,380,187

PRE-PLASTICIZATION TYPE INJECTION MOLDING MACHINE

Misao Fujikawa, Kaga, Japan, assignor to Sodick Co., Ltd., Kanagawa, Japan
Filed Feb. 19, 1993, Ser. No. 19,683
Claims priority, application Japan, Feb. 21, 1992, 4-072494
Int. Cl.⁶ B29C 45/54

U.S. Cl. 425—561

13 Claims

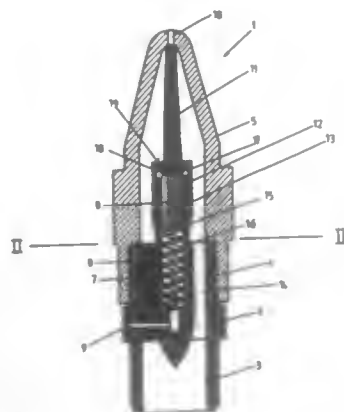


1. An apparatus comprising:
a plasticizing part for plasticizing synthetic resin material, said plasticizing part comprising a heating cylinder having a screw and a plasticizing chamber therein, said plasticizing chamber having a tip, and a drive mechanism for rotating and advancing said screw;
an injection part for injecting plasticized resin material, said injection part comprising an injection cylinder having an injection plunger and an injection chamber therein, said injection chamber having a tip;
a nozzle connected with said injection chamber of said injection cylinder for receiving plasticized resin material from said injection chamber, said injection chamber having a nozzle side-wall defined by said nozzle;
a conduit connecting said tip of said plasticizing chamber with said tip of said injection chamber, said conduit having an opening on the periphery of said nozzle side-wall; an injection passage in said nozzle having an opening at one end thereof at the center of said nozzle side-wall and another end at a tip of said nozzle; and
an injection by-pass having an opening at one end thereof located at the periphery of said nozzle side-wall at a region of said nozzle side-wall wherein plasticized resin material supplied from said conduit tends to remain, said region being located opposite to said opening of said conduit on said nozzle side-wall, said region and said opening of said conduit having said opening of said injection passage therebetween, and another end connected to said injection passage.

5,380,188
NEEDLE SHUT-OFF NOZZLE FOR PLASTIC
INJECTION MOULDING COMPOUNDS

Edmund Ullsperger, Sophienhöhe 3, D 50171 Kerpen, Germany
 Filed Jul. 9, 1993, Ser. No. 87,878
 Claims priority, application Germany, Jul. 9, 1992, 4222510
 Int. Cl.⁶ B29C 45/23

U.S. Cl. 425—563



1. A needle shut-off nozzle for plastic injection moulding compounds comprising a body (2), a nozzle (5) having an outlet (10), means (4) for removably connecting said body (2) to said nozzle (5), said body (2) including a cylindrical portion (13) opening in a direction toward said outlet (10), a needle (11) for closing said outlet (10), said needle (11) including a cylindrical portion (12) opening in a direction away from said outlet (10) said cylindrical portions (12, 13) being in telescopic sliding relationship to each other, and said body (2) and the cylindrical portion (13) thereof being an integral one-piece homogeneous construction.

5,380,189
METHOD FOR DEHYDRATING VEGETIVE MATTER
 Carter D. Clary, Clovis, and Vincent E. Petrucci, Fresno, both of Calif., assignors to California State University, Fresno Foundation, Fresno, Calif.
 Continuation of Ser. No. 793,471, Nov. 18, 1991, abandoned.
 This application Aug. 2, 1993, Ser. No. 100,388
 Int. Cl.⁶ A23L 1/212

U.S. Cl. 426—438

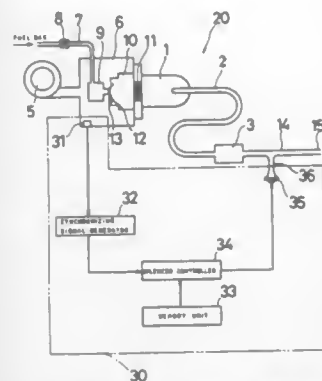
7 Claims

1. A method for dehydrating vegetive matter to produce a resultant product having a pliable, collapsed, wrinkled appearance and a soft, chewy texture without the use of sulfur, the method comprising the steps of:
 submersing said vegetive matter, in a substantially fresh, natural form, in a liquid medium heated to a temperature of substantially not greater than one hundred and sixty-five degrees Fahrenheit (165° F.);
 applying a negative pressure to said liquid medium and the vegetive matter submersed therein; leaving said vegetive matter in said liquid medium under said negative pressure in the range of from about one (1) hour to about three (3) hours until said vegetive matter has been dehydrated to about eight percent (8%) to ten percent (10%) of its ambient moisture content; and
 subsequently removing the vegetive matter from the liquid medium and then subjecting said vegetive matter to ambient atmospheric pressure to cause the vegetive matter to partially collapse to form said wrinkled appearance and soft, chewy texture.

5,380,190
PULSE COMBUSTOR
 Nanki Kumagai, Sapporo, Japan, assignor to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan
 Filed Aug. 20, 1993, Ser. No. 110,059
 Claims priority, application Japan, Sep. 3, 1992, 4-260680
 Int. Cl.⁶ F23C 11/04

19 Claims U.S. Cl. 431—1

15 Claims



1. A pulse combustor comprising a mixing chamber for receiving and mixing a fuel gas and air and supplying an air/fuel mixture, a combustion chamber connected to said mixing chamber for pulsative combustion of said air/fuel mixture supplied from said mixing chamber, a tail pipe constituted as a conduit of hot combustion byproducts, a gas supply system for supplying said fuel gas to said mixing chamber, an air supply system for supplying said air to said mixing chamber, and an exhaust conduit for discharging hot combustion byproducts, said pulse combustor further comprising
 a synchronous signal generator means for generating a synchronous signal synchronized with a cycle of said pulsative combustion,
 data memory means for storing silencing-acoustic waveform data,
 silencing acoustic signal generator means for outputting a silencing acoustic signal corresponding to said silencing-acoustic waveform data stored in said data memory means, synchronously with said synchronous signal output from said synchronous signal generator means,
 sound generator means for converting said silencing acoustic signal to a compensating sound and outputting said compensating sound to said exhaust conduit of said hot combustion byproducts and to said air supply system
 sensor means for detecting said cycle of said pulsative combustion, and
 control circuit means allowing said sound generator means to output said compensating sound only when said sensor means detects actual combustion conditions.

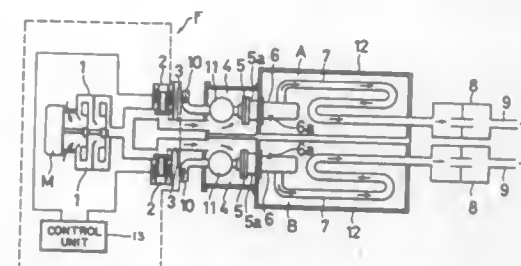
5,380,191
PULSE COMBUSTOR
 Tadashi Itakura, Ebetu, and Sasumu Ejiri, Toyosake, both of Japan, assignors to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan
 Filed Sep. 15, 1993, Ser. No. 121,771
 Claims priority, application Japan, Sep. 18, 1992, 4-275332
 Int. Cl.⁶ F23C 11/04

U.S. Cl. 431—1

10 Claims

1. A pulse combustor comprising a plurality of combustion systems each having a burner, a combustion chamber, a tail pipe, an exhaust muffler, and an exhaust conduit, and one common air supply system having an air supply blower, a plurality of air supply conduits, and a plurality of air chambers, wherein said air supply system includes air supply control

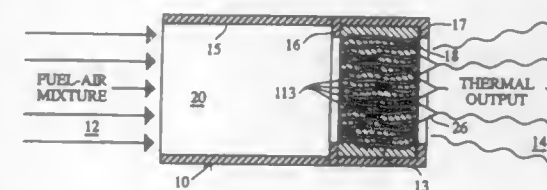
means for supplying a fixed amount of air to at least one combustion system under combustion conditions and



interfering with air supply to the rest of said plurality of combustion systems under non-combustion conditions.

5,380,192
HIGH-REFLECTIVITY POROUS BLUE-FLAME GAS BURNER
 Robert E. Hamon, Simi Valley, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
 Filed Jul. 26, 1993, Ser. No. 96,280
 Int. Cl.⁶ F23D 3/40

U.S. Cl. 431—7



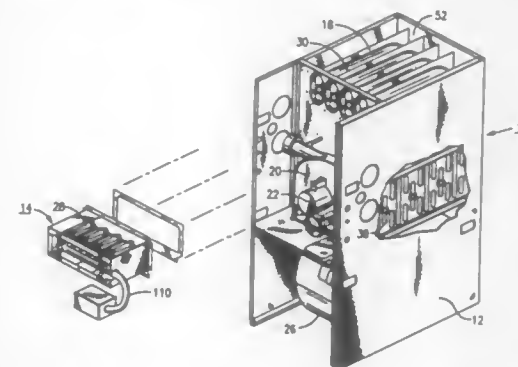
1. In a method of providing a gas burner system, the improvement comprising in combination:
 providing a porous matrix having a burner surface where combustion takes place; and
 coating said porous matrix across said burner surface with a layer having a higher reflectivity than said matrix by itself, and preserving gas-flow pores of said porous matrix by extending said gas-flow pores through said layer across said burner surface.

5,380,193
APPARATUS FOR ATTACHING MANIFOLD ASSEMBLY TO GAS CONTROL ASSEMBLY OF FURNACE
 Tommie L. Williams, Indianapolis, and Matthew Kujawa, Danville, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 2, 1993, Ser. No. 160,900
 Int. Cl.⁶ F23C 5/08

U.S. Cl. 431—178

8 Claims



1. In a gas-fired furnace of the type having a manifold assem-

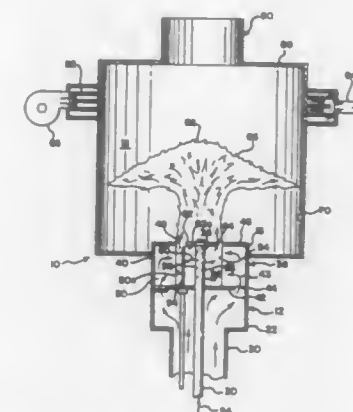
bly, said manifold assembly comprising a gas valve, a manifold, orifices extending from said manifold and being located on a common line, and a gas control assembly having a burner box compartment, the improvement comprising:

an apparatus for attaching a manifold assembly to the burner box compartment, comprising:
 a plurality of brackets, each bracket being affixed to a manifold at a position essentially 180° from the common line of orifices, and being essentially perpendicular to said common line;
 a first retaining means located on a first side of an opening of said burner box compartment, said first side being essentially parallel to said common line of orifices, for retaining a first end of said brackets to said first side;
 a second retaining means located on a second side of an opening of said burner box compartment, said second side being essentially parallel to said common line of orifices, for retaining a second end of said bracket to said second side; and
 an affixing means for affixing said bracket to at least one of the group consisting of said first retaining means and said second retaining means.

5,380,194
HEATING DEVICE
 Robert W. Polomchak, R.R. 1, and Michael Yacko, R.R. #1, Box 125, both of Fair Oaks, Ind. 47943
 Continuation-in-part of Ser. No. 948,678, Sep. 22, 1992, abandoned. This application Jan. 15, 1993, Ser. No. 78,075
 Int. Cl.⁶ F23M 9/00

U.S. Cl. 431—183

12 Claims



1. A heating device for intermixing fuel with air to form a mixture comprising:
 air means for supplying an axial flow of the air;
 swirling means in fluid communication with said air supply means for turbulently swirling and directing generally radially inward the air from said air supply means, said swirling means including,
 a portion of a tubular housing in fluid communication with said air means, said portion having an outer exit end and an outer annular baffle member extending radially inward from said portion and generally located at said exit end of said portion, said outer baffle member forming an exit aperture for emitting of the mixture,
 an inner annular baffle member circumferentially disposed about and extending radially outward from said fuel means to form a circumferential gap with said portion of said tubular housing, and
 a plurality of angled fins extending from said inner annular baffle member to said outer annular baffle member said outer baffle, said exit aperture, said inner baffle and the inner radial edges of said fins defining a mixing chamber; means within said mixing chamber and inward of said outer baffle member for emitting the fuel as a plurality of

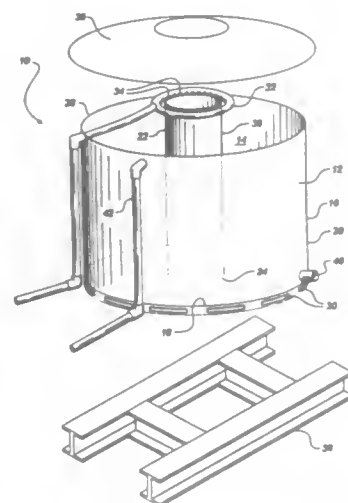
streams directed generally radially outward into said swirling means; and
means in communication with said emitting means for supplying the fuel to said emitting means wherein the fuel emitted from said emitting means intermixes with the inward directed air from said swirling means to form the mixture and the mixture is ignited to form a homogeneous mushroom shaped configuration surrounded by turbulent air flow.

5,380,195
PORTABLE SAFETY FLARE FOR COMBUSTION OF WASTE GASES

Brian Reid, 5507-52B Avenue, Rocky Mountain House, Alberta, Canada T0M 1T0, and Wendyle Jones, R.R. #2, Rocky Mountain House, Alberta, Canada T0M 1T0
Filed Dec. 10, 1993, Ser. No. 164,550
Int. Cl.⁶ F23D 14/00

U.S. Cl. 431-202

6 Claims



1. A safety flare for combustion of waste gases, comprising:
 - a. a container having an interior and an exterior, the interior being defined by a bottom and peripheral sidewalls;
 - b. a vent stack extending through the interior of the container, the vent stack having a first end communicating with the exterior of the container and a second end extending past a top peripheral edge of the peripheral sidewalls of the container;
 - c. means for permitting the communication of combustion air with the first end of the vent stack; and
 - d. a burner immediately surrounding the second end of the vent stack such that the burner is supplied with combustion air by the vent stack, the burner having a plurality of downwardly directed nozzles such that liquids passing through the nozzles fall by force of gravity into the interior of the container.

5,380,196
ORTHODONTIC BRACKET WITH ARCHWIRE SLOT LINER

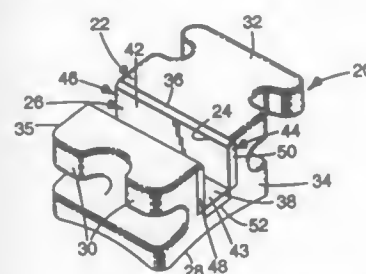
John S. Kelly, Arcadia; James D. Hansen, Duarte, and Joseph M. Caruso, Agundulce, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 13, 1993, Ser. No. 61,164
Int. Cl.⁶ A61C 3/00

U.S. Cl. 433-8

23 Claims

1. An orthodontic bracket comprising a body having a mesial side, a distal side and an elongated channel extending between said mesial side and said distal side, said bracket in-

cluding a liner received in said channel, said liner having an archwire slot, said liner including an end portion with at least



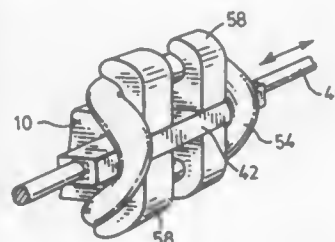
one section that extends over one of said sides along a direction generally parallel to said one side.

5,380,197
ORTHODONTIC ARCH WIRE SLEEVES FOR USE WITH ORTHODONTIC ARCH WIRES AND BRACKETS
G. Herbert Hanson, 57 Augusta Street, Hamilton, Ontario, Canada L8N 1P8

Filed Mar. 24, 1993, Ser. No. 36,639
Int. Cl.⁶ A61C 3/00

U.S. Cl. 433-22

16 Claims



1. A combination comprising an orthodontic bracket comprising a bracket body having labial, lingual, gingival, occlusal, mesial and distal surfaces, the bracket body having a mesial distal extending arch wire slot opening at the bracket labial surface and into which an operative portion of an arch wire can be inserted for cooperation between the bracket and the arch wire for orthodontic corrective movement of the bracket and a tooth to which it is attached;

an arch wire having such an operative portion inserted in the slot; and
a ligature member mounted on the bracket body and engaging the arch wire to retain the operative portion thereof against labial movement out of the slot;
said combination further comprising a sleeve member having a passage therein through which the arch wire passes, the sleeve member being mounted on said operative portion of the arch wire, and being engaged in the slot while so mounted on the arch wire to connect the bracket and the arch wire for said cooperation between them, the ligature member engaging the sleeve member to thereby retain the respective operative portion of the arch wire against labial movement out of the slot.

5,380,198
MATRIX FOR DENTAL MEDICINE AND A DEVICE FOR THE FABRICATON OF MATRIX BANDS

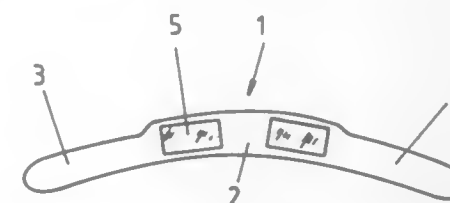
Jouko Suhonen, Huswisenstrasse 7, CH-8426 Lufingen, Switzerland

PCT No. PCT/EP91/01471, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO92/02189, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 5, 1991, Ser. No. 971,756
Claims priority, application Switzerland, Aug. 6, 1990, 2562/90-4; Germany, Dec. 28, 1990, 9017522
Int. Cl.⁶ A61C 5/04

U.S. Cl. 433-39

8 Claims



1. A matrix for dental medicine for use as a formwork for fillings of light-cured plastic material to be inserted into dental cavities, the matrix comprising a band-shaped blank of transparent material, the blank having a positioning portion in a central area thereof, the central area having two ends, and two terminal areas connected to the two ends, the central area and the terminal areas having widths, the width of the central area being greater than the width of the terminal areas, the matrix further comprising a vapor-deposited coating of opaque metallic material, layered over the blank of transparent material, with at least one window portion of the transparent material free of the metallic material coating, the at least one window portion being located in the central area of the blank.

5,380,199
DENTAL ARTICULATOR

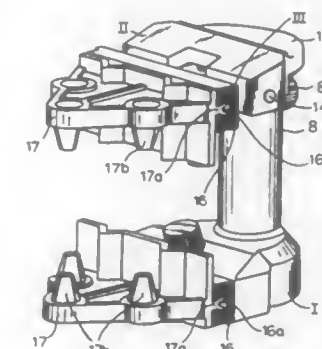
Ioannis Koutavas, 5-9 Vaphelochoriou Street, GR-114 76 Athens, Greece

PCT No. PCT/GR92/00007, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO93/01762, PCT Pub. Date Feb. 4, 1993

PCT Filed Jun. 10, 1992, Ser. No. 50,070
Claims priority, application Greece, Jul. 17, 1991, 910100316
Int. Cl.⁶ A61C 11/00

U.S. Cl. 435-65

3 Claims



1. A dental articulator, comprising:
 - a base;
 - a hollow column affixed to said base and extending upwardly therefrom, said base forming a socket;
 - a lower articulation plate received in said socket and provided with gnatho-condylar formations determining gna-

tho-condylar, lateral and protrusive lower jaw movements;

- a lower mounting member of metal mounted on said lower articulation plate for said lower jaw movements relative thereto, said lower mounting member having a generally horizontal dovetail formation;
- first locking screw means cooperating with said lower mounting member for locking same in position relative to said base and said lower articulation plate;
- a first disposable rubber holder having a dovetail formation complementary to and mating with said dovetail formation of said lower mounting member and removably receivable therein;
- a post slidably received in said column and vertically adjustable therein;
- second locking screw means on said column for locking said post at an adjusted height relative to said column;
- a head formed on said post and provided with gnatho-condylar formations defining gnatho-condylar movements on said head;
- an upper mounting member of metal mounted on said head for jaw movements relative thereto, said upper mounting member having a generally horizontal dovetail formation;
- third locking screw means cooperating with said upper mounting member for locking same in position relative to said head; and
- a second disposable rubber holder having a dovetail formation complementary to and mating with said dovetail formation of said upper mounting member and removably receivable therein, each of said rubber holders being directly in contact with plaster of respective casts, having passages traversable by screws for mounting respective casts on said holders, and being incorporatable bodily in respective casts in alternative modes of mounting casts on said holders.

5,380,200
ENDODONTIC INSTRUMENT OF PREDETERMINED FLEXIBILITY

Derek E. Heath, Johnson City, Tenn., and Carl J. Berendt, Carlsbad, Calif., assignors to Quality Dental Products, Inc., Johnson City, Tenn.

Filed Oct. 8, 1993, Ser. No. 148,888
Int. Cl.⁶ A61C 5/02

U.S. Cl. 433-102

22 Claims



1. An endodontic instrument which is adapted for use in performing root canal therapy, and comprising
 - an elongate shank having a proximate end and an opposite pilot end, and at least one continuous helical flute formed in said shank so as to extend along at least a major portion

of the axial length of said shank and to said pilot end and so as to define a working length of said shank, said shank comprising a core of a first material, and at least one outer shell coaxially surrounding said core and extending along the entire working length of said shank and comprising a metallic second material, and with said first and second materials having differing flexibilities and such that the relative amounts of said first and second materials define a predetermined desired flexibility for the shank.

5,380,201

DENTAL HANDPIECE HAVING CLEANING UNIT
Sosaku Kawata, Kanuma, Japan, assignor to Nakanishi Dental Mfg. Co., Ltd., Japan

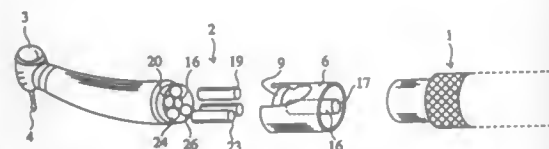
Filed Oct. 6, 1993, Ser. No. 134,319

Claims priority, application Japan, Oct. 9, 1992, 4-070613[U]

Int. Cl.⁶ A61C 1/05

U.S. Cl. 433-132

2 Claims



1. A dental handpiece having a cleaning unit comprising a turbine gas supply passage for supplying a gas under pressure to a turbine for rotationally driving a dental tool, a rinsing liquid supply passage for supplying a rinsing liquid to a turbine head, a chip-scattering gas supply passage for supplying a gas for scattering cut chips produced by operation of said dental tool, cleaning means for cleaning at least one of the gas and the liquid provided in at least one of said turbine gas supply passage, said rinsing liquid supply passage and said chip-scattering gas supply passage, and a gas exhaust passage for discharging the gas under pressure to outside after having run the turbine in rotation, said cleaning means being provided in said gas exhaust passage, said cleaning means comprising a filter and a transparent member for securing said filter.

5,380,202

DENTAL PROPHY CUP

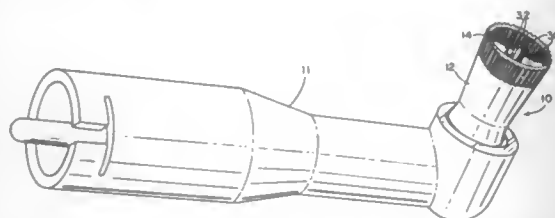
George R. Brahler, Lawrence, Kans., assignor to Brahler Products, Inc., Lawrence, Kans.

Filed Jan. 27, 1994, Ser. No. 186,994

Int. Cl.⁶ A61C 3/06

U.S. Cl. 433-166

8 Claims



1. A dental prophy cup for use with a dental prophy angle comprising:

a concentric sidewall presenting a head end and a shank end, said head end presenting walls defining an open cavity concentrically surrounded by said sidewall for receiving the surface of a tooth, said shank end including coupling means for coupling said prophy cup with the output member of a dental prophy angle, wherein the rotation of said prophy angle output member causes said prophy cup to rotate about an axis extending along the center of said

concentric sidewall, said sidewall further presenting an inner surface and an outer surface; and
cleansing means on said outer surface of said sidewall for cleansing the surrounding tissue and gingival crevice of a tooth when said prophy cup is rotated by said prophy angle output member, said sidewall head end having a thin, pliable edge which easily penetrates the gingival crevice of a tooth so that said cleansing means contacts the gingival crevice, said cleansing means including a plurality of spaced external ribs integrally molded to the outer surface of said sidewall configured for cleansing and massaging the surrounding tissue and gingival crevice of a tooth while said prophy cup is in use.

5,380,203

DENTURES AND METHOD OF MANUFACTURING SAME

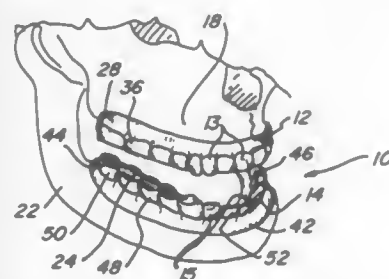
Sundru M. Moodley, 610 S. Harrison La., Denver, Colo. 80209

Filed Jan. 24, 1994, Ser. No. 185,505

Int. Cl.⁶ A61C 13/08

U.S. Cl. 433-198

19 Claims



1. Improved dentures for a denture wearer having a maxilla, a maxillary ridge, an upper gum covering said maxilla and maxillary ridge, a mandible, a mandibular ridge having an apex thereof, a lower gum covering said mandible and said mandibular ridge, and a reference plane between said mandibular ridge and said maxillary ridge in which mastication takes place, said improved dentures comprising:

an upper denture adapted to be positioned on the upper gum and having at least one posterior upper artificial tooth formed therein;
a substantially flat upper masticating surface formed in each posterior upper artificial tooth;
a lower denture adapted to be positioned on the lower gum and opposing said upper denture, said lower denture having at least one posterior lower artificial tooth formed therein;
a lower masticating surface formed in each posterior lower artificial tooth;
a single, substantially longitudinal crest formed in and extending upward a predetermined height from said lower masticating surface, said longitudinal crest substantially centrally located on said lower masticating surface and positioned to be substantially parallel to and overlying the apex of the mandibular ridge; and
an elongated metal blade having a longitudinal edge, said metal blade embedded in said at least one posterior lower artificial tooth with the longitudinal edge of the metal blade flush with and supported by the longitudinal crest.

5,380,204

NIGHT VISION GOGGLE AIDED FLIGHT SIMULATION SYSTEM AND METHOD

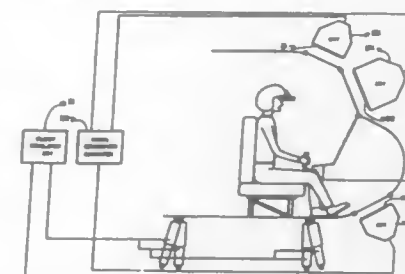
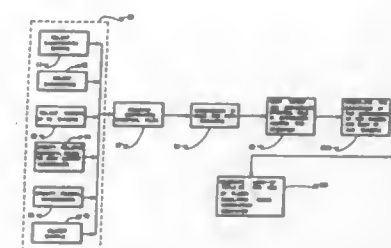
William M. Decker, Roanoke, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 29, 1993, Ser. No. 98,988

Int. Cl.⁶ G09B 9/36

U.S. Cl. 434-36

6 Claims



1. A night vision goggle aided flight infrared simulation system for use with an operator viewing at least one infrared scene generated to be viewed through night vision goggles in a flight simulator including:

a flight simulation selection means for determining any selected parameter options from at least one database source to be utilized;

a processing means utilizing given parameters of at least one database including any selected parameter options for, convoluting spectral files from given parameters and any selected parameter options, correcting for path radiance for each convoluted spectral file,

integrating each target and background spectral file across a given spectrum, calculating the brightness of the background at each range and each target,

generating at least one look-up table of brightness values; a scene generating means for generating an infrared image of a scene to be displayed, whereby the contrast of the displayed image is based on values provided by the look-up table;

an image display means for displaying at least one infrared scene generated by the scene generating means, whereby light levels are thus generated which provides intrascene dynamic range sufficient to be viewed with night vision goggles;

a night vision goggle so that an operator viewing the infrared scene through the night vision goggles views a sufficiently realistic simulation of night vision goggle aided flight.

5. A night vision goggle aided flight infrared simulation method for use with an operator viewing at least one scene generated to be viewed through night vision goggles in a flight simulator comprising the steps of:

providing given parameters and any selected parameter options necessary to generate a simulated infrared scene to be viewed;
convoluting spectral files from given parameters and any selected parameter options;

correcting for path radiance for each convoluted spectral file;
integrating each target and background spectral file across a given spectrum;
calculating the brightness of the background at each range and each target;
generating at least one look-up table of brightness values based on the given parameters including any selected parameter options;
generating an infrared scene whereby the contrast of the displayed infrared scene is based on values provided by the look-up table;
displaying the contrasted scene whereby light levels are generated which provide intrascene dynamic range sufficient to be viewed with night vision goggles;
viewing the infrared scene through the night vision goggles such that there is viewed a sufficiently realistic simulation of night vision goggle aided flight.

5,380,205

EMERGENCY TOY

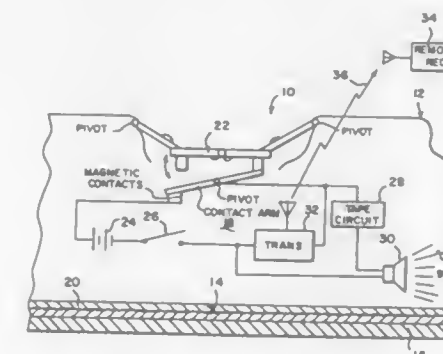
Joe A. Bradley, 3576 Southland, Memphis, Tenn. 38109, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Aug. 23, 1993, Ser. No. 110,714

Int. Cl.⁶ A44C 3/00

U.S. Cl. 434-236

2 Claims



1. An emergency toy for electronic communication with a remote receiver located at a distance from a badge, said toy comprising:

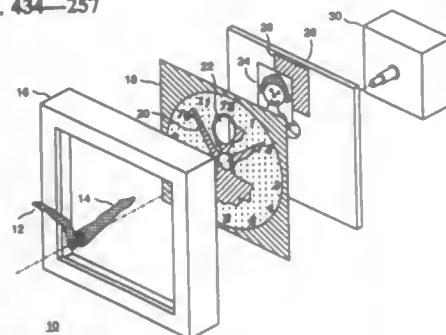
a) a badge simulating an emergency and rescue department emblem;
b) means for removably attaching said badge to a garment of a child;

c) an electronic circuit built within said badge, which when activated by the child during a simulated emergency situation will relay an audible message that will say "CALL 911", thereby teach and familiarize the child with emergency personnel and the very important emergency telephone number, wherein said electronic circuit includes:

d) a recessed button switch assembly on said badge;
e) a battery to supply power;
f) a power switch in said circuit on said badge to turn the circuit power on and off;
g) a tape in said circuit having the audible message therein;
h) a speaker on said badge, so that the audible message can be heard therefrom, when said power switch is turned on and said recessed button switch assembly is pressed by the child;
i) a transmitter in said circuit built into said badge, so that and when said electronic circuit is activated said transmitter will send a signal to said remote receiver to alert a person there of the simulated emergency situation, simultaneous with the audible message;
j) said switch assembly includes an exterior button pivotally connected to the badge in combination with an

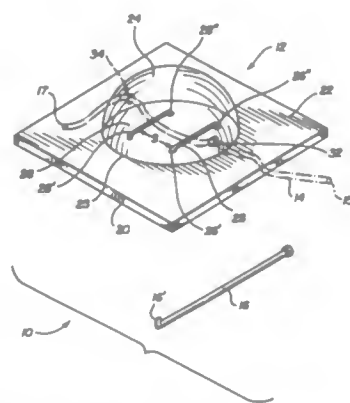
interior contact arm in said circuit whereby inward movement of said button to engage said contact arm activates said circuit.

5,380,206
PERSONALIZABLE ANIMATED CHARACTER DISPLAY CLOCK
Margaret S. Asprey, 422 Traverso Ct., Los Altos, Calif. 94022
Filed Mar. 9, 1993, Ser. No. 28,321
Int. Cl.⁶ G09B 19/00, 19/12; G04B 19/04, 19/06
U.S. Cl. 434—257 4 Claims



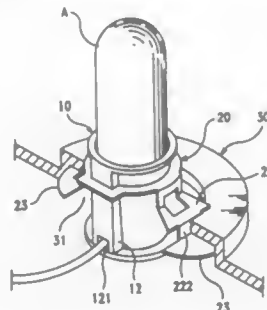
1. The combination of:
(a) a personalizable animated character display clock, including a character image, one or more movable image parts representing movable portions of a character depicted in said character image, and a clock drive mechanism coupled to rotate said one or more movable image parts relative to said character image; and
(b) a means for personalizing said character image with an image of a person's face.

5,380,207
SLIP SUTURE PRACTICE KIT
Steven B. Slepser, 866 Downingtown Pike, West Chester, Pa. 19380
Filed Dec. 27, 1993, Ser. No. 172,908
Int. Cl.⁶ G09B 23/30
U.S. Cl. 434—271 11 Claims



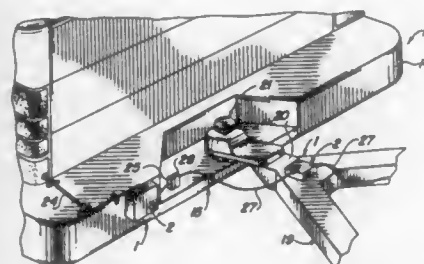
1. A kit for practicing suturing technique using a length of suture and an elongated suture handling tool, said kit comprising:
(a) a board having a planar surface;
(b) at least two elastic bands each having first and second opposite ends, said first and second ends securely fastened to said planar surface of said board, said bands extending in spaced, non-intersecting relation to one another along said planar surface thereby defining a spaced region therebetween; and
(c) a transparent, rigid dome fixedly attached to said planar surface in covering relation to said bands, said dome including at least two axially aligned holes formed there-through.

5,380,208
LAMP SOCKET MOUNTING DEVICE
Lu C. Ying, No. 531, Sec. 4, Chang Hwa Rd., Hsin Chu City, Taiwan, Prov. of China
Filed Jan. 3, 1994, Ser. No. 176,888
Int. Cl.⁶ H01R 13/32
U.S. Cl. 439—558 1 Claim



1. A lamp socket mounting device comprising a lamp socket installed in a socket mounting hole on a socket holder, and a butterfly clamping plate mounted around said lamp socket and fastened to said socket holder to hold down said lamp socket in position, wherein said lamp socket is made of cylindrical shape gradually smaller toward the bottom, having a trapezoidal block raised from an outside wall thereof and extended from a top frame thereof to a bottom edge thereof; said butterfly clamping plate comprises a loop-like base frame portion mounted around said lamp socket, two curved, symmetrical upper stop frame portions bilaterally extended downwards from said loop-like base frame portion, two half-round bottom stop frame portions inserted into said socket mounting hole and stopped against said socket holder at the bottom, and two neck portions respectively connected between said upper stop frame portions and said bottom stop frame portions and stopped against the periphery of said socket mounting hole, said upper stop frame portions having a respective bottom end terminated to a respective clamping edge stopped against said socket holder at the top, said loop-like base frame portion comprising a rectangular portion fitted over said trapezoidal block of said lamp socket.

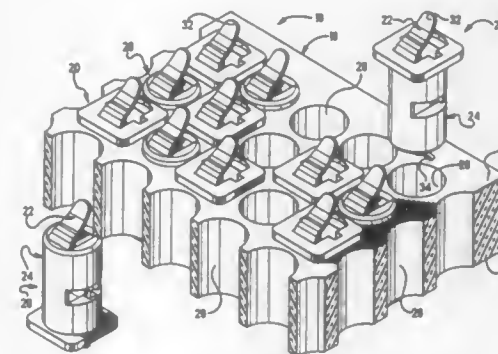
5,380,209
TRAILER LIGHT CONNECTOR ENCLOSURE
Carroll H. Converse, Jr., 318 Jones St., Pineville, La. 71360, and James A. Hayes, 6897 Ealer Rd., Pineville, La. 71360
Filed Oct. 7, 1993, Ser. No. 132,814
Int. Cl.⁶ H01R 33/00
U.S. Cl. 439—35 20 Claims



1. A trailer light connector enclosure for mounting on a vehicle and enclosing a trailer light connector provided on the vehicle wiring harness, comprising an enclosure housing sized to receive the trailer light connector, at least one opening provided in said enclosure housing for receiving the wiring harness attached to the trailer light connector and closure means removably carried by said enclosure housing for releas-

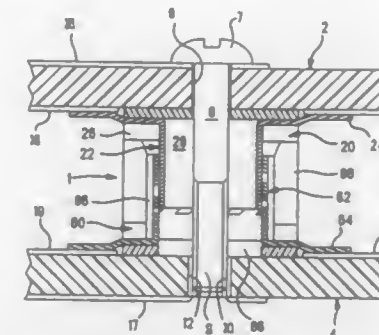
ably closing the trailer light connector inside said enclosure housing.

5,380,210
HIGH DENSITY AREA ARRAY MODULAR CONNECTOR
Dimitry Grabbe, Middletown; Isail Korsunsky, Harrisburg, and Michael F. Laub, Etters, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Continuation of Ser. No. 26,911, Mar. 8, 1993, abandoned. This application Mar. 28, 1994, Ser. No. 218,863
Int. Cl.⁶ H01R 23/68
U.S. Cl. 439—66 24 Claims



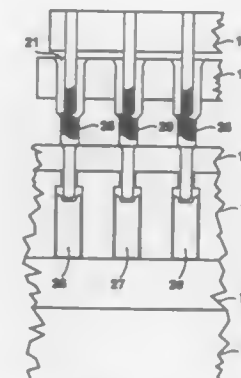
1. A connector for electrically connecting contact pads of a first circuit member to respective contact pads of a second circuit member, where the circuit members are compressed against the connector, the connector comprising:
a plurality of contact modules each having,
a module body with a first end, a second end and a tubular passageway extending therethrough; and
a contact having opposing sides, received within the passageway of the module body, having a first contact section extending outward from the first end of the body, a second contact section extending outward from the second end of the body, and a resilient portion having a bow-shape defined by primary radius sections that are convex on the first side and open on the second side, the primary radius sections are separated by a central radius section that is convex on the second side and open on the first side, the resilient portion interconnecting the contact sections and being formed to oppose movement of the contact sections toward each other whereby upon displacement of the contact sections towards each other, the primary radius sections come into supporting engagement with the body along a portion of the passageway, the contact and the module body being interconnected along the central radius section to maintain the contact within the passageway; and
a holder having first and second major surfaces and a plurality of openings extending therebetween for individually receiving the contact modules such that the first and second contact sections extend outwardly of the major surfaces and the contact modules are spaced to correspond to the contact pads of the first and second circuit members.

5,380,211
COAXIAL CONNECTOR FOR CONNECTING TWO CIRCUIT BOARDS
Akira Kawaguchi, Musashimurayama, and Akihiko Ohtsu, Kawasaki, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jul. 12, 1993, Ser. No. 90,388
Claims priority, application Japan, Aug. 5, 1992, 4-227825
Int. Cl.⁶ H01R 9/03; H05K 1/00
U.S. Cl. 439—74 11 Claims



1. A coaxial connector for electrically connecting signal and ground conductors of circuit boards comprising a center contact member for connecting the signal conductors together and an outer contact means for connecting the ground conductors together, characterized in that said center contact member is extendable through the circuit boards and electrically engages the signal conductors on the outside surfaces of the circuit boards; and said outer contact means include matable members that telescopically engage each other including contact members electrically connectable with the ground conductors on the inner surfaces of the circuit boards.

5,380,212
CONDUCTIVE ELASTOMERIC INTERFACE FOR A PIN GRID ARRAY
James G. Smeenge, Jr., Campbell, and Paul L. Rogers, San Jose, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 930,873, Aug. 14, 1992, abandoned. This application May 28, 1993, Ser. No. 70,002
Int. Cl.⁶ H01R 4/58
U.S. Cl. 439—86 8 Claims



1. An electrical interface for connection of conductive pins to a printed circuit board, the electrical interface comprising: an elastomer holder having a plurality of holes, each hole having a first opening at a first side of the elastomer holder and having a second opening at a second side of the elastomer holder, the first opening being larger than the second opening;

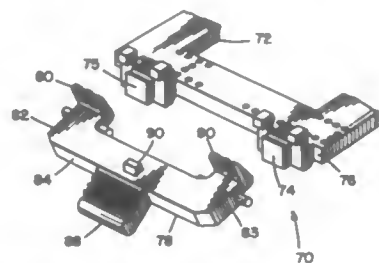
elastomer conductors placed in the plurality of holes within the elastomer holder, the elastomer conductors being placed in the first openings of holes on the first side of the elastomer holder and the elastomer conductors being sufficient in size so that the elastomer conductors do not extend through the second openings and do extend out of the first openings; and,

fastening means for fastening the elastomer holder to the printed circuit board so that the elastomer conductors extending out of the first holes on the first side of the elastomer holder come into contact with conductive pads on the printed circuit board;

wherein the conductive pins are placed through the second openings of the holes to bring them into electrical contact with the elastomer conductors.

5,380,213
ELECTRICAL CONNECTOR WITH IMPROVED EJECTORS AND ASSEMBLY
 Heinz Piorunneck, Trumbull, and Rocco J. Noschese, Wilton, both of Conn., assignors to Burndy Corporation, Norwalk, Conn.

Filed May 21, 1993, Ser. No. 67,729
 Int. Cl.⁶ H01R 13/62
 U.S. Cl. 439—160 24 Claims

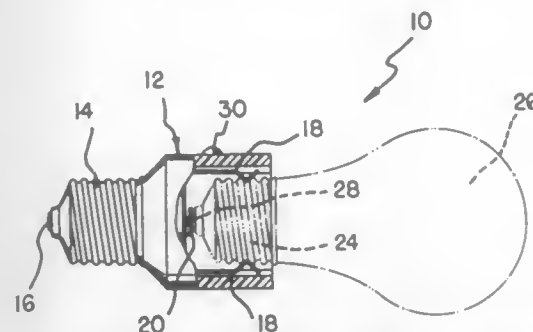


1. An electrical connector comprising:
 a housing;
 electrical contacts mounted to the housing; and
 an ejector pivotably mounted to the housing, the ejector having a first section that is laterally slid along a side of the housing in a first direction into a first receiving portion of the housing and a second section that is then rotated in a second direction, orthogonal to the first direction, into a second receiving portion of the housing such that interaction between the second section and the housing prevents the ejector from inadvertently laterally sliding out of the first receiving portion in a third direction opposite to the first direction.

5,380,214
PUSH-IN LIGHT SOCKET ADAPTER
 Jerry Ortega, Jr., 28544 Ave. 15 1/2, Madera, Calif. 93638
 Filed Aug. 16, 1993, Ser. No. 106,518
 Int. Cl.⁶ H01R 31/06, 33/22
 U.S. Cl. 439—253 1 Claim

1. A push-in light socket adapter comprising:
 a socket body having both a light bulb engaging means for releasably receiving a light bulb and a light socket engaging means for releasably coupling said socket body to a light socket, said light socket engaging means comprising a plug portion adapted to be received within said light socket, said light bulb engaging means comprising a socket portion having a substantially cylindrical shape defining a hollow interior, said socket portion being integrally connected to said plug portion by a reduced portion positioned therebetween;
 at least one exterior threaded contact disposed upon an exterior surface of said light socket engaging means;
 an exterior center contact disposed upon a longitudinal

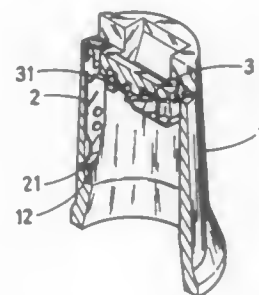
center of an exterior surface of said light socket engaging means;
 an interior center contact in constant electrical communication with said exterior center contact, said interior center contact having a center area thereof and being disposed upon a longitudinally centered interior surface area of said light bulb engaging means and operable to electrically engage a light bulb center contact of said light bulb;
 at least one interior contact disposed upon at least one further interior surface area of said light bulb engaging means, said at least one interior contact being in constant electrical communication with said exterior threaded contact and being operable to releasably retain said light bulb within said light bulb engaging means upon a direct, non-rotating insertion thereof, said at least one interior contact further being operable to provide electrical com-



munication between said exterior threaded contact and a light bulb threaded contact of said light bulb;
 and,
 an indicator light positioned upon an exterior surface of said socket body, said indicator light being in electrical communication with both said interior center contact and said at least one interior contact upon an engagement of said light bulb to said light bulb engaging means, wherein said indicator light is in constant electrical communication with said at least one interior contact, and further comprising an indicator light contact positioned behind said center area of said interior center contact, said indicator light being in further electrical communication said indicator light contact such that an insertion of said light bulb into said socket portion will bias said center area of said interior center contact into electrical contact with said indicator light contact.

5,380,215
SECURE LAMP BASE
 Ming H. Huang, 2, Lane 65, Cheng Kon Road, Hsinchu, Taiwan, Prov. of China

Filed Jan. 5, 1994, Ser. No. 177,366
 Int. Cl.⁶ H01R 13/54
 U.S. Cl. 439—340 1 Claim

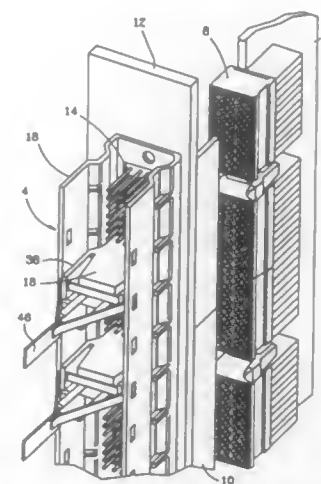


1. A secure lamp base including:
 a base having a slot along its inner wall and the bottom of the

slot being a channel; a projection in the base being provided with groove, and
 a pair of conductive slices both having the inner end to be a hook which extends its two tips sideways; one of the conductive slices leaning against the slot and its hook engaging in the channel of the base, while the other slice has its hook end folded and inserted into the groove on the projection in the base for obtaining a firm engagement therebetween.

5,380,216
CABLE BACKPANEL INTERCONNECTION
 Johannes Broeksteeg, Hertogensingel, and Lucas Soes, Rosmalen, both of Netherlands, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 21, 1993, Ser. No. 52,054
 Claims priority, application United Kingdom, May 11, 1992, 9210119; May 11, 1992, 9210131
 Int. Cl.⁶ H01R 13/627
 U.S. Cl. 439—352 8 Claims

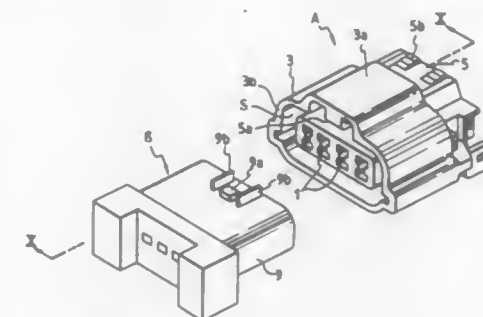


1. An electrical connection system for mounting to a printed circuit board, the system comprising:
 a mounting rail having a lower base portion with at least one aperture for placement over a plurality of pins mounted on the printed circuit board, the mounting rail further comprising two parallel and opposed vertical sidewalls, at least one of said side walls having a keying mechanism, and at least one of said sidewalls having a latching member; and
 a cable connector having a plurality of electrical terminals for mating with the pins on the printed circuit board, and a connector housing in which said electrical terminals are secured and including a complementary keying mechanism and latching element for polarization and locking in said mounting rail.

5,380,217
CONNECTOR
 Sakai Yagi, and Keishi Jinno, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
 Filed Sep. 9, 1993, Ser. No. 118,244
 Claims priority, application Japan, Sep. 9, 1992, 4-240496
 Int. Cl.⁶ H01R 13/627
 U.S. Cl. 439—358 6 Claims

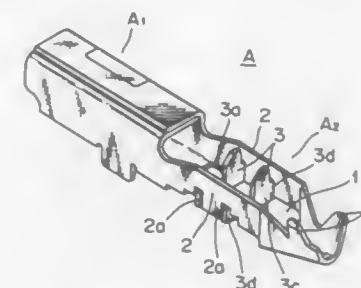
1. A connector comprising:
 a male connector including an engaging means and an outer casing having a portion disposed outside of said engaging means with a gap therebetween, said male connector having an annular space which is partially defined by said outer casing; and

a female connector having a casing body which is inserted into the annular space, wherein said engaging means is



integral to the outer casing and engages said female connector.

5,380,218
PRESSURE-CONTACT TERMINAL STRUCTURE
 Hiroshi Yamamoto, and Hitoshi Sakai, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
 Filed Sep. 7, 1993, Ser. No. 116,520
 Claims priority, application Japan, Sep. 11, 1992, 4-243123
 Int. Cl.⁶ H01R 4/24
 U.S. Cl. 439—397 7 Claims

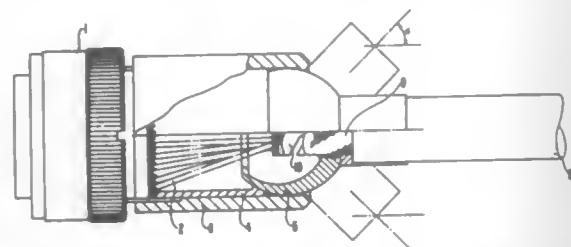


1. A pressure-contact terminal structure comprising: an electrical contact portion; and
 a wire connecting portion, the wire connecting portion further comprising:
 a base portion;
 side plate portions formed on both sides of the base portion and bent upright;
 at least one plate-like pressing piece cut and raised upright from the base portion and situated between the side plate portions, the pressing piece having a conductor contact slot; and
 locking ears integrally projecting from both sides of the lower part of the upright pressing piece, the locking ears being engaged in notches formed in the side plate portions.

5,380,219
CABLE PLUG CONNECTOR AND CABLE BUSHING
 Jurgen Klier, Am Herracker 9, 6072 Dreieich, Germany
 Filed Jan. 27, 1993, Ser. No. 9,603
 Claims priority, application Germany, Jan. 27, 1992, 4202176
 Int. Cl.⁶ H01R 13/56 14 Claims

1. A cable plug connector with a housing comprising a cable outlet area and a basic plug element (1), wherein the cable outlet area is provided with a ball joint (4, 5, 6) through which a cable (7) connected with the plug element (1) is guided, wherein the ball joint (4, 5, 6) is provided with a ball joint pan ring (4), a ball joint body (5) and a ball joint screw cap (6) and

wherein the latter is detachably connectable to the plug element (1), and the ball joint body (5) is clamped between the ball joint screw cap element (6) and the ball joint pan ring (4)



and wherein the end of the ball joint pan ring (4) facing away from the ball joint body (5) is supported on the plug element (1).

5,380,220 CONNECTOR

Toshiaki Okabe, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

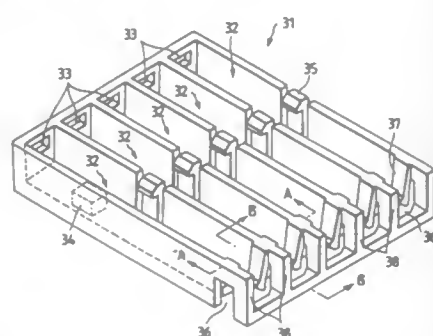
Filed Nov. 24, 1993, Ser. No. 156,841

Claims priority, application Japan, Nov. 25, 1992, 4-336756

Int. Cl.⁶ H01R 13/422, 13/58

U.S. Cl. 439-456

11 Claims



1. A connector comprising:

- a housing having a terminal receiving chamber provided therein for receiving a terminal having a wire secured thereto, said terminal receiving chamber being defined by partition walls on opposite sides thereof and a bottom wall, said bottom wall having an opening therein; and
- a resilient holding member extending from one of said partition walls so as to at least partially cover said opening, wherein said holding member urges the wire into said opening so as to partially bend said wire to thereby resist any external pulling forces applied to said wire.

5,380,221 ANCHOR PIN

Dimitry G. Grabbe, Middletown, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 18, 1993, Ser. No. 80,016

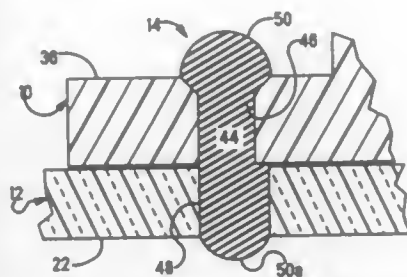
Int. Cl.⁶ H01R 13/73

U.S. Cl. 439-573

17 Claims

- 1. An anchor pin for anchoring a connector positioned upon a substrate, the connector having a outer surface facing opposite the substrate with a mounting hole extending therefrom and through the connector, the substrate having a bearing surface facing opposite the outer surface and an opening extending therefrom and through the substrate which is approximately aligned with the mounting hole to define a passage between the outer surface and the bearing surface for receiving the anchor pin, the anchor pin comprising:
 - a mounting pin having

- a first form receivable within the passage and extending beyond the outer surface and the bearing surface; and
- a second form where, in response to an external energy input, the mounting pin within the passage is melted to



become a fluid which flows to substantially fill the passage while overflowing the outer surface and the bearing surface to form opposing heads, the mounting pin hardening in this form to anchor the connector to the substrate.

5,380,222 CONNECTOR FOR CIRCUIT BOARDS, AND DEVICE USING SAME

Shigeyuki Kobayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

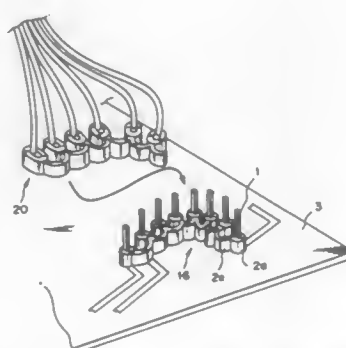
Filed Apr. 12, 1993, Ser. No. 46,193

Claims priority, application Japan, Apr. 16, 1992, 4-096464; Nov. 13, 1992, 4-303940

Int. Cl.⁶ H01R 13/40

U.S. Cl. 439-590

4 Claims



1. A circuit board connector in which a plurality of electrical contacts are arranged in a row on a connector body, said connector body comprising:

- a plurality of holding portions for independently holding one of the plurality of electrical contacts; and
 - deformable portions flexibly interconnecting said plurality of holding portions in such a manner that said holding portions are capable of moving relative to one another, wherein
- said connector body is formed from a synthetic resin and said deformable portions are integrally molded with said plurality of holding portions, and said deformable portions are formed into fan-shaped ribs, each rib having a first end and a second end, the first ends being connected to one another and the second ends being connected to respective ones of said plurality of holding portions.

5,380,223

HIGH DENSITY ELECTRICAL CONNECTOR

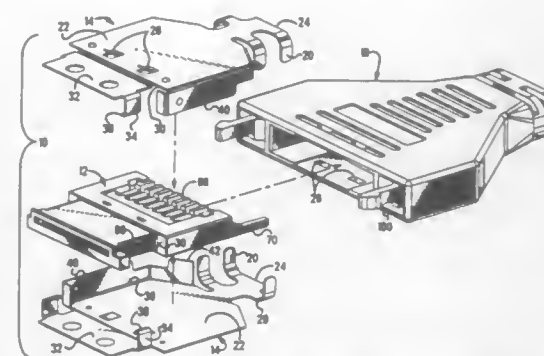
Edward K. Marsh, Kernersville; Terry L. Pitta, Greensboro, and Randy G. Simmons, Lewisville, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 24, 1993, Ser. No. 158,127

Int. Cl.⁶ H01R 13/648

U.S. Cl. 439-610

9 Claims



- 1. A high density electrical cable connector receptacle of the type for mating with a complementary electrical connector, said receptacle comprising a housing insert for mounting a plurality of electrical contacts, a pair of identical, metal shielding members adapted to lie contiguous with said housing insert, and a dielectric cover member for receiving said housing insert and shielding members, said housing insert comprising a dielectric, elongated, first housing member having a connector mating portion, and a rear insert receiving portion, and a dielectric insert for receipt in said rear insert receiving portion, where said dielectric insert includes an elongated opening through which first ends of said electrical contacts may project, and a rear contact divider characterized by a plurality of axially extending ribs along the upper and lower surfaces of said divider, where the respective upper and lower ribs are staggered and that the opposite ends of adjacent said electrical contacts are alternately arranged between adjacent ribs on said upper and lower surfaces of said divider.

5,380,224

REPAIRABLE CABLE ASSEMBLY

William M. DiCicco, East Haddam, Conn., assignor to Ametek Aerospace Products, Inc., Wilmington, Mass.

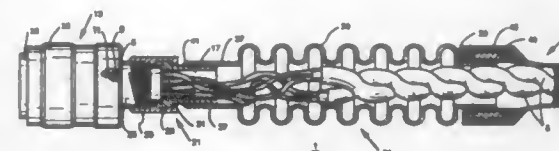
Continuation of Ser. No. 868,409, Apr. 14, 1992, abandoned.

This application Feb. 28, 1994, Ser. No. 203,671

Int. Cl.⁶ H01R 9/03

U.S. Cl. 439-610

19 Claims



- 1. A repairable cable assembly comprising:
 - an electrical connector having an electrically conductive shell and electrical contacts mounted inside said shell and accessible through a rear opening in said shell;
 - an electrically conductive coupling member removably engaging said shell over said rear opening;
 - a cable having an electrically conductive stiff sleeve and wiring inside said stiff sleeve, said electrically conductive stiff sleeve providing electrical shielding for said wiring; and
 - an axially collapsible and electrically conductive back shell electrically connected at one end to an end of said electrically conductive stiff sleeve and at an opposite end to said coupling member, said wiring extending from the end of

said electrically conductive stiff sleeve, through said axially collapsible back shell and coupling into said connector and connected by electrical connections to said electrical contacts, said coupling member being removable from said connector shell and axially retractable from said connector shell by axial collapse of said axially collapsible back shell to provide access to said electrical connections, said axially collapsible and electrically conductive back shell providing sole electrical shielding for said wiring between said end of said electrically conductive stiff sleeve and said electrically conductive coupling member with said coupling member connected to said shell.

5,380,225

ELECTRICAL CONNECTOR

Seiji Inaoka, Tokyo, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

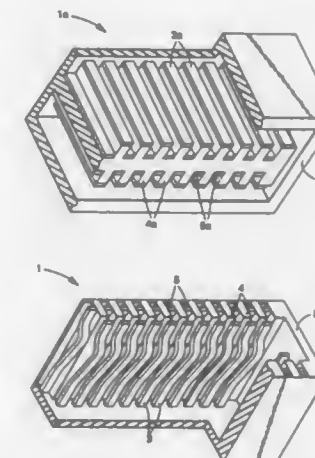
Filed Jul. 7, 1993, Ser. No. 88,261

Claims priority, application Japan, Jul. 24, 1992, 4-198684

Int. Cl.⁶ H01R 17/00

U.S. Cl. 439-660

2 Claims



1. A connector comprising:

- a connector jack and a connector plug for inserting into said jack to make electric connections therebetween, said jack comprising:

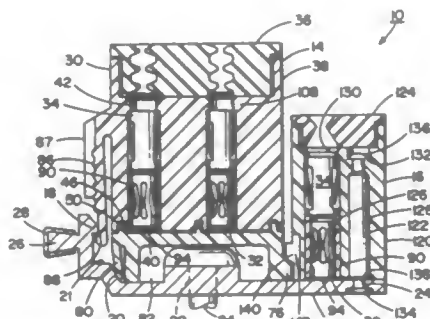
- a housing formed of insulating material and having a base and upstanding walls extending from said base to define an enclosed volume within said walls, said walls including a number of spaced projections extending therefrom to define body projections having surfaces in a plane substantially perpendicular to said base and body recesses having surfaces in a plane substantially perpendicular to said base between said projections which body recesses are recessed with respect to said body projections; and
- electrical contact elements placed on said body projections and said body recesses of said jack;

said plug comprising:

- a housing formed of insulating material and having a base and a center portion upstanding from said base, said center portion including body recesses having surfaces in a plane substantially perpendicular to said base and body projections having surfaces in a plane substantially perpendicular to said base corresponding to said body projections and said body recesses of said jack for engagement therewith; and
- electrical contact elements placed on said plug body recess surfaces and said body projection surfaces of said plug for electrical connection with said contact elements of said jack when said plug and said jack are interconnected.

5,380,226
ELECTRICAL TERMINAL BLOCK
 James D. Anderson, Norwalk, Conn., assignor to Burady Corporation, Norwalk, Conn.
 Continuation of Ser. No. 974,081, Nov. 10, 1992, abandoned.
 This application Mar. 9, 1994, Ser. No. 208,487
 Int. Cl.⁶ H01R 11/09
 U.S. Cl. 439—724

17 Claims

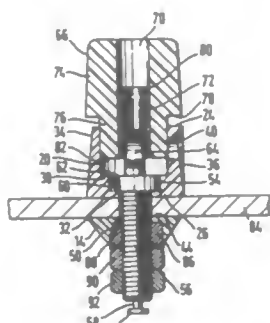


1. An electrical terminal block comprising: a housing top having a pattern of grooves extending into a bottom of the housing top;

a housing bottom having a pattern of tongues extending from a top of the housing bottom, the housing bottom being connected to the housing top with the tongues located in at least some of the grooves; and an electrical terminal having electrical contacts contained within the housing top, wherein the terminal includes a busing section between at least two of the contacts, the busing section and housing bottom being adapted to allow a portion of the busing section to extend under the housing top at a groove that does not have a tongue extending into that groove.

5,380,227
ELECTRICAL TERMINAL
 Robert W. Taylor, Surrey, Great Britain, assignor to Cliff Electronic Components Limited, Great Britain
 Filed Mar. 16, 1993, Ser. No. 33,260
 Claims priority, application United Kingdom, Aug. 24, 1992, 9217955
 Int. Cl.⁶ H01R 4/30
 U.S. Cl. 439—727

17 Claims

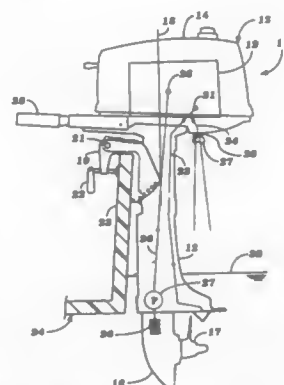


1. An electrical terminal comprising an elongate electrical connector carried by upper and lower insulating body members between which is to be disposed a mounting for the body members to be clamped thereto to hold the terminal in position, the connector having a transversely extending terminal hole and carrying an insulating knob mounted on and longitudinally adjustable over one end part length thereof for opening and closing the terminal hole and clamping a wire inserted therein whilst providing an insulating cover for said end part length, and in which the upper body member extends longitudinally over the connector to encompass the terminal hole and

has a transversely extending access hole formed therein which coincides with and provides access to the terminal hole, the upper body member having a longitudinally extending cavity within which the insulating knob is accommodated as it is adjusted longitudinally on the connector, and retaining means are provided to define an extreme range of longitudinal displacement of the knob on the connector outwardly of the cavity to restrain the knob from displacement out of its accommodation in the cavity.

5,380,228
ABNORMAL CONDITION DISPLAYING SYSTEM OF AN ENGINE COOLING SYSTEM FOR OUTBOARD MOTOR
 Takaji Kawai, and Hitoshi Ishida, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
 Continuation of Ser. No. 985,584, Dec. 3, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 208,918
 Claims priority, application Japan, Dec. 4, 1991, 3-348093
 Int. Cl.⁶ B63H 21/10
 U.S. Cl. 440—88

2 Claims



1. An outboard motor comprised of a power head containing a water cooled internal combustion engine having a cooling jacket, means for circulating coolant from a body of water in which the watercraft is operating through said cooling jacket and returning said water to the body of water in which the watercraft is operating, a bypass conduit having a restricted discharge in a lower surface of said power head and above the water level and facing downwardly for providing an indication that coolant is being circulated through the engine, said outboard motor being supported for steering movement about a vertically extending steering axis and wherein said outboard motor may be rotated through 180° for reverse operation and in which position an outlet end of the bypass conduit will be in close proximity to the interior of the watercraft on which said outboard motor is mounted and a valve for completely disabling the flow through said discharge conduit, said valve comprising a rotatable valve element having a handle portion affixed to the end thereof and which handle portion has a greater length than the diameter of the valve element.

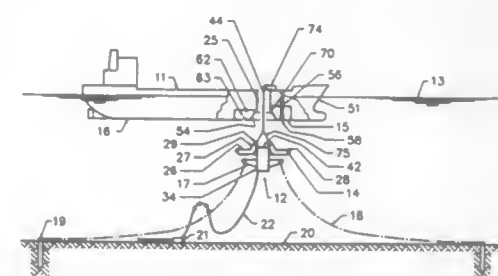
5,380,229
VESSEL MOORING SYSTEM AND VESSEL EQUIPPED FOR THE SYSTEM
 Jens Korsgaard, 318 North Post Rd., Princeton Junction, N.J. 08550

Continuation of Ser. No. 19,401, Feb. 18, 1993, Pat. No. 5,305,703, which is a continuation-in-part of Ser. No. 998,986, Dec. 31, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 221,319

The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.
 Int. Cl.⁶ B63B 22/02

U.S. Cl. 441—3

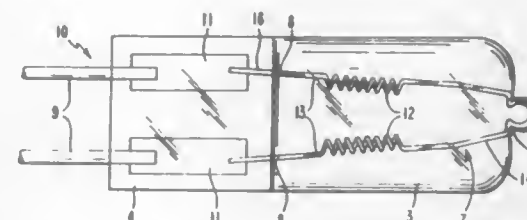
23 Claims



1. An ocean mooring system including a vessel having a hull with an annular mooring recess in the bottom of the hull; a mooring element having an upper part that is engageable with the mooring recess in the bottom of the hull; a plurality of lines connecting the mooring element to the ocean floor, the mooring element being normally maintained at a stored depth below the bottom of the hull; and means for raising the mooring element from the stored depth to engagement with the mooring recess in the bottom of the hull, wherein the system further comprises: means for rapidly drawing seawater into the hull through an intake opening located within the mooring recess so as to reduce the downward hydrostatic pressure acting on the upper part of the mooring element as it comes into engagement with the mooring recess.

5,380,230
METHOD OF MANUFACTURING A SINGLE-ENDED INCANDESCENT LAMP
 Jerry W. Smith, Irvine, and Larry R. Fields, Richmond, both of Ky., assignors to Philips Electronics North America Corporation, New York, N.Y.
 Continuation of Ser. No. 805,226, Dec. 11, 1991, Pat. No. 5,270,609. This application Sep. 14, 1993, Ser. No. 121,652
 Int. Cl.⁶ H01J 9/12, 9/02
 U.S. Cl. 445—32

5 Claims

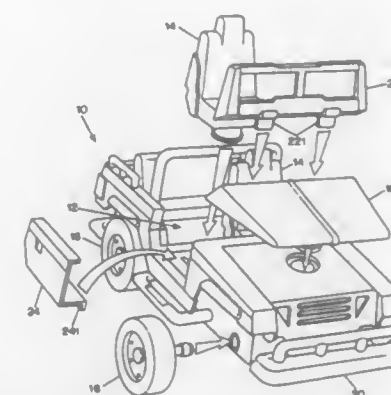


1. A method of manufacturing a single-ended incandescent lamp comprising the steps of
 (a) forming a generally V-shaped filament structure with a resilient loop at the center of a generally V-shaped structure and having respective leads at ends of said generally V-shaped structure,
 (b) attaching electrical conductors to said leads at said ends,
 (c) inserting said generally V-shaped filament structure into

an envelope having an open first and a tubulated second end,
 (d) sealing said first end over said leads and said electrical conductors,
 (e) inserting said resilient loop into said tubulated second end, said resilient loop having a dimension to bias against wall portions of said tubulated second end and to be retained by a lip of said tubulated second end at said envelope,
 (f) filling said envelope with a fill gas and halogen after evacuation, and
 (g) closing said tubulated second end over said resilient loop, wherein said generally V-shaped filament structure in step (a) is formed by the steps of
 (i) winding a length of conductive wire on a first mandrel of a different conductive material at a first pitch to form a single coiled filament structure,
 (ii) coiling at a second pitch said single coiled filament structure around a second larger mandrel of said different conductive material at a second pitch to form a coiled-coil filament structure at two separated portions of said length,
 (iii) bending said length between said separated portions to form said generally V-shaped structure,
 (iv) forming said resilient loop at said center of said generally V-shaped structure,
 (v) covering said resilient loop and portions of said generally V-shaped structure free of said coiled-coil filament structure with an acid resistant material,
 (vi) removing said first and second mandrels at areas free of said acid resistant material by etching in an acid bath, and then
 (vii) removing said acid resistant material to provide said generally V-shape filament structure.

5,380,231
TOY THAT DISASSEMBLES UPON AN IMPACT
 Virginio Brovelli, Taino, Italy, assignor to Lanard Toys Limited, Kowloon, Hong Kong
 Filed Nov. 15, 1993, Ser. No. 152,578
 Int. Cl.⁶ A63H 17/02, 17/00, 17/40, 17/22
 U.S. Cl. 446—6

19 Claims



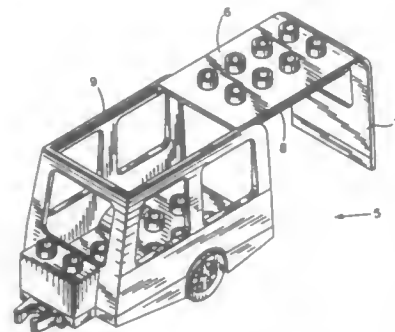
1. A toy configured as a simulated wheeled vehicle that disassembles upon an impact comprising a body, detachable elements including four wheel assemblies, mounting means for supporting each detachable element in a predetermined position on the body including a guide tube and a portion of the detachable element that is telescopically received by the guide tube; resilient ejector means engaged between the body and each detachable element and biasing the element in a direction to detach it from the mounting means, each ejector means including the guide tube, a plunger movably mounted in the guide tube, and a compression ejector spring engaging the

plunger; latch means on the body including a movable latch member that is pivotally mounted on the body and is resiliently biased to engage the detachable element by a latch spring for retaining the element on the support means against the bias of the ejector means; and latch release means including a release member movably mounted on the body in a position to be moved by engagement with an object for releasing the latch means from engagement with the detachable element upon such movement, whereupon the detachable element is ejected from the support means by the ejector means.

5,380,232

TOY WITH SLIDE OPEN-SNAP SHUT ACCESS TO INTERIOR

Ib H. Berggreen, Rungsted, and Jan Ryaa, Billund, both of Denmark, assignors to Interlogo A.G., Baar, Switzerland
Continuation of Ser. No. 859,437, May 28, 1992, abandoned.
This application Mar. 18, 1994, Ser. No. 210,726
Claims priority, application Denmark, Nov. 29, 1989, 6016/89
Int. Cl.⁶ A63H 33/04, 17/00, 17/26; B65D 43/20
U.S. Cl. 446—75 6 Claims



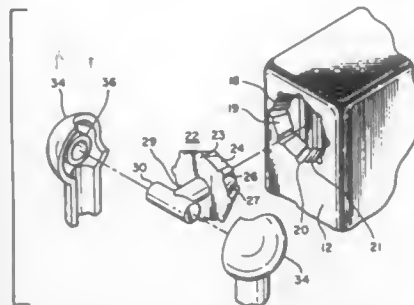
1. A toy caravan with an accessible interior, said caravan comprising:

- a container having a bottom supported above a support surface by attached wheels on an axle and a pair of opposed side walls having a spacing therebetween, a front wall joining said opposed side walls at one end thereof, said front walls and opposed sidewalls defining an established depth of said container and a sliding wall; said sliding wall having a lid portion and a rear wall portion extending downwardly from a rear end of said lid portion for a distance substantially equal to said established depth whereby to provide a rear wall for said container when said lid portion closes said container, said lid portion having a top surface and a pair of opposed parallel edges spaced apart from each other a distance substantially equal to the spacing between said opposed walls; said sliding wall lid portion and opposed walls containing mutually slidable parts consisting of grooves and projecting guides whereby said projecting guides seat within said grooves when said sliding wall is in a closing position; and at least one of said sliding wall and opposed walls being sufficiently elastic to permit said mutual sliding parts to snap into engagement with each other when a transverse force is applied to said sliding wall lid portion when it is positioned over said opposed walls;
- and said lid portion top surface having at least one coupling stud for engaging a complementary part of another toy element, said coupling stud extending upwardly from said lid top portion.

5,380,233

ARTICULATED LIMB TOY FIGURE

Kiyomi Numoto, 47, 2-100 Makinohara, Matsudo, Japan
Filed Jun. 15, 1993, Ser. No. 76,836
Int. Cl.⁶ A63H 33/04, 33/26, 3/46
U.S. Cl. 446—92 7 Claims

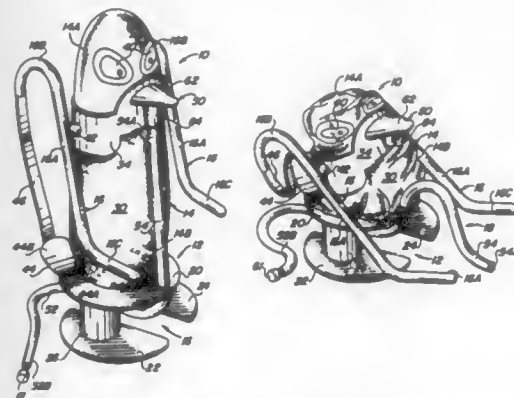


1. An adjustable arm-structure comprising a body member with a wall having formed therein a coupling socket having front and rear openings and being coaxial with a first axis, a magnetic member housed in said body member proximate said socket front opening, a coupling plug coaxially slidably engageable with said socket and movable between an advanced forward position in said socket and a retracted position, said coupling plug and socket having confronting faces separably engageable in said coupling plug advanced position to releasably lock said plug and socket against mutual angular movement about said first axis said confronting faces comprising cooperating ridge means and a plurality of channel means, wherein said ridge means selectively engages at least one channel means, said coupling plug including a front ferromagnetic section attracted by said magnet member to urge and releasably maintain said coupling plug in said advanced position, an arm member and means connecting said arm member to said coupling plug for swinging only about a second axis transverse to said first axis and angularly adjustable with said plug about said first axis.

5,380,234

INFLATABLE AND DEFLATABLE COMBATANT ACTION TOY

Kevin D. Ledford, 1857 E. Marion St., #8, Shelby, N.C. 28152
Filed May 25, 1994, Ser. No. 249,133
Int. Cl.⁶ A63H 3/06, 13/06
U.S. Cl. 446—223 20 Claims



1. An inflatable and deflatable combatant action toy, comprising:

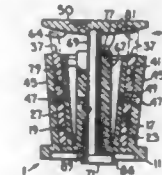
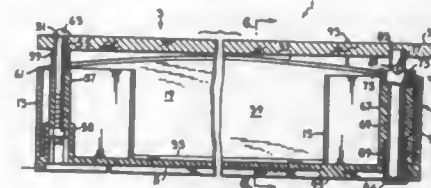
- (a) a support base;
- (b) a flexible body attached upon said support base and having a hollow interior chamber convertible between inflated and deflated conditions respectively upon supply therein and discharge therefrom of a gas under pressure;

- (c) means connected to said flexible body for delivering an impact force to another similar combatant action toy; and
- (d) an inflation support system including
 - (i) means for defining an air nozzle on a lower portion of said flexible body in communication with said interior chamber of said flexible body,
 - (ii) means connected to said air nozzle defining means for delivering pressurized air from an external source thereof through said air inlet nozzle and into said flexible body to inflate said flexible body,
 - (iii) means attached to an upper portion of said flexible body and protruding therefrom for defining a plug structure; and
 - (iv) means extending between and detachably interconnecting said air nozzle defining means on said lower portion of said flexible body and said plug structure defining means on said upper portion of said flexible body such that an impact force of sufficient magnitude delivered to said plug structure defining means can cause said interconnecting means to detach from one of said plug structure defining means and said air nozzle defining means and permit deflation of said flexible body.

5,380,235

TURKEY CALL WITH SILENCER

David R. Forbes; Carman S. Forbes, both of 4609 Blarney Dr. NE., Cedar Rapids, Iowa 52402, and Ron M. Bean, Cedar Rapids, Iowa, assignors to David R. Forbes and Carman S. Forbes, Cedar Rapids, Iowa
Filed Nov. 4, 1993, Ser. No. 147,964
Int. Cl.⁶ A63H 5/00
U.S. Cl. 446—397 3 Claims



1. A turkey call device, comprising:

- (a) a base;
- (b) a pair of opposing standards connected to said base and extending generally perpendicularly therefrom; one of said pair of opposing standards having a post and the other one of said pair of opposing standards having a gently spiraling camming surface with a first detent and a second detent;
- (c) a striker having a handle and a convex lower surface; said striker pivotally connected to said post;
- (d) a pair of opposing resonator panels interconnecting said pair of opposing standards such that a cavity is formed between said base, said pair of opposing standards, said pair of opposing resonator panels, and said striker; each of said pair of opposing resonator panels having an upper edge adapted to interact separately or simultaneously with said lower surface of said striker such that sounds similar to those of a wild turkey can be generated thereby; one of said pair of opposing resonator panels adapted to produce sounds mimicking those of a hen turkey and the other one of said pair of opposing resonator panels adapted to produce sounds mimicking those of a tom turkey;
- (e) a first spring adapted to bias said striker outwardly from said first one of said pair of opposing standards;
- (f) a separator having a nub such that as said nub is spaced in

said first detent, said striker is prevented from contacting either of said pair of resonator panels, and as said nub is spaced in said second detent, said striker can operably contact said pair of resonator panels;

- (g) a second spring adapted to bias said nub into abutting engagement with said camming surface;
- (h) a pointer connected to the separator; and
- (i) indicia adapted, in conjunction with said pointer, to indicate the spacing of said nub relative to said pair of detents.

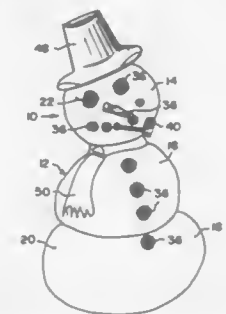
5,380,236

Patent Not Issued For This Number

5,380,237

SNOWMAN ACCESSORY KIT

Robert Kenyon, 1723 Jackson St., Scranton, Pa. 18504
Filed Sep. 9, 1993, Ser. No. 118,520
Int. Cl.⁶ A63H 33/00 10 Claims



1. An accessory kit for a snowman having a head, an upper torso body and a lower torso body, all made of packed snow, which comprises:

- a) a set of decorative articles having a circumference and a longitudinal axis;
- b) means for inserting each of said decorative articles into the packed snow of the head, the upper torso body and the lower torso body, to enhance the appearance of the snowman; and
- c) retaining means on each of said articles having a plurality of appendages, each of said appendages being circumferentially spaced from every other appendage and each of said appendages further being longitudinally spaced from every other appendage whereby when an article is inserted into said snowman and turned, each of said appendages follows the same insertion path in a corkscrew-like manner, thus retaining said article in said snowman.

5,380,238

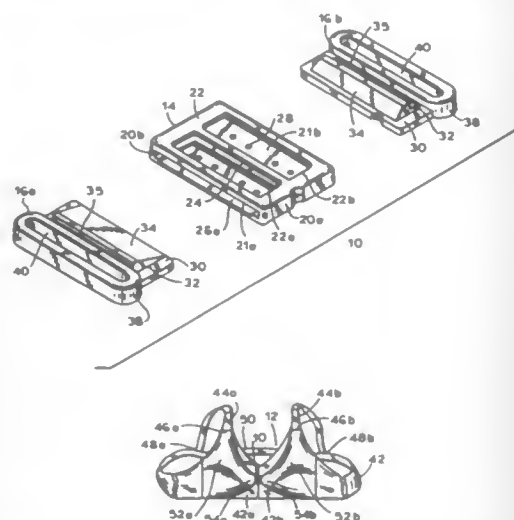
DOUBLE-CLOSURE CLASP

Martin P. Crew-Gee, Gatineau, Canada, assignor to Warnaco Inc., New York, N.Y.
Filed Sep. 30, 1993, Ser. No. 129,434
Int. Cl.⁶ A41D 3/02, 3/04 5 Claims

U.S. Cl. 450—36

- 5. A brassiere garment, comprising:
 - an elongated band adapted to encircle the body, said band including a pair of frontal breast supporting and encircling portions;
 - a pair of shoulder straps, each having a first end and a second end, attached to said breast supporting and encircling portions of said band at said first end thereof, and a rear portion of said band at said second end thereof;
 - a pair of breast cups integral with said band, each of said breast cups including a free end;
 - a pair of clip members, each attached to said respective free ends of said breast cups and including a substantially flat body defining a fenestration therein, said clip member further including a resilient tongue extension having one

end thereof integral with said body and disposed at an angle relative thereto, said tongue extension being disposed to move into and out of said fenestration; and a housing member attached to said band and constructed and arranged to slidably receive and releasably lock said clip



members in opposing relationship therein, said housing member being formed with oppositely directed clip-receiving guideways having open entry ends through which said clip member may be interengaged with and releasably locked to said housing member.

5,380,239

MULTI-PIECE SANDING WHEEL

Abel R. Casillas, Los Angeles; Jose R. Gutierrez, Long Beach, and Frederick C. Schneider, III, Palos Verdes Estates, all of Calif., assignors to The Visser Irrevocable Trust 1992-1, Englewood, Colo.

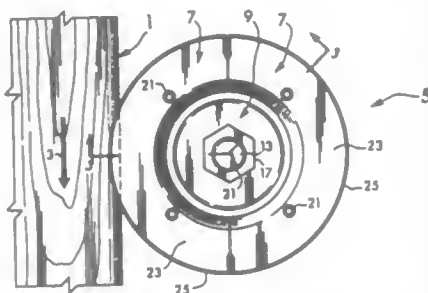
Continuation of Ser. No. 839,791, Feb. 21, 1992, abandoned.

This application Jun. 4, 1993, Ser. No. 72,370

Int. Cl.⁶ B24D 9/04

U.S. Cl. 451-496

28 Claims



1. A multi-piece sanding wheel including: at least two separable sanding members, support means, drive means for rotating said support means about an axis, means for removably securing said support means to said drive means, first means for removably securing a first of said at least two separable sanding members to said support means in a predetermined, fixed position relative to said support means while said support means is secured to said drive means, and second means for removably securing a second of said at least two sanding members to said support means in a predetermined, fixed position relative to said support means and to said first sanding member while said support means is secured to said drive means, said first and second securing means being operably distinct from each other wherein one of said first and second

sanding members can be removed from being secured to said support means while the other of said first and second sanding members remains secured to said support means in said fixed position relative to support means, each of said sanding members having an outer, sanding surface extending partially about said axis wherein said sanding surfaces together form a substantially continuous sanding surface about said axis when said sanding members are secured to said support means and wherein each of said sanding members includes a backing portion, a sanding strip, and means for removably securing said sanding strip to said backing portion wherein the backing portion of each of said sanding members forms a part of a substantially annular ring about said axis with corresponding ends of adjacent backing portions positioned substantially adjacent one another when said sanding members are secured to said support means, each end of said backing portions having a surface extending substantially outwardly of said axis when said sanding members are secured to said support means with the corresponding outwardly extending surfaces of adjacent sanding members being substantially adjacent one another when said sanding members are secured to said support means and wherein each of said sanding strips has first and second end sections and said securing means for each sanding strip secures said sanding strip about the outside of the respective backing portion with the respective end sections of said sanding strip extending over at least a portion of the respective, outwardly extending surfaces of the backing portion.

5,380,240

PROCESS AND DEVICE FOR THE SUBDIVISION OF A PASTY AND COMPRESSIBLE MASS IN PORTIONS, IN PARTICULAR OF SAUSAGE MEAT BY MEANS OF A VANE CELL PUMP

Georg Staudenrausch, Biberach/Riss, Germany, assignor to Albert Handtmann Maschinenfabrik GmbH & Co. KG, Biberach/Riss, Germany

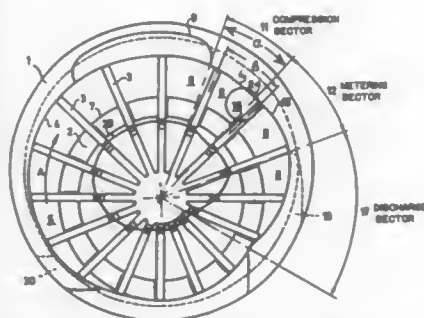
Filed Aug. 18, 1993, Ser. No. 107,995

Claims priority, application Germany, Aug. 20, 1992, 4227621

Int. Cl.⁶ A22C 11/08

U.S. Cl. 452-41

5 Claims



1. In a process for the subdivision of a pasty and compressible mass into portions in a rotating vane cell pump having a plurality of revolving conveying cells, in which the mass is fed through an inlet in the pump into the cells, subsequently compressed therein in a compression sector and then discharged therefrom in a discharge sector through an outlet in the pump as the cells revolve in the pump, the improvement comprising revolving each conveying cell filled with pasty mass through a metering sector located between the compression sector and the discharge sector after the cell has passed through the compression sector, a cell not being located entirely in the metering sector until the next succeeding cell has passed beyond the inlet and is located entirely in the compression sector, and pressing back into the next succeeding conveying cell while it is still in communication with the inlet of the pump, any excess amount of compressed mass in a conveying cell after a portion

of said cell has passed through the compression sector and said cell is now located in a boundary area between the compression sector and the metering sector.

5,380,241

POULTRY HOCK TRUSS

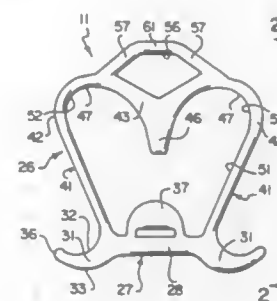
Daniel J. Volk, Alpharetta, assignor to Volk Enterprises, Inc., Turlock, Calif.

Continuation-in-part of Ser. No. 1,095, Jan. 6, 1993, Pat. No. 5,279,519. This application Jan. 18, 1994, Ser. No. 183,982

Int. Cl.⁶ A22C 21/00

U.S. Cl. 452-174

13 Claims



1. A poultry hock truss for use with a body of eviscerated poultry having hocks comprising a unitary substantially coplanar thin plastic member, the plastic member including anchor means adapted for attachment to the body of eviscerated poultry, a pair of side portions extending upwardly and outwardly from the anchor means and terminating in inwardly curved upper ends, an upper transverse crosspiece joining the inwardly curved upper ends of the side portions and a tab portion depending approximately from the midpoint of the upper transverse crosspiece toward the anchor means, the upper transverse crosspiece, the tab portion, the side portions and the anchor means defining a generally heart-shaped opening with first and second juxtaposed lobes, the lobes of the heart-shaped opening being formed to hold the hocks together in juxtaposition.

5,380,242

COIN PROCESSOR FOR USE WITH AUTOMATIC VENDING MACHINES

Sadao Matsumoto, Kounan, and Hiroaki Mannen, Oota, both of Japan, assignors to SANYO Electric Co., Ltd., Osaka, Japan

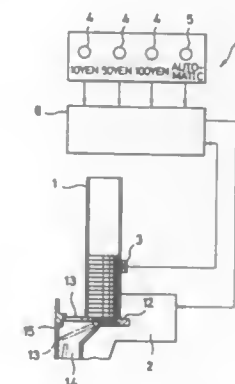
Filed Feb. 23, 1993, Ser. No. 21,458

Claims priority, application Japan, Feb. 28, 1992, 4-43192

Int. Cl.⁶ G07D 3/16

U.S. Cl. 453-3

4 Claims



4. A coin processor comprising: a coin classifying mechanism for classifying coins deposited in an automatic vending machine;

a multiplicity of coin storage cylinders for storing the coins classified by the coin classifying mechanism; change sensors provided one for each said coin cylinder for sensing predetermined numbers of coins in the cylinders; a multiplicity of coin discharging mechanisms provided one for each said coin storage cylinder; a multiplicity of coin recovery switches for enabling said discharging mechanisms so as to recover coins from said storage cylinders; a controller for controlling the operations of said coin discharging mechanisms such that said coin discharging mechanisms discharge coins from the coin storage cylinders one by one in response to signals selectively received from said coin recovery switches, said coin recovery switches comprising an entire coin recovery switch for recovering the entirety of coins from the coin storage cylinders, and a multiplicity of one-type coin recovery switches for recovering from said storage cylinders specific types of coins designated by said one-type coin recovery switches operated; and said controller controlling said coin discharging mechanisms so that the entirety of coins are discharged from said coin storage cylinders in sequence according to a priority assigned to each of said cylinders in response to the signal received from the entire coin recovery switch, wherein said controller includes selection means for switching from one coin discharge process initiated by one of the one-type coin recovery switches to another coin discharge process for another type of coins if another one of the one-type coin recovery switches is operated.

5,380,243

AIR SUPPLY HOUSING ARRANGEMENT FOR PAINT SPRAY BOOTHS

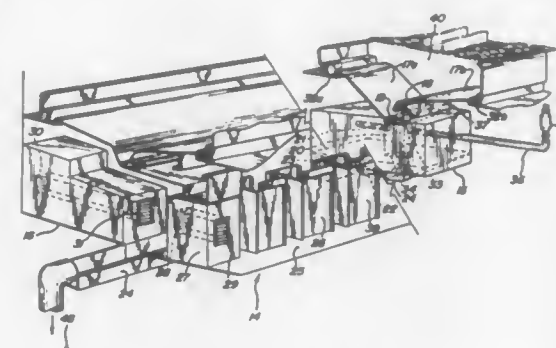
Leif E. B. Josefsson, Sterling Heights, Mich., assignor to ABB Flakt Aktiebolag, Stockholm, Sweden

Filed Jul. 27, 1992, Ser. No. 919,918

Int. Cl.⁶ B05B 15/12

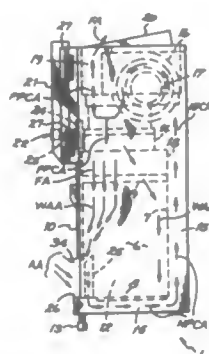
U.S. Cl. 454-52

10 Claims



1. In a paint spray booth having an air supply system for processing air flowing through a paint spray zone in the booth, and a recirculation tank, the recirculation tank positioned beneath a scrubber for holding water exiting from a scrubber outlet, the improvement comprising: a housing arrangement for the air supply system located at an elevation in the booth such that the air flowing through the paint spray zone in the booth is processed at an elevation in the booth below a level of water in the recirculation tank received from the scrubber.

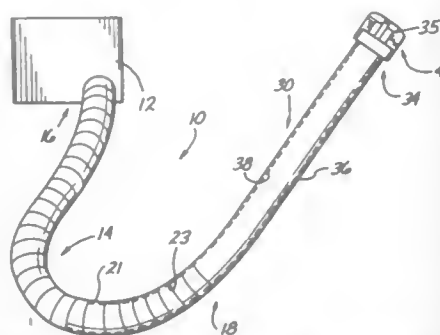
5,380,244
SAFETY CABINET
 Russell C. Tipton, Williamstown, W. Va., assignor to Forma Scientific, Inc., Marietta, Ohio
 Filed May 24, 1993, Ser. No. 67,524
 Int. Cl.⁶ B08B 15/02
 U.S. Cl. 454—57 12 Claims



1. In a safety cabinet having a work area defined within said cabinet, means for directing air through said work area, first filter means disposed upstream of said work area for removing airborne contaminants from air directed into said work area, and pressure gauge means for measuring static pressure across said first filter means, the improvement comprises:

second filter means operatively connected to said pressure gauge means for removing hazardous and toxic airborne contaminants from air flowing to said pressure gauge means and thereby preventing escape of said hazardous and toxic airborne contaminants from said cabinet through said gauge means.

5,380,245
SUCTION DELIVERY SYSTEM
 Donald R. Reiterman, Hemet; Martin J. Green, El Toro; Ed F. Nicolas, Moreno Valley; Richard J. Greff, Yorba Linda, and Ronald E. Thomas, Alta Loma, all of Calif., assignors to Stackhouse, Inc., Riverside, Calif.
 Continuation of Ser. No. 888,974, May 24, 1992, abandoned.
 This application Oct. 12, 1993, Ser. No. 135,302
 Int. Cl.⁶ B08B 15/04
 U.S. Cl. 454—63 26 Claims

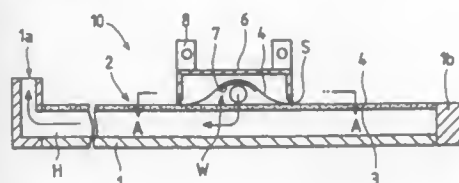


1. A surgical smoke evacuation system, comprising:
 a surgical smoke evacuator for removing smoke from a surgical environment;
 a hose adapted to extend between the evacuator and the surgical environment, the hose including a first tube with a proximal end coupled to the evacuator and a distal end, the first tube being generally flexible between the proximal end of the first tube and the distal end of the first tube;
 a wand integral with the distal end of the hose for delivering the suction of the evacuator at a predetermined flow rate appropriate for removing the smoke from the surgical environment, the wand including a second tube with a

proximal end attached to the hose and a generally open distal end having a cross sectional area sized for admitting the smoke from the surgical environment at the predetermined flow rate, the second tube communicating with the first tube and being generally rigid between the proximal end of the second tube and the distal end of the second tube;

first means included in the wand for defining at least one axial opening providing a major suction inlet into the hose, the axial opening having a tendency to become blocked when the wand is moved axially against tissue;
 second means included in the wand for defining at least one lateral opening at a location displaced from the first means a distance sufficient to inhibit blockage of the lateral opening by the tissue during axial movement of the wand; whereby
 the lateral opening reduces the suction of the tissue blocking the at least one axial opening thereby facilitating removal of the blocked wand from the tissue.

5,380,246
DUST SUCTION APPARATUS
 Masayuki Katahira, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan
 Filed Mar. 25, 1993, Ser. No. 36,710
 Claims priority, application Japan, Mar. 31, 1992, 4-77674
 Int. Cl.⁶ B08B 15/00
 U.S. Cl. 454—64 26 Claims



1. A dust suction apparatus for sucking dust generated at least one of a linear movement guiding member and a ball screw member of a linearly movable table positioning unit comprising:

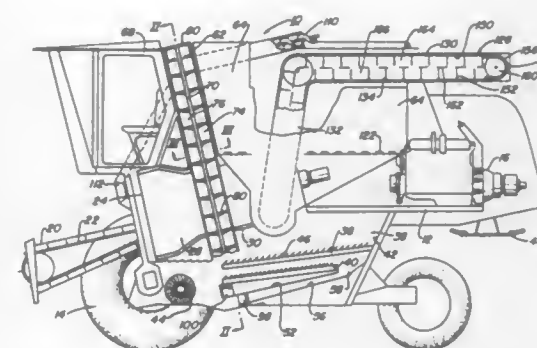
a channel body communicating with an exhaust section and having an open top extending in a longitudinal direction of said channel body, said channel body being arranged in parallel with at least one of a linear guide rail of said linear movement guiding member and a screw shaft of said ball screw member;
 a flexible sheet for hermetically closing said open top;
 a sliding member movable on said body along the longitudinal direction of said body while said sliding member remains in hermetic sliding contact with said body; and
 an opening forming means provided in said sliding member for continuously separating a portion of said sheet from said open top so that said sheet hermetically closes said open top except at said portion, and for forming openings which communicate with said at least one of said linear movement guiding member and said ball screw member through a communication passage.

5,380,247
GRAIN TRANSPORTATION APPARATUS FOR A COMBINE
 Mark R. Underwood, Burr Oak, Kans., assignor to Agri-Tech-nology, Burr Oak, Kans.
 Filed Jun. 21, 1993, Ser. No. 80,291
 Int. Cl.⁶ A01F 12/52
 U.S. Cl. 460—114 14 Claims

1. In a combine having a frame mounted on wheels, a threshing rotor for removing grain from crop, a sieve section wherein clean grain is separated from grain returns such as

tailings, and a grain bin for collecting the clean grain, the improvement comprising in combination:

a conveyor housing mounted to the frame of the combine having an interior, the interior being divided into a returns compartment and a grain compartment by a partition extending along the length of the housing, each of the compartments having a receiving end located adjacent to the sieve section and a discharge end, the receiving end of the returns compartment located below the sieve section for receiving returns from the sieve section, and the receiving end of the grain compartment located below the sieve section for receiving clean grain from the sieve

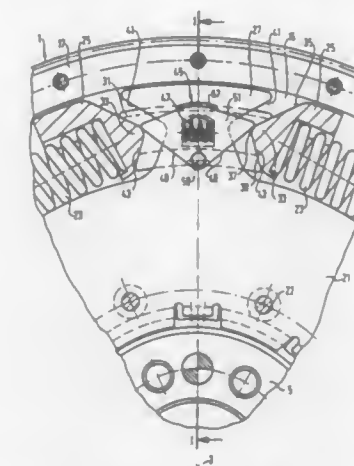


section, the discharge end of the grain compartment located above the grain bin, and the discharge end of the returns compartment located above the threshing rotor; a plurality of paddles which are spaced apart from each other at intervals within each of the compartments; and drive means for moving the paddles through each of the compartments past the receiving ends to the discharge ends, the paddles in the grain compartment forcing the grain from the receiving end to the discharge end where the clean grain is discharged to the grain bin, the paddles in the returns compartment forcing the returns from the receiving end to the discharge end where the returns are discharged to the threshing rotor for rethreshing.

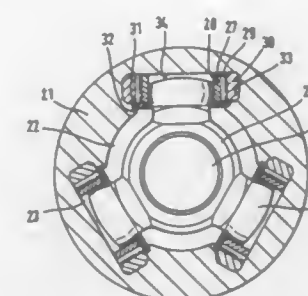
5,380,248
TORSIONAL SHOCK ABSORBER
 Georg Kraus, Bergheimfeld, and Bernhard Schierling, Kürnberg, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
 Filed Dec. 21, 1992, Ser. No. 994,547
 Claims priority, application Germany, Dec. 20, 1991, 4141723
 Int. Cl.⁶ F16D 3/14
 U.S. Cl. 464—66 15 Claims

1. A torsional shock absorber for arrangement in a drive train of a motor vehicle, comprising
 first and second damper parts which are rotatable about a common axis of rotation, one of the damper parts also being rotatable about the axis of rotation relative to the other damper part and one of the damper parts being an input part and the other damper part being an output part;
 a substantially annular channel in the first damper part, the channel being concentric to the axis of rotation;
 a plurality of spring means received in the channel and arranged for operation under load in a circumferential direction with respect to the damper parts for elastically coupling the damper parts to each other torsionally, each spring means having two control ends and at least one coil spring between the two control ends, and the damper parts having control edges that are located between the control ends of adjacent spring means in the circumferential direction and are engageable with the control ends of the spring means for torsional load transfer between the damper parts; and
 an intermediate element located between each adjacent pair

of spring means, each intermediate element being carried by the second damper part for pivotal movement about a pivot axis extending parallel to and spaced apart radially from the axis of rotation, being resiliently biased by a spring element, and having stop edges which in a relative resting position of the damper parts project circumferentially beyond the control edges of the second damper part



5,380,249
TRIPOD JOINT
 Werner Krude, Neunkirchen-Wolperath, Germany, assignor to GKN Automotive AG, Siegburg, Germany
 Filed Sep. 10, 1992, Ser. No. 943,338
 Claims priority, application Germany, Sep. 18, 1991, 4130956
 Int. Cl.⁶ F16D 3/205
 U.S. Cl. 464—111 24 Claims



1. A tripod joint comprising:
 an outer joint part including three circumferentially distributed, axis-parallel recesses forming circumferentially opposed tracks, said recesses including a planar base;
 an inner joint member having a star-shaped cross-section having three circumferentially distributed arms engaging the recesses in the outer joint part;
 roller assemblies supported on each arm, each roller assembly including an inner ring and an outer roller, said inner ring being angularly movable relative to said arm and axially movable relative to the arm axis, said inner ring and outer roller each being in direct contact with and each being supported directly on the planar base of said tracks;

a rolling contact bearing being arranged between an outer surface of the inner ring and an inner surface of the outer roller and an outer surface of the outer roller rolling directly on said outer joint part tracks;
means for directly and radially outwardly with reference to the joint axis supporting the inner ring and outer roller; and
a securing element directly and radially inwardly, with reference to the joint axis, supporting said inner ring and outer roller, said securing element supported radially inwardly, with reference to the joint axis, on guiding edges of said recesses.

5,380,250

FRANGIBLE JOINTS FOR FRANGIBLE BAND OF WIRES OR STRIP OF FASTENERS

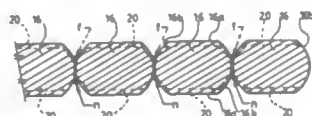
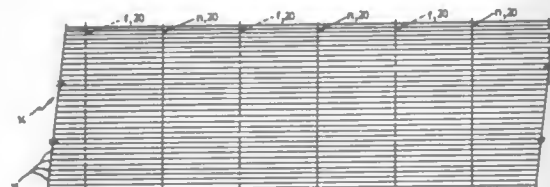
Jean-Paul Dion, 327 - 21st Street, Québec, Canada G1L 1Y6

Filed Mar. 1, 1993, Ser. No. 24,220

Int. Cl.⁶ F16B 15/08; B23K 26/00

U.S. Cl. 470-40

2 Claims



1. A band of wires for conversion into strips of fasteners comprising a series of parallel, spot-weldable, metallic wires, disposed side by side and contiguously, contiguous wires spot welded to each other at longitudinally spaced points along said wires, the spot welds being disposed along lines transverse to said band, the spot welds produced by a laser beam swept across said band, the portions of contiguous wires between said spot welds being free one from the others, the resulting spot welds constituting frangible joints holding said wires together as a band for manual handling of the band but breaking when said wires are subjected to a separating force, wherein each wire has a flattened cross-section with flat, parallel, main faces and convex, lateral faces, the adjacent convex lateral faces of contiguous wires joined by said spot welds substantially midway of the wire thickness as defined by the distance between said main faces and, wherein the spot welds disposed along a given line are nearer one main face than the other main face and the spot welds disposed along an adjacent line are farther from said one main face than from said other main face.

5,380,251

BOWLING ALLEY BUMPER SYSTEM AND METHOD

Will Heddon, 1422 Chamberlain Loop, Lake Wales, Fla. 33853

Filed Apr. 6, 1994, Ser. No. 224,635

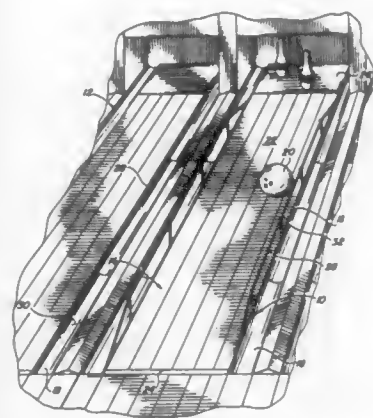
Int. Cl.⁶ A63D 5/00

U.S. Cl. 473-109

20 Claims

1. A bowling alley comprising:
a longitudinally extending lane having side edges and a bowling lane surface extending between the edges, the lane surface having a foul line at one end and a pin deck at the other end thereof;
a pair of elongated generally concave gutters extending along and substantially abutting the side edges between the ends, the gutters positioned adjacent the lane for receiving a bowling ball which falls off the lane surface, each gutter having longitudinal extending portions having

a major axis parallel to a longitudinally extending lane axis;
a pair of elongated resilient cords extending along each side edge in a first position below the lane surface, each cord positioned to receive a bowling ball rolling within the concave gutter and into the lane edge, the resilient cord thereby absorbing an impact of the ball against the edge; and



means for elevating the cord to a second position above the lane surface a distance sufficient for engaging a bowling ball rolling on the surface toward the gutter thereby confining the ball to the surface, the elevating means having a portion extending above the lane surface for holding the cord in the elevated position, the portion sufficiently resilient for bending when receiving a bowling ball and returning to its elevating position after interacting with the ball.

5,380,252

BICYCLE SPEED CHANGE ASSEMBLY

Yoshihisa Iwasaki, Osaka; Tohru Takeda, and Masao Ohta, both of Saitama, all of Japan, assignors to Maeda Industries, Ltd., Osaka and Bridgestone Cycle Co., Ltd., Tokyo, both of Japan

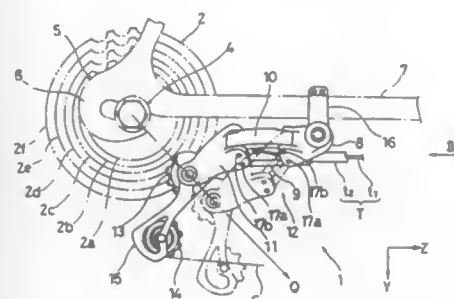
Continuation of Ser. No. 910,170, Jul. 15, 1992. This application May 20, 1993, Ser. No. 64,349

Claims priority, application Japan, Dec. 8, 1990, 2-402111; Mar. 5, 1991, 3-65539

Int. Cl.⁶ F16H 9/00

U.S. Cl. 474-77

8 Claims



1. A bicycle speed change assembly comprising:
a pantograph link mechanism including a link base supported on a chain stay ahead of a sprocket cluster mounted on a hub shaft, inner and outer links each having a base end pivoted to said link base and extending rearward, and a movable member pivoted to respective free ends of said inner and outer links;
a chain guide rotatably supporting a guide pulley and a tension pulley, said chain guide being supported on said movable member of said pantograph mechanism to pivot

about a shaft in parallel to said hub shaft while being elastically urged to tension a chain; and
a guide pulley travel control means for moving said guide pulley inward axially of the hub shaft and forwardly downward substantially along a radial path of said sprocket cluster when said pantograph mechanism is deformed.

5,380,253

BICYCLE REAR DERAILLEUR

Yoshihisa Iwasaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Japan

PCT No. PCT/JP93/00333, § 371 Date Nov. 10, 1993, § 102(e)

Date Nov. 10, 1993, PCT Pub. No. WO93/18958, PCT Pub.

Date Sep. 30, 1993

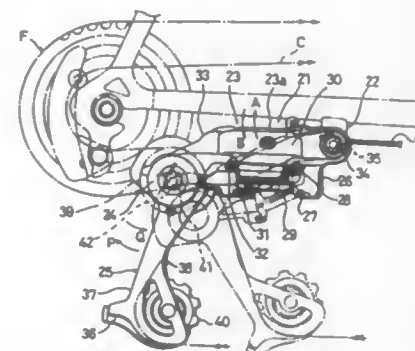
PCT Filed Mar. 22, 1993, Ser. No. 146,114

Claims priority, application Japan, Mar. 23, 1992, 4-064823

Int. Cl.⁶ F16H 9/00

U.S. Cl. 474-80

6 Claims



1. A bicycle rear derailleur for shifting a chain onto a desired sprocket of a multiple sprocket assembly having a plurality of diametrically different sprockets, comprising:

a rearwardly extending control mechanism attached at a front end portion thereof to a bicycle frame ahead of the multiple sprocket assembly, the control mechanism having at a rear end portion thereof a chain guide mount which shifts in position laterally of the bicycle by operation of the control mechanism; and a chain guide mounted to the chain guide mount, the chain guide having an upper guide pulley and a lower tension pulley, wherein the control mechanism is mounted to the bicycle frame to be pivotal about a first lateral shaft under a clockwise bias, and the chain guide is mounted to the chain guide mount to be pivotal about a second lateral shaft under a clockwise bias.

5,380,254

FINISHED FORGED SPROCKET SEGMENT METHOD AND APPARATUS

Roy L. Maguire, Edelstein; H. Dale Vick, North Pekin, and Billy G. Woodburn, East Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 954,372, Sep. 30, 1992, abandoned. This application Mar. 22, 1994, Ser. No. 216,577

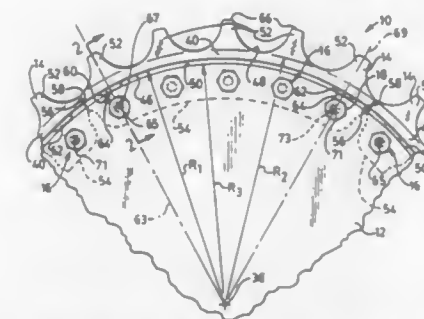
Int. Cl.⁶ F16H 55/00

U.S. Cl. 474-152

16 Claims

1. A forged toothed sprocket segment of unitary construction, comprising:
an elongated flange having first and second spaced sides;
an elongated rim having first and second spaced sides, first and second spaced curved sides oriented transverse the first and second rim sides, and a plurality of equally spaced apart teeth extending from the second curved side, said elongated flange being connected to and extending from the first curved side in a direction opposite the direction of extension of said teeth;

first and second datum pads connected at longitudinally spaced locations to the first curved side of the elongated



rim, said first and second datum pads being on the first side of the elongated flange.

5,380,255

TRANSFER CASE FOR PART TIME FRONT WHEEL DRIVE IN A FOUR WHEEL DRIVE MOTOR VEHICLE

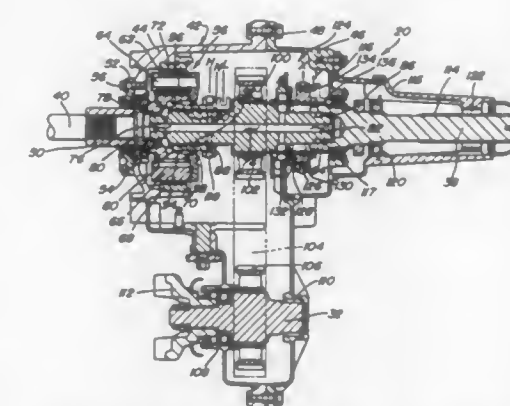
James S. Brissenden, Baldwinsville, and Richard A. Bakowski, Warners, both of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

Filed Jan. 26, 1993, Ser. No. 9,234

Int. Cl.⁶ F16H 37/08; B60K 17/346

U.S. Cl. 475-204

15 Claims



12. In a motor vehicle having a source of power and front and rear sets of wheels, a transfer case comprising:
input means for receiving drive torque from the source of power;
first output means interconnecting said input means to the front set of wheels for delivering drive torque to the front set of wheels to establish a two-wheel drive mode;
second output means interconnecting to the rear set of wheels;
first shift means for selectively coupling said second output means to said first output means to transfer drive torque to the rear set of wheels in addition to the front set of wheels for defining a four-wheel drive mode; and
second shift means for selectively coupling and decoupling said first output means with said input means.

5,380,256 **TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION**

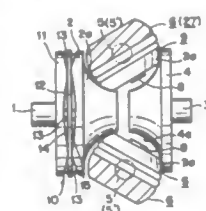
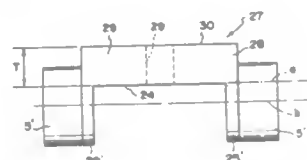
Hiroshi Fukushima, Ayase, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Jul. 12, 1993, Ser. No. 90,575

Claims priority, application Japan, Jul. 27, 1992, 4-57865[U]
Int. Cl.⁶ F16H 15/38

U.S. Cl. 476—40

2 Claims



1. A toroidal type continuously variable transmission, comprising:
an input side disk and an output side disk arranged coaxially with said input side disk and supported for rotation relative to said input side disk, said input side disk and said output side disk having opposed concave inner surfaces of arcuate cross section;
a power roller sandwiched between said inner surfaces of said input side disk and said output side disk and having a spherical convex peripheral surface abutting said inner surfaces;
a displacement shaft on which said power roller is rotatably supported; and
a trunion supporting said displacement shaft and including a cylindrical base having a recessed intermediate portion to which a base end of said displacement shaft is mounted and a pair of cylindrical pivots protruding from opposite ends of said base and on which said trunion is swingable, said pivots each having a central pivot axis parallel to a central axis of said base and offset from said central axis of said base in a protruding direction of said displacement shaft.

5,380,257 **ELECTROHYDRAULIC CONTROL DEVICE FOR A DRIVE TRAIN OF A VEHICLE**

Michael F. Coffman, Metamora, and Paul E. Jantz, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 25, 1993, Ser. No. 37,136

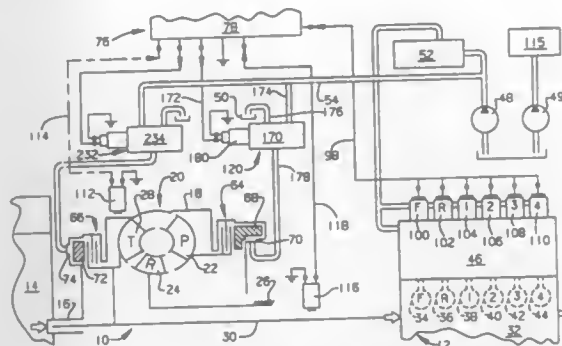
Int. Cl.⁶ B60K 41/02; F16D 43/284

U.S. Cl. 477—175

1 Claim

1. An electrohydraulic control device for a drive train of a vehicle including an engine, a transmission, a source of pressurized fluid, and an input clutch drivingly connected between the engine and the transmission, comprising:
means for sensing the rotational output speed of the engine and responsively producing an engine speed signal;
valve means for controllably directing fluid under pressure from the source to the input clutch to controllably engage and disengage the input clutch; and
electronic control module means for receiving said engine speed signal and controllably actuating said valve means as a function of said engine speed signal, for comparing said engine speed signal with a first predetermined threshold and responsively actuating said valve means to maintain a first predetermined pressure within the input clutch in response to said engine speed signal being below said

first predetermined threshold, for comparing said engine speed signal with a second predetermined threshold and responsively actuating said valve means to maintain a second predetermined pressure within the input clutch in response to said engine speed signal being above said



second predetermined threshold, and for modulating pressure within the input clutch between said first and second predetermined pressures in response to said engine speed signal being between said first and second predetermined thresholds.

5,380,258 **EXERCISE APPARATUS**

Peter J. Hawley, Jr., Brighton, Mass., assignor to Stairmaster Sports/Medical Products, Inc., Kirkland, Wash.

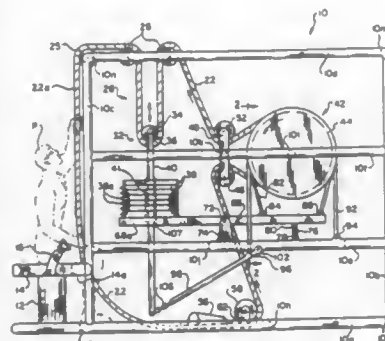
Filed Oct. 26, 1992, Ser. No. 966,710

The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.

Int. Cl.⁶ A63B 7/04

U.S. Cl. 482—37

61 Claims



1. An exercise apparatus, comprising:
a vertically movable weight;
an input mechanism engaged by the user to input a unidirectional force at a user-selected velocity to apply a positive input power to lift the weight;
a brake applying a negative braking power with a unidirectional force opposing lowering of the weight; and
a differential member coupled to the weight and receiving the input power from the input mechanism and the braking power from the brake, the differential member summing the input power and the braking power and applying the resultant to the weight so that if the resultant is positive the weight is lifted, and if the resultant is negative the weight is lowered.

5,380,259 **ARM, HAND AND WRIST EXERCISING DEVICE**

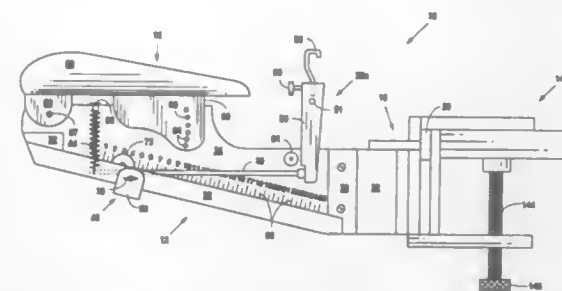
David L. Robertson, and Arthur D. Raynie, both of San Antonio, Tex., assignors to Mediflex Systems, Inc., San Antonio, Tex.

Filed Oct. 13, 1993, Ser. No. 135,894

Int. Cl.⁶ A63B 23/14

U.S. Cl. 482—44

19 Claims



1. An exercising device comprising:
a housing with sidewalls,
an arm rest with a near end and a far end, the arm rest attached to the sidewalls near the top of the housing;
a lever rod having a near end and a far end,
a fulcrum for engaging said lever rod between the near end and the far end thereof, said fulcrum movable along the bottom edge of the sidewalls of said housing,
bias means engageable with the near end of said lever rod and said housing, and
means attachable to the far end of said lever rod for engagement with an extremity of the arm of the user for moving said far end of said lever rod against the resistance of said bias means by pivoting said lever rod at said fulcrum.

5,380,260 **MEDICAL PADDINGS**

Patrick L. Blott, Bishops Cleeve, United Kingdom, assignor to Smith & Nephew plc, England

Continuation of Ser. No. 773,655, Oct. 15, 1991, abandoned.

This application Nov. 9, 1993, Ser. No. 150,236

Claims priority, application United Kingdom, Aug. 15, 1989, 8918572

Int. Cl.⁶ A61F 13/00

U.S. Cl. 602—41

24 Claims

1. A moisture vapour permeable water impervious sheet or strip of medical padding for orthopaedic use which comprises lofted non-woven fabric comprising synthetic fibres and which has wax at a surface layer of the fabric.

5,380,261 **EXERCISE DEVICE ADJUSTABLE RESISTANCE CORD-WINDING**

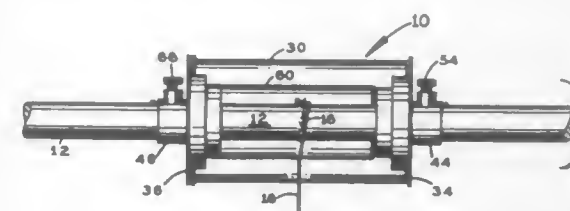
Raul Mora, Fort Lauderdale, Fla., assignor to Alrama Enterprises, Inc., Dade City, Fla.

Filed Aug. 30, 1993, Ser. No. 113,065

Int. Cl.⁶ A63B 21/06

U.S. Cl. 482—46

2 Claims



1. An Apparatus for exercising muscles of the hand, wrist and forearm comprising:

a shaft having a longitudinal axis.
a flexible cord connected to said shaft.
a weight member suspended from said flexible cord, such that a user can grasp and rotate said shaft about said longitudinal axis while positioning said shaft substantially horizontally to wrap and unwrap said cord around said shaft and thereby raise and lower said weight member,
a hollow outer cylinder shorter than said shaft rotatably mounted substantially coaxially over said shaft and having a cord opening through which said cord passes,
first and second outer cylinder end walls having central bores and first and second tubular end flanges extending outwardly from said outer cylinder and over said shaft, said first end wall being structurally connected to said outer cylinder,
a first set screw in said first end flange for tightening to cause said outer cylinder to rotate in unison with said shaft so that the outer surface of said outer cylinder gathers and releases said cord,
for increasing the distance between said longitudinal axis of rotation and the surface about which said cord is gathered to increase rotational resistance.

5,380,262 **COMBINATION COLLAPSIBLE CHAIR AND WALKER DEVICE**

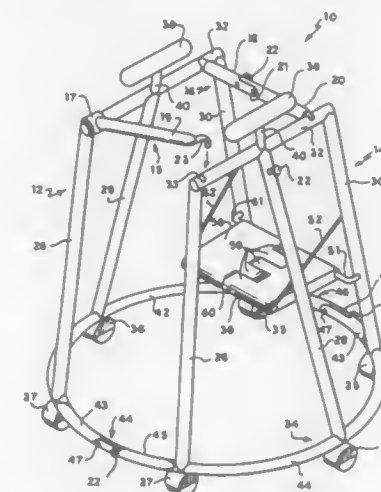
Ben R. Austin, 1215 St. Albans Rd., San Marino, Calif. 91108

Filed Apr. 13, 1994, Ser. No. 226,826

Int. Cl.⁶ A63B 22/20; A61H 3/04

U.S. Cl. 482—68

19 Claims



1. A combination collapsible chair and walker device for aiding a handicapped user to move and to exercise in an independent manner, comprising:
a pair of upstanding complementary frame members laterally spaced apart from each other;
a collapsible connecting tubular member at a top front end of said device and connecting said pair of frame members;
a gate located at a back end of said device for permitting entry by the user when opened;
an arm rest attached to each of said frame members and extending upwardly therefrom;
there further being a collapsible wide base ring for mounting said pair of frame members;
a plurality of swivel-type casters supporting said base ring, including a pair of front swivel-type casters located in the front bottom end of said device, said front swivel-type casters positioned in a fixed forward direction for allowing said device to be easily guided forward; and
a seat mounted on said pair of frame members and formed of panel sections whereby the seat may be folded in a collapsed condition;

wherein said collapsible connecting tubular member, said collapsible wide base ring and said collapsible seat panel sections permit the device to be compactly collapsed for easy storage.

5,380,263

WAIST SPORTING EQUIPMENT

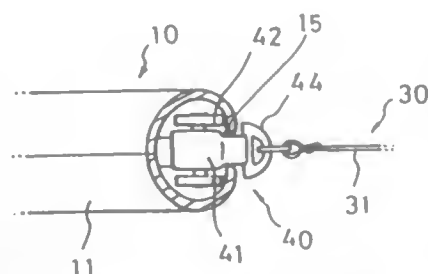
Young B. Chung, A-102 Pacific House, 129-2 Anam-dong, Seongbuk-ku, Seoul, Rep. of Korea
Continuation of Ser. No. 959,155, Oct. 9, 1992, abandoned. This application Jun. 1, 1994, Ser. No. 252,379

Claims priority, application Rep. of Korea, Jun. 9, 1992, 92UM10203; Jun. 9, 1992, 92UM10204

Int. Cl.⁶ A63B 21/22

U.S. Cl. 482—110

8 Claims



1. A waist sporting and amusement device comprising:

- a circular ring member sized to encircle around the waist portion of a user and having a cross-section with an upper arcuate portion and a lower arcuate portion such that said upper arcuate portion extends from a first inner circumferential location to a second outer circumferential location and terminating at said second outer circumferential location with an interior edge and said lower arcuate portion extends from said first inner circumferential location to a third outer circumferential location and terminating at said third outer circumferential location with an interior edge whereby a peripheral groove is formed and defined by said interior edges of said upper arcuate portion and said lower arcuate portion;

an inertia member of a predetermined weight for applying centrifugal force and inertia force gradually to said circular ring member upon rotation of said ring member, said inertia member including a weight body;

connecting means for connecting the ring member and the weight body so that the weight body may rotate with respect to the ring member upon rotation of the inertia member; and

rotary means for attaching said connecting means to said circular ring, said rotary means including a support body positioned within said circular ring, said support body including a body portion and a stem portion having a bearing surface, said stem portion projecting through said peripheral groove such that said bearing surface operably interacts with said interior edges of said upper and lower arcuate portions so as to provide for controlled movement of said support body;

a connecting rib secured to said stem portion of said support body for connecting said connecting means to said support body;

upper and lower rollers journaled for rotation from said body portion of said support body and each of said upper and lower rollers operably contacting only a circumferential portion of the interior surface of said upper and lower arcuate portions of said circular ring member respectively to facilitate travel of said support body about the interior of said upper and lower arcuate portions of said circular ring as a user employs a rocking action of the user's waist to effect rotation of said inertia member about said circular ring for sport and amusement.

5,380,264

ROLLER FOR USE IN MOLTEN METAL BATH

Takahiko Ookouchi, Katsuta; Hiromi Kagohara, Hitachi; Hiromi Hama, Katsuta; Mitsuo Nakagawa, Mito; Hitoshi Okoshi, Hitachi, and Yoshitaka Nakayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

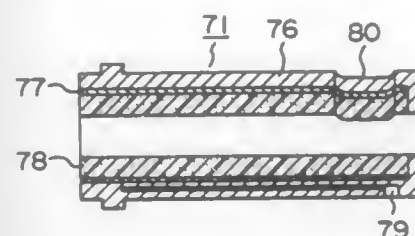
Division of Ser. No. 583,131, Sep. 17, 1990, Pat. No. 5,252,130.

This application Dec. 30, 1992, Ser. No. 998,855

Int. Cl.⁶ B23P 15/00

U.S. Cl. 492—3

6 Claims



1. A roller for rolling working, comprising a solid metal member provided with a shaft portion and a body portion, a cylindrical member fitted onto the outer periphery of the body portion of said solid metal member, which cylindrical member is formed of a ceramic sintered body, a metal pipe interposed between said member and said cylindrical member which metal pipe is elastic-plastically deformed at a stress level lower than rupture strength of the cylindrical member, said metal member and said cylindrical member being fitted to each other by shrinkage fit or expansion fit.

5,380,265

APPARATUS FOR MANUALLY FOLDING SHEETS OF PAPER

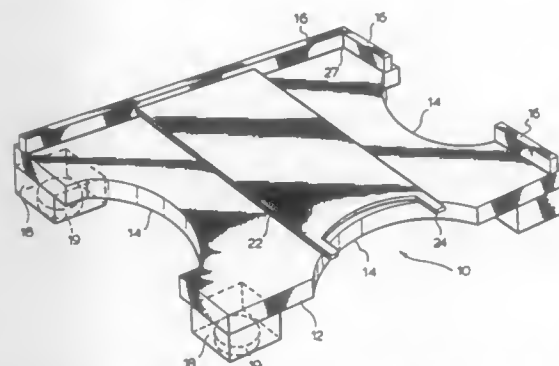
Guido J. Giovinazzo, 90 Florence St., Hamilton, Ontario, Canada L8R 1W7, and Anthony J. Giovinazzo, 123 Longwood Road N., Hamilton, Ontario, Canada L8S 3V8

Filed Sep. 27, 1993, Ser. No. 126,762

Int. Cl.⁶ B65H 45/12

U.S. Cl. 493—405

1 Claim



1. An apparatus for manually folding at least one standard sheet of paper, said apparatus comprising a base plate having a top, a bottom and a side edges, each of said edges having a cut out therealong,

at least two guides extending substantially perpendicular from the base plate about the top and a side edge opposite said side edge having the cut out, said guides defining a right angled corner,

a tongue having one end mounted to one of said two guides for extending over said base plate in a spaced parallel relation, said tongue having a cut out on an end opposite the mounting end, said tongue cut out aligning with said cut out along said side edge of said base plate, said tongue having a size and positioned relative to said corner to fold

said at least one sheet of paper into thirds, said tongue having two pairs of edges, each comprising a rounded edge and a tapered edge adapted for creasing said at least one sheet of paper, whereby at least one sheet of paper is insertable between said tongue and said base, positionable into said right angled corner and extendable over said cut outs of said base plate, said at least one sheet of paper is foldable about said tongue and removable therefrom in a folded condition by gripping said sheet of paper in the area of said cut outs.

5,380,266

FEED ACCELERATOR SYSTEM INCLUDING ACCELERATOR CONE

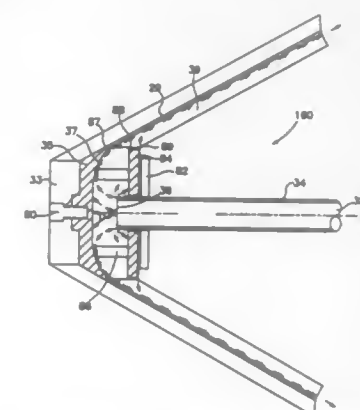
Woon F. Leung, Norfolk, and Ascher H. Shapiro, Jamaica Plain, both of Mass., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Nov. 27, 1991, Ser. No. 798,898

Int. Cl.⁶ B04B 1/20

U.S. Cl. 494—53

36 Claims



1. A feed accelerator system for use in a centrifuge, the system comprising

a conveyor hub rotatably mounted substantially concentrically within a rotating bowl, and

an accelerator including a generally cone-shaped inside surface having an axially increasing diameter to a discharge end, the inside surface disposed between an accelerator base and an accelerator small diameter section,

wherein

the accelerator is secured within the conveyor hub so that the accelerator rotates with the conveyor hub,

a distributor is proximate to the small diameter section, the distributor surface including an approximately parabolic shape smoothly joining the cone-shaped inside surface so as to form a continuous accelerator inside surface, and

a plurality of accelerator vanes are disposed on the cone-shaped inside surface so as to form a plurality of feed channels, and generally extend proximally from the small diameter section and terminate at a location on the cone-shaped inside surface proximate to the base,

a feed pipe is disposed within the centrifuge for delivering a feed slurry to the accelerator, the feed pipe including at least one discharge opening located proximally to a feed pipe end so that the discharge opening is positioned proximally to and faces the distributor surface.

5,380,267

NOISE-ATTENUATING PNEUMATIC COMPRESSOR AND MEDICAL APPARATUS INCORPORATING SAME

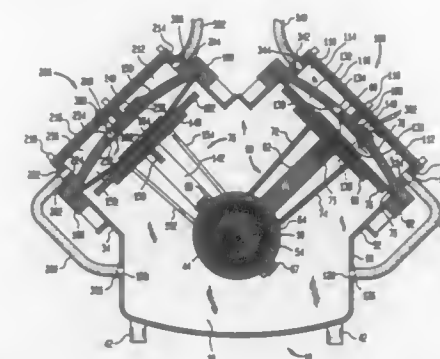
James E. Boutelle, Morristown; Kevin M. Carroll, Wayne, and Jonathan R. Williams, Montville, all of N.J., assignors to Datascope Investment Corp., Montvale, N.J.

Filed Jun. 18, 1993, Ser. No. 79,009

Int. Cl.⁶ A61M 1/10

U.S. Cl. 600—18

33 Claims



1. A compressor, comprising a housing having an interior defining an enclosed space, a cylindrical chamber having an open end connected in communication with an interior of said housing and a closed end,

a piston assembly disposed in said cylindrical chamber and having a piston head dividing said cylindrical chamber into a high pressure side between said piston head and said closed end and a low pressure side between said piston head and said open end,

drive means for driving said piston assembly reciprocally in said cylindrical chamber between an intake position and an exhaust position,

a suction aperture and a discharge aperture communicating with said high pressure side of said cylindrical chamber, suction valve means for opening and closing said suction aperture,

discharge valve means for opening and closing said discharge aperture,

a resonating chamber having an interior defining a predetermined volume and an exterior,

means for providing a flow path between said interior of said resonating chamber and said suction aperture so that movement of said piston assembly from said exhaust position to said intake position draws a volume of air from said interior of said resonating chamber into said high pressure side of said cylindrical chamber,

means for connecting said discharge aperture to an external device so that movement of said piston assembly from said intake position to said exhaust position expels said volume of air from said high pressure side of said cylindrical chamber toward the external device, and

port means in said resonating chamber for providing an air communication path of a preselected diameter between said interior of said resonating chamber and said exterior of said resonating chamber.

5,380,268

BODY FLUID FLOW CONTROL VALVE AND METHOD

Douglas E. Wheeler, 1715 Enclave Pkwy., #307, Houston, Tex. 77077

Filed Jun. 7, 1993, Ser. No. 72,082

Int. Cl.⁶ A61F 2/02

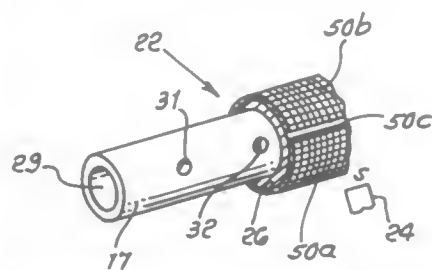
U.S. Cl. 600—30

11 Claims

1. The method of controlling urine flow from the bladder in a body which includes the steps:

a) providing an axially endwise elongated magnetically responsive cylindrical valve of a size to fit in the urethra,

providing grip means at an end of the valve, and providing a valve actuating magnet,
b) installing the valve in the urethra, by providing a tool having grip finger means and operating the tool to cause said finger means to grip said grip means for advancing the valve endwise in the urethra, in the path of urine flow,



c) and operating the valve between urine flow passing and urine flow blocking states, by controlling the position of the actuating magnet, outside the body, whereby the magnetic field of the actuating magnet effects said operating of the valve.

5,380,269

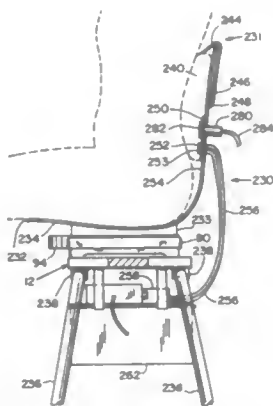
BACK TREATMENT DEVICE

Charles L. Urso, 54 Marivista Ave., Waltham, Mass. 02254
Continuation-in-part of Ser. No. 749,873, Aug. 26, 1991, Pat. No. 5,224,924. This application Sep. 28, 1992, Ser. No. 952,567
Claims priority, application WIPO, Aug. 26, 1992, PCT/US92/07231

Int. Cl.⁶ A61F 5/00

U.S. Cl. 602—19

6 Claims



1. A back treatment device comprising:
a chair having a seat and a back rest;
a bladder, for containing liquid, mounted on the back rest;
and
an ultrasonic transducer mounted to the bladder for transmitting ultrasonic waves through the liquid in order to treat back ailments.

5,380,270

URETERAL CATHETER

Massoud Ahmadzadeh, Neuenkirchen, Germany, assignor to Willy Rusch AG, Kernen I.R., Germany
Filed Dec. 9, 1991, Ser. No. 805,482
Claims priority, application European Pat. Off., Dec. 7, 1990, 90123499.7

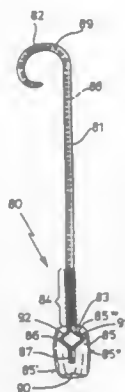
Int. Cl.⁶ A61M 25/00; A61F 2/04

U.S. Cl. 604—9

8 Claims

1. Ureteral catheter having an elongated shaft (10; 81) and a lumen (19; 28; 42; 88) for drainage, said shaft (10; 81) having a first end with a pigtail (11; 82) and several openings (18; 89)

therein, whereby said openings (18; 89) communicate with said lumen (19; 28; 42; 88) and said shaft (10; 81) having a second end with an open tip (12; 50; 60; 83) and a valve mechanism (17; 37; 62; 72; 85), wherein said open tip (12; 50; 60; 83) on the second end has an extendable folded shaft section (15; 32; 51; 61; 71; 84) and said shaft (10; 81) further comprises a retainer



system (86) within said valve mechanism (17; 37; 62; 72; 85) and wherein said retainer system (86) comprises a section, integral with said shaft (10; 81), which is split into two half shafts (91, 92), said half shafts (91, 92) being spaced apart from one another, in an unloaded mode, in a direction transverse to said lumen (19; 28; 42; 88).

5,380,271

ELECTROTRANSPORT AGENT DELIVERY DEVICE AND METHOD

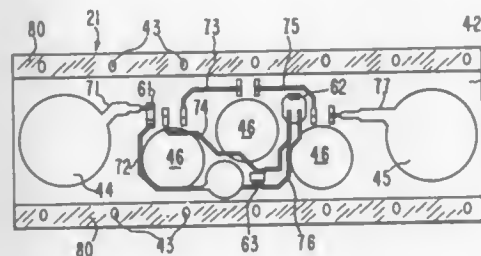
J. Richard Gyory, San Jose, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Filed Sep. 24, 1992, Ser. No. 950,627

Int. Cl.⁶ A61N 1/30

U.S. Cl. 604—20

18 Claims



1. An electrotransport device for delivery of a beneficial agent through a body surface of a patient, the device comprising:

first and second electrode assemblies, at least one of the electrode assemblies containing the beneficial agent to be delivered;

electrical circuit means for electrically connecting the first electrode assembly to the second electrode assembly through the electrical circuit means, the electrical circuit means including at least one electrically conductive circuit trace positioned on a substrate and including at least one electrical component which is electrically connected to the circuit trace by an electrical connection means wherein the circuit trace is comprised of an electrically conductive ink or coating and the circuit trace and the electrical connection means each have a resistivity of less than about 0.01 ohm-cm and each are substantially free of electrically conductive materials which are toxic to the patient.

5,380,272

TRANSCUTANEOUS DRUG DELIVERY APPLICATOR

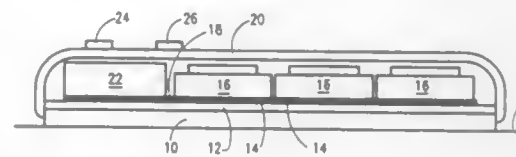
Joseph Gross, Moshav Mazor, Israel, assignor to Scientific Innovations Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 38,362, Mar. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 10,178, Jan. 28, 1993, abandoned. This application Jun. 16, 1993, Ser. No. 77,146

Int. Cl.⁶ A61N 1/30

U.S. Cl. 604—20

17 Claims



1. A transcutaneous iontophoretic chemical applicator for applying a chemical, comprising:

(a) an array of reservoirs, said reservoirs being electrically insulated from one another, at least one of said reservoirs containing the chemical;

(b) a partially electrically conducting layer overlying and contacting at least two of said reservoirs, said partially electrically conducting layer being made up of a single layer overlying all of said reservoirs;

(c) electrodes overlying and physically and electrically contacting said partially electrically conducting layer; and
(d) an electrical power source electrically connected to said electrodes.

5,380,273

VIBRATING CATHETER

Will R. Dubrul, P.O. Box 246, Redwood City, Calif. 94064, and Michael A. Evans, 637 Webster St., Palo Alto, Calif. 94301

Continuation-in-part of Ser. No. 885,665, May 19, 1992, abandoned. This application May 19, 1993, Ser. No. 65,470

Int. Cl.⁶ A61B 17/32

U.S. Cl. 604—22

4 Claims



1. An apparatus for the removal of an obstruction in tubular tissue of a patient comprising an elongate tubular catheter having a proximal end and a distal end and a body portion therebetween, said body portion having at least two lumens and an outer tissue-contacting surface substantially coextensive therewith, said outer tissue-contacting surface being dimensioned to fit within said tubular tissue and said tissue-contacting surface having at least one lysing agent dispensing opening therein and an inflatable member coextensive and coaxial with at least a portion thereof, said inflatable member being distal to said at least one lysing agent dispensing opening; the proximal end of the catheter being trifurcated to form first, second and third projections, the first projection being in material vibratory communication with said tissue-contacting surface and adapted to receive and matingly engage a vibrating element; the second projection providing an injection port which is in fluid communication with said inflatable member, and said third projection forming a lysing agent injection port which is in fluid communication with at least one lysing agent dispensing opening; and wherein said vibrating element produces translational and/or rotational mechanical vibrations between 1-1000 Hz.

5,380,274

ULTRASOUND TRANSMISSION MEMBER HAVING IMPROVED LONGITUDINAL TRANSMISSION PROPERTIES

Henry Nita, Mission Viejo, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 640,190, Jan. 11, 1991, Pat. No. 5,304,115. This application Oct. 12, 1993, Ser. No. 135,275

Int. Cl.⁶ A61B 17/32

U.S. Cl. 604—22

29 Claims



1. An ultrasound transmission member coupleable to an ultrasound generating device for transmitting ultrasound from said ultrasound generating device to a location within a mammalian body, said ultrasound transmitting member comprising:

an elongate member having a proximal end, distal end, and at least four regions of differing cross-sectional dimension, said four regions of said elongate member comprising:

i) a first region extending distally from the proximal end of the member and having a substantially continuous first cross-sectional dimension;

ii) a second region extending distally from the distal end of said first region, said second region being tapered to a second cross-sectional dimension smaller than said first cross-sectional dimension;

iii) a third region extending distally from the distal end of said second region, said third region being of a substantially continuous third cross-sectional dimension, said third cross-sectional dimension being substantially the same as said second cross-sectional dimension; and

iv) a fourth region extending distally from the distal end of said third region, said fourth region being tapered to a fourth cross-sectional dimension larger than said third cross-sectional dimension.

5,380,275

DEVICE FOR IRRIGATING A NATURAL BODY ORIFICE OF A PERSON SEATED ON A TOILET

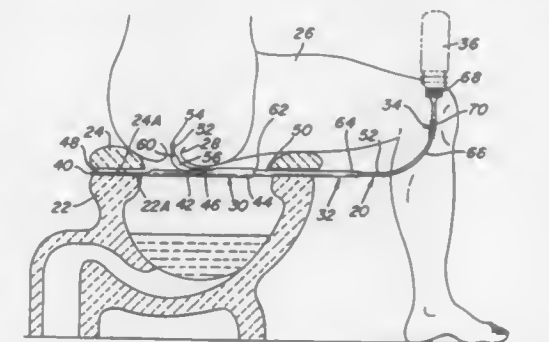
Kenneth Kensey, Chester Springs, and Joseph Kaufmann, Philadelphia, both of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Filed Apr. 23, 1993, Ser. No. 52,319

Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—27

16 Claims



1. A device for administering a material into a natural orifice of a person while said person sits on a toilet having a conventional bowl with a conventional toilet seat disposed thereover to form a space therebetween, said device comprising a base unit, and extendable tube means, said base unit being arranged

for releasable disposition within said space on said bowl and under said toilet seat to be held by friction therebetween, said base unit comprising elongated saddle means configured to be disposed in a space between the buttocks of a person seated on said toilet seat, and passageway means extending longitudinally through a portion of said elongated saddle means, said passageway means having an opening therein and being slidable longitudinally through said portion of said elongated saddle means so that said opening is located at a position adjacent said natural orifice when said person is seated on said toilet seat, said extendable tube means having a distal end portion slidably mounted within said passageway means so that it can be slid longitudinally therethrough, whereupon said distal end portion is located outside said opening to enter said natural orifice to carry said material into the body of said person through said natural orifice.

5,380,276

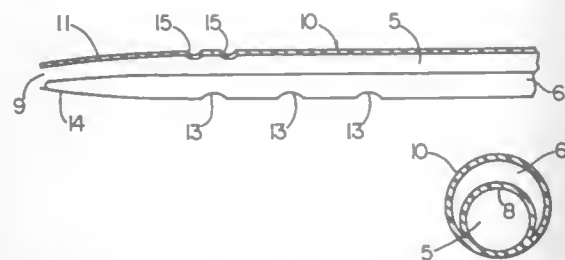
DUAL LUMEN CATHETER AND METHOD OF USE
John Miller, Victor Gamble, and David Beattie, all of Salt Lake City, Utah, assigns to The Kendall Company, Mansfield, Mass.

Filed Feb. 28, 1994, Ser. No. 203,126

Int. Cl.⁶ A61M 1/00, 3/00, 25/00

U.S. Cl. 604—28

11 Claims



1. A dual lumen catheter adapted for use in kidney dialysis comprising:

- a unitary, elongated, flexible catheter tube that is substantially circular in cross-section, said tube having an outer wall member forming a tube having a proximal end and a distal end portion adapted for insertion within the vein of a patient,
- the outer wall member defining first and second lumens that are separated by an inner common support wall which is substantially circular and joins said outer wall,
- said first lumen extending longitudinally between the opposed distal and proximal ends of the catheter tube and terminating coextensive with said distal end portion of said catheter tube,
- said second lumen extending longitudinally from the proximal end of the catheter tube and terminating proximal to said distal end portion of said catheter tube, said second lumen further comprising adjacent said distal end a port hole extending through said outer wall,
- said second lumen being crescent shaped in cross-section and substantially surrounding said first lumen, the cross-sectional areas of the first and second lumens being approximately equal,
- each of said first and second lumens being totally smooth internally, thereby containing no ridges or connections which can promote formation of blood clots or cause hemolysis or damage to red blood cells during dialysis,
- said catheter further having secured at its proximal end a hub assembly comprising two hub segments and two tubing extensions, each segment being connected to a tubing extension, said hub assembly being unitary with and in fluid communication with said catheter tube.

5,380,277

TOOL FOR LAPAROSCOPIC SURGERY

Edward H. Phillips, 712 N. Roxbury Dr., Beverly Hills, Calif. 90210

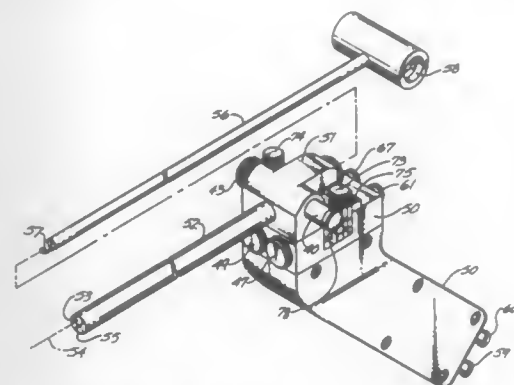
Continuation of Ser. No. 3,505, Jan. 13, 1993, Pat. No. 5,334,140, which is a division of Ser. No. 528,954, May 25, 1990, Pat. No. 5,195,958. This application Nov. 2, 1993, Ser. No. 116,619

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.⁶ A61B 17/39, 17/36, 17/32

U.S. Cl. 604—33

10 Claims



1. An instrument for laparoscopic surgery comprising:
 - (a) a housing having an irrigating fluid inlet port and an irrigating fluid outlet port and an inlet vacuum port and an outlet vacuum port, said housing having an internal vacuum conduit connecting said inlet vacuum port to said outlet vacuum port to permit the passage of evacuated fluid through said internal vacuum conduit and an internal fluid conduit connecting said irrigating fluid inlet port to said irrigating fluid outlet port to permit the passage of irrigating fluid through said internal fluid conduit;
 - (b) valve means in a normally closed position carried by said housing and responsive to external force for selectively permitting the passage of irrigating fluid through said internal fluid conduit or said evacuated fluid through said internal vacuum conduit;
 - (c) a shaft member having a distal end and a proximate end and a longitudinal axis said proximate end of said shaft member carried by said housing where said shaft member has an axially extending channel therethrough communicating with said fluid outlet port of said housing and said inlet vacuum port of said housing, said channel having a single flow path therethrough and an opening at or adjacent said distal end of said shaft member to permit the passage of irrigating fluid into the operative region or to permit the passage of evacuated fluid into said channel;
 - (d) an electrocautery member carried by said shaft member and extending distally from said distal end of said shaft member; and
 - (e) electrical connecting means for electrically connecting said electrocautery member to a power source.

5,380,278

LIQUID CLEANSING AND EVACUATION METHOD AND APPARATUS FOR USE IN SURGICAL PROCEDURES

Pierre Mombrin, 3208 Bruce Dr., Fremont, Calif. 94539

Filed Jun. 26, 1992, Ser. No. 904,762

Int. Cl.⁶ A61M 1/00

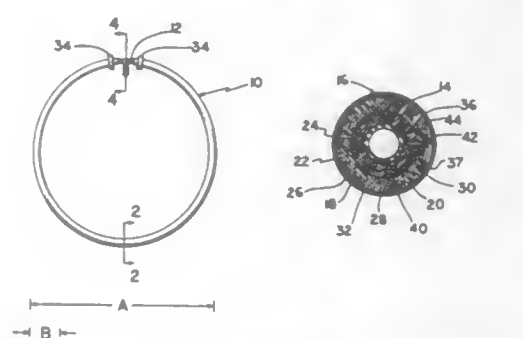
U.S. Cl. 604—35

33 Claims

1. A method for cleansing operative tissue during surgery, comprising:

- a. continuously bathing said operative tissue in a region of surgical activity with liquid; and

- b. continuously evacuating said liquid from said surgical activity region by drawing a vacuum through a perforate



member covered with liquidphilic wicking material extending about said region of surgical activity.

5,380,279

ANIMAL VACCINATION GUN

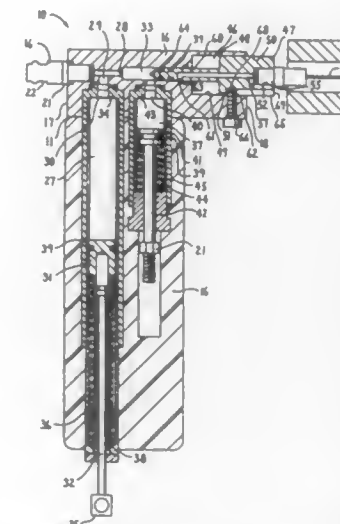
Conrad Schmidt, Nobles County, Minn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 11, 1994, Ser. No. 209,803

Int. Cl.⁶ A61B 17/20

U.S. Cl. 604—46

7 Claims



1. An animal vaccination gun comprising a housing with a fluid inlet means provided at a first end thereof and a fluid outlet means provided at a second end thereof, said fluid inlet means comprising a one-way valve for allowing fluid to be introduced into said housing and preventing fluid from exiting said housing through said fluid inlet means, a filling chamber in fluid communication with said fluid inlet means, said filling chamber having a first spring-biased piston slidably mounted therein for movement between a fully extended position and a fully retracted position, the spring biasing said first piston towards the fully extended position, a metering chamber in fluid communication with said filling chamber through a fluid conduit connecting said filling and metering chambers, said metering chamber having a second spring-biased piston slidably mounted therein for movement between a fully extended position and a fully retracted position, the spring biasing said second piston towards the fully extended position, said fluid outlet means comprising a fluid discharge member slidably mounted in said housing for movement between an extended position and a retracted position, said fluid discharge member having a first portion positioned in said fluid conduit, a second portion which extends out of said housing and has a needle provided at an end thereof and an opening provided in said

first portion which is in fluid communication with said needle, said fluid discharge member first portion preventing flow between said filling chamber and said metering chamber and placing said metering chamber in fluid communication with said needle through said opening when said fluid discharge member is in the retracted position.

5,380,280

ASPIRATION SYSTEM HAVING PRESSURE-CONTROLLED AND FLOW-CONTROLLED MODES

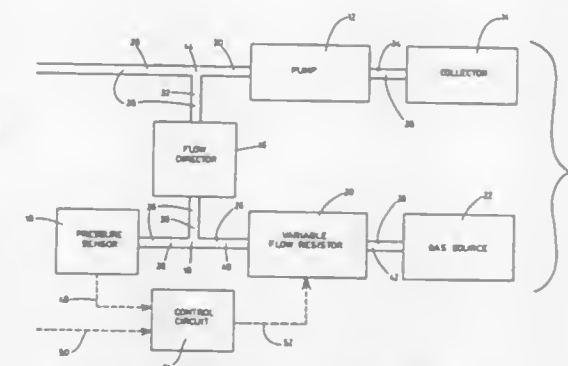
Erik W. Peterson, 1860 Newell Ave., Walnut Creek, Calif. 94595

Filed Nov. 12, 1993, Ser. No. 150,715

Int. Cl.⁶ A61M 31/00, 1/00, 5/00

U.S. Cl. 604—65

12 Claims



1. A surgical aspiration system comprising:

- (a) a first conduit having a first end and a second end, the first end and the second end being in fluid communication and the first end communicating with the surgical site from which fluid is to be aspirated;
- (b) a second conduit having a first end and a second end, the first end of the second conduit and the second end of the second conduit being in fluid communication, the second end of the first conduit and the first end of the second conduit meeting at a juncture which permits fluid communication therethrough;
- (c) a collector which is in fluid communication with the second end of the second conduit, the collector receiving aspirated fluid;
- (d) a pump which induces flow of aspirated fluid through the second conduit, and into the collector;
- (e) a third conduit having a first end and a second end, the first end of the third conduit and the second end of the third conduit being in fluid communication, the first end of the third conduit meeting at the juncture such that it is in fluid communication with the second end of the first conduit and the first end of the second conduit;
- (f) a flow director having an input and an output, the output being located at the second end of the third conduit and being in fluid communication with the second end of the third conduit, the flow director permitting flow of gas into the third conduit and preventing the flow of liquid to the input of the flow director.
- (g) a fourth conduit having a first end and a second end, the first end of the fourth conduit and the second end of the fourth conduit being in fluid communication, the second end of the fourth conduit being in fluid communication with the input of the flow director;
- (h) a proportional valve having a first port and a second port, the first port being in fluid communication with the first end of the fourth conduit;
- (i) a gas source being in fluid communication with the second port of the proportional valve;
- (j) a pressure sensor which is in fluid communication with

- the fourth conduit and which produces a signal proportional to the pressure in the fourth conduit;
- (k) operator input means which produce a signal proportional to the desired pressure level; and
- (l) control means which control the proportional valve to maintain the pressure in the fourth conduit as indicated by the signal produced by the pressure sensor approximately equal to the desired pressure level as indicated by the signal produced by the operator input means.

5,380,281

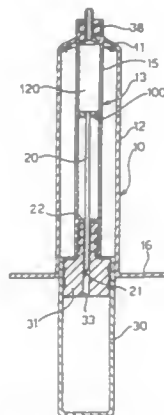
DEVICE FOR THE ADMINISTRATION OF DRUGS, PARTICULARLY TWO-COMPONENT DRUGS

Giorgio Tomellini, and Gian A. Rollandi, both of Genova, Italy, assignors to BRACCO, S.p.A., Milano, Italy
PCT No. PCT/EP92/00777, § 371 Date Jan. 13, 1994, § 102(e)
Date Jan. 13, 1994, PCT Pub. No. WO92/18177, PCT Pub.
Date Oct. 29, 1992

PCT Filed Apr. 6, 1992, Ser. No. 133,014

Claims priority, application Italy, Apr. 9, 1991, TO91 U
000078

Int. Cl.⁶ A61M 37/00, 5/24, 5/28; A61B 19/00
U.S. Cl. 604—85 9 Claims



1. A device for the administration of drugs, comprising:
 - a tubular housing having a double wall including an outer jacket and an inner jacket, said housing being open at one end and closed by an end wall at the opposite end;
 - a container for holding a first liquid drug component, said container including a stopper in the form of a slidable piston, said stopper being couplable to the inner jacket of said housing and slidable into said container so as to apply a pressure to the first liquid drug component;
 - a chamber formed within said inner jacket adjacent to the end wall of said housing, said chamber for holding a second drug component to be dissolved in said first liquid drug component; and
 - a needle mounted within the inner jacket of said housing, said needle having one end opening into said chamber and the opposite pointed end extending toward the open end of said housing, said needle being positioned such that the pointed end perforates an axial bore through said stopper when said stopper is coupled to said inner jacket, so that said container communicates via said needle with said chamber, and when the slidable piston of said container slides into said container said first liquid drug component travels under pressure through said needle into said chamber and mixes with said second drug component.

5,380,282

BALLOON CATHETER ASSEMBLY

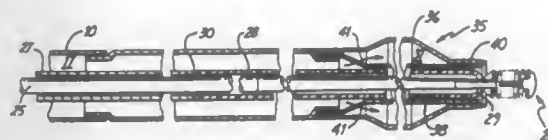
Matthew M. Burns, Orono, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 748,839, Aug. 23, 1991, Pat. No. 5,259,839. This application Sep. 21, 1993, Ser. No. 124,885
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.⁶ A61M 29/00

U.S. Cl. 604—96

20 Claims



1. In an angioplasty balloon catheter assembly of a type in which a balloon is carried at a distal end of a catheter shaft, the catheter assembly including a guide wire, the catheter shaft including an inflation lumen by which the balloon is inflated and deflated, and having a guide wire passage communicating with the inflation lumen and extending through the balloon, so that the guide wire can extend through the catheter shaft through the guide wire passage and out a distal end of the balloon; the improvement comprising:

radially expandable valve means carried by the guide wire near a distal end of the guide wire for selectively blocking, at least partially, the guide wire passage during balloon inflation and deflation when in an expanded state, and permitting sliding movement of the guide wire in the guide wire passage when in a non-expanded state, said guide wire including a continuous tube which extends axially over a substantial portion of the length of said guide wire, the radially expandable valve means being operably connected between said tube and the guide wire.

5,380,283

RAPID EXCHANGE TYPE DILATATION CATHETER

Kirk L. Johnson, Miami Lakes, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 54,430, Apr. 28, 1993, Pat. No. 5,334,147.
This application Nov. 22, 1993, Ser. No. 155,994

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—96

16 Claims



1. A method of inserting a balloon dilatation catheter into the vascular system of a patient along a guidewire previously emplaced in the patient, which comprises:
 - passing the proximal end of the guidewire into the distal end of a guidewire lumen of the catheter, and advancing the catheter distally along the guidewire; puncturing a side opening in said catheter through a catheter wall portion that is thinner than most of the catheter wall, said punctured side opening extending between the guidewire lumen and the exterior of the catheter; and causing the guidewire proximal end to pass through said side opening from the guidewire lumen to the exterior as the catheter is advanced.

5,380,284

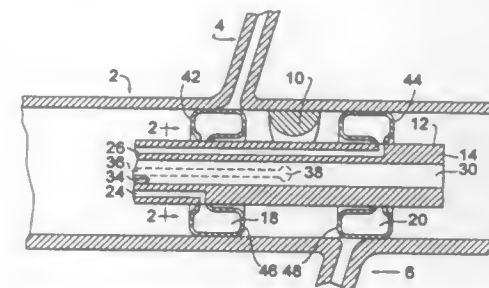
OBSTRUCTION DISSOLUTION CATHETER WITH VARIABLY EXPANDING BLOCKING BALLOONS AND METHOD OF USE

T. Anthony Don Michael, 4109 Sill Pl., Bakersfield, Calif. 93306
Filed Aug. 13, 1993, Ser. No. 105,632

Int. Cl.⁶ A61M 29/00

U.S. Cl. 601—101

16 Claims



1. In a device for dissolving deposits on a wall of a body passage, which wall has openings leading to side passages, which device comprises:

a catheter having an axis, an outer surface, a distal end and a proximal end, the catheter being insertable into the body passage via the distal end;

the catheter having a dissolution agent delivery passage for delivering a dissolution agent to a region surrounding the catheter, and the catheter further having means defining at least one balloon inflation passage; and

a balloon secured to the outer surface of the catheter at a location spaced from the dissolution agent delivery passage and communicating with the at least one balloon inflation passage, the balloon being inflatable to at least partly block a space between the catheter and the body passage wall when the catheter is inserted into the body passage, the improvement wherein said balloon has a nonuniform compliance such that when an inflation fluid is supplied to said balloon, said balloon expands parallel to said axis to a greater degree into said region than away from said region.

5,380,285

ONE-SHOT SYRINGE

Robert W. Jensen, 10 Oak Grove Way, Napa, Calif. 94558

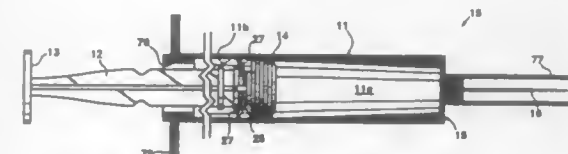
Division of Ser. No. 896,671, Jun. 10, 1992, Pat. No. 5,267,962.

This application Dec. 2, 1993, Ser. No. 161,938

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—110

2 Claims



1. In a disposable syringe having a hollow cylindrical barrel closed at one end, a plunger having a length longer than said barrel mounted in said barrel for reciprocation, said plunger having a handle on its end extending from the barrel and a piston mounted on the opposite end of said plunger received in said barrel and a hypodermic needle mounted in said closed end of said barrel being in communication with the interior of said barrel, the improvement comprising:

a tapered section formed in said barrel adjacent to its closed end which has a decreasing diameters from its central section to its closed end; and

disabling means associated with said piston end of said plunger operable to prevent re-use of said syringe once said disabling means has commenced traversing said ta-

pered portion of said barrel, said disabling means including a collapsible piston core operable to be diminished in diameter by the tapered portion as the piston traverses said tapered portion of the barrel whereby said piston will not thereafter seal with the internal bore of said barrel if said piston is thereafter extracted from said tapered portion.

5,380,286

SAFETY DEVICE FOR AN INJECTION SYRINGE NEEDLE

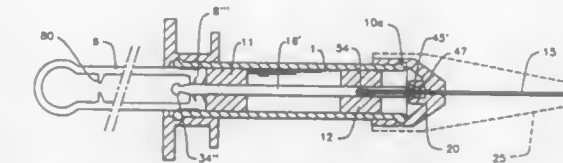
Abraham van den Haak, Eesergroen, Netherlands, assignor to Advanced Protective Injection Systems B.V.

Continuation of Ser. No. 818,187, Jan. 8, 1992, abandoned, which is a division of Ser. No. 490,568, Apr. 26, 1990, Pat. No. 5,116,319. This application Apr. 6, 1994, Ser. No. 224,111
Claims priority, application Netherlands, Aug. 23, 1988, 8802106

Int. Cl.⁶ A61M 5/50, 5/32

U.S. Cl. 604—110

2 Claims



1. A safety device for an injection syringe comprising:
 - an elongate casing having a first end and a second end and provided with a longitudinal bore defining an interior surface, said first end adapted to form a substantially fluid tight seal with a cap;
 - a cap attached to and adapted to form a substantially fluid tight seal with said first end of said elongate casing, said cap provided with a first needle foot engagement means and an aperture for receiving a needle;
 - a needle foot having a first end and a second end disposed within said longitudinal bore of said elongate casing, said first end of said needle foot provided with a lateral aperture in the wall of said needle foot in fluid communication with said longitudinal bore of said needle foot, a first needle foot attachment means disposed at said first end of said needle foot, said first needle foot attachment means adapted for selective engagement with said first needle foot engagement means of said cap, a second needle foot attachment means disposed at said second end of said needle foot, said second end of said needle foot adapted for engagement with a plunger means;
 - a needle having a first end and a second end provided with a longitudinal bore, said second end of said needle attached to and in fluid communication with said longitudinal bore of said first end of said needle foot, said second end of said longitudinal bore of said needle in fluid communication with said lateral aperture in said needle foot, said first end of said needle extending through said aperture in said cap;
 - a first stopper means slidably disposed around the external surface of said needle foot adapted to form a slidable substantially fluid tight seal with said interior surface of said elongate casing and the external surface of said needle foot, said first stopper means adapted to selectively seal said lateral aperture of said needle foot;
 - a second stopper means slidably disposed around the external surface of said needle foot between said first stopper means and said second end of said needle foot adapted to form a slidable substantially fluid tight seal with said interior surface of said elongate casing and the external surface of said needle foot, the portion of said longitudinal

bore of said elongate casing between said first and said second stopper means defining a chamber for a fluid; and a plunger means having a first end and a second end disposed in said longitudinal bore of said elongate casing, said first end of said plunger means adapted for selective engagement with said second stopper, and said second end of said plunger provided with grasping means for selective engagement with said second needle foot attachment means, said plunger means adapted for reciprocal movement between said first end and said second end of said elongate casing.

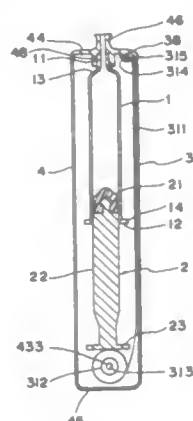
5,380,287

MEDICAL SOLUTION DELIVERY SYSTEM

Toshihiro Kikuchi, Suita, and Hitooshi Futagawa, Kusatsu, both of Japan, assignors to Nishio Corporation, Osaka, Japan
Filed Jul. 27, 1993, Ser. No. 97,051
Claims priority, application Japan, Jul. 31, 1992, 4-225252
Int. Cl.⁶ A61M 5/20

U.S. Cl. 604—135

7 Claims



1. A medical solution delivery system comprising: a syringe composed of a cylindrical container and a plunger slidably arranged therein, said container having a narrow part forming a port for a medical solution; plunger-driving means of a constant force for forcing the plunger toward the port of the container to deliver a medical solution in the cylindrical container; a capsule having a chamber for holding the syringe and the plunger-driving means therein; and a flexible connecting tube connectable to the narrow part of said container and provided with flow control means arranged therein to control a flow rate of the medical solution delivered from the syringe; said capsule being a cylindrical member having a hole formed at one end thereof so that the narrow part of said container is protruded from the capsule therethrough, said capsule being composed of a capsule body and a covering member removably fitted in the capsule body, said capsule body being provided with an L-shaped slit which extends from a middle part thereof along the barrel of the capsule body to the rear part and then circumferentially extends therefrom to form a short arm portion with a cut.

5,380,288

SURGICAL CANNULA AND TROCAR SYSTEM AND METHOD OF USING THE SAME

Rickey D. Hart, N. Attleboro, and John T. Rice, Lincoln, both of Mass., assignors to Innovative Devices, Inc., Hopkinton, Mass.

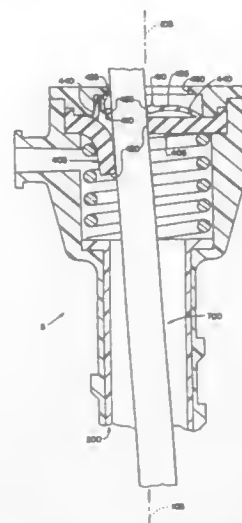
Filed Mar. 30, 1993, Ser. No. 39,912
Int. Cl.⁶ A61B 17/34

U.S. Cl. 604—167

9 Claims

5. Sealing means for sealing an opening in a housing, said opening having a distal end and a proximal end, said sealing

means comprising a first sealing member, a second sealing member, and connecting means connecting said first and second sealing members together in spaced relation to one another, said sealing means being adapted for location across said opening such that said first sealing member is disposed toward said distal end of said opening and said second sealing member is disposed toward said proximal end of said opening; said first sealing member comprising a layer of resilient material extending substantially completely across said opening, said layer defining at least one slit extending substantially centrally and axially therethrough so as to form a flap valve configuration; said second sealing member comprising a resilient structure defining an axial opening and an outer edge, said second



- sealing member being sized such that the transverse cross-section of said second sealing member is smaller than the transverse cross-section of said opening; and said connecting means being formed out of a resilient material and comprising a proximal portion connected to said outer edge of said second sealing member and extending outwardly therefrom to a second outer edge, and a side wall portion having an upper edge and a lower edge, said upper edge being connected to said second outer edge of said proximal portion, and said lower edge being connected to said first sealing member, with said side wall portion normally extending substantially vertically between said proximal portion and said first sealing member; said connecting means being formed so as to be significantly more easily deformable than said second sealing member.

5,380,289

FLUID COLLECTION DEVICE

George P. Hemstreet, Oklahoma City; Karl H. Bergey, Norman; Robert E. Hurst, and Rebecca B. Bonner, both of Oklahoma City, all of Okla., assignors to The Board of Regents of the University of Oklahoma, Norman, Okla.

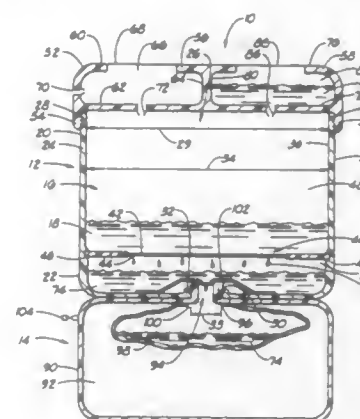
Filed Jan. 19, 1993, Ser. No. 5,488
Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—317

14 Claims

1. A method for delivering a reactant to and filtering cells in a biological fluid, the method comprising the steps of: providing a container, the container having a body extending from a first end to a second end and enclosing a space located therebetween, filtering means disposed within the space and mounted between the first end of the container and the second end of the container such that the space is subdivided into a first compartment between the filtering means and the first end and a second compartment between the

filtering means and the second end, the filtering means comprising a filter having pores sized sufficiently small to inhibit passage of cells through the filter wherein when fluid is passed through the filter, cells are collected on the filter, a reactant dispenser for delivering reactant to a biological fluid upon actuation of the reactant dispenser, the reactant dispenser connected to the body and in communication with the space of the body, and a biological fluid disposed in the first compartment;



- actuating the reactant dispenser wherein a reactant held therein is automatically dispensed into the first compartment of the container for reacting with the cells of the biological fluid disposed in the container; passing the biological fluid through the filtering means wherein cells from the fluid are retained on the filtering means and a filtrate is formed as the fluid is passed through the filtering means into the second compartment; and removing the filtrate from the container.

5,380,290

BODY ACCESS DEVICE

Joshua Makower, Earl H. Slee, Naomi C. Chesler, William J. Gorman, and Frank E. Barber, all of New York, N.Y., assignors to Pfizer Hospital Products Group, Inc., New York, N.Y.

Filed Apr. 16, 1992, Ser. No. 870,140
Int. Cl.⁶ A61M 5/178

U.S. Cl. 604—164

15 Claims



1. A body access device comprising a first tubular element having proximal and distal ends, an outer diameter, a first outer wall, a first lumen, and a sharpened tip at said distal end; said first element having an elongated opening longitudinally disposed in said wall communicating with said first lumen and extending a predetermined distance substantially from said distal end toward said proximal end; said opening being dimensioned and configured and adapted to receive therein an elongated element; a second tubular element having proximal and distal ends, a maximum outer diameter, a second outer wall, and at least a second lumen, with said second lumen being dimensioned and configured to receive therein at least a portion of said first element; said sharpened tip being adapted to pass through said second outer wall at a location proximate said distal end thereof, with said tip being directed toward said distal end of said second element for location of at least a portion of said elongated opening within said second lumen, a substantially fluid tight seal being created at said pass through

location, with said first lumen and said second lumen being in communication, wherein said elongated element may be introduced into and removed from said opening substantially non-longitudinally; and a third tubular element having proximal and distal ends, an inner diameter defining at least a third lumen, with said inner diameter of said third lumen being greater than the maximum outer diameter of said second element and with said third element being coaxially aligned with and slidably positioned around said second element.

5,380,291

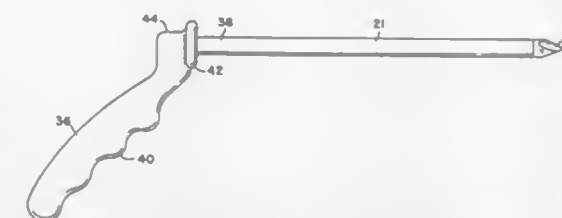
VISUALLY DIRECTED TROCAR FOR LAPAROSCOPIC SURGICAL PROCEDURES AND METHOD OF USING SAME

Steven G. Kaali, 88 Ashford Ave., Dobbs Ferry, N.Y. 10522
Continuation-in-part of Ser. No. 978,092, Nov. 17, 1992, Pat. No. 5,334,150. This application Nov. 17, 1993, Ser. No. 153,625
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.

Int. Cl.⁶ A61M 5/176, 25/00

U.S. Cl. 604—164

15 Claims



1. A surgical penetration device comprising: a) an inflexible elongated member having a first end, b) light transmission and imaging means provided at the first end of said elongated member to project light and receive light images, c) said light transmission and imaging means including means for piercing human flesh to permit surgical insertion of said light transmission and imaging means through human flesh into a body cavity, d) said light transmission and imaging means being affixed to said first end of said inflexible elongated member, e) said elongated member having means for containing a lighting means and a light image receiving means to cooperate with said light transmission and imaging means, and f) handle means joined to said elongated member to permit one-handed manipulation of said elongated member and to permit the same one hand to simultaneously exert manual pressure on said elongated member in the direction of said light transmission and imaging means for surgical insertion of said light transmission and imaging means through human flesh into a body cavity.

5,380,292

GASTROINTESTINAL NEEDLE MECHANISM

Donald Wilson, Clemmons, N.C., assignor to Wilson-Cook Medical, Inc., Winston-Salem, N.C.

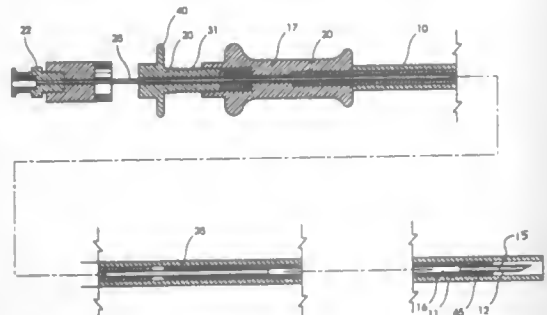
Filed Dec. 22, 1993, Ser. No. 171,926
Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—164

5 Claims

1. An adjustable needle mechanism comprising a catheter; a first tube slidable within said catheter; a head secured to one end of said catheter; a hollow needle mounted on one end of said tube in communication with said tube, said tube being slidable in said catheter to a first position wherein said needle projects out of the other end of said catheter and slidable in said catheter to a second position wherein said needle is withdrawn into said catheter;

- a handle fixed to said tube and extending through said head, said handle having a port communicating with said tube;
a handle stop member adjustably mounted on said head in the path of said handle;



said handle being movable to move said needle to said first position wherein said handle engages said handle stop member, said handle stop member being adjustable on said head to change the distance that said needle projects out of said catheter when said needle is in said first position.

5,380,293

INTRAVENOUS INFUSION SET

Graham C. Grant, 19 Lockley Parade, East Roseville, New South Wales, 2069, Australia

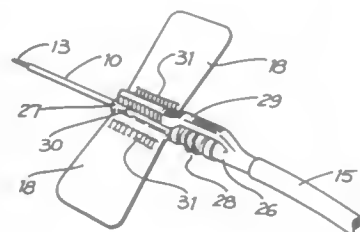
Filed Feb. 2, 1994, Ser. No. 190,641

Claims priority, application Australia, Feb. 3, 1993, PL7085

Int. Cl.⁶ A61M 5/32, 25/02, 25/00

U.S. Cl. 604—177

4 Claims



1. An intravenous infusion set comprising:

- a hypodermic needle;
- a length of flexible tubing being connected to one end of the needle for delivering an infusant liquid to the needle;
- a second end of needle carrying a sharp tip, the second end of needle being housed inside a plastic material cannular sleeve, the needle being axially slidable relative to the sleeve between a first position, in which the sharp tip of the needle projects beyond the sleeve, and a second position in which the sharp tip of the needle is retracted and is located entirely within the sleeve;
- a first body moulding connected to and moveable with the needle;
- a second body moulding connected to the sleeve, the second body moulding being slidable relative to the needle whereby second body moulding is moveable in an axial direction toward and away from the first body moulding;
- a bridge integrally formed with one of the first and the second body mouldings, and the bridge projecting in an overlying relationship with respect to the other one of the first and the second body mouldings; and
- transversely extending wing-like strips integrally formed with the other one of the first and the second body mouldings, the wing-like strips being foldable toward one another and being positioned, when so folded, to clamp the bridge therebetween once the first body moulding has sufficiently moved axially toward the second body moulding so that the wing-like strips, when folded toward one

another, are able to hold manually the first body moulding and second body moulding in a juxtaposed relationship once the needle is in the first position, and thereafter the wing-like strips, during use of the infusion set, being moveable to lie flat against skin of a patient to facilitate fastening of the infusion set to the skin of the patient.

5,380,294

WINDOWED VEIN CATHETER DRESSING

Christer Persson, Aneby, Sweden, assignor to Procter & Gamble Hygien Aktiebolag, Krista, Sweden

PCT No. PCT/SE92/00030, § 371 Date Jul. 20, 1993, § 102(e)

Date Jul. 20, 1993, PCT Pub. No. WO92/12757, PCT Pub.

Date Aug. 6, 1992

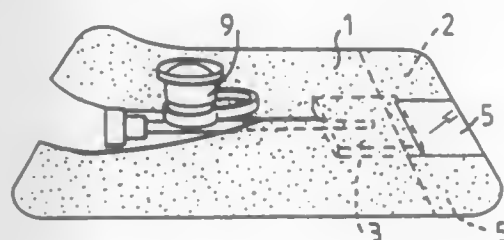
PCT Filed Jan. 24, 1992, Ser. No. 90,076

Claims priority, application Sweden, Jan. 25, 1991, 9100230-3

Int. Cl.⁶ A01M 25/02

U.S. Cl. 604—180

11 Claims



1. In a vein catheter dressing adapted to secure the housing of a vein catheter on a patient's skin, wherein the dressing comprises a supporting foil (1), an adhesive layer (2) on the side of the foil (1) to be applied to the skin of the patient, a liquid absorbent pad (3) on a central part of said adhesive layer, said pad being adapted to be applied over the incision of the catheter and being substantially smaller than the supporting foil (1) and being spaced inwardly from the margins of the supporting foil, two release foils (7, 8) which before application of the dressing cover the adhesive layer (2) and the pad (3), and a slit that extends in a direction away from the pad through an edge of the dressing; the improvement comprising a window aperture in the supporting foil, said window aperture being disposed on only the side of the pad opposite the slit, and a layer of transparent material (5) covering said window aperture.

5,380,295

DELIVERY APPARATUS WITH MECHANISM PREVENTING REARWARD MOVEMENT OF A PISTON DISPOSED THEREIN

Rita D. Vacca, Glendale, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Dec. 14, 1992, Ser. No. 988,267

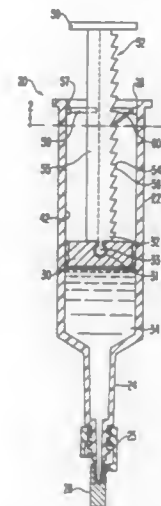
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—187

10 Claims

1. A delivery apparatus comprising:
- a container portion having a delivery end and an opposite open end adapted to receive a piston;
 - a piston adapted to be positioned in said container portion so as to be sealingly slidable against an interior surface of said container portion;
 - a push rod connectible to said piston for moving said piston within said container portion along said interior surface in a forward direction towards said delivery end to expel material contained within said container portion; and
 - means for continuously preventing movement of said piston in the reverse direction away from said delivery end including at least one semi-flexible detent member extending away from the interior of said container portion, said at least one detent member arranged to engage a series of

projections formed on said push rod by moving into and out of engagement with consecutive projections of said series of projections, said means for preventing movement of the piston in the reverse direction permitting said piston to move a predetermined limited distance in said reverse direction, said predetermined distance being selected so as to allow the filled, sealed delivery apparatus to be steril-



ized with the push rod connected to the piston by accommodating slight movement of the piston during said sterilization, whereby said at least one detent member and said projections permit movement of said push rod and piston towards said delivery end but prevent movement of same away from said delivery end beyond said predetermined limited distance.

5,380,296

MULTI-CELLED SAFETY PACKAGE, NEEDLE GUARD AND SAFE DISPOSAL MODULE FOR PRE-FILLED MEDICATION CARTRIDGES

William H. Smedley, Lake Elsinore; Terry M. Haber, Lake Forest, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Sterling Winthrop Inc., Malvern, Pa.

Division of Ser. No. 153,945, Nov. 16, 1993, Pat. No. 5,324,272, which is a continuation of Ser. No. 973,582, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 558,878, Jul. 27, 1990, abandoned. This application Jun. 13, 1994, Ser. No. 259,289

Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—193

7 Claims

1. A safety syringe comprising:
- a prefilled cartridge-needle unit including a hollow barrel having a plunger end and a needle end, a piston mounted within the barrel, and a needle assembly, including a needle, mounted to the needle end; and
 - a hollow enclosure unit sized for housing the cartridge-needle unit therein for movement between safe and use positions regardless of the relative rotary orientations of the cartridge-needle unit and the enclosure unit, the enclosure unit comprising:
 - a body section housing the barrel, the body section having a plunger end and a needle end;
 - a stem section attached to the body section;
 - an end section attached to the body section to cover the plunger end of the barrel assembly;
 - the stem section being separable from the body section and the end section being at least partially separable from the body section; and
 - the stem section configured to drive the piston along the barrel after the end section has been at least partially

separated from the body section to expose the plunger end of the barrel assembly;

said needle assembly including a hub having a radially extending rear shoulder facing the plunger end of the barrel and a front shoulder facing away from the rear shoulder;

said body section including an inwardly extending first spring finger configured to engage the rear shoulder when the cartridge-needle unit is at a safe position partially withdrawn from the plunger end of the body section, said



first spring finger positioned to engage said rear shoulder after the needle is fully within the body section to restrict removal of the needle assembly from the plunger end of the body section to help prevent inadvertent needle sticks; and wherein the body section includes a second inwardly extending spring finger configured to engage the front shoulder when the cartridge needle unit is in the safe position to restrict movement of the needle assembly back through the needle end of the body section to help prevent inadvertent needle sticks.

5,380,297

SYRINGE

Alexis A. F. Wadman, Bedfordview, and Hendrikus J. V. D. Meyden, Edenvale, both of South Africa, assignors to Inject Development Limited, Tortola, Virgin Islands (Br.)

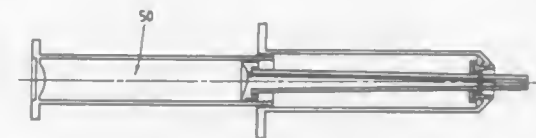
Filed Jul. 27, 1993, Ser. No. 98,451

Claims priority, application South Africa, Jul. 28, 1992, 92/5651; Oct. 21, 1992, 92/8125

Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—195

21 Claims



1. A syringe comprising: a barrel having a needle end and a handle end; a piston having an operatively inner and an outer end, and which is reciprocable in the barrel with the outer end facing the needle end of the barrel, there being a liquid passage between the piston ends, which passage is connectable at the outer piston end to needle means; an open ended generally tubular sheath having a needle end and a handle end, and being slidable over the barrel; connecting means for enabling the sheath and the piston to be attached together with the sheath extending around the barrel, and enabling the sheath and the piston to be selectively detachable from each other with the

syringe assembled for use; the sheath being of sufficient axial length to extend to surround needle means attached to the piston in use, when the piston and sheath are detached from each other and the inner piston end is toward the handle end of the barrel and the barrel is retracted from the sheath.

5,380,298

MEDICAL DEVICE WITH INFECTION PREVENTING FEATURE

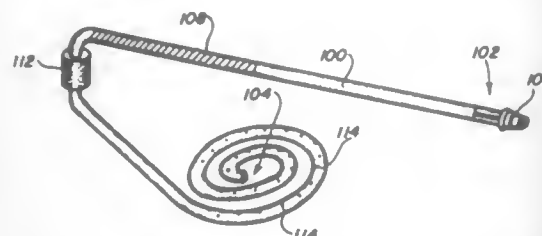
Paul M. Zabetakis, Stamford, Conn.; Catherine M. Cotell, Alexandria, Va., and Douglas B. Chrissy, Bowie, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 7, 1993, Ser. No. 43,914

Int. Cl.⁶ A61M 5/32, 25/00

U.S. Cl. 604—265

23 Claims



1. A medical device having a section for insertion into and protrusion from an attachment site, surrounded by tissue, in a body of an animal, said section comprising
 - a flexible member having an outer periphery; and
 - a continuous, bioactive, biocompatible, flexible ceramic coating surrounding and adhered to at least a portion of said outer periphery of said flexible member, said coating having the ability to support growth of said tissue therealong and the ability to form a tight and sterile bond with said tissue, said flexible coating being sufficiently flexible so that said flexible member, when inserted into and protruding from said attachment site, does not significantly restrict movement of the body around said attachment site.

5,380,299

THROMBOLYTIC TREATED INTRAVASCULAR MEDICAL DEVICE

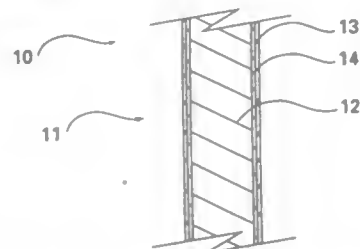
Neal E. Fearnot; Anthony O. Ragheb, and William D. Voorhees, III, all of West Lafayette, Ind., assignors to MED Institute, Inc., West Lafayette, Ind.

Filed Aug. 30, 1993, Ser. No. 114,261

Int. Cl.⁶ A61M 5/32

U.S. Cl. 604—265

18 Claims



1. An intravascular medical device comprising:
 - a structure shaped and sized for introduction into a vascular system of a patient, and structure including a base material and a homogeneous coating of a thrombolytic agent and at least one from a group consisting of a cellulose and a cellulose-based polymer on said base material.

5,380,300

DOUCHE NOZZLE

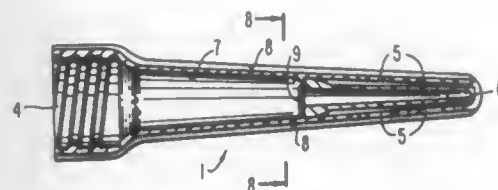
Robert W. Pritchard, Pittsburgh, and Lawrence J. Stappi, Bellevue, both of Pa., assignors to SmithKline Beecham, Philadelphia, Pa.

Filed Aug. 19, 1993, Ser. No. 109,178

Int. Cl.⁶ A61M 31/00

U.S. Cl. 604—275

2 Claims



1. A douche vaginal nozzle, comprising an elongated hollow body having an open proximal end and a distal end, a plurality of apertures through said tubular body adjacent said distal end to permit liquid flowing, under initial pressure, through the interior of said tubular body toward said distal end to exit said nozzle, and an elongated baffle member, comprising a liquid permeable porous body, arranged inside said tubular body adjacent said apertures for regulating the flow of liquid exiting said nozzle, wherein said porous body comprises means to diffuse said flow of liquid, under said initial pressure, with a reduced pressure, to a gently flowing stream, and wherein said porous body comprises means to minimize suckback of liquid exiting said nozzle, when the initial pressure is released, said tubular body of said nozzle having an internally threaded open base portion at said proximal end for threaded attachment to a bottle filled with a liquid douche, and a plurality of spaced-apart grooves are formed on the exterior of said tubular body extending longitudinally from said open proximal end, across said based portion and to said distal end.

5,380,301

CATHETER/HUB STRAIN RELIEF AND METHOD OF MANUFACTURE THEREOF

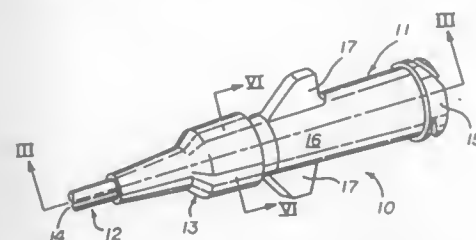
James B. Prichard, St. Peters, and Raymond O. Bodicky, Oakville, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Jul. 10, 1992, Ser. No. 911,599

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—281

9 Claims



1. A catheter comprising:
 - catheter tube means forming a lumen therethrough,
 - hub means forming a bore therethrough and having a basket means formed at a distal end thereof, said basket means including a plurality of rib members extending away from said distal end of said hub in generally parallel relationship with each other and with a longitudinal axis of said hub means, said rib members being spaced apart from each other to form a plurality of openings through said basket means into said bore of said hub means, and
 - strain relief means including means for attaching said catheter tube means to said hub means such that said catheter tube lumen is in fluid flow connection with said hub means bore, and at least a portion of said strain relief means

passing through and filling said openings through said basket means of said hub means.

5,380,302

CANNULA FIXATION DEVICE WITH RETAINING RING HAVING IDENTATIONS

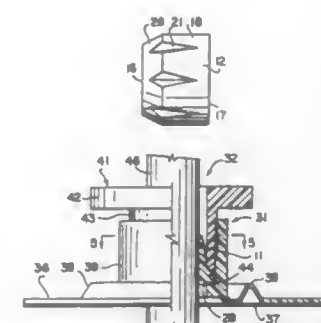
Michael J. Orth, San Jose, Santa Clara County, Calif., assignor to Unisurge, Inc., Cupertino, Calif.

Filed Feb. 10, 1993, Ser. No. 16,072

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—283

11 Claims



1. A retaining ring for use with a cannula fixation device to secure cannula of various sizes therein comprising a body of elastomeric material, said body having a generally cylindrical configuration and a longitudinal axis, said body also having an outer cylindrical surface and first and second end surfaces, said body having a bore extending therethrough along the longitudinal axis and through the first and second end surfaces with the body providing an inner cylindrical surface which defines the bore and a plurality of circumferentially spaced-apart indentations formed in the body and spaced from the inner cylindrical surface, the indentations extending parallel to the longitudinal axis and outwardly through the outer surface of the body between the first and second ends.

5,380,303

METHOD FOR USING AN ANTIMICROBIAL AGENT FOR OPHTHALMIC FORMULATIONS

Frank J. Holly, 301 York Ave., Lubbock, Tex. 79416, and Stephen R. Tonge, Birmingham, England, assignors to Frank J. Holly, Lubbock, Tex.

Continuation of Ser. No. 891,425, May 29, 1992, Pat. No. 5,300,296, which is a continuation-in-part of Ser. No. 432,171, Nov. 6, 1989, abandoned. This application Aug. 30, 1993, Ser. No. 112,942

Int. Cl.⁶ A61M 35/00

U.S. Cl. 604—290

6 Claims

1. A method, for treating a patient eye affected by a syndrome, which comprises:
 - applying to said eye, a topical medication comprising:
 - an ophthalmically acceptable aqueous medium;
 - an effective antimicrobial amount of poly[oxyethylene-(dimethylimino)-ethylene-dimethylimino]-ethylene dichloride copolymer in a 1:2 molecular ratio from about 0.001 percent by weight to about 1.000 per cent by weight;
 - an effective pH stabilizing amount of buffer;
 - a metal ion chelating agent selected from a group consisting of ethylenediaminetetraacetic acid and alkali metal salts thereof; and
 - applying a further preparation known to be effective against said syndrome.

5,380,304

FLEXIBLE, KINK-RESISTANT, INTRODUCER SHEATH AND METHOD OF MANUFACTURE

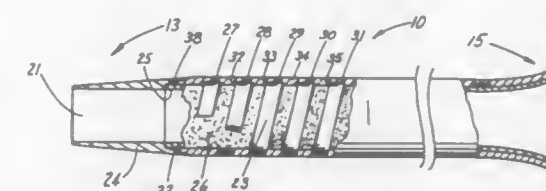
Fred T. Parker, Bloomington, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Continuation-in-part of Ser. No. 741,689, Aug. 7, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 21,398

Int. Cl.⁶ A61M 25/00

U.S. Cl. 604—282

24 Claims



1. A flexible, kink-resistant, introducer sheath, comprising:
 - an inner tube having a passageway extending longitudinally therethrough
 - a coil having a plurality of turns positioned longitudinally and compression fitted around and applying a compressive forces to said inner tube, said turns having a predetermined spacing therebetween; and
 - an outer tube positioned longitudinally around said coil and said inner tube and connected to said inner tube through the spaces between said turns.

5,380,305

HEMOSTATIC SAFETY CATHETER-CANNULA ASSEMBLY

Ahmed F. Ghouri, Des Moines, Iowa, assignor to Jerry D. Rockhold, Jr., Lineville, Iowa

Filed Apr. 20, 1993, Ser. No. 48,187

Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—263

5 Claims



1. A hemostatic safety catheter assembly for the prevention of contamination by blood during vascular or intracavitary insertion, said assembly comprising:
 - (a) a catheter including a base and a flexible catheter tube connected to the base;
 - (b) a one-way valve means in the base of the catheter that is biased to normally prevent blood flow through the catheter and including a gating means operable to open the one-way valve means for fluid flow by fluid supply tubing that is inserted into the base of the catheter to engage and actuate the one-way valve; and

(c) said one-way valve means is positioned in said base in such fashion that when said one-way valve means is opened by the insertion of said fluid supply tubing into the base, said gating means is moved into a position that does not disrupt the flow of fluid through said base so as to avoid turbulence in said fluid flow.

5,380,306

UNITARY COMPOSITE CONNECTOR FOR A LIQUID CIRCUIT, IN PARTICULAR FOR MEDICAL APPLICATIONS

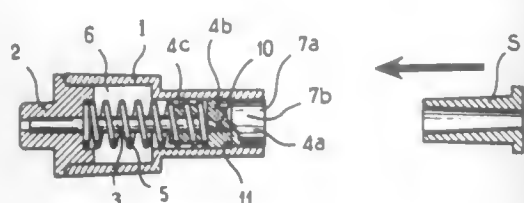
Thierry Brinon, Ecouen, France, assignor to Vygon, Ecouen, France

Filed Nov. 23, 1992, Ser. No. 980,547

Claims priority, application France, Nov. 25, 1991, 91 14492
Int. Cl.⁶ A61M 5/00

U.S. Cl. 604—244

21 Claims



1. A unitary composite connector for a liquid circuit, in particular for medical applications, the connector comprising: means constituting a tubular chamber extending between an upstream coupling means extending from said chamber toward an upstream end of said connector and a downstream coupling means extending from said chamber toward a downstream outlet opening of said connector, said upstream coupling means including an upstream passage extending from said upstream end to said chamber and said downstream coupling means including a downstream passage extending from said chamber to said downstream outlet opening;

- a hollow needle which is fixed in said upstream passage and which is disposed in said chamber for causing said upstream passage to be in fluid communication with said downstream passage; and
- a plug being made of material that permits said needle to be passed through it and that recaptures its closure properties whenever said needle is not passing through it, said plug being mounted in said downstream passage so as to be capable of sliding between a downstream stable closure position where the plug closes said downstream passage, where said needle does not pass through said plug, and where said plug completely fills said downstream outlet opening so as to prevent any dead volume at said downstream outlet opening to thereby prevent bacteria from entering said downstream passage, and an upstream position where said needle does pass through said plug and towards which said plug can be pushed by a member inserted in said downstream passage from outside said connector through said downstream outlet opening, and spring means situated in said chamber resiliently urging said plug towards its downstream stable closure position.

5,380,307

CATHETER WITH ATRAUMATIC DRUG DELIVERY TIP

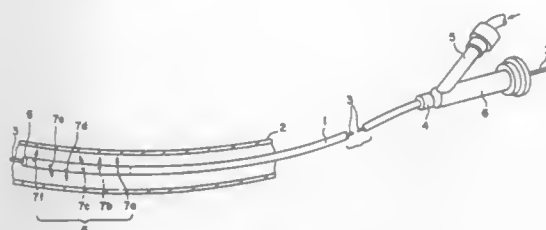
U. Hiram Cbee, Palo Alto, Calif., and Edward R. LeMoure, New Haven, Conn., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Sep. 30, 1992, Ser. No. 954,669

Int. Cl.⁶ A61M 5/00, 25/00

U.S. Cl. 604—264

17 Claims



1. A catheter comprising an elongated tubular body having a proximal end section, a main section and a distal end section; and a port in the proximal end section for supplying medication into said catheter;
- said distal end section having a plurality of radial holes of different diameters for radially ejecting said medication, and a tip located distally in said distal end section and including an axial hole for axially ejecting medication, said radial holes being spirally arranged in order of their diameter, with the larger diameter holes being located towards said tip of said distal end section.

5,380,308

CONTAINMENT VESSELS FOR LIQUID WASTE

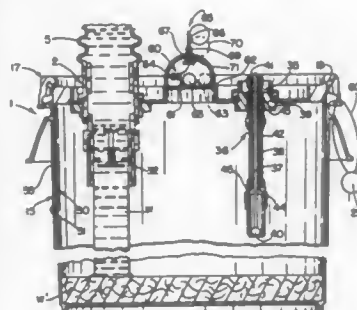
Robert E. Ganya, Clarion, Pa.; Otto V. Jackson, Orlando, Fla., and Diane M. Gunya, Clarion, Pa., assignors to Millen Systems Corp., Twinsburg, Ohio

Filed Jun. 25, 1992, Ser. No. 906,942

Int. Cl.⁶ A61M 1/00; B01J 19/06; B65D 85/82

U.S. Cl. 604—323

20 Claims



1. A containment vessel for liquid waste comprising a container having a top and bottom and a side wall extending between said top and bottom, and an inlet for introducing liquid waste into said container, said side wall having an interior surface coated with a layer of gelling material over a substantial portion of the height of said container from said bottom to said top, all of said gelling material which comprises said layer being adhered directly to said interior surface by an adhesive coating on said interior surface which dissolves when contacted by the liquid waste to release said gelling material into the liquid waste and thereby transform the liquid waste into a non-pourable gel.

5,380,309

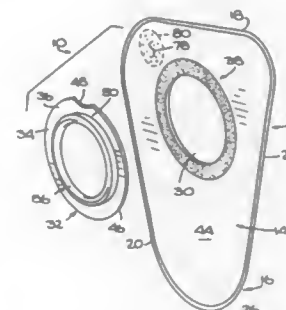
FLUSHABLE OSTOMY POUCH WITH MECHANICAL COUPLING

Denis E. Keyes, Rocky Hill, and Kenneth Johnsen, Piscataway, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 14,953, Feb. 8, 1994, abandoned. This application Jun. 9, 1994, Ser. No. 257,499
Int. Cl.⁶ A61F 5/44

U.S. Cl. 604—338

17 Claims



1. A flushable ostomy pouch for holding body waste that passes through a stoma comprising,
 - a) an envelope formed of flexible plastic sheet material defining a waste collection chamber for body waste that passes through a stoma,
 - b) a waste inlet opening formed in said envelope for passage of waste material from said stoma into said collection chamber,
 - c) flexible coupling means on said envelope around said waste inlet opening for positioning said waste inlet opening around a stoma,
 - d) adhesive bonding means for adhesively and detachably bonding said coupling means to said envelope, whereby said coupling means is removable from said envelope to facilitate flush disposal of said envelope in a toilet, said adhesive bonding means having a predetermined bonding strength that permits said coupling means to be peeled as a unit from said envelope so as to be reusable or discardable; and
 - e) means for facilitating removal of said coupling member from said envelope.

5,380,310

DISPOSABLE SANITARY ARTICLE FOR INCONTINENT PERSONS

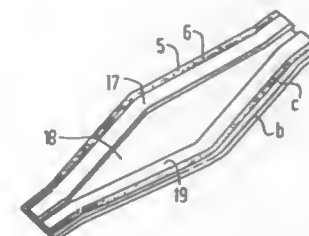
Sem Mitranl, Ris Orangia, France, assignor to Kayserberg, S.A., France

Continuation of Ser. No. 854,546, Apr. 21, 1986, abandoned, which is a continuation of Ser. No. 577,630, Jan. 31, 1984, abandoned. This application Mar. 15, 1991, Ser. No. 670,385

Claims priority, application France, Jun. 2, 1982, 82-09591
Int. Cl.⁶ A61F 13/15, 13/20, 5/44

U.S. Cl. 604—385.1

8 Claims



1. A disposable sanitary article to be worn by incontinent adult males comprising an absorbing pad having a liquid-impermeable sheet attached to an exterior side of said pad and

a liquid-permeable sheet attached to an interior side of said pad, said article having an overall substantially rectangular shape with each longitudinal edge of the article being folded back on the liquid-permeable sheet to form longitudinal folds, with each longitudinal edge being secured to a central part of the article at each end of both of said longitudinal folds so as to form a semi-enclosed area, so dimensioned that a portion of said longitudinal folds which is present between each end of each of said longitudinal folds are movable from a position close to the central part to a position spread apart so as to form a pouch so that said liquid-permeable sheet is present within said pouch so that said liquid-permeable sheet comes in contact with a wearer's skin, and wherein said sanitary article is of a size and dimension to encompass external male genitalia but not extend around a wearer's waist so as to absorb fluid emitted from said external male genitalia but not sized to enable said article to collect fecal matter of said adult male and further wherein said sanitary article does not include means for attaching said article around the wearer's waist.

5,380,311

APPLICATOR FOR EXTERNAL URINARY COLLECTION CATHETER, AND URINARY COLLECTION DEVICE COMPRISING SAID APPLICATOR

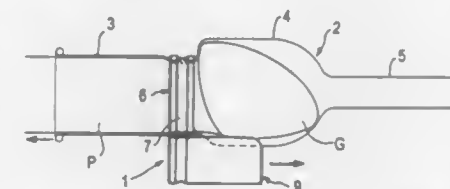
Pierre Bailly, Montrouge, France, assignor to Synthelabo, Le Plessis, France

Filed Jul. 19, 1993, Ser. No. 92,889

Claims priority, application France, Jul. 20, 1992, 92 08927
Int. Cl.⁶ A61F 5/44

U.S. Cl. 604—349

6 Claims



1. A male urinary collection catheter kit, comprising:
 - (a) a catheter (2) having a flexible sheath (3) which is placed in a leaktight manner onto a penis and which is rolled up prior to being placed on the penis, a tubular-shaped part (4) which receives the glans of the penis and which is connected to the sheath (3), and a tube (5) in which urine is removed and which is connected to the sheath (3); and
 - (b) an applicator (1) having a resiliently deformable ring (6) the diameter of which may be varied so that it can be slipped over said tubular-shaped part (4), then the diameter can be reduced until the ring (6) is caught behind the glans, then the diameter can be maintained while the virga of the penis is pulled upon to cause it to extend so that the flexible sheath (3) can be unrolled over the penis and then the diameter is capable of spontaneously increasing so that the applicator (1) can be removed from said catheter.

5,380,312

ONE-PIECE MALE URINARY INCONTINENCE CONDOM, WITH A SKIN SHIELD, NON-RETURN VALVE, URINE COLLECTING COMPARTMENT, AND DRAIN VALVE

Victor H. Goulter, 485 Molino Dr., San Francisco, Calif. 94127
Filed Feb. 23, 1993, Ser. No. 20,583

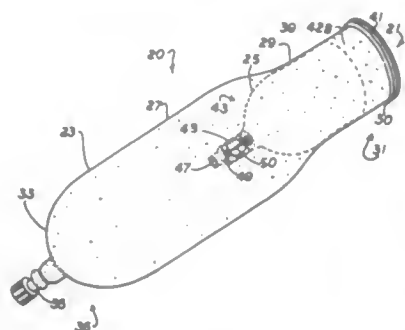
Int. Cl.⁶ A61F 5/44

U.S. Cl. 604—352

10 Claims

1. A male incontinence device, comprising:
 - a first compartment sized to fit over the penis of a wearer,
 - a second, urine-collecting compartment defined by a condom having a closed distal end and an open proximal end and being sized so that it can be fitted over at least the

distal end of the penis of a wearer and further wherein at least the distal end of the condom is extensible when partially filled with urine,
a skin shield which separates the interior of the first compartment and the interior of the second compartment,



a fluid passage connecting said first compartment to said second compartment,
and securing means for securing at least a portion of the first and second compartments to the penis of the wearer.

5,380,313

LOOP FASTENING MATERIAL FOR FASTENING DEVICE AND METHOD OF MAKING SAME

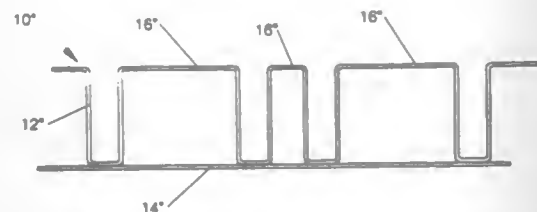
David J. K. Goulait, Cincinnati, Ohio, and Jerry E. Carstens, Germantown, Tenn., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 382,516, Jul. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 64,896, Jun. 19, 1987, Pat. No. 4,854,984. This application Jan. 16, 1992, Ser. No. 821,665

Int. Cl.⁶ A61F 13/15, 13/20

U.S. Cl. 604—391

3 Claims



1. A disposable absorbent article having end edges and a soft, comfortable outer layer, said absorbent article comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, an absorbent core positioned between said topsheet and said backsheet, and a fastening device positioned on the disposable absorbent article, said fastening device comprising:

- a hook fastening material comprising a base and a multiplicity of prongs joined to said base, each of said prongs being made of thermoplastic hot melt adhesive deposited onto said base; and
- a loop fastening material for engaging said prongs of said hook fastening material;

said loop fastening material comprising:

- a fibrous lamina having pleats of nonuniform pitch, said fibrous lamina being bonded to said backsheets, said pleats extending in a direction perpendicular to said end edges of said disposable absorbent article, said backsheets being substantially entirely covered by said fibrous lamina to form a soft comfortable outer layer.

5,380,314

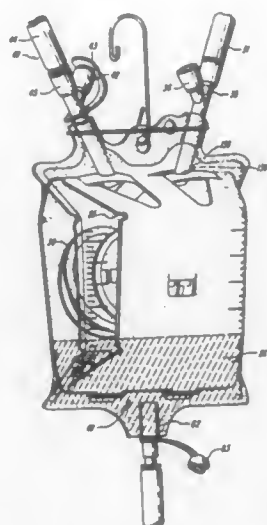
IN-LINE FLUID RECOVERY SYSTEM

Steve A. Herweck, Nashua, and Theodore Karwowski, Hollis, both of N.H., assignors to Atrium Medical Corporation, N.H.
Filed Sep. 4, 1991, Ser. No. 755,032

Int. Cl.⁶ A61M 1/00

U.S. Cl. 604—403

18 Claims



1. Apparatus for the collection and reinfusion of blood comprising

- a blood bag formed of flexible sheet material and configured for use with a source of suction having a normal suction level and subject to occasional excessive suction, said blood bag having an unobstructed inlet for receiving a flow of blood and a substantially unobstructed suction inlet connectable to the source of suction, both inlets being located in a top region, and an outlet port located in a bottom region of the blood bag, and
- an internal stent enclosed within said blood bag and having a spring resiliently urging the stent outwardly against walls of the blood so that the bag forms a container of defined volume, the spring having a force constant selected so that the spring is preloaded in an intermediate position at said normal suction level and the stent moves inwardly, when said excessive suction is applied due to atmospheric pressure exerted on surrounding bag walls, resulting in a defined cross-section inside the bag that varies in use as a function of suction level, said stent moving in response to changes of suction level to vary said volume for modulating abrupt variations of suction level applied through said blood flow inlet.

5,380,315

MIXING APPARATUS

Keinosuke Isono, Saitama, and Tatsuo Suzuki, Tokyo, both of Japan, assignors to Material Engineering Technology Laboratory Incorporated, Tokyo

Filed Jan. 26, 1993, Ser. No. 9,073

Claims priority, application Japan, Feb. 4, 1992, 4-048060

Int. Cl.⁶ A61B 19/00; A61M 5/32

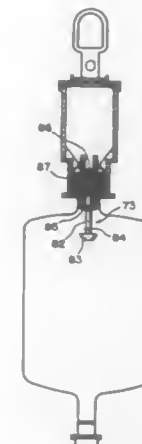
U.S. Cl. 604—416

9 Claims

1. An apparatus for separately storing and selectively mixing a first component, which is in a liquid form, and a second component, comprising:

- (a) a first container made of a flexible material, having a communication mouth with an isolator and adapted to store the first component therein, said communication mouth having detents formed thereon,
- (b) a second container having a mouth portion in which a plug is fitted, and adapted to store the second component,

- (c) a fixing member held between the plug and the communication mouth,
- (d) a supporting case in which the second container is accommodated, said supporting case having bores formed at a position near a free end thereof, such that the detents fit in the corresponding bores to connect the supporting case to the communication mouth of the first container, whereby the fixing member is compressed to secure a liquid-tight state between the plug and the fixing member and between the mouth and the fixing member,
- (e) a hollow, inflexible communication device capable of



penetrating through the isolator, the fixing member and the plug to communicate the first container and the second container with each other, said communication device being tentatively held in the communication mouth by an annular rib formed thereon, and movable therein, whereby the first container and the second container communicate with each other in a liquid-tight fashion by externally pressing the communication device toward the second container so that the first component and the second component can be mixed together without changing the positional relationship between the first container and the second container.

5,380,316

METHOD FOR INTRA-OPERATIVE MYOCARDIAL DEVICE REVASCULARIZATION

Michael Alta, Sunnyvale, Calif.; Mahmood Mirhoseini; Mary Cayton, both of Glendale, Wis.; Carl J. Simpson, and Brian Guscott, both of Los Altos Hills, Calif., assignors to Advanced Cardiovascular Systems, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 630,259, Dec. 18, 1990, abandoned.

This application Jun. 16, 1993, Ser. No. 79,699

Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—7

15 Claims



1. A method of revascularizing a desired portion of a patient's myocardium, comprising the steps of:

providing an elongated flexible optical fiber system having proximal and distal ends;
guiding a distal portion of the elongate flexible optical fiber system within the patient's chest cavity and urging the distal end thereof into contact with an exterior portion of the patient's epicardium which is extensive with the desired portion of the myocardium to be revascularized; and transmitting laser energy from a remote source thereof through the optical fiber system to the distal end of said optical fiber system and directing transmitted laser energy emitted from the distal end thereof in a beam onto the portion of the patient's epicardium in contact therewith with sufficient energy and for a sufficient length of time to form a revascularizing channel through the epicardium, the myocardium and the endocardium having transverse dimensions at least the same as the distal end of the optical fiber system while urging the distal end of the optical fiber system against tissue thereof.

5,380,317

MEDICAL DEVICE APPLYING LOCALIZED HIGH INTENSITY LIGHT AND HEAT, PARTICULARLY FOR DESTRUCTION OF THE ENDOMETRIUM

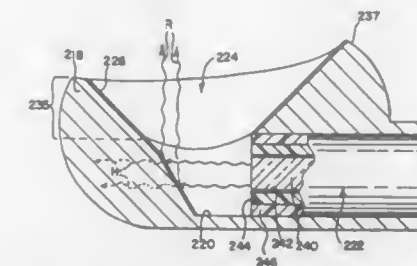
Royce B. Everett, Edmond, Okla.; George M. Acosta, Long Beach, and Hany M. G. Hussein, Costa Mesa, both of Calif., assignors to Trimedyn Laser Systems, Inc., Irvine, Calif., a part interest

Continuation of Ser. No. 460,843, Jan. 31, 1990, Pat. No. 5,242,437, which is a continuation-in-part of Ser. No. 205,218, Jun. 10, 1988, abandoned. This application Jul. 22, 1993, Ser. No. 96,478

Int. Cl.⁶ A61B 17/32

U.S. Cl. 606—15

50 Claims



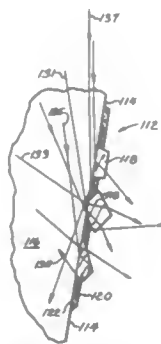
1. A device for applying a laser energy beam to a selected body site, comprising:

- an elongated, laser energy transmitting conduit having a proximal end region with a proximal end defined thereon and a distal end region with a distal end defined thereon and defining a laser energy path; and
- a hollow, bulbous element mounted on said distal end region of said conduit, said element including:
 - a cavity defined therein within which said distal end of said conduit is received;
 - a closed distal end wall blocking any transmission of a laser energy beam distally from said element coaxial with said laser energy path at said distal end of said conduit;
 - a laterally open aperture defined in said element and located proximally from said closed distal end wall and communicating with said cavity, said aperture being open to fluid communication from outside said element through said aperture into said cavity to said distal end of said conduit; and
 - beam splitting means, disposed entirely within said cavity, for receiving laser energy transmitted through said conduit and for directing at least a first portion of said received laser energy as a laser energy beam exiting said element along a lateral beam path through said aperture, said lateral beam path being transverse to said laser energy path at said distal end of said conduit.

5,380,318
CONTACT OR INSERTION LASER PROBE HAVING WIDE ANGLE RADIATION
 Norio Dalkuzono, Tokyo, Japan, assignor to Surgical Laser Technologies, Inc., Oaka, Pa.
 Continuation of Ser. No. 824,823, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 273,304, Nov. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 124,448, Nov. 24, 1987, abandoned, which is a continuation of Ser. No. 862,114, May 12, 1986, abandoned. This application Mar. 11, 1994, Ser. No. 212,653
 Int. Cl.⁶ A61B 17/32

U.S. Cl. 606—16

57 Claims

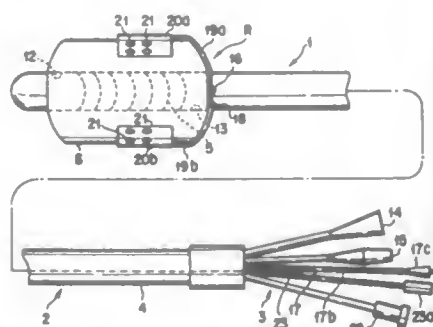


1. A medical laser delivery system for conveying laser energy from a source of laser energy to a tissue undergoing laser treatment; the delivery system comprising laser transmissive material having a laser energy input region for receiving laser energy from a laser source and a laser energy radiation surface for emitting laser energy from the delivery system; laser energy diffusing means, said diffusing means comprising laser transmissive particles of irregular shape and means for affixing the particles to the laser energy radiation surface, the particles affixed so that laser energy emitted from the radiation surface may be coupled into the particles and irregularly refracted and reflected thereby causing a wide laser energy radiation profile, the affixing means and the particles forming a tissue contact surface for directly contacting the tissue undergoing treatment, a substantial number of the particles partially extending from the affixing means.

5,380,319
HEAT USING THERAPEUTIC DEVICE
 Hidetoshi Saito, Hanno; Makoto Inaba, Tokyo; Motoyuki Tagawa, Tokyo, and Toru Nagase, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
 Filed Oct. 2, 1992, Ser. No. 955,660
 Claims priority, application Japan, Oct. 7, 1991, 3-259478
 Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—28

16 Claims



1. A heat using therapeutic device including an applicator provided with a first section that is insertable into a body cavity of a patient, a second section located on a rear end side

of the first section and adapted to be positioned outside a body of the patient, and warming means attached to the first section for use when a heat therapy is to be applied to the patient, said heat using therapeutic device further comprising:

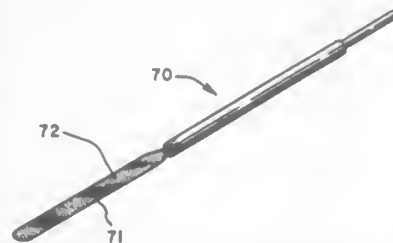
balloon means which is formed of a flexible material, said balloon means being arranged at the first section of the applicator to enclose the warming means, and said balloon means forming a space into which an operating fluid is introduced;

means for supplying and exhausting the operating fluid into and out of the space formed by the balloon means, said means for supplying and exhausting the operating fluid, expanding the balloon means to fix the applicator in the body cavity of the patient by supplying the operating fluid to the space formed by the balloon means; and
 medicine releasing means having a first section side and a second section side for releasing a medicine from a region near the warming mean, said medicine releasing means having a medicine ejecting portion formed on either an inner or outer surface portion of the balloon means without penetrating through the balloon means, a medicine supply portion formed on the second section side of the medicine releasing means, and a medicine passage for enabling a communication between the medicine ejecting portion and the medicine supply portion.

5,380,320
ELECTROSURGICAL INSTRUMENT HAVING A PARYLENE COATING
 James R. Morris, Sedalia, Colo., assignor to Advanced Surgical Materials, Inc., Littleton, Colo.
 Filed Nov. 8, 1993, Ser. No. 149,059
 Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—33

27 Claims



20. An electrosurgical instrument for use with a source of high-frequency electrical energy during surgery on tissue, said instrument comprising:

an electrosurgical implement for receiving said high-frequency energy and having at least one tissue-contacting surface formed thereon; and
 a parylene coating covering at least substantially all of said tissue-contacting surface of said electrosurgical implement having a thickness in the range of approximately 0.01 to 0.2 mil inches, thereby enabling said high-frequency electrical energy to be transported across said parylene coating by capacitive coupling.

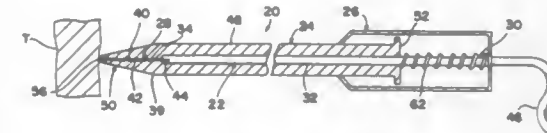
5,380,321
SHIELDED ENERGY TRANSMITTING SURGICAL INSTRUMENT AND METHODS THEREFOR
 InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
 Filed Nov. 4, 1992, Ser. No. 971,173
 Int. Cl.⁶ A61B 17/36

U.S. Cl. 606—41

5 Claims

1. A method of treating anatomical tissue within an anatomical cavity including the steps of
 forcing a distal end of an energy transmitting surgical instrument against a wall of the anatomical cavity;
 moving a shield of the energy transmitting surgical instrument to expose a distal end of an energy transmitting

member of the energy transmitting surgical instrument in response to resistance of the cavity wall;
 penetrating the cavity wall with the distal end of the energy transmitting member to introduce a portal sleeve of the energy transmitting surgical instrument within the cavity; shielding the distal end of the energy transmitting member in

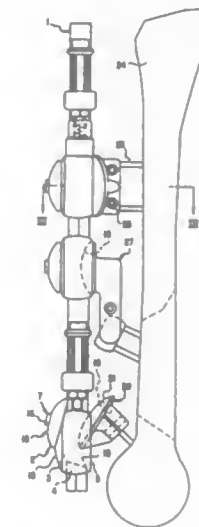


response to introduction of the portal sleeve into the anatomical cavity;
 exposing the distal end of the energy transmitting member; supplying energy to the distal end of the energy transmitting member; and
 treating the tissue with the distal end of the energy transmitting member.

5,380,322
BONE FIXATION DEVICE
 Breunis van den Brink, Harakampweg 37, 6731 AA Otterloo; Gerrit J. Termaten, Hanzeweg 17, 7241 CS, Lochem, and Johannes A. de Gruijl, Wildbaan 1, 3958 DH Amerongen, all of Netherlands
 Filed Dec. 17, 1992, Ser. No. 992,030
 Int. Cl.⁶ A61F 5/04

U.S. Cl. 606—57

16 Claims

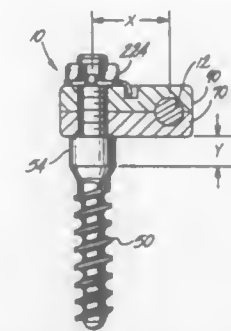


1. Bone fixation device comprising a profiled bar on which at least two supporting members have been movably and lockably mounted, which supporting members have a sliding portion with an opening therein for passing the bar and onto which supporting members receiving elements can be clamped, each serving to receive at least one screw, which can be secured in one part of a bone wherein each supporting member comprises a supporting plate extending from the sliding portion of the supporting member situated on the bar, with one surface of the supporting plate being concave and the opposing surface being convex and with an opening made in each plate for passing a clamping bolt which extends through a ring having a concave surface lying flat against the convex surface of the supporting plate and which bolt has been screwed into one of a number of threaded bores made in a receiving element having a convex surface lying flat against the concave surface of the supporting plate.

5,380,323
CLAMPS FOR SPINAL FIXATION SYSTEMS
 Robert S. Howland, Seal Beach, Calif., assignor to Advanced Spine Fixation Systems, Inc., Cypress, Calif.
 Filed Jan. 16, 1993, Ser. No. 78,724
 Int. Cl.⁶ A61F 5/00

U.S. Cl. 606—61

20 Claims



8. A spinal fixation system comprising:
 an assortment of anchor screws, each anchor screw comprising:
 a first end for fastening the anchor screw to a vertebra;
 a second end opposite the first end;
 a shoulder located between the first and second ends and having a lower face, facing the vertebra and an upper face opposite the lower face, the shoulder having a shoulder height between the upper and lower faces wherein the assortment includes anchor screws having various shoulder heights;
 an assortment of clamps for connecting a spine rod to the anchor screws, each clamp comprising:
 an upper-half clamp and a lower-half clamp;
 the upper-half clamp and lower-half clamp having an aperture for fastening to the anchor screw, the lower-half clamp engaging the upper face of the shoulder;
 the upper-half clamp and the lower-half clamp include a pair of facing channels, one of the pair being defined by the upper-half clamp and the other of the pair being defined by the lower-half clamp for receiving a spine rod at a particular rod angle from a plane perpendicular to a longitudinal axis of the vertebra wherein the assortment includes channels which hold the rod at different angles from a plane perpendicular to a longitudinal axis of the vertebra; and
 means for clamping the spine rod within the facing channels wherein the clamps in the assortment have various different distances from the anchor screw to the facing channels; and
 means for fastening the clamps to the anchor screws.

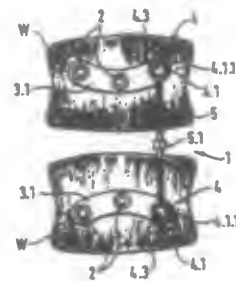
5,380,324
IMPLANTABLE DEVICE FOR STRAIGHTENING AND FIXING VERTEBRAE
 Walter Müller, Voehringen, and Georg Piotrowski, Oberndorf, both of Germany, assignors to Pina Vertriebs AG, Neuhausen 2/SH, Germany
 Filed Jul. 30, 1993, Ser. No. 99,618
 Int. Cl.⁶ A61B 17/58

U.S. Cl. 606—61

8 Claims

1. Device which can be fastened as an implant for a spinal column for fixing vertebrae, including fixing cervical vertebrae, on an anterior side, adjacent an esophagus, comprising:
 a first kidney-shaped mounting plate, said first mounting plate being arched to not lie in a single plane, said first mounting plate having a ribbed surface on one side and having two holes for receiving fastening screws;
 a second kidney-shaped mounting plate, said second mounting plate being arched to not lie in a single plane, said

second mounting plate having a ribbed surface on one side and having two holes; two fastening screws received by said two holes of said second mounting plate, said fastening screws for fastening said first mounting plate and said second mounting plate into a corresponding one vertebra and another vertebrae; articulated bearing means connected to said first mounting plate and an articulated bearing means connected to said second mounting plate, each articulated bearing means being arranged on an end of an associated mounting plate, on a side opposite said ribbed surface for positioning the articulated bearing means adjacent the esophagus, upon fastening the associated mounting plate on an anterior side



of a vertebra, each articulated bearing means including a bearing bush formed in one piece with said mounting plate, said bearing bush having a spindle hole extending essentially at right angles to a longitudinal extension of said mounting plate, including a bearing pin mounted in said bearing bush and movable therein; a spindle provided with left-hand and right-hand threads with an angular shaft piece for actuating said spindle, said spindle engaging said bearing pin through said spindle hole of said articulated bearing means connected to said first mounting plate and engaging said bearing pin through said spindle hole of said articulated bearing means connected to said second mounting plate.

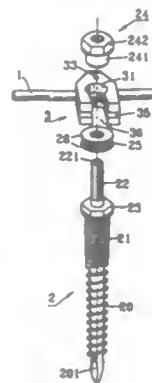
5,380,325 OSTEOSYNTHESIS DEVICE FOR SPINAL CONSOLIDATION

Michel Lahille, Vanhallan; Jean-Philippe Lemaire, Couternon, and Sami Khalife, Amlens, all of France, assignors to Blomat, Igny, France

Filed Nov. 5, 1993, Ser. No. 147,532
Claims priority, application France, Nov. 6, 1992, 92 13414
Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—61

20 Claims



1. An osteosynthesis device comprising a rod, a member having a threaded section extending from a head and fitted with a nut, and a connecting fastener, said fastener comprising a first smooth bore passed through by said rod, a first slit opening axially into said first bore,

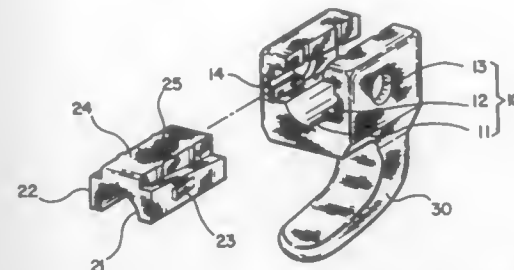
and a second smooth bore substantially perpendicular to said first slit and passed through by a portion of said threaded member section located between said member head and said nut, and a second slit opening axially into said second bore and having a width greater than the diameter of said threaded member section.

5,380,326 CLAMPING DEVICE FOR VERTEBRAL LOCKING ROD Chih-I Lin, 513 S. Golden Pados Dr., Diamond Bar, Calif. 10765

Filed Nov. 12, 1993, Ser. No. 151,016
Int. Cl.⁶ A61B 17/58

U.S. Cl. 606—61

4 Claims



1. A clamping device for a vertebral locking rod comprising: an outer clamping member having opposing ends, said outer clamping member being formed with a U-shaped damping mount portion that is located between opposing inner sides of said outer clamping member and extends between the opposing ends of said outer clamping member, each of said opposing inner sides including an inclined fitting slot, at least one of said opposing inner sides at its inclined fitting slot being formed with a first retaining member; and an inner clamping member having opposing ends, said inner clamping member including opposing inclined fitting members and an arcuate fastening mount portion located between said fitting members, at least one of said fitting members being provided with a second retaining member, wherein said inner clamping member is adapted to be inserted in a predetermined direction and slidably positioned within said outer clamping member with each of said fitting members mating with a respective one of said fitting slots, said U-shaped clamping mount portion and said arcuate fastening mount portion defining a substantially cylindrical clamping hole adapted to receive a vertebral locking rod, and said first and second retaining members being interengaged to retain said inner clamping member within said outer clamping member.

5,380,327 DEVICE FOR CONNECTING BONE FRAGMENTS BY MEANS OF A BONE PLATE

Christoph Eggers, Hamburg, and Arnold Keller, Kayhude, both of Germany, assignors to Waldemar Link GmbH & Co., Hamburg, Germany

Filed Dec. 1, 1993, Ser. No. 160,056
Claims priority, application Germany, Dec. 4, 1992, 9216565[U]

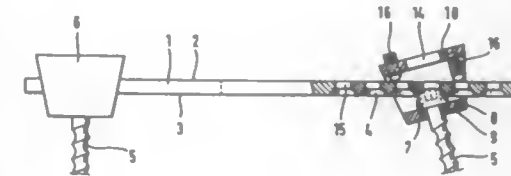
Int. Cl.⁶ A61B 17/56

U.S. Cl. 606—69

8 Claims

1. In a device for connecting bone fragments comprising a bone plate (1), at least one bone screw for connecting the bone plate to the bone fragments and at least one coupling part (6) for fixing the screw at a fixed angle with respect to the bone plate (1), characterized in that the coupling part (6) transversely surrounds the bone plate and is positioned at a fixed

angle to the screw, said screw forming a swivel bearing with the plate, said coupling part having a cover plate (10) carrying



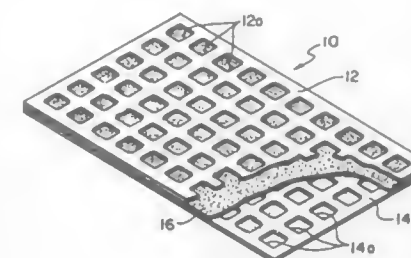
at least three fixing screws (16) arranged laterally offset with respect to the swivel bearing.

5,380,328 COMPOSITE PERFORATED IMPLANT STRUCTURES Frank H. Morgan, Las Vegas, Nev., assignor to TiMesh, Inc., Las Vegas, Nev.

Filed Aug. 9, 1993, Ser. No. 103,541
Int. Cl.⁶ A61F 2/28

U.S. Cl. 606—70

16 Claims



1. A composite surgical implant structure for use in orthognathic and reconstructive surgery and for the correction of cranial defects of human patients comprising:

- a) at least one layer of perforated and pliable, biocompatible metallic sheet material wherein the perforations are of a size such that bone screws may be inserted therethrough and into hard and soft tissues of a human patient; and
- b) at least one layer of biologically and chemically inert microporous membrane sheet material of like size and configuration in intimate contact with, supported by, and covering said at least one layer of perforated metallic

sheet material, said at least one layer of microporous membrane material being comprised of randomly dispersed polytetrafluoroethylene fibers having a pore size in the range of from about 0.2 to about 3.0 microns whereby desired biological nutrients are permitted passage through the pores of said membrane material and the perforations of said metallic sheet material of said implant structure to underlying hard and soft tissues of said human patient and unwanted biological cells and bacteria are precluded from passage through said implant structure to said tissues.

5,380,329 BONE AUGMENTATION METHOD AND APPARATUS James P. Elia, and Jerry W. Bains, both of Scottsdale, Ariz., assignors to Dental Marketing Specialists, Inc., Scottsdale and Jerry W. Bains and Salee C. Bains, Carefree, both of Ariz., Irrevocable Trust, a part interest

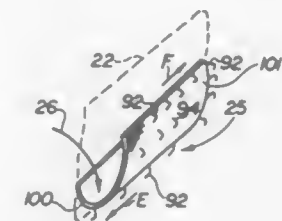
Filed Jul. 28, 1992, Ser. No. 920,799
Int. Cl.⁶ A61B 17/56; A61F 5/00

U.S. Cl. 606—72

13 Claims

1. A containment member for insertion in position intermediate facial tissue and underlying bone, said containment member being shaped to receive bone augmenting material and store said bone augmenting material adjacent said underlying bone, said containment member comprising

- (a) a resorbable sheet forming a pocket for receiving bone augmenting material and being shaped for insertion intermediate said facial tissue and said underlying bone to store said bone augmenting material adjacent said underlying bone; and,



(b) outwardly extending hooks attached to said resorbable sheet, said hooks being shaped and dimensioned to pierce said facial tissue.

5,380,330

Patent Not Issued For This Number

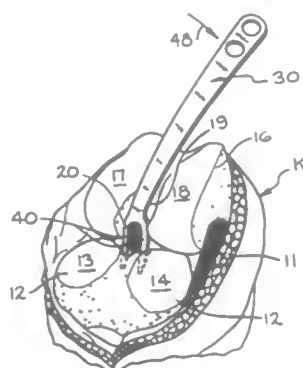
5,380,331
METHOD FOR PERFORMING KNEE SURGERY AND
RETRACTORS FOR USE THEREIN

W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43624

Continuation-in-part of Ser. No. 508,090, Apr. 11, 1990, Pat. No. 5,217,963. This application Jul. 20, 1992, Ser. No. 915,517
 Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—79

36 Claims



1. A lateral patellar retractor for use in performing knee surgery comprising:

- (a) a pair of spaced apart prongs having parallel outer edges, each of said outer edges lying respectively in a first plane and a second plane, said first plane and said second plane being parallel, spaced apart inner edges and upper and lower surfaces following a curved path such that the upper surface is concave and the lower surface is convex, each of said prongs terminating in a tip, the radius of curvature for the curved path followed by said upper surface being 3.31 inches \pm 0.030 inch, the distance between said outer edges being 0.770 \pm 0.030 inch, and the minimum distance between said inner edges being no less than 0.400;
- (b) a support section integral with said prongs, said support section having upper and lower surfaces which include opposing portions following a curved path such that the upper surface is convex and the lower surface is concave; and
- (c) a handle joined to said support section.

5,380,332
SYSTEM AND METHOD FOR PROFILING AN
ANATOMIC PATELLA

Joseph M. Ferrante, Cordova, Tenn., assignor to Wright Medical Technology, Inc., Arlington, Tenn.

Continuation of Ser. No. 976,615, Nov. 16, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,157
 Int. Cl.⁶ A61B 17/00; A61F 2/32

U.S. Cl. 606—79

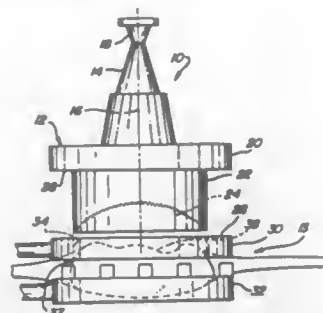
5 Claims

1. A system for profiling an anatomic patella, the system comprising:

- (a) a tool including a handle portion and a neck portion having a first end operatively connected to the handle portion and having a second end terminating in a grinding surface for being pressed against a posterior surface of a patella, the grinding surface being shaped, sized and configured to complement an articulating surface of a femoral prosthesis and engage the posterior surface of the patella and defining a concave hemispherical domed shape for

forming a hemispherical domed surface in the posterior surface of the patella, and

- (b) means for securing the patella as the grinding surface of the second end of the neck portion of the tool is pressed against the posterior surface of the patella and for guiding the grinding surface of the second end of the neck portion



of the tool to a predetermined medial portion of the posterior surface of the patella so that as the second end of the neck portion of the tool is rotated, the predetermined medial portion of the posterior surface of the patella is shaped to match the articulating surface of the femoral prosthesis.

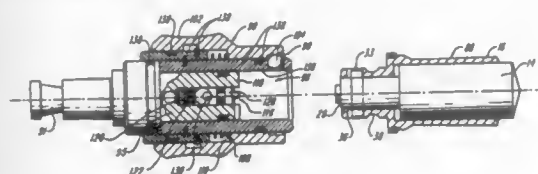
5,380,333
SURGICAL DRILL

Raphael F. Meloui, Randolph, and Jose E. Lizardi, Medfield, both of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Division of Ser. No. 25,977, Mar. 3, 1993. This application Jan. 25, 1994, Ser. No. 186,801
 Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—80

15 Claims



- 1. A drill apparatus for penetrating bone, comprising:
 - a generally cylindrical primary drill member having cutting surfaces at a distal end thereof and an elongate stem at a proximal end thereof, the stem having at least one driver engaging surface at its proximal end;
 - a generally cylindrical secondary drill member having cutting surfaces at a distal end thereof and a stem at a proximal end thereof, the secondary drill member having an axial bore extending therethrough that is adapted to receive the primary drill member in a clearance fit such that at least a portion of the proximal end of the primary drill member stem is able to protrude from the proximal end of the bore in the secondary drill member;
 - coupling means for joining the primary and secondary drill members to facilitate the rotation of the secondary drill member upon rotation of the primary drill member;
 - a drill body member having at a distal end a cylindrical socket adapted to receive at least the stem of the primary drill member and the stem of the secondary drill member, the socket comprising
 - an inner sleeve member defining an inner wall of the socket, a distal portion of the inner sleeve having an aperture disposed therein adapted to house an engagement bearing;
 - a retractable outer sleeve slidably disposed over the inner sleeve, and biased to a forward, non-retracted position;
 - an engagement bearing housed in the aperture and

adapted to protrude into the interior of the socket when a surface thereof is subject to a force produced by the outer sleeve being positioned in the forward, non-retracted position, and adapted to be forced out of the interior of the housing when the outer sleeve is in the retracted position;

seal means disposed about distal and proximal portions of the inner and outer sleeves for preventing contamination of interior portions of the drill body member;

an annular groove disposed about an external surface of the stem of the secondary drill member, the annular groove being adapted for locking engagement with the engagement bearing when the outer sleeve is in the forward, non-retracted position such that the primary and secondary drill members are secured within the housing member; and

a clutch mechanism having

- a drive means for facilitating rotation of the primary drill and secondary members and preventing counterclockwise rotation of the primary and secondary drill members, the drive means being disposed at a bottom portion of the socket of the drill body member and having at least one drive surface adapted to engage the driver engaging surface of the primary drill member stem to facilitate rotation of the drive means; and
- compression means for biasing the stem of the primary drill member away from the drive means to prevent rotation of the primary drill member absent sufficient axial load on the primary drill member to overcome the biasing force of the compression means.

5,380,334
SOFT TISSUE ANCHORS AND SYSTEMS FOR
IMPLANTATION

Paul A. Torrie, Marblehead, and Gary P. Tallent, Gloucester, both of Mass., assignors to Smith & Nephew Dyonics, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 18,449, Feb. 17, 1993, abandoned. This application May 6, 1993, Ser. No. 58,631
 Int. Cl.⁶ A61B 19/00

U.S. Cl. 606—104

22 Claims



1. A surgical kit for implanting a soft tissue anchor, the kit comprising:

- (i) an outer tube having an elongate body with distal and proximal ends, and a longitudinal bore along the length of the body for receiving an inner tube;
- (ii) an anchor stud having a longitudinal axis, the anchor stud releasably affixed to the distal end of the outer tube, the anchor stud comprising a bore along the anchor stud longitudinal axis, said bore in communication with the

- bore in the outer tube, the anchor stud having at least two radially-outward expandable legs;
- (iii) an inner tube having an elongate body with distal and proximal ends, the inner tube body sized for insertion into the longitudinal bore in the outer tube;
- (iv) an anchor stud-expanding pin held in the bore of the inner tube, the pin sized for expanding the legs of the anchor stud radially outward to grip walls of a hole in bone; and
- (v) a pushrod sized for insertion into the inner tube and equipped with means for leveraging the pushrod to force the anchor stud-expanding pin into the bore of the anchor stud for expanding the legs outwardly to grip bone.

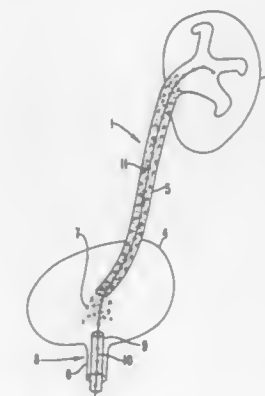
5,380,335
APPARATUS FOR EXPELLING FOREIGN BODIES IN
AN ELONGATED ORGAN OF A LIVING ORGANISM
 Guido Dormia, Lecco, Italy, assignor to Angiomed AG, Karlsruhe, Germany

Filed Oct. 14, 1992, Ser. No. 960,687
 Claims priority, application Italy, Feb. 28, 1992, MI92A-000449

U.S. Cl. 606—127

Int. Cl.⁶ A61B 17/22

9 Claims



1. Apparatus for separating foreign bodies in an elongated organ of a living organism, the apparatus comprising an elongated element comprising a solid metal wire, and baffles provided on said solid metal wire and, said baffles comprising spherical members in order to enable a separation of the foreign bodies, and wherein respective ends of the elongated element include thickened portions.

5,380,336
METHOD AND APPARATUS FOR STEREOTACTIC
RADIOSURGERY AND FRACTIONATED RADIATION
THERAPY

John Misko, 3190 SW. Fairmount Rd., Portland, Oreg. 97201; Robert J. Miller, Sherwood, Oreg., and Stan Heard, Portland, Oreg., assignors to John Misko, Portland, Oreg.

Filed Apr. 16, 1993, Ser. No. 48,384
 Int. Cl.⁶ A61B 17/00

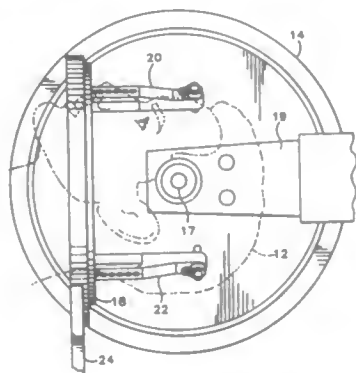
U.S. Cl. 606—130

7 Claims

1. A method for performing stereotactic radiosurgery upon a target within a skull, comprising:

- providing a frame including laterally extendable mounting devices for positioning around the skull and mounting receptors for holding the frame;
- fastening the mounting receptors to the skull;
- attaching the frame to the mounting receptors at a preset position with respect to the skull so that each mounting device extends from the frame in a given laterally extended condition, the preset frame position used as a target reference point for defining a multidimensional coordinate system to precisely identify a target;

locking each mounting device into its associated laterally extended condition;
detaching the frame from the mounting receptors while each mounting device remains locked in said associated laterally extended condition; and



reattaching the frame to the mounting receptors at the preset position during various stages of the stereotactic radiosurgery, the frame after being reattached to the mounting receptors reestablishing the target reference point used to initially identify the target.

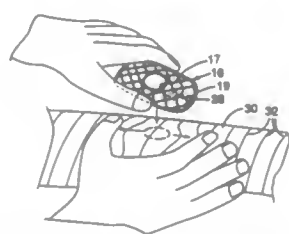
5,380,337

MESH-TYPE SKIN BIOPSY APPLIANCE

Richard A. Romaine, 475 SW. View Crest Dr., Gresham, Oreg. 97080

Filed Jan. 24, 1994, Ser. No. 185,526
Int. Cl.⁶ A61B 17/00

U.S. Cl. 606—131



1. In combination with a biopsy punch, a stretched-skin-excising appliance comprising:
 - a) a stiff piece of mesh material sized to overlie a selected skin area and having an opening dimensioned to clear the punch;
 - b) the material having mesh dimensions predetermined to make visible to an operator the said selected skin area and to allow passage of exudate, including blood and blood serum;
 - c) the material having a skid-resistant, skin-contacting surface and an opposite pressure-applying surface.

5,380,338

LAPAROSCOPE HOLDER WITH ROTATABLE GRIPPING PADS

Steven C. Christian, New Brighton, Minn., assignor to Minnesota Scientific, Inc., St. Paul, Minn.
Continuation of Ser. No. 940,177, Sep. 3, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 183,101

Int. Cl.⁶ A61B 19/00

U.S. Cl. 606—130

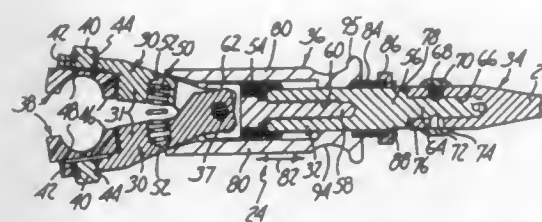
6 Claims

1. A gripping device for holding a medical instrument from a support apparatus having a support arm, the device comprising:

gripping arms for gripping an instrument, the gripping arms

being pivotally mounted together and being adapted for rotatably mounting to a support arm, the gripping arms being pivotal between an open position and a closed position;

means for moving the gripping arms between the open and closed position to release and grip an instrument, the means for moving the gripping arms comprising a sleeve operably engaging an exterior surface of the gripping



arms, the sleeve being movable between a gripping arm engaging position and a gripping arm release position wherein when the sleeve is in the gripping arm engaging position, the gripping arms are in the closed position and wherein when the sleeve is in the gripping arm release position, the gripping arms are in the open position; and a gripping pad rotatably attached to each gripping arm wherein each gripping pad has an arcuate groove formed therein for engaging the instrument.

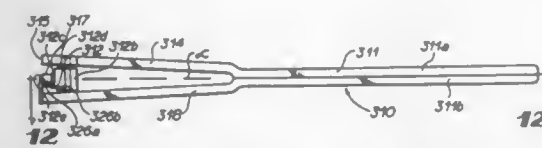
5,380,339

PARASITE REMOVER

Robert M. Webster, 195 Green Valley Rd., Fairburn, Ga. 30213
Continuation-in-part of Ser. No. 854,211, Mar. 20, 1992, Pat. No. 5,246,449. This application Sep. 17, 1993, Ser. No. 123,135
Int. Cl.⁶ A45D 26/00

U.S. Cl. 606—131

6 Claims



1. A parasite remover for removing a parasite from the skin of a host comprising:
 - a pair of opposed normally diverging arms secured together at their proximal ends, said arms having distal ends moveable toward and away from each other;
 - an engagement plate on a distal end portion of one of said arms, said plate having a slot provided therein, said slot being open at one of its ends and closed another end for receiving a portion of said parasite between the body and mouth of the parasite when said plate is placed on said skin of said host and moved toward said portion of said parasite;
 - said engagement plate having a configuration for urging said body of said parasite away from said skin of said host as said portion of said parasite is urged progressively into said slot;
 - the other of said arms being moveable with respect to said one of said arms for producing relative motion between said plate and said parasite so as to cause said body of said parasite to be lifted by said engagement plate away from said skin of said host; and
 - said other of said arms having a length in relation to said one of said arms so as to allow said other of said arms to sweep over said engagement plate when said arms are moved toward each other.

CHEMICAL

5,380,340

HAIR DYE CONTAINING AMINOPYRAZOLE DERIVATIVES AS WELL AS PYRAZOLE DERIVATIVES

Hans Neunhoeffer, Mühlthal/FRG; Stefan Gerstung, Reinheim/FRG; Thomas Clausen, and Wolfgang R. Balzer, both of Alsbach/FRG, all of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Germany

PCT No. PCT/EP92/01887, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO93/07849, PCT Pub. Date Apr. 29, 1993

PCT Filed Aug. 19, 1992, Ser. No. 27,171

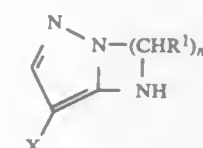
Claims priority, application Germany, Oct. 14, 1991, 4133957

Int. Cl.⁶ A61K 7/13; C07D 487/02

U.S. Cl. 8—409

13 Claims

1. Pyrazole derivative of the formula (II)



(II)

wherein R¹ is selected from the group consisting of hydrogen and alkyl groups having one to four carbon atoms; and

wherein n=2 and X is an amino group or n=3 and X is selected from the group consisting of nitro and amine groups.

5,380,341

SOLID STATE ELECTROCHEMICAL CAPACITORS AND THEIR PREPARATION

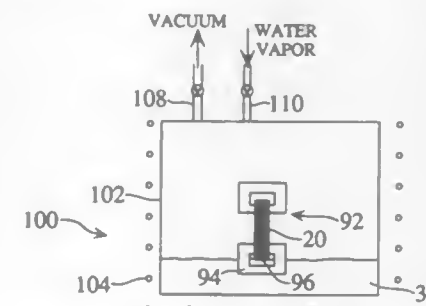
M. Dean Matthews, Saratoga, and Pedro G. Medrano, Mountain View, both of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Sep. 27, 1993, Ser. No. 127,666

Int. Cl.⁶ H04R 17/00

U.S. Cl. 29—25.03

15 Claims



1. A method for making an electrochemical capacitor, comprising the step of:

assembling a stacked assembly of at least two bipolar electrodes, each of the bipolar electrodes comprising a metal foil electrode substrate having a porous, electronically conductive, substrate coating on each surface, the stacked assembly further including a porous separator layer between each of the electrodes, the separator layer being made of a material that is electronically non-conductive; providing an ionic conductor electrolyte that wets both the substrate coating and the separator layer at temperatures above the melting point of the solid ionic conductor electrolyte, the ionic conductor electrolyte having a melting point above about 30° C.; and introducing the ionic conductor electrolyte into the stacked assembly.

5,380,342

METHOD FOR CONTINUOUSLY CO-FIRING PULVERIZED COAL AND A COAL-WATER SLURRY

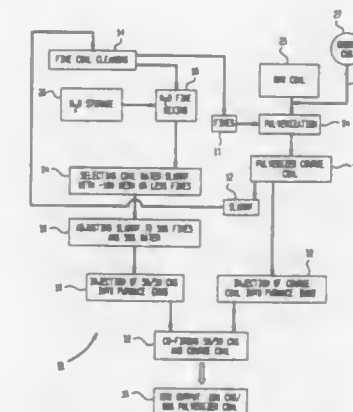
Joseph W. Leonard, III, Lexington, Ky., and Robert D. Stoenner, Johnstown, Pa., assignors to Pennsylvania Electric Company, Johnstown, Pa.

Continuation-in-part of Ser. No. 608,986, Nov. 1, 1990, abandoned. This application Jul. 2, 1993, Ser. No. 85,629

Int. Cl.⁶ C10L 1/00; F23B 7/00; F23N 1/00

U.S. Cl. 44—280

7 Claims



1. In a modified gas fired boiler having a quarl therein wherein the boiler produces a heat output, a process for co-firing an aqueous coal slurry consisting essentially of approximately 50 weight % coal up to 100 mesh fines and approximately 50 weight % water and pulverized coal comprising the steps of: (a) preheating the quarl in the boiler by combusting natural gas therein; (b) adding an atomized aqueous coal slurry at a rate of 60% CWS and 40% natural gas; while simultaneously (c) reducing said gas to wherein 80% heating in said boiler is by said gas; and then (d) introducing pulverized coal; and then, (e) further reducing the inflow of said gas until (f) co-firing pulverized coal and aqueous coal slurry wherein approximately 80% of the heat output from said boiler is produced by firing said pulverized coal and wherein approximately 20% of the heat output from said furnace is from firing said aqueous slurry whereby the aqueous coal slurry is subsequently co-fired continuously with the pulverized coal.

5,380,343

METHOD FOR PREPARING AN ALCOHOL MODIFIED VEGETABLE OIL DIESEL FUEL

Herbert F. Hunter, 137 School St., Franklin, Mass. 02038

Filed Feb. 1, 1993, Ser. No. 11,730

Int. Cl.⁶ C10L 1/02

U.S. Cl. 44—302

2 Claims

1. The method of preparing an improved microemulsion fuel composition from vegetable oils comprising:

(a) filtering said vegetable oil to remove any particulate matter;

(b) reacting said vegetable oil in an aqueous solution at an alcoholic medium with an alkali metal base where the alkali of the alkali metal base is selected from the group consisting of lithium, potassium, sodium, rubidium and cesium;

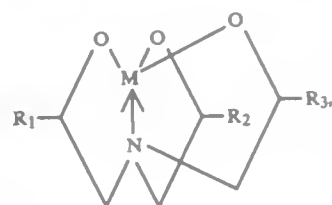
(c) Adding a small amount of alkali metal soap as a surfactant where the alkali of the alkali metal soap is selected from the group consisting of lithium, potassium, sodium, rubidium and cesium; and (d) separating a aqueous layer from the improved microemulsion fuel.

5,380,344
COMPOSITIONS COMPRISING
2,2',2''-NITRILOTRIETHANOL CYCLOMETALATES
 Hermann O. Wirth, Bensheim, and Hans-Helmut Friedrich, Lautertal, both of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
 Division of Ser. No. 638,601, Jan. 7, 1991, Pat. No. 5,256,323.
 This application Jul. 30, 1993, Ser. No. 99,874
 Claims priority, application Switzerland, Jan. 11, 1990, 85/90-8

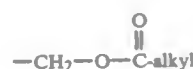
Int. Cl.⁶ C10L 1/30

U.S. Cl. 44—367

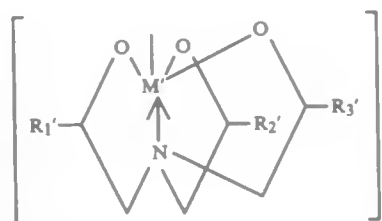
1. A composition comprising
 a) an internal combustion engine fuel, and
 b) at least one compound of the formula I



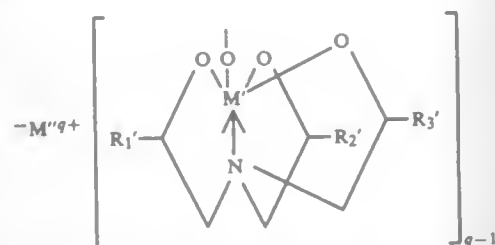
wherein R₁ is $-(CH_2-X)_n-R$, where X=S or O, n=0 or 1 and R is an alkyl group of 1 to 18 carbon atoms, a phenyl group, a phenyl group which is substituted by at least one C₁-C₄alkyl group, a phenyl-(C₁-C₄alkylene) group or a phenyl-(C₁-C₄alkylene) group which is substituted by at least one C₁-C₄alkyl group, or R₁ is an alkyl group of 1 to 18 carbon atoms which is substituted by at least one OH group, or R₁ is a



group in which the alkyl moiety contains 1 to 18 carbon atoms, and R₂ and R₃ are the same or different and are —H or, independently of R₁, have the same meanings as R₁, and M is B, Al, Fe, Cr, Sb or Bi, or M is a group M'—R' or a group M'—OR'', where M' is Ti, Zr or Sn, and R' and R'' are C₁-C₁₈alkyl or R' is



wherein M' is as defined above, and R₁', R₂' and R₃' have the meanings of R₁, R₂ and R₃, or R'' is Li, Na or K or is



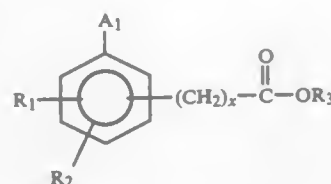
wherein M'' is as defined above and M'' is Mg, Ca, B, Al, Fe, Cr, Sb, Bi, Zn, Ti, Ni or Cu, q has the valency of M'', and R₁'

R₂' and R₃' have the respective meanings of R₁, R₂ and R, or M is VO.

5,380,345
POLYALKYL NITRO AND AMINO AROMATIC ESTERS AND FUEL COMPOSITIONS CONTAINING THE SAME
 Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.
 Filed Dec. 3, 1993, Ser. No. 162,416
 Int. Cl.⁶ C10L 1/18

U.S. Cl. 44—399

- I. A compound of the formula:



wherein A₁ is nitro, amino, N-alkylamino wherein the alkyl group contains 1 to 6 carbon atoms, or N,N-dialkylamino wherein each alkyl group independently contains 1 to 6 carbon atoms;

R₁ and R₂ are independently hydrogen, hydroxy, lower alkyl having 1 to 6 carbon atoms, or lower alkoxy having 1 to 6 carbon atoms;

R₃ is a polyalkyl group having a weight average molecular weight in the range of about 450 to 5,000; and x is an integer from 0 to 10.

5,380,346
FORTIFIED HYDROCARBON AND PROCESS FOR MAKING AND USING THE SAME
 James E. Fritz, 271 Crutcher Rd., Port Townsend, Wash. 98368
 Continuation-in-part of Ser. No. 898,042, Jun. 12, 1992, Pat. No. 5,236,467. This application Jun. 25, 1993, Ser. No. 83,826
 Int. Cl.⁶ C10L 1/18

U.S. Cl. 44—401

1. Fortified hydrocarbon torch gas which is mixture of a major portion by weight of hydrocarbon base gas and additive consisting essentially of a minor portion by weight of additive selected from the group consisting of dioxyhydrocarbons and trioxyhydrocarbons having 2 to 4 carbon atoms in a molecule.

5,380,347
BLAST MEDIA CONTAINING SURFACTANT-CLATHRATE COMPOUND
 Anthony E. Winston, East Brunswick; Benny S. Yam, Holmdel, both of N.J., and Keith A. Jones, Yardley, Pa., assignors to Church & Dwight Co., Inc., Princeton, N.J.
 Division of Ser. No. 6,659, Jan. 21, 1993, Pat. No. 5,332,447.
 This application Feb. 3, 1994, Ser. No. 193,759
 Int. Cl.⁶ B08B 7/00

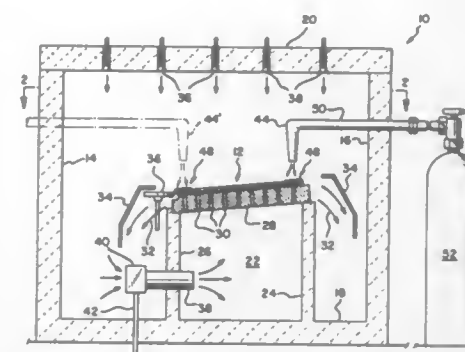
U.S. Cl. 51—293

1. A method of forming a blast media useful in stripping contaminants from a solid surface comprises: forming a surfactant-clathrate compound, and incorporating said surfactant-clathrate compound with abrasive particles, said surfactant-clathrate compound comprised of a surfactant and a water soluble compound having clathration capability.

5,380,348
METHOD FOR TREATING GLASS SHEETS ON A GAS HEARTH
 Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
 Filed Jan. 21, 1993, Ser. No. 78,333
 Int. Cl.⁶ C03B 23/035

U.S. Cl. 65—25.2

8 Claims



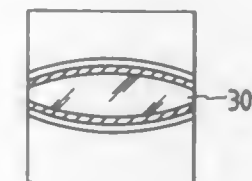
1. A method for selectively cooling areas of a glass sheet during heating to minimize undesirable sagging of selected areas of the glass sheet, comprising:
 providing a glass sheet on a gas hearth block,
 heating said glass sheet, and
 blowing air, at a temperature cooler than the temperature to which said glass sheet has been heated, onto selected areas of said glass sheet,
 whereby undesirable sagging of said selected areas of said glass sheet is minimized.

5,380,349
MOLD HAVING A DIAMOND LAYER, FOR MOLDING OPTICAL ELEMENTS
 Yasushi Taniguchi, Kawasaki; Keiji Hirabayashi, Tokyo; Keiko Ikoma, Yokohama; Noriko Kurihara, Tokyo; Masaaki Matsushima, and Kiyoshi Yamamoto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 854,760, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 443,152, Nov. 30, 1989, abandoned. This application Apr. 11, 1994, Ser. No. 226,106
 Claims priority, application Japan, Dec. 7, 1988, 63-307933; Dec. 7, 1988, 63-307934; Mar. 10, 1989, 1-56245
 Int. Cl.⁶ C03B 40/00

U.S. Cl. 65—286

2 Claims U.S. Cl. 75—313

26 Claims



1. A mold for press molding of an optical glass element, comprising:
 a mold matrix; and
 a diamond sintered product provided on the mold matrix comprising diamond particles and a sintering aid, said sintering aid being at least one metal selected from the group consisting of Ti, Ta, W and Mo, wherein the content of said sintering aid is from 1-10% by volume of said diamond sintered product;
 wherein a molding face is formed by said diamond sintered product.

2. A mold for press molding of an optical glass element comprising:
 a mold matrix;
 an intermediate layer formed on the face of the mold matrix between the mold matrix and a diamond film, said intermediate layer comprising:
 at least a single layer comprising a composition of at least one selected from: (a) metals of group IVA, VA and VIA of the periodic table (b) carbides, nitrides, carbonitrides, carbonate nitrides, borides, borocarbides, and boronitrides of Si and Al and (c) carbides and nitrides of B (boron); and
 said diamond film having a (100) face formed a concentration of raw gas comprising hydrogenated and 1-3% methane and having a thickness within the range of 5 μm to 100 μm, wherein the (100) face is oriented parallel to the face of said mold matrix.

5,380,350
METHODS OF MAKING GRANULAR WATER SOLUBLE OR HYGROSCOPIC AGRICULTURAL FORMULATIONS
 Ken Persch, Apex, N.C., assignor to BASF Corporation, Parsippany, N.J.
 Filed Oct. 30, 1992, Ser. No. 968,926
 Int. Cl.⁶ H01N 25/12

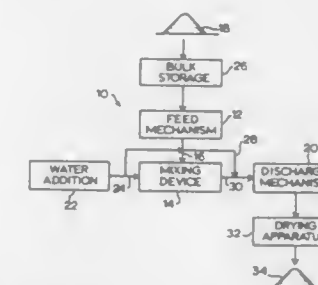
U.S. Cl. 71—64.03

28 Claims

1. A method of making water-dispersible, granular formulation of a salt of a water soluble or hygroscopic pesticide comprising:

adsorbing a pesticidal effective amount of a salt of said water soluble or hygroscopic pesticide onto a highly adsorptive solid material which consists essentially of (i) filler/binder which is a delaminated kaolin clay, (ii) a synthetic calcium silicate carrier, and (iii) a dispersing agent which is a mixture of a lignosulfonic acid or a condensed sulfonated sodium salt with polyvinylpyrrolidone;
 granulating, in the absence of a milling step, the composition by granulating means;
 drying the granulated composition by drying means; and
 sizing the composition to remove any oversize fines.

5,380,351
METHOD FOR AGGLOMERATION OF FLUE GAS DESULFURIZATION DUST
 Bryan C. Fisher, Kennesaw, Ga., assignor to ReUse Technology, Inc., Kennesaw, Ga.
 Filed Dec. 21, 1993, Ser. No. 171,030
 Int. Cl.⁶ C22B 7/02



1. A process for producing an agglomerate, which process comprises the steps of:

- providing a feed material comprising a flue gas desulfurization dust formed from the reaction of a calcium-based scrubber reagent with sulfur oxides in a flue gas resulting from the combustion of carbonaceous, sulfur-bearing material;
- introducing the feed material into a mixing device;
- introducing an amount of water into contact with the feed

material, wherein the amount of water is appropriate to agglomerate the feed material;
 d. admixing the feed material and the amount of water for a length of time appropriate to form agglomerates; and
 e. drying the agglomerates to produce free-flowing agglomerates.

5,380,352

METHOD OF USING RUBBER TIRES IN AN IRON MAKING PROCESS

Richard B. Greenwalt, Danville, Calif., assignor to Bechtel Group, Inc., San Francisco, Calif.

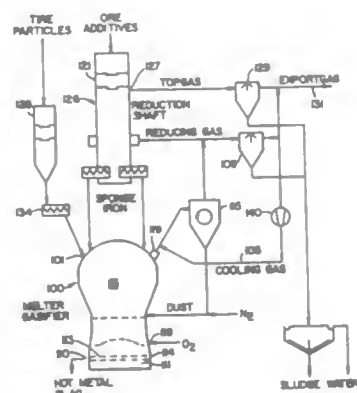
Continuation-in-part of Ser. No. 958,043, Oct. 6, 1992, Pat. No. 5,259,864, and a continuation-in-part of Ser. No. 991,914, Dec. 17, 1992, and a continuation-in-part of Ser. No. 56,341, Apr. 30, 1993, Pat. No. 5,259,865. This application May 18, 1993, Ser. No. 63,630

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.⁶ C21B 13/14

U.S. Cl. 75—445

2 Claims



1. An improvement to a molten iron making process which substantially reduces slag formation and increases the contained carbon level in the iron comprising the steps of introducing shredded rubber tires into a melter gasifier; blowing oxygen containing gas into said melter gasifier and combusting the shredded rubber tire particles to form at least a first fluidized bed of coke particles from said rubber tire particles; introducing ferrous material into said melter gasifier through an entry port in the upper portion thereof; reacting rubber tire particles, oxygen and ferrous material in said melter gasifier to combust the major portion of said rubber tire particles to produce reduction gas and molten iron containing heavy metals freed from combustion of the rubber tire particles and a reduced slag containing sulfur freed from combustion of the rubber tire particles; injecting CO₂ into said melter gasifier and mixing CO₂ with said reduction gas to form a combined reduction gas having a CO level of about 85% of the gas; flowing said combined reduction gas out of said melter gasifier; combining said combined reduction gas with a side stream of cool reducing gas to form a cooled reduction gas; directing said cooled reduction gas to a reduction furnace which is operably connected to said melter gasifier and mixing said cooled reduction gas with ferrous material in said reduction furnace to convert the ferrous material to direct reduced iron and to increase the carbon content of the direct reduced iron to above 5%.

5,380,353

COPPER SMELTING APPARATUS

Moto Goto; Nobuo Kikumoto; Osamu Iida, all of Tokyo; Hiroaki Ikoma, Osaka, and Shigemitsu Fukushima, Tokyo, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

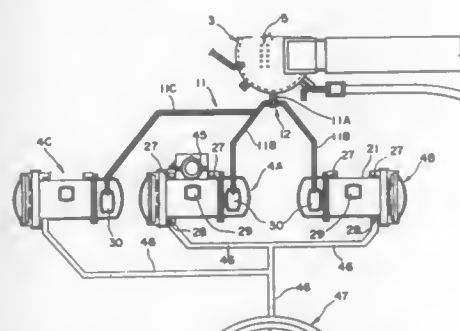
Continuation-in-part of Ser. No. 797,116, Nov. 20, 1991, Pat. No. 5,205,859. This application Mar. 31, 1993, Ser. No. 40,999
 Claims priority, application Japan, Nov. 20, 1990, 2-314671; Nov. 20, 1990, 2-314673; Nov. 20, 1990, 2-314675; Nov. 20, 1990, 2-314682

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.⁶ C22B 15/06

U.S. Cl. 75—640

7 Claims



1. A copper smelting apparatus comprising:
 a matte-producing means for producing matte;
 a converting furnace for oxidizing said matte produced in said matte-producing means into blister copper;
 a plurality of blister copper refining furnaces for refining the blister copper produced in said converting furnace into copper of higher purity; and
 blister copper launder means for connecting said converting furnace and said blister copper refining furnaces to transfer blister copper from said converting furnace to one of said blister copper refining furnaces.

5,380,354

RECOVERY OF METALS FROM SULPHIDIC MATERIAL

Michael E. Chalkley, St. Albert; Ian M. Masters, and Barry N. Doyle, both of Fort Saskatchewan, all of Canada, assignors to Sberitt Inc, Fort Saskatchewan, Canada

Filed May 4, 1994, Ser. No. 237,986

Claims priority, application United Kingdom, May 4, 1993, 93091445

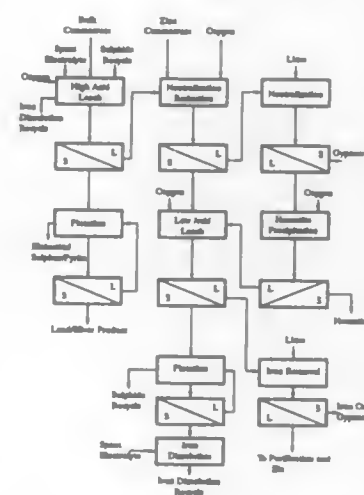
Int. Cl.⁶ C22B 15/08

U.S. Cl. 75—743

10 Claims

1. A process for recovering zinc and iron from zinc-and iron-containing sulphidic concentrate which also contains lead and silver comprising leaching the concentrate under oxidizing conditions at a temperature in the range of about 130° to 170° C. in aqueous acidic sulphate solution in a first stage leach, maintaining a mole ratio of acid to zinc plus lead in the concentrate in the range of 0.55:1 to 0.85:1 in the first stage leach to produce a leach solution of low acid and dissolved iron content for recovery of zinc therefrom, separating the leach residue from the first stage leach solution, leaching the leach residue from the first stage leach under oxidizing conditions at a temperature in the range of 130° to 170° C. in aqueous acidic sulphate solution in a second stage leach, maintaining a mole ratio of acid to zinc plus lead in the leach residue from the first stage leach in the range of 1.2:1 to 1.4:1 in the second stage leach to produce a leach solution high in zinc and a leach residue containing precipitated iron, lead, silver, sulphur, and unleached sulphides, separating the second stage leach solution from the leach residue, recycling the second stage leach solution to the first stage leach, separating the lead, silver and iron

from the sulphur and unleached sulphides in the second stage leach residue, leaching the lead, silver and iron residue of the second stage leach residue in aqueous acid sulphate solution under reducing conditions in a third stage leach to produce a leach residue containing lead and silver and a leach solution



containing iron in the ferrous state, neutralizing the leach solution from the third stage leach for the removal of impurities from the solution, and treating the said neutralized leach solution under oxidizing conditions at a temperature in the range of about 170° to 200° C. for the removal of iron therefrom as hematite.

5,380,355

AIRSTREAM DECONTAMINATION UNIT

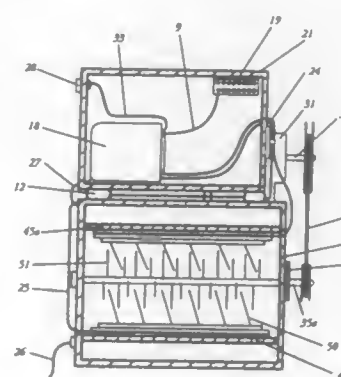
Larry P. Brothers, Manchester, Tenn., assignor to Lebone Corporation, Tullahoma, Tenn.

Filed May 6, 1993, Ser. No. 57,543

Int. Cl.⁶ B03C 3/10

U.S. Cl. 96—64

4 Claims



1. A waste airstream decontamination unit comprising:
 a. a decontamination chamber;
 b. at least one rotating shaft extending across said chamber;
 c. at least one set of grounded electrodes attached to and extending away from said shaft, each of said grounded electrodes comprising a rod having a side surface and terminating at a tip;
 d. electrode mounting means extending across said chamber proximate to and in substantial alignment with each said shaft;
 e. a plurality of positive electrodes mounted to said electrode mounting means, each of said positive electrodes comprising a rod having a side surface and terminating at a tip, each of said positive electrodes arranged to correspond to at least one of said grounded electrodes, whereby rotation

of said shaft will periodically place each of said grounded electrodes in an arc-producing position with respect to at least one of said positive electrodes;

f. means for applying an arc-producing and sustaining electric potential between said positive and grounded electrodes;

g. means for rotating said shaft;

h. means for causing said waste airstream to flow through said chamber proximate to said positive and grounded electrodes; and

i. each of said positive electrodes being in an angular relationship with respect to a corresponding said grounded electrode whereby when a said grounded electrode is rotated proximate to a said positive electrode, an arc is created between said tips of said positive electrode and said grounded electrode and whereby continuing rotation of said shaft will cause said arc to travel along said side surface of at least one of said electrodes as said arc extends in length.

5,380,356

QUARTZ-FREE POWDERED MAGMATIC NEPHELINE ROCK MATERIAL FOR THE SURFACE TREATMENT OF DENTAL PARTS, ESPECIALLY GRINDING, POLISHING AND/OR BLASTING MATERIAL

Hans-Werner Gundlach, Bremen, and Peter Stronck, Osterholz-Scharmbeck, both of Germany, assignors to BEGO Bremer Goldschlägerel Wilh. Herbst GmbH & Co., Bremen, Germany

Filed Sep. 8, 1992, Ser. No. 940,211

Claims priority, application Germany, Sep. 7, 1991, 4129870; Nov. 7, 1991, 4136592

Int. Cl.⁶ A61K 6/00, 7/30

U.S. Cl. 106—3

8 Claims

1. A polishing material for the surface treatment of dental parts, and consisting primarily of solid substances in a liquid or paste-like mass, wherein the solid substances are made of quartz-free magmatic nepheline syenite rock, wherein the quartz-free magmatic nepheline syenite rock is in fine-granular or powdered form and has a particle size of 2 to 300 μm, and wherein said material is further composed of:

water;
 glycerine;
 a defoaming agent; and
 bactericide additives.

5,380,357

WATER SOLUBLE CRAYON COMPOSITION AND METHOD

Richard N. Lytton, Naperville, Ill., assignor to La-Co Industries, Inc., Chicago, Ill.

Filed Aug. 4, 1993, Ser. No. 101,919

Int. Cl.⁶ C09D 13/00

U.S. Cl. 106—19 B

30 Claims

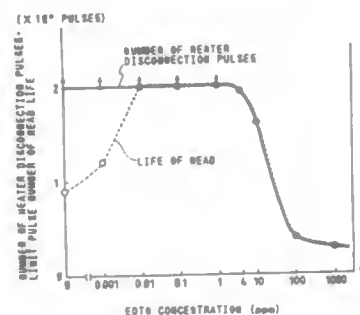
1. An improved water soluble crayon composition comprising:

a. about 9% to about 35% by weight of at least one ethoxylated alcohol;
 b. about 0% to about 70% by weight of a water soluble material in the form of a liquid or a paste and selected from the group consisting of ethoxylated sorbitan fatty acid esters, ester derivatives, phenols, ethers and polymeric derivatives; and
 c. at least one pigment or dye.

5,380,358
INK, INK JET RECORDING METHOD USING THE SAME, AND INK JET RECORDING APPARATUS USING THE SAME

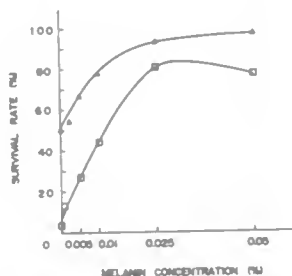
Makoto Aoki, and Shoji Kolke, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jul. 27, 1993, Ser. No. 96,999

Claims priority, application Japan, Jul. 31, 1992, 4-204920
 Int. Cl.⁶ C09D 11/02
 U.S. Cl. 106—20 R 23 Claims



1. An ink which contains a recording agent and a liquid medium for dissolving or dispersing said recording agent, said ink being characterized in that said ink contains 0.01 to 50 ppm of a chelating agent based on the total weight of said ink.

5,380,359
COSMETICS BASED ON NATURALLY DERIVED MELANIN-COATED PIGMENTS
 Shinkichi Honda, Abiko; Yoichi Takekoshi, Tsuchiura, and Yoichi Arai, Niihari, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
 Filed Nov. 24, 1993, Ser. No. 150,114
 Claims priority, application Japan, Mar. 31, 1992, 4-077848; WIPO, Oct. 15, 1992, PCT/JP92/01338
 Int. Cl.⁶ C09C 1/32
 U.S. Cl. 106—414 6 Claims



1. A melanin-coated pigment which is prepared by coating a carrier with a readily alkali-soluble natural melanin.

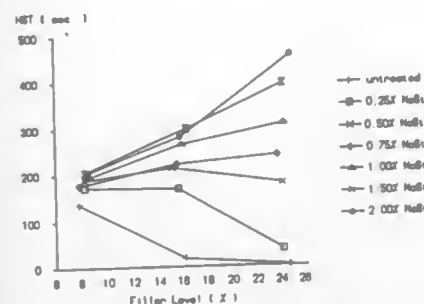
5,380,360
ULTRA-FINE GRANULAR BARIUM SULFATE-COATED FLAKY PIGMENT AND METHOD OF PREPARING THE SAME
 Tamio Noguchi, and Yumiko Waragai, both of Fukushima, Japan, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Germany
 Filed Apr. 12, 1993, Ser. No. 45,066
 Claims priority, application Japan, Apr. 10, 1992, 4-134100
 Int. Cl.⁶ C04B 14/20
 U.S. Cl. 106—415 16 Claims

1. A flaky pigment comprising a flaky substrate uniformly coated with ultra-fine barium sulfate grains having a maximum mean grain size of 0.1 μm.

5,380,361
MODIFIED FILLER MATERIAL FOR ALKALINE PAPER AND METHOD OF USE THEREOF IN ALKALINE PAPER MAKING

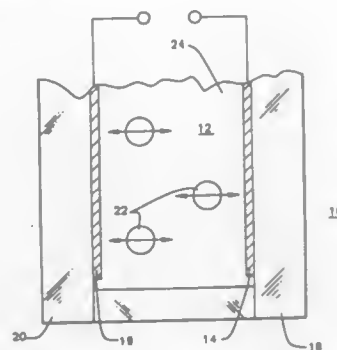
Robert A. Gill, Bethlehem, Pa., assignor to Minerals Technologies, Inc., New York, N.Y.

Filed Mar. 12, 1993, Ser. No. 30,992
 Int. Cl.⁶ C09C 1/02
 U.S. Cl. 106—465 43 Claims



1. A hydrophobic filler material for paper comprising:
 - a. finely divided particles of inorganic material;
 - b. a water soluble C₁₂-C₂₂ fatty acid salt in an amount sufficient to coat substantially all of the surfaces of at least a majority of the particles; and
 - c. a metal ion in an amount at least effective to complex all of the fatty acid salt.

5,380,362
SUSPENSION FOR USE IN ELECTROPHORETIC IMAGE DISPLAY SYSTEMS
 Frederic E. Schubert, Shoreham, N.Y., assignor to Copytel, Inc., Huntington Station, N.Y.
 Filed Jul. 16, 1993, Ser. No. 92,749
 Int. Cl.⁶ C08K 13/06
 U.S. Cl. 106—493 15 Claims



1. An electrophoretic display composition comprising:
 - a suspension medium comprising tetrachloroethylene and sec-butyl benzene;
 - a dispersion of charged pigment particles suspended in said suspension medium, approximately 50 wt % of said pigment particles being formed in the presence of a surface active agent, said suspension medium having a specific gravity corresponding to that of said pigment particles, said pigment particles defining surfaces having at least one acidic hydrogen site per molecule and said pigment particles being selected from the group consisting of Diarylide yellow Pigment Yellow 14 and Pigment Yellow 55;
 - a fluid dye dispersed in said suspension medium; and
 - a charge control agent, said charge control agent being adsorbed on said pigment particles and having a basic anchoring group for reacting with said pigment particles

to form charge pairs therewith and having a polymer chain extending therefrom, thereby providing a steric barrier between particles.

a means for defining a bead region wherein a flowing liquid layer or layers is continuously applied to a moving substrate;
 a roller, and associated drive means, for conveying said substrate longitudinally through said bead region;
 a means for continuously supplying said flowing liquid layer or layers to a slide surface of a coating head;
 a coating lip tip at the terminus of said slide surface of said coating head and within said bead region; and
 a lip surface extending from the coating lip tip down into the bead region opposite the moving substrate;

5,380,363
PIGMENT COMPOSITION
 Gerard Colpeau, Louviers, France, and John D. Schofield, Bury, United Kingdom, assignors to Francolor Pigments SA, Rieux, France
 PCT No. PCT/GB93/00317, § 371 Date Nov. 9, 1993, § 102(e) Date Nov. 9, 1993, PCT Pub. No. WO93/16137, PCT Pub. Date Aug. 19, 1993
 PCT Filed Feb. 15, 1993, Ser. No. 133,129
 Claims priority, application United Kingdom, Feb. 13, 1992, 9202989
 Int. Cl.⁶ C09B 45/01, 41/00
 U.S. Cl. 106—496 7 Claims

1. A process for the manufacture of an azo metal salt pigment, wherein a transparent or translucent alkaline aqueous solution of a resin and a dispersant of formula (1) or formula (3) is added to an azo compound before a laking step for producing the azo metal salt pigment, said formula (1) being



wherein
 YCO is the residue of a polyester derived from a hydroxycarboxylic acid, and
 M is H, a metal or optionally substituted ammonium, and said formula (3) being

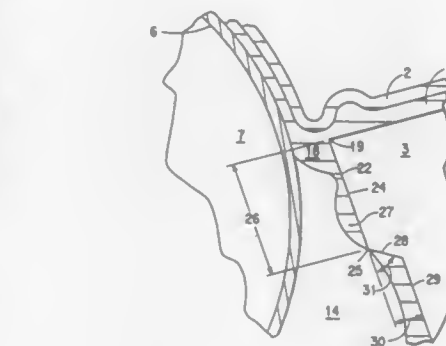


wherein
 Z is a divalent bridging group containing an oxygen or a nitrogen atom through which Z is attached to the carbonyl group
 R is a primary, secondary or tertiary amino group or a salt thereof with an acid, or a quaternary ammonium salt group, and
 YCO is as herein defined.

5,380,364
 Patent Not Issued For This Number

5,380,365
LIP SURFACE GEOMETRY FOR SLIDE BEAD COATING
 Robert I. Hirschburg, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
 Filed Jan. 21, 1992, Ser. No. 823,695
 Int. Cl.⁶ B05C 3/12
 U.S. Cl. 118—410 3 Claims

1. A slide bead coating apparatus having a bead region wherein a flowing liquid layer or plurality of flowing liquid layers is continuously applied to a moving substrate, said coating apparatus comprising:

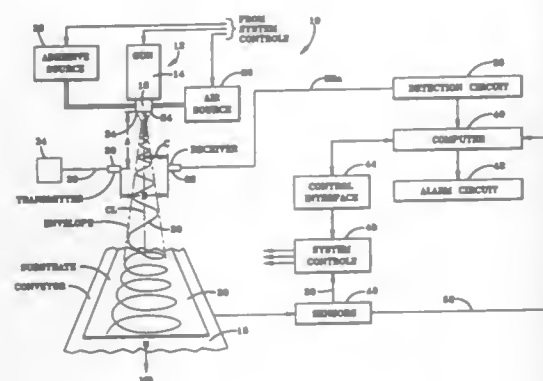


wherein the coating apparatus further comprises:
 a break and associated offset in the lip surface capable of isolating the bead region from a reservoir of liquid below said break; said break being located 0.5–5.0 mm below said coating lip tip and forming an angle with said lip surface of at least 15° in a direction away from said substrate, and the offset having an average depth at least 0.25 mm from the plane of the lip surface and being at least 0.5 mm long.

5,380,366
APPARATUS FOR OPTICALLY MONITORING AND CONTROLLING A MOVING FIBER OF MATERIAL
 Kevin C. Becker, Westlake; Patrick J. O'Keefe, Jr., Wellington, both of Ohio, and Eddie W. Dixon, Jr., Norcross, Ga., assignors to Nordson Corporation, Westlake, Ohio
 Division of Ser. No. 787,237, Nov. 4, 1991, Pat. No. 5,208,064.
 This application Apr. 22, 1993, Ser. No. 52,086
 Int. Cl.⁶ B05C 11/00
 U.S. Cl. 118—712 18 Claims

1. A dispensing system comprising:
 a dispensing means having a discharge opening for dispensing a fiber of material and a means for causing the dispensed fiber of material to propagate in a moving pattern

through a space between the discharge opening and a substrate;
 a transmitting means for transmitting a beam of light;
 a receiving means, aligned with the beam of light for generating a signal in response thereto, and the transmitting and receiving means positioned such that under normal operating conditions, the fiber of material will pass through the beam of light at least twice as it propagates in the moving pattern;
 a means, responsive to the signal generated by the receiving means for generating an edge signal when an edge of the



fiber bears a predetermined relationship to the beam of light;
 a means for generating a symmetry signal indicative of, or proportional to, either a time interval between a first said edge signal and a second edge signal or a time interval between the second said edge signal and a third edge signal;
 a means, generating a period signal indicative of, or proportional to, the time interval between said first edge signal and said third edge signal; and
 a means, responsive to said period and symmetry signals for determining a motion status of the pattern.

5,380,367

VAPOUR GENERATOR FOR CHEMICAL VAPOUR DEPOSITION SYSTEMS

Daniele Bertone, Torino, Italy, assignor to Caelt - Centro Studi E Laboratori Telecomunicazioni S.p.A., Torino, Italy
 Filed Oct. 18, 1993, Ser. No. 139,395

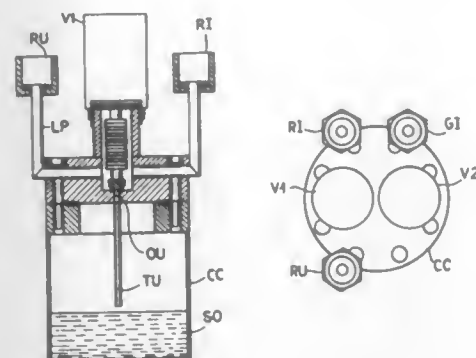
Claims priority, application Italy, Dec. 4, 1992, 92A 000981
 Int. Cl.⁶ C23C 16/00

U.S. Cl. 118—726

3 Claims

1. Vapour generator for chemical vapour deposition plants, where a carrier gas is saturated with vapours extracted from a source of the reagent in liquid or solid state and is brought to a reaction chamber, comprising an air-tight container (CC) into which a reagent source (SO) can be deposited, possessing a first wall which comprises a first and a second hole (OU, IN), which communicate on one side with the inside of the vapour generator and on the other side respectively with a first and a second pneumatic operated valve (V1, V2), the second valve (V2) being linked to a pipe section (TG), obtained in the body

of the said first wall, ending outside into a first union (GI), and the first valve (V1) being linked to a bypass-line (LP), also



obtained in the body of the said first wall wherein bypass-line (LP) is connected to a second input union and a third output union (RI, RU).

5,380,368

Patent Not Issued For This Number

5,380,369

PROCESS FOR CLEANING AND/OR DISINFECTING AND/OR MAINTAINING MEDICAL OR DENTAL INSTRUMENTS

Pius Steinhäuser, Anton Bodenmiller, both of Leutkirch, and Herbert Lott, Bad Wurzach, all of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Germany
 Filed Oct. 4, 1993, Ser. No. 131,465

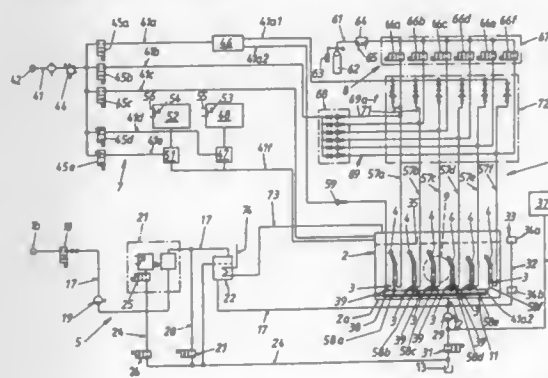
Int. Cl.⁶ B08B 3/12; A61L 2/02

U.S. Cl. 134—1

10 Claims

1. A process for selectively cleaning, disinfecting and maintaining in a liquid-filled washing container for medical and dental instruments each including at least one tool holder and having hollow interiors in a liquid-filled washing container; comprising sequentially the steps of:

a) internally and externally washing said instruments or the at least one tool holder;



b) draining and drying the interior cavity of said instruments or said at least one tool holder of liquid by blowing compressed air therethrough; and
 c) applying ultrasound to said at least one tool holder.

5,380,370

METHOD OF CLEANING REACTION TUBE

Reiji Niino; Yoshiyuki Fujita, both of Kofu; Hideki Lee, Nirasaki; Yasuo Imamura, Yokohama; Toshiharu Nishimura, Kofu; Yauichi Mikata, Kawasaki; Shinji Miyazaki, Yokkai-chi; Takahiko Moriya, Yokohama, all of Japan, and Katsuya Okumura, Poughkeepsie, N.Y., assignors to Tokyo Electron Limited, Tokyo, Japan

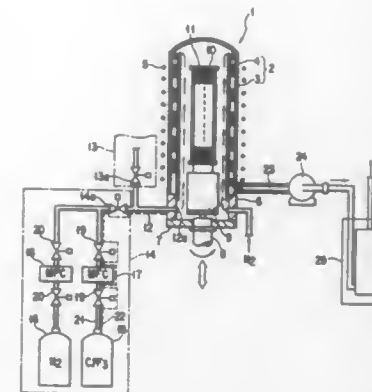
Filed Apr. 30, 1993, Ser. No. 54,229

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.⁶ B08B 7/00, 9/00

U.S. Cl. 134—22.11

8 Claims



1. A method of cleaning an inside of a reaction tube, comprising the steps of:

supplying a cleaning gas containing ClF_3 in a concentration of 10 to 50 vol. % into said reaction tube at a flow rate to remove a film deposited on an inner wall surface of said reaction tube or a surface of a member incorporated in said reaction tube by etching using the ClF_3 ;

maintaining the temperature in said reaction tube at not less than 450° C. while said cleaning gas is supplied; and setting a pressure condition such that the etching rate of the film being removed by the cleaning gas is higher than the etching rate of the material of said reaction tube or a member incorporated in said reaction tube, said film being selected from the group consisting of a polysilicon based film, a silicon nitride based film, and a silicon oxide based film.

5,380,371

PHOTOELECTRIC CONVERSION ELEMENT AND FABRICATION METHOD THEREOF

Tsutomu Murakami, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,775

Claims priority, application Japan, Aug. 30, 1991, 3-244939; Aug. 30, 1991, 3-244939

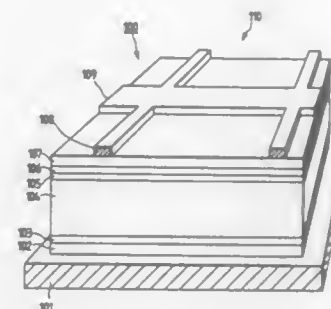
Int. Cl.⁶ H01L 31/04, 31/0216, 31/0224, 31/18

U.S. Cl. 136—256

28 Claims

1. A photoelectric conversion element comprising a semiconductor layer, a passivation layer comprising an insulating or highly resistive polymer resting on said semiconductor

layer, and a conductive member comprising a conductive paste on said passivation layer,



wherein said semiconductor layer is electrically connected with said conductive member through the passivation layer.

5,380,372

SOLAR CELL AND METHOD FOR MANUFACTURE THEREOF

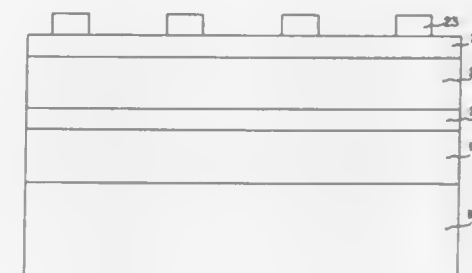
Hilmar V. Campe, Bad Homburg; Horst Ebinger, Salmünster; Dieter Nikl, Kelkheim, and Wolfgang Warzawa, Hanau, all of Germany, assignors to Nukem GmbH, Alzenau, Germany

Filed Oct. 8, 1992, Ser. No. 958,090

Claims priority, application Germany, Oct. 11, 1991, 4133644
 Int. Cl.⁶ H01L 31/0392, 31/18, 31/0368

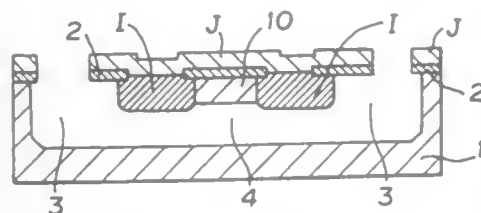
U.S. Cl. 136—258

26 Claims



1. A solar cell comprising a substrate, and the following layers deposited thereon in the order recited: an intermediate film deposited on a surface of said substrate and sealing the surface thereof, said intermediate film containing polycrystalline silicon carbide, a nucleation film having a monocrystalline or multicrystalline structure deposited on said intermediate film, at least one semiconductor film deposited on said intermediate film, first and second electrically conducting contacts forming front and rear contacts, respectively, and said intermediate film comprising said second contact.

5,380,373
FLOATING SINGLE CRYSTAL THIN FILM FABRICATION METHOD
 Mitsutera Kimura, and Noriaki Suzuki, both of Miyagi, Japan, assignors to Ricoh Seiki Company, Ltd., Tokyo, Japan
 Filed Jul. 14, 1993, Ser. No. 91,065
 Claims priority, application Japan, Jul. 14, 1993, 4-186833
 Int. Cl.⁶ H01L 21/30, 21/306; B44C 1/22
 U.S. Cl. 148—33.2 19 Claims



9. A floating single crystal thin film comprising:
 a) a single crystal substrate;
 b) an enclosure material having an impurity concentration therein formed in said single crystal substrate so as to enclose a portion of said single crystal substrate;
 c) a covering layer formed on a portion of said single crystal substrate and said enclosure material;
 d) at least two windows extending through said insulating layer and into said single crystal substrate;
 e) a hollow through section formed in said single crystal substrate extending between said windows and beneath said portion of said single crystal substrate;
 f) wherein a single crystal thin film is formed above said hollow through sections and enclosed by said enclosure material.

5,380,374
CONVERSION COATINGS FOR METAL SURFACES
 Charles E. Tomlinson, Martinsville, Ind., assignor to Circle-Proseco, Inc., Bloomington, Ind.
 Filed Oct. 15, 1993, Ser. No. 137,583
 Int. Cl.⁶ C23C 22/34

- U.S. Cl. 148—247 27 Claims
 1. An aqueous composition for coating aluminum, ferrous or magnesium alloys, comprising:
 (a) between about 10 ppm and about 5,000 ppm, based on the aqueous composition, of dissolved Group 4 metal ions selected from the group consisting of titanium, zirconium and hafnium;
 (b) between about 80 ppm and about 1300 ppm, based on the aqueous composition, of dissolved Group 2 metal ions selected from the group consisting of magnesium and calcium;
 (c) between about 10 ppm and about 6,000 ppm, based on the aqueous composition, of dissolved fluoride ions; and
 (d) water;
 said composition having a pH of between about 2.0 and about 5.0.

5,380,375
AMORPHOUS ALLOYS RESISTANT AGAINST HOT CORROSION
 Koji Hashimoto, 2-25-2, Shogen, Izumi-ku, Sendai-shi, Miyagi; Hiroki Habazaki, Sendai, both of Japan; Stanislaw Mrowec, and Marek Danielewski, both of Cracow, Poland, assignors to Koji Hashimoto, Miyagi and Yoshida Kogyo K.K., Tokyo, both of Japan
 Division of Ser. No. 44,534, Apr. 7, 1993, This application Nov. 24, 1993, Ser. No. 158,013
 Claims priority, application Japan, Apr. 7, 1992, 4-85529; Apr. 7, 1992, 4-85530; Nov. 11, 1992, 4-326075
 Int. Cl.⁶ C22C 45/00, 45/10
 U.S. Cl. 148—403 4 Claims

4. An amorphous alloy resistant against hot corrosion, which consists of at most 20 atomic percent of at least one element selected from the group of Fe, Co, Ni and Cu and at least 25 atomic percent and less than 70 atomic percent of the sum of (1) at least one element selected from the group of Ti and Zr and (2) at least 9 atomic percent of at least one element selected from the group of Ta and Nb, with the balance being substantially at least 30 atomic percent of Cr, and at least one of Ti and Zr being present in the alloy.

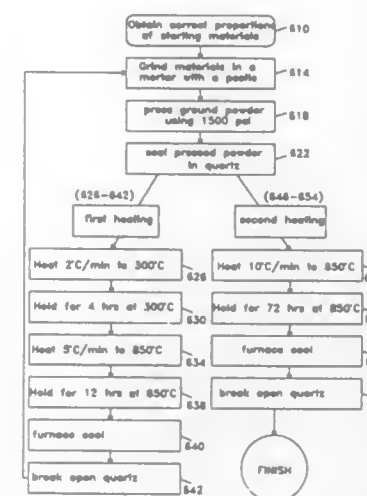
5,380,376
ALUMINUM ALLOY FOR ARMORED CABLE WRAP
 Paul E. Fortin, and Pierre-Henri Marois, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada
 Filed Jun. 2, 1993, Ser. No. 71,299
 Int. Cl.⁶ C22C 21/06

- U.S. Cl. 148—440 20 Claims
 1. An armored cable wrap having improved pull out strength consisting essentially of an alloy of aluminum, about 2.8–3.5 percent by weight Mg, about 0.25–0.70 percent by weight Mn and about 0.15–0.35 percent by weight Cr, wherein said alloy has been partially annealed to an ultimate tensile strength of at least 265 MPa prior to forming said wrap.

5,380,377
METHOD OF MAKING SULFIDE ALLOYS EXHIBITING THERMAL BISTABILITY
 Lee S. Martinson, Coralville; John W. Schweltzer, Iowa City, and Norman C. Baenziger, North Liberty, all of Iowa, assignors to The University of Iowa Research Foundation, Iowa City, Iowa
 Division of Ser. No. 51,947, Apr. 26, 1993, This application Jan. 31, 1994, Ser. No. 188,809
 Int. Cl.⁶ C22C 24/00

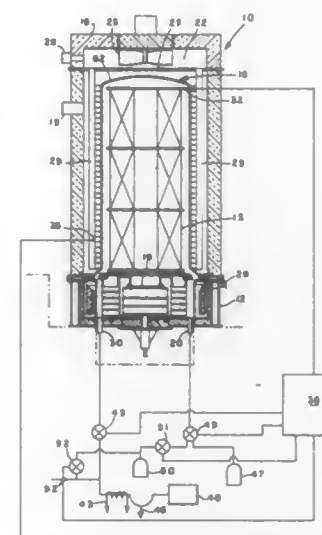
- U.S. Cl. 148—557 11 Claims
 1. A process for making a bistable material comprising the steps of:
 providing a composition of Ba:Co:Ni:S in a molar ratio of

1:1—x:x:2—y, where x is greater than 0 and less than 1, y is greater than 0 and less than 2; and



heating said composition in vacuum.

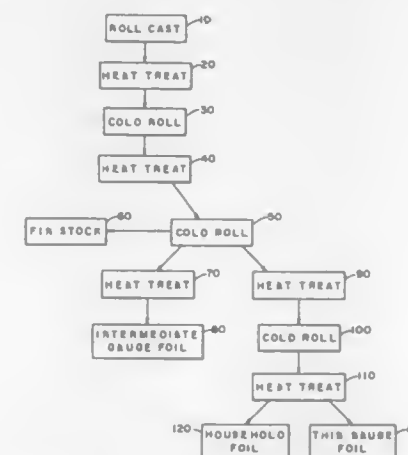
5,380,378
METHOD AND APPARATUS FOR BATCH COIL ANNEALING METAL STRIP
 Klaus H. Hemsath, Toledo, Ohio, assignor to Gas Research Institute, Chicago, Ill.
 Filed Apr. 23, 1993, Ser. No. 51,702
 Int. Cl.⁶ C21D 9/663
 U.S. Cl. 148—601 19 Claims



1. A batch coil annealing process for annealing cold rolled strip comprising the steps of:
 a) vertically stacking coils of rolled strip onto a base and covering said coils with an inner cover sealed to said base;
 b) heating said cover to, in turn, heat said coils to a preheat temperature of at least about 500° F.;
 c) drawing a vacuum within said cover while said coils are being heated to vaporize oils and other hydrocarbon deposits within said cover and exhaust same from said cover;
 d) condensing said vaporized hydrocarbons into liquid outside said cover for collecting and removing same; and thereafter;
 e) backfilling said cover with a treatment gas composed

substantially of hydrogen while said coils are heated to their annealing process transformation temperature, said vacuum within said cover decreasing to as little as standard atmosphere pressure or above when backfilled with said treatment gas; and
 f) periodically increasing the vacuum within said cover followed by periodic introduction of said treatment gas into said cover whereby the cycle time of said annealing process is reduced.

5,380,379
ALUMINUM FOIL PRODUCT AND MANUFACTURING METHOD
 Klaus P. Maiwald, Thun, Switzerland; Marcio D. Soares, and Aldenir J. Clemente, both of Pernambuco, Brazil, assignors to Alcoa Aluminio Do Nordeste S.A., Itapissuma, Brazil
 Filed Aug. 18, 1993, Ser. No. 108,476
 Int. Cl.⁶ C22F 1/04; C22C 21/00
 U.S. Cl. 148—697 25 Claims



1. An aluminum alloy sheet product having: (a) a composition consisting essentially of about 1.35–1.6 wt. % iron, about 0.3–0.6 wt. % manganese, about 0.1–0.4 wt. % copper, about 0.05–0.1 wt. % titanium, about 0.01–0.02 wt. % boron, and up to about 0.2 wt. % silicon, the balance being aluminum, incidental elements and impurities; (b) an as-cast thickness between about 4.8–10 mm (0.19–0.39 inch); and (c) improved strength and surface properties from having been subjected to a manufacturing method that includes: heat treating at one or more temperatures above about 450° C. (842° F.) for more than about 4 hours; and cold rolling to final gauge.

5,380,380
IGNITION COMPOSITIONS FOR INFLATOR GAS GENERATORS
 Donald R. Poole, Woodinville, and Patrick C. Kwong, Seattle, both of Wash., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.
 Filed Feb. 9, 1994, Ser. No. 193,717
 Int. Cl.⁶ C06B 43/00, 25/34

- U.S. Cl. 149—22 13 Claims
 1. An autoigniting composition for a gas generator of a vehicle occupant restraint system comprising a hydrazine salt of 3-nitro-1,2,4-triazole-5-one and a first additive comprising an oxidizer, wherein said composition is thermally stable when

said first additive is combined with said hydrazine salt of 3-nitro-1,2,4-triazole-5-one.

5,380,381
LABELING MACHINE WITH VARIABLE SPEED CUTTING HEAD

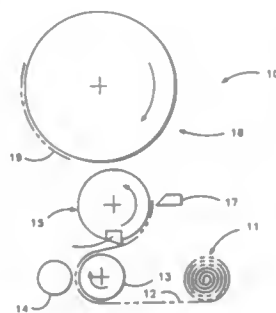
Svatoboj Otruba, Ceres, Calif., assignor to B & H Manufacturing Company, Inc., Ceres, Calif.

Filed Jun. 3, 1993, Ser. No. 72,234

Int. Cl.⁶ B32B 31/00

U.S. Cl. 156—64

10 Claims



1. A method of applying labels to containers, said method comprising the steps of:
providing a feed roller to transport a strip of labels at a first speed;
utilizing a rotating cutter drum to receive said strip of labels from said feed roller, said utilizing step including the step of cutting individual labels of said strip of labels;
operating a vacuum drum at a second speed to receive said strip of labels from said rotating cutter drum; and
modulating said rotating cutter drum to accelerate said rotating cutter drum to a speed corresponding to said first speed to receive said strip of labels and to accelerate said rotating cutter drum to a speed corresponding to said second speed to deliver said strip of labels to said vacuum drum.

5,380,382
METHOD OF INSTALLING A METALLIC THREADED INSERT IN A COMPOSITE/RUBBER PANEL

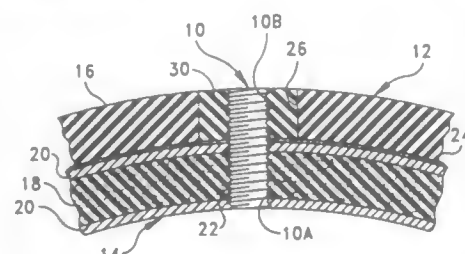
Stanley J. Izdebski, Warwick, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1994, Ser. No. 199,927

Int. Cl.⁶ B32B 7/04

U.S. Cl. 156—91

2 Claims



1. A method of installing a metallic threaded insert in a composite/rubber panel, said composite/rubber panel comprising a non-ferrous composite panel layer and a rubber panel layer, said insert comprising first and second insert sections, said insert sections having inwardly and outwardly facing threads, said method comprising the steps of:
threading said first insert section into a pre-formed hole in said non-ferrous composite panel layer, said hole having a diameter slightly smaller than an outer diameter of said first insert section, said outwardly facing threads on said first insert section becoming imbedded in said non-ferrous

composite panel layer so as to frictionally retain said insert in said hole;
bonding said rubber panel layer to said non-ferrous composite panel layer so that an opening in said rubber panel layer overlies said first insert section, said opening having a layer dimension than said second threaded insert section;
threading said second insert section onto an elongated positioning bolt; threading said positioning bolt into said first insert section;
threading said second insert section downwardly on said positioning bolt so as to be positioned in adjacent relation to said first insert section;
filling said opening with a flowable rubber compound;
curing said rubber compound so that it flows into the outwardly facing threads of said second insert section; and
threading said positioning bolt out of said first and second insert sections thereby forming an integral threaded insert having a continuous inward thread which extends through said rubber panel layer and said composite panel layer.

5,380,383
TREAD APPLICATION METHOD

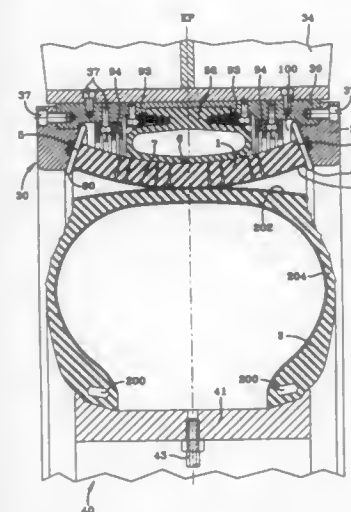
Lawrence E. Chlebina, Akron; William J. Head, Ravenna, and Donald C. Kabinski, Medina, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 1, 1994, Ser. No. 222,763

Int. Cl.⁶ B29D 30/52

U.S. Cl. 156—96

4 Claims



1. An improved method for mounting an annular tread onto a tire casing, the improved method comprising the steps of:
a) expanding the tread radially;
b) encircling and holding the expanded tread with a transfer mechanism, the transfer mechanism having a means for holding the lateral edges of the tread, in the expanded condition independent of the center of the tread and without contacting the radially inner surface of the tread, and a means for circumferentially clamping the central portion of the tread to the casing;
c) centering the transfer mechanism with expanded tread over the casing;
d) actuating the means for clamping while holding the lateral edges of the tread in the transfer mechanism; and
e) releasing the lateral edges of the tread thereby transferring the tread to the casing while preventing entrapment of air between the casing and the tread.

5,380,384
METHOD OF FORMING GREEN TIRE
Toshio Tokunaga, Fuchu; Naomichi Soga, Kokubunji, and Haruo Kawashima, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

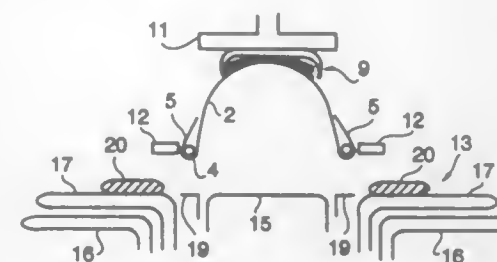
Filed Mar. 4, 1994, Ser. No. 205,730

Claims priority, application Japan, Mar. 4, 1993, 5-067327; Mar. 19, 1993, 5-083883

Int. Cl.⁶ B29D 30/20

U.S. Cl. 156—111

3 Claims



1. A method of forming a green tire comprising:
setting bead wires at both ends of a cylindrical carcass ply on a first forming drum, and forming a carcass body having bead portions;
positioning a BT band formed in a separate process over an outer peripheral portion of said carcass body on said first forming drum, and deforming said carcass body into a toroidal shape, and incorporating said carcass body with said BT band;
mounting said carcass body incorporated with said BT band onto a second forming drum around which side rubbers are wound through bladders at positions corresponding to said bead portions at both the ends of said carcass ply while keeping the shape of said carcass body; and
expanding said bladders for press-bonding said side rubbers on both the ends of said carcass body.

5,380,385
PROCESS FOR THE MANUFACTURE OF A FLEXIBLE POLYMERIC STRUCTURE BY EXTRUSION AND THE FLEXIBLE STRUCTURE MANUFACTURED THEREFROM

Georges Derroire, Riom, and Bernard Ragout, Aubiere, both of France, assignors to Caoutchouc manufacture et plastiques, Versailles, France

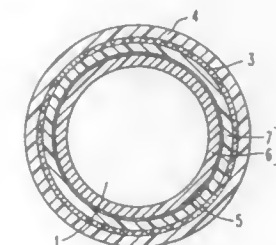
Filed Apr. 1, 1992, Ser. No. 861,644

Claims priority, application France, Apr. 4, 1991, 91 04155

Int. Cl.⁶ B29C 47/06

U.S. Cl. 156—149

4 Claims



1. Process for the manufacture of a motor vehicle hose and using the motor vehicle hose on an internal combustion engine of a motor vehicle, said process comprising the steps of:
extruding a first polymeric layer;
applying a sealant barrier to said first polymeric layer, said sealant barrier comprising a multilayer film, said multilayer film being a few microns thick, said multilayer film comprising a polymeric barrier film;
said polymeric barrier film consisting essentially of a mate-

rial configured for minimizing permeation of motor fluids through said motor vehicle hose;
overlapping a first portion of said sealant barrier with a second portion of said sealant barrier to create an overlapped portion of said sealant barrier;
extruding a second polymeric layer onto said sealant barrier, so that said sealant barrier lies between said first polymeric layer and said second polymeric layer;
applying a reinforcement layer to said second polymeric layer;
extruding a third polymeric layer onto said reinforcement layer, said third polymeric layer being the outermost layer of said motor vehicle hose, said third polymeric layer being configured for withstanding influences external to said motor vehicle hose in an engine compartment in a motor vehicle;
heat treating said motor vehicle hose to achieve an intimate bonding of all layers of said motor vehicle hose and to seal said overlapped portion of said sealant barrier; and
mounting the motor vehicle hose on the internal combustion engine of the motor vehicle.

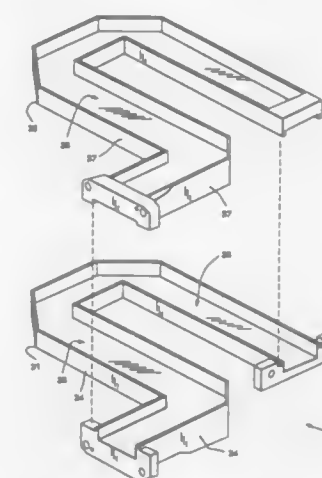
5,380,386
MOLDED METALLIZED PLASTIC MICROWAVE COMPONENTS AND PROCESSES FOR MANUFACTURE
Susan L. Oldham, Torrance; Martha J. Harvey, Valencia; Steve K. Panaretos, Los Angeles; John L. Fugatt, Hermosa Beach; Richard L. Ducharme; Jeffrey M. Bille, both of Torrance, and Douglas O. Klebe, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 880,122, May 7, 1992, abandoned. This application May 16, 1994, Ser. No. 243,605

Int. Cl.⁶ B32B 31/14

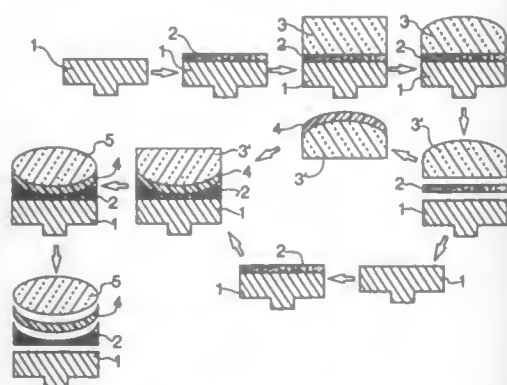
U.S. Cl. 156—150

31 Claims



1. A method of fabricating a microwave waveguide component that is capable of transmitting microwave energy, said method comprising the steps of:
forming a plurality of joinable thermoplastic members, which when joined, form a microwave waveguide component having an internal surface;
bonding the plurality of joinable thermoplastic members together after said step of forming a plurality of joinable thermoplastic members to form the microwave waveguide component having the internal surface; and
plating the internal surface after step of bonding the plurality of joinable thermoplastic members together to form the microwave waveguide component that is capable of transmitting microwave energy.

5,380,387
LENS BLOCKING/DEBLOCKING METHOD
 Peter A. Salamone, Hebron, and JoAnn DeMarco, Wethersfield, Conn., assignors to Loctite Corporation, Hartford, Conn.
 Continuation-in-part of Ser. No. 127,286, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 959,209, Oct. 13, 1992, abandoned. This application Jun. 23, 1994, Ser. No. 264,831
 Int. Cl.⁶ B32B 31/00
 U.S. Cl. 156—154 22 Claims

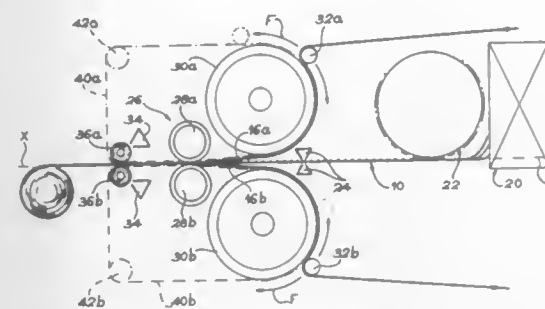


1. A method for bonding a lens blank to a lens block for subsequent working, said method comprising the steps of:

- applying an adhesive material to the bonding surface of a lens block, said adhesive material comprising from about 45 to about 80% by weight of an acrylic capped organic prepolymer resin terminated at both ends with acrylic functionality, from about 5 to about 35% by weight of a monofunctional ethylenically unsaturated diluent monomer, up to about 6% by weight of a non-reactive releasing agent and from about 0.001 to about 5% by weight of a photoinitiator and wherein the acrylic capped organic prepolymer resin is selected from the group consisting of (meth)acrylated urethane, (meth)acrylated polyester urethane (meth)acrylated polyepoxide, (meth)acrylated poly(alkyleneoxide), (meth)acrylated polybutadiene and mixtures thereof;
- placing the lens blank upon the adhesive coated surface and aligning the same; and
- allowing or enabling said adhesive to bond the lens blank to the lens block.

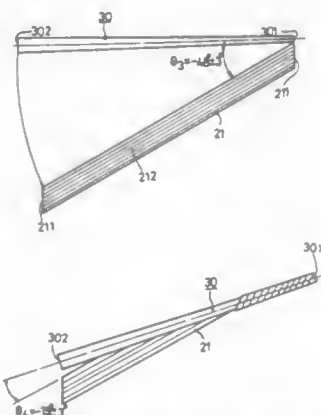
- A process of producing a lens comprising the steps of:
 - bonding a lens blank to a support member with a radiation curable adhesive, said adhesive comprising from about 45 to about 80% by weight of an acrylic capped organic prepolymer resin terminated at both ends with acrylic functionality, from about 5 to about 35% by weight of a monofunctional ethylenically unsaturated diluent monomer, up to about 6% by weight of a non-reactive releasing agent and from about 0.001 to about 5% by weight of a photoinitiator and wherein the acrylic capped organic prepolymer resin terminated at both ends with the acrylic functionality is selected from the group consisting of (meth)acrylated urethane, (meth)acrylated polyester urethane, (meth)acrylated polyepoxide, (meth)acrylated poly(alkyleneoxide), (meth)acrylated polybutadiene and mixtures thereof;
 - exposing the bonded lens blank and support member to radiation so as to cure the adhesive;
 - subjecting the lens blank to working and/or treatment so as to form the lens blank into a desired lens; and
 - separating the lens from the support member.

5,380,388
PROCESS FOR THE PRODUCTION OF A TIGHT COMPLEX SHEET HAVING A RANDOM SHAPE AND INCORPORATING AN INTERNAL REINFORCEMENT
 Marc H. Montagne, Merignac, and Olivier Regipa, Toulouse, both of France, assignors to Aerospatiale Societe Nationale Industrielle, France
 Continuation of Ser. No. 797,685, Nov. 25, 1991, abandoned.
 This application Aug. 17, 1993, Ser. No. 108,070
 Claims priority, application France, Nov. 26, 1990, 90 14745
 Int. Cl.⁶ B29D 9/00; D04H 3/04
 U.S. Cl. 156—179 14 Claims



1. Process for the production of a tight complex incorporating an internal reinforcement, and two covering films for the reinforcement, comprising stages of producing a nonwoven grid reinforcement formed from warp threads and weft threads arranged on two juxtaposed layers, preheating the covering films to a thermoassembly temperature wherein the preheating is performed by heating drums on which the films travel prior to their application to the nonwoven reinforcement and application of the preheating covering film to the nonwoven reinforcement, with a predetermined force and a complexing temperature by a pair of heating rollers set below the thermoassembly temperature and at most equal to the maximum temperature at which the warp and weft threads maintain their stress performance characteristics.

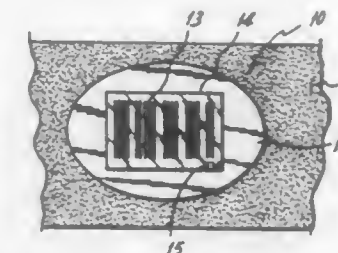
5,380,389
METHOD FOR MANUFACTURING THE SHAFT UNIT OF A GOLF CLUB
 Kun-Nan Lo, No. 33, Hsiang-Ho Rd., Li-Lin Tsun, Tan-Tzu Hsiang, Taichang Hsien, Taiwan, Prov. of China
 Filed Sep. 14, 1993, Ser. No. 120,362
 Int. Cl.⁶ A63B 53/10
 U.S. Cl. 156—188 2 Claims



- A method for making a shaft unit of a golf club, comprising the steps:
 - providing a shaft which is made of metal and which has a first end surface, a second end surface, and a cross-section

- tional area that increases gradually from said first end surface to said second end surface;
- providing an elongated first-layer sheet which is made of resin and which has two inclined end surfaces that are parallel to each other, and several fibers that are coated on said sheet and that extend along a length of said sheet;
- winding said first-layer sheet on said shaft in a clockwise direction from said first end surface to said second end surface of said shaft in such a manner that one of said end surfaces of said first-layer sheet and said first end surface of said shaft are on a similar same plane and that said fibers of said first-layer sheet form an angle of about 48 ± 3 degrees with respect to an axis of said shaft so that, when said first-layer sheet is wound to said second end surface of said shaft, said fibers of said first-layer sheet form an angle of about 19 ± 3 degrees with respect to said axis of said shaft;
- providing an elongated second-layer sheet which is similar to said first-layer sheet;
- winding said second-layer sheet on said shaft in a counterclockwise direction from said first end surface to said second end surface of said shaft in the same manner as said first-layer sheet; and
- pressurizing and heating assembly of said sheets and said shaft so as to form said golf club.

5,380,391
HEAT ACTIVATED TRANSFER FOR ELASTOMERIC MATERIALS
 John Mahn, Jr., 6154 Oakhaven Dr., Cincinnati, Ohio 45238
 Filed Mar. 8, 1993, Ser. No. 27,954
 Int. Cl.⁶ B32B 25/00; B60C 13/00
 U.S. Cl. 156—240 5 Claims



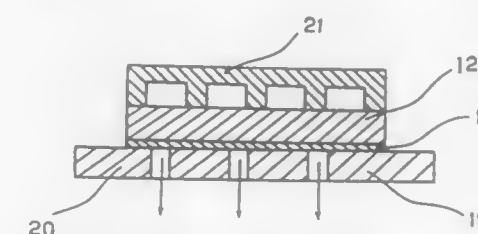
- A method of forming a marked elastomeric article comprising:
 - forming indicia on an elastomeric sheet by coating a portion of said sheet with a contrasting solvent based ink;
 - coating said indicia with a clear thermoset layer and allowing said thermoset layer to set, thereby providing a protective coating over said indicia prior to bonding said elastomeric sheet to said elastomeric article;
 - applying said elastomeric sheet to said elastomeric article and curing said elastomeric article thereby bonding said elastomeric sheet to said elastomeric article.

5,380,390
PATTERNED ABRASIVE MATERIAL AND METHOD
 Naum N. Tselisin, Atlanta, Ga., assignor to Ultimate Abrasive Systems, Inc., Atlanta, Ga.
 Continuation-in-part of Ser. No. 712,989, Jun. 10, 1991, abandoned. This application May 25, 1993, Ser. No. 66,475
 Int. Cl.⁶ B44C 1/165
 U.S. Cl. 156—230 18 Claims



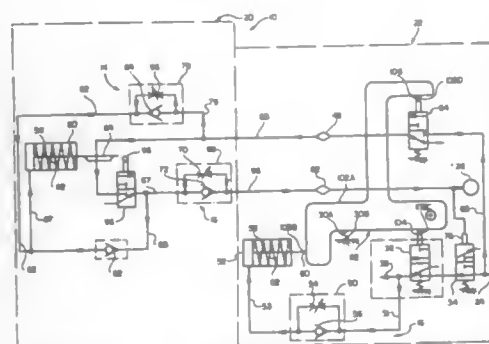
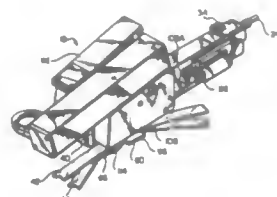
- A method for making an abrasive material, said abrasive material comprising a plurality of hard particles for providing the abrasive quality, and a sinterable matrix material having the hard particles distributed therein for holding said hard particles, said method comprising the steps of placing a pressure sensitive adhesive tape against one side of a mask so that said pressure sensitive adhesive tape is adhered to said mask, said mask defining a plurality of openings distributed in a predetermined pattern, said openings extending completely through said mask so that said pressure sensitive adhesive tape closes said openings, then placing a quantity of hard particles against the opposite side of said mask so that some of said hard particles are received within said openings and at least some of said hard particles that are received within said openings are adhered to said pressure sensitive adhesive tape, removing hard particles that are not adhered to said pressure sensitive adhesive tape and subsequently at least partially surrounding said particles that are adhered to said pressure sensitive adhesive tape with a sinterable matrix material and heating said material to cause said material to hold said particles that adhere to said tape.

5,380,392
CORE MATERIAL FOR LAMINATE AND METHOD FOR MANUFACTURING THE SAME
 Nobuhiro Imamura, Kamakura; Osamu Kobayashi, Shiga, and Yoshihiro Kimura, Mishima, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
 Division of Ser. No. 15,335, Feb. 9, 1993, abandoned, which is a division of Ser. No. 790,048, Nov. 12, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 175,190
 Claims priority, application Japan, Nov. 28, 1990, 2-332701
 Int. Cl.⁶ B32B 31/18
 U.S. Cl. 156—257 2 Claims



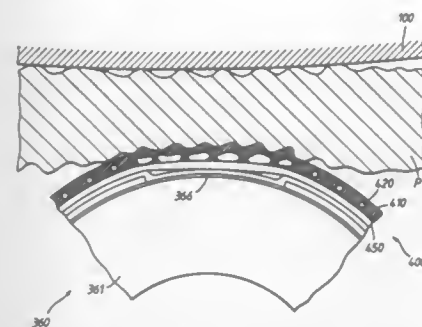
- A method for manufacturing a core material for laminates which comprises the following steps:
 - placing a laminate comprising a substrate and a porous sheet on a fixing plate having a smooth surface and a suction hole connected to a vacuum apparatus, such that the porous sheet is in contact with said fixing plate,
 - pressing the laminate against the fixing plate with a pressing instrument from above and providing suction through the suction hole so as to keep the porous sheet of the laminate horizontal,
 - cutting a plurality of parallel slits penetrating through the substrate using a revolving saw so as not to cut the porous sheet.

5,380,393
HAND STRAPPING TOOL
 Peter Drabarek, Chicago, and Janusz Figiel, Mount Prospect, both of Ill., assignors to Signode Corporation, Glenview, Ill.
 Continuation of Ser. No. 849,180, Mar. 10, 1992, abandoned.
 This application Apr. 11, 1994, Ser. No. 226,102
 Int. Cl.⁶ B32B 35/00
 U.S. Cl. 156—358 22 Claims



1. A strapping tool for applying a strap to an article, comprising:
 a pneumatic circuit pneumatically connectable to a source of pressurized fluid for energizing said circuit;
 means for automatically tensioning a strap around an article;
 means engageable with said strap for automatically welding said strap;
 means, operatively associated with said means for automatically tensioning said strap, for automatically determining tensioning of said strap around said article, whereupon determination of a proper degree of tension within said strap disposed around said article, operation of said tensioning means is terminated;
 manually operable means movable between a first position at which said means for welding said strap are automatically caused to be disengaged from said strap, and a second position at which said means for welding said strap are automatically caused to be engaged with said strap;
 first pneumatic control means, operatively associated with said tensioning means, for automatically delaying welding of said strap until said proper degree of tension within said strap has been accomplished, and for subsequently actuating said welding means for welding said strap;
 second pneumatic control means, operatively associated with said means for automatically welding said strap, for automatically determining the duration of said welding of said strap so as to therefore define a welding cycle; and
 third pneumatic control means, operatively associated with said manually operable means, for automatically maintaining said manually operable means at said second position for in turn maintaining said welding means engaged with said strap, after deactuation of said welding means upon completion of said welding cycle, for a predetermined period of time so as to therefore determine a cool down period of time for a weld developed within said strap and thereby insure proper weld integrity, and for automatically releasing said manually operable means for return to said first position at which said means for welding said strap are disengaged from said strap.

5,380,394
IMAGE FORMING APPARATUS
 Kunihiko Shibuya; Masashi Hiroki; Takashi Hatakeyama, and Tadayoshi Ohno, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Continuation of Ser. No. 738,257, Jul. 30, 1991, abandoned. This application May 24, 1993, Ser. No. 65,030
 Claims priority, application Japan, Jul. 30, 1990, 2-201926
 Int. Cl.⁶ B41J 2/00
 U.S. Cl. 156—540 11 Claims

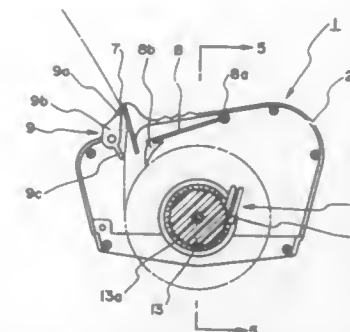


1. An image forming apparatus for transferring an image onto a recording medium, said apparatus comprising:
 a thermoplastic transfer medium including a thermoplastic ink layer, thermally expandable particles, and a base for carrying the thermoplastic ink layer and the thermally expandable particles, the thermally expandable particles having a diameter greater than the thickness of the thermoplastic ink layer;
 heating means for selectively heating the thermoplastic ink layer and the thermally expandable particles, the thermally expandable particles having a melting point higher than the melting point of the thermoplastic ink layer, so as to transfer the thermoplastic ink layer and the thermally expandable particles onto the recording medium when each has reached its respective melting point;
 means for selecting one of (1) a first recording mode for forming images on the recording medium using the thermoplastic ink layer in a melted state on a smoothly surfaced recording medium, and (2) a second recording mode for forming images on a roughly surfaced recording medium, the images formed in the second recording mode being of the same color as the images formed in the first recording mode, the second recording mode using both the melted thermoplastic ink layer and the melted thermally expandable particles mixed together; and
 means for controlling the heating means to melt the thermoplastic ink layer by heating it to its melting point when the first recording mode is selected, and by heating the thermally expandable particles to their melting point, so that both the thermoplastic ink layer and the thermally expandable particles are melted when the second recording mode is selected.

5,380,395
AUTOMATIC ADHESIVE TRANSFER DEVICE
 Hiromichi Uchida, Tokyo, Japan, assignor to Toyo Chemical Co., Ltd., Tokyo, Japan
 Filed Mar. 2, 1993, Ser. No. 25,631
 Claims priority, application Japan, Dec. 28, 1992, 4-093799[U]
 Int. Cl.⁶ B32B 31/00
 U.S. Cl. 156—577 15 Claims

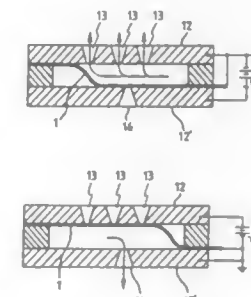
1. An automatic adhesive transfer device, comprising:
 a casing;
 adhesive tape comprising double-sided release paper in the form of an adhesive tape roll having an outer side surface coated with adhesive, said adhesive tape roll being rotatably mounted in said casing;

said casing having a bottom having an opening exposing said outer side surface of said adhesive tape coated with adhesive and a top having an exit for discharging a used portion of said double-sided release paper;
 a ratchet mechanism including a ratchet mechanism member connected with one of said adhesive tape roll and said casing and a ratchet pawl engaging said ratchet mechanism member so as to allow rotation of said adhesive tape



roll in only a direction of adhesive transfer connected with the other of said adhesive tape roll and said casing; and
 a tape cutter disposed adjacent to said exit, said tape cutter having an upper end cutter blade for cutting of said used portion of said double-sided release paper and an urging part urging said used portion of said double-sided release paper in said casing.

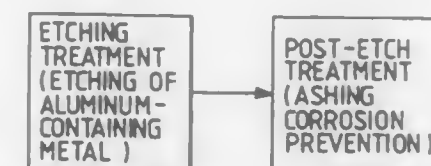
5,380,396
VALVE AND SEMICONDUCTOR FABRICATING EQUIPMENT USING THE SAME
 Mitsuhiro Shikida, Kokubunji; Kazuo Sato, Tokyo; Yoshio Kawamura, Kokubunji; Shinji Tanaka, Ibaraki; Yasuaki Horiuchi, Yono; Akira Koide, Chiyoda, and Toshimitsu Miyada, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Division of Ser. No. 890,711, May 29, 1992, Pat. No. 5,284,179.
 This application Oct. 19, 1993, Ser. No. 138,051
 Claims priority, application Japan, May 30, 1991, 3-127705; Sep. 30, 1991, 3-250721
 Int. Cl.⁶ B44C 1/22; C23F 1/00; C23C 16/00
 U.S. Cl. 156—630 19 Claims



13. A process for fabricating a micro-valve including a plurality of ports on a wall of a vessel, and a film having an inflexion plane movable within said vessel, electrodes covered with insulating layer in the wall of said vessel for opening and closing the plurality of ports by movement of said inflexion plane of said film, comprising:
 a. a first step of preparing a first substrate including a channel having at least one port and an electrode on the bottom thereof;
 b. a second step of forming a soluble sacrifice layer on the bottom portion of said channel;
 c. a third step of laminating a conductive material on said sacrifice layer, and then removing said sacrifice layer,

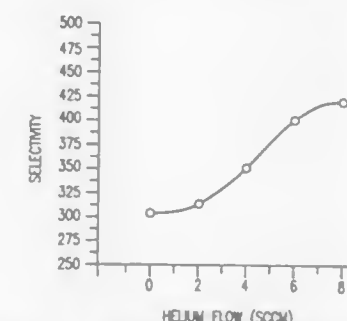
thereby forming such a conductive film member that both ends thereof is supported by the first substrate near said channel and a supporting portion thereof is separated from the bottom portion of said channel; and
 d. a fourth step of aligning and bonding a second substrate having an insulating layer, an electrode and port to said first substrate on a side thereof opposed to the bottom portion of said channel with respect to said film member, to thereby form a vessel.

5,380,397
METHOD OF TREATING SAMPLES
 Ryooji Fukuyama; Makoto Nawata, both of Kudamatsu; Yutaka Kakehi, Hikari; Hirooobu Kawahara; Yoshiki Sato, both of Kudamatsu; Yoshimi Torii, Tachikawa; Akira Kawayara, and Yoshie Sato, both of Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Continuation of Ser. No. 569,021, Aug. 17, 1990, abandoned.
 This application Oct. 27, 1992, Ser. No. 966,849
 Claims priority, application Japan, Aug. 28, 1989, 1-218523; Nov. 2, 1989, 1-284711; May 9, 1990, 2-117596
 Int. Cl.⁶ C23F 11/00
 U.S. Cl. 156—643 21 Claims



1. A method of treating samples comprising:
 a step for etching samples of aluminum-containing wiring material coated with a resist using a halogen gas thereby forming residual adhered matter having a halogen component;
 a step for simultaneously removing a resist and said residual adhered matter having said halogen component from at least a surface of said samples using a gas that has an oxygen component and a hydrogen component, said hydrogen component being selected from the group consisting of hydrogen, a hydrocarbon and a compound consisting of carbon, hydrogen and oxygen.

5,380,398
METHOD FOR SELECTIVELY ETCHING ALGAAS
 Lawrence E. Smith, Macungie, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
 Filed Nov. 25, 1992, Ser. No. 982,194
 Int. Cl.⁶ H01L 21/00, 21/02, 21/306; B44C 1/22
 U.S. Cl. 156—643 7 Claims



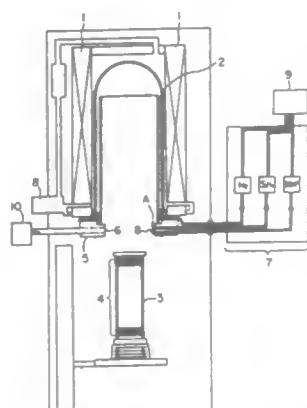
1. A method of fabricating a semiconductor device, said device comprising first and second semiconductors, one of said first and second semiconductors comprises Al, by the step of

etching said first and said second semiconductors in a mixture consisting essentially of SiCl_4 , CF_4 , O_2 , and an inert gas.

5,380,399

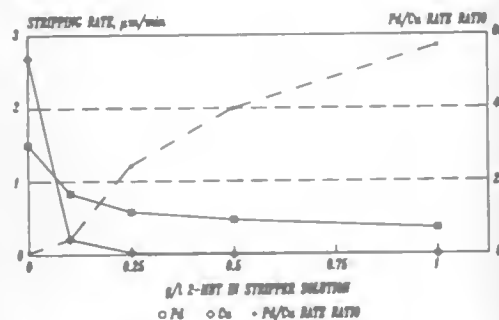
METHOD OF TREATING SEMICONDUCTOR SUBSTRATES

Naoto Miyashita; Koichi Takahashi, both of Yokohama, and Mitsutoshi Koyama, Koganei, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 14, 1993, Ser. No. 120,436
Claims priority, application Japan, Sep. 14, 1992, 4-270901
Int. Cl.⁶ H01L 21/306; B44C 1/22; C03C 15/00
U.S. Cl. 156—646 30 Claims



1. A method of heat treating a semiconductor substrate, comprising:
 - step 1 of carrying a semiconductor substrate into a heat treating chamber heated at a temperature of about 150° C. or lower;
 - step 2 of heating the heat treating chamber up to about 200° C. to remove moisture adhering to the semiconductor substrate;
 - step 3 of introducing an etching gas into the heat treating chamber to etch an oxide film formed on the surface of the semiconductor substrate; and
 - step 4 of raising the temperature within the heat treating chamber up to a heat treating temperature to heat treat the semiconductor substrate.

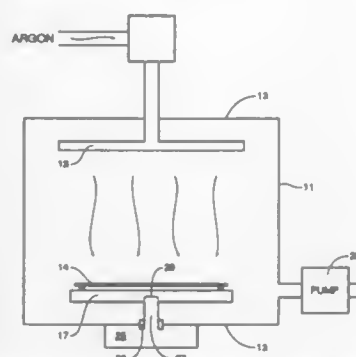
5,380,400
CHEMICAL ETCHANT FOR PALLADIUM
Joseph A. Alys, Warren; Joseph J. Maisano, Jr., Denville, and Heinrich K. Straschil, Summit, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Dec. 29, 1993, Ser. No. 175,091
Int. Cl.⁶ B44C 1/22; C23F 1/00; C09K 13/02
U.S. Cl. 156—656 37 Claims



1. A method for stripping palladium and its alloys from copper-containing substrates, which comprises preparing a palladium stripping solution and immersing pans

to be stripped of Pd into said solution, in which said stripping solution is prepared by preparing an oxidant solution comprising a hydroxide, nitrobenzoic acid and thallium compound in water, preparing a Cu-corrosion inhibitor solution comprising an organo mercapto compound in solvent therefore, preparing a salt solution comprising cyanide radical source compound and Na_2CO_3 in water, and mixing the three solutions by adding oxidant solution in increments and then the inhibitor solution to the salt solution under mixing.

5,380,401
METHOD TO REMOVE FLUORINE RESIDUES FROM BOND PADS
Curtis S. Jones; William J. Crane; Robin L. Gilchrist, and Rod C. Langley, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Jan. 14, 1993, Ser. No. 4,371
Int. Cl.⁶ H01L 21/00
U.S. Cl. 156—665 10 Claims

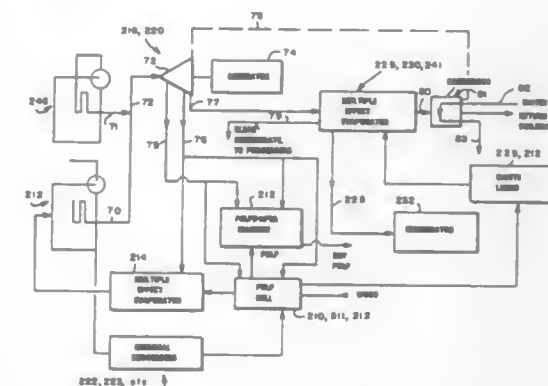


1. A process for removing fluorine contaminants from an aluminum-containing semiconductor bond pad, said process comprising the following steps:
 - exposing the aluminum-containing bond pad to argon, the aluminum bond pad being exposed to argon in a reactive ion etcher; and
 - applying energy to said argon, a carrier gas being added to said argon, said carrier gas being carbon dioxide, thereby removing the fluorine contaminants from the aluminum-containing bond pad.

5,380,402
REDUCING PULP MILL LIQUID DISCHARGE
Rolf Ryham, Roswell, Ga.; Tuomo S. Nykanen; Brian F. Greenwood, both of Glens Falls, N.Y.; Johan Gullichsen, Helsinki, Finland; Erkki Kiiskila, Karhula, Finland; Esko Mattelmaki, Varkaus, Finland; Joseph R. Phillips, Glens Falls, N.Y.; Jan Richardsen, Roswell, Ga.; Jarmo Soderman, Helsinki, and Karl G. Wiklund, Karhula, both of Finland, assignors to Kamyr, Inc., Glens Falls, N.Y.
Continuation-in-part of Ser. No. 922,334, Jul. 30, 1992. This application Oct. 13, 1992, Ser. No. 959,905
Int. Cl.⁶ D21C 11/12
U.S. Cl. 162—30.1 22 Claims

1. A method of facilitating operation, a cellulose pulp mill, having a bleach plant, and a black liquor system so as to allow minimum discharge of pollutants therefrom, utilizing a condensing type steam turbine with at least one exhaust, comprising the steps of:
 - (a) producing super heated steam by burning organic containing waste products from the pulp mill;
 - (b) feeding the super heated steam to the condensing type steam turbine to generate a maximum amount of electricity from a given amount, temperature, and pressure of steam;
 - (c) exhausting steam from the at least one exhaust of the steam turbine;

- (d) collecting liquid wastes from the cellulose pulp mill, including substantially all liquid effluents from the bleach plant;



- (e) evaporating substantially all the collected liquid wastes independent of the black liquor system using the exhausted steam from the at least one steam turbine as heating fluid for effecting evaporation to produce clean condensate and a concentrated liquid waste; and wherein the liquid polluting effluents is minimized.

5,380,403
AMINE FUNCTIONAL POLY(VINYL ALCOHOL) FOR IMPROVING PROPERTIES OF RECYCLED PAPER
Lloyd M. Robeson, Macungie, Pa., and Timothy L. Pickering, Radford, Va., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Mar. 22, 1993, Ser. No. 35,028
Int. Cl.⁶ D21H 11/14
U.S. Cl. 162—147 3 Claims

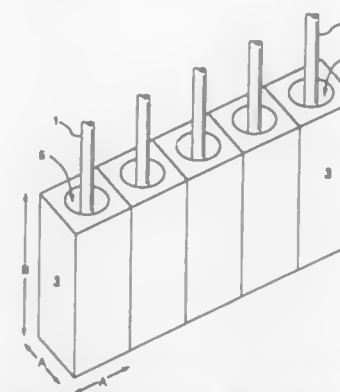
1. In a process for making recycled paper products, the improvement for increasing the wet and dry strength of the resultant recycled paper product which comprises adding to the wet-end of the papermaking process an amine functional poly(vinyl alcohol) formed by the reaction of poly(vinyl alcohol) with an amino-aldehyde dialkyl acetal where the poly(vinyl alcohol) is >75% hydrolyzed and the amine content is from >1 mole % to <15 mole % based on vinyl alcohol units, wherein said amine functional poly(vinyl alcohol) is added at a level of 0.1 to 4 wt. % based on dry paper weight.

5,380,404
Patent Not Issued For This Number

5,380,405
SEPARATION OF ALPHA-PHELLANDRENE FROM 3-CARENE BY AZEOTROPIC DISTILLATION
Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.
Filed Jan. 24, 1994, Ser. No. 184,918
Int. Cl.⁶ B01D 3/36; C07C 7/06
U.S. Cl. 203—57 2 Claims

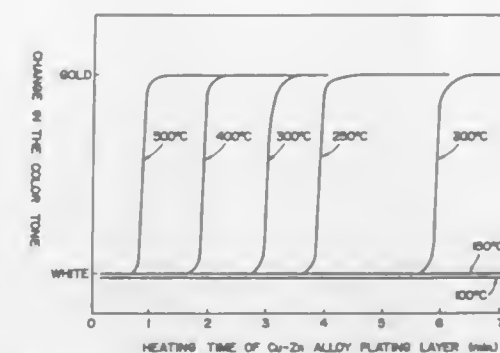
1. A method for recovering alpha-phellandrene from a mixture of alpha-phellandrene and 3-carene which comprises distilling a mixture of alpha-phellandrene and 3-carene in the presence of an azeotrope forming agent, recovering the alpha-phellandrene and the azeotrope forming agent as overhead product and obtaining the 3-carene as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of methyl t-butyl ether, methyl formate, methyl caproate, amyl acetate and methyl amyl acetate.

5,380,406
ELECTROCHEMICAL METHOD OF PRODUCING EUTECTIC URANIUM ALLOY AND APPARATUS
James A. Horton, Livermore, Calif., and H. Wayne Hayden, Oakridge, Tenn., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.
Filed Oct. 27, 1993, Ser. No. 141,754
Int. Cl.⁶ C25C 3/00, 3/34
U.S. Cl. 204—1.5 18 Claims



1. An electrochemical method of producing an eutectic uranium alloy comprising the steps of:
 - (a) creating an electrolyte reservoir defined by a container comprising an anode;
 - (b) placing an electrolyte mixture in said reservoir and in contact with said anode, said electrolyte comprising a chlorine or fluorine containing salt and uranium chloride, and melting said mixture;
 - (c) positioning a cathode in said reservoir, and in contact with said electrolyte, said cathode comprising a metal capable of forming an uranium alloy having a melting point less than the melting point of pure uranium; and
 - (d) applying a current between said cathode to said anode so that the uranium alloy forms on said cathode.

5,380,407
METHOD FOR FACILITATING DISTINCTION BETWEEN DIFFERENT STEEL PRODUCTS
Yukio Yamaoka, Sakai; Keiji Hattori, Kobe; Masaru Kodama, Amagasaki, and Hirofumi Ueki, Kobe, all of Japan, assignors to Shinko Kosen Kogyo Kabushiki Kaisha, Amagasaki, Japan
Division of Ser. No. 937,696, Sep. 1, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 139,166
Claims priority, application Japan, Dec. 25, 1991, 3-343511
Int. Cl.⁶ C25D 5/50
U.S. Cl. 205—122 9 Claims



1. A method for facilitating the distinction among different spring steel products and at the same time improving their surface appearance and corrosion resistance, comprising plating the surface of said different spring steel products before

spring-forming with alternate layers of Cu and Zn, the amount of Cu and Zn differing for steel products differing in size and/or material, to obtain color-developable spring steel products, drawing and then coil spring-forming the resulting plated spring steel products, and low temperature annealing said resulting plated spring steel products to develop their colors, the colors being different for spring steel products differing in size and/or material, whereby mixing and erroneous assembly of spring steel products differing in size and/or material is prevented.

5,380,408 ETCHING PROCESS

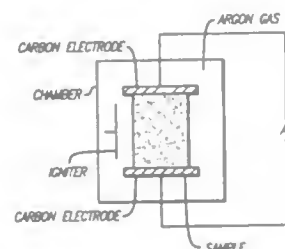
Rolf Svensson, Hagersten, Sweden, assignor to Sandvik AB, Sandviken, Sweden
Continuation of Ser. No. 882,114, May 13, 1992, abandoned.
This application Dec. 22, 1992, Ser. No. 995,914
Claims priority, application Sweden, May 15, 1991, 9101469
Int. Cl.⁶ C25F 3/08; C23F 1/00
U.S. Cl. 204—129.1 10 Claims



1. A method for removing a layer of binder phase formed on the surface of a hard material insert containing hard constituents in a binder phase based on cobalt and/or nickel, comprising removing said layer of binder phase formed on the surface of said insert by etching said insert electrolytically in a mixture of concentrated sulfuric acid and concentrated phosphoric acid in a volume ratio of 0.5-2 with a water content of <50% at a temperature of 25°-60° C.

5,380,409

FIELD-ASSISTED COMBUSTION SYNTHESIS
Zuhair A. R. Munir, Weibong Lai, and Karl H. Ewald, all of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Mar. 8, 1993, Ser. No. 27,965
Int. Cl.⁶ C25F 5/00
U.S. Cl. 204—130 13 Claims



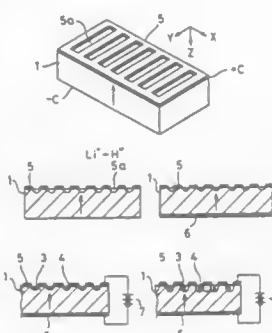
1. A method for preparing a product by self-propagating synthesis, wherein a precursor containing essentially stoichiometric amounts of elements comprising the product is ignited at a first end thereof to initiate conversion of the precursor to the product by a combustion wavefront which traverses the precursor from the first end to a second opposite end thereof, said method comprising:
subjecting the precursor to an electric field applied across the precursor, said field promoting propagation of the combustion wavefront through the precursor but not sufficient to induce substantial Joule heating prior to ignition of the precursor or to cause ignition of the precursor; and
igniting the precursor to initiate combustion while maintaining the electric field, thereby promoting propagation of

the combustion wavefront from the first end to the second end.

5,380,410

PROCESS FOR FABRICATING AN OPTICAL DEVICE FOR GENERATING A SECOND HARMONIC OPTICAL BEAM

Ippei Sawaki, Sunao Kurimura, and Michio Miura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 934,233, Aug. 25, 1992, abandoned.
This application Feb. 1, 1994, Ser. No. 189,997
Claims priority, application Japan, Sep. 18, 1991, 3-236731; Mar. 16, 1992, 4-058352
Int. Cl.⁶ C25F 5/00 19 Claims



1. A method for forming an inversion region having a first direction of polarization in a ferroelectric substrate that has a second, opposite direction of polarization, said substrate having upper and lower surfaces disposed generally perpendicularly of said polarization directions, said method comprising:
exchanging protons for cations at a locality adjacent to said upper major surface in said ferroelectric substrate to thereby produce a proton rich zone at said locality, said locality being selectively positioned in correspondence to the intended position of said inversion region;
providing respective electrodes on said upper and lower surfaces of the substrate; and
creating said inversion region by applying a d.c. voltage across said electrodes so as to induce an electric field in the substrate acting in the direction of said first direction of polarization to thereby cause protons to migrate from said proton rich zone selectively in a direction perpendicular to said upper surface.

5,380,411

ULTRASOUND OR SHOCK WAVE WORK PROCESS AND PREPARATION FOR CARRYING OUT SAME

Reinhard Schliep, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany
PCT No. PCT/DE88/00750, § 371 Date Aug. 2, 1990, § 102(e) Date Aug. 2, 1990, PCT Pub. No. WO89/05159, PCT Pub. Date Jun. 15, 1989
PCT Filed Dec. 2, 1988, Ser. No. 548,912
Claims priority, application Germany, Dec. 2, 1987, 3741201
Int. Cl.⁶ C07C 1/00 32 Claims

1. In a method for destroying tumor tissue, cells or other pathological tissue cells by means of shock waves or ultrasound, comprising subjecting said tissue or cells to shock waves or ultrasound field, wherein the improvement comprises that said tissue or cells are subjected to said shock waves or ultrasound in a preparation containing or producing microbubbles.

5,380,412

PROCESS FOR COATING ELECTRICALLY CONDUCTING SUBSTRATES, SUBSTRATES COATED BY THIS PROCESS AND AQUEOUS ELECTROCOATING BATHS

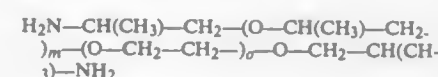
Günther Ott, Münster; Udo Reiter, Telgte; Walter Jouck, Münster; David J. Santure, Münster, and Dieter Rühl, Münster, all of Germany, assignors to BASF Lacke + Farben AG, Münster, Germany
PCT No. PCT/EP89/01163, § 371 Date Sep. 18, 1990, § 102(e) Date Sep. 18, 1990, PCT Pub. No. WO89/06672, PCT Pub. Date Jul. 27, 1989
Continuation of Ser. No. 548,999, Sep. 18, 1990, abandoned. This PCT application Dec. 15, 1988, Ser. No. 126,669
Claims priority, application Germany, Jan. 22, 1988, 3801786
Int. Cl.⁶ C25D 13/04

U.S. Cl. 204—181.7 13 Claims
1. A process for coating electrically conducting substrates, comprising the steps of:

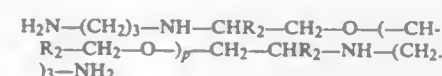
- (1) immersing the substrate in an aqueous electrocoating bath which contains a cationic amine-modified epoxy resin obtained by reacting
 - (A) a diepoxy compound of an epoxide equivalent weight below 2000,
 - (B) a compound monofunctionally reactive toward epoxide groups and containing an alcoholic OH group, a phenolic OH group or an SH group, and
 - (C) an amine,
 the components (A) and (B) being used in molar ratio of 10:1 to 1:1 and the positive charges being introduced by protonization of the reaction product, by use of an amine salt as component (C) or a combination thereof;
- (2) connecting the substrate to a current source to act as a cathode,
- (3) depositing a film on the substrate by the action of direct current,
- (4) removing the substrate from the electrocoating bath and
- (5) baking the deposited paint film, wherein the electrocoating bath further contains at least 7.5% by weight of a polyoxyalkylenepolyamine, wherein the polyoxyalkylenepolyamine is selected from the group consisting of chemical structures having the formula:



in which R₁ denotes H or an alkyl radical or 1 to 6 carbon atoms, and n denotes 5-60,



in which m+o denotes 5 to 60, m denotes 1 to 59, and o denotes 1 to 59, and



in which R₂ denotes H or an alkyl radical of 1 to 6 carbon atoms, and p denotes 5 to 60, the percentage by weight referring to the total amount of binder contained in the electrocoating bath.

5,380,413

PROCESS FOR THE MANUFACTURE OF A BIPOLAR MEMBRANE AND PROCESS FOR THE MANUFACTURE OF AN AQUEOUS ALKALI METAL HYDROXIDE SOLUTION

Francesco Posar, Rosignano-Solvay, and Mauro Ricciardi, Castelnuovo Della Misericordia, both of Italy, assignors to Solvay (Société Anonyme), Brussels, Belgium
Filed Mar. 31, 1994, Ser. No. 220,488
Claims priority, application Belgium, Apr. 8, 1993, 09300351
Int. Cl.⁶ B01D 61/44

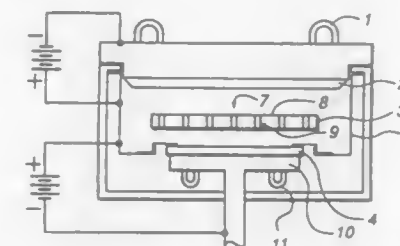
U.S. Cl. 204—182.4 10 Claims
1. Process for the manufacture of a bipolar membrane, according to which a cationic membrane is treated with a compound of a polyvalent metal and with an aqueous alkali metal hydroxide solution which comprises lithium hydroxide and is then joined side by side to an anionic membrane.

5,380,414

SHIELD AND COLLIMATOR PASTING DEPOSITION CHAMBER WITH A WAFER SUPPORT PERIODICALLY USED AS AN ACCEPTOR

Avi Tepman, Cupertino, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Filed Jun. 11, 1993, Ser. No. 75,259
Int. Cl.⁶ C23C 14/34 15 Claims

U.S. Cl. 204—192.3



9. A method to be used in the physical vapor deposition onto a plurality of wafers inside of a deposition chamber having a target positioned near the top of the chamber and a wafer acceptor positioned near the bottom of the chamber for supporting a wafer during a deposition cycle, the method comprising the steps of:

- a. bombarding the target with ions for depositing material from the target onto a predetermined number of wafers sequentially; and
- b. periodically bombarding the wafer acceptor with ions for depositing material from the wafer acceptor onto the interior surfaces of the deposition chamber, wherein this step is performed with no wafer in the deposition chamber, and further wherein the target and the wafer acceptor are formed of different types of material.

5,380,415

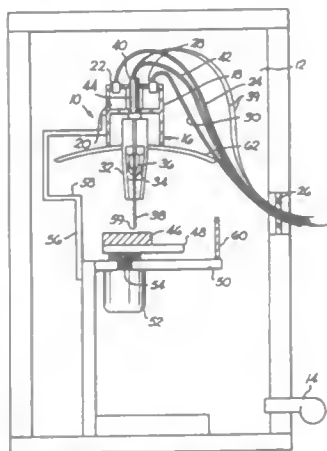
VACUUM VAPOR DEPOSITION

Richard M. Poorman, Arab, and Jack L. Weeks, Scottsboro, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Feb. 3, 1994, Ser. No. 191,309
Int. Cl.⁶ C23C 14/00

U.S. Cl. 204—192.38 20 Claims

1. Apparatus for coating a thin metal film by depositing vapors from a source of the metal onto a substrate spaced from said source, said apparatus comprising an enclosed substantially sealed chamber, a gas tungsten arc welding torch including a torch body mounted within said chamber, an elongated hollow tungsten electrode carried within and electrically insulated from said body, said electrode having a tip disposed

externally of said body, an elongated bore extending through said electrode from within said body and opening at said tip, means for supplying a gas to said torch communicating with said bore so that said gas flows out said tip, means for supplying electrical power to said electrode, support means for mounting said source spaced from said tip of said electrode for forming an electrical arc between said tip and said source and for impingement of said gas from said tip upon said source to vaporize a portion of said source, substrate mounting means for mounting said substrate spaced from said electrode and said source for receiving vapors from said source, a shield of electrically non-conductive material disposed about said torch spaced from said tip for reflecting and precluding an arc from forming between said tip and said torch when electrical power is initially supplied to said electrode to form an arc, and means



for reducing the pressure within said chamber to a substantial vacuum.

9. A method of coating a thin film of metal released from a source of said metal onto the surface of a substrate, said method comprising: mounting said source and said substrate in spaced apart disposition within an enclosed chamber, positioning a welding torch having a hollow electrode with a tip at a free end thereof within said chamber with said tip disposed adjacent said source, applying a gas through the hollow of said electrode directed onto said source, applying electrical power to said electrode to form an arc between the tip of the electrode and said source to vaporize a portion of said source, reducing the pressure within said chamber to sub-atmospheric pressure such that the pressure at said substrate is less than the pressure at the source and vapors released from said source flow onto said substrate.

5,380,416 ALUMINUM REDUCTION CELL CARBON ANODE POWER CONNECTOR

Curtis J. McMinn, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

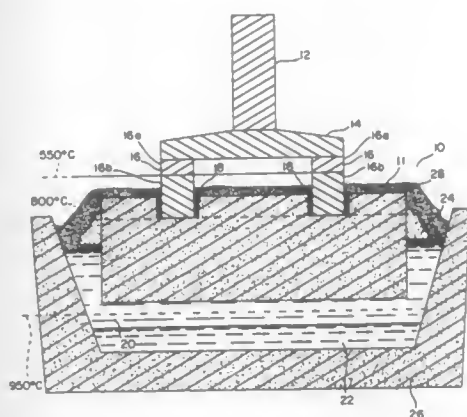
Filed Dec. 2, 1993, Ser. No. 161,836
Int. Cl.⁶ C25C 3/08

U.S. Cl. 204—245

3 Claims

1. In an electrolytic aluminum reduction cell comprising a carbon anode block and electrical connectors, each connector having a portion thereof subject to corrosion during operation of the cell and the portion is at least partially extending into the block, the improvement wherein at least the portion of each of the connectors subject to corrosion during operation of the cell

is formed entirely of a steel alloy containing at least about 0.8% by weight of chromium and has electrical resistivity character-

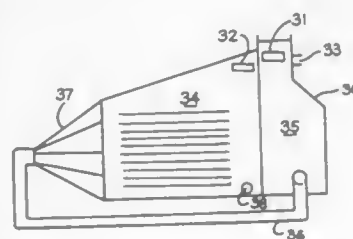


istics close to those of mild steel at operating temperatures of the block where the connectors are present.

5,380,417
SEPARATION ACCELERATOR
Saleam Essop, P.O. Box 1638, Hillcrest 3650, South Africa, and Allen Bullard, P.O. Box 1638, Hillcrest 3650, South Africa
Filed Feb. 1, 1993, Ser. No. 11,880
Claims priority, application European Pat. Off., Jan. 31, 1992, 92830040.9

Int. Cl.⁶ B03D 1/00; C02F 1/46
U.S. Cl. 204—269

11 Claims



1. A gravity separator for separating surface liquid from carrier liquid comprising:

a primary chamber comprising upper and lower portions, said upper portion of said primary chamber comprising inlet means for receiving liquid to be treated, outlet means for surface liquid adjacent to the top of said upper portion, and outlet means for partially treated carrier liquid adjacent the bottom of said upper portion of said primary chamber, whereby said partially treated carrier liquid travels to said lower portion of said primary chamber, and wherein said lower portion of said primary chamber is further comprised of two or more inclined trays which define channels connected in series by conduits, said channels formed between inclined trays communicating with an equal number of vertical channels, said vertical channels being provided with outlet means adjacent the top of said vertical channels for said surface liquid, whereby particles of surface liquid rise and coalesce and travel upward along the lower surface of said trays until said particles of surface liquid enter said vertical channels and exit said gravity separator through said outlet means adjacent the top of said vertical channels, said lower portion of said primary chamber further comprising outlet means for partially treated carrier liquid adjacent the bottom of said lower portion;

an electrolytic chamber in communication with the bottom of said lower portion of said primary chamber, said electrolytic chamber comprised of an electrolytic cell which is

further comprised of two or more electrodes of opposing polarities constructed in the form of plates which are situated parallel to one another, said electrodes being insulated from one another and being insulated from the body of said gravity separator, inlet means for introducing partially treated carrier liquid into said electrolytic chamber, outlet means adjacent the top of said electrolytic chamber for passage of said surface liquid, and outlet means adjacent the bottom of said electrolytic chamber for passage of said carrier liquid, said electrode plates being located within said electrolytic chamber whereby a portion of said carrier liquid must pass through the channels formed between said electrode plates to reach said outlet means for said carrier liquid, and

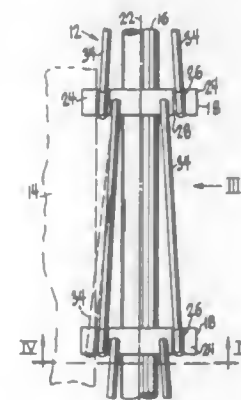
communication means between said outlet means for partially treated carrier liquid adjacent the bottom of said lower portion and said inlet means for introducing partially treated carrier liquid into said electrolytic chamber, whereby partially treated carrier liquid may exit the bottom of said lower portion of said primary chamber and enter said electrolytic chamber.

5,380,418
RACK BAR FOR RELEASABLY HOLDING
PLATE-SHAPED PARTS
Günther Strecker, Lämmlinstraße 40, 7100 Heilbronn, Germany
PCT No. PCT/DE92/00270, § 371 Date Jun. 30, 1993, § 102(e)
Date Jun. 30, 1993, PCT Pub. No. WO93/09259, PCT Pub. Date May 13, 1993

PCT Filed Apr. 3, 1992, Ser. No. 84,243
Claims priority, application Germany, Oct. 30, 1991, 9113516[]

Int. Cl.⁶ C25D 17/04
U.S. Cl. 204—297 W

20 Claims



1. A rack bar for holding plate-shaped parts for immersion electroplating of the plate-shaped parts, the rack bar having a longitudinal axis and comprising:

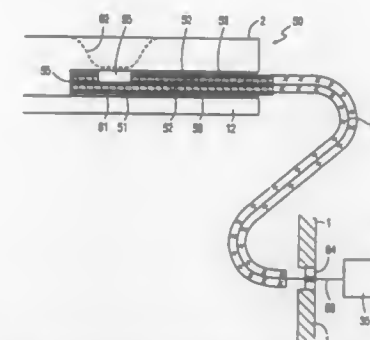
holding devices having bearing surfaces thereon on which the plate-shaped parts can be held; and
a spring clip comprising an elongated member, said spring clip having one end rigidly secured to the rack bar and an opposite free end biased toward the plane of the bearing surface of one of the holding devices for clamping the plate-shaped part between said free end and said bearing surface, said spring clip having a released position in the plane of the bearing surface wherein said spring clip forms an angle of less than 30° with respect to the longitudinal axis of the rack bar in the plane of the bearing surface, said free end of said spring clip being movable between a clamping position in which the plate-shaped part is clamped between said bearing surface and said free end, and a disengagement position in which said free end is adjacent the plate-shaped part in the plane of said bearing surface.

5,380,419 CATHODE-SPUTTERING APPARATUS COMPRISING A DEVICE FOR MEASURING CRITICAL TARGET CONSUMPTION

Gerhard F. Eggers, Isernhagen, and Horst-Christian Langowski, Hanover, both of Germany, assignors to U.S. Philips Corp. and Du Pont Optical Co., New York, N.Y.
Continuation of Ser. No. 339,925, Apr. 17, 1989, abandoned, which is a continuation of Ser. No. 95,279, Sep. 10, 1987, abandoned. This application May 5, 1993, Ser. No. 57,204
Claims priority, application Germany, Sep. 10, 1986, 3630737
Int. Cl.⁶ C23C 14/34

U.S. Cl. 204—298.03

12 Claims



8. A cathode sputtering apparatus for coating surfaces of objects, said apparatus comprising a vacuum chamber containing a helium-group gas, a target cathode with at least one aperture and an anode arranged in said chamber, means for applying a voltage between said cathode and anode to produce a plasma discharge, means for producing a magnetic field for intensifying the plasma discharge and concentrating it at the area of the target cathode, wherein for measuring a critical condition of target consumption at least one probe is located in said at least one aperture in the target cathode, which probe is adapted to respond only when the target material has eroded up to the probe, and is contacted by the discharge, wherein the plasma probe comprises an electrically conductive measurement lead whose contact with the discharge plasma is detected electronically and which measurement lead has an electric potential influenced by positive charges of ions of the discharge plasma, and wherein the measurement lead is arranged in a ceramic tube surrounded by a metal tube which tube is locally open at one side so that, at the location of this opening, the measurement lead borders on the target material to be eroded.

5,380,420
ARC ION PLATING SYSTEM
Kunihiko Tsuji, Takasago, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed May 24, 1993, Ser. No. 65,491
Claims priority, application Japan, May 26, 1992, 4-133843; Apr. 22, 1993, 5-096166

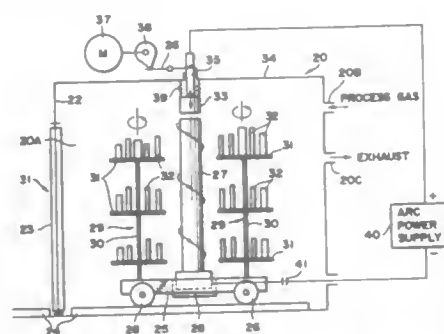
Int. Cl.⁶ C23C 14/22
U.S. Cl. 204—298.41

15 Claims

1. An arc ion plating system for forming thin film on the surface of a workpiece, comprising:

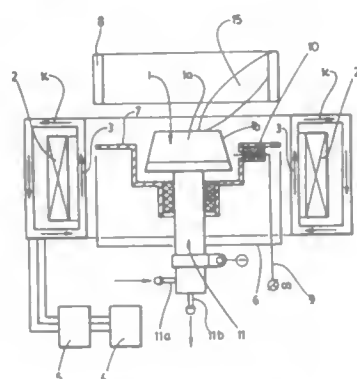
a vacuum chamber;
a door provided on said vacuum chamber for opening and closing a passage between outside of said vacuum chamber and inside of said vacuum chamber;
an opening/closing means for opening/closing said door;
a moving means for moving a platform in and out of said vacuum chamber through said door, said platform being movable in and out of said vacuum chamber through said door;
means for mounting workpiece on said platform;
means for mounting a cathode on said platform so that said

cathode is electrically insulated from a conducting portion of said platform; and



means for evaporating part of said cathode and depositing some of the evaporated part onto said workpiece.

5,380,421
VACUUM-ARC PLASMA SOURCE
Vladimir I. Gorokhovskiy, 10 Stonedene Blvd., Willowdale, Ontario, Canada M2R 3C7
Filed Nov. 4, 1993, Ser. No. 145,570
Claims priority, application Ukraine, Nov. 4, 1992, 93020090
Int. Cl.⁶ C23C 14/32
U.S. Cl. 204—298.41



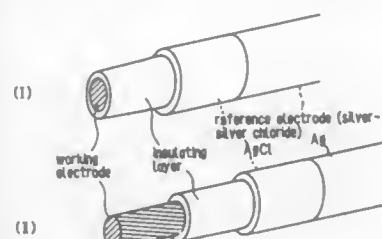
1. An apparatus for producing coatings in a vacuum comprising

- a rectangular planar cathode plate and an anode arranged at right angles thereto, the cathode plate having long sides and short sides, the long sides being beveled inwardly toward a working surface of the cathode plate,
- means for igniting an electric arc, and
- a magnetic stabilizing system comprising linear conductors arranged in parallel to the long sides of the cathode plate for producing a static magnetic field, and groups of linear conductors arranged perpendicular to the working surface of the cathode plate activated in sequence to produce a dynamic magnetic field.

5,380,422
MICRO-ELECTRODE AND METHOD FOR PREPARING IT
Akira Negishi, Matsudo; Hiroko Kaneko, Tsukuba; Takamasa Kawakubo, and Yoshihisa Suda, both of Fujikoka, all of Japan, assignors to Agency of Industrial Science and Technology and Mitsubishi Pencil Kabushiki Kaisha, both of Tokyo, Japan
Filed Jun. 29, 1992, Ser. No. 905,768
Claims priority, application Japan, Jul. 18, 1991, 3-202138
Int. Cl.⁶ G01N 27/26
U.S. Cl. 204—403

1. A renewable working micro-electrode with a reference micro-electrode comprising a working micro-electrode com-

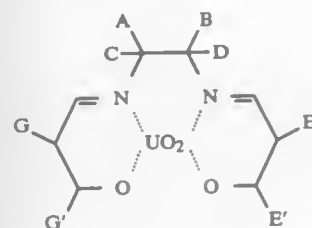
prising of a micro-porous composite carbon thin wire or thin plate prepared by a highly dispersed composite composition comprised of a crystalline carbon fine powder and an organic binder, being extruded and said extruded material being calcined in an inert atmosphere or a non-oxidizing atmosphere,



and a reference micro-electrode comprising an insulating material with which said working micro-electrode is coated except a working electrode portion, a silver coating layer on said insulating layer and a silver chloride layer deposited on a part of said silver layer.

5,380,423
ANION-SELECTIVE MEMBRANE AND A SENSOR PROVIDED THEREWITH
David N. Reinholdt, Hengelo; Johannes F. J. Engbersen, Ede; Willem Verboom, Vriezenveen; Dimitri Radkevich, and Walter P. R. V. Stanthamer, both of Enschede, all of Netherlands, assignors to Priva Agro Holding B.V., Netherlands
Filed Oct. 15, 1993, Ser. No. 136,675
Claims priority, application Netherlands, Oct. 15, 1992, 9201794
Int. Cl.⁶ G01N 27/26
U.S. Cl. 204—418

1. A membrane that is selective for anions comprising a membrane matrix said membrane matrix having bonded thereto an ionophore based on a uranyl complex with the general formula



wherein A or B or C or D=R;

A and B and C and D is selected from the group consisting of (C₅-C₇) aryl (C₅-C₇) cycloalkyl (C₁-C₃₀) alkyl (C₅-C₁₀) aryl and (C₁-C₃₀) alkyl (C₅-C₁₀) cycloalkyl; wherein each of E + E' and G + G' is selected from the group consisting of aryl, aryl substituted with a substituent (C₁-C₃₀) alkoxy, and aryl substituted with an individual substituent or the substituent joined by ring closure including

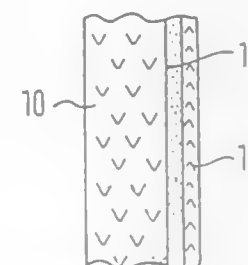
K and K-CONH-L, wherein K and L are selected from the group consisting of H —R-(CH₂)_m—, —R-(CH₂)_m—R, —X-(CH₂)_m—, —X(CH₂)_m—R, —X-(CH₂)_m—X, —X(CH₂)_m—X—R, —RX(CH₂)_m—, —RX(CH₂)_m—XR and —X-(R-X)_n—, wherein

X=O, S
m=0-10 and
n=0-10; and

wherein R is selected from the group consisting of

(C₁-C₃₀) alkyl
(C₅-C₁₀) aryl
(C₅-C₁₀) cycloalkyl
(C₁-C₃₀) alkyl (C₅-C₁₀) aryl and
(C₁-C₃₀) alkyl (C₅-C₁₀) cycloalkyl, wherein alkyl is a straight or branched chain substituted with the substituent Z_Q wherein Z is selected from the group consisting of (C₁-C₃₀) alkyl; a halogen atom; a nitro group; a cyano group; and a hydroxy group, and Q is 0-10, and wherein aryl is substituted with a substituent T_Y where T is selected from the group consisting of (C₁-C₃₀) alkyl; a halogen atom; a nitro group; a cyano group; and a hydroxy group, wherein Y is 0-10.

5,380,424
SENSOR WITH A CATALYTICALLY ACTIVE PROTECTIVE LAYER FOR DETERMINING THE OXYGEN CONTENT IN GASES, AND PROCESS FOR MANUFACTURING SUCH A SENSOR
Karl-Hermann Frieze, Leonberg, and Hans-Martin Wiedenmann, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE91/00950, § 371 Date Jun. 24, 1993, § 102(c) Date Jun. 24, 1993, PCT Pub. No. WO92/12420, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 5, 1991, Ser. No. 81,325
Claims priority, application Germany, Jan. 4, 1991, 4100106
Int. Cl.⁶ G01N 27/26
U.S. Cl. 204—429



1. An electrochemical sensor for determining the oxygen content in gas, comprising:

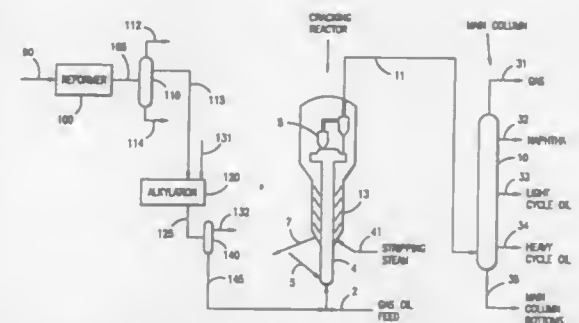
- (a) a solid electrolyte composed of an oxygen conducting material;
- (b) at least one electrode on the side of the solid electrolyte exposed to the gas to be measured;
- (c) a porous ceramic protective layer on said at least one electrode, said protective layer containing at least one catalytic metal which is active at high temperatures and which is discretely distributed therein, and at least one catalytic metal which is active at low temperatures which is homogeneously distributed therein, with said at least one catalytic metal active at high temperatures including platinum and said at least one catalytic metal active at low temperatures being rhodium.

5,380,425
OVER ALKYLATION AND CATALYTIC CRACKING FOR BENZENE CONVERSION
Jonathan E. Child, Sewell, N.J., and James K. Wolfenbarger, Torrance, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Aug. 31, 1993, Ser. No. 114,581
Int. Cl.⁶ C10G 57/00, 61/02, 63/04; C07C 2/68
U.S. Cl. 208—62

1. A process for producing a gasoline product with a reduced benzene content comprising:
a) producing a benzene rich gasoline product fraction by reforming a naphtha boiling range feed comprising normally liquid hydrocarbons boiling below about 400° F. in

a reforming reactor containing a platinum based reforming catalyst at catalytic reforming conditions to produce a reformate consisting of gasoline boiling range hydrocarbons and lighter hydrocarbons;

- b) fractionating said reformate to produce a C₆ fraction containing benzene;
- c) alkylating said C₆ reformate fraction by charging said C₆ fraction to an aromatics alkylation zone and alkylating with an alkylating agent comprising at least one of C₂, C₃ and C₄ olefins which are added to said alkylation zone, operating at aromatics alkylation conditions sufficient to alkylate over 90% of the benzene and produce heavy alkylate, a polyalkylated benzene product boiling above about 400° F. and too high for use as a gasoline fuel, which is removed from said alkylation zone and mixing said heavy alkylate with a conventional fluidized catalytic cracking feed comprising normally liquid hydrocarbons boiling above about 650° F. to form a feed mixture;

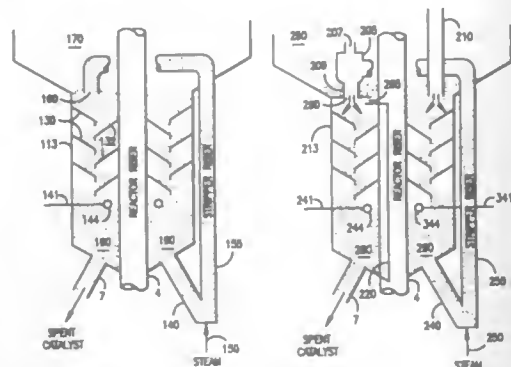


- d) catalytically cracking, in the absence of added hydrogen, said feed mixture in a catalytic cracking reactor operating at catalytic cracking conditions to produce a spectrum of catalytically cracked products from said conventional feed and crack a majority of the heavy alkylate product boiling above 400° F. to alkylated benzene species boiling below 400° F. and in the gasoline boiling range and removing from said cracking reactor a vapor stream containing cracked products including cracked heavy alkylate;
- e) fractionating said vapor stream in a fluidized catalytic cracking cracked product fractionator operating at fractionation conditions to produce a catalytically cracked naphtha fraction comprising normally liquid hydrocarbons boiling below about 400° F. including at least a majority of the polyalkylated benzene added to the cracking reactor.

5,380,426
ACTIVE BED FLUIDIZED CATALYST STRIPPING
David L. Johnson, Glen Mills, Pa.; David H. Parsons, Slidell, La., and Gerald J. Teitman, Vienna, Va., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Sep. 27, 1993, Ser. No. 126,854
Int. Cl.⁶ C10G 11/00; B01J 38/06, 8/26; F27B 15/02
U.S. Cl. 208—113

1. A fluidized catalytic cracking process wherein a heavy hydrocarbon feed comprising hydrocarbons having a boiling point above about 650 F. is catalytically cracked to lighter products by contact with a circulating fluidizable catalytic cracking catalyst inventory consisting of particles having a size ranging from about 20 to about 100 microns, comprising:
a. catalytically cracking said feed in a riser catalytic cracking reactor operating at riser catalytic cracking conditions by contacting feed with a source of regenerated catalyst to produce a riser cracking reactor effluent mixture comprising cracked products and spent catalyst containing coke and strippable hydrocarbons;
b. separating said effluent mixture into a cracked product

- vapor phase and a solids rich phase comprising spent catalyst;
- discharging said solids rich phase down into an annular stripper disposed about said riser reactor, said annular stripper having a near side near a catalyst regenerator and above a stripped catalyst outlet connective with said regenerator and a far side on the other side of said near side;
 - partially stripping catalyst by counter-current contact with a stripping vapor at dense bed catalyst stripping conditions by passing at least a portion of said solids rich phase down through a primary dense bed stripping region on said far side of said annular stripper to a primary stripped catalyst outlet;
 - transporting and stripping said catalyst removed from said primary stripped catalyst outlet by adding said removed catalyst and stripping vapor to a catalyst transport means comprising a vertical tube having a lower inlet connective



- with said primary stripped catalyst outlet and an upper outlet above or in an upper portion of said near side of said annular stripper;
- stripping catalyst discharged from said transport means by counter-current contact with a stripping vapor at dense bed catalyst stripping conditions by passing at least a portion of said discharged catalyst down through a secondary dense bed stripping region in said near side of said annular stripper to produce stripped catalyst in a lower portion of said near side of said annular stripper;
 - withdrawing said stripped catalyst from said near side of said annular stripper and charging same to a catalyst regeneration means;
 - regenerating said stripped catalyst in a catalyst regeneration means to produce regenerated catalyst; and
 - recycling said regenerated catalyst to said catalytic cracking reactor.

5,380,427

SMALL BATCH WASTE MATERIAL TREATMENT APPARATUS AND SYSTEM

Milton K. Foss, 81 W. Vancouver Dr., Port Townsend, Wash. 98368

Filed Aug. 20, 1992, Ser. No. 932,795

Int. Cl.⁶ B01D 21/02

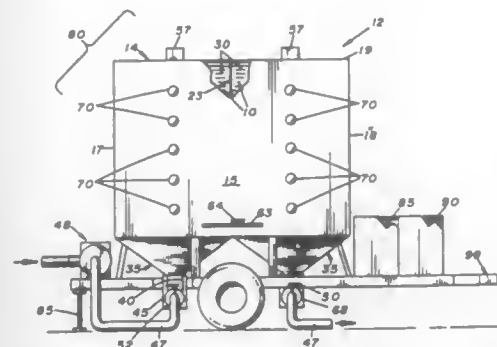
U.S. Cl. 210—95

4 Claims

1. A small batch waste material treatment apparatus, comprising:

- a receptacle divided into two processing tanks by a vertical disposed partition, each said processing tank capable of holding a small batch of waste material, each said processing tank having a front vertical surface, a top surface, and a lower portion;
- a hopper section attached to the lower portion of each said processing tank, said hopper portion having downward converging sides that terminate and create a discharge opening;
- a port opening manufactured on said top surface of above each said processing tank enabling said waste material to be deposited inside each said processing tank;
- a plurality of viewing ports manufactured on said front

- surface of each said processing tank, each said viewing port having a volume indication lines, said viewing ports being disposed vertically in selected positions on said front surface so that said volume indication lines may be used to determine the amount of waste material deposited inside said processing tank;
- a mixer disposed inside said processing tank capable of mixing said waste material deposited therein, said mixer including a mixer motor and a shaft, said shaft having at least two propellers attached thereto;
 - a discharge pipe attached to said hopper section below said



- discharge opening, said discharge pipe having a back end, a front end, and a passageway; tank;
- a lower valve attached to said discharge pipe near said front end, said lower valve enabling said waste material to be selectively deposited or removed from said processing tank, and;
 - an auger disposed inside said discharge pipe capable of forcibly removing any sludge which settles into said discharge pipe during treatment, said auger including an auger bit disposed inside said passageway of said discharge pipe, a motor attached to one end of said auger bit capable of rotating said auger bit in said discharge pipe.

5,380,428

PUMP FOR REVERSE OSMOSIS SYSTEM

Donald F. Solomon, Hemet, Calif., assignor to Product Research & Development, Santa Ana, Calif.

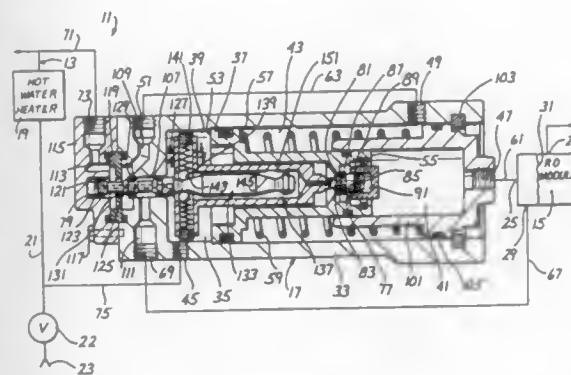
Division of Ser. No. 872,620, Apr. 22, 1992, Pat. No. 5,244,361.

This application Jul. 1, 1993, Ser. No. 86,333

Int. Cl.⁶ B01D 35/153

U.S. Cl. 210—136

8 Claims



1. A water system comprising:
- a hot water system including a hot water heater and conduit means coupled to feedwater under pressure for conducting water to and from the hot water heater;
 - a reverse osmosis module having an inlet port, a product

- water port for filtered product water and a brine outlet port for brine;
- an injector pump having an inlet coupled to the feedwater under pressure and having a water port coupled to the inlet port of the reverse osmosis module, a brine port coupled to the brine outlet port of the reverse osmosis module and a discharge port coupled to the conduit means;
 - the injector pump including a first valve mechanically operated by the injector pump and operable for opening and closing the inlet of the injector pump;
 - a second valve between the reverse osmosis module and the brine port; and
 - the injector pump including means for providing water to said water port of the injector pump for supplying to the inlet port of the reverse osmosis module and means for increasing the pressure of the brine at the discharge port of the injector pump to greater than the pressure of the feedwater whereby the brine can be injected into said hot water system.
2. A system as defined in claim 1 wherein the second valve is a check valve.

5,380,429

VARIABLE-POSITION CROSS-AXIS SYNCHRONOUS COIL PLANET CENTRIFUGE FOR COUNTERCURRENT CHROMATOGRAPHY

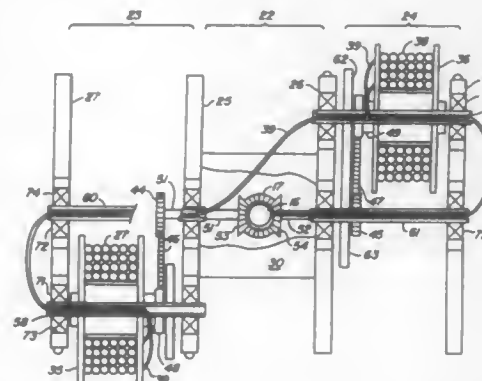
Yoichiro Ito, Bethesda, Md., and Kazufusa Shinomiya, Chiba, Japan, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 4, 1993, Ser. No. 27,111

Int. Cl.⁶ B01D 15/08

U.S. Cl. 210—198.2

5 Claims



1. In a cross-axis synchronous flow-through coil planet centrifuge comprising:
- a support base,
 - a rotary frame mounted to said support base for rotation about an axis defined as a rotary frame axis,
 - a pair of column holders capable of being mounted to each of two opposing sides of said rotary frame for rotation relative to said rotary frame about axes defined as column holder axes, said column holder axes each being perpendicular to said rotary frame axis, and
 - a coiled column mounted to each of said column holders, the improvement in which said centrifuge further comprises: mounting members on said column holders, and engagement members on said rotary frame for releasable engagement of said mounting members, with a plurality of engagement members for each said mounting member, thereby defining a plurality of mounting positions comprising one position for each said column holder in which the column holder axis thereof intersects said rotary frame axis, and at least one position for each said column holder in which the column holder axis thereof does not intersect

said rotary frame axis for each said column holder on said rotary frame.

5,380,430

MAGNETIZING APPARATUS FOR TREATMENT OF FLUIDS

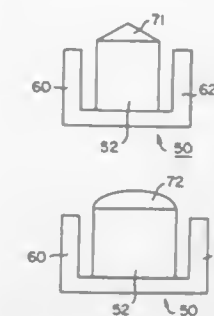
James M. Overton, 1127 Nickel Ln., Yuba City, Calif. 95991, and Stephen R. Warzburger, Box C, Goodyear's Bar, Calif. 95944

Continuation of Ser. No. 918,955, Jul. 24, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 167,621

Int. Cl.⁶ C02F 1/48

U.S. Cl. 210—222

1 Claim



1. An apparatus for treating water which comprises:
- a non magnetic conduit having an external surface and one end with an opening and another end with an opening such that water is enabled to flow into one opening and out of the other opening, said conduit having a longitudinal axis;
 - a permanent magnet having a first flux surface and a second flux surface for generating flux lines extending substantially from said first flux surface to said second flux surface, said magnet being rectangular cross section with said flux surfaces arranged on major surfaces of said magnet;
 - a magnetically permeable pole piece having opposed first and second pole end surfaces, said first pole end surface being substantially planar and in mating contact with the first flux surface of said magnet, said second pole end surface being in contact with said external surface of said conduit, said pole piece having a cross sectional shape selected from the group consisting of a semicircle or triangle;
 - a magnetically permeable channel having two side panels and a joining panel, each side panel having a pair of parallel panel edges, said joining panel having a pair of parallel panel edges and an inner surface, wherein one said edge of one of said side panels is joined to one said edge of said joining panel and one said edge of the other of said side panels is joined to the other said edge of said joining panel; said permeable channel being mounted such that said permeable channel straddles said permanent magnet with the inner surface of said joining panel abutting said second flux surface of said magnet and with the side panels extending toward said conduit and being substantially parallel to sides of said permanent magnet, wherein side panels are spaced from an adjacent one of the sides of said permanent magnet.

5,380,431

OIL RECOVERY SYSTEM

Cosby M. Newsom, 15517 S. Seaforth, Norwalk, Calif. 90650

Filed Feb. 3, 1994, Ser. No. 191,427

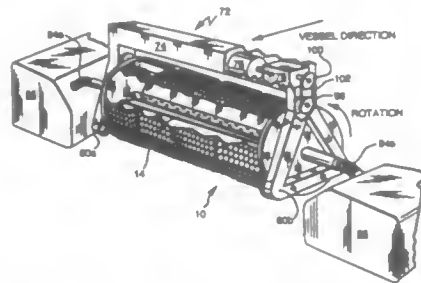
Int. Cl.⁶ L02G 15/04

U.S. Cl. 210—242.3

19 Claims

1. A device for separating oil from water, comprising:
- an oil accumulator (10), said oil accumulator (10) having a plurality of open substantially tubular cells (20) the plural-

ity of which define a large surface area for its configuration, each of said cells having an oleophilic surface to which oil clings and water does not, said oil accumulator (10) being adapted for contact with oil and water in order to entrain and separate said oil from said water; an oil remover means (12), said oil remover means (12) being operatively associated with said oil accumulator (10) when oil accumulated by said oil accumulator is to be

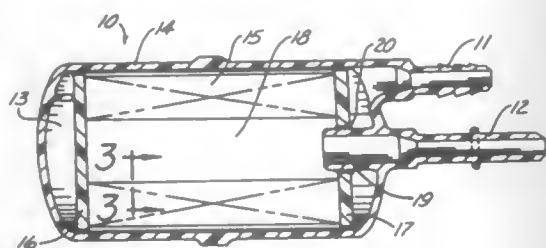


removed, said oil remover means (12) removing oil from said oil accumulator (10); and an oil collector (14), said oil collector (14) cooperatively associated with said oil accumulator (10) when oil accumulated by said oil accumulator (10) is to be removed, said oil collector (14) being adapted to collect oil removed from said oil accumulator (10) by said oil remover means (12).

5,380,432 FUEL FILTER WITH ELECTROSTATIC CHARGE PREVENTING MEDIA

Timothy B. Brandt, West Des Moines, Iowa, assignor to Parr Manufacturing, Inc., Des Moines, Iowa
Filed May 13, 1993, Ser. No. 62,423
Int. Cl.⁶ B01D 35/06, 27/08, 35/30, 39/16
U.S. Cl. 210—243

7 Claims



1. A fuel filter comprising:
a non-conductive housing made primarily of an electrically non-conductive material;
means for providing a chamber within said housing for receiving a non-polar fluid;
inlet means attached to said housing for permitting fuel under pressure to enter said chamber;
outlet means attached to said housing for permitting fuel to flow from said chamber; and
filter media located in said chamber and being fluidly disposed between said inlet means and said outlet means for filtering the fluid passing through said chamber, wherein said filter media means comprises means for conducting electricity from the upstream side thereof to the downstream side thereof to prevent the generation of electrostatic charges as said fluid flows through said filter media.

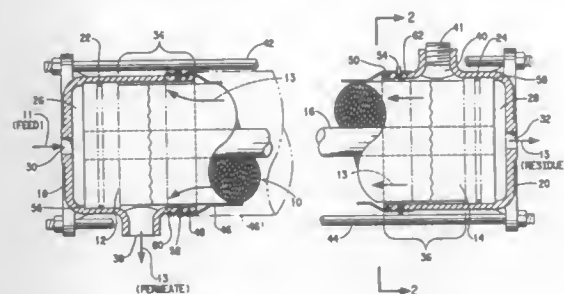
5,380,433 HOLLOW FIBER MEMBRANE SEPARATION DEVICE WITH A HOUSING MADE FROM A FLEXIBLE MATERIAL

Billy J. Etienne; Wayne L. Mills, both of Newark; Bruno Leprince-Ringuet, Wilmington, all of Del., and Frederic Fillet, Vitry sur Seine, France, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. and L'Air Liquide S.A., Paris, France

Filed Jun. 1, 1993, Ser. No. 69,562
Int. Cl.⁶ B01D 63/00

U.S. Cl. 210—321.79

15 Claims



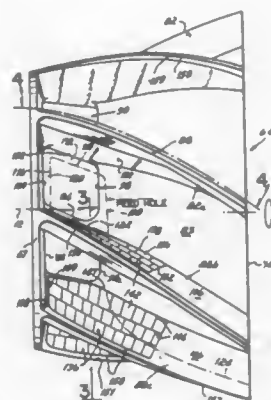
1. A hollow fiber separation device comprising:
(a) a bundle of hollow fiber membranes having open bores in one or more tubesheets;
(b) at least one of said tubesheet or tubesheets being enclosed by an end cap; and
(c) a flexible housing made from a polymeric shrinkable material, substantially impermeable to the fluids being treated, contacting and enclosing the bundle and extending between the ends of the bundle, said housing being sealingly in contact with the tubesheet(s) or the end cap(s) or both, at each end of the bundle.

5,380,434 CENTRIFUGE SCROLL WITH ABRASION RESISTANT INSERTS

Thomas B. Paschedag, Cincinnati, Ohio, assignor to Tema Systems, Inc., Cincinnati, Ohio
Filed Jul. 21, 1993, Ser. No. 95,096
Int. Cl.⁶ B01D 33/06

U.S. Cl. 210—360.2

14 Claims



1. A centrifuge for processing an abrasive liquid and solid material to separate the liquid from the solid material comprising:
a housing;
a cage member having an open end and a closed end and mounted within said housing to rotate about an axis of

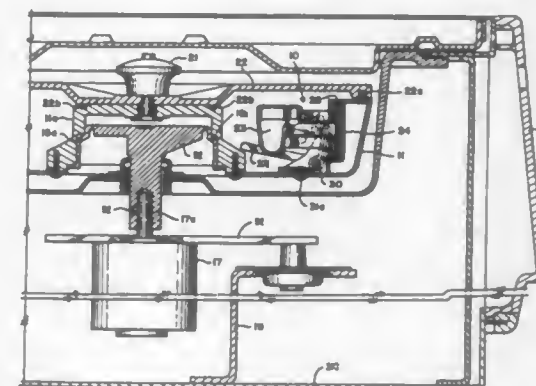
rotation, said cage member having a circumferential screen with an inner surface; and
a scroll member mounted within said cage member to rotate about said axis of rotation relative to said cage member, said scroll member receiving the combined liquid and solid material in a central portion and having
a tubular side wall with a front end and a rear end adjacent said open and closed ends, respectively, of said cage member,
a helical screw flight extending outwardly from said tubular side wall between said rear end and said front end of said scroll member, said screw flight having an edge moving in close proximity and relative to said inner surface of said circumferential screen, and said screw flight further having a front surface substantially perpendicular to said axis of rotation,
an end wall at the rear end of the tubular side wall and connected with one end of the screw flight,
said tubular side wall further having a feed opening proximate said end wall and displaced above said front surface of said helical screw flight to form a lip between an edge of the feed opening and said front surface of said helical screw flight, and
an abrasion resistant insert recessed in said front surface of said screw flight, said abrasion resistant insert having an exposed surface substantially flush with said front surface of said screw flight.

5,380,435 LIQUID ABSORPTION PAD FOR CYTOCENTRIFUGATION DEVICE

Barry O. Stokes, and Carmelo G. Quirante, both of Logan, Utah, assignors to Wescor, Inc., Logan, Utah
Division of Ser. No. 788,310, Nov. 5, 1991, Pat. No. 5,252,228.
This application Aug. 11, 1993, Ser. No. 105,882
Int. Cl.⁶ B01D 33/15

U.S. Cl. 210—361

7 Claims



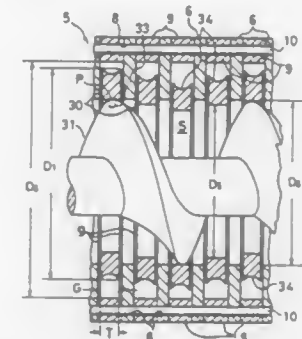
2. For use in a cytocentrifuge having centrifuging means, a device for depositing cells on a microscope slide under centrifugal force, comprising holding means holding a preformed filter absorption pad of filter sheet material preformed with a liquid-flow opening therethrough and an indentation marginally surrounding said liquid-flow opening and being thin relative to the remainder of said filter absorption pad which is relatively thick as a reservoir for liquid absorbed from liquid flowing through said liquid-flow opening; a conduit leading to and terminating at said filter absorption pad in a discharge end thereof having an end portion protruding from a peripheral flange and adapted to fit into said preformed indentation marginally surrounding said liquid flow opening and to press said filter absorption pad against a microscope slide about the liquid-flow opening in the filter absorption pad; and at least one liquid-receiving chamber having a discharge port opening into said conduit, said chamber being adapted to discharge a cell-carrying liquid into said conduit, and said preformed filter

absorption pad being free and independent of said discharge end of said conduit.

5,380,436 SOLID-LIQUID SEPARATOR

Masayoshi Sasaki, Tokyo, Japan, assignor to Amukon Kabushikikaisha, Tokyo, Japan
PCT No. PCT/JP93/00199, § 371 Date Aug. 19, 1993, § 102(e) Date Aug. 19, 1993, PCT Pub. No. WO93/16867, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 18, 1993, Ser. No. 107,729
Claims priority, application Japan, Feb. 21, 1992, 4-069996
Int. Cl.⁶ B30B 9/14; B01D 29/35, 29/44
U.S. Cl. 210—383

5 Claims



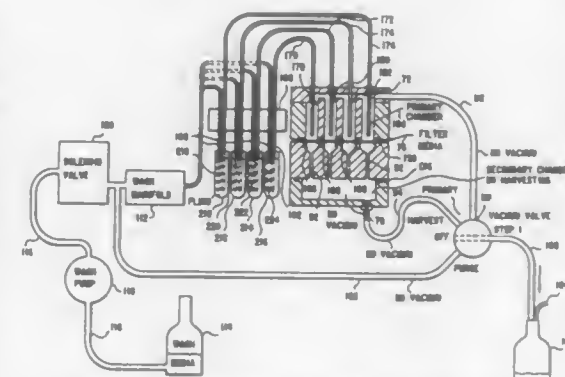
1. A solid-liquid separator comprising:
a plurality of stationary rings arranged in an axial direction in a spaced relation from each other and having gaps between each other, said plurality of stationary rings being integrally fixed;
floating rings disposed for floating in the gaps between the stationary rings;
a screw conveyor disposed rotatably in interiors of said plurality of stationary rings and said floating rings, an inner diameter of each of said floating rings being smaller than an outer diameter of said screw conveyor; and
a driving means for rotatably driving said conveyor.

5,380,437 MULTIFUNCTIONAL FILTRATION APPARATUS

Joseph Bertocchini, Darnestown, Md., assignor to Biomedical Research And Development Laboratories, Inc., Galtherburg, Md.
Filed Feb. 2, 1993, Ser. No. 12,515
Int. Cl.⁶ B01D 29/00

U.S. Cl. 210—416.1

63 Claims



1. A multifunctional filtration apparatus comprising:
(a) a first manifold;
(b) a second manifold;

- (c) a separation chamber disposed between said first manifold and said second manifold;
- (d) a filter support disposed between said separation chamber and said second manifold; and
- (e) a valve having a vacuum inlet and a first outlet and a second outlet, said first outlet operatively connected to said first manifold or said separation chamber and said second outlet operatively connected to said second manifold.

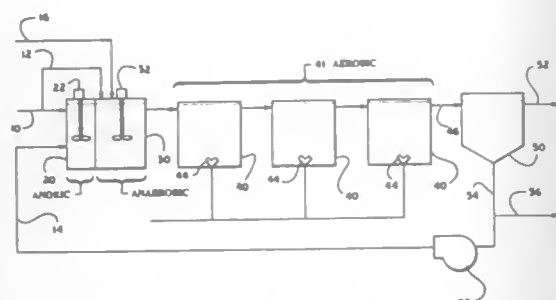
5,380,438
TREATMENT OF WASTEWATER THROUGH ENHANCED BIOLOGICAL PHOSPHORUS REMOVAL
 Philip W. Nungesser, Atlanta, Ga., assignor to City of Atlanta, Atlanta, Ga.

Filed Aug. 17, 1993, Ser. No. 108,117

Int. Cl.⁶ C02F 3/30

U.S. Cl. 210—605

3 Claims



1. A process for treating wastewater for the removal of BOD, ammonia and phosphorus with activated biomass which utilizes phosphorus compounds during metabolism comprising:

- first, subjecting influent wastewater to an anoxic zone wherein influent wastewater is mixed with activated sludge biomass containing microorganisms which utilize phosphorus compounds during metabolism;
- next, subjecting said mixture of influent wastewater and activated sludge biomass to an anaerobic zone wherein said mixture of influent wastewater and activated sludge biomass is further mixed with volatile fatty acids to form a liquor;
- next, aerating said liquor in an aerobic zone; and
- clarifying said aerated liquor to separate activated sludge biomass from effluent wastewater.

5,380,439
SUBMERSIBLE BIOLOGICAL FILTER FOR THE PURIFICATION OF WASTE WATER
 Robert Gilson, Tihange, Belgium, assignor to Cofido S.A., Lelege, Belgium

PCT No. PCT/BE90/00042, § 371 Date Mar. 19, 1992, § 102(e) Date Mar. 19, 1992, PCT Pub. No. WO91/01279, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 19, 1990, Ser. No. 809,529

Claims priority, application Belgium, Jul. 20, 1989, 8900789

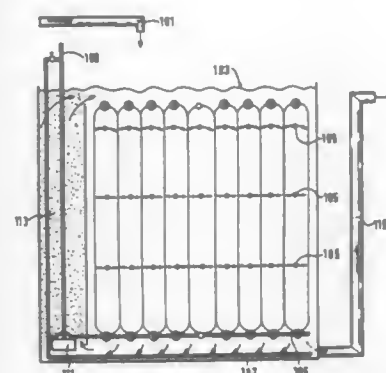
Int. Cl.⁶ C02F 3/10

U.S. Cl. 210—615

20 Claims

1. A biological filter apparatus for the purification of waste water having bacterial supports, said supports comprising:
- at least two holding members;
- an assembly of skeins, wherein each of said skeins comprises bands of plastic material disposed in a spiral arrangement around and between said holding members, thereby providing a substantial filter surface area on said bands be-

tween said members, wherein said bands are essentially continuous; and



a perforated conduit situated inside said skeins for delivering gas to aid skeins in order to clean and/or unbunch said skeins.

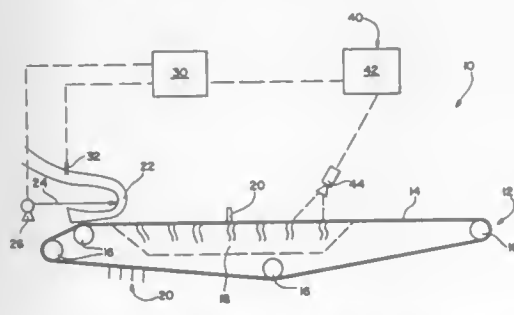
5,380,440
TWO DEWATERING OF SLURRIES CONTROLLED BY VIDEO SYSTEM
 Evan R. Chipps, Olivedale, South Africa, assignor to Anikem Pty. Limited, Transvaal, South Africa

Filed May 20, 1993, Ser. No. 64,265

Int. Cl.⁶ B01D 17/12

U.S. Cl. 210—709

1 Claim



1. A process for dewatering a coal fines slurry of solids in water, which comprises the steps of:
- introducing a dewatering aid selected from the group consisting of flocculants, coagulants, surfactants and mixtures thereof via an injection means into the slurry at an initial predetermined dosage rate to condition the slurry;
- passing the conditioned slurry into a filtration zone including filtration means to filter the solids in the slurry from the water in the slurry, thereby forming dewatered solids;
- recording images of the dewatered solids after filtration with a vision inspection system, the vision inspection system including a video camera, a television monitor, a light source, and a vision input module operatively connected to the video camera, the vision inspection system being adapted to form binary images of recorded images as black and white pixels and to effect comparison by counting said black and white pixels and comparing with predetermined levels thereof, with the counted black and white pixels thus providing grey level representations in which the shade of grey is indicative of the moisture content of the dewatered solids, while the predetermined levels thereof correspond to predetermined grey level representations which in turn correspond to known or predetermined water levels in the solids;
- digitizing the recorded images of the dewatered solids;
- comparing the digitized recorded images of the dewatered

solids with digitized desired images representing desired moisture levels of the dewatered solids;

converting the differences between the digitized recorded images of the dewatered solids versus the digitized desired images of the dewatered solids into analogue signals which are indicative of the difference between the moisture level of the dewatered solids and the desired moisture level of the dewatered solids;

calibrating the analogue signals by means of a computer, said computer being operatively connected to the injection means and the filtration means;

predetermining the dosage rate of the dewatering aid to condition the slurry via a feedforward control system which measures at least one property of the slurry selected from the group consisting of particle size, particle shape, slurry density, and slurry concentration, and comparing the measured at least one property to predetermined values for the at least one property to determine the predetermined dosage rate to condition the slurry; and

controlling the injection means and the filtration means in response to the calibrated analogue signal to adjust the dosage rate of the dewatering aid injection means and the amount of solids filtered from the water in the slurry in the filtration zone to adjust the moisture content in the dewatered solids to the desired moisture levels wherein the vision inspection system is a feedback control system used to adjust the dewatering aid dosage rate.

5,380,441
REMOVAL OF CHROMIUM FROM SOLUTION USING MECHANICALLY AGITATED IRON PARTICLES
 Roy F. Thornton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 15, 1993, Ser. No. 120,990

Int. Cl.⁶ B01D 21/00; C01F 1/52; B23H 3/00; C01G 49/00

U.S. Cl. 210—720

8 Claims

1. A method for removing hexavalent chromium from an electrochemical machining solution, which comprises:
- adding an excess of a stoichiometric amount of metallic iron particles to the electrochemical machining solution to react with the hexavalent chromium to produce trivalent chromium;
- mechanically agitating the metallic iron particles in the electrochemical machining solution with a sufficient amount of energy to insure that surfaces of the iron particles are free of insoluble precipitates selected from the group consisting essentially of iron hydroxide and chromium hydroxide;
- maintaining a pH of the electrochemical machining solution with an acid between about 2 to about 7 until the hexavalent chromium is reduced to trivalent chromium; and
- then adjusting the pH of the electrochemical machining solution with a base to precipitate the trivalent chromium.

5,380,442
REGENERATION OF USED STRETTFORD SOLUTION FOR RECYCLE
 Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 18, 1993, Ser. No. 154,055

Int. Cl.⁶ B01D 9/02

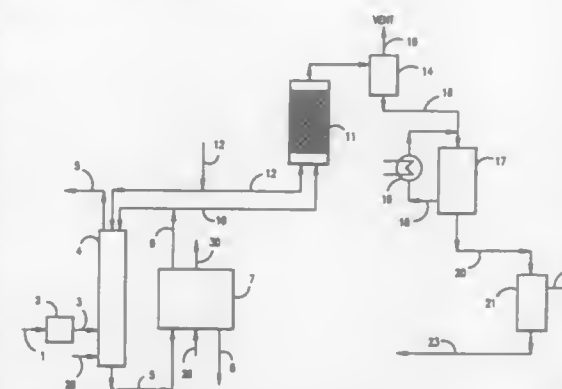
U.S. Cl. 210—721

18 Claims

1. A process for removing waste materials from Stretford solution, the solution having been regenerated by oxidation after use in a process for treating sulfur contaminated gas streams, the process for removing waste materials comprising the following steps:
- (a) feeding the Stretford solution and a source of oxygen into a reaction zone containing a catalyst, the catalyst comprising a porous solid substrate upon which a metal or metal compound insoluble in Stretford solution has been deposited;
- (b) contacting the Stretford solution and oxygen source with

the catalyst, thereby catalytically oxidizing the waste materials to sulfates;

(c) passing the Stretford solution containing sulfates to a crystallizer, wherein the sulfates are precipitated out as Na₂SO₄ crystals of Glauber's salt;



- (d) passing the mixture of Stretford solution and crystals to a separation zone, in which the crystals are removed from the Stretford solution;
- (e) returning the Stretford solution to the gas treatment process.

5,380,443
METHOD OF TREATING WASTE WATER
 James P. Deininger, and Linda K. Chatfield, both of Colorado Springs, Colo., assignors to The Regents of the University of California, Oakland, Calif.

PCT No. PCT/US90/02509, § 371 Date Nov. 7, 1991, § 102(e) Date Nov. 7, 1991

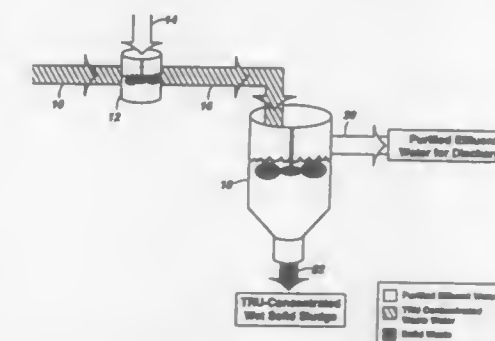
PCT Filed May 9, 1990, Ser. No. 776,246

The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.

Int. Cl.⁶ C02F 1/62

U.S. Cl. 210—724

8 Claims



1. A process of treating water to reduce the concentration of metal ion contaminants contained therein, said metal ion contaminants selected from the group consisting of zinc, copper and silver, comprising:
- a. adjusting the pH of said water to within the range of about 11 to about 12;
- b. admixing said water with a mixture of an alkali or alkaline earth ferrate and zirconium oxychloride, in an amount sufficient to form a precipitate within said water, said amount of the mixture effective to reduce the metal ion contaminant concentration in said water, wherein said ferrate is added to the water in amounts sufficient to give iron concentrations, based upon ferrate ion, of from about 0.1 parts per million to about 250 parts per million and said zirconium oxychloride is added to the mixture at from

- about 0.01 to about 1 gram of zirconium oxychloride per liter of water; and
- allowing the precipitate in the admixture to separate and thereby yield a supernatant liquid having a reduced concentration of said metal ion contaminants; and
 - separating said supernatant liquid having the reduced concentration of said metal ion contaminants from the admixture.

5,380,444 AMPHOLYTIC POLYMERS AND POLYMERIC MICROEMULSIONS

Michael S. Ryan, Fairfield; David L. Dauplaise, Stamford, and Robert J. Proverb, Fairfield, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Feb. 23, 1994, Ser. No. 200,795
Int. Cl.⁶ C02F 1/56

U.S. Cl. 210—734

10 Claims

1. A method of flocculating suspended solids in an aqueous dispersion selected from paper deinking sludges and deinking process waters, which comprises treating said dispersion with an effective amount of a microemulsion or a dilute aqueous solution, said microemulsion or dilute aqueous solution comprising a copolymer of (alk)acrylamide and at least one ethylenically unsaturated anionic comonomer, wherein said (alk)acrylamide is substituted with quaternary dialkyl aminomethyl groups;

said anionic comonomer is present in an amount ranging from about 1 to about 15 mole percent; and said copolymer has a standard viscosity of at least about 2.1 cps when measured at 0.1 percent concentration in a 1 molar sodium chloride solution.

5,380,445
PRETREATMENT OF MICROBIAL SLUDGES
Christopher J. Rivard, Lakewood, and Nicholas J. Nagle, Louisville, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Oct. 22, 1993, Ser. No. 139,840
Int. Cl.⁶ C02F 1/36

U.S. Cl. 210—748

9 Claims

1. A method for pretreating microbial sludge derived from biological treatment of sewage to break open cells and release organic matter from said cells thereby enhancing subsequent biodegradation of said organic matter, the method comprising subjecting said sludge, at an elevated temperature, to a destabilizing force selected from the group consisting of sonication, shear force, and combinations of sonication and shear force having a magnitude in the range of about 5 to 35 watt/hr/gram of dry weight of said sludge; wherein said elevated temperature is in the range of from about 50° C. to 90° C. and wherein said sludge comprises an aqueous medium containing less than about 3% solids by weight.

5,380,446 METHOD FOR FILTRATION OF MACHINE TOOL COOLANT

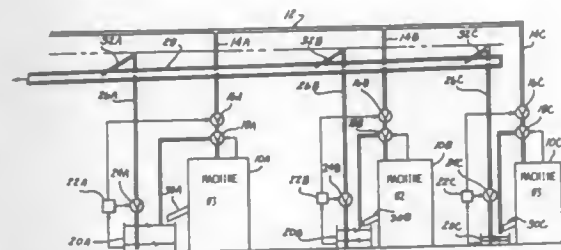
Jack R. Bratten, 5970 St. James Dr., West Bloomfield, Mich. 48322

Filed Oct. 4, 1993, Ser. No. 131,298
Int. Cl.⁶ B01D 36/00; F01M 1/10, 11/03
U.S. Cl. 210—805

5 Claims

1. A method of returning contaminated coolant from a plurality machine units to at least one common filter unit comprising the steps of:
collecting the contaminated coolant in a plurality of sumps, each associated with a respective one of said plurality of machine units;
extending an overhead collector header elevated above said machine units and extending along said sumps and to said common filter unit;
connecting said overhead header collector to said common

filter unit to allow coolant from said header collector to flow into said common filter unit;
connecting a draw tube from each of said sumps to said overhead collector header;
extending each of said draw tubes above said overhead collector and inclining the end thereof down and into said overhead collector header;



applying a vacuum to draw said coolant from each of said sumps up said draw tubes, and into said overhead collector header causing said coolant flow down said overhead collector header and through said common filter unit;
collecting coolant passed through said common filter unit and supplying collected filtered coolant back to said machine units.

5,380,447 PROCESS AND FABRIC FINISHING COMPOSITIONS FOR PREVENTING THE DEPOSITION OF DYE IN FABRIC FINISHING PROCESSES

Thomas C. Kirk, Langhorne; Curtis Schwartz, Ambler, and Barry Weinstein, Dresher, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 12, 1993, Ser. No. 90,605
Int. Cl.⁶ D06M 13/256, 13/184

U.S. Cl. 252—8.6

21 Claims

1. A fabric finishing composition consisting essentially of:
(A) from about 0.1 to about 45 weight percent of at least one dye deposition inhibiting agent selected from the group consisting of:

- a polyethoxylated urethane;
- an aryl sulfonic acid condensate comprising a sulfonated reaction product of a) at least one aldehyde, and b) at least one aromatic containing compound, and wherein the condensate contains an aromatic nucleus having at least one sulfonic acid group attached thereto;
- an acrylic carboxylate dispersant polymer comprising: a) from about 70 to about 98 weight percent of at least one monoethylenically unsaturated carboxylic acid monomer, and (b) from about 2 to about 30 weight percent of at least one alkyl (meth)acrylate monomer;
- an acrylamide containing polymer having a molecular weight from about 2,000 to about 500,000;
- a poly(amino acid); and
- an acrylic carboxylate emulsion polymer comprising: a) from about 20 to about 75 weight percent of at least one monoethylenically unsaturated carboxylic acid, and b) from about 25 to about 80 weight percent of at least one alkyl (meth)acrylate; and

(B) from 99.9 to 55 weight percent of at least one of each of the following: a builder; a surfactant different from the dye deposition inhibiting agent; a first additive selected from the group consisting of: a buffering agent, bleaching agent, anti-corrosion agent, cellulase enzyme, stabilizer, fabric softener, perfume, and opacifier; and a second additive selected from the group consisting of: water, solvent, inert diluent, and solid forming agent.

5,380,448 PROCESS FOR METAL SALTS OF HYDROCARBYL DITHIOPHOSPHORIC ACID

Abbas Kadkhodayan, Collinsville, Ill.; Dale G. Pillsbury, Oilville, Va., and Paul G. Griffin, Collinsville, Ill., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.

Filed Feb. 7, 1994, Ser. No. 192,369
Int. Cl.⁶ C10M 1/48

U.S. Cl. 252—32.7 E

15 Claims

1. A process for preparing an overbased metal salt of hydrocarbyl dithiophosphoric acid comprising:

- forming a reaction mixture containing (i) basic metal salt of hydrocarbyl dithiophosphoric acid, and (ii) metal oxide wherein the weight ratio of (i) to (ii) is within the range of from about 0.5:1 to about 4:1 which metal oxide has a surface area of no less than about 4 m² per gram up to about 12 m² per gram;
- feeding to the reaction mixture in (a) hydrocarbyl dithiophosphoric acid thereby forming a reaction mass;
- subsequent to step (b) feeding from about 1 to about 8 moles of water per mole of metal oxide to the reaction mass; and
- reacting the reaction mass in (c) at a temperature and for a period of time, which time and temperature are sufficient to form basic metal salt of dihydrocarbyl dithiophosphoric acid having a base metal to phosphorus weight ratio within the range of greater than about 1.2:1 up to about 1.3:1.

5,380,449 STABILIZED DICHLOROTRIFLUOROETHANE REFRIGERATION COMPOSITIONS

Raymond H. P. Thomas; Ruth H. H. Chen, both of Amherst, and Kenneth Harris, Buffalo, all of N.Y., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Division of Ser. No. 682,156, Apr. 5, 1991, abandoned. This application May 8, 1992, Ser. No. 883,058
Int. Cl.⁶ C09K 5/00

U.S. Cl. 252—68

8 Claims

1. A compositions comprising:
- 1,1-dichloro-2,2,2-trifluoroethane; and
 - at least one hydrogen-contributing lubricant selected from the group consisting of mineral oil, alkyl benzene, and ester; and
 - a composition comprising (i) at least one phenol or derivative thereof and (ii) at least one aromatic or fluorinated alkyl epoxide wherein said composition (c) substantially reduces the decomposition of said 1,1-dichloro-2,2,2-trifluoroethane.

5,380,450
ELECTRORHEOLOGICAL (ER) FLUID BASED ON AMINO ACID CONTAINING METAL POLYOXO-SALTS
Lori J. Conway, Hope; Donald A. Kadlec, Midland, and Joan Sudbury-Holtschlag, Saginaw, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.
Division of Ser. No. 874,450, Apr. 27, 1992, Pat. No. 5,320,770.
This application Jan. 31, 1994, Ser. No. 188,864
Int. Cl.⁶ C10M 171/00, 169/04

U.S. Cl. 252—75

12 Claims

1. A method of using an electrorheological fluid composition comprising:
- applying an electric field across the electrorheological fluid composition, said electrorheological fluid composition comprising:
- an electrically non-conducting liquid; and
 - a compound having the general formula:



wherein M is a metal cation or a mixture of metal cations at various ratios; p is the total valence of M and has a value of greater than zero; x is zero or has a value greater than zero, y

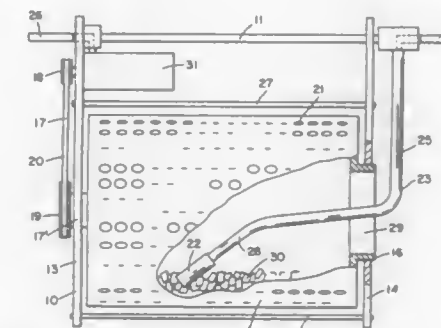
is zero or has a value greater than zero, with the proviso that only one of x or y can be zero at any given time; q has a value of p minus y with the proviso that q has a value of at least one; c has a value of greater than zero; A is an anion or a mixture of anions at various ratios; r is the total valence of A with the proviso that r has a value of at least one; d has a value of greater than zero with the proviso that (q×c) is always equal to (r×d); B is an amino acid or a mixture of amino acids; z has a value of from 0.01 to 100; and n is a number from 0 to 15.

5,380,451
BATH FOR THE PRE-TREATMENT OF LIGHT METALS
Franz Rieger, Riedstrasse 1, 7924 Steinheim am Albuch, Germany

Filed Mar. 2, 1993, Ser. No. 25,026
Claims priority, application Germany, Sep. 17, 1992, 4231052; Nov. 12, 1992, 4238242

Int. Cl.⁶ B44C 1/22; C23F 1/00; C09K 13/04
U.S. Cl. 252—79.2

14 Claims



1. Bath for the pre-treatment of light metals that form oxide layers, prior to electroless metal deposition on said light metals, comprising an aqueous bath containing phosphoric acid.

5,380,452
HARD SURFACE CLEANING COMPOSITION
Claude Blauvalet, Anyleur, Belgium; Mary C. Brauchli, Maplewood, N.J.; Jolanta Dautas, Kirtland, Ohio, and Constance A. Marchese, Edison, N.J., assignors to Colgate Palmolive Co., Piscataway, N.J.

Filed Nov. 15, 1993, Ser. No. 151,659
Int. Cl.⁶ C11D 9/24, 9/30, 9/32, 9/44

U.S. Cl. 252—117

24 Claims

1. A cleaning composition which comprises approximately by weight:
- 2 to 35% of at least one unsaturated fatty acid having about 8 to 24 carbon atoms;
 - 0.01 to 1.5% of an trialkanolamine;
 - 0.01 to 1.5% of an alkanol having about 1 to about 5 carbon atoms;
 - 1.0 to 5.0% of an alkali metal hydroxide;
 - 0.02 to 2.0% of an amine oxide;
 - 0.02 to 2.0% of a sultaine; and
 - the balance being water.

5,380,453
COMPOSITION COMPRISING ALKYL ESTERS OF ALIPHATIC (C₈-C₂₂) MONOCARBOXYLIC ACIDS AND OIL IN WATER EMULSIFIER

Borge Krawack, Højbjerg, Denmark, assignor to Unichema Chemie B.V., Gouda, Netherlands
Continuation of Ser. No. 873,382, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 671,807, Mar. 26, 1991, Pat. No. 5,143,639. This application Jan. 21, 1994, Ser. No. 183,959

Claims priority, application Denmark, Sep. 26, 1988, 5331/88; WIPO, Sep. 25, 1989, PCT/DK89/00222

Int. Cl.⁶ C11D 7/22, 1/18; C23D 17/00

U.S. Cl. 252-162

22 Claims

1. A composition for removing ink from a printing machine, which comprises an emulsion of a composition comprising 50-99.5% by weight of a C₁-C₅ alkyl ester of an aliphatic C₈-C₂₂ monocarboxylic acid and mixtures of such esters in at least 25% up to 50% water, and 0.25-10% by weight oil in water emulsifier, wherein the emulsion consists essentially of an oil in water emulsion, said alkyl ester being sufficiently liquid and containing sufficient emulsifier to be removable from printing machines without leaving an oil film.

5,380,454
LOW TEMPERATURE NON-CAUSTIC OVEN CLEANING COMPOSITION

Ronald G. Gripenburg, Oradell, N.J.; William Feuer, Nyack, N.Y., and James Feng, Fort Lee, N.J., assignors to Reckitt & Colman Inc., Wayen, N.J.

Filed Jul. 9, 1993, Ser. No. 89,232

Int. Cl.⁶ C11D 7/12, 7/60, 7/26, 7/32

U.S. Cl. 252-174.14

9 Claims

1. A non-caustic aqueous cleaning composition capable of removing baked-on organic matter from a surface, said composition comprising, by weight, from about 1% to about 12% of an amine component comprising from 40% to 100% monoethanolamine and from 0% to 60% diethanolamine, from about 2% to about 20% of diethylene glycol monobutyl ether, and from about 1% to about 10% of a carbonate salt selected from the group consisting of sodium carbonate and potassium carbonate.

5,380,455
DETERGENT COMPOSITION

Hiroko Tsuda, Tokyo; Akira Shigeta, Hasaki, and Hidenobu Koyanagi, Yono, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,790

Claims priority, application Japan, Jan. 1, 1992, 4-140549

Int. Cl.⁶ C11D 3/37, 3/18, 3/20

U.S. Cl. 252-174.23

14 Claims

1. A detergent composition which comprises the following components (A) through (C):

- (A) from 0.1 to 40% by weight with respect to the total weight of the composition of a fluorine-containing polymer in which the primary chain is substituted by a perfluoroalkyl group and an alkyl group.
(B) from 1 to 90% by weight with respect to the total weight of the composition of a liquid oil base, and
(C) from 1 to 30% by weight with respect to the total weight of the composition of a surfactant.

5,380,456
STABILIZATION OF AQUEOUS PERSALT SOLUTIONS

William G. Woods, Riverside, Calif., assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 473,508, Feb. 1, 1990, abandoned. This application Jan. 31, 1992, Ser. No. 830,046

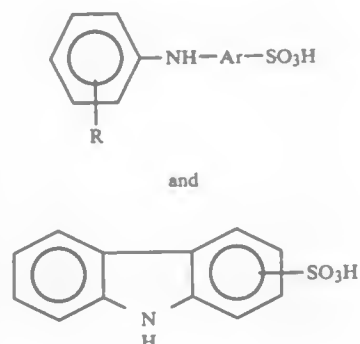
Int. Cl.⁶ C01B 15/043

U.S. Cl. 252-186.27

22 Claims

1. A stable, concentrated aqueous laundry persalt solution having a pH of from about 6 to 8, comprising about 5 to 30%

of sodium perborate or sodium percarbonate, about 0.05 to 5% chelating agent, about 3 to 30% solubilizing agent, about 0.001 to 1.0% of a water soluble salt of a stabilizing agent of a formula selected from the group consisting of



where Ar is phenyl or naphthyl and R is hydrogen, nitro or chloro, and the balance is water, said percentages by weight.

5,380,457
ACYLOXYNITROGEN PERACID PRECURSORS

Alfred G. Zielske, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.
Division of Ser. No. 820,426, Sep. 4, 1991, Pat. No. 5,328,634, which is a division of Ser. No. 542,233, Jun. 21, 1990, Pat. No. 5,087,385, which is a division of Ser. No. 338,475, Apr. 14, 1989, Pat. No. 4,957,647, which is a continuation of Ser. No. 928,065, Nov. 7, 1986, abandoned. This application Jun. 3, 1994, Ser. No. 253,649

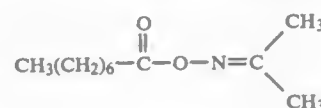
The portion of the term of this patent subsequent to Sep. 18, 2007, has been disclaimed.

Int. Cl.⁶ C09K 3/00

U.S. Cl. 252-186.38

6 Claims

1. A bleaching composition comprising:
(a) a peracid precursor having the general structure:



- (b) a bleach effective amount of a source of hydrogen peroxide.

5,380,458
STABILIZED HYPOHALITE COMPOSITIONS

Miriam L. Douglass, Piscataway, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.

Filed Oct. 2, 1992, Ser. No. 955,629

Int. Cl.⁶ C01B 11/06, 11/20, 11/22

U.S. Cl. 252-186.36

20 Claims

1. A process for inhibiting the copper-catalyzed decomposition of aqueous compositions containing from about 0.25 to about 15% by weight of a bleaching agent selected from the group consisting of an alkali or alkaline earth metal hypochlorite, hypobromite and hypiodite comprising incorporating into said composition a heteroaromatic compound stable in the presence of said bleaching agent and which is capable of forming multidentate complexes with divalent copper ions present in said aqueous composition, said compound being added in an amount sufficient to retard the decomposition of said bleaching agent.

5,380,459
LIQUID CRYSTAL DISPLAY DEVICE WITH IMPROVED VIEWING ANGLE DEPENDENCE OF COLOR

Akihiko Kanemoto; Haruo Iimura, both of Yokohama, and Yasuyuki Takiguchi, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

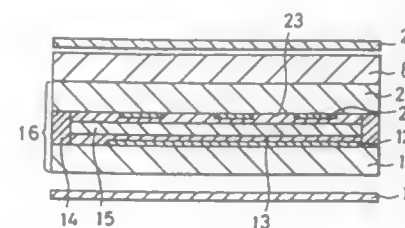
Filed Apr. 19, 1991, Ser. No. 687,502

Claims priority, application Japan, Apr. 20, 1990, 2-104610; May 11, 1990, 2-122283; Jul. 12, 1990, 2-184978

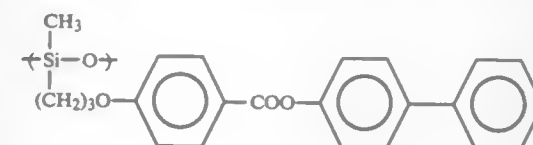
Int. Cl.⁶ C09K 19/52, 19/56; G02F 1/13

U.S. Cl. 252-299.01

9 Claims



1. A liquid crystal display device comprising a liquid crystal cell comprising (a) a pair of substrates each provided with transparent electrodes and (b) a liquid crystal layer positioned between the substrates; polarizers disposed on opposite sides of the cell; and a compensation plate disposed between at least one of the polarizers and the cell, wherein at least one layer of said compensation plate is an aligned film consisting essentially of a polysiloxane type liquid crystalline polymer having a repeating unit represented by the formula (XIX)



5,380,460
FERROELECTRIC LIQUID CRYSTAL COMPOUNDS CONTAINING CHIRAL HALOALKOXY TAIL UNITS AND COMPOSITIONS CONTAINING THEM

Michael D. Wand, Boulder; William N. Thurmes, Longmont, and David M. Walba, Boulder, all of Colo., assignors to Displaytech, Inc., Boulder, Colo.

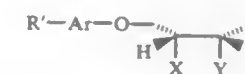
Filed Sep. 20, 1991, Ser. No. 763,134

Int. Cl.⁶ C09K 19/06, 19/34; C07D 239/02; C07C 41/00

U.S. Cl. 252-299.6

29 Claims

1. A chiral nonracemic compound having the formula:



and enantiomers thereof, wherein:

Ar is a core unit containing at least two aromatic rings having the formula: $-A_a-(E)_c-B_b-(F)_d-D_d-$, where A, B and D, independently of one another, are selected from the group of aromatic rings consisting of phenyl, pyrimidine, pyridine, pyrazine, pyridazine, and thiazole, where a, b, and d, independently of one another, can be 0-3 and a+b+d=2 or 3, where E and F, independently of one another, are selected from the group $-OOC-$, $-COO-$, $-CH_2-CH_2-$, $-O-CH_2-$, $-CH_2-O-$, $-CH=CH-$, $-CH_2-CH_2-$, $-CH=CH-$, $-NO_2-$, $-N=N-$, $-C=N-$, $-N=N-$ or a single bond; each of X¹ and X² are fluorine atoms; each of m, n, p and q is 0 or 1; and each of R¹ and R², which are independent from each other, is a C₁-C₁₀ alkyl group, a halogen atom, a nitrile group or an isothiocyanate group, provided that in the case of the alkyl group, an oxygen atom may be interposed in a carbon-carbon bond of the group or in a carbon-carbon bond between this group and the adjacent ring, and in a case where R¹ or R² is the alkyl group, some of hydrogen atoms in the group may be substituted by fluorine atoms.

$-CH_2-O-$, $-S-CH_2-$, and $-CH_2-S-$, where e and f independently of one another are 0 or 1;

R' is an alkyl, alkenyl, alkoxy, thioalkyl, thioether, ether or silylalkyl group having three to fifteen carbon atoms;

X and Y are halogens; and

R is an alkyl or alkenyl group having from one to fifteen carbon atoms,

provided that when R' is an alkyl group containing from three to fifteen carbon atoms, Ar is not 5,4'-substituted 2-phenylpyrimidine, 4,4'-substituted phenylbenzoate, 4,4'-substituted biphenylbenzoate or 4,4'-substituted biphenyl; and

provided that when R' is an alkoxy group containing from three to fifteen carbon atoms, that Ar is not 4,4'-substituted phenylbenzoate, 4,4'-substituted biphenylbenzoate, or 4,4'-substituted biphenyl.

5,380,461
TRANS-DIHALOGENOSTILBENE COMPOUNDS AND LIQUID CRYSTAL ELECTRO-OPTICAL DEVICES USING THEM

Kikumasa Sato; Seichi Inoue, both of Yokohama; Jun Ishihara, Tokyo, and Katsutoshi Machida, Kanagawa, all of Japan, assignors to Seimi Chemical Co., Ltd., Chigasaki, Japan
Continuation-in-part of Ser. No. 649,061, Feb. 1, 1991, abandoned. This application Sep. 30, 1991, Ser. No. 767,803

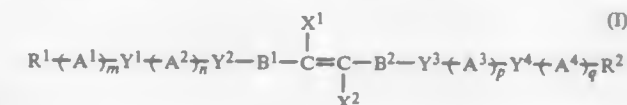
Claims priority, application Japan, Apr. 13, 1990, 2-96259

Int. Cl.⁶ C09K 19/34, 19/06, 19/30, 19/12

U.S. Cl. 252-299.61

18 Claims

1. A liquid crystal composition containing at least one trans-dihalothenostilbene compound of the formula:

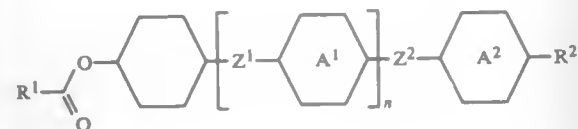


wherein each of A¹ to A⁴, which are independent from one another, is a trans-1,4-cyclohexylene group or a 1,4-phenylene group, which is unsubstituted or substituted by one or more halogen atoms, methyl groups or nitrile groups and in which one or more CH groups may be substituted by nitrogen atoms, and one or more CH₂ groups may be substituted by oxygen atoms or sulfur atoms; each of B¹ and B², which are independent from each other, is a 1,4-phenylene group, which is unsubstituted or substituted by one or more halogen atoms, methyl groups or nitrile groups and in which one or more CH groups may be substituted by nitrogen atoms; each of Y¹ to Y⁴, which are independent from one another, is $-COO-$, $-O-$, $-OCO-$, $-CH_2CH_2-$, $-CH_2-$, $-CH=CH-$, $-OCH_2-$, $-CH_2O-$, $-CH=N-$, $-NO=N-$, $-N=N-$, $-ON-$, $-C=N-$, $-N=N-$ or a single bond; each of X¹ and X² are fluorine atoms; each of m, n, p and q is 0 or 1; and each of R¹ and R², which are independent from each other, is a C₁-C₁₀ alkyl group, a halogen atom, a nitrile group or an isothiocyanate group, provided that in the case of the alkyl group, an oxygen atom may be interposed in a carbon-carbon bond of the group or in a carbon-carbon bond between this group and the adjacent ring, and in a case where R¹ or R² is the alkyl group, some of hydrogen atoms in the group may be substituted by fluorine atoms.

5,380,462
CYCLOHEXYL ALKENOATE COMPOUNDS
Stephen Kelly, Möhlin, and Martin Schadt, Seltisberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 20, 1993, Ser. No. 140,350
Claims priority, application Switzerland, Oct. 30, 1992, 3391/92
Int. Cl.⁶ C09K 19/30, 19/34; C07C 69/533; C07D 213/28
U.S. Cl. 252-299.63 25 Claims

1. A compound of the formula:



wherein

R¹ is a C₂ to C₁₂ alkenyl;
A¹ and A² each independently is an unsubstituted 1,4-phenylene, halogen substituted 1,4-phenylene, unsubstituted 1,4-phenylene in which one of the CH groups is replaced by nitrogen, unsubstituted 1,4-phenylene in which two of the CH groups are replaced by nitrogen, trans-1,4-cyclohexylene, or trans-1,3-dioxane-2,5-diyl;

Z¹ and Z² each independently is a single covalent bond, —CH₂CH₂—, —COO—, —OOC—, —OCH₂—, —CH₂O—, —C=C—, —(CH₂)₄—, —O—(CH₂)₃—, —(CH₂)₃O—, or the trans form of —OCH₂CH=CH—, —CH=CHCH₂O—, —(CH₂)₂CH=CH— or —CH=CH(CH₂)₂—; n is 0, 1 or 2; and

R² is halogen, cyano, C₁ to C₁₂ alkyl, C₂ to C₁₂ alkenyl, or —y¹—X—y²

wherein

X is COO, OOC, CO, O, or a covalent bond,
y¹ is either not present or present as C₁ to C₁₂ alkyl or C₂ to C₁₂ alkenyl, where the alkyl or alkenyl is unsubstituted or substituted with at least one fluorine, and
y² is C₁ to C₁₂ alkyl C₂ to C₁₂ alkenyl, where the alkyl or alkenyl is unsubstituted or substituted with at least one fluorine.

5,380,463
METHOD OF MAKING NIOBIUM-ACTIVATED
YTTRIUM TANTALATE X-RAY PHOSPHOR
Vaddi B. Reddy, Sayre, Pa., and Ha K. Cheong, Los Angeles, Calif., assignors to Osram Sylvania Inc., Danvers, Mass.
Continuation-in-part of Ser. No. 160,323, Dec. 2, 1993, abandoned, which is a continuation of Ser. No. 993,338, Dec. 18, 1992, abandoned. This application May 13, 1994, Ser. No. 242,218

Int. Cl.⁶ C09K 11/78
U.S. Cl. 252-301.4 R 10 Claims

1. A method for making a niobium activated yttrium tantalate x-ray phosphor, comprising the steps of:
forming a mixture of stoichiometric quantities of yttrium oxide, tantalum oxide and niobium oxide in the molar ratio of YTa_{1-x}Nb_xO₄, where x is from 0.005 to 0.02, the mixture also containing a LiCl containing flux in an amount between about 33 to about 50 weight percent of the total weight of the mixture and 0.02 to 0.04 moles of calcium fluorosilicate per mole of phosphor in the form of CaF₆Si, and firing the mixture in a temperature range between 1200°-1400° C.

5. A method for making a niobium activated yttrium tantalate x-ray phosphor, comprising the steps of:
forming a mixture of stoichiometric quantities of yttrium oxide, tantalum oxide and niobium oxide in the molar ratio of YTa_{1-x}Nb_xO₄, where x is from 0.005 to 0.02, the mixture also containing a LiCl containing flux in an amount between about 33 to about 50 weight percent of the total weight of the mixture and 0.02 to 0.04 moles of

barium fluorosilicate per mole of phosphor in the form of BaF₆Si, and firing the mixture in a temperature range between 1200°-1400° C.

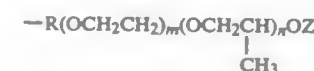
5,380,464
SILICONE FOAM CONTROL COMPOSITION
James B. McGee, Midland County; Lenln J. Petroff, Bay County, both of Mich.; Kolchi Aizawa, Kamakura, and Hiroaki Shoji, Minamisigara, both of Japan, assignors to Dow Corning Corporation, Midland, Mich.
Continuation-in-part of Ser. No. 393,620, Aug. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 192,042, May 9, 1988, abandoned. This application Feb. 12, 1990, Ser. No. 479,022

Int. Cl.⁶ B01D 19/04; C08K 3/36
U.S. Cl. 252-321 40 Claims

1. A composition consisting essentially of:
(I) a silicone defoamer reaction product prepared by reacting at a temperature of 50° C. to 300° C., and in the presence of a catalytic amount of an equilibration catalyst for promoting the reaction, said catalyst being selected from alkali metal hydroxides, alkali metal silanates, alkali metal alkoxides, quaternary ammonium hydroxides, and quaternary ammonium silanates,
(ii) 100 parts by weight of at least one polyorganosiloxane selected from the group consisting of
(A) a polyorganosiloxane having a viscosity of about 20 to 100,000 cS at 25° C. and being expressed by the general formula R¹₃SiO_{(4-a)/2} in which R¹ is a monovalent hydrocarbon or halogenated hydrocarbon group having 1 to 10 carbon atoms and a has an average value of 1.9 to 2.2 and
(B) a polyorganosiloxane having a viscosity of 200 to about 100 million cS at 25° C. expressed by the general formula R²_b(R³O)_cSiO_{(4-b-c)/2} in which R² is a monovalent hydrocarbon or halogenated hydrocarbon group having 1 to 10 carbon atoms, R³ is hydrogen or a monovalent hydrocarbon group having 1 to 10 carbon atoms, b has an average value of 1.9 to 2.2 and c has a sufficiently large value to give at least one —OR³ group in each molecule, said —OR³ group being present at least at the end of a molecular chain;
(iii) 0.5 to 20 parts by weight of at least one resinous silicon compound selected from the group consisting of
(a) an organosilicon compound of the general formula R⁴_dSiX_{4-d} in which R⁴ is a monovalent hydrocarbon group having 1 to 5 carbon atoms, X is a hydrolyzable group and d has an average value of one or less,
(b) a partially hydrolyzed condensate of said compound (a),
(c) a siloxane resin consisting essentially of (CH₃)₃SiO_{1/2} units and SiO_{4/2} units wherein the ration of (CH₃)₃SiO_{1/2} units to SiO_{4/2} units is 0.4:1 to 1.2:1, and
(d) a condensate of said compound (c) with said compound (a) or (b); and
(iii) 0.5 to 30 parts by weight of a finely divided filler and
(II) from about 20 to 200 parts by weight for each 100 parts by weight of said silicone defoamer reaction product (I) of a silicone-glycol copolymer having the average general formula



wherein R¹ has been previously defined, Q is R¹ or G, j has a value of 1 to about 25, k has a value of 0 to about 200 and G is a polyoxyalkylene group having the average structure



in which R is a divalent hydrocarbon group having 2 to about 20 carbon atoms, m has a value of about 7 to about 24, n has a value of 0 to about 24 and Z is selected from the group consisting of hydrogen, an alkyl radical having 1 to 6 carbon atoms and an acyl group having 2 to 6 carbon atoms.

5,380,465
EMULSIFIERS FOR POLYMERIZATION PROCESS
Alan S. Baker, Slough; Stephen J. Butterworth, Chesham, and Jheeta K. Ravinder, Slough, all of England, assignors to Imperial Chemical Industries PLC, London, England
Continuation of Ser. No. 693,016, Apr. 29, 1991, abandoned, which is a continuation of Ser. No. 428,028, Oct. 27, 1989, abandoned, which is a continuation of Ser. No. 268,701, Nov. 8, 1988, abandoned, Division of Ser. No. 895,851, Aug. 12, 1986, Pat. No. 4,786,681. This application Oct. 1, 1993, Ser. No. 130,415

Claims priority, application United Kingdom, Sep. 5, 1985, 8522052

The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.

Int. Cl.⁶ B01F 17/00; B01J 13/00
U.S. Cl. 252-356 14 Claims

1. A composition comprising
(a) a water-insoluble, oil-soluble surface active agent of the formula (I):



or a salt thereof; and

(b) a surface active agent having a hydrophilic/lipophilic balance value of below 15 and selected from the group consisting of a sorbitan ester and an alkylene oxide condensate of a sorbitan ester;

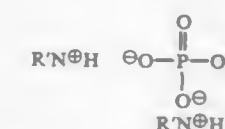
wherein:

X represents a saturated or unsaturated hydrocarbon chain containing from 30 to 500 carbon atoms;
Y is carried terminally upon a group X and is a half derivative of a succinic anhydride group having a free optionally salified carboxylic acid group and obtained by the opening of the anhydride ring in the reaction of the succinic anhydride group with a compound containing the group Z; and
Z represents a hydrophilic group carried by the group Y and is derived from an alcohol, a polyol, an amine, a polyamine, a compound containing both hydroxyl and amino groups or a compound containing carboxylic acid groups in addition to the hydroxyl and/or amino groups.

5,380,466
REACTION PRODUCT OF NITROGEN BASES AND
PHOSPHATE ESTERS AS CORROSION INHIBITORS
Richard L. Martin, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 871,451, Apr. 21, 1992, abandoned.
This application Apr. 15, 1993, Ser. No. 48,555
Int. Cl.⁶ C23F 11/167

U.S. Cl. 252-389.22 18 Claims
1. A method for inhibiting corrosion of ferrous metal surfaces in an aqueous medium containing at least one of living *Skeletonema costatum* or living fish, the method comprising incorporating into the medium a corrosion inhibitor in an amount sufficient to inhibit corrosion of ferrous metal surfaces in the medium, the corrosion inhibitor having a BOD-28 of at least about 70% in the medium and comprising a water-soluble agent selected from the group consisting of compositions of the formula



compositions of the formula

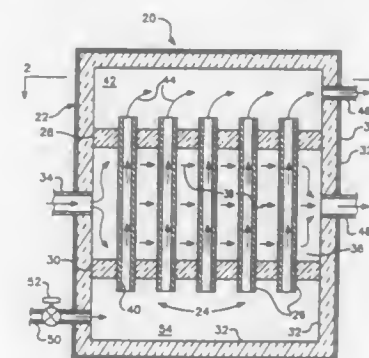


and mixtures thereof, wherein R is R²—OCH₂CH₂—, wherein R² is an alkyl, aryl, or aralkyl group of from about five to about fifteen carbon atoms, each carbon atom having at least one hydrogen and x is an integer of from one to about ten, and R¹N is a basic nitrogen compound that is at least water-dispersible.

8. A method as set forth in claim 1 wherein the medium contains fish.

5,380,467
COMPOSITION FOR EXTRACTING OXYGEN FROM
FLUID STREAMS
Ching-Ya Lin, Monroeville; Richard P. Kunkle, Irwin, and William Feduska, Edgeworth, all of Pa., assignors to Westinghouse Electric Company, Pittsburgh, Pa.

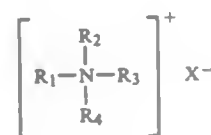
Filed Mar. 19, 1992, Ser. No. 856,679
Int. Cl.⁶ H01B 1/06; C04B 35/48
U.S. Cl. 252-520 8 Claims



1. A praseodymia-modified, yttria-stabilized zirconia which has a nearly ionic-to-electronic equivalence at elevated temperatures, said composition having a coefficient of expansion closely matching that of calcia-stabilized zirconia over the temperature range of room temperature to at least ~1000° C.

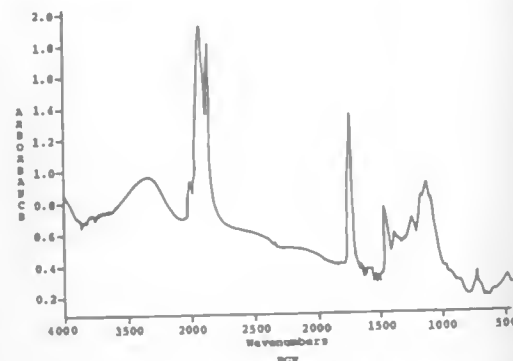
5,380,468
AQUEOUS ALKALINE COMPOSITION FOR CLEANING
ALUMINUM AND TIN SURFACES
Victor A. Guber, Euclid, and David A. Raney, Brookport, both of Ohio, assignors to Man-Gill Chemical Company, Cleveland, Ohio

Filed Oct. 20, 1992, Ser. No. 963,599
Int. Cl.⁶ C11D 1/62, 7/06
U.S. Cl. 252-547 10 Claims
1. An aqueous alkaline composition useful for cleaning aluminum and tin surfaces which comprises
(A) from about 20% to about 75% by weight of at least one inorganic base;
(B) from about 1% to about 30% by weight of at least one cationic surfactant which is a quaternary ammonium compound characterized by the formula



wherein R₁, R₂, R₃ and R₄ are each independently alkyl, alkoxyalkyl, hydroxyalkyl or aryl alkyl groups, and X is a halide; and
(C) water.

5,380,469
POLYGLYCEROL ESTERS AS FUNCTIONAL FLUIDS AND FUNCTIONAL FLUID MODIFIERS
Frank J. Filder, Schaumburg, Ill., assignor to Calgene Chemical, Inc., Skokie, Ill.
Filed Mar. 18, 1993, Ser. No. 33,800
Int. Cl.⁶ C10M 107/00
U.S. Cl. 252—565 21 Claims

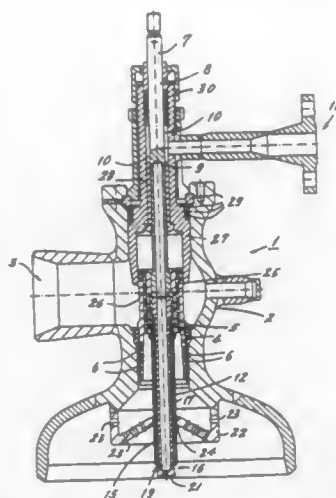


1. A method for lubricating the moving parts of a mechanical device which comprises applying to said moving parts a polyglycerol ester which is the reaction product of a polyglycerol containing three or more glycerol monomers and a member selected from the group consisting of a fatty acid, methyl esters thereof, a triglyceride and methyl esters thereof; said reaction product having a saponification value of between 100 and 169.

5,380,470
METHOD AND APPARATUS FOR REDUCING THE PRESSURE AND TEMPERATURE OF STEAM IN A STEAM CONDITIONING VALVE
Sven-Ake Jacobsson, Saffle, Sweden, assignor to BTG Källe Inventing AB, Saffle, Sweden
PCT No. PCT/SE93/00683, § 371 Date Dec. 16, 1993, § 102(e) Date Dec. 16, 1993, PCT Pub. No. WO94/04255, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 17, 1993, Ser. No. 167,810
Claims priority, application Sweden, Aug. 26, 1992, 9202454
Int. Cl.⁶ B01F 3/04 4 Claims

1. Method of reducing the pressure and temperatures of steam in a steam conditioning valve (1), in which steam flow is regulated by a plug (5) perforated by a plurality of holes (6), such that a greater or less number of holes (6) being uncovered or closed off in response to movement of the plug (5) along a seating (4) formed inside the valve (1), cooling water being simultaneously taken into the upper part (8) of the valve and regulated with the aid of a water seat (10) and a plurality of calibrated holes (9) in a hollow valve spindle (7) passing through the plug (5), this regulation being proportional to that of the process steam, the cooling water then being taken through the hollow valve spindle (7) for spraying out and through a jet (12) in the center of the departing steam flow,

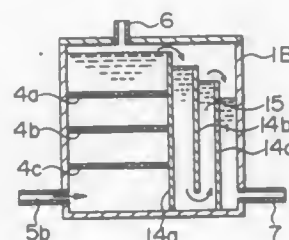
characterized in that for small opening amounts of the valve (1) process steam is taken directly to the vicinity of the outlet openings (16) of the jet (12) and the cooling water sprayed out



therefrom, such as to break up this water by the process steam being caused to impinge on the sprayed-out water simultaneously as partial vapourisation of the water is achieved and process steam cooling is improved.

5,380,471
AERATION APPARATUS FOR PRODUCING ULTRAPURE WATER
Cozy Ban; Motonori Yanagi; Takaaki Fukumoto, all of Itami; Toshiki Manabe, and Hiroshi Yanome, both of Toda, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Japan Organo Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 921,573, Jul. 30, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,611
Claims priority, application Japan, Jul. 31, 1991, 3-191559
Int. Cl.⁶ B01F 3/04 5 Claims

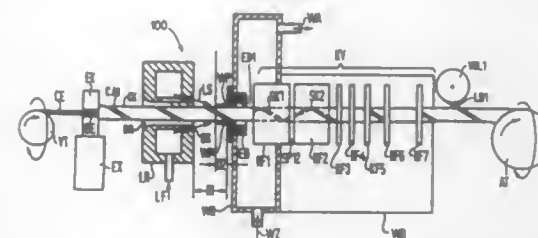
U.S. Cl. 261—122.1



1. An aeration apparatus used in producing ultrapure water comprising:
a reaction tank vertically divided into first and second sections, the first section including an inlet at a bottom of said reaction tank for receiving a liquid and the second section including an outlet at the bottom of said reaction tank;
a plurality of screens disposed within the first section of said reaction tank;
an aspirator including an inlet water pipe for admitting water to said aspirator, a gas feed pipe for supplying an aeration gas to said aspirator and for vigorously mixing the aeration gas with the water, and an outlet water pipe for supplying aerated water to the inlet of said reaction tank, wherein colloidal substances in the aerated water are converted into fine particles;
gas-liquid separation means disposed within the second section of said reaction tank for removing the aeration gas from the water including the particles in the second section of said reaction tank; and

means connected to the outlet of said reaction tank for discharging water from said reaction tank.

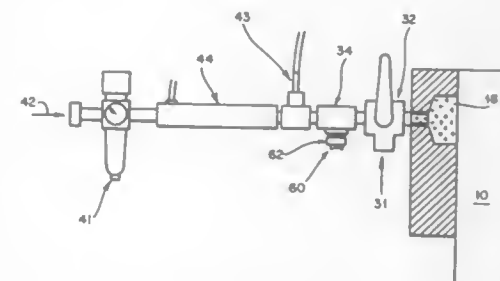
5,380,472
METHOD AND APPARATUS FOR MANUFACTURING CHAMBER MEMBERS FOR ACCEPTING LIGHT WAVEGUIDES
Reiner Schneider, Eberdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 29, 1993, Ser. No. 53,685
Claims priority, application Germany, May 8, 1992, 4215185
Int. Cl.⁶ B29C 47/90; G02B 6/44
U.S. Cl. 264—1.29 21 Claims



1. In an apparatus comprising an extruder head for manufacturing a chamber member provided with outwardly open and spirally proceeding chambers for the acceptance of light waveguides, the improvements comprising a cooling unit being positioned following the extruder head in a throughput direction of the chamber member for receiving the chamber member a calibrating device being provided at an output of the cooling unit, said calibrating device engaging into the chambers, said calibrating device being arranged at a distance from the extruder head so that the material of the chamber member has adequately hardened but is still plastically deformable, at least in a region of the chambers at an input of the extruded article into the calibrating device, said calibrating device being a multipart device formed by a plurality of shaping disks following one after another in the throughput direction.

5,380,473
PROCESS FOR MAKING SHEARFORM MATRIX
B. Arlie Bogue, Broad Run; Richard C. Fuiz, Great Falls, both of Va., and Peter G. Hiscoks, Saffron Walden, England, assignors to Fuiz Technologies Ltd., Chantilly, Va.
Filed Oct. 23, 1992, Ser. No. 965,804
Int. Cl.⁶ B29B 9/10 28 Claims

U.S. Cl. 264—11



1. A process for making a shearform matrix comprising:
a) controlledly increasing the temperature of a feedstock which includes a solid non-solubilized carrier material capable of undergoing internal flow in the absence of dissolution to a point where said carrier material will undergo internal flow with the application of disruptive fluid shear force;
b) ejecting said heated feedstock resulting from step (a) as a

coherent stream under pressure from at least one orifice; and

c) then subjecting said coherent stream of feedstock to a disruptive fluid shear force which separates said coherent stream of feedstock into multiple discrete and discontinuous parts and transforms the morphology of said feedstock into said shearform matrix.

17. An apparatus for making a shearform matrix comprising: means for advancing, and controlledly increasing the temperature of a feedstock which includes a solid non-solubilized carrier material and applied pressure on said solid non-solubilized carrier material to the point where said carrier undergoes internal flow and is simultaneously advanced for ejection; means for ejecting said feedstock as a coherent stream for shearing said feedstock to provide said shearform matrix, said means for ejecting in a fluid communication with said means for increasing the temperature and pressure and arranged to receive said feedstock material during said internal flow condition; and means for disruptively shearing said feedstock fixed proximally to said means for ejection and disposed for effecting shear of said coherent stream of feedstock during said internal flow condition into multiple discrete and discontinuous masses whereby said feedstock material is transformed to said shearform matrix.

5,380,474
METHODS FOR PATTERNED DEPOSITION ON A SUBSTRATE
Robert R. Rye; Antonio J. Ricco; M. J. Hampden-Smith, and T. T. Kodas, all of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.
Filed May 20, 1993, Ser. No. 65,211
Int. Cl.⁶ B05D 3/06 12 Claims

U.S. Cl. 264—25



1. A method for patterned deposition of a material onto a substrate, comprising the steps of:
a) etching a surface of the substrate to enhance adhesion characteristics of the surface;
b) selectively removing portions of the etched surface with a laser; and
c) depositing a material only onto the remaining portions of the etched surface.

5,380,475
PROCESS FOR MANUFACTURING AN OXIDATION-STABLE COMPONENT ON A CFC BASE, PARTICULARLY FOR SPACE TRAVEL
Peter Goetke; Ernst Blenninger; Manfred Lechner, all of München; Ulrich Papenburg, Burgdorf; Peter Sindhauser, Probstried, and Ulrich Goetz, Buching, all of Germany, assignors to Deutsche Aerospace, Germany
Filed Nov. 9, 1992, Ser. No. 973,376
Claims priority, application Germany, Nov. 9, 1991, 4136880
Int. Cl.⁶ C04B 35/52; C08K 7/06 19 Claims

1. A process for manufacturing an oxidation stable component for use in space travel and in temperature environment of at least 1500° C. from a solid CFC-body, comprising the steps of:

within the die cavity, the back-pressure being regulated by a controlled release of pressure from the die cavity due to a venting mechanism in communication with the die cavity;

whereby the pressure ratio of the formings pressure divided by the back-pressure increases substantially continuously from about 1.0 at said beginning of the thermoforming step to about 1.3 to about 1.5 at about 1/10th to about 9/10ths of a final depth of draw, and then, the pressure ratio of the forming pressure divided by the back-pressure decreases substantially continuously until it reaches about 1.2 to about 1.0 at the final depth of draw.

5,380,482

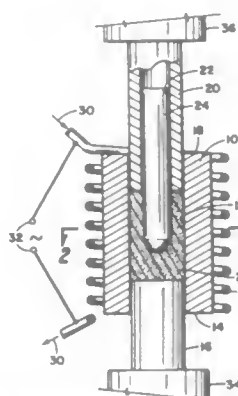
METHOD OF MANUFACTURING INGOTS FOR USE IN MAKING OBJECTS HAVING HIGH HEAT, THERMAL SHOCK, CORROSION AND WEAR RESISTANCE

David B. Maginnis, Norman, and Frank Maginnis, Moore, both of Okla., assignors to Aspen Research, Inc., Moore, Okla. Continuation-in-part of Ser. No. 780,703, Oct. 18, 1991, abandoned. This application Apr. 2, 1993, Ser. No. 43,628

Int. Cl.⁶ B22F 3/14, 1/00

U.S. Cl. 419—33

22 Claims



1. A method of manufacturing an ingot for use in making an object having heat, thermal shock, corrosion and wear resistant characteristics comprising:

- combining about 17-80% TiB_2 powder, about 0.0-4.0% Y_2O_3 powder and the balance of NiAl powder to form a mixture;
- milling the mixture for about 10 to 48 hours to form a finely admixed composition;
- placing the composition in a mold;
- subjecting the composition in the mold to high pressure and temperature for a time to cause the composition to fuse into a high hardness ingot; and
- cooling the ingot and removing it from the mold.

7. A composition comprising:

- about 17-80% TiB_2 powder, about 0.0-4.0% Y_2O_3 powder, and the balance NiAl powder, the powders being thoroughly admixed by ball milling for a period of about 10 to 48 hours.

5,380,483

VIBRATION-DAMPING ALLOY

Satoshi Watanabe, Mitaka; Kenzo Miura, Okayama; Toshinobu Okaku, Nakano; Hitoshi Okamoto, and Youichi Sugiyama, both of Tamano, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

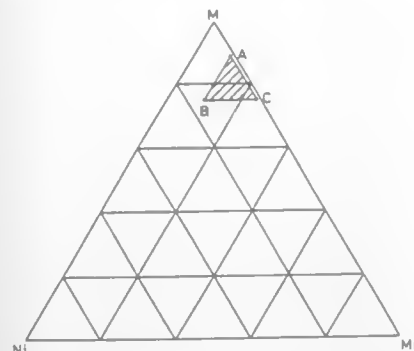
PCT No. PCT/JP91/01770, § 371 Date Aug. 5, 1993, § 102(e) Date Aug. 5, 1993, PCT Pub. No. WO93/13234, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 26, 1991, Ser. No. 98,270

Int. Cl.⁶ C22C 38/04

U.S. Cl. 420—73

4 Claims



1. A vibration-damping alloy in the form of a quinary alloy consisting essentially of 0.2-15 wt % of Ni, 10-24.8 wt % of Mn, 0.01-5.0 wt % of Nb, 0.01-2.0 wt % of C and a remainder of Fe to thereby increase strength without lowering vibration-damping properties.

5,380,484

CONTROL OF MARINE BORERS BY CHLOROTHALONIL

Thomas L. Woods, Mentor, Ohio, and Lawrence J. Cookson, Victoria, Australia, assignors to ISK Blotech Corporation, Mentor, Ohio

Filed Sep. 3, 1992, Ser. No. 939,679

Int. Cl.⁶ B08B 17/00

U.S. Cl. 422—6

12 Claims

1. A method of protecting wood in an aquatic environment from marine borer infestation which comprises treating said wood by impregnating said wood with a pesticidally effective concentration of chlorothalonil.

5,380,485

APPARATUS FOR CONDUCTING AND CONTROLLING CHEMICAL REACTIONS

Shizuo Takahashi, and Takao Kobayashi, both of Fukui, Japan, assignors to Todoroki Sangyo Kabushiki Kaisha, Fukui, Japan Continuation of Ser. No. 568,709, Aug. 17, 1990, abandoned.

This application Sep. 18, 1992, Ser. No. 946,779

Claims priority, application Japan, Aug. 28, 1989, 1-222160

Int. Cl.⁶ G05D 23/00

U.S. Cl. 422—62

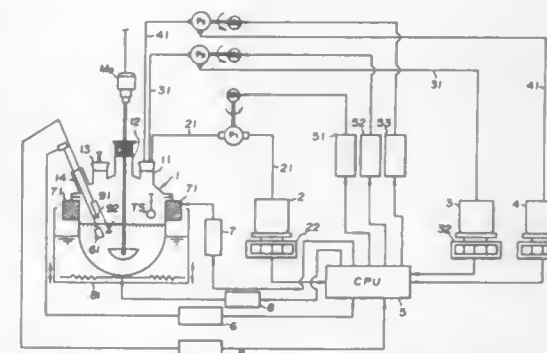
3 Claims

1. Apparatus for conducting and controlling a chemical reaction comprising:

- a reaction vessel for receiving, mixing and containing a liquid reaction system comprising a plurality of liquid components;
- a first container for holding a supply of additive acidic liquid to be supplied to the vessel during a reaction;
- a second container for holding a supply of additive basic liquid to be supplied to the vessel during a reaction;
- a third container for holding a supply of another additive liquid to be supplied to the vessel during a reaction;
- a respective electronic scale for each of said containers, each said being adapted for measuring the weight of the liquid in the corresponding container and generating an electric

signal corresponding to a present time supply level of the liquid therein;

- a pH detector including a sensor in the reaction vessel for monitoring the pH in the reaction system and generating an electric signal corresponding to a present time pH level in the system;
- a temperature sensor in the reaction vessel for detecting the temperature of the reaction system therein and generating an electric signal corresponding to the present temperature of the system;
- a cooling mechanism including a cooling jacket surrounding the vessel for receiving and circulating a coolant in contact with the outer surfaces of the reaction vessel to thereby cool the reaction system in the reaction vessel;
- a heating mechanism including heating tub containing a heated substance and an elevator for raising and lowering the tub between a raised heating position and a lowered non-heating position, said tub being disposed beneath said vessel so that the heated substance therein is brought into contact with the outer surfaces of the vessel when the tub is in its raised heating position to thereby heat the reaction system in said reaction vessel;



- a perspective pump associated with each container, each said pump being arranged for moving a corresponding liquid from its respective container and into said vessel in response to an external signal; and
- a CPU for receiving and processing the electric signals from said scales, said pH detector and said temperature sensors, using signals from the scales and from the pH detector to calculate the amount and nature of liquid to be added to the system in the reaction vessel to correct derivations from standards, generating the external signals as necessary to control the operation of said pumps to correct said deviations, using the signal from the temperature sensor to determine whether the temperature is within a predetermined range, generating a signal to raise the tub to its heating position whenever the temperature in the system is below said range, generating a signal to lower the tub to its non-heating position whenever the temperature of the system is above or within said range, and generating a signal to cause circulation of coolant in said jacket whenever the temperature of the system is above said range.

5,380,486

APPARATUS FOR TAKING LIQUID CONTENT FOR USE IN ANALYSIS OUT OF CONTAINER

Takayuki Anami, Iruma, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 868,878

Claims priority, application Japan, Apr. 19, 1991, 3-113786; Apr. 19, 1991, 3-113787

Int. Cl.⁶ G01N 33/48; B01L 3/14; B67B 7/16

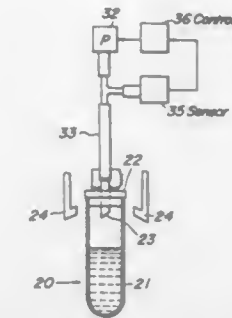
U.S. Cl. 422—63

5 Claims

1. An apparatus for taking a liquid content for use in analysis out of a container, the container including a container main body having an opening and a cap which is hermetically se-

cured to the opening to keep an inside of the container main body at an initial pressure, the apparatus comprising:

- liquid content taking means for taking at least part of the liquid content out of the container via the opening, the liquid content taking means comprising means for removing the cap from the opening of the container main body; and
 - air supplying means for supplying air into the container main body through the cap;
- the air supplying means including an air supply nozzle having a proximal end which is insertable into the container



main body through the cap, an air supply source connected to a distal end of the air supply nozzle, means for detecting a pressure inside the container main body, and means for controlling operation of the air supply source in accordance with the pressure detected inside the container main body, said air supplying means operating such that the pressure inside the container main body is increased to a pressure above the atmospheric pressure; said air supplying means controlling the pressure inside the container main body by supplying the air into the container main body while the liquid content taking means operates on the container.

5,380,487

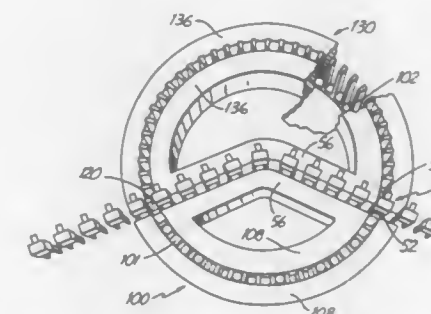
DEVICE FOR AUTOMATIC CHEMICAL ANALYSIS
Alfredo Choperena, Eden Prairie; Ross Krogh, Minneapolis; Venkatesh Prasad, Eden Prairie, and Gershon Giter, St. Paul, all of Minn., assignors to Pasteur Sanofi Diagnostics, Paris, France

Filed May 5, 1992, Ser. No. 878,956

Int. Cl.⁶ G01N 33/48; B65G 43/08

U.S. Cl. 422—63

12 Claims



1. A device for processing materials comprising first and second treatment resources, the first treatment resource including first transport means adapted to transport articles along a first treatment path and the second treatment resource including second transport means adapted to transport articles along a second treatment path, the first and second transport means including indexing positions, the first transport means including indexing positions adapted to support an article for transpond alternating with indexing positions that are not

adapted to support an article for transport, the first and second treatment paths intersecting one another at two spaced-apart intersection locations, the distance between the two intersecting locations along the first treatment path being equal to an odd number of indexing positions of the first transport means and the distance between the two intersecting locations along the second treatment path being equal to $xn+1$ indexing positions of the second transport means, wherein x and n are integers and x is greater than 2.

5,380,488

CONTAINER FEEDING SYSTEM

Koichi Wakatake, Tokyo, Japan, assignor to Kabushiki Kaisha Nittec, Tokyo, Japan

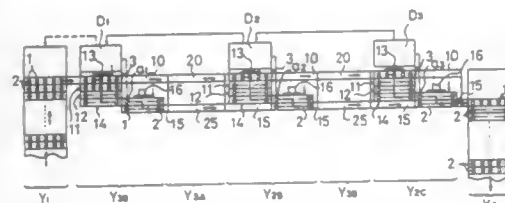
Filed Aug. 7, 1992, Ser. No. 925,676

Claims priority, application Japan, Mar. 19, 1992, 4-112042

Int. Cl.⁶ G01N 21/00

U.S. Cl. 422—65

18 Claims



1. A container feeding system, formed of a cooperating set of components comprising:
 - a rack stocker means for stocking and feeding out a plurality of racks each holding a plurality of containers for containing respective samples;
 - a rack feeding line cooperating with said rack stocker means, on and along which racks are fed out from said rack stocker means are fed only in a downstream direction relative to said rack stocker means;
 - a plurality of analyzers disposed sequentially along and adjacent to said rack feeding line;
 - control means for controlling said components, said analyzers each being controlled by the control means to independently detect a status of said racks that are being fed along said rack feeding line and to request another of said analyzers which is located at an upstream location to feed racks according to the detected status of said racks;
 - a rack recovery line disposed in parallel to said rack feeding line; and
 - urging means for selectively urging each rack that has passed a selected one of said analyzers from said rack feeding line to said rack recovery line.

5,380,489

ELEMENT AND METHOD FOR NUCLEIC ACID AMPLIFICATION AND DETECTION USING ADHERED PROBES

Richard C. Sutton, Rochester; Ignazio S. Ponticello, Pittsford; Thomas J. Cummins, Rochester; Dennis R. Zander, Penfield, and William H. Donish, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1992, Ser. No. 837,772

Int. Cl.⁶ B01L 3/00

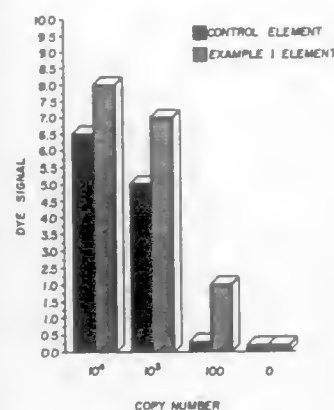
U.S. Cl. 422—68.1

26 Claims

1. An element comprising a sealable support having disposed thereon a nucleic acid reagent composition comprising a mixture of:
 - a nucleic acid reagent comprising:
 - particles composed of a first polymer having a glass transition temperature of at least about 70° C., said particles having an average diameter of from about 0.1 to about 3 micrometers, and

an oligonucleotide covalently attached to said particles, and

- a water insoluble adhesive comprising a second polymer which has a glass transition temperature which is at least about 30° C. less than the glass transition temperature of said first polymer, said polymeric adhesive being present in said composition at from about 1 to about 20 weight percent,



wherein said support has hydrophilic surface groups provided by a treatment selected from the group consisting of corona discharge treatment, chromic acid treatment, treatment with a radio frequency electromagnetic field in the presence of a reactive gas, and coating with a hydrophilic subbing layer on which said composition is disposed.

5,380,490

APPARATUS FOR MEASURING A TEST SPECIMEN

Hiroaki Hoshi, Yokohama; Matsuomi Nishimura, Ohmly; Kazumi Tanaka, Yokohama; Takeshi Miyazaki, Ebina; Toshikazu Ohnishi, Machida, and Hidehito Takayama, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

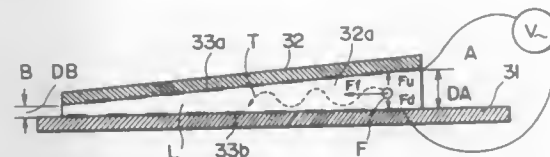
Filed Jan. 16, 1992, Ser. No. 821,049

Claims priority, application Japan, Jan. 18, 1991, 3-019551; Dec. 6, 1991, 3-349154; Jan. 8, 1992, 4-020416

Int. Cl.⁶ G01N 33/543

U.S. Cl. 422—73

5 Claims



1. An apparatus for measuring a specified substance in a test specimen, comprising:
 - receiving means for receiving a reaction solution of the test specimen and carrier particles which carry a substance specifically reacting to the specified substance in the test specimen, the reaction solution forming aggregating states of the carrier particles;
 - comb-shaped electrodes to which variable voltage is applied, for forming a variable electric field in the reaction solution;
 - means for optically detecting spatial spectrum distribution formed by said carrier particles around said comb-shaped electrodes; and
 - means for determining the aggregating states of the carrier particles on the basis of the detected spatial spectrum distribution.

5,380,491

APPARATUS FOR PUMPING AND DIRECTING FLUIDS FOR HEMATOLOGY TESTING

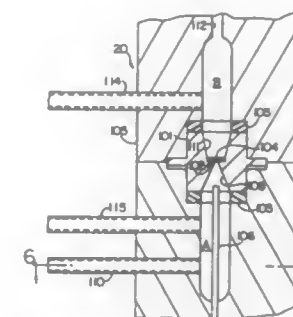
Edward L. Carver, Jr., and David C. DeCava, both of Oxford, Conn., assignors to CDC Technologies, Inc., Oxford, Conn.

Filed Jan. 21, 1993, Ser. No. 7,111

Int. Cl.⁶ G01N 33/49, 33/00

U.S. Cl. 422—73

34 Claims



1. An apparatus for hematology testing, comprising:
 - a sensing unit defining a counting orifice for the flow of a blood sample through the sensing unit to analyze the blood sample, the counting orifice defining an inlet side and an outlet side, and the sensing unit including a first inlet port and a second inlet port, the first and second inlet ports each being fluidly coupled to and located on the inlet side of the counting orifice; and
 - means for pumping including at least two syringes, a first syringe being coupled by a sample line to the first inlet port of the sensing unit and injecting a blood sample from the inlet side through the counting orifice, and a second syringe being located upstream of the second inlet port of the sensing unit and coupled by a sheath line to the second inlet port and simultaneously injecting a sheath of fluid through the sheath line and second inlet port and surrounding the sample stream on the inlet side of the counting orifice.

5,380,492

SAMPLING DEVICE AND SAMPLE ADEQUACY SYSTEM

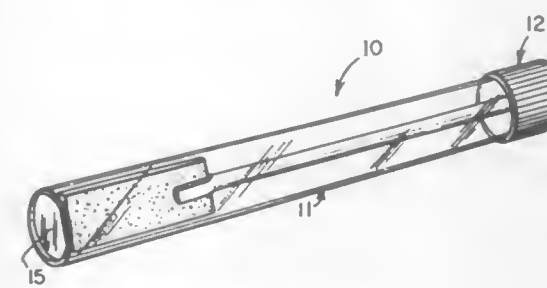
Eugene H. Seymour, 1465 Monaco Dr., Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 889,283, Jun. 3, 1992, which is a continuation-in-part of Ser. No. 857,574, Mar. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 838,609, Feb. 19, 1992, Pat. No. 5,268,148, which is a continuation-in-part of Ser. No. 831,776, Feb. 5, 1992, Pat. No. 5,260,031, which is a continuation-in-part of Ser. No. 775,195, Oct. 11, 1991, Pat. No. 5,283,038, and Ser. No. 722,333, Jun. 25, 1991, abandoned, and Ser. No. 629,278, Dec. 18, 1990, abandoned. This application Apr. 14, 1993, Ser. No. 47,713

Int. Cl.⁶ C12M 1/28; G01N 33/487

U.S. Cl. 422—101

2 Claims



1. A saliva sampling device comprising:

- a sample container having an open end, a closed end and an inner wall surface;
- a retaining ridge disposed on said inner wall surface adjacent to said closed end; and
- a sample collector including a piece of filter paper and a holder having a tube and a paddle coupled to said piece of filter paper, said paddle having a peripheral edge for engaging said retaining ridge of said sample container thereby preventing said paddle from being inserted into said sample container beyond said retaining ridge.

5,380,493

CELL WELL PLATE HOLDER AND WELL MARKING SYSTEM

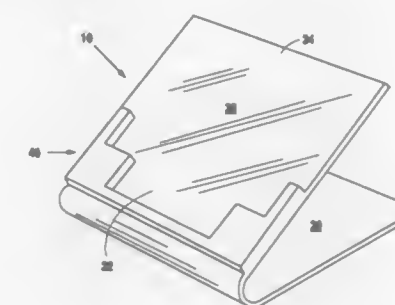
Jeffery B. Chavez, 5627 Timber Rain, San Antonio, Tex. 78250, and Christopher P. D. Jacobs, 6711 Country Breeze, San Antonio, Tex. 78240

Filed Mar. 27, 1992, Ser. No. 859,124

Int. Cl.⁶ B01L 9/00

U.S. Cl. 422—104

3 Claims



1. A device for holding a standard laboratory cell well plate, said cell well plate being rectangular with two pairs of parallel sides, said first pair of parallel sides being longer than said second pair of parallel sides, said device consisting of:
 - a receiving member having a top edge, a bottom edge, a front face and a rear face, said front face of said receiving member for supporting said standard, rectangular cell well plate in either a first orientation wherein said first pair of parallel sides of said cell well plate are parallel to said bottom edge of said receiving member, or in a second orientation wherein said second pair of parallel sides of said cell well plate are parallel to said bottom edge of said receiving member;
 - a propping member attached to said receiving member for positioning of said front face of said receiving member at an obtuse angle to a horizontal surface upon which said device is positioned;
 - a retaining member having a first end, a second end, and a midsection for maintaining said cell well plate in said first orientation or said second orientation on said front face of said receiving member, said retaining member being permanently attached to said front face of said receiving member proximate to said bottom edge of said receiving member;
 - said first end of said retaining member being stepped shaped with a first step and a second step, said first step having a top edge and a side edge, said second step having a top edge and a side edge, said side edge of said second step and said side edge of said first step perpendicular to said midsection of said retaining member, said top edge of said first step and said top edge of said second step parallel to said midsection;
 - said second end of said retaining member being stepped shaped with a first step and a second step, said first step having a top edge and a side edge, said second step having a top edge and a side edge, said side edge of said second step and said side edge of said first step perpendicular to

said midsection of said retaining member, said top edge of said first step and said top edge of said second step being parallel to said midsection;

said mid-section of said retaining member and said side edge of said second step of said first end of said retaining member and said side edge of said second step of said second end of said retaining member utilized to prevent lateral movement of said cell well plate across said front face of said receiving member when said cell well plate is in said second orientation; and

said top edge of said second step and said side edge of said first step of said first end of said retaining member and said top edge of said second step and said side edge of said first step of said second end of said retaining member utilized to prevent lateral movement of said cell well plate across said front face of said receiving member when said cell well plate is in said first orientation.

above said gas dispersing plate which satisfies equations (1), (2) and (3):

$$0 < l < L \quad (1)$$

$$0.4 \leq l/D \leq 1.8 \quad (2)$$

$$0.7 \leq L/D \leq 2.0 \quad (3)$$

wherein L is the height from said gas dispersing plate to the top of the fluidized bed, D is the inner diameter of said cylindrical polymerization reactor, and l is an arbitrary height from said gas dispersing plate to said upper blowing means.

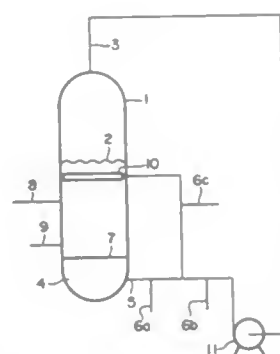
5,380,494
APPARATUS FOR GAS PHASE POLYMERIZATION
AND METHOD FOR OPERATING THE SAME

HIROYUKI OGAWA, Singapore, Singapore; Hideo Kusakabe, Chiba, Japan; Ikuhiro Tamura, Singapore, Singapore; Yoshizumi Sasaki, and Jitsuo Kuroawa, both of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Japan
Continuation of Ser. No. 773,500, Oct. 9, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,460

Claims priority, application Japan, Nov. 15, 1990, 2-310424
Int. Cl.⁶ C08F 2/00

U.S. CL. 422-131

11 Claims



1. A gas phase polymerization reactor system comprising:
a vertically oriented cylindrically-shaped gas phase polymerization reactor, said reactor having a gas dispersing plate mounted therewith so as to partition the reactor interior, a gas chamber being defined vertically below said gas dispersing plate and a fluidized bed portion being defined above said gas dispersing plate, a gas outlet being provided at the top of said reactor and a gas inlet being provided in flow communication with said gas chamber; polymerization catalyst inlet means for feeding a polymerization catalyst into said reactor above said gas dispersing plate;
polymer product outlet means provided above said gas dispersing plate for discharging polymer product from said fluidized bed portion;
upper blowing means for blowing gas into said reactor said upper blowing means being distinct from and vertically spaced from said polymerization catalyst inlet means;
means defining a gas circulation passage between said gas outlet and each of said upper blowing means and said gas inlet;
means for introducing fresh feed material to said gas circulating passage;
said upper blowing means being located at a height of 1

5,380,495
SOLID PHASE PEPTIDE SYNTHESIZER

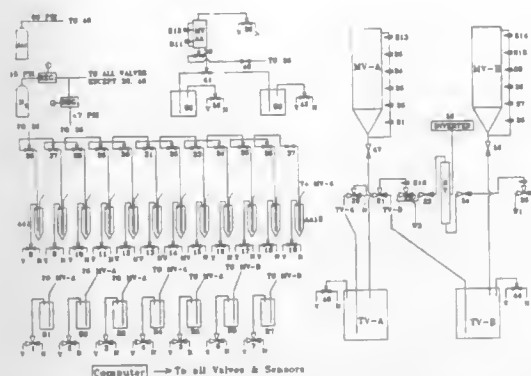
Heng-Wei Chang, 1051 Hatteras Ct., Foster City, Calif. 94404,
and Dario M. Slavazza, 259 N. Capitol Ave., #240, San Jose,
Calif. 95127

Filed Aug. 27, 1993, Ser. No. 112,893

Int. Cl.⁶ B01J 10/00

U.S. Cl. 422-131

6 Claims

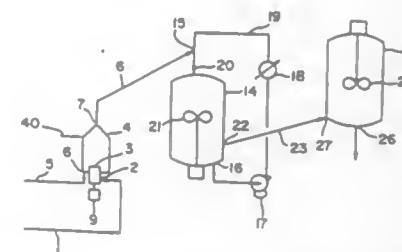


1. An apparatus for solid-phase peptide synthesis for use with pressurized inert gas comprising:
 - (1) a plurality of closed vessels each containing a solvent or an amino acid solution for said synthesis;
 - (2) a plurality of gas lines;
 - (3) a plurality of first valves;wherein each of said closed vessels is connected through a corresponding one of said valves to receive pressurized inert gas through a corresponding one of said gas lines;
 - (4) a metering vessel;
 - (5) a plurality of uninterrupted solvent lines;
- wherein each of said closed vessels is connected to said metering vessel by a corresponding one of said uninterrupted solvent lines and said metering vessel is open to atmospheric pressure;
- (6) a closed transfer vessel positioned at a lower gravitational potential than is said metering vessel;
 - (7) a second valve and flow line coupling said transfer vessel to said metering vessel;
 - (8) a third valve and flow line coupling said transfer vessel to receive pressurized inert gas;
 - (9) a closed reaction vessel;
 - (10) means for inverting said reaction vessel;
 - (11) a fourth valve and flow line coupling said reaction vessel to said transfer vessel;
 - (12) a fifth valve and flow line coupling said reaction vessel to atmospheric pressure.

5,380,496
PROCESS AND APPARATUS FOR SUSPENSION
POLYMERIZATION

Yoshiyuki Hashiguchi, Kobe; Masakiti Kishi, Himeji, and Takehiko Yagyu, Kobe, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan
Division of Ser. No. 938,515, Sep. 2, 1992, Pat. No. 5,276,113, which is a continuation of Ser. No. 525,325, May 18, 1990, abandoned. This application Oct. 1, 1993, Ser. No. 130,391
Claims priority, application Japan, May 22, 1989, 1-128083
Int. Cl.⁶ C08F 2/00; B01F 13/00
U.S. Cl. 422—131

1 Claim



1. An apparatus for suspension polymerization to produce polymer particles having a uniform size, which apparatus comprises:
 - a droplet forming device comprising at least one orifice having at least one pore through which a monomer liquid having a specific gravity smaller than that of an aqueous dispersion medium is passed and a means for vibrating the monomer liquid through the pore, wherein the droplet forming device further comprises a recycling line which recycles the aqueous dispersion medium through the droplet forming device to contact the aqueous dispersion medium with the droplets in a counter current mode,
 - a first reactor comprising an inlet for introducing the aqueous dispersion medium containing the formed droplets in the first reactor, a means for recycling the aqueous dispersion medium from a bottom to a top of the reactor, a means for agitating the aqueous dispersion medium containing the droplets and an outlet for discharging the aqueous dispersion medium together with partially polymerized droplets, and which reactor partially polymerizes the monomer liquid droplets introduced from the droplet forming device so that the specific gravity of the droplets do not exceed that of the aqueous dispersion medium under a preselected polymerization temperature, and
 - a second reactor comprising an inlet for introducing the partially polymerized droplets discharged from the first reactor in the second reactor and a means for mixing the droplets and the aqueous dispersion medium for further polymerization.

5,380,497
OXIDATION PROCESS AND APPARATUS

Alexy A. Ivanov; Vitaly D. Mescheryakov; Sergey P. Stepanov; Sergey P. Chaykovsky; Alexandr A. Yabrov; Victor P. Gavoy; Svetlana A. Pokrovskaya; Ecaterina M. Sadovskaya; Valentin S. Sheplev, and Youry P. Ermakov, all of Novosibirsk, U.S.S.R., assignors to Institute of Catalysis, Novosibirsk, U.S.S.R.

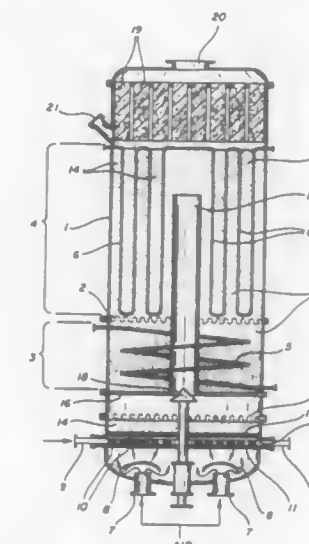
Division of Ser. No. 716,635, Jun. 17, 1991, Pat. No. 5,225,575.
This application Mar. 18, 1993, Ser. No. 33,338

Int. Cl.⁶ B01J 8/28; F27B 15/08

U.S. Cl. 422-142

2 Claims

1. A reaction vessel comprising a first reaction zone adapted for the contact of oxygen and hydrocarbon reactant gases and fluidized solid catalyst particles, restriction means located above said first reaction zone adapted to permit passage of both reactant gases and catalyst particles from said first zone to a second reaction zone located above the restriction means while at least lessening back-circulation of solid particles from the second reaction zone to the first reaction zone, a second zone



means for recovering product gases from said second reaction zone, means for regulating the temperature in each of said zones and for maintaining temperature of said first zone higher than that of said second zone, and axially located conduit means for returning solid catalyst particles from the second reaction zone to said zone of contact.

5,380,498
APPARATUS FOR PURIFICATION OF WASTE GASES

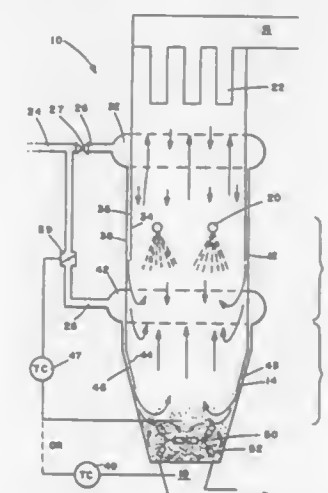
Reijo Kuivalainen, San Diego, Calif., assignor to A. Ahlstrom Corporation, Noormarkku, Finland.
Division of Ser. No. 916,142, Jul. 31, 1992, Pat. No. 5,310,528.
This application Feb. 2, 1994, Ser. No. 190,558

Claims priority, application Finland, Feb. 23, 1990, 900915

Int. Cl.⁶ B01D 50/00

U.S. Cl. 422-169

23 Claims



1. Apparatus for purification of waste gases produced during chemical reactions, comprising:

a vertically upstanding wetting reactor vessel;
a conduit external of the wetting reactor vessel, transporting the waste gases;
first and second gas inlets into said wetting reactor vessel, connected to said conduit, said first gas inlet disposed vertically above said second gas inlet;
fluid spray nozzles disposed within said wetting reactor vessel generally at the level of said first gas inlet;
a purified gas outlet from the top of said wetting reactor vessel, above said first gas inlet;
between said first gas inlet and said purified gas outlet, means for separating solid particles from gases within said wetting reactor vessel and returning separated particles to a lower portion of said wetting reactor vessel below said fluid spray nozzles; and
an outlet for substantially only solid particles separated from the gases disposed in a lower section of said wetting reactor vessel below said second gas inlet.

5,380,499

COMBINED HEAT EXCHANGER AND AMMONIA INJECTION PROCESS

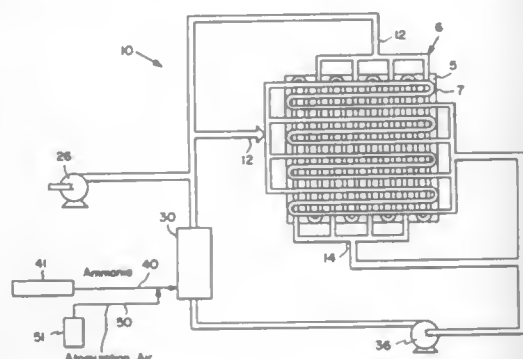
James M. MacInnis, Copley, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 15, 1993, Ser. No. 76,994

Int. Cl.⁶ B01J 8/02

U.S. Cl. 422-173

8 Claims



1. A system for injecting an aqueous ammonia mixture into a flue gas to reduce nitrogen oxides the system comprising:
a duct for receiving a flue gas
an aqueous ammonia source;
an air source;
mixture means connected to the aqueous ammonia source and to the air source for vaporizing the aqueous ammonia from the aqueous ammonia source and forming a vaporized ammonia and air mixture;
at least one tube pass disposed in the flue gas duct, said at least one tube pass having at least one inlet, at least one injection port and at least one return, the at least one inlet being connected to the mixture means for receiving the vaporized ammonia and air mixture, the vaporized ammonia and air mixture being circulated through the at least one tube pass for injection of some of the mixture into the duct and flue gas therein by the at least one injection port, the at least one return being connected to said mixture means for returning a remaining portion of the vaporized ammonia and air mixture from the at least one tube pass back to the mixture means; and
a selective catalyst for reducing nitrogen oxides located in the flue gas duct downstream of that at least one tube pass, the ammonia reducing the nitrogen oxides in the flue gas in the presence of the catalyst.

5,380,500

PROCESS FOR SEPARATING VAPOROUS HEAVY METAL COMPOUNDS FROM A CARRIER GAS AND APPARATUS FOR CARRYING OUT THE PROCESS

Michael Hirth, Mellingen; Joachim Jochum, Baden; Harald Jodelt, Waldshut, and Christian Wieckert, Baden, all of Switzerland, assignors to ABB Gadelius KK, Tokyo, Japan

Division of Ser. No. 395,502, Aug. 18, 1989, Pat. No. 5,298,227.

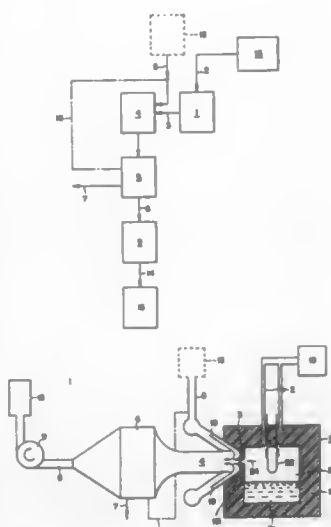
This application Nov. 12, 1993, Ser. No. 151,036

Claims priority, application Switzerland, Sep. 5, 1988, 3311/88-5; Feb. 2, 1989, 359/89-3

Int. Cl.⁶ F01N 3/10; B01J 8/04; B01D 1/00; E01C 19/45

U.S. Cl. 422-173

17 Claims



1. An apparatus for separating vaporous heavy metal compounds from a carrier gas and desubliming the vaporous heavy metal compounds, comprising:
at least one melting furnace means wherein vaporous heavy metal compounds formed during melting of particles are mixed with a carrier gas to form a gas/vapor mixture, the furnace means having at least one discharge opening for the gas/vapor mixture which leads to at least one cooling device;
the cooling device comprising at least one mixing section immediately downstream of the discharge opening;
means for reducing pressure of the gas/vapor mixture entering the mixing section;
feed means for feeding a cooling gas medium in the mixing section so as to be mixed turbulently with the gas/vapor mixture and form particles in the mixing section by desublimation of the gas/vapor mixture, the particles and residues of the gas/vapor mixture forming a fluid; and
at least one filter means provided downstream of the mixing section for absorbing the particles in the fluid.

5,380,501

EXHAUST GAS CLEANING DEVICE

Yuzo Hitachi, and Haruo Serizawa, both of Shizuoka, Japan, assignors to Usui Kokusai Sangyo Kabushiki Kaisha, Japan

Filed May 2, 1990, Ser. No. 517,878

Claims priority, application Japan, May 8, 1989, 1-113838

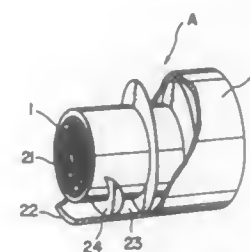
Int. Cl.⁶ B01D 50/00, 53/00

U.S. Cl. 422-180

9 Claims

1. In an exhaust gas cleaning device constructed of a metal casing and a honeycomb core body fixedly inserted in said metal casing, said honeycomb core body having been formed by superposing a planar band made of a metal sheet and a corrugated band made from another metal sheet one over the other in a contiguous relationship so as to define a plurality of axial gas flow passages and being adapted to carry an exhaust

gas cleaning catalyst thereon, the improvement wherein said metal casing includes a closed annular cavity compartment



located within an interior portion of said metal casing and at least one rib or partition wall arranged in said closed cavity compartment.

5,380,502

SYSTEM FOR SUSPENDING REACTOR TUBES IN A REACTOR

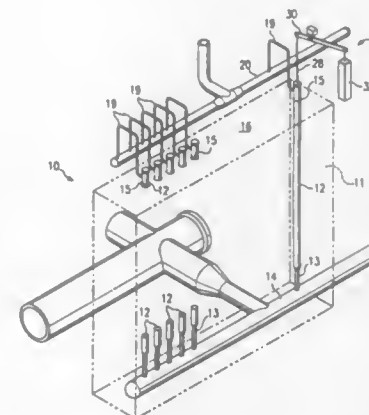
Timothy J. Murphy, Orange Park, Fla., and Guy A. Maakad, Jr., Custer, Wash., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 26, 1993, Ser. No. 96,283

Int. Cl.⁶ B01J 19/24

U.S. Cl. 422-197

9 Claims



4. A system for suspending reactor tubes in a furnace, said mechanism comprising:

- a pair of hanger rods, each hanger rod having a lower end and an upper end, said lower end of each hanger rod attached at diametrically-opposed points to the upper end of a reactor tube;
- a yoke having a pair of spaced openings therethrough, said upper end of each rod slidably positioned through a respective opening in said yoke;
- a retainer on said upper end of each of said rods above the upper surface of said yoke;
- a spring positioned on each rod between said yoke and said retainer which normally biases said retainer upward from said yoke;
- a support rod having an upper and lower end, said lower end attached to said yoke;
- a lever pivotably mounted on a fixed support, said upper end of said support rod attached to one end of said lever; and
- a weight suspended from the other end of said lever.

5,380,503

STOCKER

Toshiaki Fujii, and Hidetomo Suzuki, both of Kanagawa, Japan, assignors to Ebara Research Co., Ltd., Fujisawa, Japan

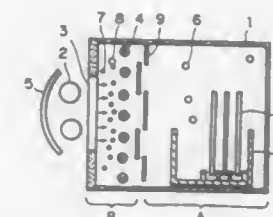
Filed Mar. 11, 1993, Ser. No. 29,639

Claims priority, application Japan, Mar. 13, 1992, 4-088360

Int. Cl.⁶ B01J 19/08; A62B 7/08; B01D 50/00

U.S. Cl. 422-243

17 Claims



1. A stocker for accommodating, storing or transporting articles, comprising a particle collector provided in a part of said stocker, said particle collector including an irradiation source, a photoelectron emitting material that emits photoelectrons when irradiated by said irradiation source, and an electrode for forming an electric field between said photoelectron emitting material and said electrode, and the electrode forming a charged particle collecting material, wherein a space where said particle collector is provided is partitioned from a remaining space in said stocker by an irradiation energy screening material to prevent direct irradiation of said remaining space by said irradiation source.

5,380,504

TREATMENT OF GOLD BEARING ORE

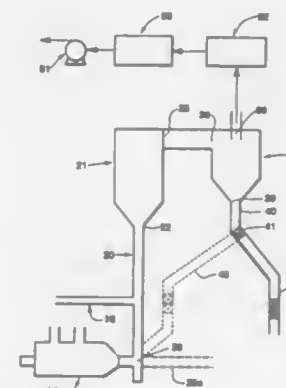
William E. Lindquist, Schnecksville; Brian T. Field, Whitehall, and Bernard T. McCormick, Bethlehem, all of Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Apr. 23, 1993, Ser. No. 51,711

Int. Cl.⁶ C22B 11/02

U.S. Cl. 423-23

17 Claims



1. A process for roasting gold containing ore comprising the steps of:

- providing a flash furnace means for roasting gold containing ore at a temperature in the range of from about 500° C. to about 750° C.;
- introducing hot oxygen containing gas and gold containing ore to be roasted to the furnace means whereby the hot gas roasts the gold ore within the furnace means while the gold ore is suspended in the hot gas;
- discharging the roasted ore and the hot gas from the furnace means with said ore being retained in said furnace means for approximately from about 2 to about 20 seconds;
- separating the roasted ore from the discharged hot gas.

5,380,505
PRODUCTION OF LOW SULFUR CONTENT LIME FROM LIMESTONE

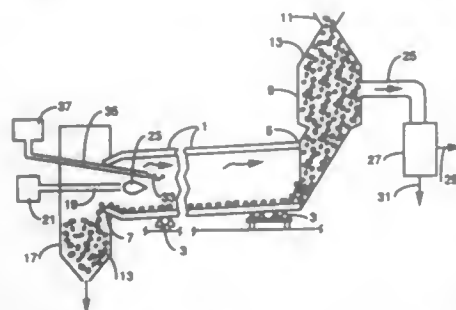
John W. College, Pittsburgh, Pa., assignor to Dravo Lime Company, Pittsburgh, Pa.

Filed Oct. 7, 1993, Ser. No. 132,807

Int. Cl.⁶ C01F 11/06

U.S. Cl. 423—175

17 Claims



1. A process for calcining limestone in a rotary kiln using hot combustion gases from carbonaceous fuels having sulfur-containing contaminants to produce a low sulfur content lime product, comprising:

- charging limestone at a solids charging end to a rotary kiln and conducting the same therethrough;
- charging the carbonaceous fuel having sulfur-containing contaminants to said rotary kiln and combusting the fuel to produce hot combustion gases having sulfur-containing contaminants, and conducting said gases therethrough countercurrent to the passage of said limestone to calcine said limestone and produce a lime product;
- discharging said lime product so produced from said rotary kiln at a discharge end opposite said solids charging end;
- injecting finely divided lime hydrate particles, of a particle size of 6.0 microns or less, into said kiln adjacent said discharge end so as to entrain said lime hydrate particles in said gases, whereby said lime hydrate particles react with said sulfur-containing contaminants to produce lime hydrate-sulfur reaction products which remain entrained in said gases, and said lime product is of a low sulfur content;
- discharging said gases, containing said lime hydrate-sulfur reaction products from said rotary kiln at a location adjacent said solids charging end of the rotary kiln;
- separating said lime-sulfur reaction products from said gases; and
- removing said lime-sulfur reaction products.

5,380,506
CATALYTIC DEVICE FOR TREATMENT OF COMBUSTION GASES AND ITS METHOD OF USE, AND THE CATALYTIC MATERIAL USED IN THE CATALYTIC DEVICE

Jack H. Taylor, Jr., 6250 Valley Wood Dr., Reno, Nev. 89523
 Division of Ser. No. 783,877, Oct. 29, 1991, Pat. No. 5,288,674.
 This application Dec. 20, 1993, Ser. No. 169,635

Int. Cl.⁶ B01D 53/34; F01N 3/00

U.S. Cl. 423—213.2

7 Claims

1. A method for reducing pollutants in exhaust emitted from an automobile internal combustion engine, comprising using an emission control device while operating the automobile, said emission control device having been inserted into an exhaust manifold output of the automobile, said emission control device comprising a substrate having thereon a catalytic material comprising plagioclase feldspar in an amount greater than 50 wt %, said feldspar comprising mainly albite and anorthite minerals, and a minor proportion of mica, kaolinite and serpentine in a total amount of less than 50 wt %.

5,380,507
METHOD OF TREATING PROCESS OR FLUE GASES CONTAINING HALOGENOUS COMPOUNDS

Matti Hiltunen, Karhula, and Kurt Westerlund, Helsinki, both of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

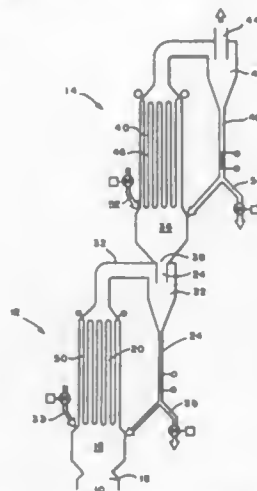
Filed Jul. 20, 1992, Ser. No. 915,579

Claims priority, application Finland, Aug. 9, 1991, 913776

Int. Cl.⁶ C01B 7/00

U.S. Cl. 423—240 S

20 Claims



1. A method of cooling hot gas containing halogenous compounds utilizing first and second successive circulating fluidized bed reactors, each having a fluidizing gas inlet and an exhaust gas outlet, and fluidized particles, comprising the steps of:

- (a) feeding as fluidizing gas to the first fluidized bed reactor gases, containing halogenous compounds, at a temperature of greater than about 700° C.;
- (b) providing catalytic material as at least part of the fluidized particles in the first fluidized bed reactor;
- (c) cooling the fluidizing gas to about 400°–700° C. and, retaining the halogenous compounds in the first fluidized bed reactor for about 1–10 seconds while effecting catalytic destruction of the halogenous compounds, and then discharging the gas from the first fluidized bed reactor through the exhaust gas outlet thereof;
- (d) feeding the gas discharged from the first fluidized bed reactor into the second fluidized bed reactor as fluidizing gas therein; and
- (e) quickly cooling the fluidizing gas in the second fluidized bed reactor to a temperature of below about 250° C., and then discharging the gas from the second fluidized bed reactor through the exhaust gas outlet thereof.

5,380,508
CALCIUM BORATE OVERBASED SALICYLATE AS AN ADDITIVE FOR PETROLEUM PRODUCTS

Kiyoshi Inoue, Hiratsuka, Japan, assignor to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 878,772, May 5, 1992, Pat. No. 5,262,140, which is a continuation of Ser. No. 563,032, Aug. 6, 1990, abandoned. This application Aug. 26, 1993, Ser. No. 112,091

Claims priority, application Japan, Aug. 9, 1989, 1-204887

Int. Cl.⁶ C01B 35/12

U.S. Cl. 423—286

4 Claims

1. A calcium borate overbased salicylate as an additive for petroleum products which has been overbased with meta-calcium borate having a particle diameter of not larger than 200 angstrom, said meta-calcium borate being prepared by two steps of:

- (1) reacting a mixture of
- (A) 100 parts by weight of oil-soluble neutral calcium salicylate,

- (B) 10 to 200 parts by weight of calcium hydroxide or oxide,
- (C) 1.5 to 2.5 moles, per mole of said component (B), of orthoboric acid,
- (D) 60 to 200 parts by weight of an alkanol of 1 to 4 carbon atoms,
- (E) 1 to 40 parts by weight of water and
- (F) 40 to 1000 parts by weight of a diluent which is a nonpolar organic solvent having a boiling point of at least 60° C., and heating the reaction mixture at a temperature of from 20° to 120° C. for 2 to 8 hours, and then
- (2) heating the reaction mixture to 100° to 200° C. thereby to remove the water therefrom by distillation.

5,380,509

Patent Not Issued For This Number

5,380,510
SILICA GEL MANUFACTURED BY A HYDROTHERMAL POLYMERIZATION FOLLOWING GELATIZATION OF SILICA HYDROGELS

Takashi Matsui, Tsuruga; Nobuki Watanabe, Hyuga, both of Japan; Masayuki Arimura, Eugene, Oreg.; Eiji Kanemaru, Hyuga, Japan; Yuzo Horinouchi, Nobeoka, Japan, and Mutsuhiro Ito, Hyuga, Japan, assignors to Fujii-Davison Chemical Ltd., Japan

Continuation of Ser. No. 853,705, Jun. 4, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 166,261

Claims priority, application Japan, Oct. 12, 1990, 2-274643

Int. Cl.⁶ C01B 33/14

U.S. Cl. 423—338

20 Claims

1. A method for manufacturing silica gels in a form of scales or needles, comprising the steps of:

- (a) forming a solution of silica sol in a solvent;
- (b) freezing the solution so as to crystallize said solvent and deposit said silica sol in gaps formed between crystallized faces of said crystallized solvent;
- (c) storing the frozen solution to gel the silica sol and obtain frozen silica hydrogels in the form of scales or needles; then
- (d) unfreezing the frozen silica hydrogels after storing the frozen solution; then
- (e) conducting a hydrothermal polymerization on the unfrozen silica hydrogels following the freezing and unfreezing steps; and finally
- (f) drying the silica hydrogels to form the silica gels.

5,380,511
PROCESS FOR PRODUCING SILICON CARBIDE-BASE COMPLEX

Tadahisa Arahori; Shigetoshi Hayashi, both of Chiba, and Kazuhiro Minagawa, Kawagoe, all of Japan, assignors to Samitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 727,211, Jul. 9, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,615

Claims priority, application Japan, Jul. 10, 1990, 2-183641; Sep. 19, 1990, 2-251222; Sep. 19, 1990, 2-251223; Sep. 28, 1990, 2-261599; Oct. 9, 1990, 2-271669; Feb. 8, 1991, 3-018091

Int. Cl.⁶ C01B 31/36

U.S. Cl. 423—345

12 Claims

1. A process for producing a silicon carbide-base complex, comprising the steps of:

- conducting pyrolysis of a gas comprising a hydrocarbon having 1–6 carbon atoms or a hydrocarbon halide having 1–6 carbon atoms to produce carbon and depositing said carbon in a porous synthesized silica glass body,
- heat-treating the same to obtain a porous molding, and
- charging pores of said molding with metallic silicon.

5,380,512
 Patent Not Issued For This Number

5,380,513
METHODS FOR REDUCING NON-TARGET RETENTION OF IMMUNOCONJUGATES AND METABOLITES THEREOF

Mary A. Gray, Seattle; Don Axworthy, Brier, both of Wash., and David Wilkening, Midland, Mich., assignors to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 415,055, Sep. 29, 1989, abandoned. This application Aug. 21, 1992, Ser. No. 933,608

Int. Cl.⁶ A61K 49/02, 39/395

U.S. Cl. 424—1.49

16 Claims

1. An improved method of diagnosis of a mammalian subject comprising the administration of a diagnostically effective amount of a diagnostic immunoconjugate wherein the improvement comprises;

additionally administering to said mammalian patient at least one urinary excretion promoting agent which localizes at renal sites and inhibits retention and reabsorption of said diagnostic immunoconjugate and/or metabolites thereof and thereby inhibits the consequent uptake of said immunoconjugate and/or metabolites thereof in the bloodstream of said patient wherein said at least one urinary excretion promoting agent is administered in an amount effective to reduce non-target retention of active moieties contained in said diagnostic immunoconjugate and/or metabolites thereof at non-targeted renal sites.

5,380,514
METHOD FOR MAGNETIC RESONANCE IMAGING OF INTERNAL BODY TISSUES USING POLYSILOXANES
 Roger D. Waigh, Wilmslow; John T. Fell, Lymm; Sylvia J. Anie, London, and Brian Wood, Manchester, all of England, assignors to The Victoria University of Manchester, Manchester, England

PCT No. PCT/GB91/00431, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO91/14457, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 21, 1991, Ser. No. 934,692

Claims priority, application United Kingdom, Mar. 24, 1990, 9006671

Int. Cl.⁶ A61B 5/055; C08G 77/00, 77/04

U.S. Cl. 424—9

6 Claims

1. In a method for the study of internal body tissues by nuclear magnetic resonance imaging which comprises administering a contrast agent to a subject to be examined and then applying nuclear magnetic resonance imaging to said subject, the improvement wherein the contrast agent consists of an inert proton-rich polysiloxane.

5,380,515
MRI IMAGE ENHANCEMENT OF BONE AND RELATED TISSUE USING COMPLEXES OF PARAMAGNETIC CATIONS AND POLYPHOSPHONATED LIGANDS

Harry S. Winchell, Lafayette, Calif.; Joseph Y. Klein, Haifa, Israel; Elliot D. Simha, Haifa, Israel; Rosa L. Cyjon, Haifa, Israel; Ofer Klein, Haifa, Israel, and Haim Zaklad, Haifa, Israel, assignors to Concat, Ltd., Lafayette, Calif.

Division of Ser. No. 757,880, Sep. 11, 1991, Pat. No. 5,236,695, which is a continuation-in-part of Ser. No. 441,144, Nov. 27, 1989, abandoned. This application Jul. 22, 1993, Ser. No. 96,141

Int. Cl.⁶ A61B 5/055

U.S. Cl. 424—9

46 Claims

3. A method of preferentially enhancing magnetic resonance image contrast in bone tissue and other tissue of a patient bearing recognition features in common with bone tissue, said method comprising administering to said patient an effective amount of a pharmaceutical agent comprising a physiologically compatible salt of the complex produced by the addition

culturing said plant portion on a solid medium to induce the formation of callus;

- (b) transferring the resulting plant cells with induced callus to a liquid medium which contains a cytokinin and copper ions in an amount sufficient to increase the amount of deodorant materials contained in the plant cells, and culturing said plant cells in said liquid medium in a single liquid medium stage for a time period sufficient to increase the amount of deodorant materials contained in the plant cells, the amount of cells transferred comprising from 2-20 wt. % of the liquid medium, said cytokinin being selected from the group consisting of N'-benzoyl adenine, 6-benzyl adenine, kinetin, 2-hydroxypurine, zeatin and mixtures thereof and being present in the range of from 10^{-7} to 10^{-3} M, and said copper ions being provided by the addition of a compound selected from the group consisting of copper sulfate, copper nitrate, copper chloride, copper acetate and mixtures thereof, in an amount of from 5 to 100 ppm on a copper sulfate basis; and
- (c) removing the plant cells from the liquid medium and extracting the deodorant materials from the plant cells.

5,380,522
METHOD FOR TREATMENT OF IRRITABLE BOWEL SYNDROME

Charles E. Day, 1224 Bear Creek Rd., Leitchfield, Ky. 42754
Filed Aug. 11, 1992, Ser. No. 928,509
Int. Cl.⁶ A61K 31/74; A01N 43/04

- U.S. Cl. 424-78.08** **9 Claims**
1. A method of treating irritable bowel syndrome, including diarrhea, constipation, and pain aspects or symptoms thereof, in a human patient, consisting essentially of the step of orally administering to the said human patient an amount of an anion-binding polymer and a hydrophilic polymer, either simultaneously, concurrently, or in the form of a pharmaceutical composition consisting essentially of the anion-binding polymer and the hydrophilic polymer which is effective for alleviation of said irritable bowel syndrome.

5,380,523
HIGH ENERGY COPRECIPITATE OF NONOXYNOL OLIGOMER, PVP AND IODINE HAVING CONTRACEPTIVE AND POTENT ANTI-HIV PROPERTIES

George A. Digenis, Lexington, Ky., and Alexander G. Digenis, Nashville, Tenn., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Aug. 17, 1993, Ser. No. 106,948
Int. Cl.⁶ A61K 47/32, 31/085

- U.S. Cl. 424-78.25** **18 Claims**
1. A composition comprising a high energy coprecipitate of nonoxynol oligomer and polyvinylpyrrolidone polymer and iodine, or polyvinylpyrrolidone-iodine complex (PVP-I), wherein the combined effect of the compounds simultaneously precipitated in said high energy coprecipitate exceeds the individual effect of said compounds, and wherein said high energy coprecipitate has antiviral activity against human immunodeficiency virus-1 (HIV-1) in an MT-2 assay.

5,380,524
SEX ATTRACTANT FOR THE APPLE ERMINE MOTH
Leslie M. McDonough, and Harry G. Davis, both of Yakima, Wash., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Continuation of Ser. No. 552,387, Jul. 13, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 3,948

- U.S. Cl. 424-84** **6 Claims**
1. A method of attracting male apple ermine moths, which comprises placing in a locus of male apple ermine moths a controlled release substrate (CRS) having an effective attractant amount of a composition comprising pure or substantially

pure (Z)-11-tetradecen-1-ol (I) and pure or substantially pure (Z)-9-dodecen-1-ol acetate (II) mixed in a ratio to provide a vapor evaporating from said CRS having a ratio of I:II of about 99:1 to 91:9.

5,380,525
RUMINAL BACTERIUM FOR PREVENTING ACUTE LACTIC ACIDOSIS

Jane A. Z. Leedle, Manhattan, Kans.; Richard C. Greening, and Walter J. Smolenski, both of Richland, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
PCT No. PCT/US91/00857, § 371 Date Aug. 28, 1992, § 102(e)
Date Aug. 28, 1992, PCT Pub. No. WO91/13146, PCT Pub. Date Sep. 5, 1991
Continuation of Ser. No. 487,491, Mar. 1, 1990, abandoned. This PCT application Feb. 13, 1991, Ser. No. 920,599
Int. Cl.⁶ C12N 1/20

- U.S. Cl. 424-93.4** **4 Claims**
1. A biologically pure bacterial culture of *Megasphaera elsdenii*, Agricultural Research Service Patent Culture Collection Accession Number NRRL-18624.

5,380,526
ANTIDIABETIC AGENT AND METHOD OF TREATING DIABETES

Michihito Ise, Kawagoe, Japan, assignor to Kureha Chemical Industry Co., Ltd., Japan

Filed Mar. 31, 1994, Ser. No. 220,869
Claims priority, application Japan, Apr. 14, 1993, 5-110882
Int. Cl.⁶ A01N 59/00

- U.S. Cl. 424-125** **11 Claims**
1. A method of treating diabetes without producing side effects comprising administering a substantially spherical carbon in a diabetes-treating effective amount to a patient suffering therefrom.

5,380,527
ALKYLMETHYLSILOXANE MIXTURES FOR SKIN CARE

Gary E. Legrow, and Regina M. Malczewski, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 26, 1991, Ser. No. 750,136
Int. Cl.⁶ A61K 7/02

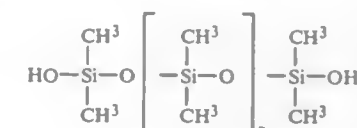
- U.S. Cl. 424-401** **6 Claims**
1. In a method of treating human skin to decrease transepidermal water loss by applying a film forming conditioning formulation to the skin, the improvement comprising utilizing a formulation containing a mixture of
A) an alkyldimethylsiloxane solvent selected from the group consisting of $[\text{MeRSiO}]_a[\text{Me}_2\text{SiO}]_b$ or $\text{R}'\text{Me}_2\text{SiO}(\text{MeRSiO})_a(\text{Me}_2\text{SiO})_b$, $\text{SiR}'\text{Me}_2$ and
B) an alkyldimethylsiloxane wax of the structure $\text{R}'\text{Me}_2\text{SiO}(\text{Me}_2\text{SiO})_y(\text{MeRSiO})_z\text{SiMe}_2\text{R}'$,
wherein each R is independently a hydrocarbon of 6 to 30 carbon atoms, R' is methyl or R, a is 1-6, b is 0-5, w is 0-5, x is 0-5, y is 0-100 and z is 1-100, provided a+b is 3-6 and w is not 0 if R is methyl.

5,380,528
SILICONE CONTAINING SKIN CARE COMPOSITIONS HAVING IMPROVED OIL CONTROL

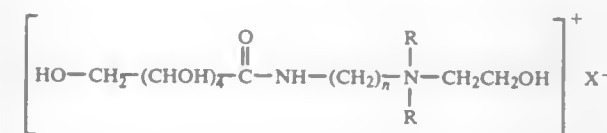
Noelle C. Alban, Nantucket, and George E. Deckner, Trumbull, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 68,565, May 27, 1993, abandoned, which is a continuation of Ser. No. 621,160, Nov. 30, 1990, abandoned. This application Sep. 15, 1993, Ser. No. 121,672
Int. Cl.⁶ A61K 7/48, 9/10

- U.S. Cl. 424-401** **19 Claims**
1. A skin care composition in the form of an aqueous gel containing less than about 1% of a hydrocarbon oil or wax comprising:
(a) from about 0.5% to about 20% by weight of a water-soluble humectant;
(b) from about 0.1% to about 20% by weight of a hydrophilic gelling agent;
(c) from about 1.0% to about 10% by weight of a silicone component consisting essentially of
i) a dimethiconol of the formula:



- where n is from about 2700 to about 4500, and wherein the molecular weight is from about 200,000 to about 300,000; and
ii) a silicone fluid carrier having a viscosity from about 0.65 cps. to about 100 cps.
wherein the ratio of i) to ii) is from about 10:90 to about 20:80 and wherein said component has a final viscosity of from about 500 cps. to about 10,000 cps.; and
(d) from about 0.01 to about 5% of a cationic N,N,N-trialkylaminoalkylene gluconamide surfactant of the formula



wherein R=alkyl, X=Cl⁻ or Br⁻, and n is an integer from 2 to 4.

5,380,529
PHARMACEUTICAL, VAGINAL APPLICABLE PREPARATION AND A PROCESS FOR ITS PREPARATION

Jean Heusser, Adliswil, and Michel Martin, Genève, both of Switzerland, assignors to Laboratoire Lucchini S.A., Geneva, Switzerland

Continuation of Ser. No. 749,105, Aug. 23, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,758
Claims priority, application Switzerland, Jul. 10, 1990, 02294/90-5

- Int. Cl.⁶ A61F 6/06, 13/00; A61K 31/075, 31/045**
U.S. Cl. 424-430 **21 Claims**
1. A casted and homogeneous film of a pharmaceutical, vaginally applicable preparation, effective for the proportioned release of active components of the vaginally applicable preparation, said film containing not more than about 5% by weight water and comprising, homogeneously sub-divided, (i) at least one water soluble polyvinyl alcohol, (ii) at least one component A, the component A(s) selected from the group consisting of wetting agents, non-ionic surface active agents and dispersing agents, (iii) at least one active component B, the active component B(s) selected from those compounds effective for local treatment of sexually transmissible or sexually

transmitted diseases and/or vaginal infections, and, optionally, (iv) one or more auxiliary agent, wherein said film has a thickness of from about 0.05 to 0.5 mm.

5,380,530
ORAL CARE COMPOSITION COATED GUM
Ira D. Hill, Locust, N.J., assignor to WhiteHill Oral Technologies, Hazlet, N.J.

Filed Dec. 29, 1992, Ser. No. 996,939
Int. Cl.⁶ A61K 9/68; A23G 3/30

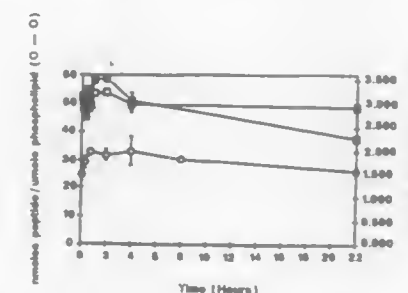
- U.S. Cl. 424-440** **17 Claims**
1. A therapeutic preparation effective in treating localized conditions of the mouth, teeth and gums, said conditions being selected from the group consisting of plaque, gingivitis, hypersensitivity, stomatitis and microbes in the mouth, said preparation being in the form of a chewing gum wherein:
A. the chewing gum is coated with an emulsion comprising an ingestible surfactant-emulsifier and a polydimethyl siloxane insoluble in said surfactant-emulsifier,
B. the emulsion is applied to the chewing gum by means of a coating process selected from the group of coating processes consisting of printing, film coating, adhesive applications and textile dyeing, and
C. the emulsion coating on said gum is releasable during chewing, at a therapeutic effective rate and in a therapeutic effective amount.

5,380,531
ACCUMULATIONS OF AMINO ACIDS AND PEPTIDES INTO LIPOSOMES

Ajoy Chakrabarti; Ian Clark-Lewis, and Pieter R. Cullis, all of Vancouver, Canada, assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 559,946, Jul. 31, 1990, abandoned. This application Jun. 2, 1992, Ser. No. 896,509
Int. Cl.⁶ A61K 9/127

U.S. Cl. 424-450 **16 Claims**



1. A liposome which comprises a lipid and a peptide, wherein a terminal carboxyl group of the peptide is modified to a non-acidic functional group such that the peptide has weak acid or base characteristics.

5,380,532

PROCESS FOR THE PREPARATION OF MEDICATION IN THE FORM OF PEARLS

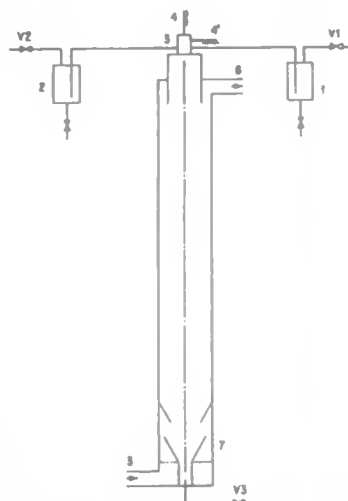
Michel Deleuil, Antony; Pierre Labourt-Ibarre, Lyon; Robert Rona, Saint-Germain-en-Laye, and Eracles Statistis, Villette D'Anthon, all of France, assignors to Rhone-Poulenc Rorer, S.A., France

Continuation of Ser. No. 642,947, Jan. 18, 1991, Pat. No. 5,188,838. This application Jul. 21, 1992, Ser. No. 917,569
Claims priority, application France, Jan. 19, 1990, 90 00623
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.⁶ A61K 9/48

U.S. Cl. 424—451

8 Claims



1. A process for the preparation of pearls based on a supercoolable active substance exhibiting delayed solidification upon being cooled and an indefinite crystallization point, comprising mixing a supercoolable active substance in molten form with an excipient promoting solidification and crystallization of the active substance, forcing the melt to pass through a nozzle which is subjected to a vibration, permitting the pearls formed to fall in a tower countercurrently to a gas, and collecting the pearls formed in the bottom of the tower.

5,380,533

GASTRORESISTANT PHARMACEUTICAL FORMULATIONS FOR ORAL ADMINISTRATION CONTAINING BILE ACIDS

Marchi Egidio; Tamagnone Gianfranco, both of Casalecchio di Reno, and Rotini L. Gabriele, Bologna, all of Italy, assignors to Alfa Wassermann s.p.A., Alanno Scalo, Italy

Filed Apr. 1, 1992, Ser. No. 861,466

Claims priority, application Italy, Apr. 12, 1991, 000113A/91
Int. Cl.⁶ A61K 9/64

U.S. Cl. 424—456

9 Claims

1. A pharmaceutical composition for oral use in the form of at least one tablet or a capsule, comprising 50–750 mgs of a bile acid mixed with 0.5–3 molar equivalents of a physiologically compatible basic substance, said at least one tablet or capsule being first coated with a non-protective film in the amount of 1–5% by weight said non-protective film comprising hydroxypropylmethyl cellulose, polyethylene glycol 6000, titanium dioxide and talc and then coated with an enterosoluble gastroresistant coating in the amount of 2–10% by weight, said composition being completely insoluble at pH lower than 5.

5,380,534

SOFT GELATIN MEDICAMENT CAPSULES WITH GRIPPING CONSTRUCTION

Gregory A. Schurig, Clearwater; Frank S. S. Morton, Seminole, and Norman S. Stroud, Safety Harbor, all of Fla., assignors to R.P. Scherer Corporation, Troy, Mich.

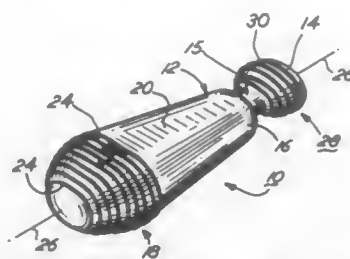
Continuation of Ser. No. 931,593, Aug. 18, 1992, abandoned.

This application Dec. 9, 1993, Ser. No. 164,629

Int. Cl.⁶ A61K 9/64

U.S. Cl. 424—456

2 Claims



1. An integral soft gelatin capsule, said capsule defining a longitudinal axis, for containing a hemorrhoidal medicament in an unopened state and for applying the hemorrhoidal medicament in an opened state, comprising:

(a) a hollow flexible bulb portion having an external bulb surface, a predetermined bulb length along said longitudinal axis and a predetermined bulb width substantially transverse thereto, said hollow flexible bulb portion encapsulating said medicament in said unopened state and including a series of substantially parallel bulb ribs extending substantially continuously about said external bulb surface substantially transverse to said longitudinal axis and projecting outwardly therefrom to provide a frictional gripping bulb surface to said hollow flexible bulb portion;

(b) an elongated neck portion extending from said hollow flexible bulb portion substantially coaxial with said longitudinal axis, having a predetermined neck length substantially along said longitudinal axis and a predetermined neck width substantially transverse to said longitudinal axis less than said bulb width, said neck portion providing a medicament application port substantially remote from said bulb portion in said opened state wherein the neck length is substantially greater than or equal to said bulb length, thereby providing the remoteness of the medicament application port from the said bulb portion;

(c) a tab portion closing said medicament application port in said unopened state and removably from said neck portion by a twisting action substantially transverse to said longitudinal axis to provide said opened state, said tab portion having an external tab surface and including a series of substantially parallel tab ribs extending substantially continuously about said external tab surface and projecting outwardly therefrom to provide a frictional gripping tab surface to said tab portion;

(d) said soft gelatin including a starch or starch derivative providing a roughness to said integral capsule;

(e) said bulb ribs and said roughness cooperating to define first grip means for securely gripping said hollow flexible bulb portion in said opened state during compression thereof to expel said medicament through said medicament application port;

(f) said tab ribs and said first grip means cooperating to define second grip means for securely gripping said hollow flexible bulb portion and said tab portion during said twisting action to provide said opened state wherein the elongated neck portion in said opened state is adapted for insertion into the rectum whereby the hemorrhoidal medicament is applied internally within the rectum to the hemorrhoid.

5,380,535

CHEWABLE DRUG-DELIVERY COMPOSITIONS AND METHODS FOR PREPARING THE SAME

Robert P. Geyer, and Vinod V. Tulliani, both of c/o Affinity Blotech, Inc., 305 Chelsea Pkwy., Boothwyn, Pa. 19061

Continuation-in-part of Ser. No. 889,179, May 27, 1992, Pat. No. 5,320,848, which is a continuation-in-part of Ser. No. 706,343, May 28, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,369

Int. Cl.⁶ A61K 9/14

U.S. Cl. 424—484

17 Claims

1. A non-aqueous process for preparing non-aqueous, chewable composition for oral delivery of unpalatable drugs, comprising a therapeutically-effective amount of one or more unpalatable drugs intimately dispersed or dissolved in a pharmaceutically-acceptable lipid which is a solid at ambient temperature, or a mixture of said lipids, the method comprising:

(a) providing a therapeutically-effective amount of one or more unpalatable drugs and a pharmaceutically-acceptable molten lipid;

(b) feeding said drug and molten lipid into a fluidized bed apparatus comprising means for fluidizing said drug and lipid; and

(c) fluidizing said drug and lipid in said fluidized bed apparatus in the absence of a solvent for a time sufficient to solidify the molten lipid and drug into particles comprising said drug and lipid, wherein said particles have a number average particle size of from 10–150 microns,

wherein said drug is present in an amount of from about 0.1–75 weight percent of said composition and said lipid is present in an amount of from about 5–50 weight percent of said composition.

5,380,537

SINGLE IRRIGATING SOLUTION USED IN OCULAR THERAPY FOR THE ENDOTHELIUM PROTECTION AND CORNEA PRESERVATION

Gny Andermann, 2, Road Point de l'Esplanade, F, 67000 Strasbourg, France

Continuation of Ser. No. 634,498, Dec. 27, 1990, abandoned.

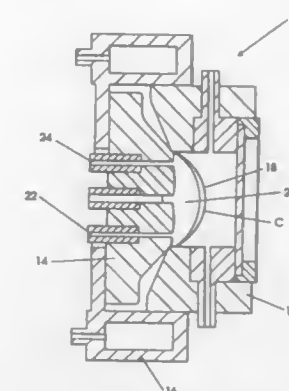
This application Nov. 25, 1992, Ser. No. 982,222

Claims priority, application France, Dec. 29, 1989, 89 17547

Int. Cl.⁶ A61K 33/00, 33/42, 33/14, 33/06

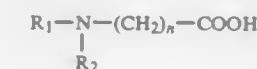
U.S. Cl. 424—602

30 Claims



1. A one-part aqueous intraocular irrigation solution characterized by a storage stability for extended periods of time greater than 24 hours without precipitation at ambient conditions and comprising:

(a) from 0.0001 grams per deciliter to 0.010 grams per deciliter of at least one gabaergic derivative having the general formula:



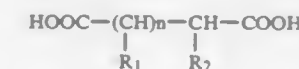
wherein:

n is from 1 to 5;

R₁ is hydrogen or C₁–C₃—straight chain alkyl;R₂ is hydrogen or C₁–C₁₀—straight chain alkyl;

(b) from 0.0046 grams per deciliter to 10 grams per deciliter of an organic calcium salt of a non-heat labile complex sugar providing a source of energy compatible in aqueous solution with sodium bicarbonate; and

(c) from 0.001 grams per deciliter to 10 grams per deciliter of an organic acid having the general formula:

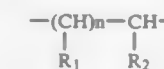


wherein:

n is between 1 and 3;

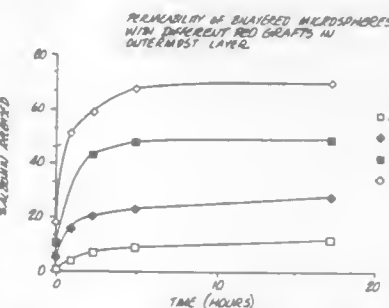
R₁ is a hydrogen atom of a hydroxyl group;CH—R₁ may be replaced with C=O;R₂ is a hydrogen or a hydroxyl;

the segment



can be saturated or unsaturated; or lactic acid; or a pharmaceutically acceptable salt thereof;

(d) sodium chloride, potassium chloride, magnesium chloride, sodium bicarbonate, and sodium phosphate, in suffi-



1. A method for producing transplantable microcapsules wherein the surface is resistant to cellular attachment comprising forming an outer layer of non-ionic water soluble polymers having molecular weights between 2,000 and 100,000 daltons which have been covalently grafted to at least one of the layers, made of polyamine or polyimine polycationic polymers, of the microcapsule membrane, such that said polycationic polymers remain polycationic after grafting.

cient quantity to form an isotonic and stable aqueous solution.

5,380,538

CRYSTAL MODIFIERS FOR DIACETIN FATS

Edward L. Wheeler, Fairfield, and Michael S. Otterburn, Randolph, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 804,140, Dec. 6, 1991, Pat. No. 5,258,197, and Ser. No. 732,518, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 555,902, Jul. 20, 1990, abandoned, and Ser. No. 624,056, Dec. 7, 1990, abandoned, said Ser. No. 804,140, is a continuation-in-part of Ser. No. 624,056, Dec. 7, 1990, which is a continuation-in-part of Ser. No. 410,161, Sep. 20, 1989, abandoned. This application Dec. 16, 1992, Ser. No. 991,688

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.⁶ A23P 1/08; A23D 9/06

U.S. Cl. 426—99

24 Claims

1. A coating composition having an acetoglyceride fat ingredient comprising a mixture of
 - (a) about 70% to about 95% of a diacetin fat comprising triglycerides bearing two acetic acid residues and one long, saturated C₁₆ to C₂₂ fatty acid residue per molecule; and
 - (b) about 5% to about 30% of a crystal-modifying fat comprising triglycerides bearing one short C₂ to C₄ acid residue and two long, saturated C₁₆ to C₂₄ fatty acid residues per molecule added to the diacetin fat in amounts effective to impart snap to the composition so that the composition undergoes brittle fracture rather than deforming under an applied load.

5,380,539

CONVERTIBLE JELLY CANDY CUP AND STICK ASSEMBLY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080
Filed Oct. 12, 1993, Ser. No. 134,688

Int. Cl.⁶ A23G 3/00

U.S. Cl. 426—115

7 Claims

1. A convertible jelly candy cup and stick assembly comprising:
 - A. a cup having a removable cover to hermetically seal the cup;
 - B. a composition stored in the cup formed by a partially-set edible jelly whose full setting is arrested by the cover which is applied to the cup, when the jelly is in a partially-set state, whereby when the cover is later removed, the composition is then exposed; and
 - C. an implement for manually kneading the exposed composition to cause it to assume sticky, taffy-like characteristics whereby the composition can then be pulled out of the cup by fingers of a user and stretched to create an edible strand of candy.

5,380,540

METHOD FOR IMPROVING FLAVOR OF DRINK OR FOOD

Tohr Yamanaka, and Katsumi Tsunoda, both of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,340

Claims priority, application Japan, May 21, 1992, 4-153065

Int. Cl.⁶ A23L 1/226

U.S. Cl. 426—534

3 Claims

1. A method for enhancing the expression of saltiness of a food or drink which comprises adding to the food or drink at least one substantially pure compound selected from the group consisting of monomers and polymers of triose-reductone, hydroxymalondialdehyde, hydroxyvaldehyde, and mixtures

thereof at a ratio of from 50 to 10,000 ng per gram of the food or drink.

5,380,541

SUCRALOSE COMPOSITIONS

Pamela K. Beyts, Reading, Great Britain; Donald W. Lillard, Decatur, Ill., and Cynthia K. Batterman, Tannersville, Pa., assignors to Tate & Lyle Public Limited Company, Great Britain and A.E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 597,109, Oct. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 378,130, Jul. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 83,554, Aug. 7, 1987, abandoned, which is a

continuation-in-part of Ser. No. 254,425, Oct. 6, 1988, abandoned. This application Apr. 21, 1992, Ser. No. 871,482
Claims priority, application United Kingdom, Oct. 6, 1987, 8723423; Mar. 28, 1989, 8907007; Canada, Aug. 3, 1989, 573653
Int. Cl.⁶ A23L 1/236

U.S. Cl. 426—548

20 Claims

1. A sweetening composition for sweetening ingestible compositions and oral products, the composition consisting essentially of a synergistic mixture of sucralose and a sweet saccharide selected from the group consisting of fructose, glucose, maltose, glucose mixed with maltose and other glucooligosaccharides, fructose mixed with glucose or glucooligosaccharides or both, lactose, isomaltulose, and sugar alcohols; the relative quantities of the sucralose and the sweet saccharide being such as to provide a relative sweetness contribution of from 5:1 to 1:5.

5,380,542

DIETARY FIBER COMPOSITIONS FOR USE IN FOODS

Ronald K. Jenkins, and James L. Wild, both of Washington, Pa., assignors to Rhone-Poulenc Specialties Chemical Co., Cranbury, N.J.

Continuation-in-part of Ser. No. 901,331, Jun. 19, 1992, and a continuation-in-part of Ser. No. 901,464, Jun. 19, 1992. This application Jun. 11, 1993, Ser. No. 73,358

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.⁶ A23L 1/0522, 1/105, 1/317

U.S. Cl. 426—573

55 Claims

1. A cereal hydrolysate containing composition for use as a fat mimic in foods comprising:
 - A. a cereal hydrolysate comprising water soluble dietary fiber material prepared by hydrolyzing an aqueous dispersion of a cereal substrate with an enzyme under conditions which will hydrolyze substrate starch without appreciable solubilization of substrate protein to yield water soluble and insoluble fractions, the water soluble dietary fiber material being isolated from the water soluble fraction, and
 - B. a hydrocolloid gum effective and in an amount sufficient to form a thermo-irreversible gel with the water soluble dietary fiber material.

5,380,543

CHEESE COMPOSITION

Richard L. Barz, Castle Rock, and Ann V. Durkin, Littleton, both of Colo., assignors to Leprino Foods Company, Denver, Colo.

Continuation of Ser. No. 835,347, Feb. 14, 1992, abandoned.

This application Oct. 1, 1993, Ser. No. 130,420

Int. Cl.⁶ A23C 19/09

U.S. Cl. 426—582

10 Claims

1. A cheese composition for baking on a pizza, comprising a mixture of natural mozzarella cheese and a minor amount of starch, wherein the cheese is comminuted and the starch is present as a coating on the cheese particles in an amount within the range of about 0.0005 to 0.01%, based on the weight of the cheese.

5,380,544

PRODUCTION OF FAT MIXTURES ENRICHED WITH TRIGLYCERIDES BEARING SHORT, MEDIUM AND LONG RESIDUES

Lawrence P. Klemann, Somerville, N.J.; Allan D. Roden, Noblesville, Ind.; Turiel A. Pelloso, Carmel, Ind., and Gilbert L. Boldt, Indianapolis, Ind., assignors to Nabisco, Inc., Parsippany, N.J.

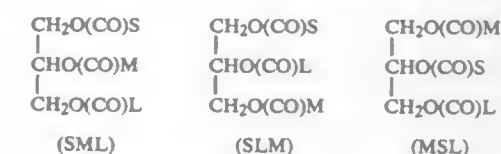
Continuation-in-part of Ser. No. 804,140, Dec. 6, 1991, Pat. No. 5,258,197, which is a continuation-in-part of Ser. No. 624,056, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,161, Sep. 20, 1989, abandoned. This application Mar. 5, 1993, Ser. No. 26,894

Int. Cl.⁶ A23D 9/00

U.S. Cl. 426—607

14 Claims

1. A food composition having a fat ingredient wherein at least 24% of the fat ingredient comprises triglycerides selected from the group consisting of



and mixtures of these, where

- each L group is, independently, a long chain saturated aliphatic group having 15 to 21 carbons;
- each M group is, independently, a medium chain saturated aliphatic group having 5 to 11 carbons; and
- each S, independently, is a short chain group having 1 to 3 carbons.

5,380,545

COATING MIX AND PROCESS FOR RETAINING MOISTURE IN COMMINUTED MEAT PRODUCTS

Charles R. Mason, Yonkers, N.Y.; Edward C. Coleman, New Fairfield, Conn.; Dalip K. Nayyar, Washingtonville, and Sharon R. Birney, Yorktown, both of N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 801,218, Dec. 2, 1991, Pat. No. 5,250,312. This application Oct. 5, 1993, Ser. No. 132,083
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.⁶ A23L 1/317

U.S. Cl. 426—646

11 Claims

1. A method for preparing and cooking comminute meat products comprising the steps of:
 - (a) incorporating within the comminuted meat matrix a dry starch at a level of from 1 to 6% by weight of the meat and thereafter forming the meat matrix into shaped pieces;
 - (b) evenly applying a dry mix containing salt having a particle size of 100% by weight through a No. 70 U.S. Standard Sieve and particles of carrageenan, the ratio of salt to carrageenan being 0.75–10:1, to the surface of the shaped pieces; and,
 - (c) cooking the coated and shaped pieces.

5,380,546

MULTILEVEL METALLIZATION PROCESS FOR ELECTRONIC COMPONENTS

Ajay Krishnan, and Nalin Kumar, both of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Jun. 9, 1993, Ser. No. 75,062

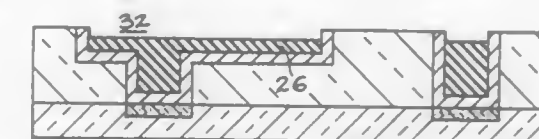
Int. Cl.⁶ B05D 5/12

U.S. Cl. 427—126.1

15 Claims

1. A method of forming a metal feature surrounded by a diffusion barrier in a recess in a planar insulating layer of a substrate, comprising the steps of:
 - providing a substrate having an insulating layer with a top

surface and a recess in and extending below the top surface; depositing a first barrier material on all surfaces in the recess and on at least a portion of the top surface of the insulating layer; depositing a conductive metal on the entire first barrier material in the recess wherein the conductive metal fills the entire recess above the first barrier material and extends above the recess; removing all of the first barrier material on the top surface of the insulating layer;



removing a top portion of the conductive metal within the recess without removing all of the conductive metal within the recess; depositing a second barrier material on the conductive metal within the recess and over the top surface of the insulating layer after removing the top portion of the conductive metal within the recess; and planarizing the substrate by polishing the second barrier material until the top surface of the second barrier material in the recess is aligned with the top surface of the insulating layer.

5,380,547

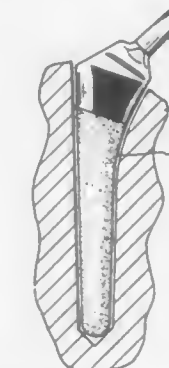
METHOD FOR MANUFACTURING TITANIUM-CONTAINING ORTHOPEDIC IMPLANT DEVICES

Joel C. Higgins, R.R. 1, Box 55, Claypool, Ind. 46510
Continuation of Ser. No. 804,154, Dec. 6, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 216,116

Int. Cl.⁶ A61F 2/28; B05D 3/06; C23C 14/02

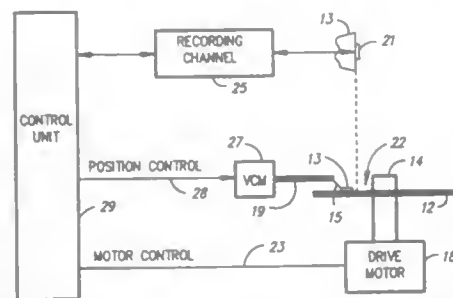
U.S. Cl. 427—2.26

10 Claims



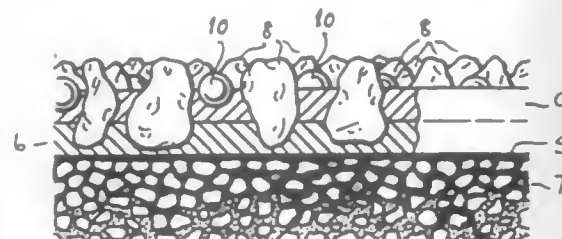
1. A method of manufacturing a titanium-containing orthopedic implant device having an outer surface with enhanced wear resistant properties, comprising the steps of:
 - locating said orthopedic implant device in a reaction vessel;
 - sensing the temperature of said outer surface of said orthopedic implant device;
 - treating said outer surface of said orthopedic implant device to produce a wear resistant layer on said outer surface, said step of treating said outer surface of said orthopedic implant device by plasma nitriding said outer surface at a temperature below about 730° C.; and
 - controlling the treatment of said outer surface of said orthopedic implant device at least partially in response to the temperature of said outer surface.

5,380,548
METHOD FOR FABRICATING A MAGNETORESISTIVE SENSOR HAVING ANTIFERROMAGNETIC LAYER
 Tsann Lin, Campbell; James K. Howard, Morgan Hill; Cherngye Hwang, San Jose; Daniele Mauri, San Jose, and Norbert Staud, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
 Division of Ser. No. 920,943, Jul. 28, 1992, Pat. No. 5,315,468.
 This application Mar. 15, 1994, Ser. No. 213,883
 Int. Cl.⁶ H01F 10/02
 U.S. Cl. 427—130



1. A method for fabricating a magnetoresistive sensor having a layer of antiferromagnetic material in direct contact with a layer of magnetoresistive ferromagnetic material for inducing a longitudinal bias field in the ferromagnetic layer, said method comprising the steps of:
 depositing a layer of magnetoresistive ferromagnetic material on a substrate;
 depositing a layer of antiferromagnetic material on said substrate in direct contact with said magnetoresistive layer, said antiferromagnetic material being an alloy of manganese (Mn); and
 annealing said deposited magnetoresistive and antiferromagnetic layers for ordering the crystallographic structure of said antiferromagnetic layer to provide a Mn alloy having a face-centered-tetragonal (fct) structure in at least a portion of said antiferromagnetic layer.

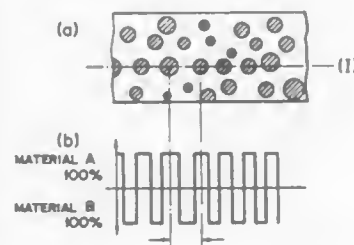
5,380,549
METHOD FOR FORMING TRAFFIC SURFACES HAVING DOUBLE-COATED BONDING OF ANTI-SLIP PARTICLES AND CONTAINING RETRO-REFLECTIVE BEADS
 Eric J. Harrison, Hillside Close, off Henley Road, Marlow, Buckinghamshire SL7 2DF, Great Britain
 PCT No. PCT/GB91/00226, § 371 Date Aug. 12, 1992, § 102(e) Date Aug. 12, 1992, PCT Pub. No. WO91/12090, PCT Pub. Date Aug. 22, 1991
 PCT Filed Feb. 14, 1991, Ser. No. 920,305
 Claims priority, application United Kingdom, Feb. 14, 1990, 9003336; Aug. 23, 1990, 9018524
 Int. Cl.⁶ B05D 5/02; E01C 11/24
 U.S. Cl. 427—137



1. A method of providing a traffic surface with both anti-slip and retro-reflective characteristics, comprising a first step of applying to the surface a first coating of paint, a second step performed before the first coating has set, of distributing solid

particles on the first coating to sink partially into the first coating, a third step, performed subsequent to said second step, of applying a second coating of paint, said second coating of paint being applied over the particles and the first coating to lock the particles into the first coating with the particles projecting from the second coating, and a fourth step performed before the second coating is set, of distributing retro-reflective beads over the second coating to sink partially into the second coating between the projecting particles for bonding the beads into the second coating with the beads projecting from the second coating, the beads being smaller than said particles and the particles projecting from the second coating by more than the beads to overshadow the beads.

5,380,550
METHOD FOR PRODUCING A REVERSIBLE THERMOSENSITIVE RECORDING MATERIAL
 Kunitoshi Sugiyama; Hideyuki Kobori; Shuji Hanai, all of Numazu, and Tsutomu Kagawa, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
 Division of Ser. No. 111,557, Aug. 25, 1993, Pat. No. 5,342,815.
 This application Apr. 4, 1994, Ser. No. 222,531
 Claims priority, application Japan, Aug. 26, 1992, 4-250705
 Int. Cl.⁶ B41M 3/12
 U.S. Cl. 427—146

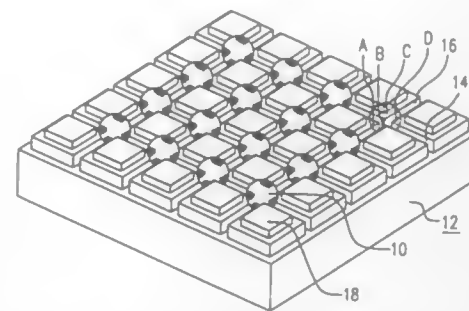


1. A method of producing a reversible thermosensitive recording material comprising (a) a support and (b) a reversible thermosensitive recording layer formed on said support, comprising a matrix resin and an organic low-molecular-weight material, said organic low-molecular-weight material being dispersed in the form of discrete domains in said matrix resin, thereby constituting a phase-separation structure, with the periodic distance of said phase-separation structure of said reversible thermosensitive recording layer being 1.3 μ m or less, comprising the steps of:
 applying a coating liquid comprising said organic low-molecular-weight material and said matrix resin which are dissolved in a solvent to said support to form said reversible thermosensitive recording layer on said support; and
 drying said applied coating liquid under such conditions controlled so as to obtain a 1.3 μ m or less periodic distance of said phase-separation structure of said reversible thermosensitive recording layer, while measuring the scattering angle of a light transmitted through said reversible thermosensitive recording layer by the light-scattering method.

5,380,551
VAPOR DEPOSITION PROCESS FOR COATING ARTICLES OF MANUFACTURE
 Greg E. Blonder, Summit, N.J., and Mindaugas F. Dautartas, Alburta, Pa., assignors to AT&T Corp, Murray Hill, N.J.
 Continuation of Ser. No. 808,704, Dec. 13, 1991, abandoned.
 This application May 21, 1993, Ser. No. 65,518
 Int. Cl.⁶ B05D 5/06; B05C 13/00; C23C 16/40
 U.S. Cl. 427—166

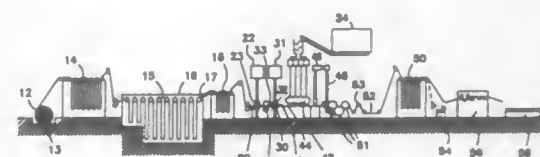
1. A method of coating a plurality of spherical members comprising the steps of:
 a) providing a plurality of spherical lenses,
 b) loading said plurality of spherical lenses onto a carrier

support member comprising a grid of intersecting trenches formed in the top surface thereof such that each spherical lens is disposed at an intersection of a pair of trenches and is supported by four points of contact with said carrier;
 c) inserting the loaded carrier support member into a reactor chamber;



d) depositing, using a chemical vapor deposition process, a coating material on the spherical outer surface of each spherical member, the deposition performed at a temperature and for a time sufficient to form an essentially uniform coating of a desired thickness.

5,380,552
METHOD OF IMPROVING ADHESION BETWEEN ROOFING GRANULES AND ASPHALT-BASED ROOFING MATERIALS
 Billy L. George; Stefan A. Babirad, both of St. Croix, Wis.; Vincent J. Laria, Jr., and Wilson S. Bigham, both of Washington, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
 Filed Aug. 24, 1992, Ser. No. 934,429
 Int. Cl.⁶ B05D 1/12
 U.S. Cl. 427—186

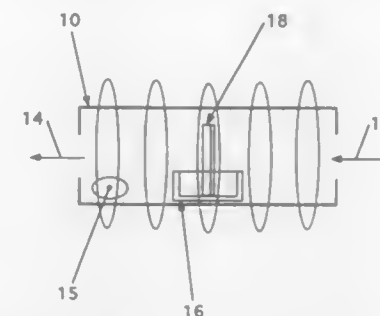


1. A method of preparing roofing product, said method comprising the steps of:
 (a) providing an asphalt-based substrate having a hot asphaltic surface in a softened state;
 (b) embedding a plurality of roofing granules in the softened hot asphaltic surface; and
 (c) applying an effective amount of non-asphalt adhesive material onto the hot asphaltic surface before step (b) for improving the adherence of at least one of said roofing granules to the hot asphaltic surface.

5,380,553
REVERSE DIRECTION PYROLYSIS PROCESSING
 Mark J. Loboda, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
 Filed Dec. 24, 1990, Ser. No. 633,707
 The portion of the term of this patent subsequent to Mar. 10, 2010, has been disclaimed.
 Int. Cl.⁶ B05D 3/02
 U.S. Cl. 427—226

1. A method of forming a ceramic coating on a substrate comprising:

applying a coating comprising a preceramic compound on a substrate;
 creating a temperature gradient in the coating sufficient to enhance the release of volatiles that are formed during pyrolysis of the coating to enhance the diffusion of processing gases into the coating by heating the substrate to a temperature sufficient to facilitate ceramification of the interior surface of the coating while directing a stream of cooling gas at the exterior surface of the coating, said cooling gas having a flow rate and temperature sufficient



to deter ceramification of the exterior surface of the coating; and
 after the interior surface of the coating has reached the desired ceramification temperature, decreasing the temperature gradient in the coating sufficiently to facilitate ceramification of the exterior surface of the coating by a means selected from the group consisting of adjusting the gas temperature and/or flow rate, adjusting the heat source over time and maintaining the heat source and the gas temperature and flow rate for a time sufficient to allow ceramification of the exterior surface of the coating.

5,380,554
CHROMIC OXIDE COATINGS BY THERMAL DECOMPOSITION OF CHROMIC ACID ANHYDRIDE (CrO₃)
 William A. Ferrando, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
 Filed Jul. 28, 1993, Ser. No. 98,093
 Int. Cl.⁶ B05D 3/02
 U.S. Cl. 427—226

1. A process for forming CrO coatings comprising:
 A. coating a diamond, ceramic, metal, or metal alloy surface with molten CrO₃; and
 B. heating the molten CrO₃ coated surface formed in step A in air at a temperature of from the melting point of CrO₃ up to 250° C. until the CrO₃ is converted into CrO in the form of an adherent, powdery, black coating.

5,380,555
METHODS FOR THE FORMATION OF A SILICON OXIDE FILM
 Katsutoshi Mine; Takashi Nakamura, and Motohiko Sasaki, all of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan
 Filed Jan. 26, 1994, Ser. No. 187,239
 Claims priority, application Japan, Feb. 9, 1993, 5-044590; Feb. 10, 1993, 5-045823; Feb. 10, 1993, 5-045824
 Int. Cl.⁶ B05D 3/02
 U.S. Cl. 427—226

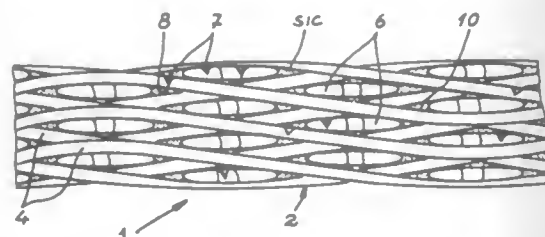
1. A method for the formation of a silicon oxide film on a substrate comprising:
 forming a coating on the surface of a substrate, wherein the base component of the coating is a silicon resin with the general formula

(HR₂SiO₃)_x(SiO₄/2)_{1.0}

and wherein R is selected from the group consisting of the hydrogen atom, alkyl groups, and aryl groups and $0.1 \leq x \leq 2.0$; and converting the coating into a ceramic silicon oxide film by heating the coated substrate.

5,380,556
PART MADE OF A CARBON-CARBON COMPOSITE WITH AN SiC SURFACE-TREATED MATRIX RESISTANT TO OXIDATION AND A PROCESS FOR PRODUCING IT

Dominique Hocquelliet, Médard en Salles, France, assignor to Aérospatiale Societe Nationale Industrielle, France
Filed Jan. 21, 1993, Ser. No. 6,819
Claims priority, application France, Jan. 20, 1992, 92 00540
Int. Cl.⁶ B05D 3/02
U.S. Cl. 427-228 16 Claims



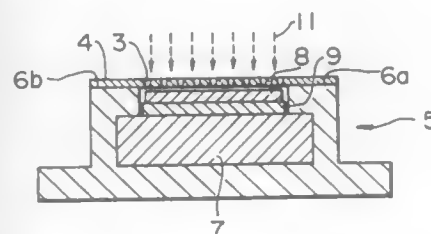
1. A process for manufacturing a structural part made of carbon-carbon type composite, protected against oxidation, which consists of:

- (a) making a fibrous preform of the part consisting essentially of fibers, said fibers being carbon fibers;
- (b) impregnating this preform with an impregnation bath containing a carbon precursor resin and ultrafine crystalline SiC powder, with the amount of SiC powder in the bath being such that the powder represents 5% to 30% by weight of the densified preform;
- (c) polymerizing the resin of the loaded preform, then pyrolyzing it to convert it into carbon and thus densify the loaded preform.

5,380,557
CARBON FLUORIDE COMPOSITIONS
Clifford L. Spiro, Niskayuna, N.Y., assignor to General Electric Company, Worthington, Ohio
Continuation of Ser. No. 751,884, Aug. 29, 1991, abandoned.
This application Jun. 3, 1993, Ser. No. 73,991
Int. Cl.⁶ B05D 3/06; C23C 16/00
U.S. Cl. 427-249 8 Claims

1. A method of preparing carbon fluoride solid compositions, comprising entraining hexafluorobenzene in an inert gas to form a gaseous mixture, energizing said gaseous mixture by passing said mixture over a hot tungsten filament at a temperature of about 1500°-2500° C. to form fragments and condensing said fragments onto a substrate at a temperature from about 200°-500° C. to form a coating comprising carbon fluoride solid compositions having a ratio of fluorine to carbon less than about 1.0 and a contact angle in excess of 120° with water, said coating having diamondlike structure with carbon atoms positioned in a tetrahedral network that is interrupted with bonds to fluorine.

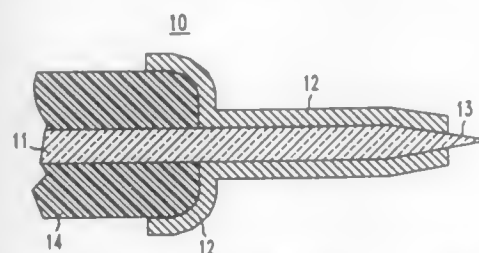
5,380,558
METHOD OF MANUFACTURING SHAPED BODY HAVING STRAIGHT STRIPES
Takao Fujino, Akishima, Japan, assignor to Hoya Corporation, Tokyo, Japan
Filed Mar. 20, 1992, Ser. No. 854,581
Claims priority, application Japan, Mar. 27, 1991, 3-63094
Int. Cl.⁶ C23C 16/00
U.S. Cl. 427-255.5 16 Claims



1. A method of manufacturing a shaped body, said shaped body having a surface on which a plurality of concaves and convexes are formed in parallel relation to each other in the form of straight stripes, said method comprising the steps of:

- (i) projecting a vertical cross-sectional configuration of said shaped body, onto a thin planar plate, with an equal magnification in a horizontal direction and with an enlarged magnification of 1,000-1,000,000 times in a vertical direction and, subsequently, boring or opening portions of said thin planar plate corresponding respectively to vertically elongated convex portions of said shaped body, to produce a vapor-deposition mask plate having therein openings, each of said openings having opposite ends with different widths in the vertical direction;
- (ii) arranging said vapor-deposition mask plate produced by said step (i), on a planar substrate with a predetermined space left therebetween; and
- (iii) executing vapor-deposition operation while one of said planar substrate and said vapor-deposition mask plate is fixed and the other is linearly reciprocated at a uniform velocity along the vertical direction of said openings, to deposit a vapor-deposition material onto said planar substrate through said openings in said vapor-deposition mask plate.

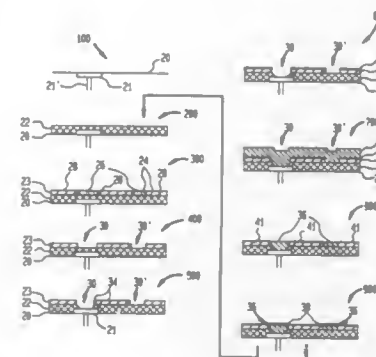
5,380,559
ELECTROLESS METALLIZATION OF OPTICAL FIBER FOR HERMETIC PACKAGING
Robert W. Filas, Bridgewater, and Constance A. Jankoski, Branchburg, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.
Filed Apr. 30, 1993, Ser. No. 54,921
Int. Cl.⁶ B05D 1/00
U.S. Cl. 427-305 8 Claims



1. A method of metallizing an optical fiber having a silica containing surface, which comprises: treating a bare surface of a section of an optical fiber in absence of oxygen with a dilute aqueous sensitizing solution of SnF₂ so as to deposit Sn²⁺ ions on the bare surface,

said sensitizing solution consisting of SnF₂ and deionized water, treating Sn²⁺ sensitized surface in absence of oxygen with an aqueous activating solution of Pd²⁺ ions to deposit a catalytic layer on the sensitized surface, said activating solution comprising from 2 to 10 g/L of PdCl₂ and from greater than 0.01 to less than 0.1 M HCl, treating the activated surface by immersion into an electroless nickel plating solution to deposit a layer comprising nickel, and optionally, treating the nickel-plated surface with a gold-plating solution to deposit a layer comprising gold in a thickness sufficient to protect the nickel deposit from oxidation.

5,380,560
PALLADIUM SULFATE SOLUTION FOR THE SELECTIVE SEEDING OF THE METAL INTERCONNECTIONS ON POLYIMIDE DIELECTRICS FOR ELECTROLESS METAL DEPOSITION
Suryanarayana Kaja, Shyama P. Mukherjee, both of Hopewell Junction; Eugene J. O'Sullivan, Upper Nyack, and Milan Paunovic, Port Washington, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 28, 1992, Ser. No. 921,186
Int. Cl.⁶ C23C 26/00
U.S. Cl. 427-306 20 Claims

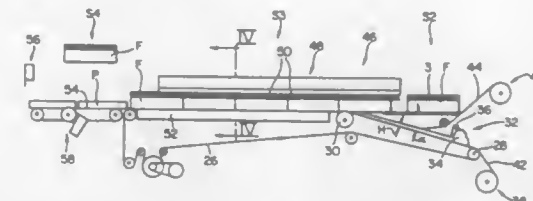


1. A method of selectively seeding a surface of a metal or alloy at a polyimide surface for electroless deposition of a further metal comprising the steps of: seeding said surface of said metal using an activating solution selected from the consisting of palladium sulfate, palladium perchlorate, palladium trifluoromethane sulfonate, palladium nitrate, and palladium fluoroborate; removing palladium ions from said polyimide by rinsing said polyimide with a rinse selected from the group consisting of water and sodium citrate complexant; and plating said further metal or alloy on said metal.
7. The method of claim 1 wherein said step of seeding is performed with an activating solution selected from the group consisting of palladium perchlorate, palladium trifluoromethane sulfonate, palladium nitrate, and palladium fluoroborate.

5,380,561
METHOD AND APPARATUS FOR COATING FLAT TEXTILE BODIES, ESPECIALLY CARPET PANELS
Michael Dorn, Frick, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland
Filed Aug. 26, 1993, Ser. No. 112,700
Claims priority, application Switzerland, Aug. 28, 1992, 02683/92
Int. Cl.⁶ B05D 1/18 8 Claims

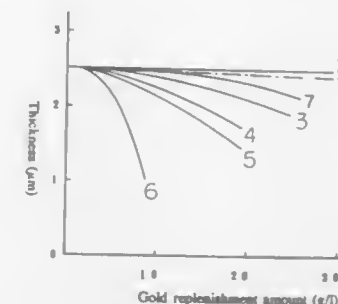
1. A method of coating a textile flat body, comprising the steps of: placing a packet of bands in a mold to form a flat body, the mold having an opening at one side and a base at the

opposite side, the bands being arranged in the mold perpendicular to the base at the opposite side and having woven or knitted portions at the open side and free pile threads extending from the woven or knitted portions toward the base; and



dipping the open side of the mold with the bands arranged therein into a coating material, the viscosity of the coating material being so adjusted that the material penetrates a limited depth into the flat body to join the bands together by means of the coating material at the woven or knitted portions.

5,380,562
PROCESS FOR ELECTROLESS GOLD PLATING
Noriko Hattori, Higashiosaka; Eichi Torikai, Yao; Shigemitsu Kawagishi, Suita; Mitsunori Tadokoshi, Osaka, and Kazuyoshi Okuno, Ashiya, all of Japan, assignors to Okuno Chemical Industries Co., Ltd., Japan
Continuation of Ser. No. 840,088, Feb. 24, 1992, abandoned.
This application Sep. 29, 1993, Ser. No. 128,156
Claims priority, application Japan, Feb. 22, 1991, 3-114158; Dec. 6, 1991, 3-323031
Int. Cl.⁶ C23C 26/00
U.S. Cl. 427-437 10 Claims



1. A process for electroless gold plating by a continuous plating operation using plating solution comprising cyanate, alkaline cyanide, reducing agent, alkaline hydroxide, crystal condition controlling agent and stabilizer wherein free cyanide ion is converted with the addition of an aldehyde or a ketone compound selected from the group consisting of formaldehyde, acetaldehyde, glyoxylic acid, succinialdehyde, cyclohexylaldehyde, acrolein, crotonaldehyde, benzaldehyde, salicylaldehyde, furfural, pyridylaldehyde, acetone, methyl-ethylketone, methylpropylketone, cyclopentanone, cyclohexanone, acetophenone, propiophenone, methylglyoxal, pyruvic acid, glutaric acid, sodium formaldehyde sulfoxylate and paraformaldehyde when the concentration of free cyanide ion increases.

5,380,563
CERAMIC WELDING
Leslie E. J. Tucker, Evesham; Kevin Dunderdale, Leeds; David K. Hurran, Cheltenham, and Robert G. Everitt, Tewkesbury, all of England, assignors to Coal Industry (Patents) Limited, London, United Kingdom

Filed Jun. 17, 1992, Ser. No. 899,679
Claims priority, application United Kingdom, Jun. 20, 1991, 9113365; Jun. 20, 1991, 9113370

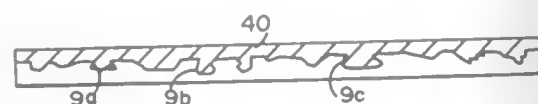
Int. Cl.⁶ B05D 3/04
U.S. Cl. 427—452 8 Claims

1. A ceramic welding process comprising projecting through a lance an oxygen containing gas and a composition of matter comprising a mixture of refractory particles and oxidizable metal particles to a ceramic surface to be welded where said oxidizable particles react exothermally to cause at least partial fusion of the refractory particles of the mixture, both with themselves and with the surface, so that a ceramic weld is formed, wherein the harmonic mean size of the refractory particles is between 300 and 1000 microns inclusive, and the size range spread factor of the refractory particles is between 0.4 and 1.1 inclusive.

5,380,564
HIGH PRESSURE WATER JET METHOD OF BLASTING LOW DENSITY METALLIC SURFACES
Lewis L. VanKuiken, Jr., Grand Rapids; Larry E. Byrnes, Rochester Hills, and Martin S. Kramer, Washington, all of Mich., assignors to Progressive Blasting Systems, Inc., Grand Rapids and General Motors, Detroit, both of Mich.

Continuation-in-part of Ser. No. 875,280, Apr. 28, 1992, abandoned, and a continuation-in-part of Ser. No. 932,528, Aug. 20, 1992, abandoned. This application Jun. 15, 1993, Ser. No. 77,677

Int. Cl.⁶ B05D 1/08, 3/00
U.S. Cl. 427—456 22 Claims



1. The method of coating a surface comprising a malleable light metal with a wear-resistant coating material comprising the steps of:

- roughening said surface by creating jets of water having pressures sufficiently high to clean and erode the surface to provide a pitted surface with undercuts so that said surface is provided with a mechanical/adhesive bond for said coating;
- directing said jets against said surface to prepare said surface for application of said wear-resistant coating by cleaning and eroding said surface to provide a pitted surface with pits and undercuts;
- after said water jet roughening step and without further roughening said surface, providing wear-resistant coating material; and
- applying said wear-resistant coating material on said roughened surface whereby said coating material fills said pits and undercuts to mechanically/adhesively bond said coating to said surface.

5,380,565
SPRAY COATING WITH CARBOXYL POLYOL-DERIVED POLYESTER AND EPOXY RESIN
Lutz-Werner Gross, Haltern; Ulrich Poth, Munster; Dieter Hille, Bergisch-Gladbach, and Klaus Weidemeier, Munster, all of Germany, assignors to BASF L+F Aktiengesellschaft, Münster, Germany

Division of Ser. No. 964,169, Oct. 21, 1992, Pat. No. 5,272,187, which is a continuation of Ser. No. 617,459, Nov. 21, 1990, Pat. No. 5,183,835, which is a continuation of Ser. No. 350,626, Apr. 25, 1989, abandoned. This application Oct. 5, 1993, Ser. No. 132,003

Claims priority, application Germany, Oct. 25, 1986, 3636368; WIPO, Oct. 22, 1987, PCT/EP87/00624
Int. Cl.⁶ B05D 1/02, 1/04

U.S. Cl. 427—475 7 Claims

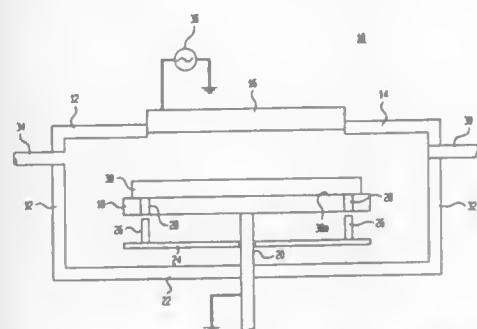
1. A method of coating a substrate comprising spraying the substrate with a coating composition containing a binder comprised of an epoxy resin-modified polyester produced by the reaction of:

- (A) a polyester having a number average molecular weight of less than 2000, an acid number of 35 to 240 and an OH number of 56 to 320, which is comprised of the reaction product of:
 - (a₁) a polycarboxylic acid containing at least 3 carboxyl groups, or a reactive derivative thereof;
 - (a₂) a polyol containing at least one carboxyl group other than components (a₁), (a₃) and (a₄); and
 - (a₃) a polycarboxylic acid containing two carboxylic groups or a reactive derivative thereof other than component (a₂); and
 - (a₄) a polyol other than component (a₂), such that at least 10 mol % of the sum of (a₁), (a₂), (a₃) and (a₄) contains a (cyclo)aliphatic structural element having at least six carbon atoms, and wherein the (a₁) and (a₃) components are co-condensed via at least two carboxyl groups, and
- (B) a bisphenol based epoxy resin having an epoxide equivalent weight of 170 to 1000 and from 0.3 to 1.5 epoxide equivalents per polyester molecule, said polyester (A) and epoxy resin (B) reacting under conditions such that essentially only carboxyl groups react with epoxide groups to produce an epoxy resin-modified polyester which is water-dilutable upon at least partial neutralization of the free carboxyl groups with base.

5,380,566
METHOD OF LIMITING STICKING OF BODY TO SUSCEPTOR IN A DEPOSITION TREATMENT
Robert Robertson, Palo Alto; Marc M. Kollrack, Alameda; Angela T. Lee, Sunnyvale; Kam Law, Union City, and Dan Maydan, Los Altos Hills, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 21, 1993, Ser. No. 80,018
Int. Cl.⁶ B05D 3/06

U.S. Cl. 427—534 19 Claims



10. A method of treating a body comprising the steps of:

placing the body on a susceptor within a deposition chamber having an electrode spaced from the susceptor; flowing a deposition gas within the chamber; applying a voltage across the electrode and the susceptor at a rf power which generates a plasma in the deposition gas so as to react the deposition gas and deposit a layer on a surface of the body; discontinuing the flow of the deposition gas; flowing a second gas into the chamber which second gas does not react with the layer on the body or the body and does not add another layer; applying a rf power to the second gas to generate a plasma of the second gas which is applied to the body; and then separating the body from the susceptor.

5,380,567
HERMETIC COATINGS BY HEATING HYDROGEN SILSESQUINOXANE RESIN IN AN INERT ATMOSPHERE

Loren A. Haluska, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 683,908, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 423,317, Oct. 18, 1989, abandoned. This application Jun. 15, 1993, Ser. No. 77,469

Int. Cl.⁶ B05D 3/02

U.S. Cl. 427—578 11 Claims

1. A method of forming a coating on an electronic device consisting essentially of:

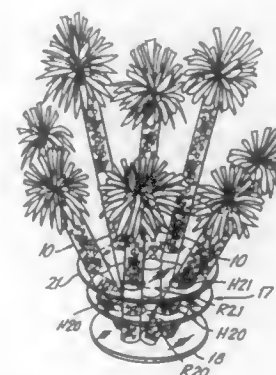
- (A) coating the electronic device with a solution consisting essentially of a solvent and hydrogen silsesquioxane resin;
- (B) evaporating the solvent to deposit a preceramic coating on the electronic device; and
- (C) heating the preceramic coating to a temperature of between about 500° up to about 800° C. under an inert gas atmosphere.

5,380,568
CENTERPIECE ASSEMBLY SIMULATING FLORAL BOUQUET

Kenneth Banschick, 30 Maple Dr., Great Neck, N.Y. 11021
Division of Ser. No. 925,770, Aug. 7, 1992, Pat. No. 5,244,700. This application Aug. 19, 1993, Ser. No. 109,080

Int. Cl.⁶ B32B 9/00

U.S. Cl. 428—4 20 Claims



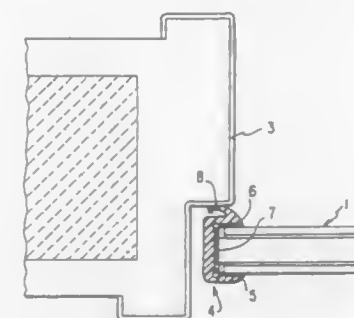
1. A centerpiece assembly comprising:
- (a) a plurality of elements, each element comprising:
 - (1) a hollow tubular member having an aperture and two ends
 - (2) a decorative pom-pom-like appendage positioned at one of said ends of said hollow tubular member; and
 - (b) a positioning system for arraying said elements in an arrangement, said positioning system comprising a plurality of openings adapted to receive said elements.

5,380,569
FIRE RESISTANT GLASS PARTITION
Detlef Kujas, Cologne, and Günter Wiedemann, Ratingen, both of Germany, assignors to Fachverband Glasdach- und Metallbau e.V., Cologne and Promat GmbH, Ratingen, both of Germany

PCT No. PCT/EP92/01593, § 371 Date Apr. 8, 1993, § 102(e) Date Apr. 8, 1993, PCT Pub. No. WO93/02268, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 14, 1992, Ser. No. 39,209
Claims priority, application Germany, Jul. 19, 1991, 4123977
Int. Cl.⁶ E06B 3/24; B27N 9/00

U.S. Cl. 428—34 12 Claims



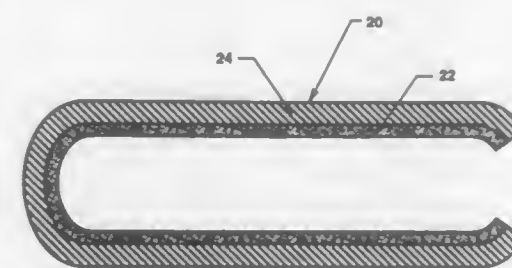
1. A fire resistant glass partition comprising:
- at least one pane of a multi-layer fireproof glass having a fitting element, the pane having edges with an end face at each edge, the fitting element projecting to an edge of the pane; and
 - a sealing profile covering all end faces of the pane, the sealing profile being formed from an elastic material for gripping the edges, the sealing profile having a region facing each end face of the pane, the region having a material that foams under the influence of heat, the fitting element being enclosed by the sealing profile with a total thickness of the sealing profile and the enclosed fitting element being essentially a total thickness of the pane.

5,380,570
THERMOPLASTIC PARA-POLYPHENYLENE SULFIDE, HIGH TEMPERATURE-RESISTANT ROCKET MOTOR CASES

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 23,443, Feb. 26, 1993, Pat. No. 5,277,868. This application Jul. 6, 1993, Ser. No. 86,799
Int. Cl.⁶ F02K 9/00

U.S. Cl. 428—36.4 3 Claims



1. An ultrahigh-temperature-resistant, thermoplastic interceptor rocket motor case manufactured by the method comprising:

- (i) providing a breakout mandrel of the required dimensions and shape;
- (ii) winding or laying down layers of ribbonized para-polyphenylene sulfide of the required thickness on the outer surface of said breakout mandrel;
- (iii) heating said ribbonized para-polyphenylene sulfide to a temperature to achieve melting and fusing of said para-polyphenylene sulfide into a solid mass to form said interceptor rocket motor case consisting of said solid mass of fused para-polyphenylene sulfide which serves as both insulator and interceptor rocket motor case material; and,
- (iv) removing said breakout mandrel to release said interceptor rocket motor case consisting of said solid mass of fused para-polyphenylene sulfide, said solid mass of fused para-polyphenylene sulfide serving as both insulator and interceptor rocket motor case material.

5,380,571

THERMOPLASTIC ELASTOMER HOSE HAVING EXCELLENT FLEXIBILITY

Osama Ozawa; Hiroyuki Miyade, and Tetsu Kitami, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

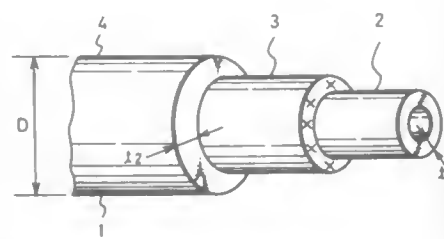
Filed Jan. 17, 1993, Ser. No. 77,638

Claims priority, application Japan, Jan. 19, 1992, 4-160724; May 13, 1993, 5-111354

Int. Cl.⁶ F16L 11/08

U.S. Cl. 428—36.9

6 Claims



1. A flexible, high heat resistant hose comprising at least an inner tube, an outer cover, and a reinforcing layer between said inner tube and said outer cover, said inner tube and outer cover each being made from a thermoplastic elastomer comprising a thermoplastic resin having a vulcanized rubber dispersed therein and said hose having a flexural rigidity at a bending radius of four times its outer diameter of not greater than 1 kgf and a M_p value not greater than 70 kgf/cm² where

$$M_p = \frac{t_1}{t_1 + t_2} \times M_1 + \frac{t_2}{t_1 + t_2} \times M_2$$

wherein t_1 and t_2 are the thickness in mm of the inner tube and the outer cover, respectively, and M_1 and M_2 are the stress in kgf/cm² at 25% elongation of the inner tube and the outer cover, respectively.

5,380,572

PRESSURE SENSITIVE ADHESIVE LABEL SHEET

Terumitsu Kotani, Yokohama; Atsui Saitoh; Tomoya Yamada, both of Chiba; Kobei Tachikawa, Toda; Yasuyuki Amano, Urawa, and Takeshi Ikeda, Warabi, all of Japan, assignors to Lintec Corporation, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,191

Claims priority, application Japan, Aug. 26, 1992, 4-226966; Sep. 18, 1992, 4-274950

Int. Cl.⁶ B32B 27/06, 27/32

U.S. Cl. 428—40

8 Claims

1. A pressure sensitive adhesive label sheet which comprises a transparent label film comprising a polyethylene resin of a density of 0.925 to 0.950 g/cm³ as the main component thereof,

having an average of the tensile strength to the MD direction and the tensile strength to the TD direction of 250 kg/cm² or more, a 1% secant modulus to the MD direction of 2500 to 5000 kg/cm², a haze of 3 to 15% and a gloss of 80% or more and a release paper laminated with the label film through a layer of a pressure sensitive adhesive material, wherein the ratio of the weight average molecular weight to the number average molecular weight of the polyethylene resin is in the range from 3 to 7.

5,380,573

OPTICAL RECORDING MEDIUM

Atsushi Fukumoto, Kanagawa; Toshiki Udagawa, Tokyo; Shunji Yoshimura, Tokyo; Masumi Ohta, Tokyo; Masumi Ono, Kanagawa, and Kouichi Yasuda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP91/01436, § 371 Date Oct. 6, 1992, § 102(e) Date Oct. 6, 1992, PCT Pub. No. WO92/15092, PCT Pub. Date Sep. 3, 1992

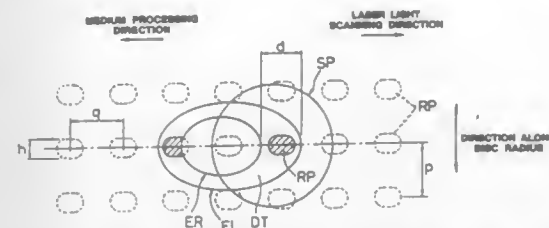
PCT Filed Oct. 18, 1991, Ser. No. 930,702

Claims priority, application Japan, Feb. 15, 1991, 3-044501

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—64

2 Claims



1. An optical recording medium, comprising: a multi-layer film as a recording layer, said multi-layer film having at least a reproducing layer and a recording holding layer magnetically coupled to each other, said recording holding layer having signals magnetically recorded therein previously, said reproducing layer having magnetic domains aligned previously such that when a readout light is radiated to the reproducing layer of the magneto-optical recording medium for heating the reproducing layer, said signals are converted under photomagnetic effects into optical signals which are read from the reproducing layer, a pit arraying pitch of recording signals along a direction at right angles to a readout light scanning direction being selected to be not more than one half a spot diameter of the readout light and a signal detecting region encompassing a recording pit centrally of the laser light spot but not intersecting directly adjacent recording pits within the laser light spot lying at right angles to said readout light scanning direction and spaced from said recording pit within said signal detecting region.

5,380,574

MATS AND RUGS AND PROCESS FOR PRODUCING THE SAME

Naoyuki Katoh, Mie; Takashi Fukushima, Toyama, and Kenzou Ichihashi, Osaka, all of Japan, assignors to Mitsubishi Yuka Badische Co., Ltd, Yokkaichi and Diatex Co., Ltd., Tokyo, both of Japan

Filed Dec. 17, 1992, Ser. No. 992,035

Claims priority, application Japan, Dec. 18, 1991, 3-335048; Feb. 3, 1992, 4-017648

Int. Cl.⁶ B32B 3/02

U.S. Cl. 428—92

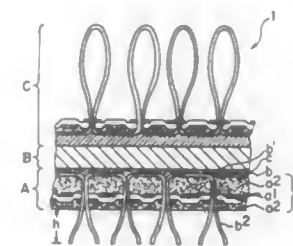
18 Claims

1. A mat having a laminate structure comprising:

(A) a reverse side mat layer comprising

(a1) a laminated mat of a base fabric and a nonwoven fabric made of a thermoplastic resin fibrous binder, wherein said base fabric and nonwoven fabric are united by needling;

- (a2) cut pile tufts made of a thermoplastic resin implanted into said laminated mat such that said cut pile tufts protrude out of the base fabric; and
- (a3) a resin adhesive layer formed by coating a liquid resin adhesive on said nonwoven fabric on the side opposite to said cut pile tufts and drying;
- (B) a thermoplastic resin adhesive layer; and
- (C) a surface mat layer;
- wherein the surface mat layer is adhered via the thermoplastic resin adhesive layer to said reverse side mat layer on the side of the reverse side mat layer having said liquid resin adhesive



coating; wherein the cut pile tufts are of a monofilament, a flat yarn, or a bundle thereof; wherein the cut pile tufts are made of a synthetic resin having a flexural modulus of from 7,500 to 110,000 kg/cm²; and wherein the cut pile tufts are implanted under the following conditions:

Implanting density: 16 to 400 roots/in²

Implanting pitch—gauge direction: 4 to 20 roots/in stitch direction: 4 to 20 roots/in

Pile height: 2 to 20 mm

Pile thickness: 20 to 1000 μm,

such that the pile thickness corresponds to a pile fineness of 800 to 6000 denier.

5,380,575

VERTICALLY ADJUSTABLE LATERAL GLASS PANE FOR AUTOMOBILES

Hans-Werner Kuster; Franz Krimling, and Friedrich-Wilhelm Berndsen, all of Aachen, Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

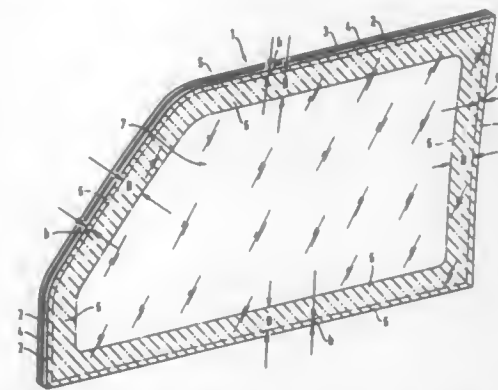
Filed Feb. 10, 1993, Ser. No. 15,838

Claims priority, application Germany, Feb. 10, 1992, 4203752

Int. Cl.⁶ B32B 9/06; C03C 27/12

U.S. Cl. 428—98

3 Claims



1. A vehicle glass pane of laminated glass comprising two thermally toughened single glass sheets bonded together via a thermoplastic intermediate layer, wherein each of the two glass sheets has a thickness of 1.5 to 3.0 mm and a prestress lower than a prestress of a monolithic safety glass, the prestress of each of the two glass sheets each varying across the area of the sheet in such a manner that at a first peripheral edge region of the glass sheet the mean tensile stress in the core of each sheet is 15 to 65% lower than the tensile stress necessary for breakage behavior in accordance with the standards for a sheet

of the same thickness, and wherein in the region of the pane area inside the first peripheral edge region, the mean tensile stress in the core of each sheet is 40 to 70% lower than the tensile stress necessary for breakage behavior in accordance with the standards for a sheet of the same thickness, the glass pane further including a second peripheral edge region disposed such that said first peripheral edge region is inside of said second peripheral edge region, and wherein said second peripheral edge region having a width of about one to two times the thickness of the glass pane, includes only compressive stresses in the core of each sheet.

5,380,576

HIGH MODULUS FIBER PROTECTIVE CARRIER SYSTEMS AND METHODS FOR THEIR USE

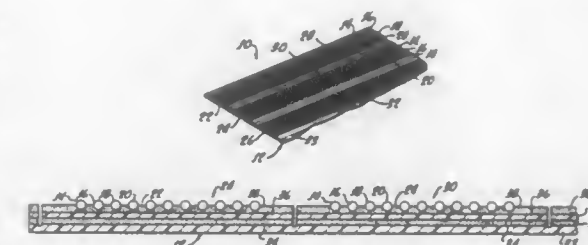
Don C. Christensen, Dublin, and Milton F. Custer, Byron, both of Calif., assignors to Hexcel Corporation, Pleasanton, Calif.

Filed Jan. 21, 1993, Ser. No. 6,504

Int. Cl.⁶ B32B 5/12, 7/12

U.S. Cl. 428—109

11 Claims



1. A protected fiber system having improved high modulus fiber storage and handling characteristics, said system comprising:

a) a composite pre-slit tape comprising a plurality of generally elongated and collimated pre-slit laminates oriented in a single plane and releasably bonded to a removable continuous backing layer, each of said pre-slit laminates comprising:

a first releasably bonding adhesive layer located adjacent said continuous backing layer and forming a releasable bond with said backing layer; and

a fiber supporting layer fabricated of a member selected from the group consisting of polyethylene terephthalate, polyethylene, polypropylene, and nylon located adjacent said first adhesive layer; and

b) a plurality of collimated fiber bundles oriented in a single plane, each of said fiber bundles comprising a plurality of collimated high modulus fibers arranged in a single layer, each fiber having a length and a diameter, and each fiber separately bonded along said length to said fiber supporting layer of a corresponding pre-slit laminate.

5,380,577

BIAXIALLY ORIENTED POLYETHYLENE-2,6-NAPHTHALENE-DICARBOXYLATE FILM AND PROCESS FOR THE PRODUCTION THEREOF

Hisashi Hamano, Sagami-hara; Masahiro Hosoi, Tokyo; Ieyasu Kobayashi, and Yasuhiro Saeki, both of Sagami-hara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 976,329, Nov. 13, 1992, abandoned.

This application Jun. 10, 1994, Ser. No. 258,375

Claims priority, application Japan, Nov. 13, 1991, 3-324072

Int. Cl.⁶ B32B 7/04

U.S. Cl. 428—143

16 Claims

1. A biaxially oriented polyester film,

(A) which is formed from polyethylene-2,6-naphthalenedicarboxylate containing 0.01 to 1% by weight of inert solid fine particles having an average particle size of 0.05 to 3 μm,

- (B) which has a refractive index, in a film thickness direction, of at least 1.500, and
- (C) which has a Young's modulus, at least in one direction, of at least 700 kg/mm².

5,380,578

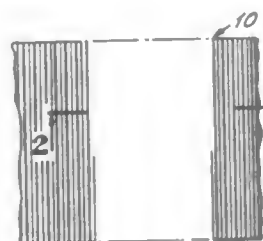
ELASTIC FABRIC HAVING A GROOVED OUTER SURFACE AND GARMENTS MADE THEREFROM
Leonard J. Rastenberg, Sands Point, N.Y., assignor to Arlington Fabrics Corporation, New York, N.Y.

Filed Jun. 30, 1993, Ser. No. 213,934

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—172

17 Claims



1. A laminated elastic fabric for use in making a garment having reduced drag with respect to a surrounding fluid as a wearer of the garment moves through the surrounding fluid, said fabric comprising:

- a stretch fabric layer; and
- an elastic, plastic layer bonded to said stretch layer to form a laminate, said plastic layer having a plurality of parallel, spaced grooves disposed in an outer surface thereof, wherein said grooves have a groove-to-groove spacing of from 1/175 inch to 1/225 inch.

5,380,579

HONEYCOMB PANEL WITH INTERLOCKING CORE STRIPS

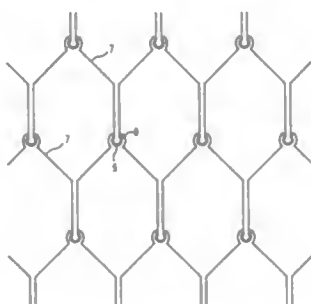
Robert Bianchi, Cranford, N.J., assignor to Accurate Tool Company, Inc., Union, N.J.

Filed Oct. 26, 1993, Ser. No. 144,193

Int. Cl.⁶ B32B 3/28

U.S. Cl. 428—184

20 Claims



1. A core for a structural element comprising a plurality of corrugated strips of a first sheet material, each strip alternately contacting adjacent strips, each strip having a plurality of first protrusions and a plurality of second protrusions, said first and second protrusions so disposed that the first protrusions of each strip engage the second protrusions of the adjacent strips along the entire width of each strip and in which the first protrusions engage the second protrusions with a detent action, the core being a mechanically integral unit, the strips being held together by a positive contacting force.

5,380,580

FLEXIBLE NONWOVEN MAT

John J. Rogers; John L. Erickson, both of Ramsey, and Stephen M. Sanocki, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 81,818, Jun. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 1,325, Jan. 7, 1993, abandoned. This application Jan. 3, 1994, Ser. No. 176,329

Int. Cl.⁶ D03D 3/00

U.S. Cl. 428—219

27 Claims

1. A flexible nonwoven mat comprising shot-free ceramic oxide fibers, wherein at least a portion of said shot-free ceramic oxide fibers are physically entangled, wherein said shot-free ceramic oxide fibers have a diameter greater than 5 micrometers and a length greater than about 1.5 cm, wherein said shot-free ceramic oxide fibers are selected from the group consisting of (a) aluminosilicate-based fibers comprising aluminum oxide in the range from 60 to about 85 percent by weight and silicon oxide in the range from about 40 to about 15 percent by weight, said aluminosilicate-based fibers being at least 20 percent by weight crystalline; (b) crystalline quartz fibers, and (c) mixtures of (a) and (b), and wherein the combined weight of said aluminosilicate-based fibers and said crystalline quartz fibers is at least 50 percent by weight of the total weight of said nonwoven mat.

5,380,581

PATTERNED NON-WOVEN FABRICS OF IMPROVED TENSILE STRENGTH

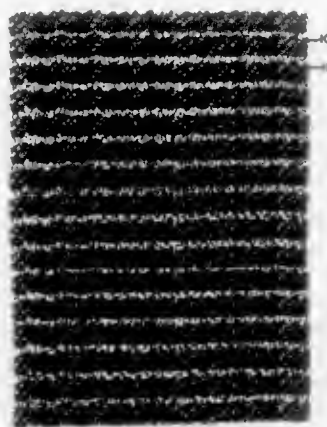
Henry Mattesky, Cedar Grove, N.J., assignor to Herbert Glatt, Morristown, N.J.

Filed Jan. 14, 1994, Ser. No. 181,850

Int. Cl.⁶ B32B 3/00

U.S. Cl. 428—195

24 Claims



1. In a non-woven fabric comprising a layer of staple length fibers arranged in a predetermined pattern of yarn-like fiber bundles, said bundles comprising a plurality of fiber segments with the segments being consolidated and in a substantial parallelism within each bundle, said bundles being located between spaced generally parallel planes generally defining the opposed surfaces of the fabric, and a binder material diffused substantially through the fabric adhering fibers together to provide fabric strength, the improvement wherein the binder is arranged in a pattern in segments, said segments running substantially perpendicular to the orientation of the fibers, the pattern within said segments having a plurality of repeats within each segment and a repeat of said total segment pattern in alternate segments, said the components of said

pattern being mutually laterally displaced from each other in sequential segments, at least 80% of the components of said pattern being at an angle of between at least 10° to not more than 70° relative to the orientation of the majority of the fibers.

5,380,582

RECYCLABLE BALE WRAP MADE FROM A THERMALLY BONDED, NEEDLEPUNCHED, POLYESTER NONWOVEN

William G. Neely, Jr., Charlotte, N.C., and Gordon Oran, Spartanburg, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 28, 1992, Ser. No. 997,686

Int. Cl.⁶ B32B 5/06; D04H 1/44, 1/46, 1/70

U.S. Cl. 428—220

6 Claims

1. A recyclable polyester bale cover consisting essentially of a single layer of non-woven fabric having been produced by the steps of:

- forming a fibrous web consisting of recyclable polyester fiber;
- cross-lapping said fibrous web to form a single layer batt;
- needlepunching said batt;
- calendering said batt under heating conditions to form a fabric suitable for bale wrap, to which labels may be stuck; and
- cutting and sewing said fabric into said recyclable bale cover.

5,380,583

MIXED-MATRIX COMPOSITE THERMOPLASTIC AND THERMOSETTING MATERIAL REINFORCED WITH CONTINUOUS FIBRES

Ernesto Occhiello; Adriano Ferrari; Fabio Garbassi, all of Novara, and Domingo Cutolo, Gessate, all of Italy, assignors to Eniicerche, S.p.A. and Enichem, S.p.A., Milan, Italy

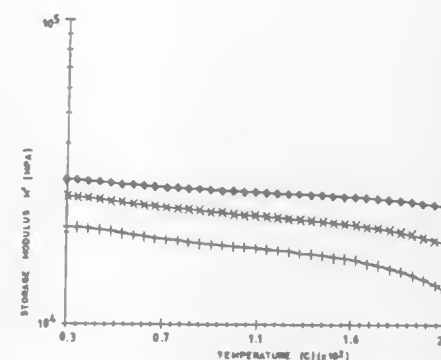
Filed Jul. 30, 1993, Ser. No. 99,702

Claims priority, application Italy, Jul. 31, 1992, MI.92-A/001891

Int. Cl.⁶ B32B 5/16

U.S. Cl. 428—283

9 Claims



1. A mixed-matrix composite material reinforced with continuous fibre comprising a flexible sheath of thermoplastic polymer covering a multifibre filament impregnated with a powder consisting of:

- 1-99% by weight of a thermoplastic polymer;
- 99-1% by weight of a reactive monomer and/or prepolymer which on thermal stressing is able to undergo crosslinking and/or molecular weight increase.

5,380,584

IMAGING ELEMENT FOR USE IN ELECTROSTATOGRAPHY

Charles C. Anderson; David F. Jennings, both of Penfield; Gerald M. Leszyk, Spencerport, and David A. Niemeyer, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1993, Ser. No. 65,978

Int. Cl.⁶ B32B 5/16

U.S. Cl. 428—323

16 Claims

1. An electroconductive imaging element especially adapted for use in a high speed laser printing process which produces an image-bearing element suitable for use as a master in a UV-imaging process, said laser printing process comprising the steps of:

- toner deposition in which a uniform layer of toner particles is deposited on the surface of said electroconductive imaging element;
- partial fusion in which said toner particles are adhered to said electroconductive imaging element in an imagewise manner by laser exposure;
- differential cleaning in which unfused toner particles are removed from the non-imaged areas of said electroconductive imaging element; and
- final fusion in which toner particles in the image areas are permanently fused to said electroconductive imaging element;

said electroconductive imaging element comprising:

- an insulating support;
- an electrically-conductive layer overlying said support, which is comprised of a colloidal gel of vanadium pentoxide dispersed in a polymeric binder, said vanadium pentoxide being present in said electrically-conductive layer in an amount of at least 3 milligrams per square meter and said electrically-conductive layer having a surface resistivity of 10⁷ ohms/square or less, an internal resistivity of 10⁷ ohms/square or less, a UV D_{min} of less than 0.1 and a visible D_{min} of less than 0.05; and
- a thermoplastic dielectric imaging layer having a thickness of at least 0.2 micrometers overlying said electrically-conductive layer, said thermoplastic dielectric imaging layer having a surface resistivity of at least 10¹³ ohms/square and being comprised of a thermoplastic polymer with a glass transition temperature of at least 20° C.

5,380,585

CHEMICALLY ADSORBED MONOMOLECULAR LAMINATION FILM

Kazufumi Ogawa, Hirakata; Norihisa Mino, Settsu, and Maoru Soga, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 781,407, Oct. 23, 1991, abandoned.

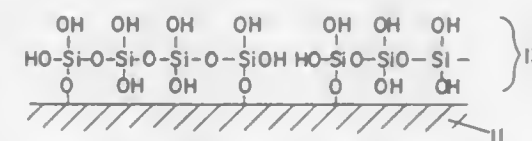
This application Mar. 26, 1993, Ser. No. 37,727

Claims priority, application Japan, Oct. 25, 1990, 2-289128; Dec. 25, 1990, 2-405754; Jan. 23, 1991, 3-024025; Jan. 23, 1991, 3-024026; Jan. 28, 1991, 3-008321; Feb. 6, 1991, 3-038137

Int. Cl.⁶ B32B 7/00

U.S. Cl. 428—333

3 Claims



1. A chemically adsorbed multilayer film covalently bonded to a substrate surface, said multilayer film comprising (a) an inorganic inner monomolecular siloxane-based layer formed on a substrate surface by a material selected from the group

consisting of SiCl_4 , SiHCl_3 , SiH_2Cl_2 and $\text{Cl}-(\text{SiCl}_2\text{O})_n-\text{SiCl}_3$, where n is an integer, (b) a chemically adsorbed monomolecular outer layer formed by adsorbing a chlorosilane based surface active agent having a straight hydrocarbon or fluorocarbon chain and a chlorosilane group adjacent said inorganic inner monomolecular siloxane-based layer, the inner layer having an increased number of bonds between the substrate surface and the monomolecular outer layer to form a multilayer film wherein each layer present is covalently bonded layer by layer on a substrate surface.

5,380,586

LOW OXYGEN TRANSMISSIVE FILM

Anthony R. Knoerzer, and Robert E. Touhsent, both of Fairport, N.Y., assignors to Mobil Oil Corp., Fairfax, Va.
Continuation of Ser. No. 812,493, Dec. 23, 1991, abandoned.
This application Jun. 24, 1993, Ser. No. 80,602
Int. Cl.⁶ B32B 7/12, 27/30, 27/42; C08F 8/00

U.S. Cl. 428—349 12 Claims

1. A polymeric film having reduced oxygen transmissive characteristics produced by the process comprising:
coating at least one side of a polymeric substrate adapted for receipt of an oxygen barrier with a solution of poly (vinyl alcohol), a cross-linking agent selected from the group consisting of urea formaldehyde, melamine formaldehyde, methylated melamine formaldehyde and trimethylol melamine urea formaldehyde, and an acid catalyst; and cross-linking said poly (vinyl alcohol) to provide said oxygen barrier, said acid catalyst being sulfuric acid.
8. A polymeric film having reduced oxygen transmissive characteristics produced by the process comprising:
providing a polymeric substrate having at least one side which has been treated to a surface tension level of at least about 35 dynes/cm;
applying a primer coating to said at least one side; and coating said at least one side with an aqueous solution of poly(vinyl alcohol), cross-linking agent and acid catalyst and thereafter allowing said poly(vinyl alcohol) to cross-link to provide an effective oxygen barrier, said acid catalyst being sulfuric acid and said cross-linking agent being selected from the group consisting of urea formaldehyde, melamine formaldehyde, methylated melamine formaldehyde and trimethylol melamine urea formaldehyde.

5,380,587

MULTILAYER FILM STRUCTURE

Gordon L. Musclove, Henrietta; Robert V. Poirier, and Ralph J. Weber, both of Fairport, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 20, 1992, Ser. No. 963,611
Int. Cl.⁶ B32B 7/12, 27/36

U.S. Cl. 428—353 4 Claims

1. A printable film structure comprising a polymeric film substrate of a member selected from the group consisting of nylon, polyethylene terephthalate, polycarbonate, polyethylene, polypropylene, coextrudates and laminates of any two or more thereof, having on at least one surface thereof a prime coating of the type which causes destructive film blocking between contacting layers of such coated films, said prime coating being a coating of a member selected from the group consisting of (A) the reaction product of acidified aminoethylated vinyl polymer and an epoxy resin (B) poly(ethyleneimine) and (C) mixtures thereof, and said prime coating having thereon a continuous copolyester coating consisting essentially of the polyester condensation product of the following monomers or their polyester forming equivalents:

- about 60 to 70 mole % of terephthalic acid;
- about 15 to 25 mole % of at least one aliphatic dicarboxylic acid of the formula $\text{HOOC}(\text{CH}_2)_n\text{COOH}$, wherein n ranges from about 1 to 11;
- greater than from about 6 up to about 15 mole % of at least one sulfonemomer containing an alkali metal sulfo-

nate group attached to a dicarboxylic aromatic nucleus; and
(d) stoichiometric quantities of about 100 mole % of at least one copolymerizable aliphatic or cycloaliphatic alkylene glycol having from about 2 to 11 carbon atoms.

5,380,588

POLYVINYL ALCOHOL-BASED SYNTHETIC FIBER

Masakazu Nishiyama; Yasuhiro Harada, and Akio Mizobe, all of Okayama, Japan, assignors to Kuraray Company Limited, Kurashiki, Japan

Filed Jun. 23, 1992, Ser. No. 902,866

Claims priority, application Japan, Jun. 24, 1991, 3-180262; Jan. 20, 1992, 4-030111; Jan. 20, 1992, 4-030112
Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—364 3 Claims
1. A acetalized polyvinyl alcohol-based synthetic fiber having a tensile strength of at least 11 g/d, a gel elasticity of at least 6.0×10^{-3} g/cm-d and a dissolution ratio of not more than 40%.

5,380,589

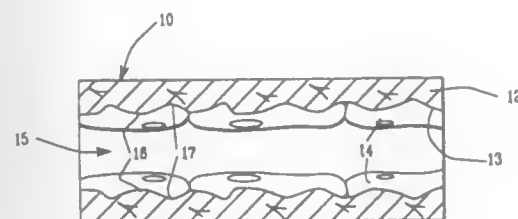
BIOTEXTURED SURFACES

Steven L. Goodman, Madison, and Ralph M. Albrecht, Belleville, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 19, 1993, Ser. No. 49,209

Int. Cl.⁶ B29D 23/22; B32B 1/08

U.S. Cl. 428—36.92 4 Claims



1. An article having an artificial surface in the form of a casting which essentially replicates a portion of a peripheral surface of a mammalian sub-endothelial extracellular matrix or sub-epithelial extracellular matrix, wherein the article was formed by using a molding core that has a surface that is an inverse representation of the peripheral surface.

5,380,590

WATER-DISPERSIBLE AROMATIC POLYESTER, AQUEOUS DISPERSION THEREOF AND POLYESTER FILM COATED THEREWITH WHICH PERMITS FAST ADHESION

Tomoki Nakamura; Tetsuo Ichihashi, both of Matsuyama, and Masayuki Fukuda, Sagami, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 4, 1994, Ser. No. 205,725

Int. Cl.⁶ D02G 3/00; C08L 67/03

U.S. Cl. 428—375 13 Claims

1. A water-dispersible aromatic polyester comprising a dicarboxylic acid component and a glycol component, wherein:
(A) at least 95 mol% of the dicarboxylic acid component is composed of an aromatic dicarboxylic acid component containing 30 to 99.5 mol% of a 2,6-naphthalenedicarboxylic acid component and at least 0.005 mol% to less than 5 mol% of an aromatic dicarboxylic acid component having a sulfonic acid salt group, and
(B) at least 95 mol% of the glycol component is composed of an ethylene glycol component and a component from a propylene oxide adduct of bisphenol A, the molar ratio of

the ethylene glycol component:the component of a propylene oxide adduct of bisphenol A being 40-99:60-1.

said filament being free of flat surfaces and having 2 to 20 curvature reversals along its contour with a modification ratio

5,380,591

TELEPHONE CABLES

Michael J. Keogh, and Geoffrey D. Brown, both of Bridgewater, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 30, 1992, Ser. No. 998,439

Int. Cl.⁶ B32B 15/00; H01B 7/00

U.S. Cl. 428—379 14 Claims

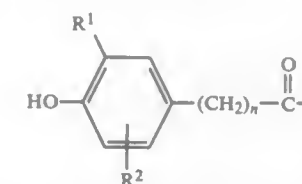
1. An article of manufacture comprising (i) a plurality of electrical conductors having interstices therebetween, each electrical conductor being surrounded by one or more layers of a composition consisting essentially of (a) one or more polyolefins selected from the group consisting of polyethylene, polypropylene, and mixtures thereof and, blended therewith, (b) a mixture containing one or more alkylhydroxyphenylalkanoil hydrazines and one or more functionalized hindered amines; and (ii) hydrocarbon cable filler grease within the interstices wherein the hydrazine has the following structural formula:

wherein n is 0 or an integer from 1 to 5;

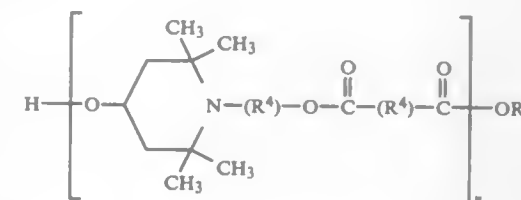
R^1 is an alkyl having 1 to 6 carbon atoms;

R^2 is hydrogen or R^1 ; and

R^3 is hydrogen, an alkanoyl having 2 to 18 carbon atoms or the following structural formula:



and wherein the hindered amine has the following structural formula:



wherein each R^4 is independently a divalent hydrocarbyl having 1 to 6 carbon atoms;

R^5 is hydrogen, alkyl having 1 to 6 carbon atoms, or aryl; and n is 2 to 50.

5,380,592

TRILOBAL AND TETRALOBAL CROSS-SECTION FILAMENTS CONTAINING VOIDS

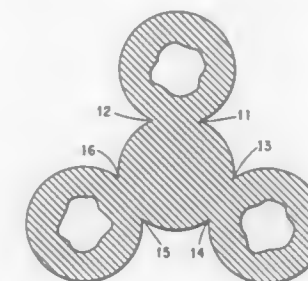
Wae-Hai Tung, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 28, 1993, Ser. No. 174,523

Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—397 5 Claims

1. A filament comprising a thermoplastic synthetic polymer, having a trilobal cross-section with a solid axial core, and having convex curves connected by cusps along its contour,



of about 1.2 to 4.5, wherein the improvement comprises at least one continuous void extending axially in each lobe.

5,380,593

POLYMERIC METAL TEREPHTHALATE AND ISOPHTHALATE FIBERS

Thomas C. Jennings, Shaker Heights, and David M. Tanno, Richmond Heights, both of Ohio, assignors to Synthetic Products Company, Shaker Heights, Ohio

Division of Ser. No. 76,486, Jun. 14, 1993, Pat. No. 5,296,585, which is a continuation of Ser. No. 638,127, Jan. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 344,595, Apr. 28, 1989, Pat. No. 4,983,688. This application Feb. 16, 1994, Ser. No. 197,113
Int. Cl.⁶ D02G 3/00

U.S. Cl. 428—401 3 Claims

1. Anhydrous polymeric metal terephthalate or isophthalate fibers wherein said fibers consist of an anhydrous metal terephthalate or isophthalate polymer and said metal is selected from the group consisting of calcium, barium, magnesium and zinc, said fibers having an average aspect ratio of greater than about 5:1.

5,380,594

MICROSPHERULES OF ACTIVATED CARBON AND A PROCESS FOR MANUFACTURING THE SAME

Hubert Von Blücher, Freytagstr. 45, 4000 Düsseldorf, Germany; Hasso Von Blücher, Columbusstr. 58, 4000 Düsseldorf, Germany, and Ernest De Ruiter, Höhenstrasse 57a, 5090 Leverkusen, Germany

Continuation-in-part of Ser. No. 527,418, May 23, 1990, abandoned, which is a continuation of Ser. No. 855,195, Apr. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 788,279, Oct. 17, 1985, abandoned. This application Jan. 31, 1991, Ser. No. 648,683

Claims priority, application Germany, Mar. 21, 1985, 3510209; European Pat. Off., Feb. 14, 1986, 86101960
Int. Cl.⁶ B32B 5/16

U.S. Cl. 428—403 8 Claims

1. Porous spherical shaped small bodies of activated carbon having a diameter of from 0.1-1 mm and an inner surface of from 600-2000 mg/m made from milled and already activated carbon particles of a size below 60 μm linked together by bridges from 10-100%, of their weight of water insoluble synthetic resins added as aqueous dispersions, and, as a result of the irregular, often splinterlike shape of the carbon particles, having gaps between these particles spread throughout the whole mass of the porous body, the size of the gaps being of the same order of magnitude as the activated carbon particles themselves.

5,380,595
CARBON CLUSTER FILM HAVING ELECTRICAL CONDUCTIVITY AND METHOD OF PREPARING THE SAME

Yoshinobu Ueba; Nobuyuki Okada; Kengo Ohkura, and Hirokazu Kugai, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
 Filed Oct. 20, 1992, Ser. No. 963,826
 Claims priority, application Japan, Oct. 25, 1991, 3-279794
 Int. Cl.⁶ H01B 1/04

U.S. Cl. 428-408

6 Claims

1. A carbon cluster thin film having an electrical conductivity that is stable in atmospheric air so that said carbon cluster thin film has a resistivity of not more than about $10^4 \Omega \text{cm}$ at room temperature, said thin film consisting essentially of a carbon cluster having a π electron conjugate system and an ion-implanted impurity in said thin film for maintaining said electrical conductivity outside a vacuum in said atmospheric air.

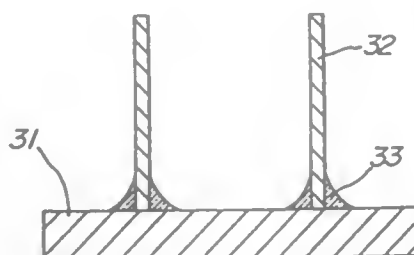
5,380,596
GLASS JOINT BODY AND METHOD OF MANUFACTURING THE SAME

Akihiko Yoshida, Iwakura; Tomonori Takahashi, Chita, and Makoto Murai, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan
 Continuation of Ser. No. 991,560, Jan. 27, 1993, abandoned, which is a division of Ser. No. 699,735, May 14, 1991, Pat. No. 5,194,337. This application Mar. 14, 1994, Ser. No. 212,650
 Claims priority, application Japan, May 18, 1990, 2-126895; Jul. 4, 1990, 2-175380; Nov. 16, 1990, 2-308762; Nov. 22, 1990, 2-315866

Int. Cl.⁶ C03C 8/02

U.S. Cl. 428-432

5 Claims



1. A glass joint body comprising a first ceramic member and a second ceramic member which are connected by a glass comprising:

- SiO₂ present in an amount no greater than 10 wt %;
- 53-80 wt % B₂O₃; and
- MgO present in an amount no greater than 40 wt %.

5,380,597
POLYVINYL ACETAL RESINS BASED ON HYDROXYALDEHYDES AND USE OF THE RESINS IN LAMINAR STRUCTURES

Jeffrey A. Klang, Exton; Michael J. Cannarsa, West Chester; Frank J. Liotta, Jr., Collegeville, all of Pa., and Scott E. Smyth, Riverton, N.J., assignors to Arco Chemical Technology L.P., Greenville, Del.
 Division of Ser. No. 963,298, Oct. 16, 1992, Pat. No. 5,332,774.
 This application May 3, 1994, Ser. No. 237,560

Int. Cl.⁶ C08L 29/04

U.S. Cl. 428-441

19 Claims

1. A laminar structure comprising:
- (a) a first layer of a glazing material selected from the group consisting of glass, polycarbonate, polyurethane, polyacrylate, polyester, polyamide, polyether, and polyacetal; and
 - (b) a second layer of a plasticized polyvinyl acetal resin,

wherein the polyvinyl acetal resin is derived from polyvinyl alcohol and 4-hydroxybutanal.

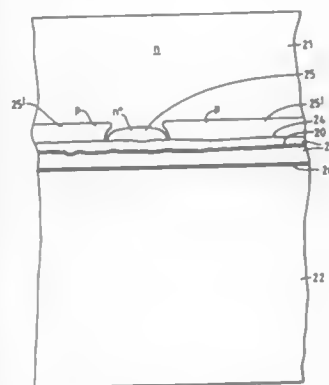
5,380,598
SOLDER JOINT

Carlo Ferrando, Chippenham, and Stephen Chan, Bristol, both of England, assignors to Westinghouse Brake & Signal Holdings Ltd., United Kingdom
 Filed Mar. 4, 1993, Ser. No. 26,465

Claims priority, application United Kingdom, Mar. 5, 1992, 9204731
 Int. Cl.⁶ B23K 1/20; H01L 23/14

U.S. Cl. 428-620

14 Claims



1. A method for joining a silicon member to a member comprising a refractory metal, the method comprising: coating the silicon member with a layer of titanium; heating the silicon member and the layer of titanium to a temperature in the range from 500° to 700° C. for a time sufficient to produce a layer of titanium silicide; providing a layer of solder containing aluminum as the principal constituent between the layer of titanium silicide and the member comprising a refractory metal; and heating the solder to a temperature in the range from 577° to 760° C. to fuse it to the titanium silicide layer.

5,380,599
PHOTOSTIMULABLE EUROPIUM-DOPED BARIUM FLUOROBROMIDE PHOSPHORS

Lothar H. Brixner, West Chester, Pa., and August Ferretti, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 717,453, Jun. 19, 1991, Pat. No. 5,227,254.
 This application Mar. 8, 1993, Ser. No. 28,049

Int. Cl.⁶ C09K 11/61

U.S. Cl. 428-691

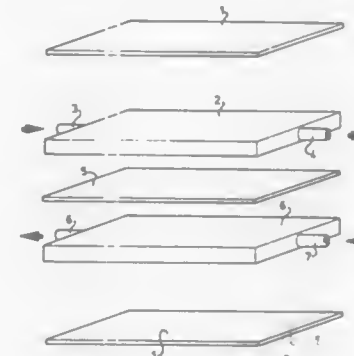
6 Claims

1. A process for the preparation of a photostimulable phosphor, comprising:

- (a) preparing a slurry containing BaF₂, BaBr₂ and a europium halide, wherein the amount of BaBr₂ is at least equal to that required stoichiometrically to form BaFBr;
- (b) agitating said slurry for a time sufficient to permit essentially of all of said BaF₂ to react with said BaBr₂ to form BaFBr;
- (c) spray drying the resulting slurry of step b) under conditions that produce porous spheroidal agglomerates having an average diameter larger than that of a preselected diameter;
- (d) firing said spheroidal agglomerates in an inert atmosphere for about 10 to about 120 min. at a temperature of about 650° C. to about 800° C.;
- (e) cooling the fired material of step (d) to ambient temperature in an inert atmosphere;
- (f) washing the cooled material of step (e) with a solvent capable of selectively dissolving any excess BaBr₂;

- (g) drying the washed material of step (f) to produce a free flowing powder of the BaFBr:Eu phosphor;
- (h) heat treating the phosphor of step (g) at a temperature of about 850° C. to about 950° C. for about 1/2 to about 15 hours in an atmosphere comprising nitrogen and about 1 to about 2% oxygen to yield an oxygen-containing photostimulable phosphor of the formula Ba_{1-x}Eu_xFBr_{1-2xO_yφ_x}, wherein φ represents an anion vacancy, x is about 0.001 to about 0.05, and is about 0.0001 to about 0.01.

formed of a substantially gas impermeable inorganic material which exhibits both electronic and ionic conduction, said



electrode having at least one gas inlet and at least one gas outlet.

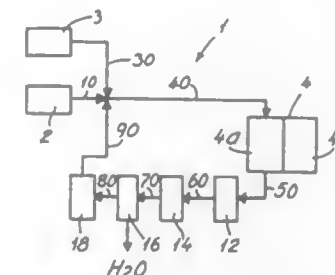
5,380,600
FUEL CELL SYSTEM

Tommy Hansen, Tikob, and Ernst Jörn, Lyngby, both of Denmark, assignors to Haldor Topsøe A/S, Lyngby, Denmark
 Continuation of Ser. No. 863,766, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 540,181, Jun. 19, 1990, abandoned. This application Aug. 4, 1993, Ser. No. 101,990
 Claims priority, application Denmark, Jun. 19, 1989, 3010/89

Int. Cl.⁶ H01M 8/06

U.S. Cl. 429-17

3 Claims



1. A method of generating electricity in a molten carbonate fuel cell system comprising introducing a carbonaceous fuel into the anode compartment of a fuel cell, steam reforming said carbonaceous fuel by contacting said fuel with a reforming catalyst located in said anode compartment to produce a reactant gas, contacting the reactant gas with the anode, withdrawing anode exhaust gas from the anode compartment, reforming the said anode exhaust gas by contacting it under adiabatic conditions with a reforming catalyst located outside of said anode compartment to form a second reactant gas and conveying said second reactant gas to said anode compartment, thereby compensating for the poisoning effect of electrolyte in the anode compartment upon the reforming catalyst in that compartment.

5,380,601
HOLLOW ELECTRODE FOR AN ELECTROCHEMICAL CELL PROVIDED WITH AT LEAST ONE INLET AND ONE OUTLET OPENING FOR GASES, AND ALSO ELECTROCHEMICAL CELL WHICH CONTAINS SUCH AS ELECTRODE

Blandikus C. Jaspers, and Bernardus A. M. Van Dongen, both of Delft, Netherlands, assignors to Seed Capital Investments (SCI) B.V., Utrecht, Netherlands

PCT No. PCT/NL91/00186, § 371 Date May 14, 1993, § 102(e)
 Date May 14, 1993, PCT Pub. No. WO92/06515, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 1, 1991, Ser. No. 39,204

Claims priority, application Netherlands, Oct. 5, 1990, 9002168

Int. Cl.⁶ H01M 8/12

U.S. Cl. 429-31

10 Claims

1. An electrochemical cell comprising a hollow electrode

5,380,602
ELECTRICAL APPLIANCE POWERED BY AN INCORPORATED RECHARGEABLE BATTERY

Hirokazu Kato; Makoto Tanimizu, and Masakazu Kita, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,266
 Claims priority, application Japan, Sep. 13, 1991, 3-233587; Oct. 9, 1991, 3-262081

Int. Cl.⁶ H01M 2/26

U.S. Cl. 429-123

22 Claims

1. An electrical appliance powered by an incorporated rechargeable battery which comprises:

- a housing incorporating the rechargeable battery having a positive electrode and a negative electrode together with a circuit board carrying an electrical circuit for operating said appliance;
- terminal means connecting said rechargeable battery physically and electrically to said circuit board;
- said terminal means including at least one terminal strip which is welded to the positive and negative electrodes of said battery to define a welded portion;
- said terminal strip being formed to have an opening for engaging a tool adapted to be utilized for breaking open said welded portion so as to enable disengaging said rechargeable battery from said circuit board at a portion of said terminal strip,
- wherein said terminal strip is in the form of an elongated member having an anchor end secured to said circuit board and a free end opposite of said anchor end, said free end being formed with said opening at least a portion of which extends beyond the periphery of said battery so as to receive therein said tool.

5,380,603
BATTERY TERMINAL SEAL

John W. Honke, Warrensburg, Mo., assignor to Hawker Energy Products, Inc., Warrensburg, Mo.

Filed Mar. 12, 1993, Ser. No. 30,762

Int. Cl.⁶ H07M 2/30

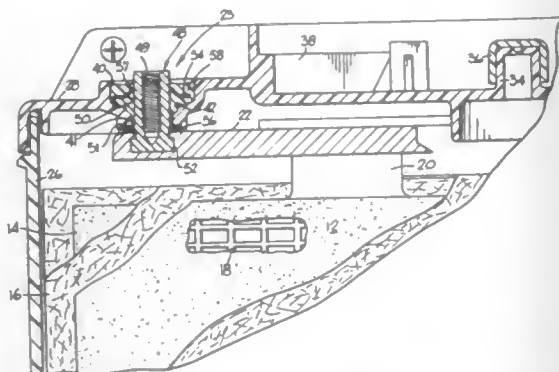
U.S. Cl. 429-180

16 Claims

1. A sealed, through partition terminal for an electrochemical cell, including a cell container having a partition wall, first and second electrodes positioned within the cell, a separator interposed between the electrodes, and electrolyte absorbed in the plates and separator, comprising:

- the partition wall being provided with a cup-like well with a through hole therein;
- a strap current collector, connected to one of the electrodes

within the cell, formed of a first conductor, and positioned adjacent the hole;
 a terminal member, formed of a second conductor, having a stud portion passing through the hole and being surrounded by the well, and an enlarged base anchored within the strap current collector;



- a fastening member gripping and embedding into the outer surface of the stud portion of the terminal, and positioned within the well; and
 a solidified resin surrounding and immobilizing the stud portion of the terminal while leaving an end thereof free for external electrical connection, and at least partially embedding the fastening member.

5,380,604

LEAD ACCUMULATOR

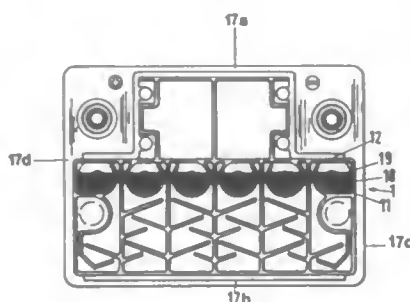
Werner Hampe, Marsberg, and Peter Scholz, Brilon, both of Germany, assignors to Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG, Brilon, Germany
 Filed Jul. 23, 1993, Ser. No. 96,781

Claims priority, application Germany, Jul. 24, 1992, 9209987[U]

Int. Cl.⁶ H01M 2/12, 2/04

U.S. Cl. 429—84

10 Claims



1. A lead accumulator comprising:
 a housing with a front side, a backside, a first and a second end faces, and a bottom, said housing having a plurality of cells containing acid;
 a lid for closing said housing, said lid comprising an upper lid and a lower lid spaced from said upper lid to define a space therebetween, said space being divided by chamber walls into a plurality of chambers such that each said cell registers with a corresponding one of said chambers within said lid;
 said lid having for each said cell a fill and check opening closable by a stopper;
 each said chamber having guides for controlling a flow of acid, said guides comprising deflecting stays and an annular stay surrounding said fill and check opening, said annular stay having a degassing and return outlet;
 said lid further having at least one ignition protector;
 said guides designed and arranged such that in any position

of said housing, when resting on one of said end faces, front side, and backside, acid within said chambers remains below a level above which acid flows into said ignition protector; and
 wherein said degassing and return outlet, when said lead accumulator is resting on said backside, is at a highest point of said annular stay.

5,380,605

PROCESS FOR PREPARING SOLUTIONS OF ELECTROLYTES FOR SOLID POLYMER BATTERIES BY TRANSFER FROM THE POLYMER SYNTHESIS SOLVENT

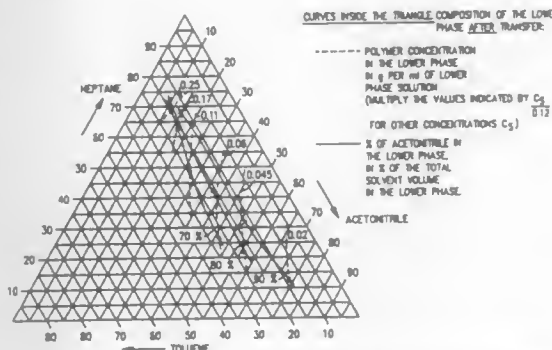
Fernand Brochu, Longueuil, and Michel Duval, Jean-Brillant, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Mar. 17, 1994, Ser. No. 214,304

Int. Cl.⁶ H01M 6/16

U.S. Cl. 429—188

16 Claims



1. Process for preparing a solution of an electrolyte containing a polymer-salt complex as well as a solvent of said complex, said salt being represented by formula M^+X^- where M^+ is a cation derived from an alkali metal or the ammonium anion and X^- designates an anion of a strong acid, said polymer being derived from at least one monomer comprising at least one heteroatom which is capable of forming bonds of donor-receptor type with the cation M^+ , from a synthesis solution consisting of a synthesis solvent and said polymer, the latter is transferred into a solvent of said complex to which said salt is added, wherein a solvent of said complex and a non solvent are added to the synthesis solution under conditions producing an upper phase which is rich in non solvent and a lower phase which is rich in solvent of said complex and contains substantially all said polymer, the upper phase is separated from the lower phase, and said salt is added to said lower phase.

5,380,606

SECONDARY BATTERY UTILIZING A MIXED BINDER

Tsukasa Itou, Kazuo Teraji, Noriyuki Yoshinaga, Sunao Harada, all of Sumoto; Kouji Negoro, and Kazunari Mori, both of Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 28, 1993, Ser. No. 174,246

Claims priority, application Japan, Dec. 28, 1992, 4-348884

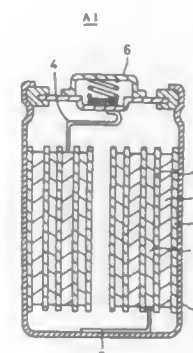
Int. Cl.⁶ H01M 4/62

U.S. Cl. 429—194

2 Claims

1. A secondary battery comprising a positive electrode principally comprising a lithium-containing complex oxide, a negative electrode principally comprising a carbon material and an organic electrolyte solution, said negative electrode

utilizing a mixed binder comprising a polyamic acid and at least one polymer selected from the group consisting of a



polyamide resin, polyvinylpyrrolidone and a hydroxyalkylcellulose.

5,380,607

THERMAL IMAGING METHOD

Robert C. Van Hante, Temse; Luc H. Leenders, Herentals; Roland F. Beels, Aartselaar; Carlo A. Uyttendaele, Berchem; Herman J. Uytterhoeven, Bonhellen, all of Belgium, and Wolfgang Podszun, Köln, Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 9, 1993, Ser. No. 149,233

Claims priority, application European Pat. Off., Nov. 17, 1992, 92203511.8

Int. Cl.⁶ G03C 5/54

U.S. Cl. 430—3

10 Claims

1. A thermal imaging process comprising the step of image-wise heating a donor element so as to transfer therefrom coloured matter onto a contacting receptor element, characterized in that said receptor element has a binder layer which contains a chemical composition of substances for producing a change in colour due to a chemical reaction activated by heat and wherein before said image-wise heating said receptor element contains in a layer at least one substance that by heat applied in the transfer of said coloured matter undergoes a change giving rise to an increase in optical density.

5,380,608

PHASE SHIFT PHOTOMASK COMPRISING A LAYER OF ALUMINUM OXIDE WITH MAGNESIUM OXIDE

Hiroyuki Miyashita; Masahiro Takahashi, and Hiroshi Mohri, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

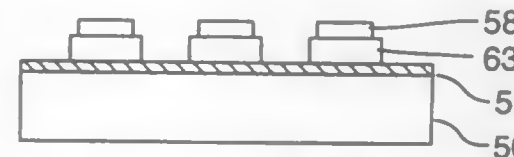
Filed Nov. 12, 1992, Ser. No. 974,919

Claims priority, application Japan, Nov. 12, 1991, 3-295610; Apr. 8, 1992, 4-087072; Apr. 8, 1992, 4-087073

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

5 Claims



2. A phase shift photomask as claimed in claim 1, characterized in that the phase shifter pattern is provided on the surface of the substrate through the opaque layer and a protective layer as a silicon oxide layer is interposed between the etching stopper layer and the opaque layer.

5,380,609

METHOD FOR FABRICATING PHOTOMASKS HAVING A PHASE SHIFT LAYER COMPRISING THE USE OF A POSITIVE TO NEGATIVE RESIST, SUBSTRATE IMAGING AND HEATING

Hiroshi Fujita, and Masaaki Kurihara, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

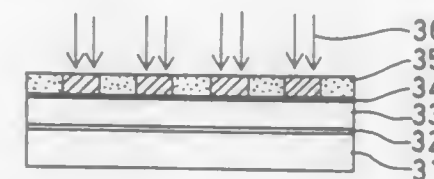
Filed Jul. 29, 1993, Ser. No. 99,153

Claims priority, application Japan, Jul. 30, 1992, 4-203436; Sep. 4, 1992, 4-236890

Int. Cl.⁶ G03F 9/00

U.S. Cl. 430—5

7 Claims



1. A method for fabricating a photomask having a phase shift layer, in which a transparent substrate is provided thereon with a phase shifter pattern and a light-blocking pattern in this order, characterized by:

forming the light-blocking pattern on a phase shifter layer, followed by the formation of a positive to negative image reversible resist thin film,
 exposing to ionizing radiation a given region of the resist thin film that includes a part of the unpatterned region thereof,
 carrying out post-exposure baking for image reversal, exposing the whole back side of the substrate to ultraviolet light using the light-blocking pattern as a mask, thereby enabling only a region of the unpatterned resist, as patterned per the first ionizing radiation exposure, that was not exposed during the first ionizing radiation exposure and was exposed during the ultraviolet light exposure, to be soluble in a developer,
 developing the resist thin film to form a resist pattern, and using the resist pattern as a mask to etch an unmasked region of the phase shifter layer, whereby the phase shifter pattern is formed.

5,380,610

IMAGE FORMING APPARATUS

Satoshi Haneda; Masakazu Fukuchi, and Tadashi Miwa, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 23,139, Feb. 24, 1993, abandoned, which is a continuation of Ser. No. 701,208, May 16, 1991, abandoned. This application Jun. 17, 1994, Ser. No. 262,038

Claims priority, application Japan, May 21, 1990, 2-130833; May 30, 1990, 2-140236

Int. Cl.⁶ G03G 15/32, 13/04

U.S. Cl. 430—31

10 Claims

1. A method of forming an image on an imaging surface of a photoreceptor having a light decay characteristic, wherein: when an amount of exposure of said imaging surface to a light beam emitted from a light source is smaller than a given critical value, a potential of said photoreceptor decays slowly from a predetermined potential; and when the amount of exposure of said imaging surface to said light beam from said light source is larger than said given critical value, the potential of said imaging surface decays rapidly from said predetermined potential;
 the method comprising:

(1) adjusting an amount of light of said light beam emitted from said light source, including the steps of:
 (a) charging said imaging surface of said photoreceptor to a predetermined potential;

- (b) exposing a plurality of points on said charged imaging surface of said photoreceptor with different amounts of light of said light beam emitted by said light source, by varying said amount of light of said light beam;
- (c) detecting from said plurality of exposed points, a half decay exposure light amount P_1 , that represents a potential of said imaging surface of said photoreceptor that has been reduced from an initial potential value to a half value of said initial potential value; and
- (d) varying a maximum light amount I_0 , on the basis of said detected half decay exposure light amount P_1 , of said light beam, in a light amount distribution thereof on said imaging surface of said photoreceptor, that satisfies the following relationship:

$$1.2 \times P_1 \leq I_0 \leq 2.5 \times P_1$$

and then

- (2) forming an image on said imaging surface, including the steps of:
- (e) charging said imaging surface of said photoreceptor to said predetermined potential; and
- (f) exposing said charged imaging surface of said photoreceptor with an image light that is generated by modulating said light beam, said image light being adjusted to have said maximum light amount I_0 , in accordance with an image to be formed.

5,380,611

LIQUID DEVELOPER SYSTEMS FOR IMAGING ON TRANSPARENT AND OPAQUE SUBSTRATES

Benzion Landa, Edmonton, Canada, assignor to Indigo N.V., SM Veldhoven, Netherlands
PCT No. PCT/NL90/00136, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO92/05477, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 19, 1990, Ser. No. 989,020
Int. Cl. G03G 15/01

U.S. Cl. 430—45

30 Claims

1. Apparatus for providing, on either opaque or transparent substrates, images having substantially equal apparent color saturation when viewed, comprising:
- a marking device operative to deposit a given amount of colored material in an imagewise configuration thereon during marking process;
- control apparatus operative when the substrate on which the image is to be printed is transparent, that causes the marking device to repeat the marking process, whereby approximately twice the given amount of colored material is deposited thereon when the substrate is transparent.

5,380,612

PROCESS FOR MANUFACTURING PLANOGRAPHIC PRINTING PLATE

Yasuo Kojima, Tama; Katsura Hirai, and Kiyoshi Goto, both of Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 12, 1993, Ser. No. 59,750

Claims priority, application Japan, May 18, 1992, 4-124938
Int. Cl. G03G 13/10, 13/12, 13/22

U.S. Cl. 430—49

12 Claims

1. A process for manufacturing a planographic printing plate using a photosensitive planographic printing plate comprising an aluminum plate and, provided thereon, a photoconductive layer containing in admixture an alkali soluble resin, a photoconductor in an amount of 5 to 25% by weight and a photosolubilizable photosensitive compound in an amount of 20 to 50% by weight, said process comprising the steps of:
- (A) charging the photoconductive layer;
- (B) imagewise exposing the charged layer to form an elec-

trophotographic latent image on the photoconductive layer;

- (C) developing the latent image on the photoconductive layer with liquid developer to form a toner image layer having a transmission density of the toner image layer to the actinic light not less than 0.6, and a transmission density per unit thickness of the toner image layer to the actinic light not less than 0.03 dm²/g, whereby the toner image layer has a screening property to actinic light;
- (D) heating the developed photoconductive layer at a temperature of 50° to 160° C.;
- (E) uniformly exposing overall to the actinic light the entire photoconductive layer through the formed toner image layer, said actinic light having a wavelength to which the photosolubilizable photosensitive compound is sensitive; and
- (F) removing the photoconductive layer where no toner image layer has been formed.

5,380,613

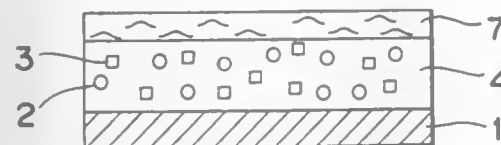
PHOTOSENSITIVE MEMBER COMPRISING ELECTRONATTRACTING COMPOUND AND HINDERED PHENOL COMPOUND

Hideaki Ueda, Kawanishi; Shigeaki Tokutake, Takatsuki; Keli-chi Inagaki, Itami, and Yuki Shimada, Suita, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Aug. 10, 1992, Ser. No. 926,291

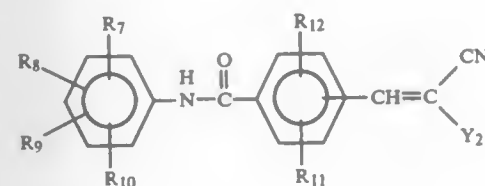
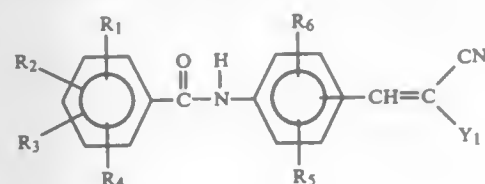
Claims priority, application Japan, Aug. 13, 1991, 3-202737; Aug. 13, 1991, 3-202740; Aug. 13, 1991, 3-202744; Aug. 13, 1991, 3-202746; Aug. 13, 1991, 3-202748; Feb. 7, 1992, 4-022443
Int. Cl. G03G 15/02

U.S. Cl. 430—58

16 Claims



1. A photosensitive member composed of a photosensitive layer on an electrically conductive substrate characterized by that the photosensitive layer comprises a charge generating material, a charge transporting material, a binder resin and an electronattracting compound represented by the following general formulas [I], [II], [III] or mixture thereof:



5,380,615

PROCESS FOR PRODUCING A TONER FOR DEVELOPMENT OF ELECTROSTATIC CHARGED IMAGE

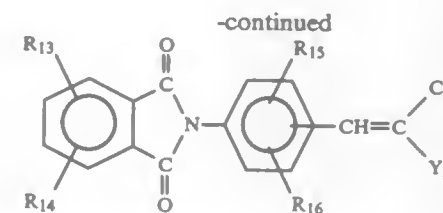
Toshiro Tokuno, Takarazuka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 11, 1989, Ser. No. 336,339

Claims priority, application Japan, Apr. 12, 1988, 63-89733
Int. Cl. G03G 9/00

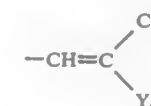
U.S. Cl. 430—109

17 Claims



in which Y_1 , Y_2 and Y_3 represent respectively a cyano group, an alkoxycarbonyl group, aryloxycarbonyl group which may have a substituent or an aryl group which may have a substituent;

R_1 — R_{16} represent respectively a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a nitro group, a cyano group, a benzoyl group which may have a substituent, an aryloxycarbonyl group which may have a substituent, an alkoxycarbonyl or



in which Y_4 represents a cyano group, an alkoxycarbonyl group, an aryloxycarbonyl group which may have a substituent, or an aryl group which may have a substituent.

5,380,614

POSITIVE CHARGEABLE COLOR TONER

Hiroki Totsuka, and Hirono Takeuchi, both of Shizuoka, Japan, assignors to Tomoe-gawa Paper Co., Ltd., Tokyo, Japan

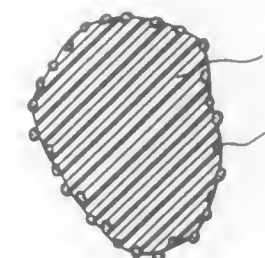
Filed Mar. 15, 1993, Ser. No. 31,548

Claims priority, application Japan, Apr. 2, 1992, 4-108435; Apr. 17, 1992, 4-122966

Int. Cl. G03G 9/08, 9/09

U.S. Cl. 430—106

10 Claims



1. A positive chargeable color toner comprising (a) a positive chargeable compound and (b) coloring particles comprising a binding resin, a coloring agent and a charge control agent, said coloring particles having surfaces to which is fixed said positive chargeable compound in the amount of 0.1~10.0 parts by weight per 100 parts by weight of said coloring particles, said positive chargeable compound comprising alumina particles which have been treated with a silane coupling agent selected from the group consisting of dimethyl silicone and $\text{C}_6\text{F}_{17}\text{SO}_2\text{NC}_2\text{H}_5(\text{CH}_2)_3\text{Si}(\text{CH}_3)_3$, said alumina particles having a CO_2 gas adsorption number of 4.0/nm² or less and a specific surface area of 80 m²/g or greater.

5. A positive chargeable color toner as recited in claim 1 wherein said coloring agent comprises at least one compound selected from the group consisting of rhodamine-type magenta dye, quinacridone-type magenta pigment, phthalocyanine-type cyanogen pigment, phthalocyanine-type green pigment, disazo-type yellow pigment, monoazo-type red pigment, and anthraquinone-type dye.

5,380,616

TONER FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Mitsuo Aoki; Yoshihiro Saguro; Tomio Kondo; Yasushi Nakamura, and Satoru Miyamoto, all of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 983,893

Claims priority, application Japan, Dec. 6, 1991, 3-349018
Int. Cl. G03G 9/097

U.S. Cl. 430—110

20 Claims

1. A toner for developing latent electrostatic images, comprising toner particles, each of said toner particles composed of:

- (a) a continuous phase comprising a binder resin, and
- (b) a disperse phase dispersed in the form of finely-divided disperse phases in said continuous phase, comprising
- (i) a resin which is not the same as said binder resin for use in said continuous phase, and
- (ii) finely-divided particles of a releasing agent which are dispersed in the resin of the disperse phase, with

(c) a coloring agent being dispersed in said continuous phase and/or said disperse phase.

5,380,617

Patent Not Issued For This Number

5,380,618

MICROPATTERN-FORMING MATERIAL HAVING A LOW MOLECULAR WEIGHT NOVOLAK RESIN, A QUINONE DIAZIDE SULFONYL ESTER AND A SOLVENT

Tadayoshi Kokubo; Kazuya Uenishi; Shiro Tan, and Wataru Ishii, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 985,453, Dec. 3, 1992, abandoned, which is a continuation of Ser. No. 500,348, Mar. 28, 1990, abandoned. This application Apr. 19, 1994, Ser. No. 230,020 Claims priority, application Japan, Mar. 29, 1989, 1-77899 Int. Cl.⁶ G03F 7/023, 7/30

U.S. Cl. 430—190

7 Claims

1. A micropattern-forming, light-sensitive resin composition which consists essentially of an admixture of:

(a) a novolak resin consisting essentially of a condensate between formaldehyde and a mixture of m-cresol and p-cresol with a m-cresol to p-cresol charging weight ratio of from 45/55 to 60/40, wherein said novolak resin has the following characteristics:

(i) a dissolving rate of 20 to 800 Å/sec in an aqueous solution of tetramethylammonium hydroxide (TMAH) and an alkali activity of 0.131N;

(ii) a weight average molecular weight of 1000 to 6000 calculated as polystyrene equivalent, and

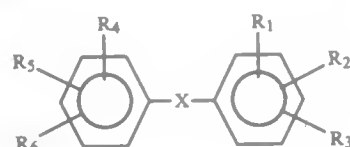
(iii) a non-exposed dissolving rate of equal to or more than 100 Å/sec in an aqueous solution of TMAH with an alkali activity of 0.262N;

(b) a light-sensitive substance of 1,2-naphthoquinonediazide-4-sulfonyl ester; and

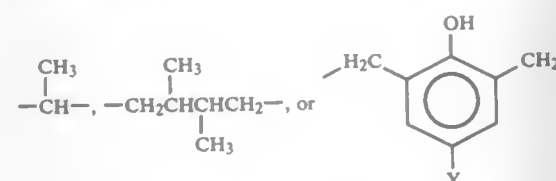
(c) a solvent capable of dissolving the novolak resin and said light-sensitive substance;

wherein said novolak resin, said light sensitive substance, and said solvent are present in such amounts that a 1.0 micron thick resist formed of the material has an optical density at 382 nm of 0.1 to 0.4 μm⁻¹,

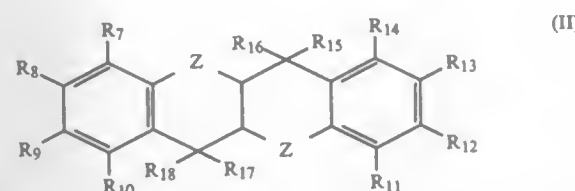
wherein said light-sensitive substance comprises a condensation reaction product between 1,2-naphthoquinonediazide-4-sulfonyl chloride and at least one of the polyhydroxy compounds represented by the following general formulae (I), (II), (III) and (IV):



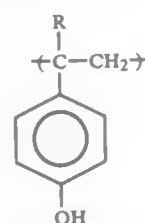
wherein X represents,



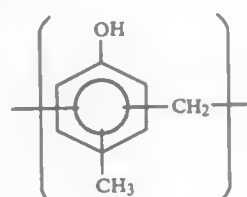
Y represents a hydrogen atom or an alkyl group, and at least one of R₁ to R₆ represents a hydroxyl group and the rest independently represent a hydrogen atom, an alkyl group or an aryl group;



wherein at least one of R₇ to R₁₄ represents a hydroxyl group, and the rest independently represent a hydrogen atom, an alkyl group or an aryl group, R₁₅, R₁₆, R₁₇ and R₁₈, which may be the same or different, each represents a hydrogen atom or an alkyl group, and Z represents a single bond or an oxygen atom;



having a weight average molecular weight of from 100 to 5000 wherein R represents a hydrogen atom or a methyl group;



having a weight average molecular weight of from 100 to 5000 and a ratio of m-cresol to p-cresol of from 40/60 to 70/30.

5,380,619 POLYMERIC PHOSPHONIUM MORDANT AND PHOTOGRAPHIC ELEMENT CONTAINING THE SAME

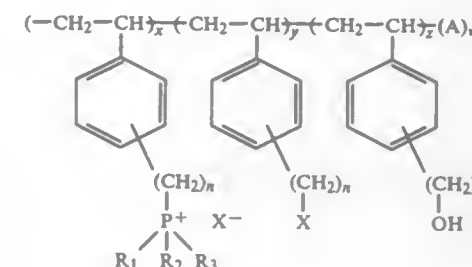
Daniël, M. Timmerman; Daniël A. Claeys, both of Mortsel, and Wilhelmus Jaansens, Aarschot, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium
Continuation of Ser. No. 437,766, Nov. 15, 1989, abandoned, which is a continuation of Ser. No. 199,992, May 26, 1988, abandoned. This application Apr. 12, 1994, Ser. No. 226,395 Claims priority, application European Pat. Off., Jun. 16, 1987, 87201146.5

Int. Cl.⁶ G03C 5/54

U.S. Cl. 430—213

5 Claims

1. Dye image-receptor element suitable for use in dye diffusion transfer imaging processes having on a support an image-receiving layer containing a hydrophilic colloid and a phosphonium mordanting polymer consisting of randomly distributed recurring units corresponding to the general formula (I)



wherein:

A represents acrylonitrile or methacrylonitrile;
n represents an integer of from 1 to about 12;
each of R₁, R₂ and R₃ (same or different) represents a C₁-C₈ alkyl group, a cycloalkyl group or an aryl group;
X represents an halogen atom;
X⁻ represents an halogen ion derived from X;
x + y + z represents from about 2 mole % to about 70 mole % with y + z maximum 15 mole % and x not equal to 0 mole %, and
w represents from about 30 mole % to about 98 mole %.

5,380,620

IMAGE-FORMING PROCESS

Tomizo Namiki; Tamotsu Suzuki, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

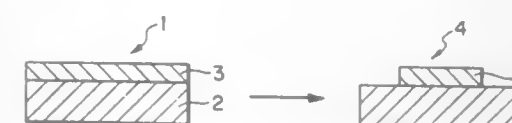
Filed Mar. 2, 1994, Ser. No. 204,448

Claims priority, application Japan, Mar. 2, 1993, 5-066120

Int. Cl.⁶ G03C 11/12

U.S. Cl. 430—257

12 Claims



1. An image-forming process comprising the steps of: forming an ink-receiving area and an ink-repelling area on a light-sensitive material by imagewise exposing the material to actinic light or by imagewise exposing the material to actinic light and developing the exposed material; placing under pressure on the ink-receiving area and ink-repelling area of the material an ink sheet comprising a support and an ink layer composed of a colorant and a polymer binder under the condition that the ink layer is brought into contact with the ink-receiving area and the ink-repelling area of the material; removing the ink sheet from the material so that the ink layer of the ink sheet is transferred only onto the ink-receiving area of the material; placing under pressure an image receiving sheet on the ink-receiving area having the ink layer therein and the ink-repelling layer of the material; and separating the image receiving sheet from the material so that the ink layer in the ink-receiving area is transferred onto the image receiving sheet.

5,380,621

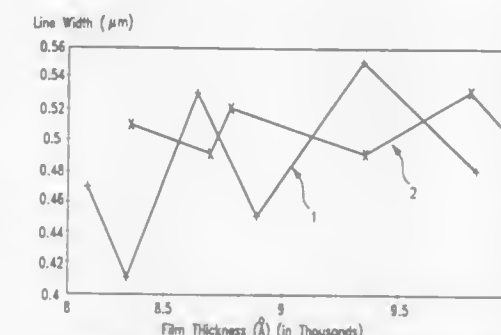
MID AND DEEP-UV ANTIREFLECTION COATINGS AND METHODS FOR USE THEREOF

Robert R. Dichiaro, Middletown; Christopher F. Lyons, La-Grangeville; Ratnasabapathy Sooriyakumaran, Fishkill; Gary T. Spinillo, Wappingers Falls; Kevin M. Welsh, Fishkill, and Robert L. Wood, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y. Continuation of Ser. No. 845,404, Mar. 3, 1992, abandoned. This application May 3, 1993, Ser. No. 55,400

Int. Cl.⁶ G03C 1/492

U.S. Cl. 430—272

7 Claims



1. A photoresist structure having at least two layers and overlaying a semiconductor substrate comprising: an antireflective first layer coated upon said substrate wherein the antireflective layer comprises a polysilane, and wherein the antireflective layer has an absolute optical density of at least 0.25 at the imaging wavelength of an overlaying photoresist layer, and wherein the antireflective layer is substantially inert to contact reactions with the photoresist layer, and wherein the antireflective layer is insoluble in the developer for the photoresist layer; and a second layer coated upon said antireflective first layer comprising a chemically amplified photoresist which is sensitive to ultraviolet radiation having a wavelength in the range from about 180 nm to about 350 nm.

5,380,622

PRODUCTION OF NEGATIVE RELIEF COPIES

Joachim Roser, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 22, 1991, Ser. No. 688,406

Claims priority, application Germany, Apr. 27, 1990, 4013575

Int. Cl.⁶ G03F 7/023, 7/30

U.S. Cl. 430—325

4 Claims

1. A process for the production of negative copies by image-wise exposure of a recording plate consisting of a substrate and a photosensitive layer which is applied thereon and consists essentially of,

as photosensitive compounds, ester of 1,2-naphthoquinone-2-diazide-4-sulfonyl acid-4- and -5-sulfonyl acid or -4-sulfonyl acid and 5-carboxylic acid, polymeric, water-insoluble, resin-like binders which are soluble in aqueous alkaline solutions,

and optionally at least one assistant from the group consisting of resins for adjustment to specific developers, monomeric 1,2-naphthoquinone-2-diazide-5-sulfonyl esters, dyes and assistants for improving the developability, which comprises heating of the exposed plate, uniform exposure of the plate and development by dissolving the alkali-soluble components from the recording layer by means of an aqueous alkaline developer to form said negative relief copies, wherein said esters are obtained by reacting

a) from 50 to 99% by weight of an oligomeric or polymeric condensate of
a₁) from 0.5 to 1 mol of an alkyl- and/or alkoxy substituted monohydric, dihydric or trihydric hydroxybenzene,
a₂) from 0 to 0.5 mol of phenol and

a₃) from 0.5 to 1.5 mol of a C₁-C₁₂-carbonyl compound, the sum of the amounts of a₁ and a₂ being 1 mol, and b) from 1 to 50% by weight of 1,2-naphthoquinone-2-diazide-4-sulfonic acid or -carboxylic acid or a functional derivative of these acids, where up to 20% by weight of said compounds b) is optionally replaced by the corresponding 5-sulfonic or -carboxylic acid or a functional derivative of these acids.

5,380,623

AQUEOUS DEVELOPER FOR LITHOGRAPHIC PRINTING PLATES WHICH PROVIDES IMPROVED OLEOPHILICITY

Gary R. Miller, Paul R. West, both of Fort Collins, and Melanie A. Felker, Loveland, all of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,949

Int. Cl.⁶ G03F 7/32

U.S. Cl. 430—331

28 Claims

1. An aqueous alkaline developing composition that is useful in developing negative-working lithographic printing plates, said composition comprising:

- (1) an organic solvent,
- (2) an anionic surface active agent,
- (3) an alkali metal tetraborate,
- (4) an aliphatic monocarboxylic acid,
- (5) an aliphatic dicarboxylic acid,
- (6) a long chain aliphatic amine, and
- (7) an alkaline buffering system in an amount sufficient to provide a pH in the range of from 8 to 12.

5,380,624

PROCESS FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kaznaki Yoshida; Takatoshi Ishikawa; Yoshihiro Fujita, and Genichi Furusawa, all of Kanagawa, Japan, assignors to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 963,288, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 632,647, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 312,279, Feb. 21, 1989, abandoned. This application Sep. 27, 1993, Ser. No. 126,730

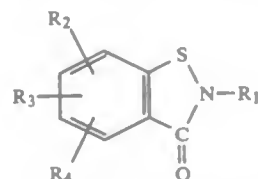
Claims priority, application Japan, Feb. 19, 1988, 63-36903; Feb. 22, 1988, 63-39077; Jun. 1, 1988, 63-134717

Int. Cl.⁶ G03C 1/34

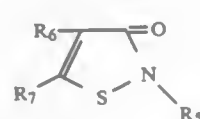
U.S. Cl. 430—372

16 Claims

1. A method for processing a silver halide color photographic material with a color developing solution containing at least one aromatic primary amine color developing agent, wherein said silver halide color photographic material, comprising at least one emulsion layer of silver halide containing 98–99.9 mol % of silver chloride, contains silver halide in an amount of from 0.3 to 0.8 g/m² as silver, contains at least one anti-bacterial agent represented by general formulae (I), (II), (V-C) or (V-D) and a hydrophilic colloid, wherein the anti-bacterial agent is present in an amount of from 10 to 10,000 ppm based on the amount of the hydrophilic colloid:

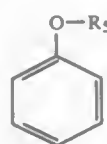


wherein R₁ represents a hydrogen atom, an alkyl group or an alkoxy group; and R₂, R₃ and R₄ each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a cyano group or a nitro group,



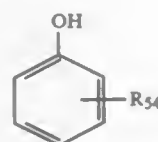
(II)

wherein R₅ represents a hydrogen atom, an alkyl group, a cyclic alkyl group, an alkenyl group, an aralkyl group, an aryl group, a —CONHR₈ group (in which R₈ represents an alkyl, aryl, alkylthio, arylthio, alkylsulfonyl, arylsulfonyl, alkylsulfinyl or arylsulfinyl group) or a heterocyclic group; and R₆ and R₇ each represents a hydrogen atom, a halogen atom, an alkyl group, a cyclic alkyl group, an aryl group, a heterocyclic group, a cyano group, an alkylthio group, an arylthio group, an alkylsulfoxide group, an alkylsulfinyl group or an alkylsulfonyl group,



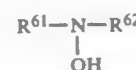
(V-C)

wherein R₅₃ represents a hydroxy-substituted alkyl group,



(V-D)

wherein R₅₄ represents a cycloalkyl group, wherein said color developing solution contains 0.005 to 0.5 mol/l of at least one organic preservative represented by the formula



wherein R⁶¹ and R⁶² each represents a substituted or unsubstituted alkyl group; and wherein R⁶¹ and R⁶² may be connected to each other to form a heterocyclic ring with a nitrogen atom, wherein the color developing solution does not contain more than 2 ml/l of benzyl alcohol and the color developing solution is supplied in an amount of from 30 to 100 ml per m² of said silver halide color photographic material.

5,380,625

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS COMPRISING PARTICULAR DYE COUPLERS USING PARTICULAR DEVELOPERS

Keiji Miyahashi; Masato Taniguchi, and Naoki Salto, all of Kanagawa, Japan, assignors to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 5, 1993, Ser. No. 14,241

Claims priority, application Japan, Feb. 5, 1992, 4-047728

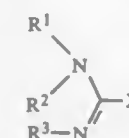
Int. Cl.⁶ G03C 7/46, 5/18, 5/26

U.S. Cl. 430—388

13 Claims

1. A method for the processing of a silver halide color photographic material, which comprises processing an image-wise exposed silver halide color photographic material comprising at least one silver halide emulsion layer and containing an N,N-substituted malondiamide coupler with a color developer containing an aromatic primary amine color developing agent represented by the following general formula (D) or (H):

removing one hydrogen atom from an amidine or guanidine represented by the following general formula (2):



(2)

wherein R¹, R² and R³ may be the same or different and each represents a hydrogen atom or an alkyl group having not more than 6 carbon atoms; X represents a hydrogen atom, an amino group, an alkyl group, an aryl group or a heterocyclic group, and each of these groups has 8 carbon atoms or less; or any two of R¹, R², R³ and X_n (wherein n is as defined above) may combine together to form a ring.

5,380,627

METHOD OF PROCESSING A PHOTOGRAPHIC SILVER HALIDE COLOR MATERIAL UTILIZING A PROCESSING TANK HAVING A BARRIER

Andrew D. Grimsey, Luton, Great Britain, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/02129, § 371 Date May 7, 1993, § 102(e) Date May 7, 1993, PCT Pub. No. WO92/09009, PCT Pub. Date May 29, 1992

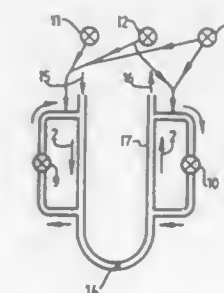
PCT Filed Nov. 11, 1991, Ser. No. 50,099

Claims priority, application United Kingdom, Nov. 14, 1990, 9024783

Int. Cl.⁶ G03C 5/18, 5/26, 7/00, 7/46

U.S. Cl. 430—399

9 Claims



1. A method of processing an imagewise exposed photographic silver halide material, comprising:

transporting the material through a processing tank containing redox amplification processing solution comprising a color developing agent and an oxidizing agent, wherein said processing tank is divided into at least two parts separated by a barrier which allows the material to pass but which reduces mixing of solution components between said at least two parts; and recirculating and replenishing the solution in each of said at least two parts separately to maintain a different concentration of halide ions in said at least two parts of said processing tank.

5,380,628

METHOD OF PREPARING COUPLER DISPERSIONS

John F. Sawyer, Fairport, and Paul L. Zengerle, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

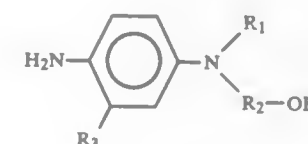
Filed Jul. 29, 1991, Ser. No. 737,076

Int. Cl.⁶ G03C 7/388

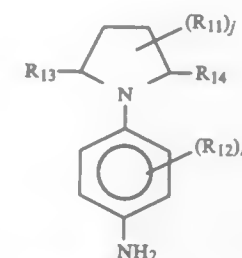
U.S. Cl. 430—449

20 Claims

1. A method of making a fine particle photographic coupler dispersion having an average particle size of less than 0.15 μm, which comprises mixing a photographic coupler, coupler solvent and auxiliary coupler solvent into an aqueous gelatin



wherein R₁ represents a C₁₋₆ straight-chain or branched alkyl group or a C₃₋₆ straight-chain or branched hydroxyalkyl group; R₂ represents a C₃₋₆ straight-chain or branched hydroxyalkylene group or a C₃₋₆ straight-chain or branched hydroxyalkylene group; and R₃ represents a hydrogen atom, a C₁₋₄ straight-chain or branched alkyl group or a C₁₋₄ straight-chain or branched alkoxy group;



(H)

wherein R₁₁ represents a substituent; j represents 0 or an integer of 1 to 6, with the proviso that when j is 2 or more, the plurality of (R₁₁)_j's may be the same or different; and R₁₂ represents a substituent; k represents 0 or 1, and R₁₃ and R₁₄, which may be the same or different, each represents an alkyl group.

5,380,626

METHOD FOR PROCESSING A SILVER HALIDE PHOTOGRAPHIC MATERIAL USING A PROCESSING SOLUTION HAVING A BLEACHING ABILITY CONTAINING ONE OF AN AMIDINE OR A BISGUANIDINE COMPOUND

Koichi Nakamura, and Yoshiharu Yabuki, both of Kanagawa, Japan, assignors to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 6, 1993, Ser. No. 42,800

Claims priority, application Japan, Apr. 6, 1992, 4-112377

Int. Cl.⁶ G03C 7/00, 5/44, 5/18, 5/38

U.S. Cl. 430—393

20 Claims

1. A method for forming an image in a silver halide color photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer which comprises

image-wise exposing the silver halide color photographic material, color developing the exposed material in a color developing solution, and then subjecting the developed material to a desilverization treatment, wherein the desilverization treatment is carried out using a processing solution having a bleaching ability and containing at least one of an amidine compound or a bisguanidine compound and a ferric salt of an organic acid, wherein the amidine compound or the bisguanidine compound is a compound represented by the following general formula (1):



(1)

wherein n represents an integer of 1 to 4; when n=1, A represents a hydrogen atom or an amino group, and B represents a residue formed by removing one hydrogen atom from an amidine represented by the following general formula (2); and when n≠2, A represents an n-valent organic residue having 10 carbon atoms or less, and B represents a residue formed by

medium containing at least 1% by weight of an anionic surfactant selected from the group consisting of alkali metal salts of alkarylene sulfonic acids, alkali metal salts of alkyl sulfates, alkaryl sulfonate salts, and alkyl sulfosuccinates; and washing the dispersion with water for a time sufficient to remove at least one-fourth of the surfactant.

5,380,629
METHOD OF MAKING AND A PHOTOGRAPHIC
ELEMENT CONTAINING BLEACH ACCELERATOR
SILVER SALTS

Benjamin T. Chen, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1993, Ser. No. 40,318

Int. Cl.⁶ G03C 5/00, 5/44, 5/42, 1/005

U.S. Cl. 430—461

23 Claims



1. A process for preparing a bleach accelerator silver salt dispersion comprising precipitating a salt of a bleach accelerating compound and a silver salt wherein the vAg is maintained at a predetermined level and wherein the precipitated bleach accelerator silver salt is additionally processed to reduce the size of the silver salt grains.

5,380,630
SILVER HALIDE PHOTOGRAPHIC PRODUCT
Yoshihiro Mochizuki, Eiichi Ueda, and Toshiyuki Ikariya, all of Hino, Japan, assignors to Konica Corporation, Japan
Continuation of Ser. No. 891,837, Jun. 1, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,075

Claims priority, application Japan, Jun. 3, 1991, 3-160070

Int. Cl.⁶ G03C 1/76, 3/00

U.S. Cl. 430—501

18 Claims

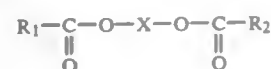
1. A color photographic product having a patrone and a silver halide color photographic material rolled in said patrone, said silver halide color photographic material comprising:

a support having a thickness not exceeding 90 microns, a backing layer on a first face of said support, and a silver halide emulsion layer and a protective layer on a second face of said support, wherein an outermost layer on each of said first face and said second face has a maximum coefficient of kinetic friction of 0.33 with respect to velvet attached to an opening of said patrone through which said material passes, and wherein

said outermost layer on said second face contains an organopolysiloxane, and said backing layer contains at least one compound represented by Formula (1) or Formula (2)

Formula (1)
RCOOM

wherein R represents an aliphatic hydrocarbon group and M represents a cation;



Formula (2)

wherein R₁ and R₂ each represents an aliphatic hydrocarbon group and X represents a divalent linkage group.

5,380,631
SILVER HALIDE COLOR PHOTOGRAPHIC
LIGHT-SENSITIVE MATERIAL

Yasushi Nozawa, Nobuo Seto, Nobutaka Ohki, and Masayoshi Toyoda, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 8, 1993, Ser. No. 2,465

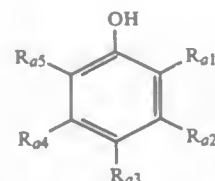
Claims priority, application Japan, Jan. 10, 1992, 4-022041
Int. Cl.⁶ G03C 1/46

U.S. Cl. 430—504

13 Claims

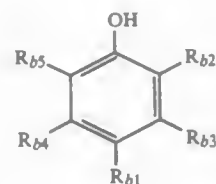
1. A silver halide color photographic light-sensitive material having at least one negative silver halide emulsion layer on a support, wherein said silver halide color photographic light-sensitive material contains at least one compound which reacts with the oxidized form of a developing agent to release a development inhibitor or a precursor of a development inhibitor and/or at least one compound which cleaves after reacting with the oxidized form of a color developing agent, the cleaved compound of which in turn reacts with another molecule of the oxidized form of a color developing agent to cleave a development inhibitor, and contains at least one compound selected from compounds represented by Formulae (A) and (B) below:

Formula (A)



in Formula (A), R₄₁ to R₄₅ may be the same or different and each represents a hydrogen atom, a group of alkyl, alkenyl, aryl, alkyloxycarbonyl, aryloxycarbonyl, acyl, sulfonyl, carbamoyl, sulfamoyl, acylamino or sulfonamido, a halogen atom, or —X—R₄₀ wherein —X— represents —O—, —S—, or —N(R₄₆)—, R₄₀ represents a group of alkyl, alkenyl or aryl, and R₄₆ represents a hydrogen atom or the group defined for R₄₀, substituents at the ortho positions with each other of the groups represented by R₄₁ to R₄₅ can combine to form a 5- to 7-membered ring, the groups represented by R₄₁ to R₄₅ are not simultaneously hydrogen atoms, and at least one of R₄₁ and R₄₅ is an alkyl group;

Formula (B)



Formula (B), R₄₁ represents a hydrogen atom, a group of alkyl, alkenyl, aryl, heterocyclic ring, alkyloxycarbonyl, aryloxycarbonyl, acyl, sulfonyl, carbamoyl, sulfamoyl or acylamino, a halogen atom, or —X—R₄₀ wherein —X— represents —O—, —S—, or —N(R₄₆)—, R₄₀ represents a group of alkyl, alkenyl, aryl or heterocyclic ring, R₄₆ represents a hydrogen atom or the group defined for R₄₀, and R₄₂ to R₄₅ may be the same or different and each represents a hydroxyl group or the group defined for R₄₁, substituents at the ortho positions with each other of the groups represented by R₄₁ to R₄₅ can combine to form a 5- to 7-membered ring, and one or two of R₄₂, R₄₃, R₄₄ and R₄₅ are hydroxyl groups except that only one of R₄₂ and R₄₅ can represent a hydroxyl group,

wherein said compound selected from compounds represented by Formulae (A) and (B) imparts to the light-sensi-

tive material upon exposure and color development a sensitivity reduction of 0.05 log E or less.

5,380,632
PHOTOSENSITIVE PHOTOGRAPHIC SILVER HALIDE
COLOR MATERIALS

Peter D. Marsden, North Harrow; John K. C. Kempster, Stanmore, and John A. Bee, Watford, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP92/01755, § 371 Date Mar. 19, 1993, § 102(e)
Date Mar. 19, 1993, PCT Pub. No. WO93/03418, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 3, 1992, Ser. No. 30,358

Claims priority, application United Kingdom, Aug. 6, 1991, 9116930

Int. Cl.⁶ G03C 1/46, 1/76

U.S. Cl. 430—505

6 Claims

1. A photosensitive photographic silver halide colour material comprising at least two dye image-forming units each separated from its neighbouring units by a layer containing a scavenger for oxidised developing agent, each unit comprising at least one silver halide emulsion layer and at least one dye image-forming colour coupler, the material comprising a total silver coating weight of less than 300 mg/m² characterised in that the material contains a gelatin layer, said gelatin layer is located adjacent a coupler containing silver halide emulsion layer, said gelatin layer is located between the support and said coupler containing silver halide emulsion layer; and said gelatin layer contains from 800 to 3000 mg/m² of gelatin, in order to decrease the band width of the dye formed from said at least one coupler and said gelatin layer contains no scavenger for oxidised developer.

5,380,633
IMAGE INFORMATION IN COLOR REVERSAL
MATERIALS USING WEAK AND STRONG INHIBITORS
John W. Harder, and John D. Baloga, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1993, Ser. No. 5,319

Int. Cl.⁶ G03C 1/46

U.S. Cl. 430—505

35 Claims

1. An color reversal element capable of development in black and white developer, and of development in a color developer comprising:

a support having thereon at least two light-sensitive silver halide emulsion layers and a compound (A) and a compound (B)

Compound (A) capable of releasing a development modifier and having the structural formula



wherein

M is a carrier moiety from which —(Time)_n—INH(1) is released during black and white development;

Time is a timing group;

INH(1) is comprised of oxazole, oxadiazole, thiazole, diazole, oxathiazole, triazole, thiatriazole, benzotriazole, tetrazole, benzimidazole, indazole, isindazole, mercaptotriazole, mercaptothiadiazole, mercaptotetrazole, selenotetrazole, mercaptothiazole, selenobenzothiazole, mercaptobenzoxazole, selenobenzoxazole, mercaptobenzimidazole, mercaptobenzothiazole selenobenzimidazole, benzodiazole, mercaptooxadiazole, or benzisodiazole,

INH(1) of Compound (A) having an inhibitor potency less than 1;

n is 0, 1 or 2; and

Compound (B) having the structural formula



wherein:

CAR is a carrier moiety from which —(TIME)_n—INH(2) is released during color development;

TIME is a timing group;

INH(2) is comprised of a development inhibitor moiety selected from the group consisting of oxazole, oxadiazole, thiazole, diazole, oxathiazole, triazole, thiatriazole, benzotriazole, tetrazole, benzimidazole, indazole, isindazole, mercaptotriazole, mercaptothiadiazole, mercaptotetrazole, selenotetrazole, mercaptothiazole, selenobenzothiazole, mercaptobenzoxazole, selenobenzoxazole, mercaptobenzimidazole, mercaptobenzothiazole selenobenzimidazole, benzodiazole, mercaptooxadiazole, or benzisodiazole, INH(2) of compound (B) having an inhibitor potency greater than 1, and

n is 0, 1 or 2;

wherein inhibitor potency, IS, of the INH compound is defined as:

$$\text{IS} = \frac{\text{IN}(\text{test})}{\text{IN}(\text{control})}$$

where IN_(test) is the inhibitor number of INH and IN_(control) is the inhibitor number for 1-phenyl-5-mercapto-1,2,3,4-tetrazole.

5,380,634
FILTER DYES FOR RAPID PROCESSING
APPLICATIONS

Eric Kiekens, Kessel-Lo, and Paul Callant, Edegem, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium
Filed Sep. 10, 1993, Ser. No. 118,739

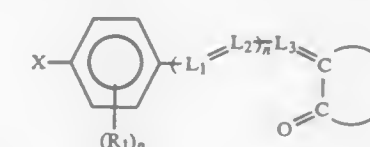
Claims priority, application European Pat. Off., Sep. 11, 1992, 92202768

Int. Cl.⁶ G03C 1/46

U.S. Cl. 430—507

11 Claims

1. A photographic material comprising a support and at least one light-sensitive silver halide emulsion layer characterised in that it comprises in a hydrophilic colloid layer at least one filter dye corresponding to the following general formula (I):



wherein

n represents 0 or 1;

p represents 0, 1 or 2;

Q represents the atoms necessary to form an acidic nucleus;

R₁ represents hydrogen, substituted or unsubstituted alkyl,

substituted or unsubstituted aryl, COOR₂, NHCOR₃ or

NHSO₂R₄ with R₂ representing hydrogen or substituted

or unsubstituted alkyl, R₃ and R₄ representing substituted

or unsubstituted alkyl, or substituted or unsubstituted aryl,

X represents OR₅, SR₅ or NR₆R₇ wherein

R₅ represents H, substituted or unsubstituted alkyl, substi-

tuted or unsubstituted aryl and

each of R₆ and R₇ which may be the same or different repre-

sents hydrogen, substituted or unsubstituted alkyl, substi-

tuted or unsubstituted aryl or the necessary atoms to form

a ring together with the N-atom to which they are at-

tached and the C-atom of the phenylene ring in ortho

position with respect to said N-atom;

L₁, L₂, L₃ represent substituted or unsubstituted methine

with the proviso that at least one of L₁, L₂ or L₃ must be

substituted by —COOR₈;

R₈ represents hydrogen, substituted or unsubstituted alkyl,

substituted or unsubstituted aryl, NH₂, NHR₉, NR₁₀R₁₁

with R₉, R₁₀ and R₁₁ representing a substituted or unsub-

stituted alkyl, or a substituted or unsubstituted aryl

(I)

and wherein at least one of R_1 to R_{11} contains an ionizable group.

5,380,635
DIHYDROPERIMIDINE SQUARYLIUM DYES AS ANTIHALATION AND ACUTANCE MATERIALS FOR PHOTOGRAPHIC AND PHOTOTHERMOGRAPHIC ARTICLES

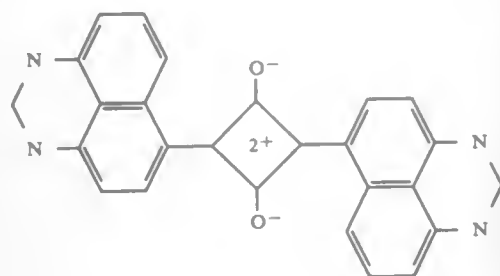
Charles W. Gomez, Cottage Grove; Lori S. Harring, Woodbury; Randall H. Helland, Lake Elmo; William D. Ramsden, Afton, all of Minn., and Tran Van Thien, Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1994, Ser. No. 203,120
Int. Cl.⁶ G03C 1/06

U.S. Cl. 430—517

21 Claims

1. A photothermographic article comprising:
a support bearing an electromagnetic-radiation-sensitive silver halide material; and
a dihydroperimidinium squarylium dye having the nucleus:



5,380,636
MULTICONTRAST RADIOGRAPHIC FILM-SCREEN ASSEMBLY

Pierfiore Malfatto, Cairo Montenotte; Sergio Pesce, Savona, and Elio Cavallo, Carcare, all of Italy, assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

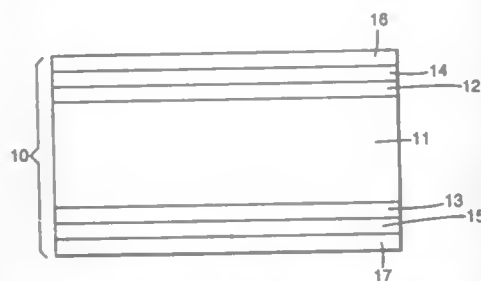
Filed Sep. 2, 1993, Ser. No. 114,848

Claims priority, application Italy, Oct. 5, 1992, MI92 A 002294

Int. Cl.⁶ G03C 1/46

U.S. Cl. 430—503

21 Claims



1. A symmetrical radiographic assembly comprising:
a double side radiographic element which comprises a support and hydrophilic colloid layers coated on each side of said support, and
an intensifying screen adjacent to each side of said radiographic element,
wherein on each side of said support are coated at least two silver halide emulsion layers, each of said at least two emulsion layers on each side of said support having a speed difference of at least 0.5, said at least two silver halide emulsion layers on each side of said support being each sensitized to a different region of the electromagnetic spectrum,
wherein said intensifying screen comprises one or more

different light emitting phosphors selected in order to have a radiation light emission having an emission maximum wavelength corresponding to at least one of said different regions of the electromagnetic spectrum to which said at least two silver halide emulsion layers on one side of said support are sensitized, and
wherein said radiographic element shows an average contrast proportionally variable with the emission ratio of said light emitting phosphor(s).

5,380,637
SILVER HALIDE PHOTOGRAPHIC MATERIAL
Selji Yamashita; Jun Kawagoe, and Ichizo Toya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1993, Ser. No. 138,052

Claims priority, application Japan, Oct. 20, 1992, 4-281870; Oct. 28, 1992, 4-290458

Int. Cl.⁶ G03C 1/76

U.S. Cl. 430—537

16 Claims

1. A silver halide photographic material, comprising a support having provided thereon at least one light-sensitive emulsion layer and at least one surface protective layer containing a hydrophilic colloid, gelatin present in a coated amount of up to 0.8 g/m² and a polymer latex having an average particle size of at least 2 μ m, wherein an amount of a precipitate generated after placing the polymer latex in a test coating solution and leaving the test coating solution and the polymer latex standing at 40° C. for 16 hours is up to 30 weight % of the polymer latex added to the test coating solution, the testing coating solution comprising:

Ingredient	Amount
Gelatin (having a Ca content of at least 2000 ppm so as to provide the test coating solution with a viscosity of 0.2 to 0.3 poise at 40° C.)	500 g
Polymer latex (as a solid matter dispersed in a 5 weight % gelatin solution so that the solid matter becomes 10 weight %)	47 g
H ₂ O	400 ml
	0.09 g
$C_8H_{17}-\text{C}_6\text{H}_4-\text{OCH}_2\text{CH}_2\text{O}-\text{SO}_3\text{Na}$	
$C_{16}H_{33}\text{O}-\text{CH}_2\text{CH}_2\text{O}-\text{H}$	0.51 g
Poly (sodium acrylate) (average molecular weight: 400,000)	1.0 g

wherein the dispersion of the polymer latex is added to a solution prepared by swelling and dissolving the gelatin in water at 40° C. and then the other compounds are added and mixed while stirring.

5,380,638
CYAN DYE-FORMING COUPLER AND A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING THE SAME

Hiroo Takizawa; Hideotoshi Kobayashi, and Hideki Naito, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

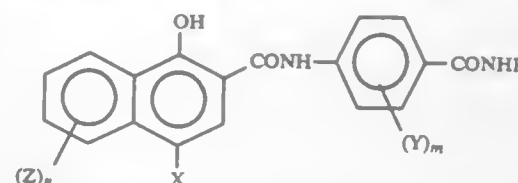
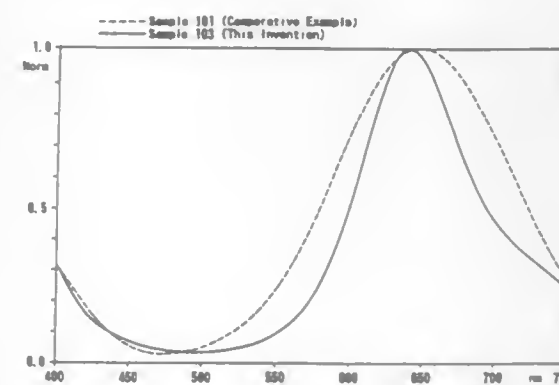
Filed Oct. 2, 1992, Ser. No. 956,105

Claims priority, application Japan, Oct. 8, 1991, 3-287226
Int. Cl.⁶ G03C 7/34

U.S. Cl. 430—552

8 Claims

1. A silver halide color photographic material, which comprises at least one cyan dye-forming coupler represented by formula (I): formula (I)



wherein R represents a hydrogen atom, Y represents a group capable of substitution onto a benzene ring, Z represents a group capable of substitution onto a naphthalene ring, X represents a hydrogen atom or a coupling-off group capable of being released upon a coupling reaction with the oxidized product of an aromatic primary amine developing agent and selected from the group consisting of a halogen atom, a sulfo group, a thiocyanato group, an alkoxy group having a C-number of 1 to 40, an aryloxy group having a C-number of 6 to 40, an alkylthio group having a C-number of 1 to 40, an arylthio group having a C-number of 6 to 50, an alkylsulfonyl group having a C-number of 1 to 40, an arylsulfonyl group having a C-number of 6 to 50, a heterocyclic oxy group having a C-number of 2 to 46, a heterocyclic thio group having a C-number of 2 to 46, an acyloxy group having a C-number of 1 to 40, a carbamoyloxy group having a C-number of 2 to 40, an azoyl group having a C-number of 1 to 50, an imido group having a C-number of 4 to 50, and a hydantoinyl group having a C-number of 3 to 50, m is an integer of 0 to 4, and n is an integer of 0 to 4.

5,380,639
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL
Osamu Ishige; Eisaku Katoh; Hiroko Fujiwara; Shigeto Hirabayashi, and Shunichi Sugita, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,011

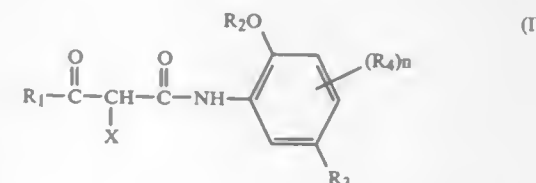
Claims priority, application Japan, Aug. 23, 1991, 3-211905
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.⁶ G03C 1/08, 7/26, 7/32

U.S. Cl. 430—544

5 Claims

1. A silver halide color photographic material that contains at least one compound represented by the following general formula (I):



where R_1 is an alkyl group; R_2 is an alkyl or aryl group; R_3 is an oxycarbonyl, sulfonamido, carbamoyl, acylamino, ureido, oxycarbonylamino, sulfonyloxy, carbonyloxy or sulfamoyl group; R_4 is a substituent; n is 0, 1, 2 or 3; and X is a group

which, when eliminated upon coupling with the oxidation product of a developing agent, forms an ortho-quinonemethide or para-quinonemethide to release a development inhibitor or a precursor thereof.

5,380,640
SILVER HALIDE PHOTOGRAPHIC EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING THE SAME

Toshiya Kondo, and Sadayasu Ishikawa, both of Hino, Japan, assignors to Konica Corporation, Japan

Filed Jan. 24, 1994, Ser. No. 185,470

Claims priority, application Japan, Feb. 10, 1993, 5-044428
Int. Cl.⁶ G03C 1/005

U.S. Cl. 430—567

4 Claims

1. A silver halide photographic emulsion comprising silver halide grains formed under a condition that fine grains of silver halide substantially comprising twinned crystals are supplied into a protective colloid solution, in which said silver halide grains are formed, during a course of formation of said grains, and

a sum of a projection area of tabular grains each having an aspect ratio larger than 1.2 accounts for not less than 50% of a total projection area of all silver halide grains of said emulsion, and said tabular grains have an average aspect ratio of more than 1.2 and less than 5.0 and an average grain size of 0.3 μ m to 0.6 μ m.

5,380,641
PROCESS FOR THE PREPARATION OF SILVER HALIDE GRAINS

Shigeharu Urabe; Haruyasu Nakatsugawa, and Mario Ishiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 10, 1993, Ser. No. 74,678

Claims priority, application Japan, Jun. 11, 1992, 4-152075
Int. Cl.⁶ G03C 1/015

U.S. Cl. 430—569

12 Claims

1. A process for the preparation of tabular silver halide grains having parallel twinning planes via at least a nucleation procedure and a subsequent ripening procedure, which comprises effecting nucleation and ripening in a mixing machine and a ripening vessel provided external to a reaction vessel, and then introducing said grains into said reaction vessel where they are allowed to grow, in accordance with the following procedures:

- 1) supplying an aqueous solution of a water-soluble silver salt, an aqueous solution of a water-soluble halide and an aqueous solution of a protective colloid into a mixing machine provided external to said reaction vessel where they are mixed at a temperature of 5° C. to 40° C. to form nuclear grains;
 - 2) introducing said nuclear grains into a ripening vessel comprising a pipe where they are ripened at an elevated temperature of 50° C. to 95° C. with the ripening being completed in the ripening vessel; and
 - 3) introducing said ripened grains into said reaction vessel equipped with an agitator where they are allowed to grow;
- wherein grains formed at different times in the mixing machine are not mixed with each other in the ripening vessel.

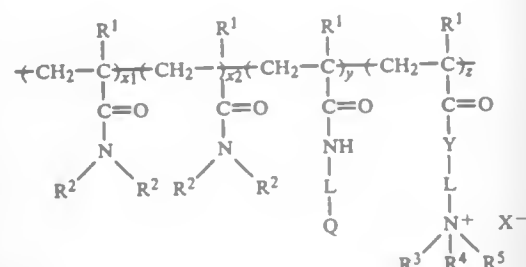
5,380,642

PROCESS FOR PREPARING A THIN TABULAR GRAIN SILVER HALIDE EMULSION

Michael R. Roberts, Rochester; Wai K. Lam, Webster; Wayne A. Bowman, Walworth; John E. Keevert, Jr., Rochester, and Byron H. Rubin, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 22, 1993, Ser. No. 173,300
Int. Cl.⁶ G03C 1/015, 1/005, 1/04

U.S. Cl. 430—569

1. A process for preparing a thin tabular grain silver halide emulsion comprised of silver halide grains in which the halide content is at least 50 mole percent bromide and wherein tabular grains of less than 0.15 micrometers in thickness and having an aspect ratio of greater than 8 account for greater than 50 percent of the total grain projected area; said process comprising the steps of nucleating said silver halide grains in the presence of a nucleation peptizer and thereafter growing said silver halide grains in the presence of a growth peptizer, wherein said nucleation peptizer is a gelatino-peptizer or a synthetic polymer of the following Formula I:



wherein:

x_1 is 0-84
 x_2 is 0-84
 y is 16-100
 z is 0-10

each R^1 is, independently, hydrogen or a methyl group;
each R^2 is, independently, hydrogen, a methyl group or an ethyl group;

L is an alkylene or arylene group of 1 to 10 carbon atoms,
 Q is $\text{CO}_2\text{---M}^+$ or $\text{SO}_3\text{---M}^+$ wherein M^+ is hydrogen, an alkali metal or an NH_4^+ , NH_3R_1^+ , $\text{NH}_2\text{R}_1\text{R}_2^+$, $\text{NHR}_1\text{R}_2\text{R}_3^+$ or $\text{NR}_1\text{R}_2\text{R}_3\text{R}_4^+$ group wherein R_1 , R_2 , R_3 and R_4 are independently alkyl groups of 1 to 6 carbon atoms,

Y is ---O--- or



wherein R is hydrogen, a methyl group or an ethyl group,
 R^3 , R^4 and R^5 are independently hydrogen or an alkyl group of 1 to 6 carbon atoms or R^3 , R^4 and R^5 taken together with the nitrogen atom to which they are attached form a five- or six-membered ring which can include an oxygen heteroatom,

X^- is Cl^- , Br^- , I^- , R^6CO_2^- , R^6OSO_3^- , R^6SO_3^- or R^6SO_2^- where R^6 is an alkyl or aryl radical of 1 to 10 carbon atoms,

and said growth peptizer is a gelatino-peptizer or a synthetic polymer of Formula I wherein $x_1 + x_2$ is 50-83, y is 15-40 and z is 1-10, with the proviso that at least one of said nucleation peptizer and said growth peptizer is a synthetic polymer of Formula I.

5,380,643

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Takayuki Sasaki, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

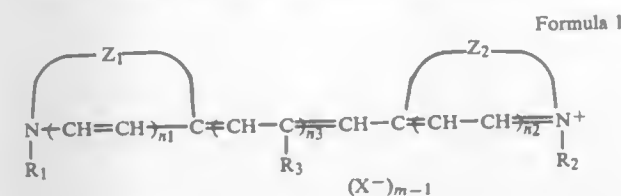
Filed Sep. 17, 1993, Ser. No. 123,539
Claims priority, application Japan, Sep. 22, 1992, 4-253077
Int. Cl.⁶ G03C 1/09, 1/10

U.S. Cl. 430—575

1. A silver halide photographic light-sensitive material comprising:

a support having thereon at least one silver halide emulsion layer,
said silver halide emulsion layer comprising a silver iodobromide grains containing silver iodide in an amount of 1.5 to 2.5 mol %, and at least one of spectral sensitizing dyes represented by formula 1 in an amount of 60 to 1000 mg per mol of silver halide being added during a course between process of desalting excessive salts and commencement of chemical ripening of said silver halide emulsion;

and a rhodium salt in an amount of 1×10^{-10} to 1×10^{-9} mol per mol of silver halide being added during the course between process of the desalting excessive salts and the commencement of the chemical ripening of said silver halide emulsion,



wherein Z_1 and Z_2 represent groups of non-metallic atoms necessary to form a pyrroline ring, a thiazoline ring, a thiazole ring, a benzothiazole ring, a naphthothiazole ring, a selenazole ring, a benzoselenazole ring, a naphthoselenazole ring, an oxazole ring, a benzooxazole ring, a naphthooxazole ring, an imidazole ring, a benzimidazole ring or a pyridine ring which each is either unsubstituted or substituted with a halogen atom, a lower alkyl group, a lower alkoxy group or a phenyl group; R_1 and R_2 each represent a lower alkyl group, a hydroxyalkyl group, a carboxylalkyl group or a sulfoalkyl group; R_3 , when n_3 is 1, represents a lower alkyl group or a hydrogen atom, while, when n_3 is zero, represents a hydrogen atom; n_1 and n_2 each is 0 or 1; n_3 is 0 or 1; X^- is an anion; and m is 1 or 2.

5,380,644

ADDITIVE FOR THE REDUCTION OF MOTTLE IN PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC ELEMENTS

Roger K. Yonkooski, Woodbury, and Patricia M. Savu, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 10, 1993, Ser. No. 104,888
Int. Cl.⁶ G03C 1/494

U.S. Cl. 430—617

1. A photothermographic element comprising a substrate coated with a photothermographic composition comprising:

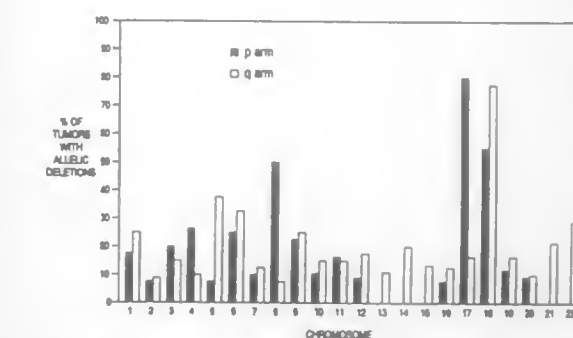
- a photosensitive silver halide;
- a non-photosensitive, reducible source of silver;
- a reducing agent for said non-photosensitive, reducible source of silver;
- a binder; and
- a fluorinated polymer consisting essentially of at least three different groups within the polymer chain derived from reactive monomers, the monomers consisting essentially of:
 - a fluorinated, ethylenically unsaturated monomer;
 - a hydroxyl-containing, ethylenically unsaturated monomer; and

(iii) a polar, ethylenically unsaturated monomer.

5,380,645

GENERALIZED METHOD FOR ASSESSMENT OF COLORECTAL CARCINOMA

Bert Vogelstein, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed Mar. 16, 1989, Ser. No. 324,512
Int. Cl.⁶ C12Q 1/68; C12P 19/34; C17H 17/00; C12N 15/00
U.S. Cl. 435—6



1. A method for assessing allelic loss in nucleic acids of cancerous cells as compared to noncancerous cells of an individual human patient having colorectal cancer, which fractional allelic loss is prognostic of clinical outcome of said individual patient, comprising the steps of:

- hybridizing a selected set of nucleic acid probes to nucleic acids isolated from colorectal cancer cells or colorectal cancer tissue of said individual patient, said nucleic acids having, been digested with a restriction enzyme, each member of said selected set of nucleic acid probes being able to hybridize to an allele of a set of alleles, for which set of alleles a statistical relationship has been predetermined, which statistical relationship correlates:
 - losses in said set of alleles in nucleic acids of cancerous cells or cancerous tissue from patients having colorectal cancer with
 - clinical outcome of said patients;
- hybridizing the selected set of nucleic acid probes of step (1) to nucleic acids isolated from non-cancerous cells or non-cancerous tissue of said individual patient, said nucleic acids having been digested with a restriction enzyme;
- based on differences in hybridization characteristics of said selected set of nucleic acid probes to the nucleic acids of step (1) compared to the nucleic acids of step (2), determining the number of allelic losses in the nucleic acids isolated from cancerous cells or cancerous tissue of said individual patient; and
- determining a fractional allelic loss value by dividing the number of allelic losses determined in step (3) by the number of alleles in the set of alleles probed for which said individual patient is heterozygous.

5,380,646

THROMBUS DETECTION USING RADIOLABELLED DISINTEGRINS

Linda C. Knight, Moorestown, N.J., and Alan H. Maurer, Wynnwood, Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.
Filed Oct. 19, 1992, Ser. No. 965,674
Int. Cl.⁶ A61K 49/02; G01N 33/53

U.S. Cl. 424—1.69

1. A method for detecting venous thrombi, arterial thrombi, pulmonary emboli, or tumors or abscesses having a thrombus component, comprising:

- administering to a patient at least one radiolabelled polypeptide having a native disintegrin amino acid sequence

from about 40 to about 90 amino acids in length, said radiolabelled polypeptide having a thrombus-to-blood ratio of at least about 4:1 and containing the segment -Arg-Gly-Asp-, wherein the glycine residue of said segment is designated as position zero of said radiolabelled polypeptide, said radiolabelled polypeptide further comprising cysteine amino acid residues at positions -23, -18, -17, -14, -5, +7, and +14, relative to said glycine residue, and said radiolabelled polypeptide further comprising the following amino acid residues occurring at the following positions: Gly (-20), Phe (-12), Asp (+4), and Pro (+15); and

(b) scintigraphically imaging the radiolabelled polypeptides.

5,380,647

SIMPLE TEST FOR DETECTING CARCINOEMBRYONIC ANTIGEN IN STOOL

Kamal Bahar, Tehran, Islamic Rep. of Iran, assignor to Farrokh Saidi, Baltimore, Md.

Continuation-in-part of Ser. No. 830,669, Feb. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 698,393, May 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 650,753, Feb. 5, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 53,024

Int. Cl.⁶ G01N 33/574, 33/53, 1/18

U.S. Cl. 435—7.23

1. A method for detecting in a stool sample without centrifugation, comprising the steps of:

- mixing said stool sample with an aqueous buffer to yield a liquid mixture;
- filtering said liquid mixture through an ashless filter paper to remove coarse and gelatinous particles but not CEA and; and
- measuring CEA and in said filtered mixture.

5,380,648

METHOD FOR THE DIAGNOSIS OF VIRULENT BACTERIA

Shanmugam Elango; Shantha Rajarathnam; Vasanthi Ramachandran; Raman K. Roy; Krishnan Sankaran, and Yerramilli V. B. Subrahmanyam, all of Bangalore, India, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed Apr. 5, 1990, Ser. No. 504,945
Claims priority, application Sweden, Apr. 5, 1989, 8901188
Int. Cl.⁶ G01N 33/569; C07K 3/14; C12Q 1/02

U.S. Cl. 435—7.32

5. A method for detecting virulent enteroinvasive *E. coli* or *Shigella* bacteria in a sample of bacteria which comprises:

- growing the sample of bacteria in a growth medium containing Congo Red as an induction triggering factor for a time and at a temperature sufficient to cause the production of Congo Red-induced virulence-associated proteins to take place,
- collecting the bacterial cells and releasing the Congo Red-induced virulence-associated proteins by lysis,
- solubilizing the Congo Red-induced virulence-associated proteins to form a lysate,
- coating the lysate containing the solubilized proteins onto an adsorptive surface,
- blocking the non-specific binding sites on the surface with a non-interfering protein,
- contacting the surface with first antibodies which specifically bind to the Congo Red-induced proteins present on the surface for a time and under conditions sufficient to form complexes thereon,
- contacting the surface having the complexes thereon with second antibody which is conjugated to a detectable label and which specifically binds to the first antibodies present in the complexes for a time and under conditions sufficient to form labeled complexes, and
- detecting the presence of the labeled complexes on the

surface as an indication of the presence of virulent enteroinvasive *E. coli* or *Shigella* bacteria.

5,380,649
ENZYMATIC DETERMINATION OF ANALYTE IONS IN FLUIDS BY OPTIMIZING MEASUREMENT LEVELS
 Michael N. Berry, Eden Hills, Australia; Michael-Harold Town, Oberhausen, Germany; Georg-Burkhard Kresse, Penzberg, Germany; and Uwe Herrmann, Bernried, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany and The Flinders University of South Australia, South Australia, Australia

Division of Ser. No. 696,326, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 302,799, Jan. 19, 1989, abandoned.

This application Jun. 22, 1992, Ser. No. 907,731
 Claims priority, application Australia, Apr. 10, 1987, PI 1365; Jun. 5, 1987, PI 2311

Int. Cl.⁶ C12Q 1/40, 1/00, 1/34, 1/26
 U.S. Cl. 435—22 18 Claims

1. Process for the determination of the concentration of an analyte ion in a fluid sample, comprising measuring the activity of an enzyme whose activity is stimulated by the analyte ion and is selected from the group consisting of a transference, a hydrolase, an oxidoreductase or a lyase in the presence of a selective binding agent which binds to the analyte ion in the fluid sample and is present in a quantity sufficient to increase the ratio of the activity of the enzyme to the concentration of free analyte ions in the fluid sample to within an optimal range for measurement of the concentration of analyte ions in the fluid sample wherein the activity of the enzyme is proportional to the concentration of analyte ions in the fluid sample.

5,380,650
ENHANCED LUMINESCENT ASSAY
 Geoffrey J. R. Barnard, Cheam, England; Dean Goodwin, Dyke, Va., and Robert S. Davidson, Leicester, England, assignors to British Technology Group Ltd., London, England
 PCT No. PCT/GB87/00617, § 371 Date Mar. 23, 1989, § 102(e) Date Mar. 23, 1989, PCT Pub. No. WO88/01746, PCT Pub. Date Mar. 10, 1988

PCT Filed Sep. 3, 1987, Ser. No. 340,413
 Claims priority, application United Kingdom, Sep. 3, 1986, 8621261

Int. Cl.⁶ C12M 1/28; C07C 13/00, 205/05; C07D 471/00
 U.S. Cl. 435—28 11 Claims

1. In a luminescent or luminometric assay which comprises carrying out a chemiluminescent reaction between a catalyst having an accessible heme group, an oxidant and a chemiluminescent dihydrophthalazinedione (DPD) conjugated to a molecular residue relating to a substance to be assayed, and detecting or measuring the chemiluminescence produced, the improvement wherein said reaction is carried out in the presence of an enhancer comprising a saturated bridged bicyclic compound having a nitrogen atom at one or both bridgehead positions or a piperidine ring compound having four C₁₋₄ alkyl groups at the 2- and 6- positions.

5,380,651
METHOD OF DETERMINING ODORANT COMPOUNDS AND ANTAGONISTS OF ODORANTS USING A PRIMARY CULTURE OF OLFACTORY NEURONS
 Gabriele V. Ronnett, Baltimore; Lynda Hester, Towson, and Solomon H. Snyder, Baltimore, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.
 Continuation of Ser. No. 769,210, Oct. 1, 1991, abandoned, which is a division of Ser. No. 633,513, Dec. 31, 1990, Pat. No. 5,217,893. This application Jun. 21, 1993, Ser. No. 79,354

Int. Cl.⁶ C12Q 1/02; C12N 5/00
 U.S. Cl. 435—29 8 Claims

1. A method for identifying antagonists of known odorants, comprising the steps of:
 contacting a primary culture of dissociated olfactory neurons with a quantity of a known odorant, said quantity of

known odorant having the ability to excite said olfactory neurons, said olfactory neurons:

- (a) comprising at least about 85% of the cells in said primary culture of olfactory neurons,
- (b) demonstrating responsiveness in culture to 1 nM IBMP, to between about 1 and about 10 uM citralva, and to between 1 and about 10 uM isovaleric acid,
- (c) expressing vimentin, olfactory marker protein and neuron-specific enolase, and
- (d) not expressing glial fibrillary acidic protein, S-100 protein, keratin, or neurofilament protein, said expression being assessed by immunohistochemistry or by Western blotting;

determining a first level of excitation of the neurons in the presence of said quantity of the known odorant; contacting said primary culture of olfactory neurons with a mixture consisting of said quantity of the known odorant and a putative antagonist;

determining a second level of excitation of the neurons in the presence of said mixture; and comparing said first and second excitation levels, an antagonist being identified when the second level of excitation is less than the first level of excitation.

5,380,652
DEVICE AND PROCEDURE FOR IDENTIFYING PATHOGENIC MICROORGANISMS
 William W. Ayres, Box 305, Chalk Hill Rd., Chalk Hill, Pa. 15421, and John Duda, 130 Creek Rd., Brownsville, Pa. 15417
 Continuation-in-part of Ser. No. 680,426, Apr. 4, 1991, Pat. No. 5,328,833. This application Aug. 3, 1993, Ser. No. 101,008
 The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.⁶ C12Q 1/00, 1/18, 1/14
 U.S. Cl. 435—34 3 Claims

1. A procedure for identifying *Staphylococcus aureus* and differentiating it from coagulase negative staphylococci which comprises first culturing a microorganism suspected of being *Staphylococcus aureus* in the presence of Alphazurine A dye, then placing said suspected microorganism on a solid media and visually observing the presence or absence of growth or inhibition of growth of said microorganism on said solid media, the absence of growth or inhibition of growth being a positive indication of *Staphylococcus aureus*.

5,380,653
EXPRESSION VECTORS AND METHODS FOR INTRACELLULAR PROTEIN PRODUCTION IN BASCILLUS

Ilkka Palva, Helsinki, Finland, assignor to The Finnish National Public Health Institute, Finland
 Continuation of Ser. No. 308,861, Feb. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 129,357, Nov. 30, 1987, Pat. No. 5,010,015, which is a continuation of Ser. No. 939,244, Dec. 5, 1986, abandoned, which is a continuation of Ser. No. 336,405, Dec. 31, 1981, abandoned. This application Sep. 18, 1992, Ser. No. 947,888

Claims priority, application Finland, Dec. 31, 1980, 804081
 Int. Cl.⁶ C12N 15/09, 15/54, 15/62, 15/75

U.S. Cl. 435—69.7 12 Claims

1. A recombinant DNA molecule comprising (1) the regulation sequence of the α -amylase gene of *Bacillus amyloliquefaciens*, (2) DNA encoding a truncated, non-functional signal sequence of the α -amylase gene of *Bacillus amyloliquefaciens* wherein said DNA comprises DNA encoding at least the N-terminal initiation methionine (Met) and the next six adjacent N-terminal amino acids of the wild type of said signal sequence, but not DNA encoding the seven C-terminal amino acids of the wild type of said signal sequence; and (3) DNA encoding amino acids of a desired protein or polypeptide wherein said DNA encoding said desired protein or polypeptide is downstream from and in phase with said regulation

sequence and said DNA encoding said non-functional signal sequence.

5,380,654
PROCESS FOR THE PREPARATION OF EPOXIDES OF MEANS OF MICROORGANISMS

Keizo Furuhashi, and Motoyoshi Takagi, both of Saitama, Japan, assignors to Japan Energy Corporation, Tokyo, Japan
 Continuation of Ser. No. 700,326, May 9, 1991, abandoned, which is a continuation of Ser. No. 268,648, Nov. 8, 1988, abandoned, which is a continuation of Ser. No. 737,966, May 28, 1985, abandoned. This application Jan. 19, 1993, Ser. No. 5,408
 Claims priority, application Japan, May 28, 1984, 59-108040; Sep. 3, 1984, 59-184332; Mar. 6, 1985, 60-44185

Int. Cl.⁶ C12P 17/02, 13/00; C12N 1/12
 U.S. Cl. 435—117 11 Claims

1. A process for the preparation of epoxides comprising:
 (a) reacting an allyl ether with *Nocardia corallina* ATCC 31338 under aerobic conditions in an aqueous medium to produce the corresponding 2,3-epoxypropyl ether and
 (b) isolating the epoxide, wherein said allyl ether is selected from the group consisting of allyl phenyl ether, 2-methylphenyl allyl ether, 3-methylphenyl allyl ether, 4-methylphenyl allyl ether, 2-allylphenyl allyl ether, 2-allyloxyphenyl allyl ether, 2-ethylphenyl allyl ether, 2-(n-propyl)phenyl allyl ether and allyl benzyl ether.

5,380,655
METHODS AND COMPOSITIONS FOR THE PRODUCTION OF HAEMOPHILUS INFLUENZAE TYPE B MAJOR OUTER MEMBRANE PROTEIN ANTIGENS
 Eric J. Hansen, Plano, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.
 Continuation of Ser. No. 249,482, Sep. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 131,143, Dec. 10, 1987, abandoned. This application Feb. 11, 1992, Ser. No. 835,092

Int. Cl.⁶ C12N 1/21, 15/31
 U.S. Cl. 435—172.3 26 Claims

21. A method for preparing transformed *Haemophilus influenzae* cells useful in the production of *Haemophilus influenzae* P2 antigen comprising:
 (a) transforming *Haemophilus influenzae* host cells with a recombinant vector which includes a DNA sequence encoding a *Haemophilus influenzae* P2 antigen; and
 (b) selecting transformants which express the antigen encoded by the DNA sequence.

5,380,656
CHYMOPAPAIN AND METHOD OF PURIFYING IT ON AN INHIBITORY DIPEPTIDE AFFINITY COLUMN
 Alan J. Barrett; David J. Buttle, both of Cambridgeshire, United Kingdom, and Daniel H. Rich, Madison, Wis., assignors to The Boots Company, Nottingham, England
 Filed Dec. 13, 1991, Ser. No. 768,325
 Claims priority, application United Kingdom, Apr. 28, 1989, 8909836

Int. Cl.⁶ C12N 9/50; A61K 37/54
 U.S. Cl. 435—219 13 Claims

1. A purified chymopapain which has a specific activity against BAPNA (1 mM) at 37° C. and pH 6.0 of between 800 and 1700 units per mg and contains less than 0.2% each of papaya proteinase III (PPIII), papain and papaya proteinase IV (PPIV).

5,380,657
METHOD FOR ISOLATION OF INSERTION ELEMENTS FROM CORYNEFORM BACTERIA

Andreas Schaefer; Anna-Hildegard Seep-Feldhaus; Wolfgang Jaeger; Joern Kallinowski; Wolfgang Wollleben, and Alfred Puhler, all of Bielefeld, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 18, 1993, Ser. No. 33,320
 Claims priority, application Germany, Mar. 19, 1992, 4208785
 Int. Cl.⁶ C12N 15/11

U.S. Cl. 435—172.3 4 Claims

1. A method of isolating an insertion element or transposon in coryneform bacteria, said method comprising:

- (a) constructing a non-self-transferrable vector mobilizable from an *E. coli* mobilizer strain, said vector comprising:
 (i) a DNA segment containing a replicon functional in *E. coli*,
 (ii) a second DNA segment containing the DNA fragment coding for the Mob site containing the oriT,
 (iii) a third DNA segment which recombines homologously in Gram-positive bacteria and/or contains a replicon functional in coryneform bacteria, and
 (iv) a DNA segment from *Bacillus subtilis* containing the sacB gene,
- (b) transferring said vector by means of conjugative transfer into a coryneform recipient strain to form transconjugants,
- (c) cultivating said transconjugants containing said vector in a sucrose-containing nutrient medium to obtain sucrose-resistant clones, and
- (d) lysing said sucrose-resistant clones to obtain plasmids and cleaving said plasmids with restriction endonucleases to form fragments,
- (e) analyzing said fragments for the presence of an insertion element or transposon.

5,380,658
IMMOBILIZATION OF BIOLOGICALLY ACTIVE SUBSTANCES WITH A POLYPHOSPHAZENE CARRIER
 Toshitsugu Matsuki; Noritsugu Saito, both of Matsuyama, and Shingo Emi, Daito, all of Japan, assignors to Teijin Limited, Osaka, Japan
 Continuation of Ser. No. 603,500, Oct. 26, 1990, Pat. No. 5,268,287. This application Sep. 16, 1993, Ser. No. 121,909
 Claims priority, application Japan, Oct. 27, 1989, 1-278363; Nov. 22, 1989, 1-301903; Nov. 24, 1989, 1-303195; Nov. 27, 1989, 1-304797; Apr. 2, 1990, 2-85012
 The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.⁶ C12N 11/06; G01N 33/549; C08G 79/02; C07K 17/00
 U.S. Cl. 435—181 7 Claims

1. A carrier for immobilizing a biologically active substance, produced by the process comprising the steps of:

- (i) providing a shaped polyphosphazene article, wherein at least a surface portion of the article is composed of a phosphazene polymer which has side chains having primary amino groups;
- (ii) reacting said primary amino groups of said side chains of the shaped polyphosphazene article with a bifunctional aldehyde to form side chains having an aldehyde group; and
- (iii) reacting a portion of said aldehyde groups with a compound having an amino group to form organic radicals which are non-reactive and hydrophilic, wherein said aldehyde groups which are not reacted to form said organic radicals are capable of binding a biologically active substance; so as to produce said carrier.

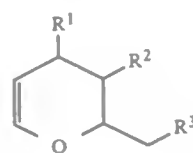
5,380,659
PROCESS FOR HIGHLY REGIOSELECTIVE
ESTERIFICATION AND ESTER CLEAVAGE ON
UNSATURATED SUGAR COMPOUNDS WITH THE AID
OF LIPASES AND ESTERASES

Wolfgang Holla, Hofheim am Taunus, and Reinhold Keller, Bad
Soden am Taunus, both of Germany, assignors to Hoechst
Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 336,480, Apr. 12, 1989, abandoned.

This application Aug. 6, 1992, Ser. No. 924,799
Claims priority, application Germany, Apr. 14, 1988, 3812409;
Aug. 19, 1988, 3828190

Int. Cl.⁶ C12N 9/16, 9/18, 9/20; C12P 7/00
U.S. Cl. 435—196 17 Claims

1. A process for enzymatic esterification or ester cleavage
with the aid of lipases or esterases, which comprises the reaction
thereof with unsaturated sugar compounds of the formula I



in which

- R^1 , R^2 and R^3 are independently selected from $(C_1$ to $C_{10})$ -acyloxy and benzoyloxy,
- R^1 , R^2 and R^3 are hydroxyl,
- R^1 is a hydroxyl protected by an ester or an ether linkage or is an acetal and R^2 and R^3 are independently selected from $(C_1$ - $C_{10})$ -acyloxy and benzoyloxy,
- R^1 and R^3 are independently selected from $(C_1$ - $C_{10})$ -acyloxy and benzoyloxy and R^2 is a hydroxyl protected by an ester or an ether linkage or is an acetal,
- R is a hydroxyl protected by an ester or an ether linkage or is an acetal and R^2 and R^3 are hydroxyl,
- R^1 and R^3 are hydroxyl and R^2 is a hydroxyl protected by an ester or an ether linkage or is an acetal,
- R^1 and R^3 are hydroxyl and R^2 is $(C_1$ - $C_{10})$ -acyloxy, benzoyloxy or a hydroxyl protected by an ester or an ether linkage or is an acetal, or
- R^1 and R^2 are independently selected from acyloxy and benzoyloxy and R^3 is a hydroxyl protected by an ester or an ether linkage or is an acetal.

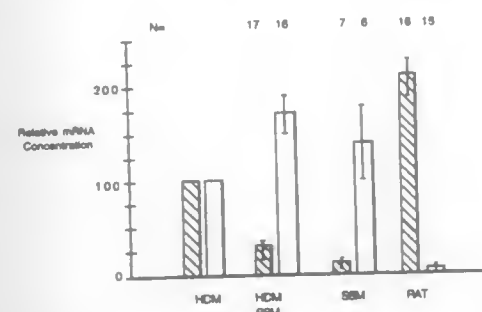
5,380,660
METHOD OF TREATING SERUM OR
SERUM-CONTAINING MEDIUM TO INACTIVATE AN
INHIBITOR OF HEPATOCYTE DIFFERENTIATION
Douglas M. Jefferson, Watertown, and David E. Johnston,
Natick, both of Mass., assignors to New England Medical
Center Hospitals, Inc., Boston, Mass.
Continuation of Ser. No. 360,428, Jun. 2, 1989, abandoned,
which is a continuation-in-part of Ser. No. 305,750, Feb. 2, 1989,
abandoned. This application Oct. 5, 1992, Ser. No. 956,595
Int. Cl.⁶ C12N 5/00

U.S. Cl. 435—240.3 7 Claims

1. A method of treating serum or serum-containing medium
for reducing the loss of differentiative functions of hepatocytes
cultured in said serum or serum-containing medium, said
method comprising:

- contacting said serum or serum-containing medium with
an anionic detergent in an amount sufficient to inactivate
an inhibitor of hepatocyte differentiation in said serum or
serum-containing medium, wherein said detergent con-
tains a sulfate or a carboxylate ionic group;
- incubating said serum or serum-containing medium

which has been contacted with the anionic detergent in
order to inactivate said inhibitor; and



(c) removing unbound detergent from said serum or serum-
containing medium.

5,380,661
BACILLUS LICHENIFORMIS NRRL B-18962 CAPABLE
OF PRODUCING LEVAN SUCRASE IN THE ABSENCE
OF SUCROSE

Robert L. Charles, and Jayarama K. Shetty, both of Elkhart,
Ind., assignors to Solvay Enzymes, Inc., Houston, Tex.
Division of Ser. No. 884,183, May 18, 1992, Pat. No. 5,334,524.

This application Oct. 19, 1993, Ser. No. 138,004
Int. Cl.⁶ C12N 1/20, 1/00

U.S. Cl. 435—252.5 2 Claims

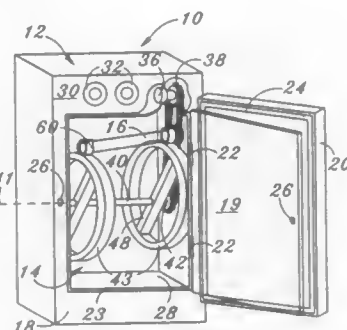
1. A biologically pure culture of *Bacillus licheniformis*
NRRL B-18962.

5,380,662
HYBRIDIZATION INCUBATOR WITH ROTISSERIE
MECHANISM

Arthur J. Robbins, and Michael D. Robbins, both of Mountain
View, Calif., assignors to Robbins Scientific Corporation,
Calif.

Filed Jun. 1, 1990, Ser. No. 531,842
Int. Cl.⁶ C12M 1/10

U.S. Cl. 435—312 13 Claims



1. A hybridization incubator assembly, comprising:
an oven subassembly for providing an enclosed volume
within which controlled temperature conditions may be
maintained; and
a rotisserie subassembly, at least a substantial portion of
which is enclosed within the oven subassembly, for sup-
porting and transporting a plurality of sample holding
components on a continuous pathway within said en-
closed volume,
wherein the rotisserie subassembly is characterized by hav-
ing a pair of generally circular support wheels mounted on
a single rotatable horizontally arrayed drive shaft, with
each said support wheel mounted perpendicularly and
eccentrically on said drive shaft such that said sample

holding components are supported on the rim portions of
said support wheels and the contents of said sample hold-
ing components are agitated as said drive shaft is rotated.

5,380,663
AUTOMATED SYSTEM FOR PERFORMANCE
ANALYSIS AND FLUORESCENCE QUANTITATION OF
SAMPLES

Abraham Schwartz, Hato Rey, P.R., and Alan D. Hetzel,
Starke, Fla., assignors to Caribbean Microparticles Corpora-
tion, Hato Rey, P.R.

Continuation of Ser. No. 671,198, Mar. 18, 1991, abandoned,
which is a continuation-in-part of Ser. No. 620,530, Nov. 21,
1990, Pat. No. 5,089,416, and a continuation-in-part of Ser. No.
516,056, Apr. 27, 1990, Pat. No. 5,084,394, each is a
continuation-in-part of Ser. No. 374,435, Jun. 30, 1989, Pat. No.
5,093,234, which is a continuation-in-part of Ser. No. 128,786,
Dec. 4, 1987, Pat. No. 4,857,451, which is a continuation-in-part
of Ser. No. 805,654, Dec. 11, 1985, Pat. No. 4,774,189, which is
a continuation-in-part of Ser. No. 685,464, Dec. 24, 1984, Pat.
No. 4,767,206. This application Aug. 23, 1993, Ser. No. 110,632
Int. Cl.⁶ G01N 21/64, 33/546

U.S. Cl. 436—10 19 Claims

10. A method of calibrating and of determining performance
of a flow cytometer, comprising:

- providing a flow cytometer, a programmable computer
and a display screen;
- providing a premixed suspension of quantitative micro-
beads, said microbeads having a useful life, said microbead
suspension comprising a plurality of populations of micro-
beads, each of said plurality of said populations having
microbeads with a uniform size and a distinct fluorescence
intensity which differs from the other populations in fluo-
rescence intensity, the microbeads of one of said popu-
lations having no added fluorescent dye and the remaining
microbeads being bound to a first fluorescent dye;
- indicating that the microbeads have a useful life;
- providing software operating on said computer and
containing information on the fluorescence intensity of
each population, said software operating on said computer
to control calculation of calibration and fluorescence
information tailored to said microbead populations, and
display on said screen an expiration date correlated with
the useful life of the microbeads to an operator calibrating
said flow cytometer with said microbeads, wherein said
software ceases operation on said computer at said expira-
tion date, whereupon said flow cytometer cannot be cali-
brated with said software and said microbeads;
- using said flow cytometer and said microbead suspension
prior to said expiration date to provide an ungated list
mode file of data for the microbead suspension on the flow
cytometer; and
- using said software and said computer to automatically
gate and smooth the data, locate peaks in fluorescence
intensity corresponding to each of the microbead popula-
tions, construct linear regression plots and determine the
fluorescence threshold intensity of the flow cytometer,
wherein when said software ceases operation on said
computer, said operator must utilize another suspension of
microbead populations and software tailored for use on
said computer with said another suspension to calibrate
said flow cytometer.

5,380,664
HEMATOLOGY CONTROL COMPOSITIONS FOR
THREE POPULATIONS OF LEUKOCYTES; AND
METHODS FOR THEIR PREPARATION AND USE IN
WHOLE BLOOD CONTROL SYSTEMS

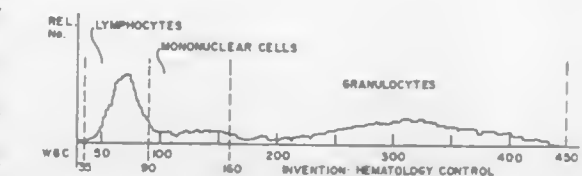
Franklin J. Carver, Miami, and Theodore J. Gerula, Miami
Lakes, both of Fla., assignors to Coulter Corporation, Miami,
Fla.

Continuation of Ser. No. 355,047, May 16, 1989, abandoned,
which is a continuation of Ser. No. 115,671, Nov. 2, 1987,
abandoned, which is a division of Ser. No. 612,091, May 18,
1984, Pat. No. 4,704,364. This application Apr. 17, 1990, Ser.
No. 510,376

The portion of the term of this patent subsequent to Nov. 3, 2004,
has been disclaimed.

Int. Cl.⁶ G01N 19/00 12 Claims

U.S. Cl. 436—10



1. A hematology reference control fluid suspension for use in
an automatic cell counting and sizing instrument, said refer-
ence control comprising a predetermined number of treated
red blood cells to be counted in each of at least two of the
following approximate size ranges:

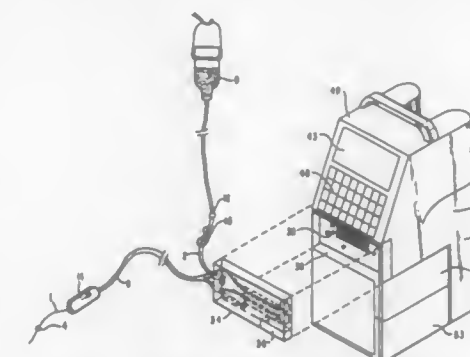
- 35 to 90±3 fL
 - 90 to 160±3 fL
 - 160 to 450±3 fL
- in a compatible aqueous and substantially isotonic stabilizing
media; and said cells in each size range functioning as a substi-
tute for one of three white cell sub-populations in human
blood, said sub-populations being lymphocytes, monocytes or
granulocytes.

5,380,665
FLUID SAMPLE COLLECTION AND DELIVERY
SYSTEM AND METHODS PARTICULARLY ADAPTED
FOR BODY FLUID SAMPLING

Robert F. Cusack, and Michael D. Mintz, both of Edison, N.J.,
assignors to International Technidyne Corporation, Edison,
N.J.

Continuation of Ser. No. 869,312, Apr. 15, 1992, abandoned,
which is a continuation of Ser. No. 329,340, Mar. 27, 1989, Pat.
No. 5,134,079. This application Jan. 27, 1993, Ser. No. 9,417
Int. Cl.⁶ G01N 35/08

U.S. Cl. 436—53 17 Claims



1. A system for transporting a blood sample directly from a
patient's body to test equipment capable of analyzing a blood
sample, comprising:

an intervascular means for selectively drawing a blood sample from a patient's body;

a fluid conduit having a first and a second end and an intermediate portion, said first end coupled to said intervascular means for receiving said blood sample therein and said intermediate portion of said fluid conduit including at least first and second input ports;

a source of blood miscible fluid;

a source of blood immiscible fluid;

a first tube arrangement coupling said source of blood miscible fluid to said first input port;

a second tube arrangement with an inputting means for selectively introducing blood immiscible fluid into said second input port;

a transportable cassette assembly, wherein said second end of the fluid conduit extends into the cassette, said first tube arrangement extending from said source of blood miscible fluid through said transportable cassette assembly and to said first input port, and said second tube arrangement extending from said source of blood immiscible fluid through said transportable cassette assembly and to said second input port;

a controlling means selectively attachable to said cassette assembly for selectively controlling the introduction of said blood sample, said immiscible fluid and said miscible fluid into said fluid conduit, thereby allowing any juxtapositional sequence of blood, immiscible fluid and miscible fluid to be produced within said fluid conduit;

a pump selectively attachable to said cassette assembly, wherein said pump engages said first tube arrangement and said fluid conduit within said cassette assembly, said pump pumping the sequence of fluids through said fluid conduit at a first flow rate and pumping said miscible fluid through said first tube arrangement at a second flow rate, wherein said first and second flow rates are controlled by said controlling means; and

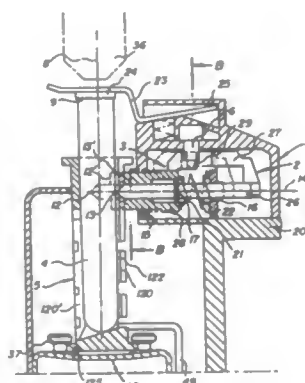
a mechanical directing means attached through said cassette assembly to said second end of the fluid conduit for directing the position of the second end relative test equipment whereby only a selected sample of blood in said sequence of fluids is received by the test equipment.

5,380,666

METHOD FOR SCANNING AND CENTERING CONTAINERS FILLED WITH A LIQUID

Hans-Peter Wuerschum, Ostfildern, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 732,254, Jul. 18, 1991, Pat. No. 5,221,519.
This application Apr. 26, 1993, Ser. No. 51,910
Int. Cl.⁶ G01N 37/00; B67D 5/00
U.S. Cl. 436—54

3 Claims



1. A method for centering an aspirator probe within a container of liquid having a size and position that can vary from container to container, said probe being constructed to descend along an axis having a position adjustable in the horizon-

tal plane depending on the size and the position of the container, the method comprising the steps of:

- placing a container of liquid into a tray, said container having a diameter that can vary from container to container;
- moving said tray and said container of liquid into a position in which said container can be intersected by said probe;
- sensing the position of said tray within said horizontal plane and fixing said tray in said sensed position;
- sensing a center of said container in said fixed tray and fixing said container at said sensed center, and
- moving said probe so as to descend on a line coincident with said center.

5,380,667

SERUM BILIRUBIN AND LIVER FUNCTION TESTS AS RISK PREDICTORS FOR CORONARY ARTERY DISEASE

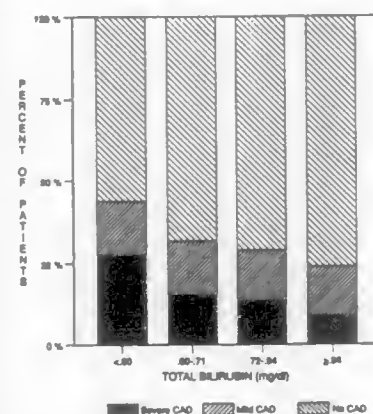
Harvey A. Schwertner, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 30, 1992, Ser. No. 968,881

Int. Cl.⁶ G01N 33/92

U.S. Cl. 436—71

3 Claims



1. A method for determining the likelihood that a patient is at increased risk for severe coronary artery disease, comprising the steps of:

- measuring the level of the patient's serum total bilirubin;
- comparing the measured level to a threshold level for serum total bilirubin; and,
- determining from the comparison the likelihood that the patient is at increased risk for severe coronary artery disease wherein levels below the threshold level of serum total bilirubin indicate that the patient is at increased risk for severe coronary artery disease.

5,380,668

COMPOUNDS HAVING THE ANTIGENICITY OF HCG

James N. Herron, Salt Lake City, Utah, assignor to University of Utah Research Foundation, Salt Lake City, Utah
Filed Jul. 6, 1993, Ser. No. 89,994
Int. Cl.⁶ G01N 33/53; A61K 37/02; C07K 7/00, 15/00
U.S. Cl. 436—510

20 Claims

1. A compound which has up to 13 amino acids and which includes a hexapeptide with the sequence:

AA1 AA2 AA3 AA4 AA5 AA6

wherein:

- AA1 is a substituted or unsubstituted amino acid, said amino acid selected from the group consisting of Gly, Asn, Ser, Phe, and Lys;
- AA2 is a substituted or unsubstituted amino acid, said amino

5,380,670

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

Hiroyasu Hagino, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 767,480, Sep. 30, 1991, Pat. No. 5,304,821.

This application Feb. 2, 1994, Ser. No. 190,494

Claims priority, application Japan, Oct. 8, 1990, 2-270733

Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—31

11 Claims

acid selected from the group consisting of Pro, Trp, Ala, Val, and Glu;

AA3 is a substituted or unsubstituted amino acid, said amino acid selected from the group consisting of Arg, Gln, Ile, Met, Val, Thr, Ser, and Phe;

AA4 is a substituted or unsubstituted amino acid, said amino acid selected from the group consisting of Tyr, Glu, Phe, and Thr;

AA5 is a substituted or unsubstituted amino acid, said amino acid selected from the group consisting of Asp, Asn, Leu, Met, Val, Tyr, Ser, Ile, Ala, Gly, and Phe; and

AA6 is a substituted or unsubstituted amino acid, said amino acid selected from the group consisting of Phe, Trp, Ala, Thr, Arg, and Val.

5,380,669

METHOD OF FABRICATING A TWO-COLOR DETECTOR USING LPE CRYSTAL GROWTH

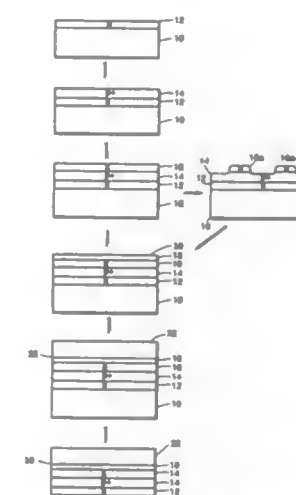
Paul R. Norton, Santa Barbara, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Feb. 8, 1993, Ser. No. 14,939

Int. Cl.⁶ H01L 31/18

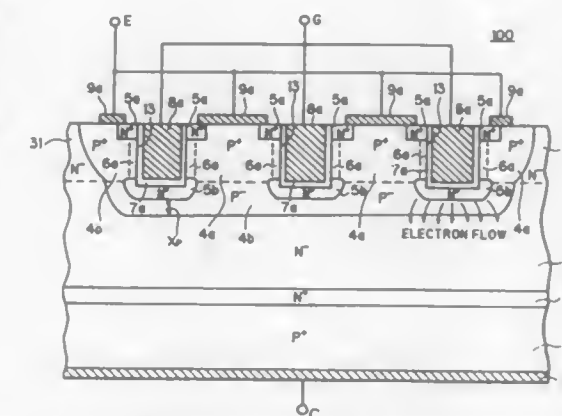
U.S. Cl. 437—5

11 Claims



1. A method for fabricating a radiation detector, comprising the steps of:

- providing a first substrate:
- growing on a surface of the first substrate, by a liquid phase epitaxy process, a first layer comprised of a Group IIB-VIA semiconductor material having a first electrical conductivity and a bandgap selected for absorbing infrared radiation within a first spectral band, wherein the first spectral band includes LWIR radiation or VLWIR radiation;
- growing on a surface of the first layer a second layer comprised of a Group IIB-VIA semiconductor material having a second electrical conductivity and a narrower bandgap than the first layer;
- growing, on a surface of the second layer, a third layer comprised of a Group IIB-VIA semiconductor material having the first electrical conductivity and a bandgap that is narrower than the bandgap of the first layer, the bandgap of the third layer being selected for absorbing infrared radiation within a second spectral band having a shorter wavelength than the first spectral band;
- forming a passivation layer upon a surface of the third layer: bonding a second substrate to a surface of the passivation layer; and removing the first substrate.



1. A method of fabricating a semiconductor device, comprising the steps of:

- obtaining a first semiconductor layer of a first conductivity type having top and bottom major surfaces;
- forming a first part of a second semiconductor layer of a second conductivity type on an upper major surface of said first semiconductor layer of a first conductivity type;
- forming a first part of a third semiconductor layer of the first conductivity type in a top surface of said first part of said second semiconductor layer;
- selectively forming at least one fourth semiconductor layer of the second conductivity type in a top surface of said first part of said third semiconductor layer;
- forming a second part of said third semiconductor layer of the first conductivity type on respective top surfaces of said first part of said third semiconductor layer and said fourth semiconductor layer;
- selectively forming at least one fifth semiconductor layer of the second conductivity type in a top surface of said second part of said third semiconductor layer, said fifth semiconductor layer being located above said fourth semiconductor layer;
- forming at least one trench which extends from a top surface of said fifth semiconductor layer into said fourth semiconductor layer through said fifth semiconductor layer and said second part of said third semiconductor layer;
- forming an insulating layer and a control electrode in this order on an inner wall of said trench;
- forming a first main electrode layer which contacts both said top surface of said second part of said third semiconductor layer and said top surface of said fifth semiconductor layer; and
- forming a second main electrode layer on said lower major surface of said first semiconductor layer.

5,380,671
METHOD OF MAKING NON-TRENCHED BURIED CONTACT FOR VLSI DEVICES

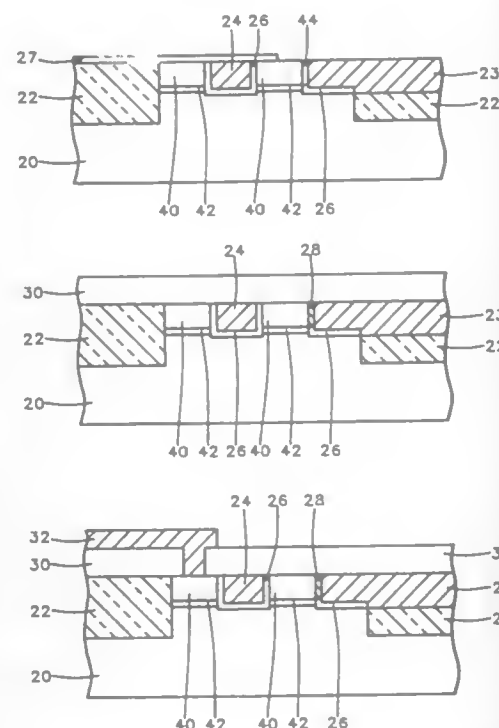
Water Lur, Taipei, and D. Y. Wu, Hsin-Chu, both of Taiwan, Prov. of China, assigns to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Jun. 13, 1994, Ser. No. 258,717

Int. Cl.⁶ H01L 21/336, 21/76

U.S. Cl. 437—41

13 Claims



1. A method of forming a semiconductor device, comprising the steps of:

- providing a silicon substrate;
- etching isolation trenches in said silicon substrate;
- filling said isolation trenches with an isolation dielectric material;
- etching gate electrode trenches with side walls, end walls, and bottoms in said silicon substrate;
- etching conductor electrode trenches with side walls, end walls, and bottoms in said silicon substrate and said isolation dielectric material wherein said conductor electrode trenches have contact ends;
- forming a gate dielectric layer on said side walls, said end walls, and said bottoms of said gate trenches and on said side walls, said end walls, and said bottoms of said electrode trenches at said contact ends;
- filling a said gate electrode trenches and said conductor electrode trenches with conductive electrode material;
- forming a thin oxide layer on the resulting structure;
- forming source and drain regions in the substrate using ion implant techniques;
- etching said thin oxide layer covering said contact ends of said conductor electrode trenches;
- forming a contact cavity by etching said gate dielectric layer from the top of said side walls and the top of said end walls at said contact ends of said conductor electrode trenches;
- filling said contact cavity with conductive contact material whereby the conductive electrode material is electrically connected to the source or drain; and
- forming a pre-metal dielectric layer over the semiconductor substrate surface.

5,380,672
DENSE VERTICAL PROGRAMMABLE READ ONLY MEMORY CELL STRUCTURES AND PROCESSES FOR MAKING THEM

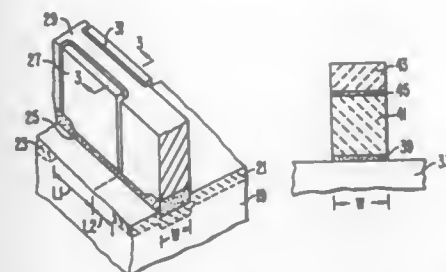
Jack H. Yuan, Cupertino; George Samachisa, San Jose; Daniel C. Guterman, Fremont, and Eliyahou Harari, Los Gatos, all of Calif., assigns to SunDisk Corporation, Santa Clara, Calif.

Division of Ser. No. 629,250, Dec. 18, 1990, Pat. No. 5,343,063. This application Sep. 3, 1993, Ser. No. 117,219

Int. Cl.⁶ H01L 21/265

U.S. Cl. 437—43

24 Claims



1. A method of forming an electrically programmable memory device on a semiconductor substrate, comprising the steps of:

- forming source and drain regions within the substrate at one surface thereof;
- depositing a layer of isolation dielectric to a thickness on said substrate surface, said substrate surface being characterized by being substantially planar at least between the source and drain regions;
- removing portions of the isolation dielectric layer to form a trench that exposes the substantially planar substrate surface along a length thereof between said source and drain regions, said trench having a cross-sectional shape in a direction orthogonal to the substrate surface with a depth equal to said dielectric layer thickness and at least a segment of the depth adjacent the substrate surface being rectangularly shaped with a width between sidewalls thereof that is equal to or less than two times said isolation dielectric layer thickness, said removing step being accomplished without removing any substantial amount of the substrate within the trench;
- forming a gate dielectric layer on the exposed substrate surface within said trench;
- forming an electrically conductive floating gate over said gate dielectric and within said trench;
- forming a control gate dielectric layer over said floating gate; and
- forming an electrically conductive control gate over said floating gate, whereby said floating and control gates are capacitively coupled between opposing surface areas thereof which are separated by said control gate dielectric layer.

5,380,673
DRAM CAPACITOR STRUCTURE
 Ming-Tzong Yang, Chen-Chiu Hsue, both of Hsin Chu, and Anchor Chen, Hsin-Chu City, all of Taiwan, Prov. of China, assigns to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed May 6, 1994, Ser. No. 239,130

Int. Cl.⁶ H01L 21/70

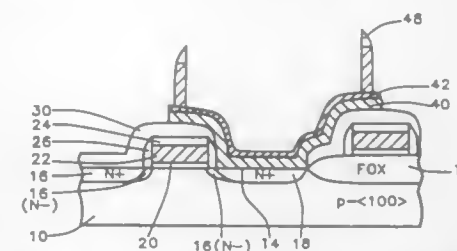
U.S. Cl. 437—47

18 Claims

1. A method for fabricating a high capacitance stacked capacitor on a semiconductor substrate having a device area formed therein comprising the steps of:
- depositing a first insulating layer composed of silicon oxide over said device area and elsewhere over said substrate;
 - forming an opening in said first insulating layer to said de-

vice area providing a contact opening for said stacked capacitor;

- depositing a doped first polysilicon layer over said substrate and over said contact opening thereby making ohmic contact to said device area;
- depositing an electrically conductive layer on said first polysilicon layer, wherein said electrically conductive layer is not polysilicon;
- masking and etching said first polysilicon layer and said electrically conducting layer forming a patterned area over and aligned to said device area;
- depositing a second polysilicon layer over said patterned area of said first polysilicon layer and electrically conducting layer;
- depositing a second insulating layer on said second polysilicon layer;
- masking and etching said second insulating layer forming patterned insulating area over said second polysilicon layer and over and aligned to said patterned area of said first polysilicon and said electrically conducting layer;
- depositing a third insulating layer over said patterned area of said second insulating layer being of different insulator type;



- etching said third insulating layer anisotropically forming sidewall spacers on said patterned second insulating layer and exposing surface of said patterned area of second insulating layer;
- etching completely said second insulating layer forming free standing said sidewall spacers composed of said third insulating layer over said second polysilicon layer;
- etching said second polysilicon layer to said electrically conducting and first polysilicon layers;
- etching completely said third insulating layer sidewall spacers and completing said bottom electrode of said stacked capacitor having said vertical sidewalls;
- depositing a capacitor dielectric layer over and around said bottom capacitor electrode and elsewhere on said substrate having a high dielectric constant;
- depositing a third polysilicon layer over said capacitor dielectric layer and forming a top capacitor electrode layer of said stacked capacitor;
- masking over said stacked capacitor area and etching completely said third polysilicon layer to surface of said capacitor dielectric layer and completing said high capacitance stacked capacitor.

5,380,674
METHOD OF FABRICATING SEMICONDUCTOR MEMORY DEVICE HAVING TRENCH CAPACITOR AND ELECTRICAL CONTACT THERETO

Shin'ichiro Kimura; Takeshi Sakata, both of Kunitachi, and Kiyoo Itoh, Higashi-Kurume, all of Japan, assigns to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 962,509

Claims priority, application Japan, Oct. 18, 1991, 3-270711

Int. Cl.⁶ H01L 21/70, 27/00

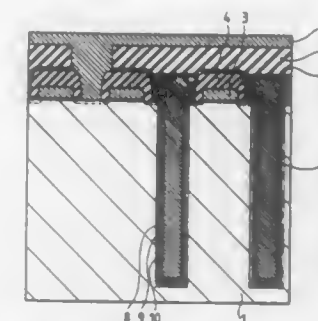
U.S. Cl. 437—52

18 Claims

1. A method for fabricating a semiconductor memory device comprising:
- step of forming at least one gate electrode onto a main sur-

face of a semiconductor substrate through a gate insulating film;

- step of forming a first insulation film to cover a side wall and an upper surface of said at least one gate electrode;
- step of forming a second insulation film overlying the main surface;
- step of applying anisotropic etching to said second insulation film and leaving a part formed on the side wall of said at least one gate electrode and removing a part formed on other domain, whereby an exposed part of the semiconductor substrate is provided;



- step of applying anisotropic etching to the exposed part of said semiconductor substrate and forming at least one trench, each trench having an inner surface;
- step of forming a third insulation film, by chemical vapor deposition, at least on the inner surface of each trench;
- step of removing said second insulation film, so as to provide an exposed surface of the semiconductor substrate; and
- step of forming a conductive film extending from said third insulation film within each trench to the exposed surface of said semiconductor substrate.

5,380,675
METHOD FOR MAKING CLOSELY SPACED STACKED CAPACITORS ON DRAM CHIPS

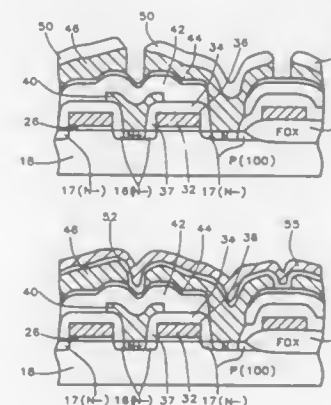
Chen-Chiu Hsue, and Gary Hong, both of Hsin-Chu, Taiwan, Prov. of China, assigns to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Mar. 21, 1994, Ser. No. 210,933

Int. Cl.⁶ H01L 21/70, 27/00

U.S. Cl. 437—52

38 Claims

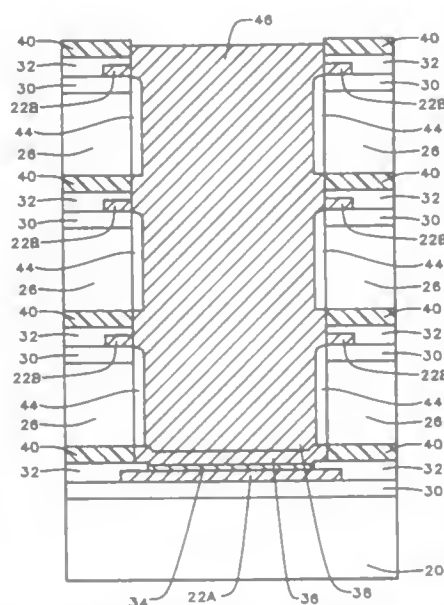


1. A method for fabricating an array of closely spaced storage capacitors over a semiconductor substrate having an array of device regions, word lines and bit lines formed thereon comprising the steps of:

- depositing a first insulating layer on said substrate and electrically isolating said word lines and bit lines;
- depositing a second insulating layer on said first insulating

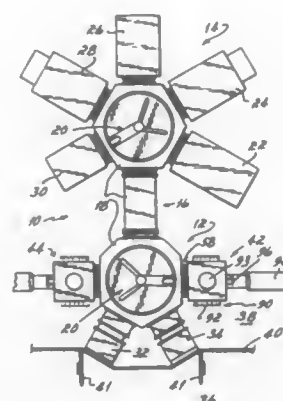
densely stacked array of subordinate integrated circuit semiconductor devices, comprising:

- fabricating interconnected integrated circuitry elements electrically connected to a plurality of contact terminal pads arranged in an inner peripheral row on a master semiconductor substrate to form a master device;
- forming a plurality of lead terminal pads on the master device arranged in an outer peripheral row and electrically connected to the inner row of contact terminal pads;
- forming an insulating layer of an organic material over the surface of the master device;
- etching openings over the contact terminal pads and the lead terminal pads;
- depositing a barrier metal layer and a gold layer over the contact terminal pads;
- fabricating interconnected integrated circuitry elements that are electrically connected to contact terminal pads arranged in a peripheral row on subordinate semiconductor substrate to form a plurality of subordinate integrated circuit semiconductor devices, the pattern of the contact pad terminals matching the pattern of the contact pad terminals on the master devices;



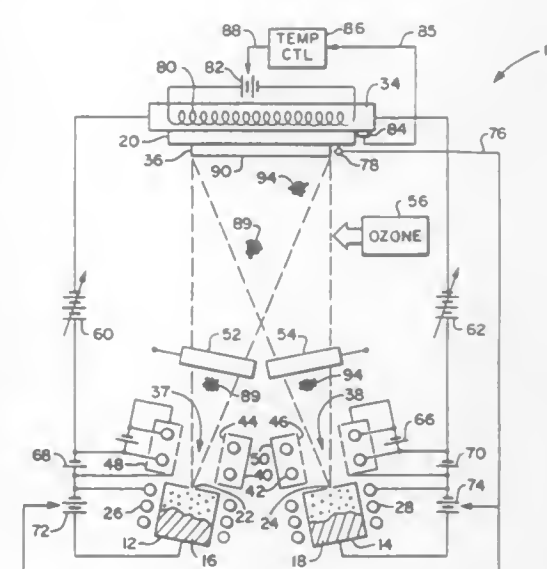
- depositing an insulating layer of an organic material over the surfaces of each subordinate integrated circuit semiconductor devices;
- etching control openings through each of the contact terminal pads and substrates of the plurality of subordinate semiconductor devices, the central openings of a size less than the size of the contact terminal pads;
- depositing a thin conformed dielectric layer over the surfaces of said subordinate semiconductor devices and on the surfaces of the central openings;
- anisotropically etching away the conformed dielectric layer on the surfaces of said subordinate semiconductor devices and the top edges of the dielectric layer in the central openings to a depth sufficient to expose edge surfaces of the contact terminal pads;
- stacking the plurality of said subordinate semiconductor devices on said master semiconductor devices with the central openings of said subordinate semiconductor devices aligned over the row of contact terminal pads on the master semiconductor device; and
- filling the openings with a conductive material to electrically interconnect the plurality of subordinate semiconductor devices and the master semiconductor device.

5,380,682
WAFER PROCESSING CLUSTER TOOL BATCH PREHEATING AND DEGASSING METHOD
 Richard C. Edwards, Ringwood, N.J.; Michael S. Kolesa, Suffern, N.Y., and Hiroichi Ishikawa, Mahwah, N.J., assignors to Materials Research Corporation, Orangeburg, N.Y.
 Division of Ser. No. 701,800, May 17, 1991, Pat. No. 5,259,881.
 This application Nov. 3, 1993, Ser. No. 147,666
 Int. Cl.⁶ H01L 21/00, 21/02, 21/302, 21/463
 U.S. Cl. 437—225 12 Claims



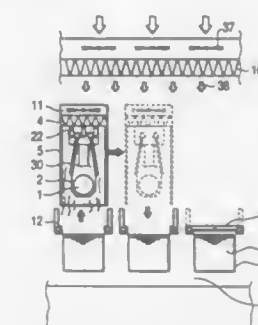
1. A method of processing wafers comprising the steps of:
 - a) placing wafers of a first batch in a cassette into a load-lock closed to an internal machine environment and open to an external atmospheric pressure environment, sealing the load-lock with wafers of the first batch therein from the external environment, pumping the sealed load-lock to a vacuum pressure level of the internal machine environment, and opening the pumped load-lock to the internal environment;
 - b) after the completion of step a), transporting wafers of the first batch one by one from the cassette in the opened load-lock and into a preheating module at the vacuum pressure level of the internal environment, sealing the first batch of wafers in the preheating module, and preheating wafers of the first batch sealed in the preheating module;
 - c) placing wafers of a second batch in a cassette into a load-lock closed to the internal machine environment and open to an external atmospheric pressure environment, sealing the load-lock with wafers of the second batch therein from the external environment, pumping the sealed load-lock to the vacuum pressure level of the internal machine environment, and opening the pumped load-lock to the internal environment;
 - d) after the completion of step b), opening the preheating module and removing preheated wafers of the first batch one by one therefrom in the internal environment;
 - e) after the completion of step c), transporting wafers of the second batch one by one from the opened load-lock into which they were placed and into a preheating module at the vacuum pressure level of the internal environment, sealing wafers of the second batch in the preheating module, and preheating wafers of the second batch sealed in the preheating module; then
 - f) while wafers of the second batch are being preheated in a preheating module in accordance with step e), sequentially transporting preheated wafers of the first batch through a plurality of processing modules in selective communication with the internal environment; and
 - g) after the completion of step f), loading, one by one, wafers of the first batch that have been sequentially processed in accordance with step f) into a load-lock, sealed from the external environment and open to the internal environment.

5,380,683
IONIZED CLUSTER BEAM DEPOSITION OF SAPPHIRE AND SILICON LAYERS
 Scott M. Tyson; Richard Y. Kwor, and Leonard L. Levenson, all of Colorado Springs, Colo., assignors to United Technologies Corporation, Hartford, Conn.
 Filed Oct. 2, 1992, Ser. No. 955,603
 Int. Cl.⁶ H01L 21/00, 21/02, 21/302, 21/463
 U.S. Cl. 437—236 48 Claims



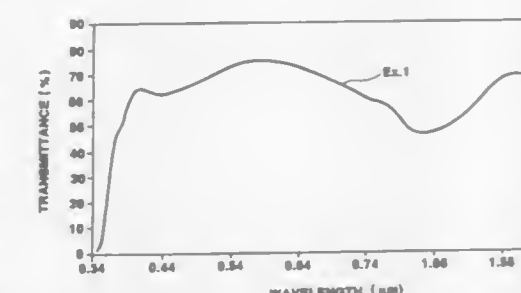
1. A method for forming a sapphire layer and a silicon layer superjacent a substrate, comprising the steps of:
 - providing sapphire in a first crucible having a first nozzle;
 - providing silicon in a second crucible having a second nozzle;
 - positioning a substrate and said crucibles within a vacuum region, said vacuum region having a first pressure level;
 - heating said first crucible to a first temperature to vaporize said sapphire at a second pressure level within said first crucible, said second pressure level being substantially greater than said first pressure level, such that said sapphire vapor is ejected through said first nozzle, thereby forming clusters of sapphire by adiabatic expansion, said sapphire clusters being formed in said vacuum region, outside said first crucible, substantially in the vicinity of said first nozzle;
 - ionizing a portion of said sapphire clusters by electron bombardment, thereby providing a remaining portion of non-ionized sapphire clusters;
 - accelerating said ionized and non-ionized sapphire clusters towards said substrate to form a sapphire layer superjacent said substrate;
 - heating said second crucible to a second temperature to vaporize said silicon at a third pressure level within said second crucible, said third pressure level being substantially greater than said first pressure level, such that said silicon vapor is ejected through said second nozzle, thereby forming clusters of silicon by adiabatic expansion, said silicon clusters being formed in said vacuum region outside said second crucible, substantially in the vicinity of said second nozzle;
 - ionizing a portion of said silicon clusters by electron bombardment, thereby providing a remaining portion of non-ionized sapphire clusters; and
 - accelerating said ionized and non-ionized silicon clusters towards said substrate to form a silicon layer superjacent said substrate.

5,380,684
METHOD FOR TRANSFERRING WAFERS FROM ONE PROCESSING STATION TO ANOTHER SEQUENTIALLY AND SYSTEM THEREFOR
 Yuji Ohkuma, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
 Filed Sep. 3, 1993, Ser. No. 115,768
 Claims priority, application Japan, Sep. 8, 1992, 4-238730
 Int. Cl.⁶ H01L 21/00 7 Claims



1. A method for transferring wafers from one processing station to another processing station sequentially, utilizing a wafer transfer system which is installed in a clean bench forming a downward flow of clean air, wherein a plurality of stations for processing wafers is provided in the clean bench and the transfer system comprises at least a transfer robot which carries a plurality of wafers and is movable from one station to another station sequentially for processing and an exhaust duct which has at least an inlet for exhausting air, said method comprising the steps of:
 - providing partition walls for the transfer robots, the walls defining a chamber surrounding said plurality of wafers, an air filter and a fan positioned for producing a downward air flow in the chamber; and
 - controlling a total amount of clean air supplied to the transfer system so as to be less than an air supply amount to the clean bench.

5,380,685
BRONZE-COLORED INFRARED AND ULTRAVIOLET RADIATION ABSORBING GLASS
 Shigeki Morimoto, Mie, and Tadashi Noguchi, Matsusaka, both of Japan, assignors to Central Glass Company, Ltd., Ube, Japan
 Filed Mar. 16, 1993, Ser. No. 31,984
 Claims priority, application Japan, Mar. 18, 1992, 4-062418; Jul. 14, 1992, 4-187016
 Int. Cl.⁶ C03C 3/087 12 Claims



1. A bronze-colored infrared and ultraviolet radiation absorbing glass comprising a soda lime silica base glass, and consisting essentially of as coloring components, on a weight

basis, 0.10–0.55% of total iron expressed as Fe_2O_3 , 0.2–0.6% of CeO_2 , 0.3–14 ppm of CoO and 5–20 ppm of Se, wherein said total iron includes ferrous iron and ferric iron and the weight ratio of said ferrous iron to said ferric iron, $\text{Fe}^{2+}/\text{Fe}^{3+}$, is in the range from 0.17 to 0.55.

5,380,686

PROCESS FOR PRODUCING COMPOSITE RAW MATERIAL FOR CERAMICS AND COMPOSITE RAW MATERIAL FOR CERAMICS PRODUCED BY SAID PROCESS

Isao Kondou, Ikeda; Nobuyuki Tamari, Toyonaka; Takahiro Tanaka, and Satoshi Sodeoka, both of Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 19, 1993, Ser. No. 109,058

Claims priority, application Japan, Sep. 11, 1992, 4-269422
Int. Cl.⁶ C04B 35/56, 35/10

U.S. Cl. 501—87

4 Claims

1. A process for producing a uniformly mixed composite raw material for ceramics, the process comprising providing a dispersion of at least two types of raw materials for ceramics in a liquid medium, coagulating and precipitating said raw materials together with aluminum hydroxide precipitate formed by reacting an aluminum salt with an alkali in said medium, and recovering said uniformly mixed composite raw material, said aluminum salt being 0.05 to 0.5 parts by weight, in terms of alumina, per 100 parts by weight of the total amount of said raw materials.

5,380,687

SILICON-ALUMINUM MIXED OXIDE

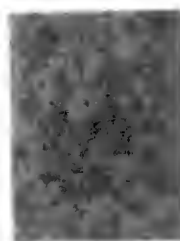
Helmut Mangold, Rodenbach; Werner Hartmann, Babenhausen; Peter Kleinschmitt, Hanau; Dieter Kerner, Hanau, and Thomas Rudolph, Hanau, all of Germany, assignors to Degussa Aktiengesellschaft, Germany

Filed Apr. 21, 1993, Ser. No. 49,311

Claims priority, application Germany, Aug. 28, 1992, 4228711
Int. Cl.⁶ C04B 35/44

U.S. Cl. 501—128

1 Claim



1. A mullite powder having a composition of 65 to 85% Al_2O_3 , remainder SiO_2 , said mullite powder consisting essentially of crystallites between 40 and 400 nm in size which can be intergrown with each other and in which the mullite phase is without amorphous components and without components of aluminum oxide as determined by an X-ray diffraction pattern, said mullite powder being produced by a method which comprises heating, at a temperature between 1100° and 1700° C., a silicon-aluminum mixed oxide powder produced by flame-hydrolysis which has a composition of 65 to 85% Al_2O_3 , remainder SiO_2 , said silicon-aluminum mixed oxide powder having an amorphous structure, each primary particle containing components of both SiO_2 and Al_2O_3 , the primary particles being between 7 and 80 nm in size and the specific surface of the powder being between 20 and 200 m^2/g .

5,380,688

METHOD FOR MAKING SUBMICROMETER CARBIDES, SUBMICROMETER SOLID SOLUTION CARBIDES, AND THE MATERIAL RESULTING THEREFROM

Stephen D. Dunmead; William G. Moore; Alan W. Weimer; Glenn A. Eisman, and John P. Henley, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1993, Ser. No. 104,511

Int. Cl.⁶ C04B 35/56

U.S. Cl. 501—87

23 Claims

1. A method for making a particulate ceramic composition, consisting essentially of: rapidly carbothermally reducing a reactive particulate mixture of (a) at least one metallic oxide selected from the group consisting of the oxides of the Group IVB (Ti, Zr, Hf), Group VB (V, Nb, Ta); Group VIB (Cr, Mo, W) transition metals, and combinations thereof and (b) a carbon source by heating the reactive particulate mixture at a rate of between about 100K/sec to about 100,000,000K/sec in a substantially non-oxidizing atmosphere to an elevated temperature that makes carbothermal reduction of the reactive particulate mixture thermodynamically favorable; and holding the particulate mixture at the elevated temperature for a residence time sufficient to substantially convert said reactive particulate mixture into at least one product selected from the group consisting of (i) one or more metallic carbides, (ii) one or more metallic carbide precursors, (iii) one or more solid solution carbides, and (iv) one or more solid solution metallic carbide precursors, and combinations thereof.

5,380,689

Patent Not Issued For This Number

5,380,690

CRACKING CATALYST FOR THE PRODUCTION OF LIGHT OLEFINS

Shi Zhicheng; Shi Wenyuan; Ye Yifang; Ge Xingpin; Cao Ping; Liu Shunhua; Xie Chaogang; Li Zaiting; Shu Xingtian; Yang Xiaoming; Fu Wei; Zhou Meng, and He Mingyuan, all of Beijing, China, assignors to China Petro-Chemical Corporation, Beijing, China

Filed Jun. 7, 1993, Ser. No. 72,771

Claims priority, application China, Mar. 29, 1993, 93102783.7
Int. Cl.⁶ B01J 29/08, 29/28

U.S. Cl. 502—65

9 Claims

1. A cracking catalyst for the production of light olefins comprising 0–70% by weight based on the weight of the catalyst of clay, 5–99% of inorganic oxides and 1–50% of zeolites, wherein said zeolite components comprise 0–25% by weight of Y zeolite and 75–100% by weight of phosphorus and rare earth containing high silica zeolite having a structure of pentasil.

5. A catalyst according to claim 1, wherein said phosphorus and rare earth containing high silica zeolite having a structure of pentasil comprises a rare earth containing high silica zeolite having a structure of pentasil treated with aluminum phosphate, possessing a phosphorus content of 2–20% by weight calculated as P_2O_5 .

8. A catalyst according to claim 5, wherein said rare earth containing high silica zeolite having a structure of pentasil is prepared by using water glass, aluminum phosphate and inorganic acid as raw materials, and REY and REHY zeolite as crystalline seeds, and crystallizing at 130°–200° C. for 12–60 hrs.

5,380,691 CATALYTIC MICROPOROUS ZIRCONIA PARTICULATES

Jean-Michel Popa, Drancy, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 521,840, May 10, 1990, abandoned.

This application Jun. 12, 1992, Ser. No. 897,755

Claims priority, application France, May 10, 1989, 89 06090

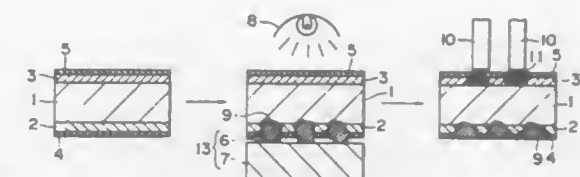
Int. Cl.⁶ B01J 27/053, 27/18, 27/232, 27/25, 31/38, 37/30, 21/06

U.S. Cl. 502—170

32 Claims

1. Microporous zirconia particulates having pores of an average diameter of less than 2 nm, wherein the zirconia particulates contain an anion more covalent than a hydroxyl anion concentrated at the face surface of the particulates.

a protective layer formed on said thermosensitive recording layer, with said transparent support, said thermosensitive



recording layers and said protective layer having substantially the same refractive index.

5,380,694

THERMOSENSITIVE RECORDING ELEMENT

Robert R. Krebs, Dallas, Tex., assignor to International Paper Company, Purchase, N.Y.

Filed Jun. 3, 1992, Ser. No. 893,139

Int. Cl.⁶ B41M 5/30, 5/36, 5/40

U.S. Cl. 503—214

23 Claims

1. A thermosensitive recording element comprising in order: (a) a support; (b) at least one thermal layer comprising an organic polymeric binder, a substantially colorless electron donating dye precursor and an electron accepting compound capable of forming color by reacting with said dye precursor; and (c) a layer coated from a non-binder containing solution of a crosslinking agent wherein said agent forms a diol or ether bond with the binder in the underlying thermal layer;

5,380,695

IMAGE-RECEIVING ELEMENT FOR THERMAL DYE TRANSFER METHOD

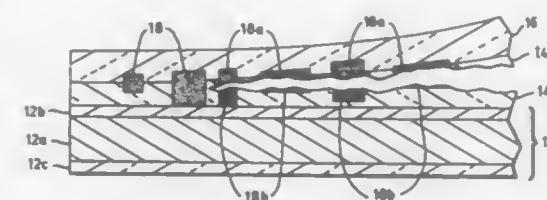
Yuan H. Chiang, Andover, Mass., and Russell A. Gandiana, Merrimack, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 22, 1994, Ser. No. 231,119

Int. Cl.⁶ B41M 5/035, 5/38

U.S. Cl. 503—227

19 Claims



10. A method of preparing an identification document secure against tampering and including the steps of:

providing an image-receiving element comprising, in order, a support sheet; a polymeric cohesively destructible security layer having a printed security pattern comprising a patterning agent and a binder therefor; and an image-receiving layer for receiving an image in dye by a thermal transfer from a dye donor sheet; said polymeric cohesively destructible security layer being characterized by a cohesivity less than the adhesivity of such layer for each layer contiguous thereto, and said security pattern being destroyed by attempted delamination of said image-receiving layer from said image-receiving element; contacting the image-receiving layer of said image-receiving element with a dye donor sheet comprising a support and a thermally transferable dye; imagewise transferring said dye of said dye donor sheet to



(V)

wherein A^5 represents at least one element selected from the group consisting of La, Y, Ce, Pr, Nd, Sm, Eu, and Gd; B^3 represents at least one element selected from the group consisting of Ba, Sr, Ca, Mg, Pb, Zn, and Ag; C^4 represents at least one element selected from the group consisting of Mn, Co, Fe, Ni, Cr, Cu, V, Mo, W, Ti, Zr, Nb, Pd, Rh, Ru, and Pt; and x is a number of from 0 to 1, supported on a solid acid carrier.

5,380,693

TRANSPARENT THERMOSENSITIVE RECORDING MEDIUM

Hiroshi Goto, Fuji, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 1, 1994, Ser. No. 221,669

Claims priority, application Japan, Apr. 2, 1993, 5-100565; Jun. 29, 1993, 5-185454; Oct. 12, 1993, 5-280173; Oct. 12, 1993, 5-280174

Int. Cl.⁶ B41M 5/40

U.S. Cl. 503—200

6 Claims

1. A transparent thermosensitive recording medium comprising: a transparent support, a thermosensitive recording layer which comprises an electron-donating coloring compound, an electron-accepting compound and a binder resin, formed on said transparent support, and

the image-receiving layer of said image-receiving element, thereby to provide a dye image-bearing layer; and separating said donor sheet and said image-bearing element from each other.

5,380,696

OXIDATION CATALYST AND PROCESS OF PREPARING SAME

Matsunori Sawada, and Minoru Ogiso, both of Kanagawa, Japan, assignors to Tanaka Kikinzoku Kogyo K.K., Japan

Filed Jul. 16, 1993, Ser. No. 93,346

Claims priority, application Japan, Jul. 17, 1992, 4-213319

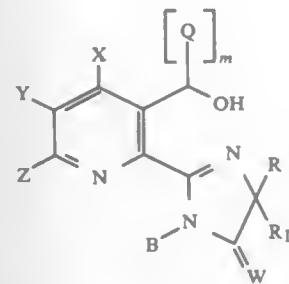
Int. Cl.⁶ B01J 23/28, 23/30, 23/04, 23/52

U.S. Cl. 502-313

4 Claims

1. A liquid phase oxidation catalyst which comprises a metal substrate and an eutectoid coating containing palladium and molybdenum and/or tungsten coated on the substrate.

3. A process of preparing a liquid phase oxidation catalyst which comprises, electroplating a metal substrate in a solution containing palladium and, molybdenum and/or tungsten to obtain a catalyst having an eutectoid coating containing palladium and, molybdenum and/or tungsten coated on the substrate.

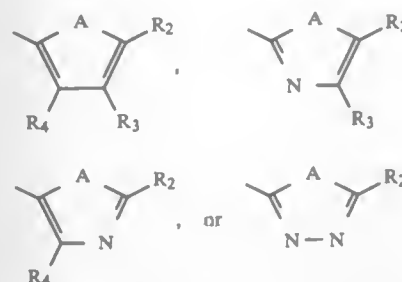


wherein

R is C₁-C₄ alkyl;

R₁ is C₁-C₄ alkyl or C₃-C₆ cycloalkyl; and when R and R₁ are taken together with the carbon to which they are attached they may represent C₃-C₆ cycloalkyl optionally substituted with methyl;

Q is



R₂, R₃ and R₄ are each independently hydrogen, halogen, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkoxy or phenyl optionally substituted with one or two halogen atoms, C₁-C₄ alkyl or haloalkyl groups or C₁-C₄ alkoxy or haloalkoxy groups;

m is an integer of 1 or 2;

A is O, S, or NR₅; provided that when m is 2, A is O;

R₅ is C₁-C₄ alkyl;

B is hydrogen, COR₆ or SO₂R₇;

R₆ is C₁-C₁₁ alkyl, chloromethyl or phenyl optionally substituted with one chloro, one nitro or one methoxy group;

R₇ is C₁-C₄ alkyl or phenyl optionally substituted with one methyl group;

W is O or S;

X is hydrogen, halogen or methyl;

Y and Z are each independently hydrogen, halogen, C₁-C₆ alkyl, C₁-C₄ alkoxy, C₁-C₆ alkoxy, C₁-C₄ alkylthio, phenoxy, C₁-C₄ haloalkyl, nitro, cyano, C₁-C₄ alkylsulfonyl or phenyl optionally substituted with one C₁-C₄ alkyl, C₁-C₄ alkoxy or halogen; and, when taken together, Y and Z may form a ring in which YZ are represented by the structure: -(CH₂)_n-, where n is an integer selected from 3 and 4; or

and when R and R₁ are not the same, the optical isomers thereof.

5,380,699

SUBSTITUTED PYRIDINE COMPOUNDS USEFUL AS HERBICIDAL AGENTS

Len F. Lee, St. Charles; Yuen-Lung L. Sing, St. Louis, and Sai C. Wong, Chesterfield, all of Mo., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 61,962, May 17, 1993, Pat. No. 5,298,473, which is a division of Ser. No. 802,924, Dec. 6, 1991, Pat. No. 5,260,262. This application Dec. 6, 1993, Ser. No. 161,493

Int. Cl.⁶ C07D 401/06; A01N 43/40

U.S. Cl. 504-136

15 Claims

6. A method of controlling undesirable vegetation compris-

5,380,698

3-(SUBSTITUTED KETONE AND ALCOHOL)-2-(2-IMIDAZOLIN-2-YL) PYRIDINE AND QUINOLINE HERBICIDAL AGENTS

Peter J. Wepplo, Princeton, N.J., and Alvin D. Crews, Jr., Yardley, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 893,180, Jun. 3, 1992, Pat. No. 5,256,629. This application Jul. 9, 1993, Ser. No. 89,138

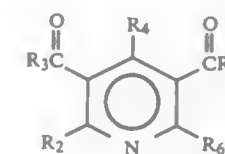
Int. Cl.⁶ A01N 43/40; C07D 213/30

U.S. Cl. 504-130

12 Claims

1. A compound having the structure

ing applying thereto an effective amount of a compound represented by the formula



wherein:

R₂ and R₆ are independently lower alkyl, fluorinated methyl, chlorofluorinated methyl, or chlorinated methyl, provided that one of R₂ and R₆ is fluorinated methyl or chlorofluorinated methyl;

R₃ is alkoxy or alkylthio;

R₄ is hydrogen, alkyl, cycloalkyl, or cycloalkylalkyl; and

R₅ is a heterocyclic radical which is pyrimidinyl optionally substituted with one or more radicals selected from halo, amino, aminocarbonyl, cyano, alkoxy, alkyl, alkoxyalkyl, alkoxyalkenyl, alkylamino, and dialkylamino.

5,380,700

PYRIDINE DERIVATIVES, HERBICIDAL COMPOSITION CONTAINING THE SAME, AND METHOD FOR KILLING WEEDS

Masahiro Miyazaki; Masafumi Matsuzawa; Keiji Toriyabe, all of Shizuoka, and Michiya Hirata, Kashiwa, all of Japan, assignors to Kumiai Chemical Industries Co., Ltd. and Ihara Chemical Industries Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 927,281, Sep. 17, 1992. This application Dec. 23, 1992, Ser. No. 996,042

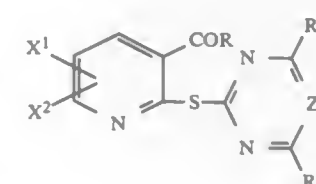
Claims priority, application Japan, Mar. 26, 1991, 3-84556

Int. Cl.⁶ C07D 401/02, 401/14, 403/02; A01N 43/54

U.S. Cl. 504-239

9 Claims

1. A compound having the following formula or a herbicidally acceptable salt thereof:



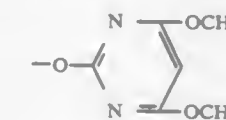
wherein R is selected from the group consisting of a hydrogen atom, a hydroxyl group, a C₁-C₇ alkoxy group, a C₁-C₇ alkoxy group, a pivaloyloxymethoxy group, a benzyloxy group, a benzyloxy group substituted with a chlorine atom or a methoxy group, a trimethylsilylethoxy group, a methylsulfonylamino group, a methylthio group, a phenoxy group and a phenylthio group;

R¹ and R² are the same or different, and are selected from the group consisting of a hydrogen atom, a C₁-C₇ alkoxy group, a halogen atom, a C₁-C₃ alkylamino group, a di C₁-C₃ alkylamino group, a halo C₁-C₇ alkoxy group and a C₁-C₇ alkyl group;

Z is a methine group;

X¹ is selected from the group consisting of a benzoylamino group, a cyclo C₃-C₇ alkyl group, halo C₁-C₇ alkoxy group, a C₂-C₈ alkenyloxy group, a C₂-C₈ alkynyloxy group, a methoxycarbonyl group, a C₁-C₃ alkylamino group, a di C₁-C₃ alkylamino group, a phenyl group, a phenyl group substituted with substituent selected from the group consisting of a lower alkyl group, a halogen atom, a nitro group, a halo C₁-C₇ alkyl group, a halo C₁-C₇ alkoxy group, a C₁-C₇ alkoxy group, a piperidino group, a di C₁-C₃ alkylamino group, a phenoxy group, a methylphenoxy group, an ethoxymethoxy group, a methoxyethoxy group, a methoxymethoxy group, a cyano group, an ethynyl group, a C₁-C₃ alkylamino group, an ethoxycarbonyl C₁-C₂ alkoxy group, a

methoxymethyl group, a C₁-C₂ alkylthio C₁-C₂ alkoxy group, a benzyloxy group and a hydroxyl group; a benzyloxy group; a benzyloxy group substituted with a chlorine atom, a benzyloxy group, and a benzyloxy group; a phenoxy group; a phenoxy group substituted with a substituent selected from the group consisting of a halogen atom, a methyl group and a methoxy group; a phenylthio group; a phenylthio group substituted with a substituent selected from the group consisting of a chlorine atom, a methyl group and a methoxy group; a C₁-C₂ alkoxyimino C₁-C₂ alkyl group, a C₂-C₃ acyl group, a C₁-C₂ alkylthio group, a phenylamino group; a phenylamino group substituted with a chlorine atom; a carboxyl group, and a group having the formula,



X² is selected from the group consisting of a hydrogen atom, halogen atom, a C₁-C₂ alkyl group, a methoxy group, and a di methylamino group.

5,380,701

3-ARYLURACIL DERIVATIVES AND THE USE THEREOF FOR WEED CONTROL

Paul Winternitz, Greifensee, and Martin Zeller, Baden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 12, 1993, Ser. No. 135,768

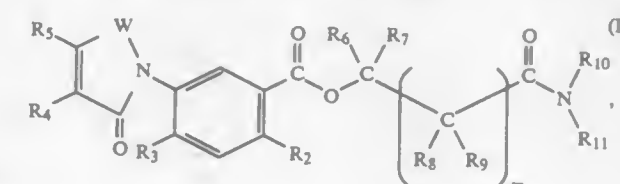
Claims priority, application Switzerland, Oct. 23, 1992, 3310/92

Int. Cl.⁶ A01N 43/54; C07D 417/00, 413/00, 239/02

U.S. Cl. 504-243

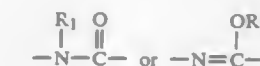
24 Claims

1. A 3-aryluracil compound of formula I



wherein

W is a group of formula



in which the linkage to the ring nitrogen atom is through the carbon atom:

R₁ is hydrogen, C₁-C₄alkyl, C₁-C₄haloalkyl, C₃- or C₄alkenyl or C₃- or C₄alkynyl;

R₂ is halogen or cyano;

R₃ is hydrogen or fluoro;

R₄ is hydrogen, halogen or C₁-C₄alkyl;

R₅ is C₁-C₄alkyl or C₁-C₄haloalkyl;

R₆ to R₉ are each independently of one another hydrogen, C₁-C₄alkyl, C₃-C₆alkenyl, C₃-C₆alkynyl

C₁-C₄haloalkyl or phenyl; or

R₆ and R₇ or R₈ and R₉, together with the linking carbon atom, form a 3-, 4-, 5- or 6-membered cycloalkane ring which may be substituted by one or more C₁-C₄alkyl groups; or R₇ and R₉, together with the linking carbon atoms, form a 3-, 4-, 5- or 6-membered cycloalkane ring which may be substituted by one or more C₁-C₄alkyl groups;

m is 0 or 1;

R₁₀ is hydrogen, C₁-C₄alkyl, C₃- or C₄alkenyl, C₃- or C₄alkynyl, C₄-C₄haloalkyl, C₁-C₆alkoxy-C₁-C₄alkyl, C₁-C₆alkylthio-C₁-C₄alkyl;

R₁₁ is hydrogen, C₁-C₄alkyl, C₃- or C₄alkenyl, C₃-C₃alkynyl, C₁-C₄haloalkyl, C₁-C₆alkoxy, C₁-C₆alkenyl, C₁-C₆alkoxy-C₁-C₄alkyl, C₁-C₆alkylthio-C₁-C₄alkyl, C₃-C₆cycloalkyl, C₂-C₄cycloalkyl, C₁-C₄alkoxycarbonyl-C₁- or -C₂alkyl, carboxy-C₁- or -C₂alkyl, (C₁-C₄alkoxy)₂-P(O)-C₁- or -C₂alkyl, aryl, aryl-C₁-C₄alkyl, heteroaryl, heteroaryl-C₁-C₄alkyl, C₃-C₆cycloalkyl-C₁-C₄alkyl; or

R₁₀ and R₁₁, together with the linking nitrogen atom, form a pyrrolidino, piperidino, hexahydroazepino, morpholino, 2,6-dimethylmorpholino, thiomorpholino, piperazino or 4-methylpiperazino ring; and

R₁₂ is C₁-C₄alkyl, C₃- or C₄alkenyl or C₃- or C₄alkynyl; or when R₁ is hydrogen, an agrochemically acceptable salt of a compound of formula I.

5,380,703

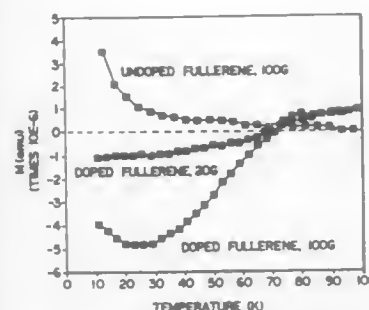
HALOGEN-DOPED SUPERCONDUCTIVE FULLERENES
Yi-Han Kao, Williamsville; Liwei Song, Buffalo; Deborah D. L. Chung, East Amherst, and Kevin T. Fredette, Baldwinsville, all of N.Y., assignors to The Research Foundation of State University of New York at Buffalo, Buffalo, N.Y.

Filed Jan. 25, 1993, Ser. No. 8,213

Int. Cl.⁶ H01B 1/00, 12/00; H01L 39/12

U.S. Cl. 505—460

7 Claims



1. A process for making halogen doped fullerene comprising: contacting a vaporized interhalogen material with a quantity of fullerene to form a halogen doped fullerene with superconductive properties.

5,380,704

SUPERCONDUCTING FIELD EFFECT TRANSISTOR WITH INCREASED CHANNEL LENGTH

Yoshinobu Tarutani, Yamanashi; Tokumichi Fukazawa, Takikawa; Uki Kabasawa, Kokubunji; Kazumasa Takagi, Tokyo; Akira Tsukamoto, Kodaira; Masahiko Hiratani, Aki-shima, and Toshikazu Nishino, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 790,359, Nov. 12, 1991, abandoned, and a continuation-in-part of Ser. No. 647,234, Jan. 29, 1991, Pat. No. 5,250,506. This application Aug. 30, 1993, Ser. No. 113,006

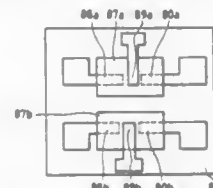
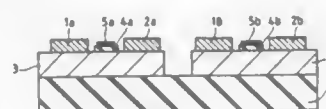
Claims priority, application Japan, Feb. 2, 1990, 2-21983; Nov. 26, 1990, 2-321652; Nov. 26, 1990, 2-321653; Nov. 26, 1990, 2-321654; Nov. 26, 1990, 2-321655

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.⁶ H01L 39/22; B05D 5/12; H01B 12/00

U.S. Cl. 505—193

24 Claims



1. A superconducting device comprising a single-crystalline insulative substrate; a first film comprising a normal conducting oxide material and having a preferred crystal orientation being formed on a surface of said substrate; a plurality of electrodes comprising a superconducting oxide material and having a crystal orientation identical to that of said first film and being directly formed on a surface of

5,380,702
METHOD FOR TEXTURING HIGH TEMPERATURE SUPERCONDUCTORS

David L. Healy, 1232 Polaris Dr., Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 74,896, Jul. 17, 1987,

abandoned. This application Jun. 4, 1990, Ser. No. 532,180

Int. Cl.⁶ B29C 35/08; C01B 13/14; C04B 35/64; H05B 6/64

U.S. Cl. 505—480

10 Claims

1. A process for producing a superconducting ceramic material comprising the steps of:

mixing powders of compounds containing the materials Y, Ba, Cu and O to produce a powder mixture; said powders being mixed in proportions effective to produce a superconducting phase upon being heated together; and then subjecting the powder mixture to a heat treatment effective to produce a superconducting ceramic material, said heat treatment comprising at least one step of heating in microwave energy.

2. A method for increasing the alignment of the crystal structure of a ceramic copper oxide superconductor material having portions with different crystallographic orientations, comprising the steps of:

heating the ceramic copper oxide superconductor material by application of plane polarized microwave energy; maintaining said microwave heating until at least some of the portions of the copper oxide superconductor material reach a temperature sufficient to cause an increase in the overall alignment of the crystallographic orientation of the crystal structure of the material; and allowing said ceramic superconductor to cool to room temperature.

said first film and separated from each other by a predetermined distance;

a gate insulating film disposed on an exposed surface of said film; and

a gate electrode disposed on said gate insulating film to control a current flowing between said plurality of electrodes through said first film;

wherein said predetermined distance between the plurality of electrodes is 0.1 μm to 1.0 μm; and

wherein said superconducting oxide material and said normal conducting oxide material have the same crystal structure and contain copper as constituent-element.

5,380,705

DRILLING MUD COMPRISING TETRAPOLYMER CONSISTING OF N-VINYL-2-PYRROLIDONE, ACRYLAMIDOPROPANESULFONIC ACID, ACRYLAMIDE, AND ACRYLIC ACID

Michael Stephens, Bartlesville; Billy L. Swanson, Delaware, and Bharat B. Patel, Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 924,815, Aug. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 469,997, Jan. 25, 1990, Pat. No. 5,135,909. This application May 2, 1994, Ser. No. 237,942

Int. Cl.⁶ C09K 7/02

U.S. Cl. 507—121

18 Claims

1. A water-based drilling fluid comprising

a) a clay and water in amount effective to form a water-based drilling fluid; and

b) a tetrapolymer provided in an amount effective to provide water-loss control wherein the tetrapolymer is the product of a polymerization of the following four monomer components:

(i) 2-acrylamido-2-methylpropane sulfonic acid and alkali salts thereof present in an amount in the range of from about 10 weight percent to about 90 weight percent;

(ii) N-vinyl-2-pyrrolidone present in an amount in the range of from about 1 weight percent to about 60 weight percent;

(iii) acrylamide present in an amount in the range of from about 1 weight percent to about 60 weight percent; and

(iv) acrylic acid and alkali salts thereof present in an amount in the range of from about 1 to about 60 weight percent.

5,380,706

WELL DRILLING FLUIDS AND METHODS

Ronald E. Himes; Patty L. Totten, and Edward E. Vinson, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

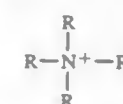
Continuation-in-part of Ser. No. 804,252, Dec. 6, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 38,582

Int. Cl.⁶ C09K 7/02

U.S. Cl. 507—129

19 Claims

1. A well drilling fluid containing water, no oil, at least one viscosifying agent and a formation stabilizing compound containing a cation selected from the group consisting of N,N-trimethylphenylammonium, N-methylpyridinium, N,N-dimethylmorpholinium, the alkyl quaternary ammonium cation of the 2 mole oligomer of epihalohydrin wherein the alkyl radical is selected from —CH₃, —C₂H₅, —C₃H₇ and —C₄H₉ radicals, and cations of the formula

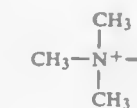


wherein R is independently —CH₃, —C₂H₅, —C₃H₇ or —C₄H₉, and cations of the general formulas:

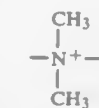


wherein

A represents the group



B represents the group



C represents the group



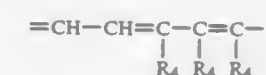
D represents the group



E represents



and further wherein:

R₁ is selected from the groups,—CH₂COOH, —CH₂CH₂OH,—CH₂CH₂CH₂OH and—CH₂CHOHCH₃;R₂ is selected from the groups,—CH₂CH₂—, —CH₂CHOHCH₂—,—CH₂CH₂CH₂—, —CH₂CH₂CH₂CH₂—, and—CH₂CH₂OCH₂CH₂—;R₃ is selected from the groups,

and

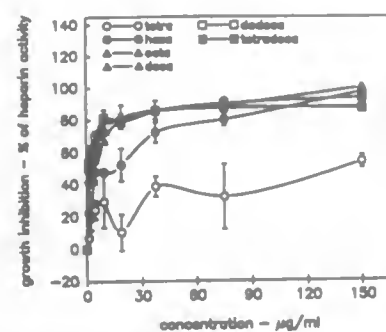
R₄ is independently hydrogen and the group —(CH₂)_nCH₃ wherein n has a value in the range of 0 to 5 and at least one of said R₄ substituents is said —(CH₂)_nCH₃ group;

and an anion selected from the group consisting of inorganic anions, organic anions and mixtures thereof which do not react with said drilling fluid.

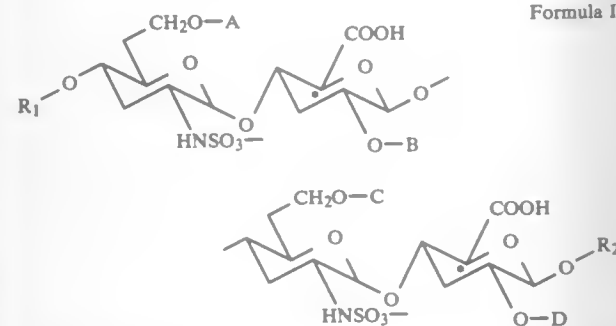
5,380,716
SULFATED POLYSACCHARIDES AS INHIBITORS OF
SMOOTH MUSCLE CELL PROLIFERATION

H. Edward Conrad; Peter Fugedi; Brian K. Bradley, all of Alameda; Lan H. Lam, Cupertino, and Roger A. Laine, Alameda, all of Calif., assignors to Glycomed, Inc., Alameda, Calif.

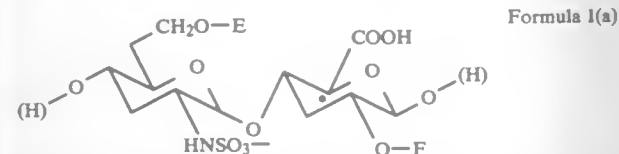
Continuation-in-part of Ser. No. 686,540, Apr. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 400,661, Aug. 31, 1989, Pat. No. 5,032,679, which is a continuation-in-part of Ser. No. 285,546, Dec. 15, 1988, abandoned. This application Dec. 28, 1992, Ser. No. 996,894 Int. Cl.⁶ A61K 31/725; C08B 37/10 U.S. Cl. 514—56



1. A compound that inhibits the proliferation of smooth muscle cells to a greater extent than commercial heparin, and has a decreased ability to act as an anticoagulant as compared to commercial heparin, the compound having the following structural formula:



wherein each of A, B, C, and D is independently H or SO₃R and each R is independently H or a cation, with the proviso that at least two of A, B, C or D is —SO₃R; noting that hydroxyl groups on the sugars have been omitted in Formulas I and I(a) for greater clarity and the * adjacent the carbon substituted with COOH indicates any possible stereochemistry in either I or I(a); R₁ and R₂ are each independently hydrogen or a unit having the following structure:



wherein when a unit of Formula I(a) is connected at one end, the hydrogen at that end is not present; and each of E and F is independently hydrogen or SO₃R and noting that the hydroxyl group on the 3-position on each sugar is present but has been omitted for greater clarity and further noting that the 3-position is not sulfated.

5,380,717
FOOD COMPOSITE FOR PERFORMING FUNCTION OF
LARGE BOWEL REGULATION

Kazuhiro Ohkuma; Shigeru Wakabayashi, both of Sanda, and Mitsuko Satouchi, Takarazuka, all of Japan, assignors to Matsutani Chemical Industries Co., Ltd., Hyogo, Japan Continuation of Ser. No. 902,501, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 656,891, Feb. 19, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,176 Claims priority, application Japan, Feb. 22, 1990, 2-41620 Int. Cl.⁶ A61K 33/10, 31/70, 31/715; A23G 3/00 U.S. Cl. 514—58

11 Claims
1. A method for regulating large bowel function which comprises the steps of:

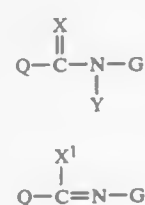
- providing an indigestible dextrin which is obtained by heating starch in the presence of a mineral acid to prepare pyrodextrin, hydrolyzing the pyrodextrin with α-amylase and refining the hydrolyzed pyrodextrin; and
- administering an effective amount of the indigestible dextrin to an animal.

5,380,718
ARTHROPODICIDAL FUSED
TETRAHYDROPYRIDAZINES

Charles R. Harrison, Newark; George P. Lahm, and Thomas M. Stevenson, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. PCT No. PCT/US91/02836, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/17983, PCT Pub. Date Nov. 28, 1991

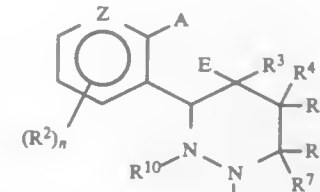
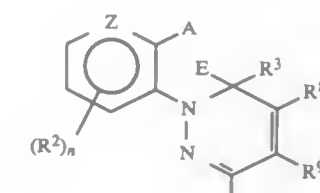
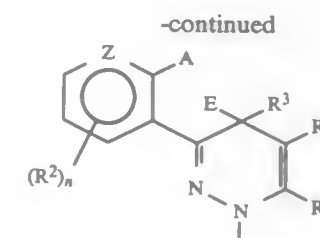
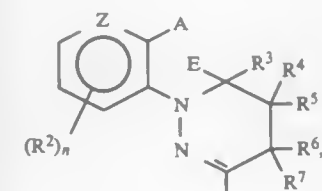
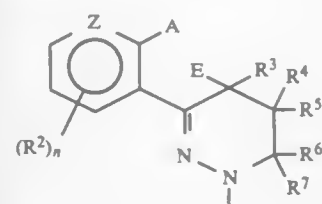
Continuation-in-part of Ser. No. 570,103, Aug. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,697, May 15, 1990, abandoned. This PCT application Apr. 30, 1991, Ser. No. 945,965

Int. Cl.⁶ C07D 237/26, 491/048, 487/04, 495/04 U.S. Cl. 514—80 11 Claims
1. A compound selected from groups having Formulae I and II:

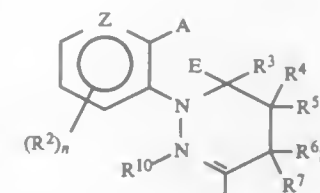


wherein:

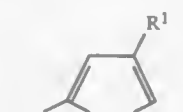
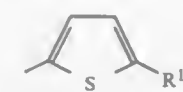
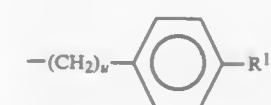
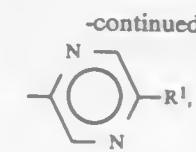
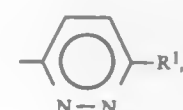
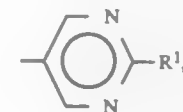
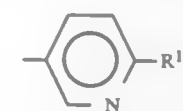
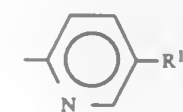
Q is selected from the group



and

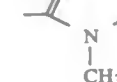


A and E are taken together to form V;
V is selected from the group —CH₂—, —CH₂CH₂—, —O—, —S—, —SO—, —SO₂—, —NR¹¹—, —OCH₂—, —SCH₂—, —N(R¹¹)CH₂—, substituted —CH₂—, and substituted —CH₂CH₂—, the substituents independently selected from 1-2 halogen and 1-2 methyl; provided that when V is —OCH₂—, —SCH₂— or —N(R¹¹)CH₂—, either atom can be attached to the aromatic moiety;
G is selected from the group



X is selected from the group O, S and N-X²;
X¹ is selected from the group Cl, Br, OR¹², SR¹² and NR¹²R¹³;
X² is selected from the group R¹², OH, OR¹², CN, SO₂R¹², SO₂Ph, OC(O)NR¹³R¹⁴, OC(O)OR¹², NR¹³R¹⁴ and phenyl optionally substituted with R¹⁵;
Y is selected from the group H, C₁–C₆ alkyl, benzyl optionally substituted by W, C₂–C₆ alkoxyalkyl, CHO, C₂–C₆ alkylcarbonyl, C₂–C₆ alkoxyalkyl, C₂–C₆ haloalkylthio, C₂–C₆ haloalkylthio, C₁–C₆ alkylthio, C₁–C₆ haloalkylthio, phenyl optionally substituted with 1 to 3 substituents independently selected from W, benzyl optionally substituted with 1 to 3 substituents independently selected from W, halogen, CN, N₃, SCN, NO₂, OR²¹, SR²¹, S(O)₂R²¹, S(O)₂R²¹, OC(O)R²¹, OS(O)₂R²¹, CO₂R²¹, C(O)R²¹, C(O)NR²¹R²², SO₂NR²¹R²², NR²¹R²², NR²²C(O)R²¹, OC(O)NHR²¹, NR²²C(O)NHR²¹ and NR²²SO₂R²¹; or when m, n or p is 2, (R¹)₂ when attached to adjacent atoms can be taken together, or (R²)₂ when attached to adjacent atoms can be taken together, or (R²⁰)₂ when attached to adjacent atoms can be taken together as —OCH₂O—, —OCF₂O—, —OCH₂CH₂O—, —CH₂C(CH₃)₂O—, —CF₂CF₂O— or —OCF₂CF₂O— to form a cyclic bridge; provided that when R¹, R² or R²⁰ is S(O)₂R²¹, S(O)₂R²¹, OC(O)R²¹ or OS(O)₂R²¹ then R²¹ is other than H;
R³ is selected from the group H, J, N₃, NO₂, halogen, N(R²⁶)R²⁷, C₁–C₆ alkyl, C₂–C₆ alkenyl, C₂–C₆ haloalkenyl, C₂–C₆ alkynyl, C₂–C₆ alkoxyalkyl, C₃–C₈ alkoxyalkyl, C₂–C₆ alkoxyalkyl, CO₂R²¹, OR²³, C(O)R²¹, C(O)NR²¹R²², C(S)NR²¹R²², C(S)SR²¹, C(S)SR²¹, CN, Si(R³²)(R³³)R³¹, S(O)R³¹, SO₂R³¹, —P(O)(OR³¹)₂, phenyl, phenyl substituted by (R²⁰)_p, benzyl and benzyl substituted with 1 to 3 substituents independently selected from W; or R³ is C₂–C₆ epoxyalkyl optionally substituted with a group selected from C₁–C₃ alkyl, CN, C(O)R²⁸, CO₂R²⁸, and phenyl optionally substituted with W, or R³ is C₁–C₆ alkyl

J is selected from the group consisting of



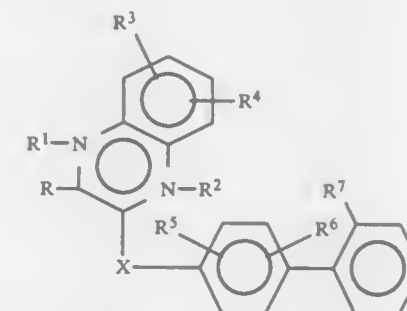
R¹¹ is selected from the group H, C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₂-C₄ alkenyl, C₂-C₄ haloalkenyl, SR²¹, S(O)R²¹,

R^{27} is selected from the group H, C_1 - C_3 alkyl, phenyl,

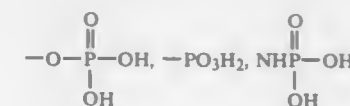
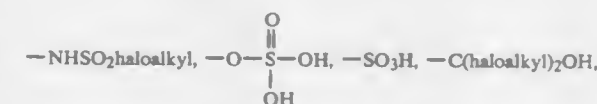
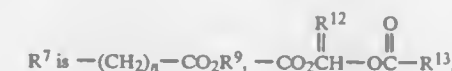
Z is C or N. _____

U.S. Cl. 514—85 15 Claims

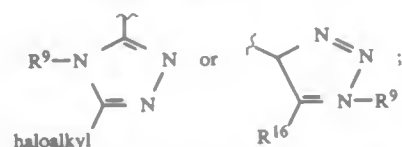
1. A compound of formula



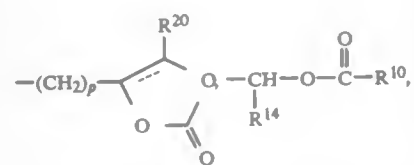
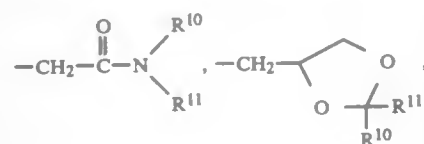
R⁵ and R⁶ are each independently hydrogen, alkyl, alkoxy, halogen, or haloalkyl;



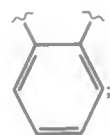
—CONHOR¹², —CONHNHSO₂haloalkyl, —(CH₂)_n-5-tetrazolyl (optionally substituted with R⁹),



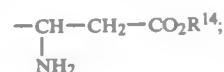
R⁸ is a single bond, alkyl, alkenyl, aryl, or aralkyl;
R⁹ is hydrogen, alkyl, cycloalkyl, aryl, aralkyl,



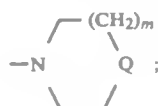
alkali metal, or ammonium;
R¹⁰ and R¹¹ are each independently hydrogen, alkyl, alkoxy, cycloalkyl, aryl, or aralkyl, or R¹⁰ and R¹¹ together are —(CH₂)₂—, —(CH₂)₃—, —CH=CH—, or



R¹² is hydrogen, alkyl, aryl, cycloalkyl, or aralkyl;
R¹³ is alkyl, —NR¹⁰R¹¹, or



R¹⁴ is hydrogen, alkyl, perfluoroalkyl, cycloalkyl, phenyl, or benzyl;
R¹⁵ is hydrogen, alkyl, or phenyl;
R¹⁶ is —CN, —NO₂, or —CO₂R¹⁴;
R¹⁷ and R¹⁸ are each independently hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, benzyl, α-methylbenzyl, or together with the nitrogen atom to which they are attached are



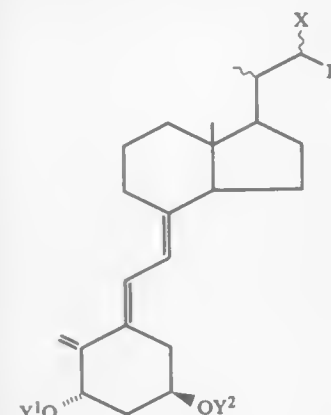
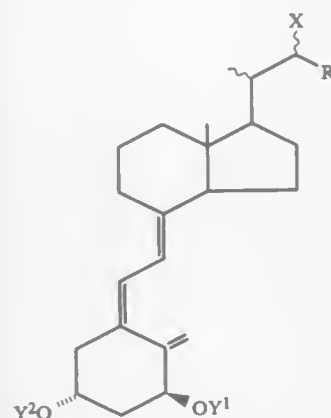
Q is —NR¹⁹, —O—, or —CH₂—;
R¹⁹ is hydrogen, alkyl, aryl, aralkyl, cycloalkyl, or cycloalkylalkyl;
R²⁰ is hydrogen, alkyl, aryl, cycloalkyl, aralkyl, or cycloalkylalkyl;
m is 0 or 1;
n is 0, 1, or 2; and
p is 1, 2, 3, or 4.

5,380,720 IODO VITAMIN D₃ COMPOUNDS AND METHOD FOR PREPARING SAME

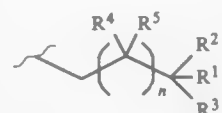
Hector F. DeLuca, Deerfield, Wis., and Rafal R. Slcinski, Pasteura, Poland, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 11, 1993, Ser. No. 60,231
Int. Cl.⁶ C07C 401/00

U.S. Cl. 514—167 28 Claims
1. Vitamin D compounds having the structure I and II shown below:



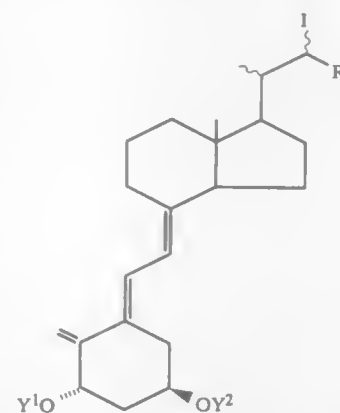
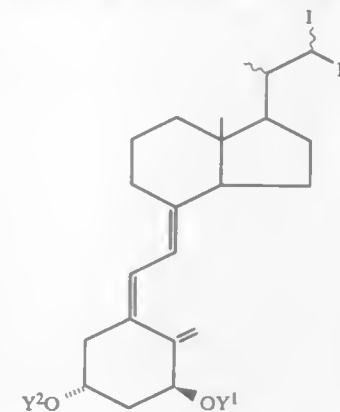
where X is iodine, Y¹ and Y², which may be the same or different, are each selected from the group consisting of hydrogen and a hydroxy-protecting group, and where R is an aryl, alkyl, hydroxyalkyl or fluoroalkyl group, or R may represent the following side chain fragment:



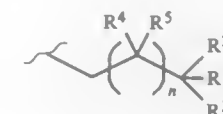
wherein R¹ represents hydrogen, hydroxy or protected hydroxy, R² and R³ are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group —(CH₂)_m—where m is an integer having a value of from 2 to 5, R⁴ is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R⁵ is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, and wherein n is an integer having a value of from 1 to 5.

consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R⁵ is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, and wherein n is an integer having a value of from 1 to 5.

11. A method of treating osteoporosis comprising administering to a patient an effective amount of a 22-iodo-vitamin D₃ compound having the structure I and II shown below:



where Y¹ and Y², which may be the same or different, are each selected from the group consisting of hydrogen and a hydroxy-protecting group, and where R is hydrogen, an aryl, alkyl, hydroxyalkyl or fluoroalkyl group, or R may represent the following side chain fragment:



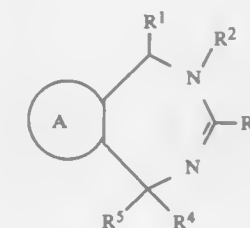
wherein R¹ represents hydrogen, hydroxy or protected hydroxy, R² and R³ are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group —(CH₂)_m—where m is an integer having a value of from 2 to 5, R⁴ is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R⁵ is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, and wherein n is an integer having a value of from 1 to 5.

5,380,721

ARYL-FUSED AND HETARYL-FUSED-2,4-DIAZEPINE AND 2,4-DIAZOCINE ANTIARRHYTHMIC AGENTS Robert E. Johnson, East Greenbush; Donald C. Schlegel, Scho-dack, and Alan M. Ezrin, Colonie, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation of Ser. No. 21,926, Feb. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 974,396, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 743,853, Jun. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 580,065, Sep. 10, 1990, abandoned. This application May 31, 1994, Ser. No. 250,995
Int. Cl.⁶ C07D 243/04, 245/06; A61K 31/395, 31/55
U.S. Cl. 514—183 60 Claims

1. A compound of formula:



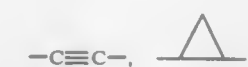
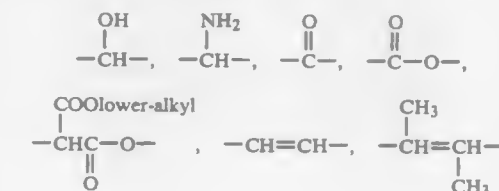
II wherein

A is a ring chosen from the group consisting of phenyl, and phenyl having one or two substituents chosen from the group consisting of amino, lower-alkyl, lower-alkoxy, halogen, nitro, and lower-alkylsulfonamido;

R¹ is hydrogen, lower-alkyl, or phenyl;
R² is hydrogen, lower-alkyl, benzyl; phenyl; phenyl substituted with halogen, lower-alkyl or lower-alkoxy; or
R² is —CH₂CH₂R⁷ where R⁷ is lower-alkoxy; benzyl; di-(lower-alkyl)amino, pyrrolidino; piperidino; morpholino; pyridinyl; phenyl; or phenyl substituted with amino, nitro or lower-alkylsulfonamido;
R³ is Y_p—(CH₂)_m—X_n—R⁸ wherein
Y is —NH—, —O—, —S—, or



p is zero or one;
m is an integer from zero to seven;
X is —S—, —O—, —SO₂—,



—NHSO₂—;

n is zero or one; and

R⁸ is hydrogen, lower-alkyl; phenyl; furanyl; thienyl, pyridinyl, phenyl having one or two substituents chosen independently from the group consisting of halogen, lower-alkyl, nitro, hydroxy, lower-alkoxy, lower-alkylamido, lower-alkylsulfonamido, polyfluorolower-alkylsulfonamido, lower-alkylaminosulfonyl, di-lower-alkylaminosulfonyl, and amino; or when n is zero and m is other than zero, R⁸ is additionally halogen; benzyl(lower-alkyl)amino; di-(lower-alkyl)amino; or a 5- or 6-membered

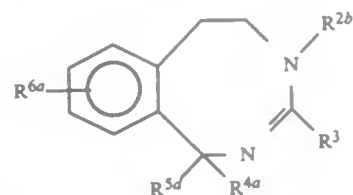
heterocycle selected from the group consisting of morpholinyl, piperidinyl, piperazinyl, and imidazolyl, said heterocycle being unsubstituted or substituted with one lower-alkyl group; or X and R⁸ taken together are cyclohexylidene; or when, m and p are zero, R⁸ is additionally morpholinyl, piperidinyl, pyrrolidinyl, or di-(lower-alkyl)amino;

R⁴ is hydrogen; lower-alkyl; allyl; lower-alkoxy-lower-alkyl; acetyl; lower-alkylaceto; lower-alkyl carboxyl; or α-hydroxy-lower-alkyl; and

R⁵ is hydrogen; lower-alkyl; naphthyl; thienyl; pyridinyl; benzyl; phenyl; or phenyl having one or two substituents chosen independently from the group consisting of lower-alkyl, lower-alkoxy, halogen, hydroxyl, amino, di(lower-alkyl)amino, lower-alkylsulfonamido, lower-acylamino, lower-alkylthio, and lower-alkylsulfonyl; or an acid-addition salt thereof;

with the proviso that the total number of carbon atoms in R¹ plus R² plus R⁴ plus R⁵ must be five or greater; further provided that when A is phenyl, R¹ and R² are hydrogen or lower-alkyl, and R⁴ is hydrogen or lower-alkyl, R⁵ is other than hydrogen or lower-alkyl.

34. A compound of formula



wherein

R^{2b} is hydrogen; lower-alkyl; benzyl; phenyl; or phenyl substituted with halogen, lower-alkyl or lower-alkoxy;

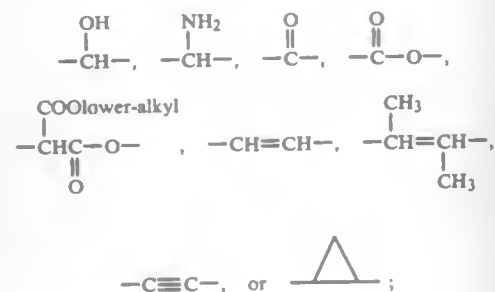
R³ is Y-(CH₂)_m-X-R⁸ wherein

Y is -NH-, -O-, -S-, or



p is zero or one;

X is -S-, -O-, -SO₂-,



m is an integer from zero to seven;

n is zero or one; and

R⁸ is hydrogen; lower-alkyl; phenyl; furanyl, thienyl, pyridinyl, phenyl having one or two substituents chosen from the group consisting of halogen, lower-alkyl, nitro, hydroxy, lower-alkoxy, lower-alkylamido, lower-alkylsulfonamido and amino; or when n is zero and m is other than zero, R⁸ is additionally halogen; benzyl(lower alkyl)amino; di-(lower-alkyl)amino; or X and R⁸ taken together are cyclohexylidene;

R^{4a} is hydrogen or lower-alkyl;

R^{5d} is lower-alkyl; phenyl; naphthyl; thienyl; pyridinyl; benzyl; or phenyl having one or two substituents chosen

from the group consisting of lower-alkyl, lower-alkoxy and halogen;

R^{6a} is one or two substituents chosen independently from the group consisting of hydrogen, lower-alkyl, lower-alkoxy and halogen;

or an acid-addition salt thereof.

5,380,722

INDOLE CARBOXAMIDES

François Clemence; Jacques Guillaume, both of Paris, and Gilles Hamon, Montrouge, all of France, assignors to Roussel-Uclaf, France

Continuation of Ser. No. 777,607, Oct. 16, 1991, abandoned, which is a division of Ser. No. 438,525, Nov. 17, 1989, Pat. No. 5,084,455, which is a division of Ser. No. 136,118, Dec. 21, 1987, Pat. No. 4,908,367, which is a continuation-in-part of Ser. No. 883,915, Jul. 10, 1986, Pat. No. 4,791,109. This application May 25, 1993, Ser. No. 66,565

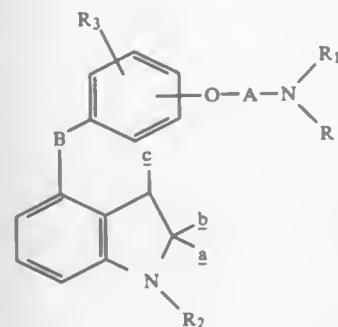
Claims priority, application France, Jul. 11, 1985, 85 10648; Dec. 19, 1986, 86 17810; Feb. 6, 1987, 87 0151

The portion of the term of this patent subsequent to Dec. 13, 2005, has been disclaimed.

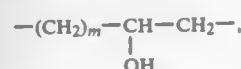
Int. Cl.⁶ A61K 31/535, 31/495; C07D 413/00, 403/00

U.S. Cl. 514—235.2 17 Claims

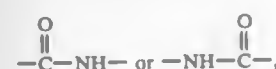
1. A compound selected from the group consisting of indole-carboxamides of the formula



wherein R₁ and R taken together with the nitrogen atom form morpholino or piperazinyl, R₃ is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 3 carbon atoms, chlorine, bromine, iodine, -NO₂, -NH₂, acylamido of aliphatic carboxylic acids of 2 to 5 carbon atoms, a and b form =O and c is hydrogen or a and c form a carbon-carbon bond and b is hydrogen, A is selected from the group consisting of -(CH₂)_n- and



n is an integer from 2 to 5, m is an integer from 1 to 3, B is



R₂ is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms and its non-toxic, pharmaceutically acceptable acid addition salts thereof.

5,380,723

INDOLE DERIVATIVES

Toshihiro Takahashi; Hitoshi Inoue, both of Saitama; Masato Horigome, Tokyo; Kenichi Momose, Saitama; Masanori Sugita, Saitama; Kouichi Katsuyama, Saitama; Chikako Suzuki, Saitama; Shinji Nagai, Saitama; Masao Nagase, Saitama, and Koichi Nakamaru, Saitama, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Division of Ser. No. 949,028, Sep. 22, 1992, Pat. No. 5,326,879.

This application Apr. 15, 1994, Ser. No. 228,505

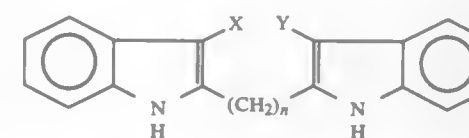
Claims priority, application Japan, Oct. 7, 1991, 3-285535

Int. Cl.⁶ A61K 31/44, 31/445, 31/47, 31/40; C07D 401/14, 403/14, 413/14

U.S. Cl. 514—235.8

5 Claims

1. A compound of formula (I)

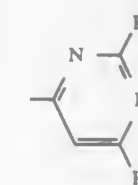


wherein X and Y may be the same or different and each independently represents H or -CH₂CH₂R;

R represents pyridyl, morpholino, pyrrolidino, piperidino, 2-(3-indolyl)ethylamino, 1—1, 2, 3, 4-tetrahydroquinolyl, or 2-1,2,3,4-tetrahydroisoquinolyl;

n is an integer of 4 to 8;

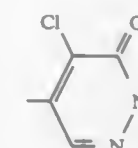
with the proviso that X and Y both do not represent H or piperidinoethyl when n is 4, or a pharmaceutically acceptable acid addition salt thereof.



(a)

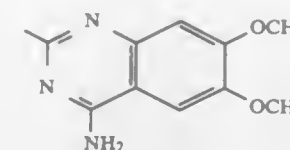
wherein R¹ is amino or 1-pyrrolidinyl;

2) a 4-chloro-3-oxo-2,3-dihydro-5-pyridazinyl group of the formula (b);



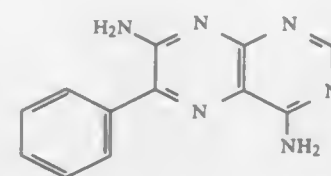
(b)

3) a 4-amino-6,7-dimethoxy-2-quinazolinyl group of the formula (c);



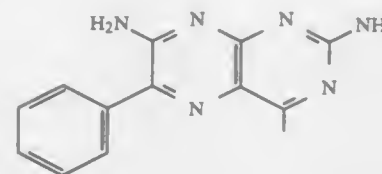
(c)

4) a 4,7-diamino-6-phenyl-2-pteridiny group of the formula (d);



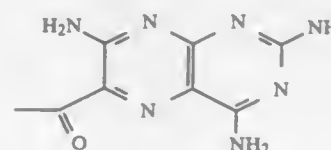
(d)

5) a 2,7-diamino-6-phenyl-4-pteridiny group of the formula (e);



(e)

6) a 2,4,7-triamino-6-pteridiny carbonyl group of the formula (f);



(f)

and
7) a group of formula (g);

5,380,724 PIPERAZINE AND HOMOPIPERAZINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

Zoltan Zubovics; Katalin Goldschmidt; Katalin Szilagyi; Ferenc Andras; Eszter Hodula; Lajos Toldy; Klara Sutka; Zeuzsanna Fittler; Laszlo Sebestyen; Katalin Gorgenyi; Istvan Sziraki; Jozsef Gyimesi, and Valeria Vitkoczi, all of Budapest, Hungary, assignors to Gyogyszerkutato Intezet KFT, Budapest, Hungary

Filed Jun. 16, 1993, Ser. No. 78,601

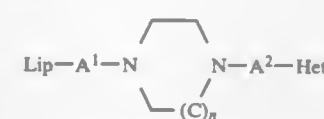
Claims priority, application Hungary, Jun. 17, 1992, P 92 02021

Int. Cl.⁶ A61K 31/495; C07D 239/02, 487/00, 403/04

U.S. Cl. 514—252

7 Claims

1. A compound selected from the group consisting of that of the formula (I),



(I)

and the pharmaceutically acceptable salts thereof wherein

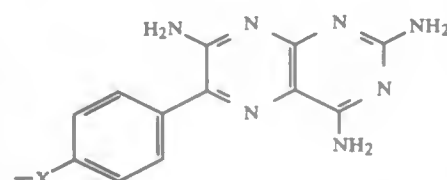
Lip is selected from the group consisting of hydrogen C₁₅₋₂₀ alkyl, C₁₀₋₂₀ alkanoyl, C₁₀₋₂₀ alkenoyl, unsubstituted trityl, trityl substituted by halogen, adamantyl, 1-naphthyl, 2-naphthyl, oxo-substituted tetrahydronaphthyl, and an amine protective group commonly used in the peptide chemistry;

A¹ and A² are the same or different and are selected from the group consisting of a single bond, C₂₋₃ alkylene, hydroxy-substituted C₂₋₃ alkylene and oxo-substituted C₂₋₃ alkylene;

n is 1 or 2; and

Het is selected from the group consisting of

1) a group of the formula (a),



wherein X is selected from the group consisting of oxygen, sulfur, nitrogen lower alkyl-oxygen, lower alkyl nitrogen and lower alkyl sulfur with a first proviso that when Het stands for a group of the formula (a) and both A¹ and A² are single bonds then Lip is not hydrogen;

with a second proviso that when Lip is different from naphthylxy or oxo-substituted tetrahydronaphthylxy then A¹ is a single bond;

with a third proviso that when Lip represents naphthylxy or oxo-substituted tetrahydronaphthylxy then A¹ may not be a single bond,

as well as with a fourth proviso that A¹ and A² cannot simultaneously be hydroxy-substituted-C₂₋₃ alkylene or oxo-substituted C₂₋₃-alkylene and their salts.

5,380,725
ARYL- AND HETEROARYL PIPERAZINYL
CARBOXAMIDES HAVING CENTRAL NERVOUS
SYSTEM ACTIVITY

Magid A. Abou-Gharbia, Glen Mills; John P. Yardley, Gulph Mills, and Wayne E. Childers, Jr., Yardley, all of Pa., assignors to American Home Products Corporation, Madison, N.J. Division of Ser. No. 852,119, Mar. 16, 1992, Pat. No. 5,254,552, which is a continuation of Ser. No. 533,974, Jun. 6, 1990, abandoned, which is a division of Ser. No. 493,179, Mar. 14, 1990, Pat. No. 5,010,078, which is a continuation-in-part of Ser. No. 335,075, Apr. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 297,460, Jan. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 197,890, May 24, 1988, abandoned. This application Jul. 14, 1993, Ser. No. 91,495

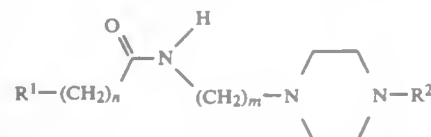
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.⁶ A61K 31/495; C07D 403/12, 295/145

U.S. Cl. 514—253

14 Claims

1. A compound having the formula

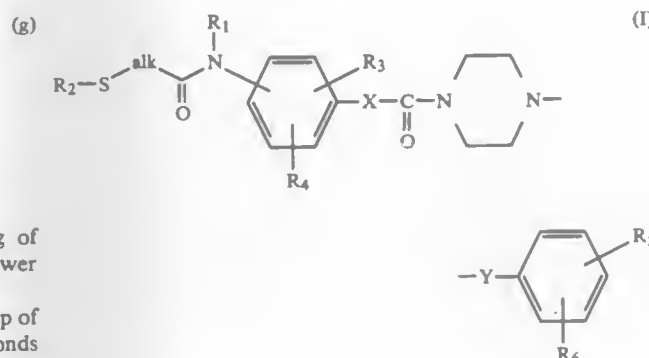


wherein R¹ is 1-adamantyl, 3-methyl-1-adamantyl, 3-noradamantyl, 2-indolyl; R² is unsubstituted or substituted phenyl, wherein the substituents are selected from methoxy and chloro; n is the integer 0 or 1; m is the integer 2 or 3 or a pharmaceutically acceptable salt thereof.

5,380,726
SUBSTITUTED DIALKYLTHIO ETHERS

Pier G. Ferrini, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Dec. 20, 1993, Ser. No. 170,110
Claims priority, application Switzerland, Jan. 15, 1993,
115/93-1

Int. Cl.⁶ A61K 31/495; C07D 295/192, 295/185
U.S. Cl. 514—255 12 Claims
1. A compound of formula I



wherein

R₁ is hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, lower alkoxy-lower alkoxy-lower alkyl; phenoxy-lower alkyl or phenyl-lower alkoxy-lower alkyl, the phenyl group in each of the two last-mentioned radicals being unsubstituted or substituted by at least one of lower alkyl, trifluoromethyl, lower alkoxy, halogen and hydroxy; N-lower alkylamino-lower alkyl or N,N-di-lower alkylamino-lower alkyl:

R₂ is lower alkyl that is substituted by at least a group (a) substituent and optionally by a group (b) substituent; said group (a) substituent selected from the group consisting of amino, lower alkanoylamino, carboxy, lower alkoxy-carbonyl, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, cyano and a radical —C(=O)—W₂; and

said group (b) substituent selected from the group consisting of amino, lower alkylamino, di-lower alkylamino, lower alkanoylamino, a radical —NH—W_1 , oxo, carboxy, lower alkoxy, carbonyl, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, cyano, hydroxy, lower alkoxy, lower alkanoyloxy and halogen; wherein W_2 is the residue of a natural amino acid bonded via an amino group, or a lower alkyl ester thereof; and wherein W_1 is the residue of a natural amino acid bonded via any carboxy group, or a lower alkyl ester thereof; R_3 and R_4 are each independently of the other hydrogen, lower alkyl, halogen, lower alkoxy or lower alkylthio; R_5 and R_6 are each independently of the other hydrogen, lower alkyl, halo-lower alkyl, lower alkoxy, lower alkylthio, halogen, amino, lower alkylamino, di-lower alkylamino or lower alkanoylamino; alk is lower alkylene; and X and Y are each independently of the other a direct bond, lower alkylene or lower alkenylene; or a pharmaceutically acceptable salt thereof.

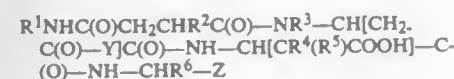
5,380,727
SYNERGISTIC COMBINATION FOR TREATING
HERPES INFECTIONS

Robert Déziel, Ville Mont-Royal, and Yvan Guindon, Montreal,
both of Canada, assignors to Bio-Mega, Inc., Laval, Canada
Filed Dec. 17, 1991, Ser. No. 809,611

Claims priority, application Canada, Dec. 31, 1990, 2033447
Int. Cl.⁶ A61K 37/00

U.S. Cl. 514-261 16 Claims

1. A pharmaceutical composition for treating herpes infections in a mammal comprising a pharmaceutically or veterinarily acceptable carrier, and the combination of an antiherpes viral nucleoside analog, or a therapeutically acceptable salt thereof, and a ribonucleotide reductase inhibiting peptide derivative of formula I



wherein R¹ is (1-10C) alkyl, (1-10C)alkyl monosubstituted with halo, hydroxy or lower alkoxy, lower cycloalkyl, (lower cycloalkyl)-(lower alkyl), phenyl(lower)alkyl or phenyl(lower)alkyl monosubstituted with halo, hydroxy or lower alkoxy;

R² is lower alkyl;
R³ is hydrogen or lower alkyl;
R⁴ is hydrogen or lower alkyl and R⁵ is lower alkyl, or R⁴ and R⁵ together with the carbon atom to which they are attached form a lower cycloalkyl;
R⁶ is lower alkyl, lower cycloalkyl or (lower cycloalkyl)- (lower alkyl);
Y is

(a) NR⁷R⁸ wherein R⁷ and R⁸ each independently is lower alkyl, or R⁷ and R⁸ together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, morpholino, thiomorpholino, piperazino or N⁴-methylpiperazino; or

(b) (1-7C)alkyl, lower cycloalkyl or (lower cycloalkyl)-methyl; and

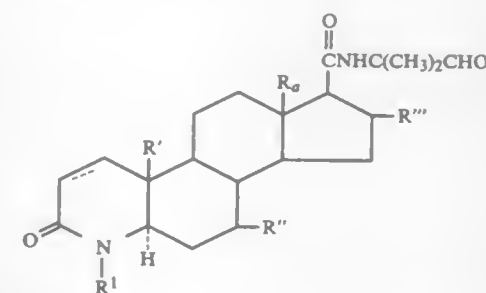
Z is hydrogen, COOH or CH₂OH:

or a therapeutically acceptable salt thereof, wherein the anti-herpes viral nucleoside analog and the peptide, are each present in the composition in an amount effective to produce a synergistic effect in the mammal.

5,380,728
ALDEHYDE METABOLITE OF
17 β -N-MONOSUBSTITUTED-CARBAMOYL-4-AZA-5 α -
ANDROST-1-EN-3-ONES AND RELATED ANALOGUES
Gary H. Rasmussen, Watchung, N.J., assignor to Merck & Co.
Inc., Rahway, N.J.

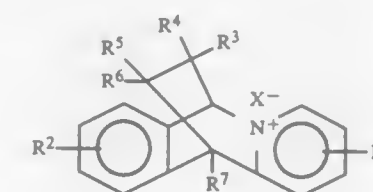
Filed Feb. 10, 1993, Ser. No. 15,780
Int. Cl.⁶ C07D 221/02

U.S. Cl. 514—284



wherein:

the dotted line can represent a double bond when present;
R¹ is hydrogen, methyl or ethyl;
R' is hydrogen or methyl;
R'' is hydrogen or β -methyl;
R''' is hydrogen, α -methyl or β -methyl, and
R_a is methyl.



wherein:

R¹ is hydrogen, or from one to four, the same or different, substituents in any of the 1-, 2-, 3-, or 4-positions selected from the group consisting of lower-alkoxy, lower-alkyl, and halogen:

R² is hydrogen, or from one to four, the same or different, substituents in any of the 7-, 8-, 9-, or 10-positions selected from the group consisting of lower-alkyl, lower-alkanoyloxy, halogen, nitro, hydroxy, lower-alkoxy, methylenedioxy, polyfluorolower-alkyl and polychlorolower-alkyl;

R^3 and R^4 are the same or different lower-alkyl;

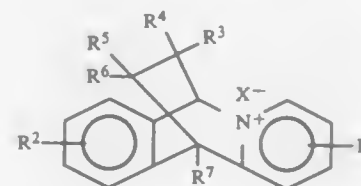
R⁵ and R⁶ are independently selected from the group consisting of hydrogen, lower-alkoxy, tri(lower-alkyl)silyloxy and di(lower-alkyl)amino; or R⁵ and R⁶ together represent —O—CHR⁸—(CH₂)_nCHR⁹—O— wherein n is zero or one and R⁸ and R⁹ are independently hydrogen, lower-alkyl, or phenyl-lower-alkoxy-lower-alkyl:

R⁷ is hydrogen, or lower-alkyl; and

X^- is an anion:

or a pharmaceutically acceptable acid-addition salt of basic members thereof; or a hydrate thereof; or a stereoisomer thereof; with the proviso that when R¹, R² and R⁷ are hydrogen, R³ and R⁴ are methyl and X⁻ is ClO₄⁻, R⁵ and R⁶ together cannot be —O—CH(CH₃)CH(CH₃)—O—; further provided that R⁵ and R⁶ cannot both simultaneously be hydrogen; still further provided that when R¹, R² and R⁷ are hydrogen, R³ and R⁴ are methyl, and X⁻ is ClO₄⁻, R⁵ and R⁶ cannot simultaneously be methoxy.

34. A method for the treatment or prevention of neurodegenerative disorders or neurotoxic injuries which comprises administering to a patient in need of such treatment an effective amount of a compound of the formula:



wherein:

R¹ is hydrogen, or from one to four, the same or different, substituents in any of the 1-, 2-, 3-, or 4-positions selected

from the group consisting of lower-alkoxy, lower-alkyl and halogen;
 R² is hydrogen, or from one to four, the same or different, substituents in any of the 7-, 8-, 9-, or 10-positions selected from the group consisting of lower-alkyl, lower-alkoxy, halogen, nitro, hydroxy, lower-alkoxy, methylenedioxy, polyfluorolower-alkyl, and polychlorolower-alkyl;
 R³ and R⁴ are independently selected from the group consisting of hydrogen, lower-alkoxy, halogen, lower-alkyl, and phenyl;
 R⁵ and R⁶ are independently selected from the group consisting of hydrogen, lower-alkoxy, trilower-alkylsilyloxy and dilower-alkylamino; or R⁵ and R⁶ together represent —O—CHR⁵(CH₂)_nCHR⁶—O— wherein n is zero or one and R⁵ and R⁶ are independently hydrogen, lower-alkyl, or phenyl-lower-alkoxy-lower-alkyl;
 R⁷ is hydrogen, or lower-alkyl; and
 X⁻ is an anion;

or a pharmaceutically acceptable acid-addition salt of basic members thereof; or a hydrate thereof; or a stereoisomer thereof; with the proviso that when R¹, R³, R⁴ and R⁷ are hydrogen, R⁵ and R⁶ are ethoxy and X⁻ is ClO₄⁻, R² cannot be 7,10-diacetoxy or 7-acetoxy-10-tert-butyl; further provided that when R¹, R² and R⁷ R³ and R⁴ are methyl and X⁻ is ClO₄⁻, R⁵ and R⁶ are hydrogen, together cannot be —O—CH(CH₃)CH(CH₃)—O—; still further provided that when R¹, R⁴, R⁵ and R⁷ are hydrogen, R³ and R⁶ are ethoxy and X⁻ is ClO₄⁻, R² cannot be 7—NO₂; still further provided that R⁵ and R⁶ cannot both simultaneously be hydrogen.

5,380,730

PYRIDINE COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL UTILITY

David A. Roberts, Congleton; Robert H. Bradbury, Wilmslow; Martin P. Edwards, Bollington, and Arnold H. Ratcliffe, Poynton, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 843,037, Feb. 11, 1992, Pat. No. 5,236,936. This application Jun. 14, 1993, Ser. No. 76,330

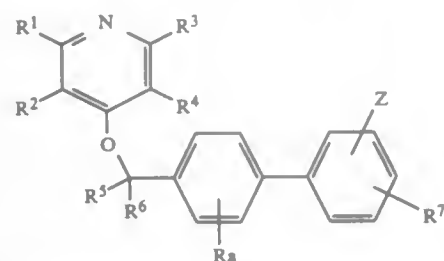
Claims priority, application United Kingdom, Feb. 11, 1991, 9102803.5

Int. Cl.⁶ C07D 213/02; A61K 31/44

U.S. Cl. 514—333

7 Claims

1. A pyridine compound of formula Ia



wherein R¹ is hydrogen, (1-8C)alkyl, (3-8C)cycloalkyl, phenyl or substituted (1-4C)alkyl, the latter containing one or more fluoro substituents or bearing a (3-8C)cycloalkyl, (1-4C)alkoxy or phenyl substituent; R² is hydrogen, (1-8C)alkyl, (3-8C)alkoxyalkyl, (3-8C)cycloalkyl, (1-4C)alkyl, carboxy, (1-4C)alkoxycarbonyl, (3-6C)alkenyloxy, cyano, nitro, phenyl or phenyl(1-4C)alkyl; R³ is selected from halogeno, (1-4C)alkoxy, amino, alkylamino and dialkylamino of up to 6 carbon atoms, and any of the values defined for R¹; R⁷ is selected from hydrogen (1-4C)alkyl, (1-4C)alkoxy, halogeno, trifluoromethyl, cyano and nitro; R₄ is —A¹.B¹ wherein A¹ is a direct bond and B¹ is a 5 or 6 membered saturated or unsaturated heterocyclic ring containing a single heteroatom selected from oxygen, sulphur and nitrogen, or containing two heteroatoms one of which is nitrogen and

the other is oxygen, sulphur or nitrogen, and optionally bearing a (1-4C)alkyl or (1-4C)alkoxy substituent; R_a is selected from hydrogen, (1-4C)alkyl, (1-4C)alkoxy, halogeno, trifluoromethyl, cyano and nitro; R⁵ is hydrogen; R⁶ is hydrogen or (1-4C)alkyl; Z is 1H-tetrazol-5-yl, —CO.NH.(1H-tetrazol-5-yl) or a group of the formula —CO.OR⁸ or —CO.NH.SO₂.R⁹ in which R⁸ is hydrogen or a non-toxic, biodegradable residue of a physiologically acceptable alcohol or phenol, and R⁹ is (1-6C)alkyl, (3-8C)cycloalkyl or phenyl; and wherein any of said phenyl moieties of R¹, R², R³ or R⁹ may be unsubstituted or bear one or two substituents independently selected from (1-4C)alkyl, (1-4C)alkoxy, halogeno, cyano and trifluoromethyl; or an N-oxide thereof; or a non-toxic salt thereof.

5,380,731

ANTIALLERGIC COMPOUNDS

Albert A. Carr, John M. Kane, and Hsien C. Cheng, all of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

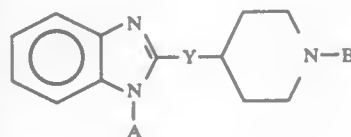
Continuation of Ser. No. 984,715, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 793,073, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 627,687, Dec. 14, 1990, abandoned. This application Aug. 17, 1993, Ser. No. 108,786

Int. Cl.⁶ A61K 31/445; C07D 401/06

U.S. Cl. 514—322

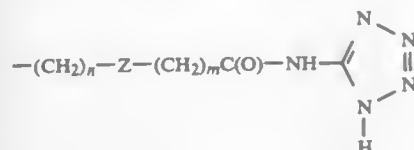
44 Claims

1. A compound of the formula:

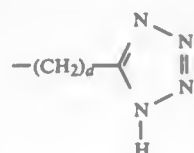


in which Y is represented by CO or CHOH; A and B are each independently represented by a substituent selected from the group consisting of:

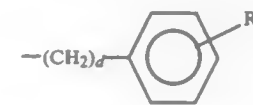
- a carbonyl derivative of the formula —(CH₂)_n—Z—(CH₂)_mCOR₁ in which n and m are each independently represented by an integer from 0-3, Z is represented by a bond, O, or S and R₁ is represented by OH, a C₁-C₄ alkoxy or —NR₂R₃ wherein R₂ and R₃ are each independently represented by H or C₁-C₄ alkyl; and
- an amido tetrazole derivative of the formula:



- wherein n, m and Z are as previously defined; and
- an alkyl derivative of the formula —(CH₂)_n—Z—(CH₂)_mCH₃ wherein n, m and z are as previously defined; and
- an alkyl tetrazole of the formula:



- in which d is represented by an integer from 1-5; and
- an aralkyl derivative of the formula:



in which R₄ is represented by a substituent selected from the group consisting of H, C₁-C₄ alkyl, C₁-C₄ alkoxy, OH, halogen, and —CF₃, and d is as previously defined; and

- an oxo derivative of the formula: —C(O)R₅, in which R₅ is represented by a C₁-C₄ alkyl, C₁-C₄ alkoxy, or —NR₂R₃, wherein R₂ and R₃ are as previously defined, and the pharmaceutically acceptable salts thereof, with the proviso's: 1) that A and B are not both simultaneously aralkyl, 2) that when B is an oxo derivative in which R₅ is C₁-C₄ alkoxy, then A is not aralkyl, and 3) when A and/or B is a carbonyl derivative in which Z is a bond, then the sum of m and n is at least one.

5,380,732

PESTICIDAL COMPOUNDS

Robert J. Blade, Berkhamsted, England, assignor to Roussel Uclaf, Paris, France

Continuation of Ser. No. 362,203, Jun. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,975, May 22, 1989, abandoned. This application Oct. 13, 1992, Ser. No. 960,275

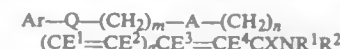
Claims priority, application United Kingdom, Nov. 28, 1986, 8628467

Int. Cl.⁶ C07D 213/64; A61K 31/505

U.S. Cl. 514—351

14 Claims

1. A compound of the formula or a salt thereof:



where Ar is a pyridyl ring attached at the 2, 3 or 4 position and is optionally substituted by one or more of halogen, cyano, C₁-6 alkyl, C₁-6 alkyl substituted by halogen, C₁-6 alkoxy, C₁-6 alkoxy substituted by one or more of halogen or C₁-6 alkyl, or RS(O)_x where x is 0, 1 or 2 and R is C₁-6 alkyl optionally substituted by one or more halogen atoms,

Q is —CH₂— or —O—, m and n are each independently 0 to 7 and the total of m+n is 6 or greater, A is —CH₂— or —O—, a is 1, E¹ to E⁴ are independently hydrogen, C₁-4 alkyl, halo C₁-4 alkyl or halogen, X is oxygen or sulfur, and R¹ and R² are independently hydrogen, C₁-6 alkyl or C₃-6 cycloalkyl, either being optionally substituted by one or more of C₁-6 alkyl, C₂-6 alkenyl, dioxalanyl, C₃-6 cycloalkyl, C₁-6 alkoxy or RS(O)_x as defined above, provided that when Q and A are both —O— m is at least 3.

5,380,733

CERTAIN

PYRIDYL-5-PHENYL-1-CYCLOPROPYL-DIENAMIDE PESTICIDES

George S. Cockerill, London, England; David A. Pulman, Berkeley, Calif.; Robert J. Blade, and Malcom H. Black, both of Herts, England, assignors to Roussel Uclaf, Paris, France

Filed Dec. 16, 1992, Ser. No. 991,239

Claims priority, application United Kingdom, Dec. 19, 1991, 9126955

Int. Cl.⁶ C07D 405/10, 213/75; A01N 43/40

U.S. Cl. 514—352

11 Claims

1. A compound of formula (I):



or a salt thereof where Q phenyl or naphthyl is optionally substituted by

- C₁-6 hydrocarbyl, C₁-6 alkoxy or methylenedioxy, which-in-turn is optionally substituted by one to five halogen atoms; or
- halo, cyano, nitro; or
- a group S(O)_nR₇ wherein n=0, 1 or 2 and R₇ is C₁-6 alkyl optionally substituted by halogen or R₇ is amino optionally substituted by one or two C₁-6 alkyl groups; or a group NR₈R₉ where R₈ and R₉ are independently selected from hydrogen, C₁-6 alkyl or a group COR₁₂ where R₁₂ is C₁-6 alkyl or C₁-6 alkoxy;

Q₁ is a 1,2-cyclopropyl ring optionally substituted by a group selected from C₁-3 alkyl, halo, C₁-3 haloalkyl or C₁-3 alkynyl or cyano,

R₂, R₃, R₄ and R₅ are the same or different with at least one being hydrogen and the others being independently selected from the group consisting of hydrogen, halo, C₁-4 alkyl or C₁-4 haloalkyl;

X₁ is oxygen or sulphur; and

R₁ is pyridine optionally substituted by a substituent selected from C₁-4 alkyl and C₁-4 alkoxy which-in-turn in optionally substituted by 1 to 5 halogen atoms; halogen, cyano, C₁-3 alkynyl; C₁-3 alkenyl, nitro, a group S(O)_nR₇ wherein n=0, 1 or 2 and R₇ is C₁-4 alkyl optionally substituted by 1 to 5 halogens, a group NR₈R₉ wherein R₈ and R₉ are independently selected from hydrogen or C₁-4 alkyl, a group=X₂ where X₂=O, S or NR₁₀ where R₁₀ is selected from hydrogen, C₁-4 alkyl, C₁-4 alkoxy, and COR₁₁ where R₁₁ is C₁-4 alkyl.

5,380,734

N-CYANOAMIDINE DERIVATIVES AS ANTI-INFLUENZA AGENTS

Kuo-Hom L. Hsu, Fort Washington, Pa.; Daniel M. Teller, Columbus, Ohio; Alan R. Davis, Wayne; Michael D. Lubeck, Glenmoore, both of Pa.; Harry R. Munson, Jr., Loveland, Ohio; Gunnar E. Jagdmann, Apex, N.C., and Ibrahim M. Uwaydah, Richmond, Va., assignors to American Home Products Corporation, Madison, N.J.

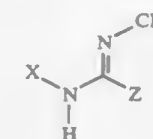
Filed Apr. 15, 1993, Ser. No. 47,730

Int. Cl.⁶ C07D 213/57; A61K 31/44

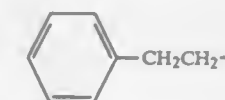
U.S. Cl. 514—357

5 Claims

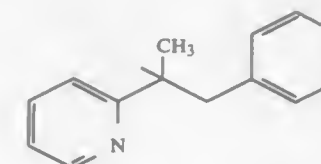
1. A compound of the formula:



wherein:



and Z is



or a pharmaceutically acceptable salt thereof.

5,380,735

BENZOTHIADIAZOLE DERIVATIVES AND METHODS OF USE

Bon Y. Jung, Daejeon; Choon S. Ra, Seoul; Yo S. Rew; Young H. Rhee, both of Daejeon; Ho S. Yeo; Man Y. Yoon, both of Daejeon, and Woo B. Choi, Daejeon, all of Rep. of Korea, assigns to Lucky, Ltd., Seoul, Rep. of Korea

Filed Sep. 27, 1993, Ser. No. 126,658

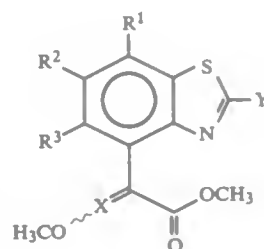
Claims priority, application Rep. of Korea, Sep. 28, 1992, 92-17670

Int. Cl.⁶ A61K 31/425; C07D 277/70, 277/82, 277/68

U.S. Cl. 514—367

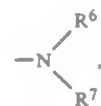
5 Claims

5. A method for combating phytopathogenic organisms and fungi present on an animal comprising applying to the animal an effective amount of a benzothiazole derivative having the following general formula (I) or its (E) and (Z)-isomer,



in which

R¹, R² and R³ independently of one another represent hydrogen, halogen, straight and branched (C₁-C₈)alkyl, (C₁-C₈)halogenoalkyl or (C₁-C₈)alkoxy, X represents N or CH, Y represents a group —OR⁴, —SR⁵ or



R⁴, R⁵, R⁶ and R⁷ independently of one another represent hydrogen, straight and branched (C₁-C₁₆)alkyl, (C₃-C₈)alkenyl, (C₃-C₈)alkynyl, (C₃-C₈)cycloalkyl, alkyl substituted with (C₁-C₆)alkoxy, or (C₁-C₆)halogenoalkyl, or represent a substituted phenyl, phenylacyl or benzyl group wherein the possible substituent on the phenyl, phenylacyl or benzyl group includes halogen, straight and branched (C₁-C₈)alkyl, (C₁-C₈)alkoxy, (C₃-C₈)alkenyl, (C₃-C₈)alkynyl, phenoxy, nitro, cyano and a five- or six-membered heterocyclic group containing one to four nitrogen atoms.

5,380,736

HETEROCYCLIC SUBSTITUTED 2-ACYLAMINO-5-THIAZOLES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Robert Boigegrain, Assas; Roger Brodin, Montpellier; Danielle Gally, Saubens; Jean-Charles Molimard, Saint Gely du Gesf, and Dominique Olliero, Montpellier, all of France, assigns to Elf Sanofi, Paris, France

Division of Ser. No. 889,910, May 29, 1992, Pat. No. 5,314,889. This application Mar. 3, 1994, Ser. No. 205,408

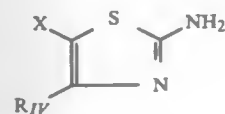
Claims priority, application France, Jun. 5, 1991, 91 06814

Int. Cl.⁶ C07D 277/40

U.S. Cl. 544—369

2 Claims

1. A 2-acylaminothiazole of formula:

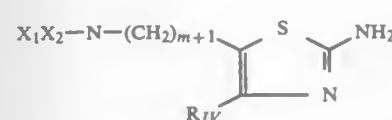


in which

R_{1V} is selected from the group consisting of (C₃-C₇)cycloalkyl, (C₁-C₄)alkyl substituted (C₃-C₇)cycloalkyl, phenyl and phenyl substituted by one or more groups selected from halogen, (C₁-C₆)alkyl, (C₁-C₃)alkoxy, (C₁-C₃)thioalkoxy, nitro and trifluoromethyl, and

X is selected from the group consisting of (C₁-C₅)alkoxy, piperidinyl, 4-hydroxy piperidinyl and 4-(C₁-C₃)alkoxycarbonyl piperazinyl.

2. A compound of formula:



in which

R_{1V} is selected from the group consisting of (C₃-C₇)cycloalkyl, (C₁-C₄)alkyl substituted (C₃-C₇)cycloalkyl, phenyl and phenyl substituted by one or more groups selected from halogen, (C₁-C₆)alkyl, (C₁-C₃)alkoxy, (C₁-C₃)thioalkoxy, nitro and trifluoromethyl, m is selected from 1 and 2, and

—NX₁X₂ is selected from the group consisting of phthalimido and —NH₂, or a salt thereof.

5,380,737

SACCHARIN DERIVATIVE PROTEOLYTIC ENZYME INHIBITORS

Richard P. Dunlap, Penfield; Albert A. Mura, Rochester; Dennis J. Hlasta, Clifton Park; Ranjit C. Desai, Colonie; Lee H. Latimer, Brighton, and Chakrapani Subramanyam, East Greenbush, all of N.Y., assigns to Sterling Winthrop Inc., New York, N.Y.

Continuation of Ser. No. 793,035, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 514,920, Apr. 26, 1990, abandoned, and a continuation-in-part of Ser. No. 608,068, Nov. 1, 1990, abandoned, and a continuation-in-part of Ser. No. 782,016, Oct. 24, 1991, Pat. No. 5,128,339, said Ser. No. 514,920, is a continuation-in-part of Ser. No. 347,125, May 4, 1989, abandoned, and a continuation-in-part of Ser. No. 347,126, May 4, 1989, abandoned, said Ser. No. 782,016, is a continuation-in-part of Ser. No. 608,068, Nov. 1, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 113,508

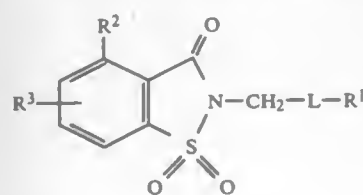
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.⁶ A61K 31/425; C07D 417/12

U.S. Cl. 514—373

21 Claims

1. A method of treating a patient having a degenerative disease which comprises administering to the patient a proteolytic enzyme inhibiting amount of a compound of formula I



Formula I

wherein
L is N;

L-R¹ is a N-heterocyclyl leaving group, and H-L-R¹ is the conjugate acid thereof which has a pK_a value less than or equal to 6;

R² is primary or secondary alkyl of two to four carbon atoms, primary alkylamino of one to three carbon atoms, primary alkylmethylamino of two to four carbon atoms, diethylamino or primary alkoxy of one to three carbon atoms; and R³ is from one to three substituents at any or all of the 5-, 6- and 7-positions and is selected from the group consisting of hydrogen, lower-alkyl, cycloalkyl, amino-lower-alkyl, lower-alkylamino-lower-alkyl, di-lower-alkylamino-lower-alkyl, hydroxy-lower-alkyl, lower-alkoxy-lower-alkyl, perfluoro-lower-alkyl, perchloro-lower-alkyl, formyl, cyano, carboxy, aminocarbonyl, R-oxycarbonyl, B=N wherein B=N is amino, lower-alkylamino, di-lower-alkylamino, carboxy-lower-alkylamino, 1-pyrrolidinyl, 1-piperidinyl, 1-azetidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl or imidazolyl, 1-lower-alkyl-2-pyrrolyl, lower-alkylsulfonylamino, perfluoro-lower-alkylsulfonylamino, perchloro-lower-alkylsulfonylamino, nitro, hydroxy, lower-alkoxy, cycloalkoxy, B=N-lower-alkoxy, hydroxy-lower-alkoxy, polyhydroxy-lower-alkoxy, lower-alkoxy-lower-alkoxy, poly-lower-alkoxy-lower-alkoxy, hydroxy-poly-lower-alkylenoxy, lower-alkoxy-poly-lower-alkylenoxy, B=N-carbonyloxy, carboxy-lower-alkoxy, R-oxycarbonyl-lower-alkoxy, methylenedioxy, R-thio, R-sulfinyl, R-sulfonyl, perfluoro-lower-alkylsulfonyl, perchloro-lower-alkylsulfonyl, aminosulfonyl, lower-alkylaminosulfonyl, di-lower-alkylaminosulfonyl and halo wherein R is lower-alkyl, phenyl, benzyl or naphthyl or phenyl or naphthyl having one or two substituents selected from the group consisting of lower-alkyl, lower-alkoxy and halo;

or a pharmaceutically acceptable acid addition salt thereof if the compound has a basic functional group or a pharmaceutically acceptable base addition salt thereof if the compound has an acidic functional group.

5,380,738

2-SUBSTITUTED OXAZOLES FURTHER SUBSTITUTED BY 4-FLUOROPHENYL AND 4-METHYLSULFONYLPHENYL AS ANTIINFLAMMATORY AGENTS

Bryan H. Norman; Len F. Lee, both of St. Charles; Jaime L. Masferrer, Ballwin, and John J. Talley, St. Louis, all of Mo., assigns to Monsanto Company, St. Louis, Mo.

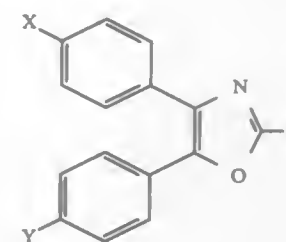
Filed May 21, 1993, Ser. No. 65,730

Int. Cl.⁶ C07D 263/32

U.S. Cl. 514—374

21 Claims

1. A compound of the formula (I)



wherein

X and Y are independently fluoro or methylsulfonyl; and R is

- hydrogen;
- alkyl of from one to ten carbon atoms optionally substituted by hydroxy;
- alkenyl of from two to ten carbon atoms optionally substituted by hydroxy;
- alkynyl of from two to ten carbon atoms optionally substituted by hydroxy;
- cycloalkyl of from 3 to 7 carbons;

- cycloalkylalkyl wherein cycloalkyl is as defined above and alkyl is of from one to three carbons;
- aryl which is phenyl, thienyl or 1-, or 2-naphthyl wherein the aryl is optionally substituted by alkoxy of from one to four carbon atoms or halo;
- aralkyl wherein ar is aryl as defined above and alkyl is of from one to three carbons;
- diarylalkyl wherein aryl is as defined above and alkyl is of from one to four carbon atoms; or
- QR¹ wherein Q is alkylenyl of from one to four carbon atoms and R¹ is COR² wherein R² is 1) OR³ wherein R³ is hydrogen or alkyl of from one to four carbon atoms or 2) NR⁴R⁵ wherein R⁴ and R⁵ are independently hydrogen and alkyl of from one to four carbon atoms; or a pharmaceutically-acceptable salt thereof; provided one of X and Y is methylsulfonyl.

5,380,739

SUBSTITUTED INDOLE DERIVATIVES

Robin D. Clark, Palo Alto; David E. Clarke; Lawrence E. Fisher, both of Mountain View, and Alam Jahangir, San Jose, all of Calif., assigns to Syntex (U.S.A.) Inc., Palo Alto, Calif.

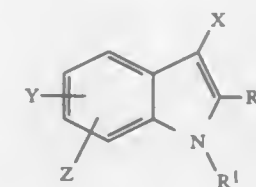
Continuation-in-part of Ser. No. 882,390, May 13, 1992, Pat. No. 5,212,195. This application Feb. 4, 1993, Ser. No. 4,869. The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.⁶ C07D 257/04; A61K 31/41

U.S. Cl. 514—381

19 Claims

1. A compound represented by the Formula (I):



wherein:

- R¹ is lower alkyl, cycloalkyl, or cycloalkyl lower alkyl;
R² is 2''-(1H-tetrazol-5-yl)biphenyl-4'-ylmethyl;
X is hydrogen, lower alkyl, halogen, —C(O)CF₃, —CO₂R⁴, or —C(O)NR⁵R⁶;
Y is hydrogen, lower alkyl, lower alkoxy, hydroxy, halogen, —CO₂R⁴;
Z is hydrogen, lower alkyl, lower alkoxy, or halogen; wherein
R⁴ is hydrogen or lower alkyl;
R⁵ is hydrogen or lower alkyl;
R⁶ is hydrogen or lower alkyl; or
R⁵ and R⁶ taken together with the nitrogen to which they are attached represent a heterocycle; or a pharmaceutically acceptable salt thereof.

5,380,740

ANTI-INFLAMMATORY COMPOUNDS, COMPOSITIONS AND METHOD OF USE THEREOF

Stevan W. Djuric, Glenview; Donald J. Fretland, Highland, and Stella S. Yu, Morton Grove, all of Ill., assigns to G. D. Searle & Co., Chicago, Ill.

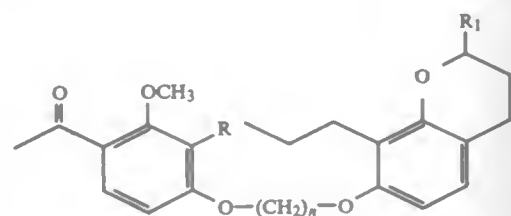
Filed Apr. 28, 1993, Ser. No. 50,109

Int. Cl.⁶ C07D 311/66, 405/13; A61K 31/35, 31/41

29 Claims

U.S. Cl. 514—382

1. A compound of the formula

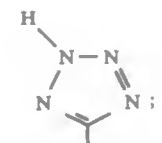


and the stereoisomers and pharmaceutically acceptable salts thereof, wherein R represents lower alkyl of 1 to 6 carbon atoms, lower alkenyl of 2 to 6 carbon atoms, or $-(CH_2)_m R_3$ wherein R_3 represents cycloalkyl of 3 to 5 carbon atoms and m is 1, 2 or 3;

R_1 is $-CONH_2$ or



wherein R_2 is lower alkyl, phenyl, unsubstituted or substituted with lower alkyl;



and n is an integer from 2 to 5.

5,380,741 FUNGICIDAL TRIAZOLE AND IMIDAZOLE DERIVATIVES

Jean Hutt, Marie-Pascale Latorse, both of Lyon, and Christine Veyrat, St Cyr Au Mont-D'Or, all of France, assignors to Rhone-Poulenc Agrochimie, Lyon Cedex, France

Filed Apr. 8, 1993, Ser. No. 44,048

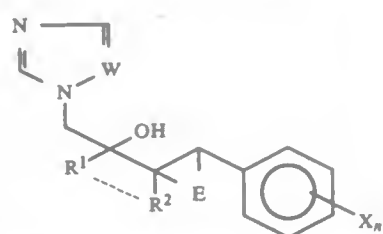
Claims priority, application France, Apr. 8, 1992, 92 04524

Int. Cl.⁶ A01N 43/653; C07D 249/08

U.S. Cl. 514-383

23 Claims

1. A compound having the formula



or an agriculturally acceptable salt thereof, wherein:

E is an oxygen atom or a CH_2 radical;

R^1 and R^2 , taken together, are a $-(CH_2)_3-$, $-(CH_2)_4-$ or $-(CH_2)_5-$ radical, said radical forming, together with the carbon atoms to which it is attached, a ring having 5, 6 or 7 ring carbon atoms, wherein each hydrogen can optionally be replaced by a substituent selected from the group consisting of a halogen atom and a straight or branched-chain alkyl radical having up to 4 carbon atoms, optionally substituted by one or more halogen atoms;

W is a nitrogen atom;

X is a halogen atom; a straight or branched-alkyl radical having up to 4 carbon atoms, optionally substituted by one or more halogen atoms; an alkylamino radical, the alkyl portion having from 1 to 4 carbon atoms, optionally substituted by one or more halogen atoms; an alkoxy radical

having 1 to 4 carbon atoms, optionally substituted by one or more halogen atoms; a phenoxy or benzyloxy radical which is optionally substituted by one or more halogen atoms; nitro; or cyano; and

n is an integer equal to 1, 2, 3, 4 or 5, provided that when n is equal to or greater than 2, then the groups represented by X can be the same or different.

5,380,742

4H-THIENO[3,4-C]PYRROLE DERIVATIVES

Mireille Sevrin, Paris; Jacques Menia, St. Germain Lembron; Christian Maloizel, Meudon, all of France; Juan A. Diaz Martin, Madrid, Spain; Ulpiano Martin Escudero Perez, Madrid, Spain; Manuel Bedoya Zurita, Madrid, Spain; Gregorio Del Sol Moreno, Madrid, Spain; Maria D. Jimenez Bargaeno, Madrid, Spain, and Magali Romanach Ferrer, Madrid, Spain, assignors to Synthelabo, Le Plessis Robinson, France

Filed Nov. 24, 1993, Ser. No. 156,780

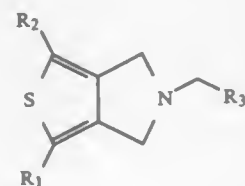
Claims priority, application France, Nov. 24, 1992, 92 14065; Jan. 22, 1993, 93 07538

Int. Cl.⁶ A61K 31/415; C07D 403/14

U.S. Cl. 514-397

8 Claims

1. Pyrrole derivative of the formula:



in which

R_1 represents a hydrogen or halogen atom, a linear or branched C_{1-6} alkyl group, a C_{3-6} alkenyl group, a $(C_{1-4}$ alkoxy)methyl group, benzyl, a phenyl group unsubstituted or substituted by one or more halogen atoms or alkyl radicals, a CO_2R group in which R represents a linear or branched C_{1-4} alkyl radical, phenyl or benzyl, or a $CONR'R''$ group in which R' and R'' each represent, independently of one another, a hydrogen atom or a linear or branched C_{1-4} alkyl radical,

R_2 represents a hydrogen or halogen atom or a linear or branched C_{1-4} alkyl group,

and R_3 represents a 4,5-dihydro-1H-imidazol-2-yl or 1H-imidazol-4-yl group or its addition salt with pharmaceutically acceptable acids.

5,380,743

FUNGICIDAL COMPOSITIONS CONTAINING (BENZYLIDENE)-AZOLYMETHYLCYCLOALKANE

Jean Hutt, Lyons; Jacques Magnier, de Sillingy; Alfred Greiner, St. Cyr Au Mont d'Or, and Regis Pepin, Rilleux la Pape, all of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Continuation of Ser. No. 458,222, Dec. 28, 1989, abandoned.

This application Feb. 16, 1993, Ser. No. 20,225

Claims priority, application France, Dec. 29, 1988, 88 17580;

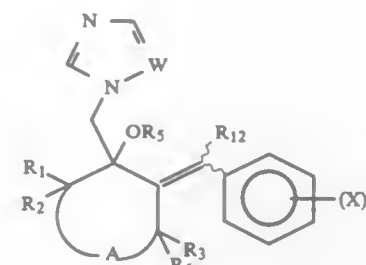
Jan. 30, 1989, 89 09079; Jul. 13, 1989, 89 09741

Int. Cl.⁶ A01N 43/50; C07D 233/60, 233/96

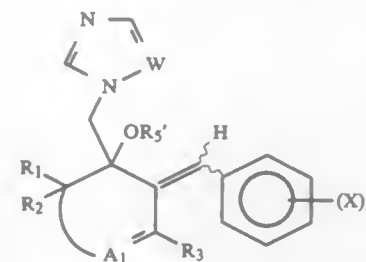
U.S. Cl. 514-399

17 Claims

1. A (benzylidene)-azolymethylcycloalkane or -alkene of formula:



IA



IB

in which

A is $-CR_6R_7-$ or $-CR_6R_7CR_8R_9-$ or $-CR_6R_7CR_8R_9CR_{10}R_{11}-$;

A_1 is $CR_7=$, $-CR_6R_7-CR_9=$ or $-CR_6R_7-CR_8R_9-CR_{11}=$;

X is a halogen atom, or a cyano or nitro group, or a C_{1-4} alkyl or C_{1-4} alkoxy group, optionally halogenated; n is a positive integer or zero, less than 6, it being possible for the groups X to be identical or different when n is greater than 1;

W denotes a trivalent group consisting of a $=CH-$ group; R_1 and R_2 , which may be identical or different, denote a hydrogen atom; a C_{1-4} alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkoxy, mono- or polyhalo(C_{1-4} alkoxy), C_2-C_4 alkenyl, C_2-C_4 alkynyl, mono- or polyhalo(C_2-C_4 alkenyl) and mono- or polyhalo(C_2-C_4 alkynyl) radicals; a C_{1-4} alkoxy radical optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkoxy, mono- or polyhalo(C_{1-4} alkoxy), C_2-C_4 alkenyl, C_2-C_4 alkynyl, mono- or polyhalo(C_2-C_4 alkenyl) and mono- or polyhalo(C_2-C_4 alkynyl) radicals; or C_3-C_7 cycloalkyl, C_6-C_{10} aryl or C_7-C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkyl radicals, mono- or polyhalo(C_{1-4} alkyl) radicals, C_{1-4} alkoxy radicals and mono- or polyhalo(C_{1-4} alkoxy) radicals; R_1 and R_2 together can form a C_2-C_5 hydrocarbon chain making a ring with the carbon to which R_1 and R_2 are attached, this chain optionally being substituted as for the C_6-C_{10} aryl radicals mentioned above, or R_1 and R_2 together can form a C_2-C_5 dioxolane hydrocarbon chain with the carbon to which R_1 and R_2 are attached, this chain optionally being substituted as for the C_6-C_{10} aryl radicals mentioned above;

R_3 and R_6 to R_{11} , which may be identical or different, denote a hydrogen atom; a C_{1-4} alkyl radical optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkoxy and mono- or polyhalo(C_{1-4} alkoxy) radicals; or C_3-C_7 cycloalkyl, C_6-C_{10} aryl or C_7-C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkyl radicals, mono- or polyhalo(C_{1-4} alkyl) radicals, C_{1-4} alkoxy radicals and mono- or polyhalo(C_{1-4} alkoxy) radicals; or alternatively two adjacent radicals of the

chain A, together with the atoms of A to which they are attached, form a benzene ring fused to the cycloalkane; R_5 denotes a hydrogen atom; a C_{1-4} alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkoxy, mono- or polyhalo(C_{1-4} alkoxy), C_2-C_4 alkenyl, C_2-C_4 alkynyl, mono- or polyhalo(C_2-C_4 alkenyl) and mono- or polyhalo(C_2-C_4 alkynyl) radicals; or C_3-C_7 cycloalkyl, C_6-C_{10} aryl or C_7-C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkyl radicals, mono- or polyhalo(C_{1-4} alkyl) radicals, C_{1-4} alkoxy radicals and mono- or polyhalo(C_{1-4} alkoxy) radicals; or R_5 denotes a group $C(=O)-R_{13}$, R_{13} denoting a C_{1-4} alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkoxy, mono- or polyhalo(C_{1-4} alkoxy), C_2-C_4 alkenyl, C_2-C_4 alkynyl, mono- or polyhalo(C_2-C_4 alkenyl) and mono- or polyhalo(C_2-C_4 alkynyl) radicals; or C_3-C_7 cycloalkyl, C_6-C_{10} aryl or C_7-C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkyl radicals, mono- or polyhalo(C_{1-4} alkyl) radicals, C_{1-4} alkoxy radicals and mono- or polyhalo(C_{1-4} alkoxy) radicals; or a C_2-C_4 ethynyl, C_2-C_4 acetynyl, mono- or polyhalo(C_2-C_4 ethynyl) or mono- or polyhalo(C_2-C_4 acetynyl) radical;

R_{12} has one of the meanings of R_5 , with the exception of $C(=O)-R_{13}$; and

R_4 denotes a hydrogen atom; a halogen atom; a C_{1-4} alkyl radical, optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkoxy, mono- or polyhalo(C_{1-4} alkoxy), C_2-C_4 alkenyl, C_2-C_4 alkynyl, mono- or polyhalo(C_2-C_4 alkenyl) and mono- or polyhalo(C_2-C_4 alkynyl) radicals; or C_3-C_7 cycloalkyl, C_6-C_{10} aryl or C_7-C_{11} aralkyl radicals, it being possible for these various radicals to be optionally substituted with one or more atoms or radicals selected from the group consisting of halogen atoms, C_{1-4} alkyl radicals, mono- or polyhalo(C_{1-4} alkyl) radicals, C_{1-4} alkoxy radicals and mono- or polyhalo(C_{1-4} alkoxy) radicals; or the agriculturally acceptable salified forms of these compounds.

5,380,744

PHENOXYALKYLAMINE DERIVATIVE AND AGRICULTURAL AND HORTICULTURAL CHEMICAL FOR CONTROLLING NOXIOUS ORGANISMS CONTAINING THE SAME

Tokio Obata; Akira Ooka; Katsutoshi Fujii, and Shin Suizu, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Apr. 1, 1994, Ser. No. 221,496

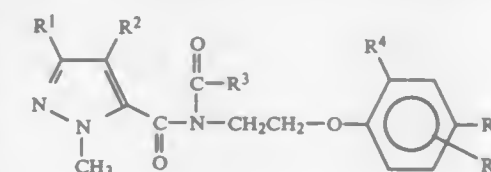
Claims priority, application Japan, Apr. 2, 1993, 5-076931; Jan. 6, 1994, 6-000322

Int. Cl.⁶ A01N 43/40, 43/56; C07D 231/14, 401/12

U.S. Cl. 514-403

12 Claims

1. A phenoxyalkylamine compound represented by the formula (I):



(I)

wherein R^1 represents an alkyl group having 1 to 8 carbon atoms; a cycloalkyl group having 3 to 8 carbon atoms; a hydrogen atom; a phenyl group which is unsubstituted or substituted

by an alkyl group having 1 to 4 carbon atoms or a halogen atom; or a haloalkyl group having 1 to 4 carbon atoms; R² represents a halogen atom; a hydrogen atom; an alkyl group having 1 to 4 carbon atoms; an alkoxy group having 1 to 4 carbon atoms or a nitro group; R¹ and R² may be linked with each other and fused with carbon atoms of a pyrazole ring to which they are bonded to form a saturated 4- to 8-membered ring which is unsubstituted or substituted by an alkyl group having 1 to 4 carbon atoms; R³ represents an alkyl group having 1 to 15 carbon atoms; a cycloalkyl group having 3 to 8 carbon atoms; a phenyl group which is unsubstituted or substituted by a halogen atom, an alkyl group having 1 to 8 carbon atoms or an alkoxy group having 1 to 4 carbon atoms; a haloalkyl group having 1 to 4 carbon atoms; an alkoxyalkyl group with 2 to 8 carbon atoms in total having an alkoxy group with 1 to 4 carbon atoms; an alkenyl group having 3 to 6 carbon atoms; a pyridyl group which is unsubstituted or substituted by a halogen atom; a benzyl group; an alkoxyalkyl group with 3 to 8 carbon atoms in total having an alkoxy group with 1 to 4 carbon atoms; a pyrazole group which is unsubstituted or substituted by an alkyl group having 1 to 8 carbon atoms or a halogen atom; or an alkoxy group having 1 to 4 carbon atoms; R⁴ represents an alkyl group having 1 to 4 carbon atoms; a hydrogen atom or a halogen atom; R⁵ represents an alkyl group having 1 to 20 carbon atoms; a hydrogen atom; an alkenyl group having 3 to 6 carbon atoms; a benzyl group; a phenoxy group; a halogen atom; a cyanomethyl group or —A—O—R⁷ where A represents an alkylene group having 1 to 4 carbon atoms and R⁷ represents an alkyl group having 1 to 6 carbon atoms; an alkenyl group having 3 to 6 carbon atoms, an alkenyl group having 3 to 6 carbon atoms or an acyl group having 2 to 5 carbon atoms; and R⁶ represents a hydrogen atom; an alkyl group having 1 to 4 carbon atoms or a halogen atom.

5,380,745

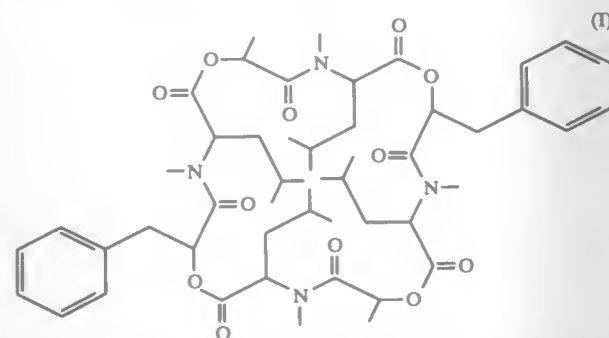
MEDICINAL COMPOSITION

Katsuhito Uomoto; Tomoko Shomura; Mitsuyo Matsumoto; Masayuki Takagi; Takao Shimizu, and Susumu Kiriya, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan
Continuation of Ser. No. 846,076, Mar. 5, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,358
Claims priority, application Japan, Mar. 8, 1991, 3-043461
Int. Cl.⁶ A61K 31/40

U.S. Cl. 514—410

11 Claims

1. A medicinal composition comprising (1) a compound represented by the following formula (I) or substantially water-insoluble anthelmintic analogues thereof as an active ingredient



and (2) at least two nonionic surfactants, in a total amount of not less than 1 part by weight per part by weight of said compound (I).

5,380,746

BIS-(1H-INDOL-3-YL)-MALEINIMIDE DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

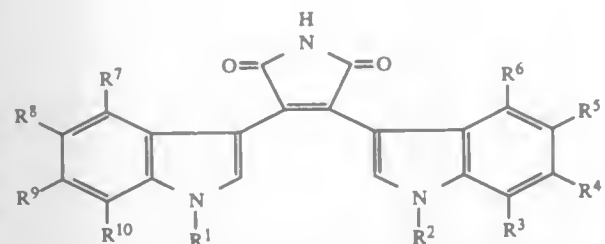
Hubert Barth, Emmendingen; Johannes Hartenstein, Stegen-Wittental; Claus Rudolph, Vörsstetten; Christoph Schächtele, Freiburg; Hans-Jürgen Betsche, Vörsstetten; Reinhard Reck, Sexau, and Hartmut Osswald, Tübingen, all of Germany, assignors to Goedecke Aktiengesellschaft, Berlin, Germany
Continuation of Ser. No. 715,064, Jun. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 515,795, Apr. 27, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 28,528
Claims priority, application Germany, May 5, 1989, 3914764; Dec. 27, 1989, 3942991

Int. Cl.⁶ C07D 401/14, 403/14, 413/14; A61K 31/40, 31/445, 31/535

U.S. Cl. 514—414

28 Claims

1. A compound of formula



or a pharmaceutically acceptable salt thereof wherein

R¹ and R² are each independently hydrogen, a straight or branched alkyl of from one to eighteen carbon atoms, unsubstituted or substituted benzyl wherein the substituent is alkyl of from one to three carbon atoms, alkoxy of from one to four carbon atoms, halogen, aminoalkyl of from one to twelve carbon atoms which is unsubstituted, mono- or disubstituted on the nitrogen by benzyl or alkyl of from one to four carbon atoms alkoxyalkyl of from one to six carbon atoms or CH₂—CO—NR¹¹R¹² wherein R¹¹ and R¹² are each independently hydrogen, alkyl of from one to six carbon atoms, benzyl, haloalkyl of from one to six carbon atoms, hydroxy alkyl of from one to six carbon atoms wherein R¹¹ or R¹² can each be unsubstituted or substituted by halogen, alkoxy alkyl, by one to three hydroxy groups, or R¹¹ and R¹² are each independently acyl of from one to four carbon atoms or glycoside; R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, and R¹⁰ are each independently hydrogen, halogen, alkyl of from one to four carbon atoms, alkoxy of from one to four carbon atoms, acyloxy of from one to four carbon atoms, nitro, amino which is unsubstituted or mono- or disubstituted by benzyl, alkyl of from one to four carbon atoms, benzyloxy, hydroxy, aminoalkoxy of from one to twelve carbon atoms and which nitrogen can be unsubstituted or mono- or disubstituted by benzyl or by alkyl of from one to four carbon atoms or the substituents form a ring containing from three to six carbon atoms or the alkyl is unsubstituted or substituted by alkyl of from one to four carbon atoms, hydroxy, alkoxy of from one to four carbon atoms, trifluoromethyl or two neighboring substituents form methylene,

with the proviso that not all of R¹ to R¹⁰ are hydrogen and R¹⁰ can also be cyanoalkyl or when R⁴ or R⁴ and R⁹ are hydroxy, the others of R¹ to R¹⁰ are not hydrogen.

5,380,747

TREATMENT FOR ATHEROSCLEROSIS AND OTHER CARDIOVASCULAR AND INFLAMMATORY DISEASES
Russell M. Medford; Margaret K. Offermann, and R. Wayne Alexander, all of Atlanta, Ga., assignors to Emory University, Atlanta, Ga.

Filed Oct. 30, 1992, Ser. No. 969,934

Int. Cl.⁶ A61K 31/40, 31/27

U.S. Cl. 514—423

12 Claims

1. A method for the treatment of cardiovascular disease in humans comprising administering to the human an effective amount of a dithiocarbamate of the formula:



wherein R¹ is H, sodium, potassium, or NR⁴R⁵R⁶R⁷, wherein R⁴, R⁵, R⁶, and R⁷ are independently hydrogen, C₁₋₆ linear, branched, or cyclic alkyl, hydroxy(C₁₋₆) alkyl, or aryl, and R² and R³ are independently C₁₋₁₀ linear, branched or cyclic alkyl; —(CHOH)_n(CH₂)_nOH, wherein n is 0-6; —(CH₂)_nCO₂R¹, —(CH₂)_nCO₂R⁴; hydroxy(C₁₋₆)alkyl—, or R² or R³ together constitute a bridge of the formula —(CH₂)_m—, wherein m is 3-6, and wherein R⁴ is alkyl, aryl, alkylaryl, or aralkyl.

5,380,748

TRIALKYLAMINE DERIVATIVE AND AMELIORANT FOR DIGESTIVE TRACT MOVEMENT CONTAINING THE SAME

Yoshiaki Muto; Hiromi Ichikawa; Kuniyoshi Ogura; Kyoji Chaki; Masao Seiki, and Toshihiko Takemasa, all of Saitama, Japan, assignors to Zeria Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00270, § 371 Date Aug. 30, 1993, § 102(e) Date Aug. 30, 1993, PCT Pub. No. WO92/15553, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 6, 1992, Ser. No. 107,825

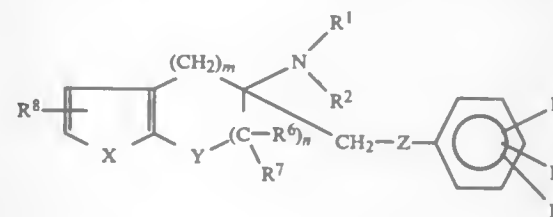
Claims priority, application Japan, Mar. 7, 1991, 3-065306

Int. Cl.⁶ A61K 31/38, 31/34; C07D 335/04, 333/50

U.S. Cl. 514—434

5 Claims

1. A trialkylamine derivative represented by the formula (1) or a pharmaceutically acceptable salt thereof:



wherein

R¹ and R² may be the same or different from each other and each represents lower alkyl;
R³, R⁴ and R⁵ may be the same or different from one another and each represents hydrogen, lower alkyl, lower alkoxy, lower alkoxyalkyl or halogen;
R⁶ and R⁷ may be the same or different from each other and each represents hydrogen or lower alkyl;
R⁸ represents hydrogen, lower alkyl, lower alkoxy or halogen;
X represents oxygen, sulfur or —CH=CH—;
Y represents oxygen, sulfur or methylene;
Z represents —OCO(CH₂)_p— or —OCH₂(CH₂)_p— (wherein p represents a number of 0 to 4 and symbol ~ represents the linkage with a benzene ring);
m is zero and
n is 1, 2 or 3, provided that the case where m is 0, n is 1 or 2, R¹ and R² represent each methyl, X represents —CH=CH—, Y represents —CH₂—, and Z represents —O— CO— is excluded.

5,380,749

THIOXANTHENE ANTITUMOR AGENTS

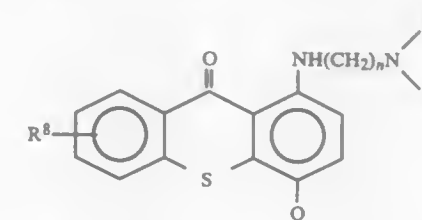
Theodore C. Miller; Joseph C. Collins, both of East Greenbush, N.Y.; Kenneth C. Mattes, Irondequoit; Mark P. Wentland, Colonie, both of N.Y.; Robert B. Perni, Robeson, Pa.; Thomas H. Corbett, Grosse Pointe Park, Mich., and Joseph W. Guiles, Chester Springs, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 44,843, Apr. 8, 1993, Pat. No. 5,346,917, which is a continuation-in-part of Ser. No. 835,159, Feb. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 713,173, Jun. 10, 1991, abandoned. This application Mar. 23, 1994, Ser. No. 216,989

Int. Cl.⁶ A61K 31/38; C07C 261/00; C07D 335/12, 311/82
U.S. Cl. 514—437

55 Claims

1. A compound of formula



wherein n is 2 or 3;

R¹ and R² are independently lower-alkyl;

Q is a residue chosen from the group consisting of CH₂NHR³, CH₂NHCHO, CH=N—Ar, C(O)NR⁵R⁶, CH₂N(R⁴)C(O)R⁷, CH₂N(C₂H₅)CHO, CH₂N(R⁴)P(O)(O-lower-alkyl)₂, CH₂N=CH—N(R⁹) (R¹⁰), CH₂N(R⁴)C(O)CF₃ and CH₂N(R⁴)C(O)OR⁷;

R³ is hydrogen or lower-alkyl;

R⁴ is hydrogen, lower-alkyl or Ar;

R⁵ is hydrogen, lower-alkyl or Ar;

R⁶ is hydrogen or lower-alkyl;

R⁷ is lower-alkyl, or Ar;

R⁸ is hydrogen, lower-alkyl, lower-alkoxy, or hydroxy;

Ar is phenyl or phenyl substituted with methyl, methoxyl, hydroxy, halogen or nitro, and

R⁹ and R¹⁰ are independently lower-alkyl;

(1) or a pharmaceutically acceptable acid-addition salt or solvate thereof.

5,380,750

ARYLETHYLAMINE COMPOUNDS

Daniel Lesieur, Gondecourt; Said Yous, Lille; Patrick Depreux, Armentieres; Jean Andrieux, Antony; Gérard Adam, Le Mesnil Le Roi; Daniel H. Caignard, Paris, and Béatrice Guardiola, Neuilly Sur Seine, all of France, assignors to Adir Et Compagnie, Courbevoie, France

Division of Ser. No. 931,574, Aug. 12, 1992, Pat. No. 5,276,051.

This application Jul. 19, 1993, Ser. No. 93,769

Claims priority, application France, Aug. 13, 1991, 91 10261

Int. Cl.⁶ C07D 63/22; A61K 27/00

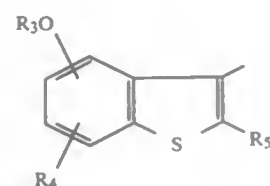
U.S. Cl. 514—443

23 Claims

1. A compound selected from those of the formula (I):



in which:
Ar' represents:



R₁ represents:
a group



in which R₇ represents trifluoromethyl,
a group



in which R₈ represents unsubstituted or optionally substituted cycloalkyl, unsubstituted or optionally substituted cycloalkyl-(C₁-C₄)alkyl unsubstituted or optionally substituted aryl, or unsubstituted or optionally substituted arylalkyl in which the alkyl chain contains 1 to 3 carbon atoms, inclusive,

R₂ represents hydrogen or linear or branched lower alkyl having 1 to 6 carbon atoms inclusive;

R₃ represents hydrogen, linear or branched lower alkyl having 1 to 6 carbon atoms inclusive, unsubstituted or optionally substituted aryl, unsubstituted or optionally substituted arylalkyl or diarylalkyl in which the alkyl chain contains 1 to 3 carbon atoms, inclusive, or cycloalkyl or cycloalkylalkyl in which the alkyl chain contains from 1 to 3 carbon atoms, inclusive,

R₄ represents hydrogen, halogen, hydroxy, linear or branched alkoxy having 1 to 6 carbon atoms, inclusive, or linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive,

R₅ represents hydrogen, halogen, linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive, unsubstituted or optionally substituted phenyl, or unsubstituted or optionally substituted phenylalkyl in which the alkyl chain contains 1 to 3 carbon atoms, inclusive, or an optical isomer, thereof or an addition salt thereof with a pharmaceutically-acceptable acid or base, and wherein

the term "substituted" associated with the expressions "aryl", "arylalkyl", "diarylalkyl", "phenyl" and "phenylalkyl" means that the aromatic nucleus or nuclei may be substituted by one or more radicals selected from: linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive, linear or branched lower alkoxy having 1 to 6 carbon atoms, inclusive, hydroxy, halogen, nitro, and trifluoromethyl;

the term "substituted" associated with the expressions "cycloalkyl" and "cycloalkyl-(C₁-C₄)alkyl" means that the cyclic system may be substituted by one or more radicals selected from: halogen, linear or branched lower alkyl having 1 to 6 carbon atoms, inclusive, and linear or branched lower alkoxy having 1 to 6 carbon atoms, inclusive;

the term "cycloalkyl" designates a saturated or unsaturated cyclic system having 3 to 8 carbon atoms, inclusive, and the expression "aryl" means pyridyl, phenyl, naphthyl, thienyl, furyl, or pyrimidyl.

5,380,751

6,7-MODIFIED PACLITAXELS

(III) Shu-Hui Chen, Hamden; Vittorio Farina, West Hartford; Gregory Roth, Cheshire, and John Kadow, Wallingford, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

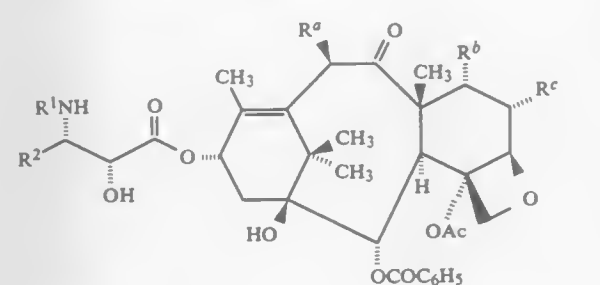
Continuation-in-part of Ser. No. 985,761, Dec. 4, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 128,619

Int. Cl.⁶ C07D 305/14; A61K 31/335

U.S. Cl. 514-449

7 Claims

1. A compound of formula I



in which

R¹ is —COR² in which R² is RO— or R;

R² is C₁₋₆ alkyl, C₂₋₆ alkenyl, C₂₋₆ alkynyl, C₃₋₆ cycloalkyl, or a radical of the formula —W—R^x in which W is a bond, C₂₋₆ alkenediyl, or —(CH₂)_t—, in which t is one to six; and R^x is naphthyl, or phenyl, and furthermore R^x can be optionally substituted with one to three same or different C₁₋₆ alkyl, C₁₋₆ alkoxy, halogen or —CF₃ groups;

R^a is —OCOR, H, OH, —OR, —OSO₂R, —OCONR^aR, —OCONHR, —OCO(CH₂)_nR, or —OCOOR;

R^b and R^c are both hydroxy or together form a bond with the carbon atoms to which they are attached; and

R and R^d are independently C₁₋₆ alkyl, C₂₋₆ alkenyl, C₃₋₆ cycloalkyl, C₂₋₆ alkynyl, or phenyl, optionally substituted with one to three same or different C₁₋₆ alkyl, C₁₋₆ alkoxy, halogen or —CF₃ groups.

5,380,752

METHOD FOR PREVENTING OXIDATION OF CRYSTALLINE STEROID ALCOHOLS IN CELLS, LIPOPROTEINS, AND CHYLOMICRONS

Woodrow C. Monte, 6411 S. River Dr., #65, Tempe, Ariz. 85283

Filed May 1, 1992, Ser. No. 877,826

Int. Cl.⁶ A61K 31/34

U.S. Cl. 514-474

6 Claims

1. The method of inhibiting the oxidation of the crystalline steroid alcohol cholesterol in cells lining the inner surfaces of veins and arteries, comprising the incorporating of a composition into the bloodstream for absorption and dissolution in chylomicrons, high density lipoproteins, low density lipoproteins, and very low density lipoproteins, said composition comprising an ascorbyl monoester of a saturated aliphatic monocarboxylic acid containing 12 to 18 atoms per molecule; wherein the chylomicrons, high density lipoproteins, low density lipoproteins, and very low density lipoproteins are absorbed by said cells to transport said ascorbyl monoester into said cells.

5,380,753

BATH AGENT

Shoji Yoshida, Nishinomiya; Kazumi Ogata, Toyonaka, and Osamu Kawahira, Osaka, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 30, 1993, Ser. No. 39,996

Claims priority, application Japan, Apr. 10, 1992, 4-135519

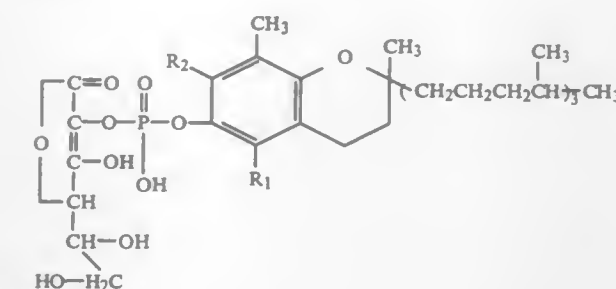
Int. Cl.⁶ A61K 31/34; C07D 305/12

U.S. Cl. 514-474

3 Claims

1. A bath agent containing sodium sulfate and/or sodium

chloride and a compound represented by the following formula (I)



wherein R₁ and R₂ are the same or different, and are a hydrogen atom or a methyl group or a pharmacologically acceptable salt thereof.

5,380,754

TOPICAL COMPOSITION ENHANCING HEALING OF VIRAL LESIONS

Bruce W. Miller, Tierra Verde, Fla., and Richard L. Kronenthal, Fair Lawn, N.J., assignors to ViroTex Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 887,101, May 19, 1992, abandoned, which is a continuation of Ser. No. 718,005, Jun. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 504,683, Apr. 4, 1990, abandoned, which is a continuation of Ser. No. 161,802, Feb. 29, 1988, abandoned. This application Dec. 4, 1992, Ser. No. 985,279

Int. Cl.⁶ A61K 31/21

U.S. Cl. 514-513

4 Claims

1. A method for treatment of a herpetic lesion comprising topically administering to said lesion a composition comprising the combination of:

(a) tetracaine, in a concentration of from about 1% to 2% by weight; and

(b) sodium lauryl sulfate in a concentration of from about 0.5% to about 5.0% by weight, and

wherein said combination is administered in a pharmaceutically acceptable carrier for topical administration.

5,380,755

ALKYL AND ALKYL BENZYL ETHERS OF SUBSTITUTED HYDROQUINONES

Argyrios G. Arvanitis, Kennett Square, Pa., and Everett L. Scholfield, Wilmington, Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

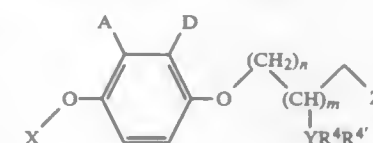
Filed Jul. 24, 1992, Ser. No. 918,836

Int. Cl.⁶ A61K 31/275

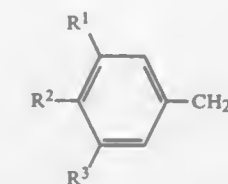
U.S. Cl. 514-522

12 Claims

1. A compound having the formula:



and pharmaceutically acceptable salts thereof, wherein: X is



R¹, R², and R³, are independently selected from the group consisting of hydrogen, halogen, C₁-C₄ alkyl, C₁-C₄ alkoxy, CF₃, C₂F₅, CN, and NO₂;

A and D are independently selected from the group including hydrogen, COR⁵, CH₂OR⁶ and CN;

Y is a nitrogen or oxygen atom;

R⁴ and R^{4'} are independently selected from the group consisting of hydrogen, C₁-C₄ alkyl, allyl, propargyl, and COR⁸, provided that when Y is oxygen R³ is hydrogen or COR⁸, and R^{4'} is not present;

Z is hydrogen, CN, OH, OR⁶, OCOR⁶, OCO₂R⁶, or OCONR⁶R⁷;

R⁵ is hydrogen, C₁-C₄ alkyl, or C₁-C₄ alkoxy, or C₁-C₄ dialkylamino;

R⁶ and R⁷ independently are selected from the group consisting of hydrogen and C₁-C₄ alkyl;

R⁸ is C₁-C₄ alkyl, C₁-C₄ alkoxy, or C₁-C₄ alkylamino, or C₂-C₈ dialkylamino;

m is 0 or 1; and

n is 1-5, provided that when n=2-5, then m=0; provided that when:

R¹, R², and R³ are H;

A is H;

D is CO₂CH₃, COCO₂H, COCH₃, CN, or CONH₂;

n=0-3; and

m=0; then Z cannot be CO₂CH₂CH₃, CO₂H, or OCH₃.

4. A method of treating diseases involving monoamine oxidase in a mammal comprising administering to a mammal in need of such treatment a monoamine oxidase inhibiting effective amount of a compound of claim 1.

5,380,756

DISINFECTING SHAMPOO COMPOSITION FOR ANIMALS

Jeffrey F. Andrews, and Jane T. Kure, both of Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 893,666, Jun. 4, 1992, Pat. No. 5,219,887, which is a continuation-in-part of Ser. No. 712,915, Jun. 7, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,089

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.⁶ A61K 31/23, 31/66

U.S. Cl. 514-552

16 Claims

1. An antimicrobial shampoo composition comprising a stable emulsion of

i) 0.01-20 wt. % of an antimicrobial agent comprising a fatty acid monoester of a polyhydroxy alcohol,

ii) 0.1-5 wt. % of a chelating agent selected from the group consisting of ethylenediamine tetraacetic acid and salts thereof, lactic acid, and acidic polyphosphates,

iii) 20-70 wt. % of a cleansing agent selected from the group consisting of sulfosuccinate esters, polyoxyethylene-polyoxypropylene copolymer surfactants, sodium lauryl sulfate and derivatives thereof, polyoxyethylene cetyl ether, sorbitol esters, triethanolamine lauryl sulfate, sodium cocoyl taurate, and mixtures thereof,

iv) 1-10 wt. % of a conditioner selected from the group consisting of proteins, lanolin and derivatives thereof, silicone derivatives and quaternary ammonium salt derivatives, and mixtures thereof, and

v) 25-75 wt. % water.

5,380,757
METHOD OF TREATING VULVAR DYSTROPHY AND VAGINAL DRYNESS

David F. Horrobin, Surrey, England, assignor to Scotia Holdings plc, Surrey, England

Filed May 14, 1993, Ser. No. 61,110

Claims priority, application United Kingdom, May 27, 1992, 9211229

Int. Cl.⁶ A61K 31/20

U.S. Cl. 514—560 8 Claims
1. Method of treating vulvar dystrophy, vaginal dryness or both comprising administering to a woman requiring such treatment from 1 mg to 10 g/day of GLA, DGLA, or both, optionally in association with other EFAs of the n-6 or n-3 series.

5,380,758
S-NITROSO THIOLS AS SMOOTH MUSCLE RELAXANTS AND THERAPEUTIC USES THEREOF

Jonathan Stamler, Chapel Hill, N.C.; Joseph Loscalzo, Dover, Mass.; Adam Slivka, Randolph, Mass.; Daniel Simon, Waban, Mass.; Robert Brown, Natick, Mass., and Jeffrey Drazen, Winchester, Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 804,665, Dec. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 676,691, Mar. 29, 1991, abandoned. This application Sep. 14, 1992, Ser. No. 943,834

Int. Cl.⁶ A61K 31/195, 38/00

U.S. Cl. 514—562 23 Claims
1. A method for relaxing airway smooth muscle in an individual in need thereof, comprising administering an airway smooth muscle relaxing amount of a compound selected from the group consisting of S-nitroso-N-acetylcysteine, S-nitroso-glutathione and S-nitroso-homocysteine to a human in need thereof.

5,380,759
METHYL N-[6-(3,4,5-TRIMETHOXYBENZYOXY)IMIDAZO[1,2-B]PYRIDAZIN-2-YL]CARBAMATE USED TO TREAT LEUKEMIA

Simon T. Hodgson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Division of Ser. No. 817,539, Jan. 7, 1992, abandoned, which is a continuation of Ser. No. 231,894, Aug. 12, 1988, Pat. No. 5,091,531. This application Sep. 17, 1993, Ser. No. 123,529
Claims priority, application United Kingdom, Aug. 15, 1987, 8719368

Int. Cl.⁶ A61K 31/195, 31/495; C07D 487/04

U.S. Cl. 514—248 2 Claims
1. A method of achieving a cytotoxic effect against a leukemia tumor which comprises administering to a host of said tumor an effective cytotoxic amount of the compound methyl N-[6-(3,4,5-trimethoxybenzyloxy)imidazo[1,2-b]pyridazin-2-yl]carbamate or a pharmaceutically acceptable salt thereof.

5,380,760
TRANSDERMAL PROSTAGLANDIN COMPOSITION

Hanns Wendel, and Franz-Josef Braun, both of Borken, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 19, 1993, Ser. No. 155,126

Int. Cl.⁶ A61K 31/19

U.S. Cl. 514—573 10 Claims
1. A pressure sensitive adhesive topical and/or transdermal drug delivery formulation, comprising:
(i) a therapeutically effective amount of prostaglandin E₁ or a pharmaceutically acceptable salt or lower alkyl ester thereof; and
(ii) a polyisobutylene pressure sensitive adhesive, wherein the prostaglandin is dissolved or substantially uni-

formly dispersed in the polyisobutylene pressure sensitive adhesive.

5,380,761
TRANSDERMAL COMPOSITIONS

Szabó Anna Z.; Gabriella Szabó née Ujhelyi; Antal Tóth; Tamás Szűts; Kálmán Magyar; József Lengyel; János Pintér; Anna Székely; András Szego, all of Budapest, and Katalin Mármarosai née Kellner, Bistorbágy, all of Hungary, assignors to Chinoi Gyógyszer-ES Vegyszeri Termékek Gyara RT., Budapest, Hungary

Continuation of Ser. No. 861,537, Apr. 1, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 140,279

Claims priority, application Hungary, Apr. 15, 1991, 1229/91

Int. Cl.⁶ A61K 31/135

U.S. Cl. 514—655 6 Claims
1. A process for the preparation of an anhydrous transdermal composition comprising in a 20 to 100% lyotropic liquid crystalline arrangement:

5 to 15 weight % of optically active or racemic N-methyl-N-(1-phenyl-2-propyl)-2-propynylamine or N-methyl-N-{1-(4-fluorophenyl)-2-propyl}-2-propynylamine or a pharmaceutically acceptable salt thereof;
40 to 70% by weight of liquid polyethylene glycol;
10 to 20% by weight of solid polyethylene glycol;
2 to 30% by weight of a nonionic surface active agent;
2 to 20% by weight of propylene glycol, and if desired, 0.5 to 2% by weight of a polymer, the a value of which is greater than 0.6, and
optionally, in an amount needed up to 100% an emulsifying agent, which comprises the step of:

(a) preparing a mixture comprising 40 to 70% by weight of the liquid polyethylene glycol, 10 to 20% by weight of the solid polyethylene glycol, 2 to 30% by weight of the non-ionic surface active agent, and 2 to 20% by weight of the propylene glycol;
(b) inoculating the mixture formed in step (a) with 5 to 15% by weight of the optically active or racemic N-methyl-N-(1-phenyl-2-propyl)-2-propynylamine or N-methyl-N-{1-(4-fluorophenyl)-2-propyl}-2-propynylamine or a pharmaceutically acceptable salt thereof dissolved in warm polyethylene glycol; and
(c) cooling the inoculated mixture and optionally adding thereto 0.5 to 2% by weight of the polymer, the a value of which is greater than 0.6, to obtain the lyotropic liquid crystalline composition, and adding optionally, in an amount needed up to an emulsifying agent.

5,380,762
METHOD FOR CONTROLLING MACROINVERTEBRATES

Frederic L. Morgan, Cordova, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Feb. 2, 1993, Ser. No. 12,367

Int. Cl.⁶ A01N 33/02, 59/10

U.S. Cl. 514—673 8 Claims
1. A method for controlling macroinvertebrates in an aqueous system comprising adding to said aqueous system in recognized need of such control an effective toxic controlling amount of ethylenediamine dihydriodide wherein said ethylenediamine dihydriodide is added in the amount of from about 1.0 ppm to about 100 ppm in said aqueous system.

5,380,763
TOPICAL COMPOSITION FOR TREATING ACNE VULGARIS

Toshiya Sato, deceased, late of Kanagawa by Kuniko Sato, legal representative, and Kenya Ishida, Kanagawa, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Nov. 19, 1993, Ser. No. 154,458

Claims priority, application Japan, Nov. 19, 1992, 4-332232

Int. Cl.⁶ A61K 31/045

U.S. Cl. 514—724 3 Claims
1. A method of treating acne vulgaris caused by *Propionibacterium acnes* which comprises applying to the affected areas of the skin a composition comprising 1-pentadecanol as an active ingredient and a carrier or diluent acceptable for topical composition, wherein said 1-pentadecanol is applied in a concentration effective to inhibit *Propionibacterium acnes*, until the acne is slightly improved, apparently improved and or completely healed.

5,380,764
COMPOSITION OF VITAMIN A, GLUCOSE AND HYDROGEN PEROXIDE FOR COSMETIC OR PHARMACEUTICAL USE

Paul Herzog, 37-39, route du Monteliza, Saint-Legier, Switzerland 1806

Continuation-in-part of Ser. No. 630,690, Dec. 20, 1990, abandoned, which is a continuation of Ser. No. 363,563, Jun. 8, 1989, abandoned. This application Jan. 28, 1993, Ser. No. 10,513
Claims priority, application Switzerland, Dec. 21, 1989, 4582/89

Int. Cl.⁶ A61K 31/07

U.S. Cl. 514—725 18 Claims
1. A composition for use as a cosmetic or pharmaceutical consisting essentially of (1) Vitamin A in the form of an ester or as the free acid in an amount sufficient to provide an effective quantity of retinoic acid to skin cells and (2) glucose in an amount of between about 0.5 and 10% by weight and in association with (3) a stable aqueous emulsion of hydrogen peroxide, wherein the hydrogen peroxide is present in an amount of about 0.1% to about 10% by weight to supply water and oxygen to transport the Vitamin A and glucose through the outer layers of skin and to react with the Vitamin A so that the Vitamin A can provide retinoic acid to cells therein, and the glucose is present to provide energy to the reaction.

5,380,765
CHEMOSENSORY OLFACTORY ASSAY FOR PSYCHIATRIC DISORDERS

Alan R. Hirsch, 180 E. Pearson, #4702, Chicago, Ill. 60611
Continuation of Ser. No. 954,882, Sep. 30, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,059

Int. Cl.⁶ A61K 31/05

U.S. Cl. 514—731 2 Claims
1. A method of diagnosing depression in a patient having a chemosensory dysfunction, comprising:
administering a plurality of concentrations of p-ethylphenol to the patient to determine the patient's threshold detection level for p-ethylphenol;
comparing the threshold detection level of the patient with a standard threshold amount for p-ethylphenol detected by a normal person of the same sex and age as the patient; identifying at least a 5 decimel decrease in the threshold detection level of the patient compared to the standard threshold amount for p-ethylphenol; and
correlating the at least 5 decimel decrease in the threshold detection level with a diagnosis of depression in the patient.

5,380,766
PROCESS FOR THE PREPARATION OF PREFOAMED POLYOLEFIN PARTICLES

Michael Träger, Haltern, and Thomas Leven, Lüdenscheid, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed May 19, 1994, Ser. No. 246,166

Claims priority, application Germany, Jun. 14, 1993, 4319587

Int. Cl.⁶ C08J 9/18

U.S. Cl. 521—60 10 Claims
1. A process for preparing foamed polyolefin particles by dispersion foaming of components consisting essentially of polyolefin particles, a liquid dispersing agent and optionally a volatile blowing agent in a reaction system consisting essentially of a reactor equipped with a stirrer containing said components and a discharge jet, comprising the step of:
gassing the components of the reactor by injecting an inert gas into the dispersion below the surface of the liquid in the reactor;
and simultaneously
discharging a three phase mixture of liquid dispersing agent, polymer particles and gas through said jet.

5,380,767
FOAMABLE GEL WITH AN AQUEOUS BLOWING AGENT EXPANDABLE TO FORM A UNIMODAL STYRENIC POLYMER FOAM STRUCTURE AND A PROCESS FOR MAKING THE FOAM STRUCTURE

Kyung W. Suh, and Andrew N. Paquet, both of Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 23, 1992, Ser. No. 965,589

Int. Cl.⁶ C08J 9/00

U.S. Cl. 521—79 25 Claims
1. A foamable styrenic polymer gel comprising:
a) a flowable melt of a styrenic polymer material comprising greater than 50 percent by weight styrenic monomeric units based upon the total weight of the styrenic polymer material;
b) a blowing agent comprising about 1 weight percent or more water based upon the total weight of the blowing agent; and
c) the styrenic polymer melt having a water solubility sufficient to provide for formation of a styrenic polymer foam structure having a substantially unimodal cell size distribution upon expansion of the styrenic polymer gel.

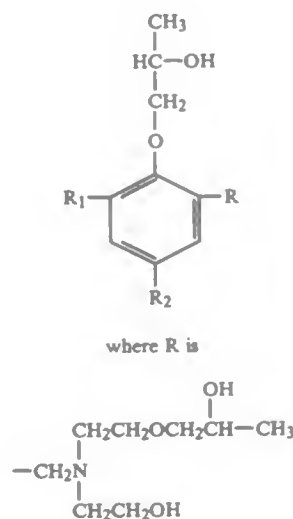
5,380,768
FOAM, FOAM-RESIN COMPOSITE AND METHOD OF MAKING A FOAM-RESIN COMPOSITE

John A. Cranston, Huntsville, and Doug E. MacArthur, New Market, both of Ala., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed May 20, 1993, Ser. No. 64,869

Int. Cl.⁶ C08G 18/00

U.S. Cl. 521—167 47 Claims
1. A urethane modified polyisocyanurate rigid foam comprising the reaction product of:
an A component comprising polymeric isocyanate having a functionality of at least 2.4;
a B component comprising:
an aromatic amino polyol having the formula



where R is

$\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}(\text{OH})\text{CH}_3$

$-\text{CH}_2\text{N}(\text{CH}_2\text{CH}_2\text{OH})_2$

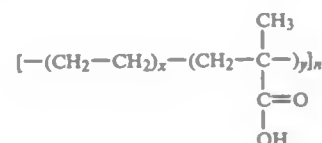
R₁ is hydrogen or R, and R₂ is hydrogen, R or the nonyl radical $-\text{CH}_2(\text{CH}_2)_9$, said aromatic amino polyol being about 60 to about 90 vol. % of the B component; a polyether polyol, said polyether polyol being about 5 to about 35 vol. % of the B component; a trimerization catalyst; a surfactant; an amount of water sufficient to provide, upon reaction of the A and B components, CO₂ as the sole blowing agent; wherein the foam has a density of about 5 to about 15 lb./ft.³.

5,380,769

REACTIVE INK COMPOSITIONS AND SYSTEMS
Donald R. Titterton, Tualatin, Ore.; Loc V. Bui, Linda M. Hirsch, both of Portland, and C. Wayne Jaeger, Beaverton, all of Ore., assignors to Tektronix Inc., Wilsonville, Ore.

Filed Jan. 19, 1993, Ser. No. 5,970
Int. Cl.⁶ C09D 11/10; C08L 33/02, 93/04; C08K 5/09
U.S. Cl. 523—161 13 Claims

1. A reactive ink for use in ink jet printers comprising:
a base ink component having an ink carrier constituent, a compatible colorant, and a cross-linkable constituent one selected from the group consisting of:
ethylene-acrylic acid copolymer having the following structure



where

x=from about 75% to about 99%;
y=from about 1% to about 25%; and
a dimer acid; and

a cross-linking agent reactive with the cross-linkable constituent in the base ink component and adapted to be applied to a receiving substrate separately from the base ink component and, upon contact with the cross-linkable constituent of the base ink component, to produce a cross-linked ink.

5,380,770

HEAT CURED SILICONE RUBBER COMPOSITIONS CONTAINING A POTASSIUM ALUMINOSILICATE FILLER WHICH PROVIDES RESISTANCE TO HYDROCARBON OILS AND ADJUSTABLE SHRINKAGE
James E. Doin, Hoosick Falls, and Edwin R. Evans, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Apr. 9, 1992, Ser. No. 865,546
Int. Cl.⁶ C08K 9/06, 3/34; C08L 83/00
U.S. Cl. 523—212 29 Claims

1. A heat curable silicone rubber composition comprising a polymer system, said polymer system containing:
(A) up to 100 parts by weight of an organopolysiloxane having a viscosity of about 3,000,000 to about 100,000,000 cps at 25° C. and substantially no vinyl, or mixtures of such organopolysiloxanes;
(B) up to 100 parts by weight of a vinyl-stopped organopolysiloxane, substantially free to vinyl-on-chain, having a viscosity of about 3,000,000 to about 100,000,000 cps at 25° C., or mixtures of such organopolysiloxanes;
(C) up to 100 parts by weight of a vinyl-on-chain organopolysiloxane, free of vinyl end stops, having a vinyl content of about 5×10⁻³ to about 5 weight percent and a viscosity of about 3,000,000 to about 100,000,000 cps at 25° C., or mixtures of such organopolysiloxanes;
(D) up to 100 parts of a vinyl-stopped, vinyl-on-chain organopolysiloxane having a vinyl content of about 5×10⁻³ to about 5 weight percent, or mixtures of such organopolysiloxanes;
(F) up to about 30 parts by weight based upon 100 parts of the total of Components (A)–(D) of an organopolysiloxane resin copolymer comprising:
1) R₃SiO₄ units (M units) and SiO₂ units (Q units) where each R is independently selected from the group consisting of vinyl radicals and monovalent hydrocarbon radicals free to aliphatic unsaturation with a ratio of M units to Q units ranging from 0.5:1 to about 1.5:1, where the copolymer contains from about 0.5 to 10 weight percent vinyl groups, or
2) R₃SiO₄ units (M units), SiO₂ units (Q units) and R^{1/2}SiO_{2/2} units (D vinyl units) where each R is as defined above and each R^{1/2} is a vinyl containing radical having from 2 to about 10 carbon atoms, and where the ratio of M units to Q units is from 0.5:1 to about 1.5:1, and the D vinyl units are present in an amount of from about 1 to about 70 mol percent based upon the total number of mols of siloxy units in the copolymer, and where the resinous copolymer contains from about 0.5 to about 10.0 weight percent vinyl groups, or
3) mixtures of 1 and 2; such that the total of Components (A)–(D) and (F) equals 100 parts by weight, said silicone rubber composition further comprising:
(G) from about 1 to about 50 parts by weight potassium aluminosilicate filler having a surface area of between about 5.0 and about 6.50 m²/g, an average particle diameter of between about 1.0 and about 20.0 micrometers and an average particle thickness of between about 0.45 and 1.0 micrometers;
(H) up to about 200 parts by weight based upon the polymer system of a finely divided filler; and
(J) from about 0.1 to about 10 parts by weight based upon the polymer system of a hydride cross-linking agent.

5,380,771

AQUEOUS DISPERSION OF AMINE SALTS OF AN ACRYLIC POLYMER
Joseph L. Nothnagel, Maple Grove, Minn., assignor to Cargill Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 731,489, Jul. 17, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 901,796
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.⁶ C08J 3/05, 3/03; C08L 33/02, 33/10
U.S. Cl. 523—339 7 Claims

1. A process for making a water dispersion of a water dispersible amine salt of an acrylic polymer, the amine salt of the acrylic polymer being a reaction product of a mixture comprising the acrylic polymer having carboxyl groups, an amine and a substantially water immiscible organic solvent in a neutralization reaction, the acrylic polymer having a weight average molecular weight in the range of from about 30,000 to about 300,000 and an acid value in the range of about 15 to about 100, the process comprising:
adding water to a dispersion of the acrylic polymer or the amine salt of the acrylic polymer in the substantially water immiscible organic solvent, to form an acrylic polymer amine salt/organic solvent/water mixture, the substantially water immiscible organic solvent and water being in amounts effective for forming an azeotrope having a boiling point in the range of from about 85° C. to about 95° C.;
inverting the mixture and forming an organic solvent in water azeotrope;
heating the azeotrope to remove the substantially water immiscible organic solvent;
condensing the water and substantially water immiscible organic solvent being removed from the water dispersion;
separating the substantially water immiscible organic solvent and water, the water dispersion being formed and the organic solvent being removed by the heating of the azeotrope to form the water dispersion of the water dispersible amine salt of the acrylic polymer, the organic solvent capable of being separated from the water after the heating for circulation of the water to the mixture by virtue of the immiscibility of the organic solvent with the water, and circulating the water separated from the organic solvent back into the mixture to provide an aqueous dispersion of the amine salt of the acrylic polymer, at least 60% of the carboxyl groups of the acrylic polymer being neutralized and the dispersion having at least about 30 weight percent acrylic polymer and salt thereof as solids, less than 2 weight percent of organic solvent and being substantially free of an emulsifier.

5,380,772

MODELLING LIQUID FOR DENTAL PORCELAIN
Akira Hasegawa, Inuyama, and Tsugumichi Kawasaki, Nagoya, both of Japan, assignors to G-C Toshi Kogyo Corporation, Kasugai, Japan

Continuation of Ser. No. 619,979, Nov. 30, 1990, abandoned.
This application May 27, 1993, Ser. No. 70,010
Claims priority, application Japan, Dec. 11, 1989, 1-318826; Sep. 28, 1990, 2-257057

Int. Cl.⁶ C08F 2/46 13 Claims

1. A modeling liquid used for building up dental porcelain, comprising:
(A) a photopolymerizable compound having at least one ethylenically unsaturated double bond,
(B) a photopolymerizable initiator,
(C) a reducing agent, and
(D) a polymerization inhibitor, wherein said modeling liquid can be fired without effecting discoloration of a porcelain; and
wherein said modeling liquid has a refractive index of 1.4 to 1.6 inclusive at 25° C. and a viscosity of 0.1 Pa.s or less at 23° C.

5,380,773

BITUMENS MODIFIED WITH RECYCLED AND/OR VIRGIN POLYMERS AND THEIR APPLICATIONS
Emanuele Bellio, Ragusa; Michele Ficili, Scicli, and Nicola Patti, Ragusa, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy

Filed Dec. 18, 1992, Ser. No. 992,628
Claims priority, application Italy, Dec. 23, 1991, MI.91-A/003478

Int. Cl.⁶ C08L 95/00 15 Claims

1. A bituminous composition consisting essentially of:
a) bitumen;
b) a recycled and/or virgin polyethylene (PE) having a density of from 0.870 to 0.970 g/ml and a Melt-Flow Index value of between and between 20 and 70;
c) a recycled and/or virgin ethylene-vinyl acetate copolymer (EVA) having a Melt-Flow Index of between 0.3 and 500 and a vinyl acetate content of between 1 and 50% by weight with respect to the total copolymer; and
d) a PE wax having a molecular weight of between 3,000 and 6,000.

5,380,774

NYLON MOLDING COMPOSITIONS EXHIBITING IMPROVED PROTECTION AGAINST UV-LIGHT DEGRADATION

Bruce M. Mulholland, Union, Ky., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Nov. 28, 1989, Ser. No. 441,959
Int. Cl.⁶ C08K 5/3435, 5/11, 5/524

U.S. Cl. 524—102 20 Claims

1. A nylon molding composition comprising a nylon base resin and a stabilization system which is present in said composition in an amount sufficient to achieve a color difference, as calculated in CIELab units under illuminant "D-65" according to ASTM Standard D-2244, of less than about 1.5 when exposed to 601.6 kJ/m² irradiation in a Xenon arc weatherometer operated according to SAE J1885, and exhibiting at least about 75% surface gloss retention after irradiation, and wherein said stabilization system includes:
(i) a hindered phenolic antioxidant in the form of tetrakis-(methylene(3,5-di-tert-butyl-4-hydroxy-hydrocinnamate)) methane;
(ii) a phosphate compound in the form of bis(2,4-di-tert-butyl-phenyl) pentaerythritol diphosphite;
(iii) a hindered amine light stabilizer in the form of bis(1,2,2,6,6-pentamethyl-4-piperidyl)(3,5-di-tert-butyl-4-hydroxybenzyl)butyl-propanedioate; and optionally
(iv) a benzotriazole UV-light absorber in the form of 2-(3',5'-bis(1-methyl-1-phenylethyl)-2'-hydroxyphenyl) benzotriazole.

5,380,775

VINYL ESTER AND POLYESTER RESINS CONTAINING MONOMER, CERESIN WAX, DRYING OIL AND EPOXIDIZED DRYING OIL

Terry W. Cowley, and Mary L. N. White, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 121,399, Sep. 14, 1993, Pat. No. 5,340,856, which is a division of Ser. No. 996,545, Dec. 24, 1992, Pat. No. 5,286,554, which is a division of Ser. No. 797,640, Nov. 25, 1991, Pat. No. 5,206,077. This application May 19, 1994, Ser. No. 245,773

Int. Cl.⁶ C08K 5/15 8 Claims

1. In a composition comprising (A) at least one vinyl ester resin or at least one unsaturated polyester resin or a combination of such resins; (B) at least one polymerizable, vaporizable, ethylenically unsaturated monomer; and (C) a polymerizable, vaporizable, ethylenically unsaturated monomer emission sup-

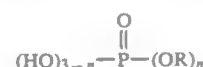
pression amount of ceresin wax; the improvement which comprises employing in said composition (D) a drying oil in an amount of from about 0.1 to about 0.7 percent by weight based upon the combined weight of resin and polymerizable, vaporizable, ethylenically unsaturated monomer; and (E) an epoxidized drying oil in an amount of from about 0.2 to about 0.7 percent by weight based upon the combined weight of resin and polymerizable, vaporizable, ethylenically unsaturated monomer.

5,380,776
MOLDABLE FILLED POLYESTER RESIN COMPOSITION

Peter G. Hibbert, Newark, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Sep. 1, 1992, Ser. No. 938,795
Int. Cl.⁶ C08K 5/521

- U.S. Cl. 524—145 17 Claims
1. A moldable composition comprising:
 - (A) a liquid polyester resin produced by the condensation reaction of at least one unsaturated dicarboxylic acid or anhydride with at least one polyol;
 - (B) an inert filler; and
 - (C) a viscosity reducing effective amount of a compound of the formula:



wherein:

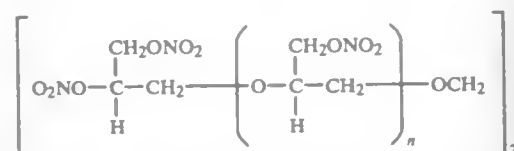
R is C₄–C₁₈ alkyl, C₄–C₁₈ alkenyl or C₄–C₁₈ alkynyl; and n is 1 or 2.

5,380,777
POLYGLYCIDYL NITRATE PLASTICIZERS

Rodney Willer, Newark, Del.; Alfred G. Stern, Elkton, Md., and Robert S. Day, Newark, Del., assignors to Thiokol Corporation, Ogden, Utah

Division of Ser. No. 2,423, Jan. 8, 1993, abandoned. This application Mar. 28, 1994, Ser. No. 224,098
Int. Cl.⁶ C07C 203/04; C08G 59/14; C08K 5/32; C08L 71/02
U.S. Cl. 524—186 6 Claims

2. A composition which comprises:
 - (A) a plasticizer which comprises a nitrated difunctional poly(glycidyl nitrate) oligomer of the formula



where n is 0 to 3, having a M_n of from about 394 to about 1084, and

- (B) a binder compound selected from the group consisting of poly(glycidyl nitrate), poly(ethylene glycol), poly(diethylene glycol adipate), glycidyl azide polymer, poly(ε-caprolactone), poly(propylene glycol), poly(neopentyl glycol) adipate, poly(nitratomethyl methyl oxetane), and other energetic polyoxetanes.

5,380,778
FLUORO-CHEMICAL AMINOALCOHOLS
Richard S. Buckanin, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 30, 1992, Ser. No. 954,336
Int. Cl.⁶ C08K 5/17

- U.S. Cl. 524—247 11 Claims
1. A thermoplastic composition comprising fluoroaliphatic

radical-containing aminoalcohol and thermoplastic synthetic organic polymer.

5,380,779
PRESSURE SENSITIVE ADHESIVE COMPOSITION WHICH IS REPULPABLE UNDER ACIDIC PH CONDITIONS

Francois C. D'Haese, Gent, Belgium, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 763,823, Sep. 23, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 215,211
Int. Cl.⁶ C08L 79/04; C08F 128/02, 20/10

- U.S. Cl. 524—272 20 Claims
1. A pressure sensitive adhesive composition comprising:
 - (a) a terpolymer formed from A, B and C monomers wherein,
 - A is a hydrophobic monomer selected from the group consisting of acrylic or a methacrylic ester of a non-tertiary alcohol, the alcohol having 2 to 14 carbon atoms, wherein A comprises from 30 to 85% by total weight of the A plus B plus C;
 - B is a polar monomer copolymerizable with said A monomer and having hydroxyl, carboxyl, sulfonic acid functionality or combinations thereof, with the proviso that if B contains the hydroxyl functionality it is combined with a monomer having an acid group, wherein B comprises from 2 to 50% by total weight of A plus B plus C, and wherein from 5 to 100% of any said acidic group has been neutralized; and
 - C is a water-dispersible macromolecular monomer which is copolymerizable with A and B and has the formula X—Y—Z wherein X is a structural element comprising a moiety which is copolymerizable with A and B, Y is a divalent linking group joining X to Z, and Z is a water-dispersible moiety containing at least two units which are essentially unreactive under free radical initiated copolymerization conditions used to form the terpolymer, wherein C comprises from 10 to 50% by total weight of A plus B plus C; and
 - (b) an additive selected from the group consisting of tackifiers, plasticizers, and combinations thereof wherein the ratio of said additive to said terpolymer is in the range of from 0.2:1 to 5:1
- wherein said composition is repulpable at a pH of from 2 to 11.

5,380,780
ABSORBABLE COATING AND BLEND
James R. Olson, Norwich, Conn., assignor to Deknatel Technology Corporation, Inc., Fall River, Mass.
Continuation of Ser. No. 291,486, Dec. 29, 1988, abandoned. This application Sep. 14, 1992, Ser. No. 944,861
Int. Cl.⁶ C08J 5/10; A61L 17/00

- U.S. Cl. 524—311 7 Claims
1. An absorbable coating comprising a blend of about 95 to about 5% by weight of a homopolymer of ε-caprolactone and about 5 to about 95% by weight of a crystallization modifier selected from the group consisting of crystalline fatty acids and crystalline esters of fatty acids which are saturated C₁₂–C₁₈ fatty acid esters of polyhydric alcohols.

5,380,781
CATIONICALLY ELECTRODEPOSITABLE FINE PARTICLES DERIVED FROM ALKOXYSILANE-MODIFIED EPOXY RESINS AND CATIONIC ELECTRODEPOSITION PAINT COMPOSITION COMPRISING THE SAME
Kiyoshi Kato, Oiso; Kenichi Yoneyama, Chigasaki; Haruo Nagao; Kenji Yamamoto, both of Hiratsuka; Kazuyuki Morimoto, Nagoya, and Masafumi Kume, Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan
Filed Jul. 23, 1993, Ser. No. 95,210
Claims priority, application Japan, Jul. 27, 1992, 4-218699; Apr. 7, 1993, 5-103726
Int. Cl.⁶ C09D 5/44; C08G 59/18

- U.S. Cl. 523—404 10 Claims
1. Cationically electrodepositable gelled fine particles which are obtained by subjecting fine particles of a mixture of (A) an epoxy resin-amine adduct having hydrolyzable alkoxy groups and (B) at least one compound selected from the group consisting of (B-1) a polyisocyanate compound blocked with an oxime compound and (B-2) a polyepoxide compound to intraparticle crosslinking at least partially in the presence of water; said epoxy resin-amine adduct having hydrolyzable alkoxy groups (A) being produced by (1) adding an alkoxy group-containing amine or mercaptan compound to the epoxy groups of an epoxy resin-amine adduct, (2) by adding an alkoxy group-containing epoxy compound to the amine groups of an epoxy resin-amine adduct, or (3) by adding an alkoxy group-containing isocyanate compound to the hydroxyl and amino groups of an epoxy resin-amine adduct; said polyepoxide compound (B-2) being obtained by a reaction between a polyphenol compound and epichlorohydrin; and the fine particles having a diameter of 0.5 μm or less.

5,380,782
POLYMERIC DISPERSANTS FOR CERAMIC MATERIALS
Leonard E. Bogan, Jr., Harleysville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Oct. 4, 1993, Ser. No. 130,976
Int. Cl.⁶ C08K 3/38

- U.S. Cl. 524—404 9 Claims
1. An aqueous dispersion of ceramic materials, comprising:
 - (a) water
 - (b) from about 0.1 to about 99 percent by weight of the dispersion of one or more ceramic materials selected from the group consisting of silicon, silicon carbide, silicon nitride, sialon, aluminum nitride, boron nitride, boron carbide, yttria, zirconia, and alumina
 - (c) from about 0.01 to about 10 percent by weight based on the weight of the one or more ceramic materials of one or more polymeric dispersants wherein the polymeric dispersant contains, as polymerized units
 - (i) from about 40 to about 85 percent by weight of one or more carboxylic acid monomers selected from the group consisting of C₃–C₆ monoethylenically unsaturated monocarboxylic acids, C₄–C₈ monoethylenically unsaturated dicarboxylic acids, anhydrides of C₄–C₈ monoethylenically unsaturated cis-dicarboxylic acids and the alkali metal and ammonium salts thereof;
 - (ii) from about 15 to about 60 percent by weight of one or more monomers selected from the group consisting of sulphonc acid monomers, phosphonic acids and salts thereof; and
 - (iii) from about 3 to about 20 percent by weight of N-tertiarybutylacrylamide.

5,380,783
POLY(ARYLENE SULFIDE) RESIN COMPOSITION
Yoshikatsu Satake; Toshihiko Ono; Yoshinobu Itoh, and Yukio Ichikawa, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan
Filed Aug. 30, 1993, Ser. No. 113,473
Claims priority, application Japan, Sep. 17, 1992, 4-273722; Mar. 26, 1993, 5-092206
Int. Cl.⁶ C08K 3/10

- U.S. Cl. 524—406 16 Claims
1. A poly(arylene sulfide) resin composition comprising a poly(arylene sulfide) resin and, as a corrosion inhibitor, at least one substance selected from the group consisting of elemental molybdenum, oxoacids of molybdenum, sodium salt of and potassium salt of orthomolybdic acid, sodium salts of and potassium salts of isopolymolybdic acids, strontium salt of orthomolybdic acid, strontium salts of isopolymolybdic acids, basic calcium molybdates, zinc salts of the oxoacids of molybdenum, elemental tungsten, ammonium salts of the oxoacids of tungsten and zinc salts of the oxoacids of tungsten, said corrosion inhibitor being incorporated in a proportion within a range of 0.01–10 parts by weight per 100 parts by weight of the poly(arylene sulfide) resin.

5,380,784
WATER-BASED RESIN DISPERSION AND RESIN COMPOSITION FOR COATING
Kazuhiko Usuki, Osaka; Kazuhiko Nishimoto, Saitama; Akio Tokuyama, Osaka; Koichi Saito, Kyoto, and Manabu Yoshio, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Feb. 19, 1992, Ser. No. 836,906
Claims priority, application Japan, Feb. 27, 1991, 3-033133
Int. Cl.⁶ C08K 3/10

- U.S. Cl. 524—407 8 Claims
1. A water-based resin dispersion having an acid value of 0 to 15, obtained by emulsion polymerization of a mixture of α,β-ethylenically unsaturated monomers, said mixture comprising, per 100 parts by weight of the α,β-ethylenically unsaturated monomer mixture,
 - (1) 1 to 20 parts by weight of α,β-ethylenically unsaturated monomer having a β-ketoester group,
 - (2) 0.05 to 5 parts by weight of crosslinking α,β-ethylenically unsaturated monomer having two or more groups polymerizable by radical polymerization, and
 - (3) a balance of α,β-ethylenically unsaturated monomer other than monomers (1) and (2).
 2. A water-based resin dispersion having been effected using a non-urethane-containing emulsifier which is polymerizable by radical polymerization, the emulsifier being used in an amount of 0.2 to 10 parts by weight per 100 parts by weight of the α,β-ethylenically unsaturated monomer mixture.

5,380,785
RUBBERY POLYMER
Hung D. Ngoc, Limeli Brevannes, and Mariano Salazar, Orsay, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 5, 1993, Ser. No. 43,076
Int. Cl.⁶ C08L 55/02

- U.S. Cl. 524—504 12 Claims
1. A leathery composition which is useful in automotive applications which is comprised of (1) polyvinyl chloride, (2) a plasticizer, and (3) a rubbery polymer which is comprised of repeat units which are comprised of (a) butyl acrylate, (b) at least one member selected from the group consisting of methyl methacrylate, ethyl methacrylate, methyl acrylate, and ethyl acrylate, (c) acrylonitrile, (d) styrene, (e) a half ester maleate soap, and (f) a crosslinking agent, wherein said rubbery polymer is made by a process comprising the steps of (1) polymerizing (i) butyl acrylate, (ii) at least one member selected from the

group consisting of methyl methacrylate, ethyl methacrylate, methyl acrylate, and ethyl acrylate, (iii) acrylonitrile, (iv) a crosslinking agent, and (v) a half ester maleate soap under emulsion polymerization conditions to produce a seed polymer containing latex; (II) adding (i) styrene, (ii) additional acrylonitrile, and (iii) additional crosslinking agent to the seed polymer containing latex under emulsion polymerization conditions which result in the formation of an emulsion containing the rubbery polymer; and (III) recovering the rubbery polymer from the emulsion containing the rubbery polymer.

5,380,786
POLYVINYL CHLORIDE BLENDS HAVING IMPROVED PHYSICAL PROPERTIES INCLUDING LOW TEMPERATURE BRITTLINESS

William S. Greenlee, Josef C. Vyvoda, and Roman W. Wypart, all of Avon Lake, Ohio, assignors to The Geon Company, Independence, Ohio
Continuation of Ser. No. 324,800, Mar. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 242,394, Sep. 9, 1988, abandoned. This application Dec. 27, 1990, Ser. No. 634,783
Int. Cl.⁶ C08L 33/06

U.S. Cl. 524—560 **1 Claim**
1. A blend composition having favorable low temperature properties, comprising:

a polyvinyl chloride-acrylate copolymer, said polyvinyl chloride copolymer containing from (a) about 10 parts to about 90 parts by weight of vinyl chloride units and optional vinyl component units wherein the amount of said optional vinyl component units is from about 0 to 45 parts by weight and from (b) 90 parts to about 10 parts by weight of one or more acrylate units, said acrylate unit, before polymerization, having the formula:



wherein R^1 is an aromatic, aliphatic, or combinations thereof, having from 1 to 18 carbon atoms, or a halogen derivative thereof, or hydrogen, and wherein R^2 is an aliphatic, an aromatic, an alkyl hydroxyl, or combinations thereof having from 1 to 18 carbon atoms, or a halogen derivative thereof; or a hydrocarbyl ether, an alkoxyalkyl, a phenoxyalkyl, a phenoxyalkyl, or combinations thereof, having from 2 to 1,000 carbon atoms, or a substituted halogen, oxygen, sulfur, or nitrogen derivative thereof; and

said polyvinyl chloride-acrylate copolymer further being blended with one or more ethylene copolymer low temperature property improving polymers, having a weight average molecular weight in excess of 100,000 and selected from the group consisting of ethylene-vinyl acetate-carbon monoxide, ethylene-vinyl acetate, ethylene-ethyl acrylate, and ethylene-methacrylate, said blend composition having a low temperature brittleness of less than -10°C . as measured by ASTM D-746.

5,380,787
PAINT RESEMBLING STAINED GLASS
Hotoji Sakuma, Gotenba, Japan, assignor to Padico Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1993, Ser. No. 109,481
Claims priority, application Japan, Aug. 24, 1992, 4-245963
Int. Cl.⁶ C08J 3/20; C08K 3/20; C08L 75/00

U.S. Cl. 524—591 **16 Claims**
1. A paint resembling stained glass for artistic plastic objects comprising:

(a) 100 parts by weight of a paint con, position composed of 4 to 17% by weight of a urethane resin, 0.1 to 10% by weight of a coloring agent and 73.0 to 95.9% by weight of an acrylic ester based resin, wherein the ratio in % by

weight, of said acrylic ester based resin to said urethane resin is 83-95/17-5; and
(b) 90 to 150 parts by weight of water.

5,380,788
ROOM TEMPERATURE ADDITION-CURABLE SILICONE ADHESIVE COMPOSITIONS AND N-HETEROCYCLIC SILANE ADHESION PROMOTERS
Judith Stein, Schenectady, and Mark W. Davis, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 13, 1993, Ser. No. 165,625
Int. Cl.⁶ C08K 5/54

U.S. Cl. 524—730 **9 Claims**
1. A room temperature vulcanizable addition-curable composition, comprising by weight,

(A) 100 parts of a vinyl-containing polydiorganosiloxane composition comprising:
(1) about 50 to about 100 parts of an essentially cyclic-free vinyl-terminated polydiorganosiloxane having the general formula,



where Vi is a vinyl radical, R is selected from the class consisting of alkyl radicals having 1 to 8 carbon atoms, phenyl radicals, fluoroalkyl radicals having 3 to 10 carbon atoms and mixtures thereof, "m+n" has a value sufficient to provide a polydiorganosiloxane viscosity of 100 to about 100,000 centipoise at 25°C , and a polydiorganosiloxane vinyl content of from about 0.02 to about 2.0 weight %, and

(2) from about 0 to about 50 parts of a solid, benzene-soluble vinyl-containing resin copolymer comprising,



where R^1 is a vinyl radical, or a monovalent hydrocarbon radical free of aliphatic unsaturation and containing no more than six carbon atoms, the ratio of $(R^1)_3SiO_4$ units to $SiO_{4/2}$ units being from about 0.5:1 to about 1.5:1, and the resin having a vinyl content of from about 1.5 to about 3.5% by weight,
(B) from about 1 to about 20 parts of a hydrogen-containing polysiloxane having from about 0.05 to about 1.6% by weight of hydrogen and an average unit formula,
 $R^2_2H_2SiO_{(4-a-b)/2}$,

where R^2 is a monovalent hydrocarbon radical, or halogenated monovalent hydrocarbon radical having from 1 to about 10 carbon atoms and free of aliphatic unsaturation, "a" has a value of from about 0 to about 3, "b" has a value of from about 0 to about 3, and the sum of "a" + "b" has a value of from 0 to 3,
(C) a catalytic amount of a hydrosilylation catalyst,
(D) an effective amount of a bis[trialkylsilylalkenyl]pyridine adhesion promoter having the formula,



where R^3 is a $C_{(1-4)}$ alkyl radical and R^4 is a $C_{(2-8)}$ alkylene radical,

(E) from about 0 to about 200 parts of an extending filler, and
(F) from about 0 to about 50 parts of a reinforcing filler, and in the absence of (A) (2), an amount effective for reinforcement.

5,380,789
METHOD OF PREPARING VEGETABLE OIL-MODIFIED PHENOLIC RESIN AND LAMINATE PRODUCED BY USING THE SAME

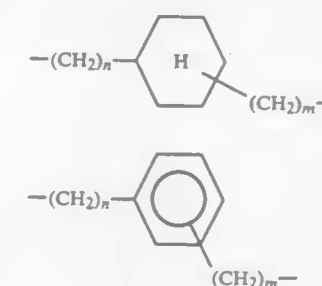
Ken Nanaumi, Takeshi Horiuchi, Masahiro Nomoto, all of Shimodate, and Mitsuhiro Inoue, Oyama, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan
Filed Aug. 10, 1993, Ser. No. 104,003

Claims priority, application Japan, Aug. 17, 1992, 4-217811
Int. Cl.⁶ C08K 5/41; C08G 8/34

U.S. Cl. 524—745 **15 Claims**

1. A method of preparing a vegetable oil-modified phenolic resin, comprising allowing a phenol to react with a non-conjugated drying oil in the presence of a super acid selected from the group consisting of a perfluorosulfonic acid, a perfluorosulfonic anhydride and a mixture thereof to form a phenol-added vegetable oil, and allowing the phenol-added vegetable oil to react with an aldehyde in the presence of an alkaline catalyst under weakly alkaline conditions to form a vegetable oil-modified phenolic resin.

with 5 to 8 carbon atoms or a unit having a formula corresponding to formula (II):

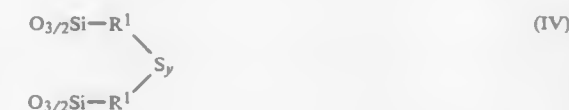


n or m is a number from 0 to 6 and denotes the number of methylene groups bound to the silicon or sulfur atom; wherein M from formula (I) denotes H^+ , NH_4^+ , or a metal ion having a valence of x, wherein x is 1 to 4, wherein the solution optionally also contains compounds having a formula corresponding to formula (III):



or derivatives thereof condensed via oxygen bridges, wherein R' denotes a methyl or ethyl group and a ratio of Si atoms from formula (I) to a sum of the Si and/or Al atoms from formula (III) is in the range of 1:0 to 1:3, and a total concentration of compounds of formula (I) and formula (III) is 0.01 to 70 wt. %, the method comprising:

suspending a polymeric disulfane, trisulfane or tetrasulfane compound in water, wherein the polymeric compound is made up of units having a formula corresponding to formula (IV):



wherein R^1 at each location in formula (IV) is the same or different and has the same meaning as in formula (I), y is 2, 3 or 4, and the free valences of oxygen atoms bonded to the silicon atom in formula (IV) are saturated by silicon atoms in other formula (IV) groups or by metal atom/oxygen groups in cross-linking bridge members corresponding to formula (V):



5,380,791
METHOD OF PRODUCING SULFONATED ORGANOSILICON COMPOUNDS AND CORRESPONDING AQUEOUS SOLUTIONS

Peter Panster, Rodenbach; Arno Jaenes, Hasselroth, and Thomas Goebel, Hanau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 18, 1992, Ser. No. 993,009
Claims priority, application Germany, Dec. 20, 1991, 4142129
Int. Cl.⁶ C08L 83/00

U.S. Cl. 524—837 **17 Claims**

1. A method of producing 0.01 to 70 wt. % aqueous solutions of sulfonated organosilicon compounds having a formula corresponding to formula (I):



or oligomeric siloxane derivatives thereof, condensed via oxygen bridges,

wherein R^1 denotes a straight-chain or branched alkylene group with 1 to 12 carbon atoms, a cycloalkylene group

wherein R^1 in formula (V) has the same meaning as in formula (III), and a ratio of Si atoms from formula (IV) units to a sum of Si and/or Al atoms from formula (V) units is 1:0 to 1:3, wherein the suspended compounds are present in the water at a concentration of 0.1 to 50 wt. %;

adding hydrogen peroxide to the suspension at a temperature in the range of 10° to 100°C . for 2 to 20 hours, wherein the hydrogen peroxide is added in a form of up to a 70 wt. % solution, and the quantity of hydrogen peroxide used is at least an amount stoichiometrically required for oxidizing the formula (IV) sulfane compound into the sulfone compound of formula (I);

agitating the suspension at a temperature in the range of 30° to 100°C . for up to 60 hours and at 100° to 150°C . for up to an additional 60 hours at a normal pressure or an excess pressure equal to a sum of the partial pressures of the components of the mixture at the respective temperature until a substantially clear solution has been obtained and any excess hydrogen peroxide present has decomposed; cooling the solution and optionally neutralizing the solution;

separating any insoluble components present by filtering or centrifuging and washing with a washing liquid; and bringing the solution of product combined with the washing liquid to a desired concentration by diluting the solution with water or by concentrating the solution.

5,380,792

TWO-COMPONENT AQUEOUS POLYURETHANE DISPERSIONS HAVING IMPROVED POT LIFE AND COATINGS PREPARED THEREFROM

Christine A. Renk, Pittsburgh, Pa., assignor to Miles Inc., Pittsburgh, Pa.

Filed Apr. 19, 1993, Ser. No. 48,850
Int. Cl.⁶ C08G 18/06, 18/28

U.S. Cl. 524—840

16 Claims

1. A two-component, aqueous polyurethane coating composition which may be cured at ambient temperature and which comprises

- I) a polyisocyanate component which is neither water dispersible nor water soluble which comprises a polyisocyanate mixture having an NCO content of 10 to 47% by weight and containing isocyanurate and allophanate groups in a molar ratio of monoisocyanurates to monoallophanates of 10:1 to 1:5, wherein the allophanate groups are formed from urethane groups which are based on the reaction product of an organic diisocyanate having aliphatically and/or cycloaliphatically bound isocyanate groups and a monoalcohol containing at least 1 carbon atom and having a molecular weight of up to 500, and
- II) a polyol which is dispersed or dissolved in water, wherein components I and II are present in an amount sufficient to provide an equivalent ratio of isocyanate groups to hydroxyl groups of 0.8:1 to 6:1.

5,380,793

STYRENE SOLUBLE UNSATURATED POLYESTER RESIN FROM POLYETHYLENE TEREPHTHALATE

Timothy P. Pepper, Dublin, Ohio, assignor to Ashland Oil, Inc., Russell, Ky.

Filed Jul. 13, 1993, Ser. No. 91,488
Int. Cl.⁶ C08G 63/02; C08L 67/06

U.S. Cl. 525—48

38 Claims

1. A method for making a styrene-soluble ethylenically-unsaturated polyester which comprises the steps of:

- (a) depolymerizing polyethylene terephthalate with a glycol forming an intermediate having hydroxyl groups,
- (b) re-esterifying said depolymerized polyethylene terephthalate intermediate with an alpha, beta ethylenically unsaturated dicarboxylic acid or anhydride and,
- (c) reacting said unsaturated polyester with an effective amount of cyclopentadiene or dicyclopentadiene.

5,380,794

POLYVINYL BUTYRAL TACKIFIER FOR VINYL CHLORIDE POLYMER COMPOSITIONS

Richard E. Schaefer, Fairview Heights, Ill.; James T. Renshaw, St. Louis, Mo., and Peter M. Maino, Manhasset, N.Y., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 2, 1993, Ser. No. 144,379
Int. Cl.⁶ C08L 29/04, 27/06, 61/02

U.S. Cl. 525—57

14 Claims

1. A vinyl chloride polymer composition comprising polyvinyl chloride, inorganic fillers and polyvinyl butyral, said polyvinyl butyral being from about 0.5% to about 4% by weight of said composition.

5,380,795

POLYMER MIXTURE COMPRISING AN AROMATIC POLYCARBONATE, A STYRENE-CONTAINING COPOLYMER AND/OR GRAFT POLYMER, AND A POLYSILOXANE-POLYCARBONATE BLOCK COPOLYMER, AND ARTICLES FORMED THEREFROM

Johannes C. Gosens, Roosendaal; Adelbert H. Leonardus, Bergen op Zoom, and Hendrikus J. Eugene, Roosendaal, all of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 23, 1993, Ser. No. 157,349

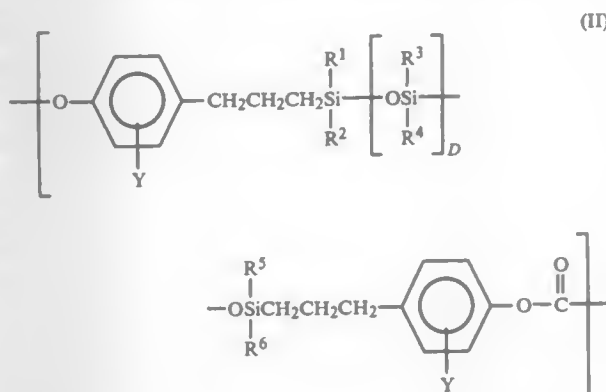
Claims priority, application Netherlands, Dec. 2, 1992, 9202090

Int. Cl.⁶ C08L 69/00, 25/04

U.S. Cl. 525—67

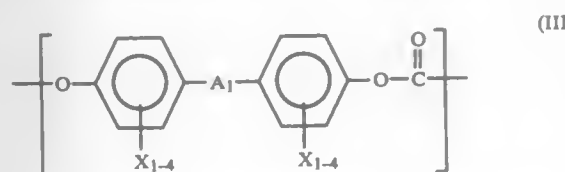
10 Claims

1. A polymer mixture which comprises
- (A) an aromatic polycarbonate without polysiloxane blocks,
 - (B) (i) a styrene-containing copolymer, (ii) a styrene-containing graft polymer having a rubbery graft base, or (iii) a mixture of components (i) and (ii), and
 - (C) a polysiloxane-polycarbonate block copolymer built up from (a) 1-50% by weight of polysiloxane blocks of formula (II)



and

- (b) 50-99% by weight of blocks built up from 75-99% by weight of units having the formula (III)



and from 1-25% by weight from aliphatic diester units of formula (IV):



wherein, in formula II, R¹, R², R³, R⁴, R⁵ and R⁶ each independently of each other, represents a hydrogen atom, a hydrocarbyl or a halogenated hydrocarbyl, D is an integer from 5-140, Y is a hydrogen atom or an alkoxy, and wherein A₁ is a bivalent hydrocarbon group having 1-15 carbon atoms, which bivalent hydrocarbon group may be substituted; and —S—, and —S—S—; and —S(O)—; and —S(O)2—; and —O—, or a —C—, and every X, independently of each other, is a hydrogen atom, a halogen or a monovalent hydrocarbon and wherein A₂ is an alkylene radical having 6-18 carbon atoms.

5,380,796

FUNCTIONALIZED OLEFIN POLYMERS AND POLYPHENYLENE ETHER COMPOSITIONS CONTAINING THEM

John R. Campbell, Clifton Park, and James R. Presley, Cobleskill, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 21, 1994, Ser. No. 183,709

Int. Cl.⁶ C08F 255/02; C08L 71/12

U.S. Cl. 525—68

20 Claims

1. A graft copolymer comprising molecules having a base olefin polymer chain and reactive grafted moieties comprising structural units of the formula



wherein each R¹ is independently hydrogen or C₁₋₅ alkyl, each R² is C₁₋₁₀ alkyl and X¹ is



5,380,797

HIGH IMPACT STRENGTH POLYMER BLENDS

Werner Siol, Darmstadt; Jens-Dieter Fischer, Bickenbach; Ulrich Terbrack, Reinheim, and Klaus Koralewski, Riedstadt, all of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Germany

Filed Dec. 14, 1992, Ser. No. 992,259

Claims priority, application Germany, Dec. 14, 1991, 4141319

Int. Cl.⁶ C08L 51/04

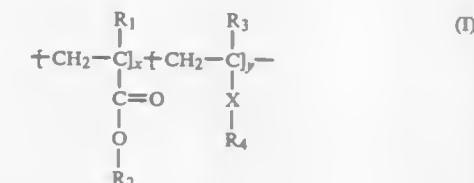
U.S. Cl. 525—71

13 Claims

1. A high impact strength polymer blend of structurally different polymers P1 and P2, comprising:

- (1) 50-99 parts by wt. of a two-phase or multiphase polymer P1 having at least one elastomer A1, A1 having a glass transition temperature Tg < 10° C., a portion of A1 being covalently bonded to at least one thermoplastic matrix polymer B1, B1 having a glass transition temperature Tg > 30° C.; and
 - (2) 1-50 parts by wt. of a two-phase or multiphase polymer P2 having at least one elastomer A2, A2 having a glass transition temperature Tg < 10° C., a portion of A2 being covalently bonded to at least one thermoplastic matrix polymer B2, B2 having a glass transition temperature Tg > 30° C., wherein
- a) polymer B1 is polystyrene or poly-α-methylstyrene, and

b) polymer B2 is a polymer of formula I:



wherein:

- R₁ and R₃ are hydrogen or methyl,
R₂ is alkyl having 1 to 6 carbon atoms,
—X— is —C(O)—O—, —O—C(O)— or —C(O)—NH—,
R₄ is a cycloalkyl group with 5 to 8 carbon atoms, optionally with other monomers present in amounts of up to 20 wt. % based on the monomers of formula (I), y is in the range between 5 and 100 wt. % and x is in the range between 0 and 95 wt. %, c) blends of polymers B1 and B2 have separation temperatures LCST above 100° C., d) the polymers B1 and B2 contain no acrylonitrile, methacrylonitrile, maleic anhydride, or N-substituted maleimide monomer units containing aromatic substituents, and e) elastomer A1 is structurally different from elastomer A2.

5,380,798

IMPACT-RESISTANT STYRENIC POLYMER RESIN COMPOSITION AND PROCESS FOR MAKING SAME

Hideori Onishi, and Hiroaki Matuda, both of Yokohama, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1993, Ser. No. 127,735

Claims priority, application Japan, Sep. 30, 1992, 4-285021

Int. Cl.⁶ C08L 25/04, 51/04; C08F 279/02

U.S. Cl. 525—89

10 Claims

1. An impact-resistant styrenic polymer resin composition comprising, based on the weight of the impact-resistant styrenic polymer composition, 70 to 97% by weight of a styrenic polymer resin and 3 to 30% by weight of a toughening agent which is in the form of fine particles having an average particle diameter of 0.3 to 0.7 μm and dispersed in the styrenic polymer resin, wherein said styrenic polymer resin is obtained by polymerizing a styrenic monomer or monomer mixture comprising at least 50% by weight of a styrenic monomer selected from the group consisting of styrene, α-methylstyrene, vinyltoluene, and chlorostyrene, and not more than 50% by weight of a copolymerizable monomer selected from the group consisting of unsaturated nitrile monomers, acrylic acid esters, and methacrylic acid esters;

said toughening agent comprising:

- (I) 10 to 98 parts by weight of a styrene/butadiene di-block copolymer having (i) a weight average molecular weight of 30,000 to 1,000,000, (ii) a molecular weight distribution of 1.00 to 1.20 as defined by the ratio of weight average molecular weight to number average molecular weight; (iii) a total bound styrene content of 30 to 70% by weight, and (iv) a block styrene content of at least 60% based on the total bound styrene content; and
 - (II) 2 to 90 parts by weight of a styrene/butadiene copolymer rubber, polybutadiene or a mixture of a styrene/butadiene copolymer rubber and polybutadiene, which has (i) a weight average molecular weight of 1,000 to 1,000,000, (ii) a molecular weight distribution of 1.00 to 1.60 as defined by the ratio of weight average molecular weight to number average molecular weight, (iii) a total bound styrene content of 0 to 15% by weight, and (iv) a cis-1,4 bond content of 10 to 80%;
- wherein the total amount of (I) and (II) is 100 parts by

weight, and the toughening agent has a JIS A hardness not larger than 75.

5,380,799

MOLDABLE RESIN COMPOSITION

Dean H. Wiseman, Jacksonville, Fla., and Masamichi Togo, Osaka, Japan, assignors to Reichold Chemicals, Inc., Durham, N.C.

Division of Ser. No. 815,377, Dec. 31, 1991, Pat. No. 5,306,773. This application Dec. 30, 1993, Ser. No. 175,606

Int. Cl.⁶ C08F 8/00; C08L 63/00

U.S. Cl. 525—111

19 Claims

1. A method of producing a molded article comprising the steps of:

(a) forming a resin composition comprising a thermosetting unsaturated polyester resin, a mixture of thermoplastic polymers of vinyl acetate and an epoxy compound having at least one 1,2-epoxy group per molecule, a dialkyl-p-toluidine accelerator, a low temperature free radical peroxide initiator, and an alkali metal or transition metal compound capable of reacting with the free radical initiator to initiate polymerization of the unsaturated polyester resin;

(b) forming a shaped article from the resin composition; and
(c) subjecting the shaped article to a temperature of about 20° C. to about 40° C. to polymerize the thermosetting resin composition to provide a molded article.

5,380,800

PROCESS FOR THE PREPARATION OF MODIFIED PHENOLIC RESINS

Albert Bender, Mainz, and Wolfgang Dathe, Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany. Continuation of Ser. No. 17,631, Feb. 12, 1993, abandoned. This application Mar. 16, 1994, Ser. No. 213,719

Claims priority, application Germany, Mar. 4, 1992, 4206697 Int. Cl.⁶ C08L 61/00

U.S. Cl. 525—133.5

4 Claims

1. A process for the preparation of a modified phenolic resin, which comprises subjecting the starting components of natural resin acids and oligomeric or polymeric ethylenically unsaturated hydrocarbon resins, phenols and aldehydes, which phenols and aldehydes can also be present as resols or novolaks, and, optionally α , β -ethylenically unsaturated carboxylic acids or derivatives thereof, esterifying agents, fatty acids, ethylenically unsaturated monomers, salt-forming agents and catalysts to a condensation reaction under pressure and in the presence of an inert organic solvent which forms an azeotrope with water, and during this procedure removing the water from the reaction mixture continuously by azeotropic distillation by heating to 220° to 270° C.

5,380,801

MISCIBLE BLENDS OF POLYPHENYLENE ETHER AND POLYARYL (METH)ACRYLATE COPOLYMERS

Jens-Dieter Fischer, Bickenbach, and Werner Siol, Darmstadt-Eberstadt, both of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Germany

Division of Ser. No. 718,435, Jan. 20, 1991, Pat. No. 5,218,050. This application Jan. 8, 1993, Ser. No. 2,319

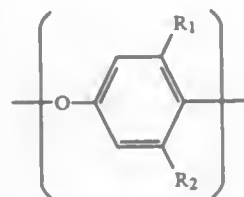
Claims priority, application Germany, Jan. 20, 1990, 4019626 Int. Cl.⁶ C08L 33/08, 33/10, 71/12

U.S. Cl. 525—132

12 Claims

1. A miscible polymer blend, comprising:

(A) 0.5–99.5 wt. % of a polyphenylene ether, having monomer units of formula (I)



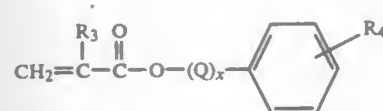
(I)

wherein R₁ is a methyl, isopropyl, C₁₋₈ cycloalkyl, C₁₋₈ alkoxy, C₆₋₁₀ aryl, or chlorine,

R₂ is a methyl, isopropyl, C₁₋₈ cycloalkyl, C₁₋₈ alkoxy, C₆₋₁₀ aryl, or chlorine, and

B) 99.5–0.5 wt. % of a polyaryl(meth)acrylate copolymer component comprising copolymer B2) wherein copolymer B2) is miscible with said polyphenylene ether and comprises

b21) 99.9–35 wt. % of monomer units having formula (II)



(II)

wherein R₃ is hydrogen or methyl, Q is a C₁₋₆ alkylidene group or a group —(CH₂)_m—O—, wherein m is a number from 2 to 6, x is 0 or 1, and R₄ is hydrogen, C₁₋₆ alkyl, C₁₋₆ alkoxy, C₁₋₆ alkylamino or C₁₋₆ alkylamino substituted at nitrogen with C₁₋₆ alkyl groups, and

b22) 0.1–65 wt. % of comonomers capable of absorbing UV light or low molecular weight UV absorbing compounds.

5,380,802

FIRE RETARDANT POLYOLEFIN FIBERS AND FABRICS

Enrico J. Termine, Lafayette; Ray W. Atwell, West Lafayette; Harry A. Hodgen, Battle Ground, and Nicolai A. Favstritsky, Lafayette, all of Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Dec. 9, 1992, Ser. No. 987,608

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.⁶ C08L 51/06; C08F 255/02

U.S. Cl. 525—72

13 Claims

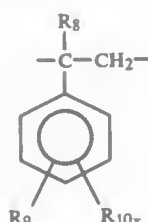
1. A flame-retarded polyolefin fiber, comprising:

(a) a thermoplastic polyolefin; and

(b) a graft copolymer composition represented by the formula:



wherein n is an integer > 1, PP is polypropylene, and S represents grafted side chains having halogenated monomeric units of the formula:



wherein x=1 to 4; R₈ is H or CH₃; R₉ is H or a C₁₋₄ alkyl group; and R₁₀ is Br or Cl; and wherein said thermoplastic polyolefin and said graft copolymer are spun into a fiber.

5,380,803

POLYETHYLENE BLENDS

William R. Coutant, and Joel L. Martin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 761,603, Sep. 18, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 48,630

Int. Cl.⁶ C08L 23/06, 23/08, 23/16, 23/18

U.S. Cl. 525—240

20 Claims

1. A composition of matter comprising:

(a) about 10 to about 35 weight percent of a low molecular weight ethylene homopolymer resin, where said resin is made by polymerizing ethylene with a titanium chloride based catalyst system, and where said resin has a density greater than about 0.96 grams per cubic centimeter, a melt index greater than about 30 grams per 10 minutes, and a heterogeneity index from about 2 to about 8,

(b) about 65 to about 90 weight percent of a high molecular weight ethylene copolymer resin, where said resin is made by copolymerizing ethylene and an alpha-olefin with a titanium chloride based catalyst system, and where said resin has a density less than 0.955 grams per cubic centimeter, a high load melt index from about 2 to about 6 grams per 10 minutes, and a heterogeneity index from about 2 to about 8,

where said weight percents are based on the total weight of said resins (a) and (b); and

wherein said composition of matter has a high load melt index from about 10 to about 25 grams per 10 minutes, a melt index greater than 0.05 grams per 10 minutes, a density greater than 0.94 grams per cubic centimeter and less than or equal to 0.98 grams per cubic centimeter, and is essentially free of other ethylene polymers.

5,380,804

1,3,5-TRIS-(2-CARBOXYETHYL) ISOCYANURATE CROSSLINKING AGENT FOR POLYEPOXIDE COATINGS

Robert G. Lees, Stamford, Conn., and Charles A. Zezza, Mahwah, N.J., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Jan. 27, 1993, Ser. No. 13,593

Int. Cl.⁶ C08F 16/26, 20/32, 24/00

U.S. Cl. 525—327.3

17 Claims

1. A curable powder coating composition comprising:

(i) 1,3,5-tris-(2-carboxyethyl)-isocyanurate;

(ii) a polyepoxide derived from the copolymerization of:

(a) an epoxy group-containing olefinically-unsaturated monomer; and

(b) an epoxy-free olefinically-unsaturated monomer; and

(iii) a cure catalyst.

5,380,805

POLYIMIDES, PROCESS FOR THE PREPARATION THEREOF AND POLYIMIDE RESIN COMPOSITIONS

Shoji Tamai; Masahiro Ohta, both of Yokohama; Saburo Kawashima, Yokosuka; Katsuaki Iiyama, Odawara; Hideaki Oikawa, Yokohama; Akihiro Yamaguchi, Kamakura; Kouji Ohkoshi, Zushi, and Masao Yoshikawa, Kuwana, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan. Division of Ser. No. 608,727, Nov. 5, 1990, Pat. No. 5,288,843, which is a continuation-in-part of Ser. No. 196,492, May 20, 1988, abandoned, and Ser. No. 199,918, May 27, 1988, abandoned, and Ser. No. 202,031, Jun. 3, 1988, abandoned, and Ser. No. 551,314, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 426,715, Oct. 26, 1989, abandoned. This application Oct. 29, 1993, Ser. No. 143,105

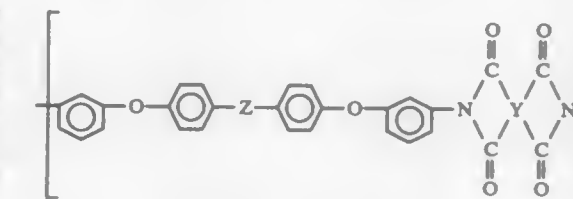
Claims priority, application Japan, May 20, 1987, 62-126320; Jun. 1, 1987, 62-134830; Jun. 1, 1987, 62-134831; Jun. 3, 1987, 62-138203; Jun. 3, 1987, 62-138204; Jun. 5, 1987, 62-140041; Dec. 16, 1987, 62-316101; Dec. 25, 1987, 62-327206; Oct. 28, 1988, 63-270778; Apr. 12, 1989, 1-090674

Int. Cl.⁶ C08L 79/08

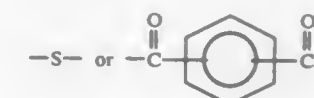
U.S. Cl. 525—432

6 Claims

1. A resin composition which comprises 99.9 to 50% by weight of a polyimide and 0.1 to 50% by weight of an aromatic polyamideimide based on the total amount of said polyimide and said aromatic polyamideimide, said polyimide having a recurring unit which does not include amide moieties and which is represented by the formula:



where Z indicates a direct bond or is



and Y is a tetravalent group selected from the group consisting of an aliphatic group having at least 2 carbon atoms, an alicyclic group, a monocyclic aromatic group, a fused polycyclic aromatic group, and a polycyclic aromatic group where aromatic groups are linked to one another directly or via a bridge member.

5,380,806

INK COMPOSITION COMPRISING A POLYURETHANE AND A MIXTURE OF EPOXIDES

Hitoshi Yano, Chiba, Japan, assignor to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 875,825, Apr. 30, 1992, abandoned.

This application Apr. 15, 1994, Ser. No. 227,989

Claims priority, application Japan, May 2, 1991, 3-128225

Int. Cl.⁶ C08F 283/00

U.S. Cl. 525—481

14 Claims

1. A flexible printed circuit board screen printing ink composition which comprises a blend of 100 parts by weight of a copolymer comprising a polycaprolactonepolyol, a diamine and a diisocyanate; about 30 to about 300 parts by weight of a novolac epoxy resin; about 30 to about 300 parts by weight of a bisphenol epoxy resin; about 0.2 to about 20 parts by weight of a thixotropic agent; about 0.1 to about 30 parts by weight of a defoaming agent; and about 0.1 to about 10 parts by weight of a leveling agent.

5,380,807
ELECTRICALLY CONDUCTIVE ALTERNATING
COPOLYMER AND METHOD OF PREPARING SUCH A
COPOLYMER

Edsko E. Havinga, Eindhoven; Wolter Ten Hoeve, and Hans Wijnberg, both of Groningen, all of Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

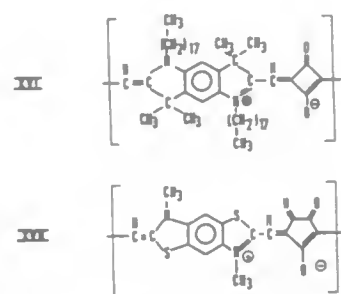
Filed Jan. 8, 1993, Ser. No. 2,432

Claims priority, application European Pat. Off., Jan. 15, 1992, 92200097

Int. Cl.⁶ C08G 16/00, 12/00

U.S. Cl. 526—257

28 Claims



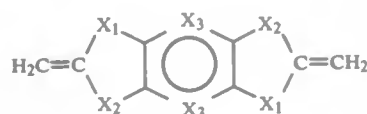
1. A (semi)conductive copolymer of alternating donor and acceptor monomer units, characterized in that the (semi)conductive copolymer is obtained by reacting an acceptor monomer unit A having an unsaturated ring structure which is substituted with at least two double-bonded oxygen atoms and at least one hydroxy group, with a donor monomer unit D formed by a homo or heterocyclic aromatic compound comprising at least two active hydrogen atoms, a polycondensation reaction taking place in the presence of a solvent, thereby forming said alternating (semi)conductive copolymer substantially free of doping, with the proviso that said monomer unit A is selected from the group consisting of croconic acid and 5,6-dihydroxy-5-cyclohexene-1,2,3,4-tetraone when said monomer unit D is p-phenylenediamine.

23. A (semi)conductive copolymer of alternating donor and acceptor monomer units, characterized in that the (semi)conductive copolymer is obtained by reacting an acceptor monomer unit A selected from the group consisting of squaric acid, croconic acid and 5,6-dihydroxy-5-cyclohexene-1,2,3,4-tetraone with a donor monomer unit D selected from the group consisting of

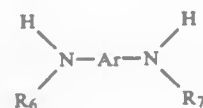
where:

$X_1 = -NR-$ and $X_2 = O, S, Se, -NR-, -CR=CH-, -CHR-CH_2-$ or $-C(alkyl)_2-$, where the alkyl group contains 1-18 C-atoms and $X_3 = -CR=$ or $-N=$, where R is an H-atom or a C_1-C_{18} alkyl or alkoxy group; or $X_1 = S$ or O and $X_2 =$ or $-CR=CH-$ and $X_3 = -CR=$ or $-N=$, where R has the above-mentioned meaning, a polycondensation reaction taking place in the presence of a solvent, thereby forming said alternating (semi)conductive copolymer substantially free of doping.

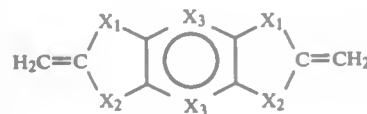
25. A (semi)conductive copolymer of alternating donor and acceptor monomer units, characterized in that the (semi)conductive copolymer is obtained by reacting an acceptor monomer unit A selected from the group of squaric acid, croconic acid and 5,6-dihydroxy-5-cyclohexene-1,2,3,4-tetraone with a donor monomer unit D selected from an aromatic diamine of the general formula



IVA

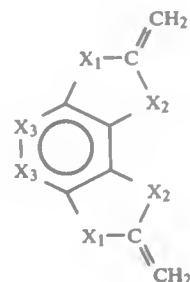


X

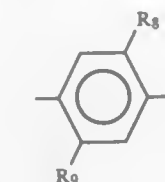


IVB

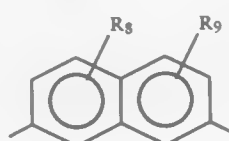
where R_6 and R_7 represent an H-atom or a C_1-C_{18} alkyl group and Ar is an aromatic core selected from the group consisting of



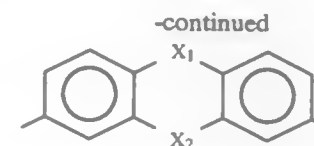
VA



XI



XII



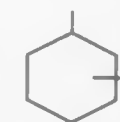
XIII



(I)

wherein x is an integer of 1 to 10, A represents an organic residue represented by one of the following structures 1 to 6,

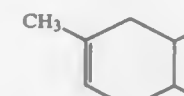
where R_8 and R_9 represent an H-atom or a C_1-C_{18} alkyl group and $X_1 = -N=$ or $-CR=$, where R represents an H-atom or a C_1-C_{18} alkyl or alkoxy group, and $X_2 = S, O, Se, -NH-$ or $-N(alkyl)-$, where the alkyl group contains 1-18 C-atoms, with the proviso that said monomer unit A is selected from the group consisting of croconic acid and 5,6-dihydroxy-5-cyclohexene-1,2,3,4-tetraone when said monomer unit D is p-phenylenediamine, a polycondensation reaction taking place in the presence of a solvent, thereby forming said alternating (semi)conductive copolymer substantially free of doping.



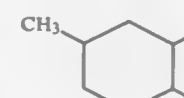
1.



2.



3.



4.



5.



6.

and Z is an organic residue of a C_2 to C_{30} polyol having x+1 hydroxyl groups; and 0 to 50 wt % of at least one monomer selected from the group consisting of diallyl 1,2-, 1,3- and 1,4-cyclohexanedicarboxylates, diallyl 4-cyclohexene-1,2-dicarboxylate, diallyl methyl-4-cyclohexene-1,2-dicarboxylate, diallyl bicyclo-2-heptane-5,6-dicarboxylate, diallyl bicycloheptane-2,3-dicarboxylate, alkyl acrylate, alkyl methacrylate, diallyl maleate and diallyl fumarate.

5,380,808
PROCESS FOR PRODUCING WATER-ABSORBING
RESINS

Takashi Sumiya; Masashi Date, both of Kyoto, and Kenji Tanaka, Otu, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jul. 11, 1991, Ser. No. 728,294

Claims priority, application Japan, Jul. 17, 1990, 2-188691; Aug. 29, 1990, 2-229103; Sep. 6, 1990, 2-237328

Int. Cl.⁶ C08F 220/06

U.S. Cl. 526—317.1

9 Claims

1. A process for producing water-insoluble water-absorbing resins comprising the steps of:

initiating polymerization of an aqueous solution containing 30 to 80% by weight of (a) a hydrophilic vinyl monomer having a functional group and (b) a crosslinking agent by supplying said aqueous solution together with (c) a polymerization initiator to a polymerizing apparatus capable of heating and/or cooling surfaces in contact with said aqueous solution; and

subsequently polymerizing said aqueous solution in the form of a sheet or a thin film with a thickness of 3 to 50 mm without agitating said solution but by controlling the temperature of the system being polymerized by heating and/or cooling surfaces to 30° to 65° C. during polymerization, wherein the temperature difference between the polymerization initiation temperature and the highest attained temperature during polymerization is no higher than about 30° C.

5,380,809
COMPOSITION FOR OPTICAL MATERIAL

Hiroshi Uchida, and Yasuji Tanaka, both of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,879

Claims priority, application Japan, Aug. 26, 1992, 4-248921

Int. Cl.⁶ C08F 18/24, 22/14

U.S. Cl. 526—318.43

4 Claims

1. A composition for an optical material consisting essentially of:

5 to 80% of a polyallyl carbonate of a linear or branched alkylene glycol represented by the following general formula (II)



wherein y is an integer of 1 to 10 and Y represents an organic residue derived from a C_2 to C_{12} polyol having y+1 hydroxyl groups,

20 to 70 wt % of an allyl ester oligomer having allyl ester groups at the terminal ends thereof and recurring units represented by the following general formula (I)

5,380,810
ELASTIC SUBSTANTIALLY LINEAR OLEFIN
POLYMERS

Shih-Yaw Lai, Sugar Land; John R. Wilson, Richwood; George W. Knight, Lake Jackson, all of Tex., and James C. Stevens, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 776,130, Oct. 15, 1991, Pat. No. 5,272,236.

This application Apr. 7, 1993, Ser. No. 44,426

Int. Cl.⁶ C08F 110/02, 10/02

U.S. Cl. 526—352

13 Claims

1. A substantially linear olefin polymer characterized as having:

a) a melt flow ratio, I_{10}/I_2 , ≥ 5.63 ,
b) a molecular weight distribution, M_w/M_n , defined by the equation:

$$M_w/M_n \leq (I_{10}/I_2) - 4.63,$$

c) a critical shear stress at onset of gross melt fracture of greater than about 4×10^6 dyne/cm², and

d) from about 0.01 to about 3 long chain branches/1000 carbons along the polymer backbone, wherein the olefin

polymer is further characterized as an ethylene homopolymer.

5,380,811 FLUORINE-CONTAINING ORGANOPOLYSILOXANE COMPOSITION

Hirofumi Kishita; Shinichi Sato, both of Annaka; Noriyuki Koike, Yoshii, and Takashi Matsuda, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Jun. 2, 1993, Ser. No. 70,223

Claims priority, application Japan, Jun. 2, 1992, 4-167026; Jun. 17, 1992, 4-183168

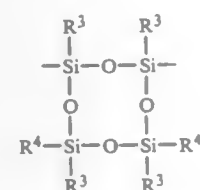
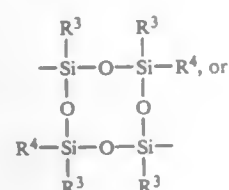
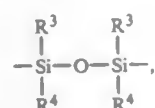
Int. Cl.⁶ C08L 83/14, 83/12
U.S. Cl. 528—15 8 Claims

1. A room temperature curable fluorine-containing organopolysiloxane composition comprising:

(A) a fluorine-containing compound having the general formula (I):



wherein a is an integer of 0 or more, Rf is a divalent perfluoroalkylene group or a divalent perfluoropolyether group, R¹ is a divalent hydrocarbon group, R² is a monovalent aliphatic unsaturated group-containing hydrocarbon group, and Q is a siloxane group having the general formula:



wherein in the formulas (2), (3) and (4) R³ and R⁴ may be the same or different and are each a monovalent unsubstituted or substituted hydrocarbon group,

(B) a hydrogenorganopolysiloxane containing at least two Si—H groups in its molecule, and
(C) a platinum family metal catalyst.

5,380,812 ONE PART CURABLE COMPOSITIONS CONTAINING DEACTIVATED HYDROSILATION CATALYST AND METHOD FOR PREPARING SAME

Michael A. Lutz; Binh T. Nguyen, and Russell K. King, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 10, 1994, Ser. No. 179,416
Int. Cl.⁶ C08G 77/08

U.S. Cl. 528—15 17 Claims

1. A one-part composition curable by a hydrosilation reaction, wherein said composition comprises in the absence of oxygen and Si-H-reactive hydroxylated compounds

- a curable compound containing at least two ethylenically or acetylenically unsaturated groups per molecule;
- a curing agent for said composition containing at least two silicon-bonded hydrogen atoms per molecule, where the amount of said curing agent is sufficient to cure said composition in the presence of an active platinum group metal-containing hydrosilation catalyst;
- an amount of said catalyst sufficient to promote curing of said composition; and
- an amount of an inhibitor sufficient to reduce the activity of said catalyst at 25° C. in the absence of oxygen and SiH-reactive hydroxylated compounds.

5,380,813 METHOD FOR PRODUCING LACTIC ACID BASED POLYURETHANE

Jukka Seppälä; Johan-Fredrik Sellin, both of Helsinki, Finland, and Tao Su, Nanning, China, assignors to Neste OY, Porvoo, Finland

Filed Oct. 15, 1993, Ser. No. 138,539
Claims priority, application Finland, Oct. 16, 1992, 924699
Int. Cl.⁶ C08G 18/06

U.S. Cl. 528—58 14 Claims

1. A method for producing lactic acid based polyurethane, comprising the steps of polymerizing monomeric lactic acid into an oligomer with a first molecular weight, and thereafter copolymerizing the oligomer with diisocyanate reacting with the free hydroxyl and carboxyl groups of it to form a polyurethane with a second molecular weight higher than said first molecular weight.

(2)

5,380,814 AROMATIC POLYCARBONATE AND PROCESS FOR PRODUCTION THEREOF

Yoshiyuki Totani; Motokazu Hirao; Tomonori Ito; Masakatsu Nakatsuka, all of Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 73,677
Claims priority, application Japan, Jun. 16, 1992, 4-156524
Int. Cl.⁶ C08G 64/00

U.S. Cl. 528—199 12 Claims

1. A process for producing an aromatic polycarbonate comprising reacting an aromatic dihydroxy compound and an alkali metal or alkaline earth metal base with a carbonyl halide compound which comprises:

- preparing a two-phase mixture composed of a uniform aqueous solution of an aromatic dihydroxy compound, an alkali metal or alkaline earth metal base and water and an organic solvent,
- continuously adding a carbonyl halide compound and a polymerization catalyst to the two-phase mixture with stirring so that the amount of polymerization catalyst in the mixture increases, and
- effecting a haloforming reaction and a polymerization reaction in the presence of a molecular weight controlling agent.

5,380,815 MELAMINIC POLYCONDENSATES

Roberto Cipolli, Novara; Roberto Orian, Milan; Enrico Masarati, Castelnovo Val Tidone, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell'Università E Della Ricerca Scientifica E Tecnologica, Rome, Italy

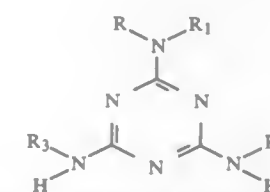
Filed Nov. 13, 1992, Ser. No. 976,423
Claims priority, application Italy, Nov. 14, 1991, MI.91-A/003037

Int. Cl.⁶ C08G 12/30, 12/02

U.S. Cl. 528—254 14 Claims

1. Resins obtained by polymerization of a mixture comprising:

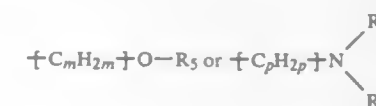
- from 0 to 50 parts by weight of one or more polyaminic compounds other than (2) below;
- from 50 to 100 parts by weight of one or more derivatives of 2,4,6-triamino-1,3,5-triazine having the general formula (I):



with either formaldehyde or a mixture of formaldehyde and another aldehyde having the general formula (II):



wherein the aldehyde having general formula (II) is present in an amount of up to 20% by mol, and wherein at least one of radicals from R to R₃ is:



wherein:

m is an integer of from 2 to 8;

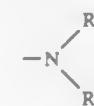
p is an integer of from 2 to 6;

R₅ is H; C₁—C₈ alkyl; C₂—C₆ alkenyl; or —[C_qH_{2q}—O—R₇—]

wherein q is an integer of from 1 to 4 and R₇ is H or C₁—C₄ alkyl; C₆—C₁₂ cycloalkyl or alkylcycloalkyl;

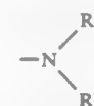
the radicals R₆, which are the same or different from each other, are:

H; C₁—C₈ alkyl; C₂—C₆ alkenyl; C₆—C₁₂ cycloalkyl or alkylcycloalkyl; C₁—C₄ hydroxyalkyl; or the moiety:



is replaced by a heterocyclic radical linked to the alkyl chain through the nitrogen atom, optionally containing another heteroatom;

or in the general formula (I) the moiety:



is replaced by a heterocyclic radical linked to the triazinic ring through the nitrogen atom, optionally containing another heteroatom;

the other radicals from R to R₃, which are the same or different from one another, have the above said meaning, or they are:

H; C₁—C₁₈ alkyl; C₂—C₈ alkenyl; C₆—C₁₆ cycloalkyl or alkylcycloalkyl, optionally substituted with a hydroxy or C₁—C₄ hydroxyalkyl function;

R₄ is C₁—C₈ alkyl; C₂—C₆ alkenyl; C₆—C₁₂ cycloalkyl; C₆—C₁₂ aryl, optionally substituted with one or more C₁—C₄ alkyl; aralkyl C₇—C₁₆; or aralkenyl C₈—C₁₂ radicals.

5,380,816

LINEAR POLYESTER DIOLS BASED ON ISOPHTHALIC ACID AND 2-METHYL-1,3-PROPANEDIOL FOR THERMOSET COATING COMPOSITIONS

Carl J. Sullivan, 315 Colonial Dr., Exton, Pa. 19341
Division of Ser. No. 610,500, Nov. 7, 1990, which is a continuation-in-part of Ser. No. 350,491, May 11, 1989, abandoned. This application May 2, 1991, Ser. No. 695,048
Int. Cl.⁶ B05D 3/02

U.S. Cl. 427—385.5 18 Claims

1. A thermosettable resin composition suitable for forming a coating of improved hardness and flexibility, said thermosettable resin composition comprising:

- a linear polyester diol consisting essentially of (i) from about 40 to 55 mole percent of recurring units of isophthalic acid; (ii) from about 45 to 60 mole percent of recurring units of an aliphatic diol, wherein from about 75 to 100 mole percent of the aliphatic diol recurring units are recurring units of 2-methyl-1,3-propanediol; and (iii) optionally, from about 0 to 15 mole percent of recurring units of a dicarboxylic acid other than isophthalic acid; wherein the linear polyester diol has a combined acid and hydroxyl number of from about 15 to 75 milligrams of potassium hydroxide per gram of linear polyester diol, and a number average molecular weight within the range of about 1000 to 7500;
- an amount of an aminoplast effective to crosslink the resin composition; and
- an amount of a catalyst sufficient to catalyze a reaction between the linear polyester diol and the aminoplast.

5,380,817

PROCESS FOR PREPARING POLYSUCCINIMIDES FROM ASPARTIC ACID

Yl H. Paik, Princeton, N.J.; Ethan S. Simon, Ambler, and Graham Swift, Blue Bell, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 10, 1992, Ser. No. 911,866
Int. Cl.⁶ C08G 69/10

U.S. Cl. 528—328 16 Claims

1. A process for preparing a polymer comprising:
a) forming a polymerization mixture of poly(alkylene glycol), aspartic acid and one or more other α-amino acids;
b) heating the mixture to an elevated temperature; and
c) maintaining the mixture at the elevated temperature to form a polymer solution, suspension or dispersion in the poly(alkylene glycol).

5,380,818

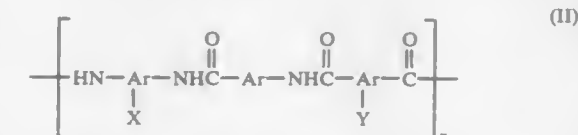
HIGH MODULUS AROMATIC POLYAMIDE FILM AND PRODUCTION THEREOF

Tae-jin Oh, Daegu, and Jin-sa Kim, Seoul, both of Rep. of Korea, assignors to Kolon Industries, Inc., Seoul, Rep. of Korea
Filed Jul. 16, 1993, Ser. No. 94,425

Claims priority, application Rep. of Korea, Jul. 20, 1992, 92-12920; Jun. 29, 1993, 93-11943
Int. Cl.⁶ C08G 69/08, 69/26

U.S. Cl. 528—331 13 Claims

1. An aromatic polyamide represented by structural formula (II):



wherein Ar represents a phenyl group, X represents the group CONH₂ in the ortho-position to the amide bond, Y is selected from the group consisting of H, Cl, Br, I, NO₂,

and an alkyl or alkoxy group having 1 to 4 carbon atoms, and n represents an integer between 10 and 100,000.

5,380,819

RESIN COMPOSITION INCLUDING POLY(ARYLENE THIOETHER) AND POLYAMIDE

Naomitsu Nishihata; Yukio Ichikawa, and Takayuki Katto, all of Iwaki, Japan, assigns to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,453

Claims priority, application Japan, Mar. 27, 1992, 4-101640
Int. Cl.⁶ C08G 75/02, 69/48; C08L 81/02

U.S. Cl. 528—336

5 Claims

1. A resin composition comprising a poly(arylene thioether) and a polyamide at least part of said poly(arylene thioether) consisting of a poly(arylene thioether) comprising phthalic anhydride groups, wherein the poly(arylene thioether) comprising phthalic anhydride has an infrared (IR) index at least 2% after subjecting the same to a remelting treatment in N-methyl-2-pyrrolidone, wherein the IR index after the remelting treatment in N-methyl-2-pyrrolidone is determined in accordance with the following method:

With respect to a sheet obtained by placing 50 g of a polymer sample in a 1-liter autoclave, adding 500 g of N-methyl-2-pyrrolidone, 30 g of water and 4 g of NaOH thereto, purging the autoclave with nitrogen gas, heating the contents to melt the polymer, cooling the contents at once with stirring, taking a slurry out of the autoclave after cooling the contents, sifting the slurry by a screen of 100 mesh to separate the polymer thus treated, washing the polymer collected three times with an aqueous NaOH solution (pH: 12.5) and twice with an aqueous HCl solution (pH: 2) to convert salts in the form of an acid, drying the thus-treated polymer, hot-pressing the polymer at 320° C. and then pouring the polymer hot-pressed into an iced water to quench it, the infrared absorption spectrum is measured to determine the IR index (%) from the thus-obtained spectrum by dividing an absorbance at 1850 cm⁻¹ which is the absorption band characteristic of phthalic anhydride group by an absorbance at 1900 cm⁻¹ which is the out-of-plane deformation overtone absorption band of CH and multiplying the resulting absorbance ratio by 100.

5,380,820

POLYIMIDES, PROCESS FOR THE PREPARATION THEREOF AND POLYIMIDE RESIN COMPOSITIONS

Masahiro Ohta, Yokohama, and Masao Yoshikawa, Kuwana, both of Japan, assigns to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Division of Ser. No. 608,727, Nov. 5, 1990, Pat. No. 5,288,843, which is a continuation-in-part of Ser. No. 196,492, May 20, 1988, abandoned, and a continuation-in-part of Ser. No. 199,918, May 27, 1988, abandoned, and a continuation-in-part of Ser. No. 202,031, Jun. 3, 1988, abandoned, and a continuation-in-part of Ser. No. 551,314, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 426,715, Oct. 26, 1989, abandoned. This application Dec. 7, 1993, Ser. No. 143,045

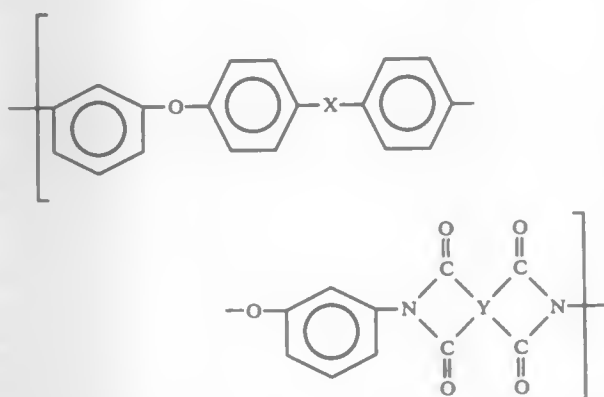
Claims priority, application Japan, May 20, 1987, 62-126320; Jun. 1, 1987, 62-134830; Jun. 1, 1987, 62-134831; Jun. 3, 1987, 62-138203; Jun. 3, 1987, 62-138204; Jun. 5, 1987, 62-140041; Dec. 16, 1987, 62-316101; Dec. 25, 1987, 62-327206; Oct. 28, 1988, 63-270778; Apr. 12, 1989, 1-090674

Int. Cl.⁶ C08G 73/10; C08L 77/00

U.S. Cl. 528—353

5 Claims

1. A heat resistant resin composition consisting essentially of 95–5 wt. % of an aromatic polyetherimide and 5–95 wt. % of a polyimide which is different from said aromatic polyetherimide and which is composed of recurring units represented by the formula:



wherein X is a direct bond or —S—, and Y is a tetraivalent group selected from the group consisting of an aliphatic group having at least two carbon atoms, alicyclic group, monocyclic aromatic group, fused polycyclic aromatic group and polycyclic aromatic group where aromatic groups are connected to each other with a direct bond or a bridge member.

5,380,821

PROCESS FOR THE MANUFACTURE OF POLY(ARYLENE SULPHIDE)

Pierre Dournel, Brussels; Danny Van Hoyweghen, Heverlee, and Ardéchir Momtaz, Brussels, all of Belgium, assigns to Solvay (Société Anonyme), Brussels, Belgium

Filed Jun. 14, 1993, Ser. No. 75,235

Claims priority, application Belgium, Jul. 14, 1992, 09200652
Int. Cl.⁶ C08G 75/14

U.S. Cl. 528—388

8 Claims

1. A process for the manufacture of poly(arylene sulphide) comprising the reaction of a dihalogenated aromatic compound with an alkali metal sulphide in a polar organic solvent, said process being carried out in the presence of a compound (C) chosen from sulphimides and their alkali metal salts.

5,380,822

WATER ASSISTED DEVOLATILIZATION

John P. Skilbeck, Lunenburg, Mass., assignor to Novacor Chemicals (International) S.A., Fribourg, Switzerland
Continuation-in-part of Ser. No. 920,244, Jul. 27, 1992, abandoned. This application May 27, 1993, Ser. No. 68,439

Int. Cl.⁶ C08F 6/10

U.S. Cl. 528—499

14 Claims

1. In a process for reducing the amount of residual monomer and solvent to less than 500 ppm in:

- (A) a polymer comprising:
- (i) from 100 to 30 weight % of one or more monomers selected from the group consisting of C₈₋₁₂ vinyl aromatic monomers which are unsubstituted or substituted by a C₁₋₄ alkyl radical; and
 - (ii) from 0 to 70 weight % of one or more monomers selected from the group consisting of C₁₋₄ alkyl esters of acrylic or methacrylic acid, acrylonitrile and methacrylonitrile; which polymers may be grafted on to from 0 to 40 weight % of one or more rubbery polymers selected from the group consisting of:
 - (iii) polymers consisting essentially of one or more C₄₋₆ conjugated diolefin monomers; and
 - (iv) polymers consisting essentially of from 20 to 80 weight % of one or more C₈₋₁₂ vinyl aromatic monomers and from 80 to 20 weight % of one or more C₄₋₆ conjugated diolefins; or

(B) a blend of said polymer and polyphenylene oxide; which polymer or polymer blend contains less than 1 weight % of residual monomer, dimer, trimer and solvents, which process comprises:

- (i) heating and maintaining said polymer or polymer blend at a temperature from 200° to 270° C.;

- (ii) injecting into said polymer or polymer blend an amount of water greater than the amount of residual monomer, dimer, trimer, and solvent but less than 1 weight %, said injection being at temperatures from 200° to 270° C. and pressures from 500 to 1500 psi;
- (iii) passing said polymer or polymer blend through a flash chamber devolatilizer maintained at a temperature from 200° to 270° C. and a pressure of less than 5 torr to flash off a vapour phase comprising water, monomer, and solvent;
- (iv) withdrawing said vapour phase from said flash chamber devolatilizer and passing it to a condenser maintained at a reduced pressure greater than 5 torr by ejecting a gas inert to said vapour phase into said vapour phase intermediate said flash chamber and said condenser; and
- (v) condensing at least the water in said vapour phase.

5,380,823

Patent Not Issued For This Number

5,380,824

ONE-STEP, ONE-CONTAINER METHOD FOR THE PREPARATION OF PYRIDOXYLATED HEMOGLOBIN

Robert Marschall, Sundbyberg, and Rainer Eketorp, Danderyd, both of Sweden, assigns to Pharmacia Aktiebolag, Uppsala, Sweden

PCT No. PCT/SE91/00221, § 371 Date Dec. 15, 1993, § 102(e)
Date Dec. 15, 1993, PCT Pub. No. WO91/16352, PCT Pub. Date Oct. 31, 1991

PCT Filed Mar. 21, 1991, Ser. No. 927,419

Claims priority, application Sweden, Apr. 18, 1990, 9001378-0
Int. Cl.⁶ A61K 35/14

U.S. Cl. 530—385

20 Claims

1. An industrial method for the preparation of pyridoxylated hemoglobin by treating red blood cells with a chemical reducing agent and with pyridoxal-5'-phosphate, characterized in that the chemical reducing agent and the pyridoxal-5'-phosphate are mixed with the red blood cells at the same time, that the mixture is heated to a temperature between 20° and 85° C. for a time of 0.5 to 15 hours, and that the preparation process is carried out as a one-step and one-container process.

5,380,825

AZT IMMUNOASSAYS, DERIVATIVES, CONJUGATES AND ANTIBODIES

Keaneth J. Stenglein, St. Louis, and Dennis M. Murray, Enreka, both of Mo., assigns to Sigma Chemical Company, St. Louis, Mo.

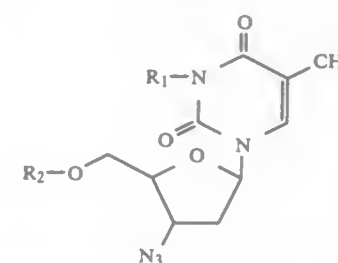
Division of Ser. No. 259,872, Oct. 19, 1988, Pat. No. 5,051,361.
This application Jun. 17, 1991, Ser. No. 716,309

Int. Cl.⁶ C07K 13/00; C12N 9/96; G01N 33/533, 33/534

U.S. Cl. 530—403

22 Claims

1. A compound of the formula:



where one of R₁ and R₂ is hydrogen and the other of R₁ and R₂ comprises R-A, R is a linking group, and

- (a) when R₁ is hydrogen A is X or Y, and
- (b) when R₂ is hydrogen A is X or Y, where X is an indicator moiety useful in an immunoassay, and Y is an immunogenic carrier.

5,380,826

SUPERCRITICAL FLUID DISRUPTION OF AND EXTRACTION FROM MICROBIAL CELLS

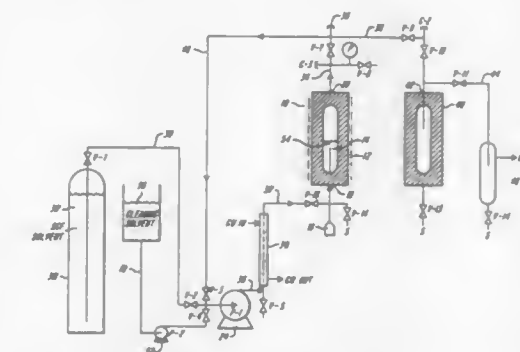
Trevor P. Castor, Arlington, and Glenn T. Hong, Tewksbury, both of Mass., assigns to Aphios Corporation, Woburn, Mass.

Continuation of Ser. No. 799,767, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 680,610, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 382,858, Jul. 20, 1989, abandoned. This application Sep. 29, 1992, Ser. No. 953,183

Int. Cl.⁶ C07K 3/12, 1/14; C12P 19/34, 21/00

U.S. Cl. 530—422

10 Claims



1. A method for collecting proteins or nucleic acids from intact prokaryotes comprising, combining a solvent with the prokaryotes to form a combination, the solvent having a critical pressure and also having a critical temperature between 0° C. and 100° C., subjecting the combination to near critical pressure or higher while maintaining the combination at or near critical temperature, suddenly releasing said pressure to cause a pressure drop, and collecting any protein or nucleic acids that have been released from the prokaryotes.

5,380,827

WATER-SOLUBLE MONOAZO DYE CONTAINING A TRIAZINYL OR PYRIMIDINYL GROUP AND AT LEAST ONE VINYL SULFONYL TYPE GROUP IN ITS STRUCTURE

Yousuke Takahashi; Yukiharu Shimizu; Toshio Hihara, all of Kitakyushu, and Kiyoshi Himeno, Munakata, all of Japan, assigns to Hoechst Mitsubishi Kasel Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,410

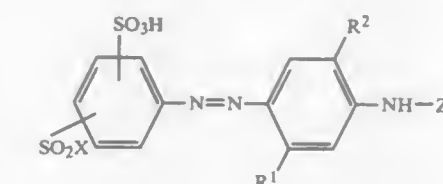
Claims priority, application Japan, Apr. 20, 1992, 4-125380; Apr. 28, 1992, 4-134426; Oct. 23, 1992, 4-307867

Int. Cl.⁶ C09B 62/028, 62/085, 62/245, 62/51

U.S. Cl. 534—638

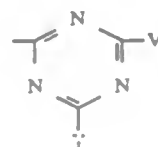
12 Claims

1. A water-soluble monoazo dye having the following formula (I) in its free acid form:

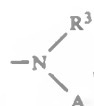


wherein X is —CH=CH₂ or —CH₂CH₂W wherein W is a leaving group removable by alkali, R¹ is methyl, —NH—CONH₂, or —NHCOT¹ wherein T¹ is methyl, ethyl, —CH₂CH₂COOH or —CH=CHCOOH; R² is hydrogen, lower alkyl or lower alkoxy; and

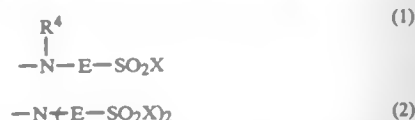
Z is



wherein V is halogen or



and Y is halogen or a group of the following formula (1) or (2):



wherein R³ is hydrogen or lower alkyl, A is a C₁-C₄ alkyl or naphthalene group substituted by at least one selected from the group consisting of a sulfonic acid group and a carboxylic acid group, or phenyl substituted by at least one selected from the group consisting of a sulfonic acid group and a carboxylic acid group, and which may be substituted by at least one selected from the group consisting of hydroxyl, halogen, C₁-C₂ alkyl and C₁-C₂ alkoxy, R⁴ is hydrogen or C₁-C₄ alkyl, E is phenylene unsubstituted or substituted by lower alkyl, lower alkoxy, halogen or a sulfonic acid group, a naphthalene group unsubstituted or substituted by a sulfonic acid group, C₁-C₄ alkylene or C₁-C₄ alkyleneoxy C₁-C₄ alkylene, and X is as defined above.

5,380,828

AZODICARBOXYLIC ACID DERIVATIVES CONTAINING HINDERED AMINE MOIETIES AS POLYMER STABILIZERS

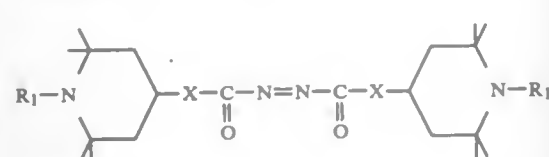
Ramanathan Ravichandran, Nannet, and Ambelal R. Patel, Scarsdale, both of N.Y., assignors to Ciba-Gelby Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 132,081, Oct. 5, 1993, abandoned. This application Apr. 7, 1994, Ser. No. 224,616

Int. Cl.⁶ C07D 211/46, 211/58, 211/94; C08K 5/3435

U.S. Cl. 534-751 14 Claims

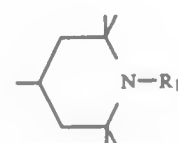
1. A compound which is an azodicarboxylic acid derivative of formula I



where

R₁ is hydrogen, oxyl, hydroxyl, alkyl of 1 to 8 carbon atoms, alkyl of 2 to 4 carbon atoms substituted by one hydroxyl group, allyl, benzyl, benzyl substituted by one of two alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 18 carbon atoms, cycloalkoxy of 5 to 12 carbon atoms or alkanoyl of 1 to 8 carbon atoms, and

X is -O- or -NR₂- where R₂ is hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, alkyl of 2 to 4 carbon atoms substituted by one alkoxy group of 1 to 12 carbon atoms or a group of formula II

in which R₁ is as defined above.

5,380,829

THIOGLYCOSIDE ANALOGS OF GANGLIOSIDES

Akira Hasegawa, 1735-160 Ohkurayama, Kano, Gifu-shi, Gifu-ken, and Makoto Kiso, Gifu, both of Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo and Akira Hasegawa, Gifu, both of Japan

Filed Feb. 27, 1992, Ser. No. 842,532

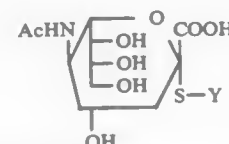
Claims priority, application Japan, Mar. 29, 1991, 3-89170

Int. Cl.⁶ C07H 5/08

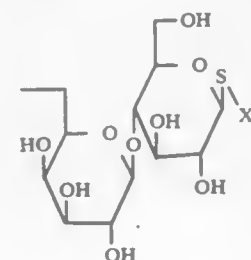
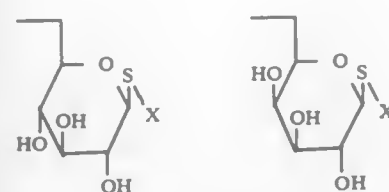
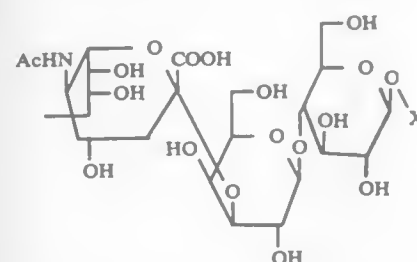
U.S. Cl. 536-4.1

8 Claims

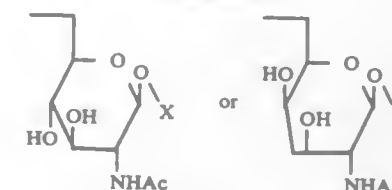
1. A thioglycoside analog of gangliosides represented by the formula



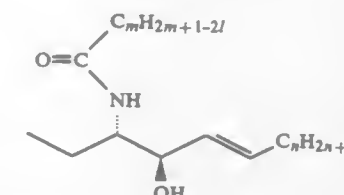
in which Y represents a radical having a formula selected from the group consisting of



-continued



and x represents a radical of the formula



wherein m is an integer of 15 to 25, l is an integer of 0 to 3 and n is an integer of 11 to 15.

5,380,830

MOLECULAR CLONES OF BOVINE IMMUNODEFICIENCY-LIKE VIRUS

Matthew A. Gonda, Walkersville, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

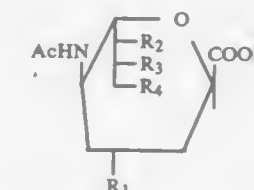
Continuation of Ser. No. 408,815, Sep. 18, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 980,324

Int. Cl.⁶ C07H 21/04; C12N 7/00, 7/02, 15/49

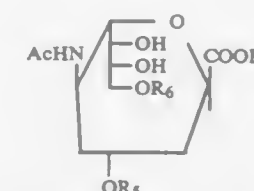
U.S. Cl. 536-23.1

3 Claims

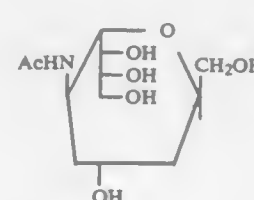
2. An isolated and purified, infectious, proviral molecular clone of BIV which is clone BIV106.



wherein at least one of R₁, R₂, R₃, and R₄ is hydrogen and the remainder is hydroxyl;



wherein at least one of R₅ and R₆ is hydrogen and the remainder is methyl; and



wherein m is an integer of 15 to 25, l is an integer of 0 to 3, n is an integer of 11 to 15 and Ac represents acetyl.

5,380,831

SYNTHETIC INSECTICIDAL CRYSTAL PROTEIN GENE

Michael J. Adang; Thomas A. Rocheleau; Donald J. Merlo, and Elizabeth E. Murray, all of Madison, Wis., assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Continuation of Ser. No. 827,844, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 242,482, Sep. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 848,733, Apr. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 535,354, Sep. 26, 1993, abandoned. This application May 3, 1993, Ser. No. 57,191

Int. Cl.⁶ C12N 15/32

U.S. Cl. 536-23.71

14 Claims

1. A method of designing a synthetic *Bacillus thuringiensis* gene to be more highly expressed in plants, comprising the steps of:

analyzing the coding sequence of a gene derived from a *Bacillus thuringiensis* which encodes an insecticidal protein toxin, and

modifying a portion of said coding sequence to yield a modified sequence which contains a greater number of codons preferred by the intended plant host than did said coding sequence.

5,380,833

POLYNUCLEOTIDE REAGENTS CONTAINING
SELECTABLE CLEAVAGE SITES

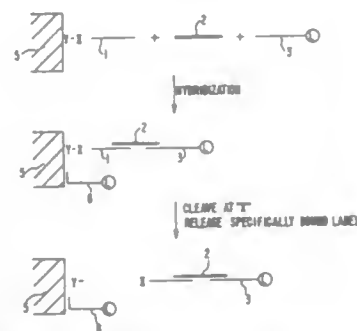
Michael S. Urdea, Alamo, Calif., assignor to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 251,152, Sep. 29, 1988, Pat. No. 5,118,605, which is a continuation-in-part of Ser. No. 661,508, Oct. 16, 1984, Pat. No. 4,775,619. This application Dec. 13, 1991, Ser. No. 806,642

Int. Cl.⁶ C07H 21/04; C12Q 1/68

U.S. Cl. 536—22.1

17 Claims



1. A DNA probe useful for detecting the presence of an oligonucleotide containing a sequence of interest, comprising a polydeoxyribonucleotide reagent bound proximal at one end to a support and at its opposite end having a sequence complementary to said sequence of interest, wherein a selectable cleavage site X is present within the polynucleotide reagent, and further wherein the selectable cleavage site X (a) is chemically cleavable; (b) is other than a restriction enzyme cleavable site; (c) is other than a phosphodiester linkage; and (d) provides for a complete break between adjacent nucleotides in the polynucleotide reagent upon cleavage.

5,380,834

IMMUNO-SUPPRESSIVE AGENT

Sadanori Mizukoshi; Fuminori Kato; Masamitsu Tsukamoto, and Kenji Kon, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Jan. 27, 1993, Ser. No. 11,463

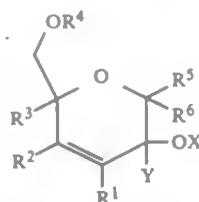
Claims priority, application Japan, Feb. 6, 1992, 4-066582; Dec. 16, 1992, 4-361752

Int. Cl.⁶ C07D 309/32

U.S. Cl. 536—4.1

10 Claims

1. An immuno-suppressive or anti-inflammatory pharmaceutical composition comprising a therapeutically effective amount of an enopyranose derivative of formula (I) or its pharmaceutically acceptable salt:



wherein R¹ is (a) a hydrogen atom, (b) C₁-C₂₀alkyl which may be substituted by one or more members selected from the group consisting of C₁-C₂₀ alkoxy, phenyl and hydroxyl, (c) C₂-C₂₀ alkenyl, (d) C₂-C₂₀ alkynyl, (e) —OSO₂R², (f) a halogen atom, (g) —OCOR², (h) —NHCOR², (i) C₁-C₂₀ alkoxy, (j) phenyl which may be substituted by one or more members selected from the group consisting of halogen, C₁-C₂₀ alkyl and nitro or (k) a saccharose residue, R² is a hydrogen atom or C₁-C₂₀ alkyl, R³ is a hydrogen atom or a halogen atom, R⁴ is (a) a hydrogen atom, (b) —COR², (c) silyl which may be substituted by one or more members selected from the group

consisting of C₁-C₂₀ alkyl and phenyl or (d) C₁-C₂₀ alkyl which may be substituted by one or more members selected from the group consisting of C₁-C₂₀ alkoxy, phenyl and hydroxyl, one of R⁵ and R⁶ is (a) hydroxyl, (b) C₁-C₂₀ alkoxy which may be substituted by one or more members selected from the group consisting of C₁-C₂₀ alkoxy, phenyl and hydroxyl, (c) a saccharose residue, (d) C₃-C₈ cycloalkoxy which may be substituted by one or more members selected from the group consisting of C₂-C₂₀ alkoxy, phenyl and hydroxyl or (e) —OCOR¹⁰ and the other is a hydrogen atom or C₁-C₂₀ alkyl which may be substituted by one or more members selected from the group consisting of C₁-C₂₀ alkoxy, phenyl and hydroxyl, or R⁴ and R⁵ together form a single bond, while R⁶ is a hydrogen atom or C₁-C₂₀ alkyl which may be substituted by one or more members selected from the group consisting of C₁-C₂₀ alkoxy, phenyl and hydroxyl, each of R⁷, R⁹ and R¹⁰ is C₁-C₂₀ alkyl or phenyl which may be substituted by one or more members selected from the group consisting of halogen, C₁-C₂₀ alkyl and nitro, R⁸ is (a) C₁-C₂₀ alkyl, (b) phenyl which may be substituted by one or more members selected from the group consisting of halogen, C₁-C₂₀ alkyl and nitro or (c) benzyloxy, X is (a) a hydrogen atom (b) C₁-C₂₀ alkyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, phenyl, C₁-C₂₀ alkyl-substituted, phenyl, pyridyl, furanyl, thienyl, acetoxy, vareloxy, azide and amino, (c) C₂-C₂₀ alkenyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, phenyl, C₁-C₂₀ alkyl-substituted phenyl, pyridyl, furanyl, thienyl, acetoxy, vareloxy, azide and amino, (d) C₂-C₂₀ alkynyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, phenyl, C₁-C₂₀ alkyl-substituted phenyl, pyridyl, furanyl, thienyl, acetoxy, vareloxy, azide and amino, (e) C₃-C₈ cycloalkyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, C₁-C₂₀ alkyl, acetoxy, vareloxy, nitro and amino, (f) phenyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, C₁-C₂₀ alkyl, acetoxy, vareloxy, nitro and amino, (g) pyridyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, C₁-C₂₀ alkyl, acetoxy, vareloxy, nitro and amino, (h) furanyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, C₁-C₂₀ alkyl, acetoxy, vareloxy, nitro and amino, (i) thienyl which may be substituted by one or more members selected from the group consisting of halogen, hydroxyl, C₁-C₂₀ alkyl, acetoxy, vareloxy, nitro and amino, (j) formyl, (k) —COR¹¹, (l) —C(W¹)W²R¹¹ or (m) —SO₂R¹¹, wherein R¹¹ is (a) a chain hydrocarbon group which may be substituted by one or more members selected from the group consisting of halogen, C₁-C₁₈ alkoxy, halo C₁-C₁₈ alkoxy, C₁-C₁₈ alkylthio, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkoxy, C₃-C₈ cycloalkenyl, C₃-C₈ cycloalkenyloxy, C₁-C₁₈ alkoxy, C₁-C₁₈ alkyl carbonyl, C₁-C₁₈ alkylcarbonyloxy, aryl, arylthio, amino and C₁-C₁₈ alkyl-substituted amino, (b) a monocyclic hydrocarbon group which may be substituted by one or more members selected from the group consisting of halogen, C₁-C₁₈ alkyl, halo C₁-C₁₈ alkyl, C₁-C₁₈ alkoxy, halo C₁-C₁₈ alkoxy, C₁-C₁₈ alkylthio, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkoxy, C₃-C₈ cycloalkenyl, C₃-C₈ cycloalkenyloxy, C₁-C₁₈ alkoxy, C₁-C₁₈ alkyl carbonyl, C₁-C₁₈ alkylcarbonyloxy, aryl, arylthio, amino, C₁-C₁₈ alkyl-substituted amino, cyano, nitro and hydroxyl, (c) a polycyclic hydrocarbon group which may be substituted by one or more members selected from the group consisting of halogen, C₁-C₁₈ alkyl, halo C₁-C₁₈ alkyl, C₁-C₁₈ alkoxy, halo C₁-C₁₈ alkoxy, C₁-C₁₈ alkylthio, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkoxy, C₃-C₈ cycloalkenyl, C₃-C₈ cycloalkenyloxy, C₁-C₁₈ alkoxy, C₁-C₁₈ alkyl carbonyl, C₁-C₁₈ alkylcarbonyloxy, aryl, arylthio, amino, C₁-C₁₈ alkyl-substituted amino, cyano, nitro and hydroxyl, (d) a monocyclic heterocycle group which may be substituted by one or more

5,380,836

NUCLEIC ACID ENCODING SODIUM CHANNEL
PROTEIN

Richard B. Rogart, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 331,330, Feb. 13, 1989, abandoned.

This application Sep. 30, 1991, Ser. No. 768,107

Int. Cl.⁶ C07H 21/02, 21/04; C12Q 1/68; C12N 5/10

U.S. Cl. 536—23.5

8 Claims

1. A purified and isolated DNA encoding rat cardiac sodium channel protein.

5,380,837

α-GLYCOSYL DERIVATIVE OF CATECHOLAMINE OR
ITS SALT, AND ITS PREPARATION AND USES

Tetsuya Nakada, Okayama, and Michio Kubota, Osaka, both of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu, Okayama, Japan

Filed May 7, 1993, Ser. No. 57,915

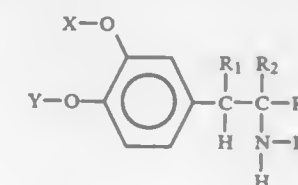
Claims priority, application Japan, Mar. 9, 1992, 4-101542

Int. Cl.⁶ C07H 15/00; C12N 9/34; C12P 19/44

U.S. Cl. 536—17.9

7 Claims

1. An α-glycosyl derivative of α-methyldopa or its salt, which does not substantially exhibit a reducing activity and turns green on the anthrone-sulfuric acid method, said α-glycosyl derivative of α-methyldopa having the following formula:



wherein R₁ is H; R₂ and R₃ are each different and are COOH or CH₃; R₄ is H; and X is H and Y is D-glucose residue(s) α-linked to a catecholamine moiety.

5,380,838

STABLE SOLVATES OF AVERMECTIN COMPOUNDS

Joseph S. Amato, Brooklyn, N.Y., and Raymond Cvetovich, Scotch Plains, N.J., assignors to Merck & Co. Inc., Rahway, N.J.

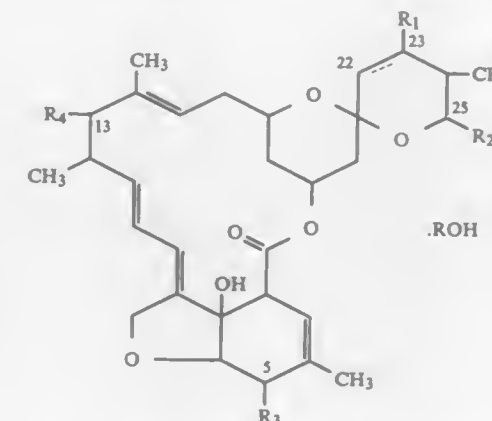
Filed Oct. 8, 1993, Ser. No. 133,494

Int. Cl.⁶ A61K 31/71; C07D 407/14

U.S. Cl. 536—7.1

5 Claims

1. An avermectin alcohol solvate compound having the formula:



where the broken line indicates a single or a double bond at the 22,23-positions;

5,380,835

SILYL PHOSPHORYLATING REAGENTS AND
METHODS OF USING THEM

Joseph E. Celebuski, Gurnee, Ill., and Roger A. Jones, Glenside, Pa., assignors to Abbott Laboratories, Abbott Park, Ill.

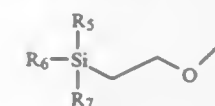
Filed Jun. 7, 1991, Ser. No. 712,001

Int. Cl.⁶ C07H 1/02, 21/04; C01B 33/00

U.S. Cl. 536—18.5

26 Claims

1. A compound for phosphorylating the 5' terminus of a nucleoside, having the formula:



wherein R₅, R₆ and R₇ are each sterically bulky groups independently selected from the group consisting of:

- alkyl, substituted alkyl, and oxa and thia analogs of alkyl and substituted alkyl, wherein sterically bulky refers to groups having at least 4 carbon atoms and occupying a volume substantially equal to or greater than t-butyl; and
- aryl and substituted aryl, wherein sterically bulky refers to groups having at least 5 carbon atoms and occupying a volume substantially equal to or greater than phenyl;

and wherein Q represents a moiety selected from the group consisting of phosphoramidites, alkyl phosphonates, hydrogen phosphonates and phosphotriesters.

C₂-C₇ alkanoyloxy or —O—CO—X₁, where X₁ is as defined above, and where R₁₇₆ is —C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, where Z, n, R₂₁ and R₂₁₀ are as defined above;

(D-IV) the 16,17-acetonide of a compound where R₁₆₅ is —OH, R₁₆₆ is —H, R₁₇₅ is —OH and R₁₇₆ is —C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, where Z, n, R₂₁ and R₂₁₀ are as defined above; and pharmaceutically acceptable salts, hydrates and solvates thereof;

with the following overall provisos that:

- (I) one of R₁₆₁ or R₁₆₂ is taken together with one of R₁₇₁ or R₁₇₂ to form a second bond between C₁₆ and C₁₇, only when R₁₀ is α-R₁₀₁:β-R₁₀₂, α-R₁₀₃:β-R₁₀₄, α-R₁₀₇:β-R₁₀₈ or α-R₁₀₉:β-R₁₀₁₀;
- (II) R₁₇ is —CH—(CH₂)_p—NR₂₁R₂₁₀, only when R₁₀ is α-R₁₀₁:β-R₁₀₂, α-R₁₀₃:β-R₁₀₄, α-R₁₀₇:β-R₁₀₈ or α-R₁₀₉:β-R₁₀₁₀;
- (III) R₅ and R₁₀ taken together are —CH—CH=C(OR₃)—CH=, only when R₁₇ is α-R₁₇₅:β-R₁₇₆ or the 16,17-acetonide of a compound where R₁₆ is α-OH:β-H and R₁₇ is α-OH:β-C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, and
- (IV) R₅ is α-R₅₇:β-R₅₈, only when R₁₇ is α-R₁₇₅:β-R₁₇₆ or α-OH:β-C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, or the 16,17-acetonide thereof.

5,380,841

PYRIDINYLPIPERAZINYL STEROIDS

John M. McCall; Donald E. Ayer, both of Kalamazoo; E. Jon Jacobsen, Plainwell; Frederick J. VanDoornik, Hamilton; John R. Palmer, and Harold A. Karnes, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

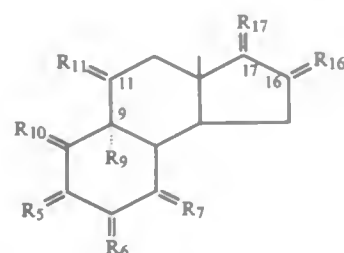
Division of Ser. No. 749,830, Aug. 26, 1991, Pat. No. 5,175,281, which is a division of Ser. No. 229,675, Aug. 8, 1988, Pat. No. 5,099,019, which is a continuation-in-part of Ser. No. 121,822, May 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 888,231, Jul. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 877,287, Jun. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 811,058, Dec. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 775,204, Sep. 12, 1985, abandoned. This application Dec. 1, 1992, Ser. No. 984,299

Int. Cl.⁶ C07J 43/00; C07D 401/02

U.S. Cl. 540—111

21 Claims

1. An amino substituted steroid of formula XI



where:

(A-I) R₆ is α-R₆₁:β-R₆₂, R₁₀ is α-R₁₀₁:β-R₁₀₂ and R₇ is α-H:β-H, where one of R₆₁ and R₆₂ is —H, and the other is —H, —F, or C₁-C₃ alkyl, R₁₀₂ is —CH₃, R₁₀₁ and R₅ taken together are —(CH₂)₂—C(=R₃₃)—CH= or —CH=CH—CO—CH=, where R₃₃ is =O or α-H:β-OR₃₄ or α-OR₃₄:β-H, where R₃₄ is —H, —CO—CH₃, —CO—C₂H₅, —CO—C₆H₅, —CO—O—CH₃ or —CO—O—C₂H₅;

(A-II) R₅ is α-R₅₃:β-R₅₄, R₆ is α-R₆₃:β-R₆₄, R₁₀ is α-R₁₀₃:β-R₁₀₄ and R₇ is α-H:β-H, where one of R₆₃ and R₆₄ is —H, and the other taken together with one of R₅₃ and R₅₄ forms a second bond between C₅ and C₆, R₁₀₄ is —CH₃, R₁₀₃ and the other of R₅₃ and R₅₄ taken together are —(CH₂)₂—C(H)(OH)—CH₂—;

(A-III) R₁₀ and R₅ taken together are —CH—CH=C(OR₃).

—CH= where R₃ is —H, C₁-C₃ alkyl, —CO—H, C₂-C₄ alkanoyl or benzyl, R₆ is α-R₆₅:β-R₆₆ where one of R₆₅ and R₆₆ is —H, and the other is —H, —F, or C₁-C₃ alkyl and R₇ is α-H:β-H;

(A-IV) R₅ is α-R₅₇:β-R₅₈, R₆ is α-R₆₇:β-R₆₈, R₇ is α-H:β-H and R₁₀ is α-R₁₀₇:β-R₁₀₈, where one of R₅₇ and R₅₈ is —H, R₁₀₇ and the other of R₅₇ and R₅₈ taken together are —(CH₂)₂—C(=R₃₃)—CH₂, where R₃₃ is as defined above, R₁₀₈ is —CH₃, where one of R₆₇ and R₆₈ is —H and the other is —H, —F, or C₁-C₃ alkyl;

(A-V) R₆ is R₆₉:R₆₁₀, R₇ is R₇₉:R₇₁₀, R₁₀ is α-R₁₀₉:R₁₀₁₀, where one of R₆₉ and R₆₁₀ is —H and the other taken together with one of R₇₉ and R₇₁₀ forms a second bond between C₆ and C₇, and the other of R₇₉ and R₇₁₀ is —H, R₁₀₁₀ is —CH₃, R₁₀₉ and R₅ taken together are —(CH₂)₂—C(=R₃₃)—CH= or —CH=CH—CO—CH=, where R₃₃ is as defined above;

(C-I) R₁₁ is α-R₁₁₁:β-R₁₁₂, where one of R₁₁₁ and R₁₁₂ is taken together with R₉ to form a second bond between C₉ and C₁₁ and the other of R₁₁₁ and R₁₁₂ is —H;

(C-II) R₉ is —Cl and R₁₁ is =O or α-H:β-R₁₁₄ where R₁₁₄ is —Cl or —OH;

(C-III) R₉ is —H or —F and R₁₁ is =O or α-R₁₁₅:β-R₁₁₆, where one of R₁₁₅ and R₁₁₆ is —H, and the other of R₁₁₅ and R₁₁₆ is —H, —OH or C₁-C₁₂ alkoxy;

(C-IV) R₉ is —H or —F and R₁₁ is α-O—CO—R₁₁₇:β-H, where R₁₁₇ is

(A) C₁-C₃ alkyl,

(B) C₁-C₁₂ alkoxy,

(C) furanyl,

(D) —NR₁₂₂R₁₂₃, where one of R₁₂₂ and R₁₂₃ is —H, methyl or ethyl and the other is —H, C₁-C₄ alkyl or phenyl,

(E) —X₃—X₁, where X₃ is —O— or a valence bond, where X₁ is phenyl optionally substituted with 1 through 2—Cl, —Br, C₁-C₃ alkoxy, —COOH, —NH₂, C₁-C₃ alkylamino, di(C₁-C₃)alkylamino, where the alkyl groups are the same or different, 1-pyrrolidinyl-, 1-piperidinyl-, 1-hexamethylenimino-, 1-heptamethylenimino-, C₂-C₄ carboxylic acid acylamino and —NH—CHO or with 1 —F or —CF₃;

(D-I) R₁₆ is R₁₆₁:R₁₆₂ and R₁₇ is R₁₇₁:R₁₇₂, where one of R₁₆₁ and R₁₆₂ is —H or —CH₃ and the other taken together with one of R₁₇₁ and R₁₇₂ forms a second bond between C₁₆ and C₁₇, and the other of R₁₇₁ and R₁₇₂ is —C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, where Z is =O, =CH₂ or R₁₇₉:—H where R₁₇₉ is —H or —CH₃ where n is 1 through 6, where R₂₁ and R₂₁₀ are taken together with the attached nitrogen atom to form 1-piperazinyl substituted in the 4-position with X₂—(CH₂)_j—

where j is 0 thru 3 and X₂ is

(I) pyridin-2-, 3- or 4-yl or the N-oxide thereof optionally substituted by 1 or 2 R₂₁₂, being the same or different, where R₂₁₂ is

(i) —F,

(ii) —Cl,

(iii) —Br,

(iv) C₁-C₅ alkyl,

(v) —CH₂—CH=CH₂,

(vi) —X₁, where X₁ is as defined above,

(vii) —NR₂₁₃R₂₁₃ where the R₂₁₃'s are the same or different and are —H, C₁-C₃ alkyl or —CH₂CH=CH₂,

(viii) *CH₂—(CH₂)_q—CH₂—N* where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring, where q is 1 through 5,

(viiiβ) *CH₂—CH₂—(CH₂)_c—G—(CH₂)_d—CH₂—CH₂—N* where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring, where G is —O—, —S—, —SO—, —SO₂— or —NHR₂₁₄, where R₂₁₄ is —H, C₁-C₃ alkyl, or X₁ as defined above, where c and d are the same or

different and are 0 through 2 with the proviso that the total number of ring carbon atoms is 4, 5 or 6,

(ix) 3-pyrrolin-1-yl,

(x) pyrrol-1-yl optionally substituted with C₁-C₃ alkyl,

(xi) piperidin-1-yl optionally substituted with 1 or 2 C₁-C₃ alkyl,

(xii) 1,2,3,6-tetrahydropyridin-1-yl,

(xiii) 1-hexamethylenimine containing a 3- or 4- double bond or 3- and 5- double bonds,

(xiv) 1,4-dihydro-1-pyridinyl substituted in the 4 position by two C₁-C₃ alkyl being the same or different,

(xv) —OH,

(xvi) C₁-C₃ alkoxy,

(xvii) —NR₂₁₇—(CH₂)_e—Q where Q is 2-pyridinyl where R₂₁₇ is —H or C₁-C₃ alkyl and e is 0 through 3,

(xviii) pyridin-2-, 3- or 4-yl,

(D-II) R₁₆ is α-R₁₆₃:β-R₁₆₄ where one of R₁₆₃ and R₁₆₄ is —H and the other is —H, —F, —CH₃ or —OH, and R₁₇ is —CH—(CH₂)_p—NR₂₁R₂₁₀, where p is 1 or 2, where R₂₁ and R₂₁₀ are as defined above;

(D-III) R₁₆ is α-R₁₆₅:β-R₁₆₆ and R₁₇ is α-R₁₇₅:β-R₁₇₆, where R₁₆₅ is —H, —OH, —F or —CH₃ and R₁₆₆ is —H, —OH, —F, or —CH₃, with the proviso that at least one of R₁₆₅ and R₁₆₆ is —H, where R₁₇₅ is —H, —OH, —CH₃, —CH₂CH₃, C₂-C₇ alkanoyloxy or —O—CO—X₁, where X₁ is as defined above, and where R₁₇₆ is —C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, where Z, n, R₂₁ and R₂₁₀ are as defined above;

(D-IV) the 16,17-acetonide of a compound where R₁₆₅ is —OH, R₁₆₆ is —H, R₁₇₅ is —OH and R₁₇₆ is —C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, where Z, n, R₂₁ and R₂₁₀ are as defined above; and pharmaceutically acceptable salts, hydrates and solvates thereof;

with the following overall provisos that:

(I) one of R₁₆₁ or R₁₆₂ is taken together with one of R₁₇₁ or R₁₇₂ to form a second bond between C₁₆ and C₁₇, only when R₁₀ is α-R₁₀₁:β-R₁₀₂, α-R₁₀₃:β-R₁₀₄, α-R₁₀₇:β-R₁₀₈ or α-R₁₀₉:β-R₁₀₁₀;

(II) R₁₇ is —CH—(CH₂)_p—NR₂₁R₂₁₀, only when R₁₀ is α-R₁₀₁:β-R₁₀₂, α-R₁₀₃:β-R₁₀₄, α-R₁₀₇:β-R₁₀₈ or α-R₁₀₉:β-R₁₀₁₀;

(III) R₅ and R₁₀ taken together are —CH—CH=C(OR₃)—CH=, only when R₁₇ is α-R₁₇₅:β-R₁₇₆ or the 16,17-acetonide of a compound where R₁₆ is α-OH:β-H and R₁₇ is α-OH:β-C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, and

(IV) R₅ is α-R₅₇:β-R₅₈, only when R₁₇ is α-R₁₇₅:β-R₁₇₆ or α-OH:β-C(=Z)—(CH₂)_n—NR₂₁R₂₁₀, or the 16, 17-acetonide thereof.

5,380,842

PHthalocyanine COMPOUNDS AND USAGE THEREOF

Hisato Itoh, Yokohama; Akio Karasawa, Zushi; Kenichi Sugimoto, Yokohama; Takahisa Oguchi, Yokohama, and Shin Aihara, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo and Yamamoto Chemicals, Incorporated, Osaka, both of Japan

Filed Jun. 22, 1992, Ser. No. 901,484

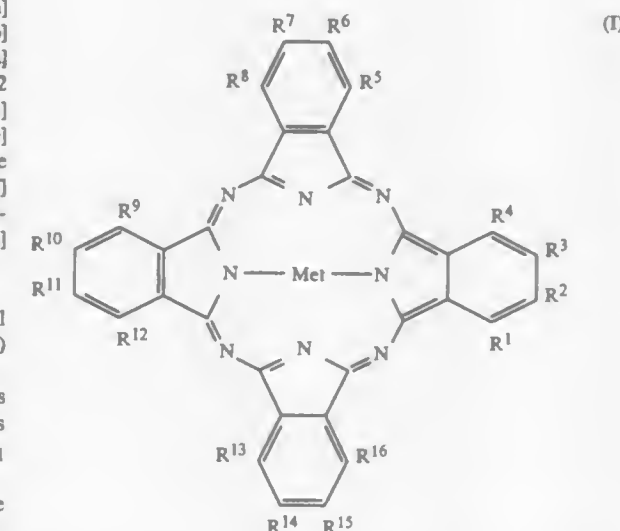
Claims priority, application Japan, Jun. 20, 1991, 3-148262; Dec. 20, 1991, 3-338557; Feb. 20, 1992, 4-033031

Int. Cl.⁶ C09B 47/04

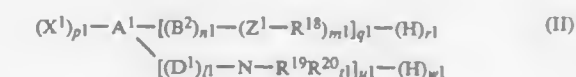
U.S. Cl. 540—128

15 Claims

1. A color filter comprising a layer having good light transmittance which contains a phthalocyanine compound represented by the formula (I):



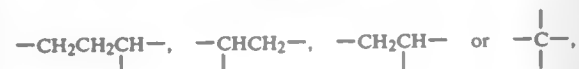
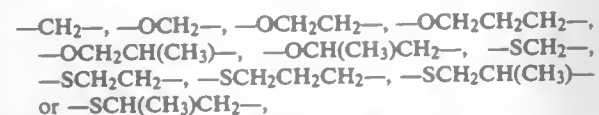
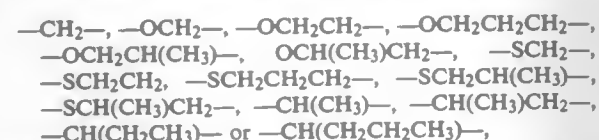
wherein R¹, R⁴, R⁵, R⁸, R⁹, R¹², R¹³ and R¹⁶ each independently represent a group represented by the formula (II) below or a hydrogen or a halogen atom, with the proviso that in each of the combinations of R¹ and R⁴, R⁵ and R⁸, R⁹ and R¹², and R¹³ and R¹⁶ groups, at least one of the groups is represented by formula (II) below; R², R⁵, R⁶, R⁷, R¹⁰, R¹¹, R¹⁴ and R¹⁵ each independently represent an unsubstituted C₁₋₂₀ alkyl group, a C₁₋₂₀ alkyl group substituted by an alkyl group, an alkoxy group, a halogen atom or an hydroxyl group, an unsubstituted C₁₋₂₀ alkoxy group, a C₁₋₂₀ alkoxy group substituted by an alkyl group, an alkoxy group, a halogen atom or an hydroxyl group, an unsubstituted C₁₋₂₀ alkylthio group, a C₁₋₂₀ alkylthio group substituted by an alkoxy group, a halogen atom or a mercapto group, an unsubstituted C₁₋₂₀ alkylamino group, a C₁₋₂₀ alkylamino group substituted by an alkoxy group, a halogen atom or an hydroxyl group, a halogen atom or an hydroxyl group, an unsubstituted C₂₋₂₀ dialkylamino group, a C₂₋₂₀ dialkylamino group substituted by an alkoxy group, a halogen atom or an hydroxyl group, an unsubstituted phenoxy group, a phenoxy group substituted by at least one member of the group consisting of C₁₋₅ alkyl groups, C₁₋₃ alkoxy groups and halogen atoms, an unsubstituted phenylthio group, a phenylthio group substituted by at least one member of the group consisting of C₁₋₅ alkyl groups, C₁₋₃ alkoxy groups and one or more halogen atoms, —COOR¹⁷, R¹⁷ being a hydrogen atom, an unsubstituted C₁₋₂₀ alkyl group, a C₁₋₂₀ alkyl group substituted by an alkoxy group, a halogen atom or a hydroxyl group, a hydroxyl or mercapto group or a halogen or hydrogen atom, subject to the proviso that all of R¹-R¹⁶ cannot be alkoxy; and Met represents Zn, Mg, Si, Sn, Rh, Pt, Pd, Mo, Mn, Pb, Cu, Ni, Co, Fe, AlCl, InCl, FeCl, TiCl₂, SnCl₂, GeCl₂, TiO, VO or Si(OH)₂; Formula (II) being



wherein X¹ and Z¹ represent independently an oxygen or sulfur atom, R¹⁸, R¹⁹ and R²⁰ independently represent a hydrogen atom or an unsubstituted C₁₋₂₀ alkyl group or a C₁₋₂₀ alkyl group substituted by alkyl groups, alkoxy groups, halogen atoms or a hydroxyl group, A¹ represents a connecting group of the formula:



-continued

B¹ represents a connecting group of the formula:D¹ represents a connecting group of the formula:

n¹ and l¹ each are an integer from 0 to 10, m¹, q¹, t¹, u¹, r¹ and w¹ each are an integer from 0 to 2, and p¹ is 0 or 1, with the proviso that, when p¹ and m¹ are 0, t¹ and u¹ each are other than 0 and w¹ is 0.

5,380,843

PROCESS FOR THE PREPARATION OF PHENYL (1,3,5-TRIAZIN-2-YL)CARBAMATES

Yoichi Kanda, and Hideo Arabori, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,594

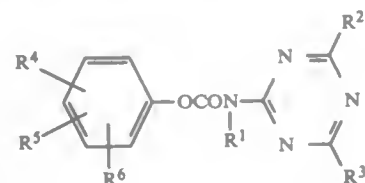
Claims priority, application Japan, Jun. 2, 1992, 4-165530

Int. Cl.⁶ C07D 251/70, 251/18, 251/40, 251/48

U.S. Cl. 544-197

3 Claims

1. A process for the preparation of a phenyl (1,3,5-triazin-2-yl)carbamate of the formula (I):

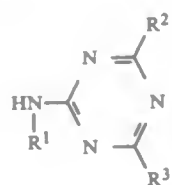


wherein

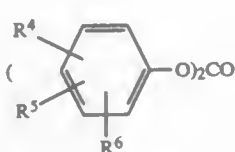
R¹ is hydrogen atom, C₁-C₄ alkyl or C₁-C₄ alkoxy, R² and R³ are independently hydrogen atom, halogen atom, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ alkylthio, C₁-C₄ haloalkyl, C₁-C₄ haloalkoxy, C₁-C₄ haloalkylthio, C₂-C₄ alkoxyalkyl or NR⁷R⁸,

R⁷ and R⁸ are independently hydrogen atom or C₁-C₄ alkyl, R⁴, R⁵ and R⁶ are independently hydrogen atom, halogen atom, C₁-C₄ alkyl or C₁-C₄ alkoxy, which process comprises:

reacting a 2-amino-1,3,5-triazine of the formula (II):



wherein R¹, R² and R³ are as recited for formula I with a diphenyl carbonate of the formula (III):



(III)

wherein R⁴, R⁵ and R⁶ are as recited in formula I, in the presence of an alkali metal hydride in an aprotic polar solvent.

5,380,844

NITROGEN-CONTAINING PERFLUOROALKANOYL PEROXIDE AND METHOD FOR PRODUCTION THEREOF

Haruhiko Fukaya, Oobu; Takashi Abe, Kasugai; Eiji Hayashi, Konan, and Yoshio Hayakawa, Jimmoku Jimachi, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Division of Ser. No. 78,817, Jun. 21, 1993, which is a division of Ser. No. 997,360, Dec. 28, 1992, Pat. No. 5,256,825, which is a division of Ser. No. 941,884, Sep. 8, 1992, Pat. No. 5,208,339.

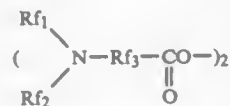
This application Apr. 22, 1994, Ser. No. 231,489

Int. Cl.⁶ C07D 241/04, 211/30

U.S. Cl. 544-357

3 Claims

1. A nitrogen-containing perfluoroalkanoyle peroxide represented by the formula:



wherein R_{f1} and R_{f2} independently stand for a perfluoroalkyl group of 1 to 5 carbon atoms, provided that R_{f1} and R_{f2} are joined to each other directly or through a nitrogen atom to form a six membered ring, and R_{f3} stands for a perfluoroalkyl group of 1 to 3 carbon atoms.

5,380,845

PROCESS FOR THE PREPARATION OF QUINOLINE CARBOXYLIC ACID DERIVATIVES

István Hermecz; Géza Kereszturi; Lelle Vasvári; Agnes Horváth, all of Budapest; Mária Balogh, Dunakeszi; Péter Rittl, Budapest; Judit Sipos, Budapest, and Anikó Pajor, Budapest, all of Hungary, assignors to Chinoin Gyógyszer-ES Vegyeszeti Termékek Gyára RT., Budapest, Hungary

Continuation of Ser. No. 340,174, Apr. 10, 1989, abandoned.

This application Nov. 9, 1993, Ser. No. 149,692

Claims priority, application Hungary, Jun. 24, 1987, 2858/87;

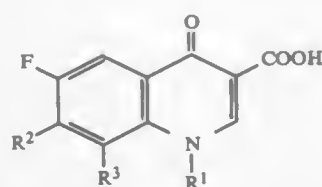
Jul. 10, 1987, 3146/87

Int. Cl.⁶ C07D 401/02, 401/04

U.S. Cl. 544-363

9 Claims

1. Process for the preparation of compounds of the Formula

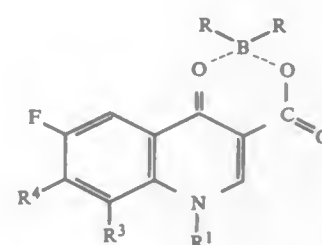


(I)

wherein

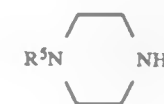
R¹ stands for phenyl substituted by 1 or 2 halogen atoms; R² stands for piperazinyl or 4-methyl-piperazinyl; R³ stands for hydrogen;

or a pharmaceutically acceptable salt thereof which comprises reacting a compound of the Formula II



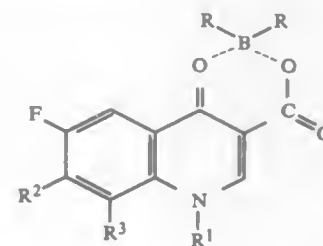
(II)

wherein R stands for halogen or an aliphatic acyloxy group containing 2 to 6 carbon atoms or an aromatic acyloxy group containing 7 to 11 carbon atoms, R⁴ stands for fluorine or chlorine with a piperazine derivative of the Formula III



(III)

wherein R⁵ stands for hydrogen or methyl or a salt thereof and subjecting the compound of the Formula IV



(IV)

thus obtained to hydrolysis after or without isolation and if desired converting the compound of the Formula I thus obtained into a salt thereof or setting free the same from its salt.

5,380,846

ADDITION-CURABLE SILICONE ADHESIVE COMPOSITIONS AND N-HETEROCYCLIC SILANE ADHESION PROMOTERS

Judith Stein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 165,626, Dec. 13, 1993, This application

Jun. 13, 1994, Ser. No. 258,880

Int. Cl.⁶ C07F 7/02

U.S. Cl. 546-14

2 Claims

1. A bis[trialkylloxysilylalkenyl]pyridine dicarboxylate having the formula,



where R³ is a C₍₁₋₄₎ alkyl radical and R⁴ is a C₍₂₋₈₎ alkylene radical.

5,380,847

SYNTHESIS OF CERTAIN 1-(1-METHYLPYPERIDIN-4-Y1)-3-PHENYL-PYRAZOLO[4,3-C]PYRIDINES

Gregory M. Shutake, Flemington; Kevin J. Kapples, Little York, both of N.J., and John D. Tomer, IV, Perkaskie, Pa., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 106,953, Aug. 17, 1993, Pat. No. 5,296,491,

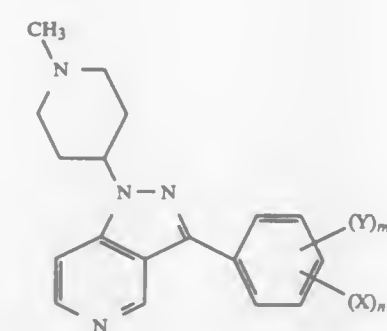
which is a division of Ser. No. 964,690, Oct. 22, 1992, Pat. No. 5,264,576. This application Jan. 12, 1994, Ser. No. 181,147

Int. Cl.⁶ C07D 471/04

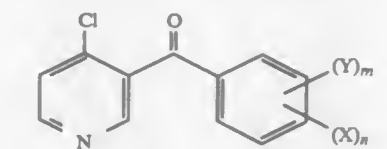
U.S. Cl. 546-119

1 Claim

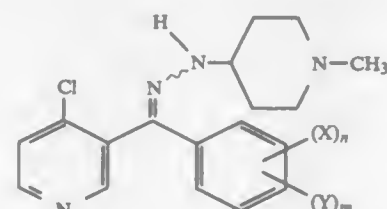
1. A process for preparing a compound of the formula



where X and Y are independently hydrogen, halogen, trifluoromethyl, nitro, loweralkyl, loweralkoxy or hydroxy; which comprises reacting a compound of the formula



with 1-methylpiperidine-4-hydrazine and titanium isopropoxide in a suitable solvent to form a compound of the formula



which is subsequently reacted with potassium-t-butoxide in a suitable solvent to form the desired product.

5,380,848

COCAINE RECEPTOR BINDING LIGANDS

Michael J. Kuhar; John W. Boja, both of Baltimore, Md.; Frank I. Carroll, Durham, N.C.; Anita H. Lewin, Chapel Hill, N.C., and Philip Abraham, Cary, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C. and The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 792,648, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 564,755, Aug. 9, 1990, Pat. No. 5,128,118. This application Apr. 26, 1994, Ser. No. 233,723

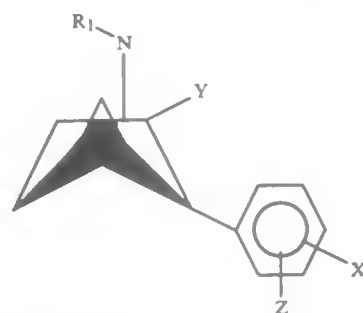
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.⁶ C07D 451/02

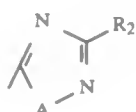
U.S. Cl. 546-124

4 Claims

1. A compound of the formula below,



wherein $Y = CH_2R_3$, CO_2R_2 or



R_1 = hydrogen, C_{1-5} alkyl,
 R_2 = hydrogen, C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{1-4} alkoxy, C_{1-6} alkynyl, halogen or amine,
 R_3 = OH, hydrogen, C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{1-4} alkoxy, Cl, Br, I, CN, NH_2 , NHC_{1-6} alkyl, NC_{1-6} alkyl, $OCOC_{1-6}$ alkyl, $OCOC_{1-3}$ alkylaryl,
 $A = S$, O or NH
 $X = H$, C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{1-4} alkoxy, C_{1-6} alkynyl, halogen, amino, acylamido, and
 $Z = H$, I, Br, Cl, F, CN, CF_3 , NO_2 , N_3 , OR_1 , CO_2NH_2 , CO_2R_1 , C_{1-6} alkyl, NR_4R_5 , $NHCOR_5$, $NHCO_2R_6$,
 wherein R_4-R_6 are each C_{1-6} alkyl and wherein Z or R_3 comprises at least one iodine or ^{11}C atom which is radioactive.

5,380,849 PROCESS FOR OPTICALLY PURE DECAHYDROISOQUINOLINES

Ioannis N. Houpis, Edison; Joseph E. Lynch, Plainfield; Audrey Molina, Elizabeth, and Ralph P. Volante, Cranbury, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 9, 1992, Ser. No. 973,497

Int. Cl.⁶ C07D 217/00

U.S. Cl. 546—146

4 Claims

1. A process for producing optically active decahydroisoquinoline-3-carboxylic acid ester comprising
 - (1) adding to a dry solution of optically active tetrahydrophthalic acid monoalkyl ester (Compound A) in hydrocarbon solvent at a temperature in the range of -30° to 30° C. under an atmosphere of nitrogen, a hydrocarbon solution of a carboxylic acid activating agent to obtain an activated tetrahydrophthalic ester, replacing the solvent to an ethereal solvent and hydrogenating the solution over Pd/C in tertiary amine to obtain optically active alkyl 2-formylcyclohexane-1-carboxylate (aldehyde ester; Compound B);
 - (2) adding a solution of the aldehyde ester in an aprotic solvent and cooled to below 0° C., a metal enolate of benzylidene glycine methyl ester prepared in situ by adding benzylidene methyl ester to a solution of metal bis(trimethylsilyl)amide under nitrogen at temperatures between -78° to 0° C., thereafter quenching with methanol/acetic acid and aging for 12 to 24 hours then recovering the product, optically active alkyl hexahydroisoquinolin-1-one-3-carboxylate (Compound C) by removing alkali soluble material and chromatographing;
 - (3) hydrogenating the optically active ester on Pd/C catalyst at 40 psi and temperatures of 35° – 40° C. and recovering, optically active alkyl octahydroisoquinolin-1-one-3-carboxylate (Compound D) in a conventional manner;
 - (4) adding borane-dimethyl sulfide to a cooled to 0° C. solution of alkyl octahydroisoquinolin-1-one-3-carboxylate

(Compound D) in tetrahydrofuran while the temperature is maintained below 0° C., then allowing the reaction mixture to warm to room temperature to complete the reaction; thereafter cooling to 0° C., and adding methanol and decomplexing agent to quench the reaction, and warming to about 45° C., to complete the decomplexing and thereafter recovering Compound I by conventional procedures.

5,380,850 (QUINOLIN-2-YLMETHOXY)INDOLES AS INHIBITORS OF THE BIOSYNTHESIS OF LEUKOTRIENES

Petpiboon Prasit, Kirkland; Rejean Fortin, Montreal North; John H. Hutchinson, Montreal; Michel L. Belley, Pierrefonds; Serge Leger, Dollard-des-Ormeaux; Richard Frenette, Laval, and John Gillard, Baie D'Urfe, all of Canada, assignors to Merck Frost Canada, Inc., Kirkland, Canada

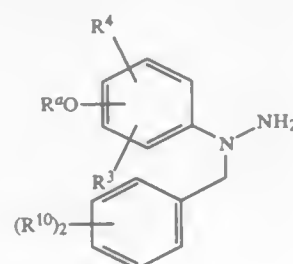
Division of Ser. No. 989,677, Dec. 14, 1992, Pat. No. 5,272,145, which is a continuation-in-part of Ser. No. 650,825, Feb. 5, 1991, Pat. No. 5,204,344, which is a continuation-in-part of Ser. No. 552,300, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 397,144, Aug. 22, 1989, abandoned. This application Dec. 16, 1993, Ser. No. 168,442

Int. Cl.⁶ C07C 211/00; C07D 215/12, 215/16

U.S. Cl. 546—155

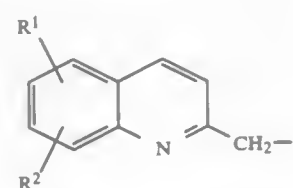
3 Claims

1. A compound of the formula:



wherein:

R^a is methyl, t-butylcarbonyl or



R^1 , R^2 , R^3 , R^4 and R^{10} are independently hydrogen, halogen, lower alkyl, lower alkenyl, lower alkynyl, CF_3 , $-CN$, $-NO_2$, $-N_3$, $-SR^{14}$, $-OR^{15}$, $-NR^{15}NR^{15}$, or $-(CH_2)_rR^{21}$;

each R^{11} is independently hydrogen or lower alkyl, or two R^{11} 's on same carbon atom are joined to form a cycloalkyl ring of 3 to 6 carbon atoms;

R^{12} is hydrogen, lower alkyl or $-(CH_2)_rR^{21}$;

R^{13} is lower alkyl or $-(CH_2)_rR^{21}$;

R^{14} is $-CF_3$ or R^{13} ;

R^{15} is hydrogen, R^{13} ;

R^{16} is hydrogen, $-CF_3$, lower alkyl, lower alkenyl, lower alkynyl or $-(CH_2)_rR^{21}$;

r is 0 to 2; and

t is 0 to 2, R^{21} is phenyl substituted with one or two R^{22} groups; R^{22} is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, $-CF_3$, $-CN$, $-NO_2$ or $-N_3$.

5,380,851 2-AMINO-5-CYANO-1,4-DIHYDROPYRIDINES, PROCESSES FOR THEIR PREPARATION

Jürgen Stoltzfuss, Haan; Siegfried Goldmann; Alexander Straub, both of Wuppertal; Horst Böshagen, Haan; Martin Bechem, Wuppertal; Rainer Gross, Wuppertal; Siegfried Heibisch, Wuppertal; Joachim Hütter, Wuppertal, and Howard-Paul Rounding, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 886,644, May 20, 1992, Pat. No. 5,225,558.

This application Jan. 21, 1993, Ser. No. 6,432

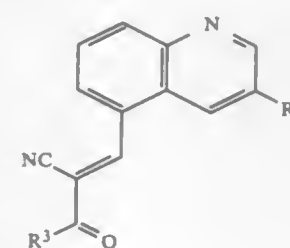
Claims priority, application Germany, May 30, 1991, 4117750

Int. Cl.⁶ C07D 215/00, 215/16, 409/06

U.S. Cl. 546—167

4 Claims

1. Ylidene compounds of the formula



in which

R^1 represents aryl having 6 to 10 carbon atoms, which is optionally substituted up to 3 times, in an identical or different manner, by halogen, nitro, cyano, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, straight-chain or branched alkyl having up to 8 carbon atoms, wherein said alkyl moieties are optionally substituted by aryl having 6 to 10 carbon atoms, straight-chain or branched alkoxy or alkoxycarbonyl having in each case up to 8 carbon atoms, carboxyl, amino, or by a group of the formula $-NR^4R^5$,

wherein

R^4 and R^5 are identical or different and denote straight-chain or branched alkyl having up to 8 carbon atoms, phenyl and benzyl, or represents thienyl, and

R^3 represents hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms.

5,380,852 5-CHLOROQUINOLIN-8-OXYALKANECARBOXYLIC ACID DERIVATIVES, USEFUL AS ANTIDOTES FOR HERBICIDES

Rainer Schütze, Kelkheim; Heinz-Josef Löher, Liederbach; Frank Ziemer, Frankfurt am Main; Klaus Baner, Hanau, and Hermann Bleringer, Eppstein/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 19, 1991, Ser. No. 810,487

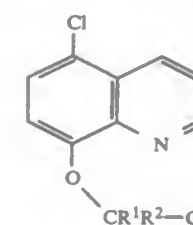
Claims priority, application Germany, Dec. 21, 1990, 4041121

Int. Cl.⁶ C07D 215/28

U.S. Cl. 546—174

14 Claims

1. A compound of the formula (I),



in which

R^1 and R^2 independently of one another are H or (C_1-C_4) -alkyl,

X is O or S,

A is (C_1-C_4) -alkylene, (C_4-C_6) -alkenylene, (C_4-C_6) -alkynylene, or (C_3-C_8) -cycloalkylene,

R^3 is (C_3-C_6) -alkenyl, (C_3-C_6) -alkynyl, phenyl- (C_1-C_4) -alkoxy, in which the phenyl ring is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, (C_1-C_4) -alkyl, (C_1-C_4) -alkoxy, (C_1-C_4) -haloalkyl and (C_1-C_4) -haloalkoxy; or, is (C_3-C_6) -alkenylalkoxy, (C_3-C_6) -alkynylalkoxy, phenyl- (C_1-C_4) -alkoxy, in which the phenyl ring is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, (C_1-C_4) -alkyl, (C_1-C_4) -alkoxy, (C_1-C_4) -haloalkyl and (C_1-C_4) -haloalkoxy; or, is (C_2-C_6) -alkenylcarbonyl, (C_2-C_6) -alkynylcarbonyl, phenyl- (C_1-C_4) -alkoxy, in which the phenyl ring is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, (C_1-C_4) -alkyl, (C_1-C_4) -alkoxy, (C_1-C_4) -haloalkyl and (C_1-C_4) -haloalkoxy; or, is (C_1-C_6) -alkylcarbonyl in which the alkyl is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, (C_1-C_4) -alkyl, (C_1-C_4) -alkoxy, (C_1-C_4) -haloalkyl and (C_1-C_4) -haloalkoxy; or, is (C_1-C_6) -alkenylcarbonyl, (C_2-C_6) -alkenylcarbonyl, phenylcarbonyl which is unsubstituted or substituted in the phenyl by one or more radicals selected from the group consisting of halogen, nitro, (C_1-C_4) -alkyl, (C_1-C_4) -alkoxy, (C_1-C_4) -haloalkyl and (C_1-C_4) -haloalkoxy; or, is (C_1-C_6) -alkylthiocarbonyl, (C_3-C_6) -alkenylthio or (C_3-C_6) -alkynylthio,

R^8 , R^9 independently of one another are (C_1-C_4) -alkyl or together are a straight chain or branched (C_1-C_4) -alkylene bridge, and

R^{10} is H or (C_1-C_4) -alkyl.

5,380,853 N,N',N''-TRISUBSTITUTED-5-BISAMINOMETHYLENE- 1,3-DIOXANE-4,6-DIONE INHIBITORS OF ACYL-COA:CHOLESTEROL-ACYL TRANSFERASE

William F. Fobare, Hamilton, N.J., and Donald P. Strike, St. Davids, Pa., assignors to American Home Products Corporation, Madison, N.J.

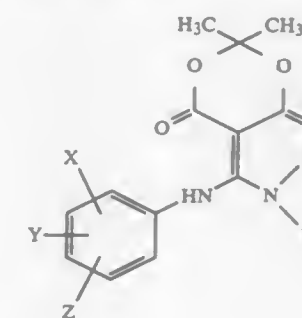
Division of Ser. No. 998,213, Dec. 30, 1992, Pat. No. 5,281,714, which is a continuation-in-part of Ser. No. 964,232, Oct. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 719,873, Jun. 24, 1991, Pat. No. 5,179,216, which is a continuation-in-part of Ser. No. 568,384, Aug. 16, 1990, abandoned. This application Nov. 15, 1993, Ser. No. 152,656

Int. Cl.⁶ C07D 401/12

U.S. Cl. 546—207

4 Claims

1. A compound of the formula:



in which

X, Y and Z are, independently, hydrogen, halogen, hydroxy, nitro, cyano, carboxyl, trifluoromethyl, phenyl, amino, alkylamino of 1 to 6 carbon atoms, dialkylamino in which

each alkyl group has 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or phenylalkoxy of 7 to 9 carbon atoms;

R₁ is phenylalkylpiperidinyl in which the alkyl moiety has from 1 to 6 carbon atoms and can be substituted by from one to three substituents selected from halogen, hydroxy, nitro, cyano, carboxyl, trifluoromethyl, phenyl, amino, alkylamino of 1 to 6 carbon atoms, dialkylamino in which each alkyl group has 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, or alkoxy of 1 to 6 carbon atoms;

R₂ is hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, benzyl or substituted phenyl or benzyl in which said substituent is alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halogen, cyano, trifluoromethyl, amino, nitro, alkylamino of 1 to 6 carbon atoms or dialkylamino 1 to 6 carbon atoms; or a pharmaceutically acceptable salt thereof.

5,380,854

DIPHENYL-HETEROCYCLIC-OXAZOLE AS PLATELET AGGREGATION INHIBITORS

Jeffrey L. Romine, Meriden; Nicholas A. Meanwell, East Hampton, and Scott W. Martin, Middletown, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y. Division of Ser. No. 862,680, Apr. 3, 1992, Pat. No. 5,254,576. This application Jul. 14, 1993, Ser. No. 92,402

Int. Cl.⁶ C07D 263/34

U.S. Cl. 548—235

3 Claims

1. The intermediate 4,5-diphenyl-2-oxazolymethylisocyanide.
2. The intermediate 5-[3-(methoxycarbonyl)methoxy]phenyl]-4-oxazole carboxylic acid.
3. The intermediate 5-(3-hydroxyphenyl)-4-oxazole carboxamide.

5,380,855

PROCESS FOR PREPARING N,N-SUBSTITUTED CARBAMOYL HALIDES

William D. McGhee, Bridgeton, and John J. Talley, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo. Filed Feb. 4, 1994, Ser. No. 192,322

Int. Cl.⁶ C07B 41/08; C07D 211/06; C07C 269/06

U.S. Cl. 546—245

20 Claims

1. A process for preparing an N,N-substituted carbamoyl halide comprising:
 - (a) contacting CO₂ and a secondary amine in the presence of an aprotic organic solvent and a base selected from the group consisting of a phosphazene compound, an organic nitrogenous base, and a mixture of pyridine and a phosphazene compound or an organic nitrogenous base, or mixtures thereof, wherein said organic nitrogenous base is selected from the group consisting of guanidine compounds, amidine compounds, tertiary amines, and said secondary amine, or mixtures thereof, under reaction conditions of time and temperature sufficient to produce the corresponding ammonium carbamate salt, and
 - (b) reacting said ammonium carbamate salt with a halide containing electrophilic compound selected from the group consisting of POX₃, PX₃, PX₅, SOX₂, and SO₂X₂, or mixtures thereof, wherein X is bromine or chlorine and halide is bromide or chloride, under reaction conditions of time and temperature sufficient to produce the corresponding N,N-substituted carbamoyl halide.

5,380,856

PROCESS FOR PREPARATION OF A POLYMORPHIC FORM OF TERPHENADINE HAVING A HIGH MELTING POINT AND ENHANCED PURITY, AND THE PRODUCT THUS OBTAINED

Didier G. Wirth; Marcel Deglave, both of Paris, and Marc-Henri Mouton, Sannois, all of France, assignors to Isochem, Paris, France

PCT No. PCT/FR92/00949, § 371 Date Sep. 13, 1993, § 102(e) Date Sep. 13, 1993, PCT Pub. No. WO93/07121, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 1, 1992, Ser. No. 117,208

Claims priority, application France, Oct. 1, 1991, 91 18064

Int. Cl.⁶ C07D 211/20

U.S. Cl. 546—248

7 Claims

1. Process for preparation of pure terphenadine in a polymorphic form having a high melting point, wherein said process consists in crystallizing the terphenadine using a mixture of water and of a solution of terphenadine in dimethylformamide, in accordance with the following steps:

- a) dissolution of the polymorphic mixture of raw terphenadine in dimethylformamide;
- b) dilution of the obtained solution, while stirring;
- c) purification by precipitation of the crystals of the polymorphic form having a high melting point; and
- d) extraction of the crystals and drying.

5,380,857

PROCESS FOR THE PRODUCTION OF 7-ACYLINDOLES

Jean-Paul Rodult, Sierre, and Alain Wellig, Ried-Mörel, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed Jun. 30, 1993, Ser. No. 84,168

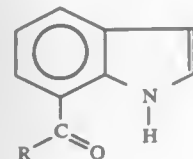
Claims priority, application Switzerland, Jul. 2, 1992, 2083/92

Int. Cl.⁶ C07D 401/06

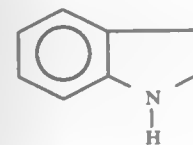
U.S. Cl. 546—273

20 Claims

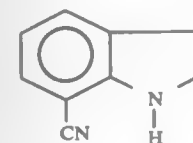
1. A process for the production of a 7-acylindole of formula:



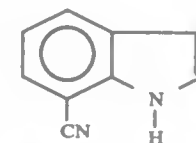
wherein R is C₁-C₄ alkyl, C₂-C₄ alkenyl, C₂-C₄ alkynyl, aryl or heteroaryl, comprising: in a first stage, cyanizing indoline of formula:



to 7-cyanoindoline of formula:



in a second stage, catalytically dehydrogenating the 7-cyanoindoline of formula III to a 7-acylindole of formula:



and, in the third stage, acylating the 7-cyanoindole of formula IV with an organometallic compound of formula:



wherein R has the above-mentioned meaning and Q is a metal atom or a group M—X, wherein M is an alkaline-earth metal, copper or zinc and X is chlorine, bromine or iodine, into the 7-acylindole of formula I.

5,380,858

PROCESS FOR THE PREPARATION OF INTERMEDIATES USEFUL FOR THE SYNTHESIS OF HISTAMINE RECEPTOR ANTAGONISTS

Graham J. Durant, and Amin M. Khan, both of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

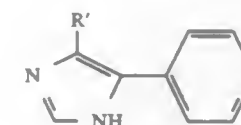
Filed Apr. 1, 1992, Ser. No. 862,658

Int. Cl.⁶ C07D 401/04

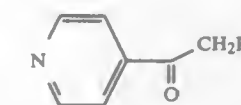
U.S. Cl. 546—278

9 Claims

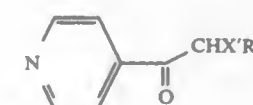
1. A process for the preparation of a compound of Formula (3):



wherein R' is H or C₁-C₄ alkyl; which comprises:
(1) reacting a compound of the Formula (1)

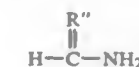


wherein R' is H or C₁-C₄ alkyl; with an activating reagent which is capable of removing a hydrogen atom from the α-methyl group of (1) and replacing that hydrogen with a halogen, hydroxy or amino function in a suitable solvent to produce an activated compound of the Formula (2a)



wherein X' is halogen, hydroxy or amino and R' is H or C₁-C₄ alkyl; and

(2) reacting a compound of the Formula (2a) with a compound of the Formula



where R'' is NH or O at an elevated temperature to yield a compound of the Formula (3).

5,380,859

IV PYRIDONE COMPOUNDS AND THE PREPARATION OF DISULFONATED PYRIDONE COMPOUNDS

Gunther Lamm, Hassloch; Helmut Beicheit, Neustadt, and Ortwin Schaffer, Ludwigshafen, all of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/00281, § 371 Date Jul. 16, 1993, § 102(e) Date Jul. 16, 1993, PCT Pub. No. WO92/14791, PCT Pub. Date Sep. 3, 1992

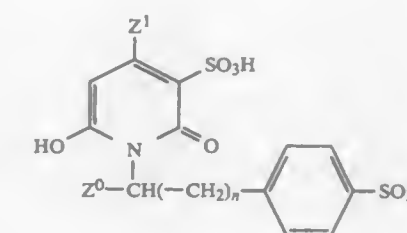
PCT Filed Feb. 10, 1992, Ser. No. 87,792

Claims priority, application Germany, Feb. 20, 1991, 4105257 Int. Cl.⁶ C07D 211/72, 211/84, 213/62, 213/69; C09D 29/42, 31/153

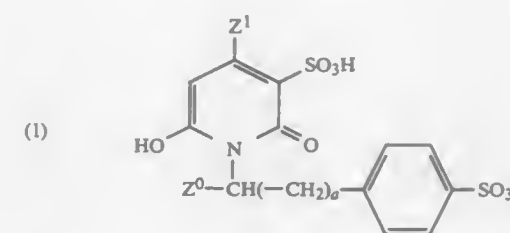
U.S. Cl. 546—296

2 Claims

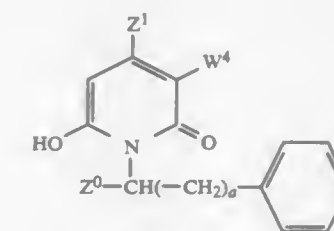
1. A pyridone compound of the formula II



where
n is 1 or 2,
Z⁰ is hydrogen or C₁-C₄ alkyl, and
Z¹ is hydrogen, C₁-C₄ alkyl or phenyl.
2. A process for preparing a pyridone compound of the formula IIa



where
a is 0, 1 or 2,
Z⁰ is hydrogen or C₁-C₄ alkyl, and
Z¹ is hydrogen, C₁-C₄ alkyl or phenyl, by reacting a pyridone of the formula IIb



where W⁴ is cyano or acetyl and a, Z⁰ and Z¹ are each as defined above, with oleum, wherein said oleum contains from 1 to 2 mol of free sulfur trioxide and said reaction comprising a first stage at from 0° to 75° C. for from 1 to 5 hours and then a second stage at from 80° to 135° C. for from 2 to 11 hours.

5,380,860

PREPARATION OF BETA-KETOESTERS USEFUL IN PREPARING QUINOLONE ANTIBIOTICS

Frank R. Busch; Richard S. Lehner, and Brian T. O'Neill, all of New London, Conn., assignors to Pfizer Inc., New York, N.Y. Continuation of Ser. No. 500,155, Mar. 27, 1990, abandoned.

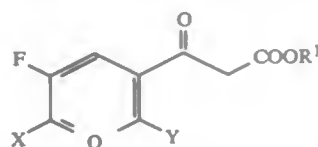
This application Jan. 24, 1992, Ser. No. 826,285

Int. Cl.⁶ C07C 67/14; C07D 213/55

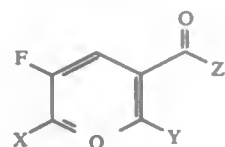
U.S. Cl. 546—315

7 Claims

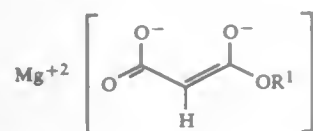
1. A method for preparing a compound of the formula



said method comprising reacting a compound of the formula



with a dianion of the formula



wherein Q is C—H or N; R¹ is C₁ to C₆ alkyl, benzyl or p-nitro-benzyl; X and Y are independently selected from fluoro and chloro; and Z is fluoro, chloro or bromo.

5,380,861

PROCESS FOR PREPARING PYRIDINE 2-CARBOXAMIDES

Michelangelo Scalone, and Peter Vogt, both of Birsfelden, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J. Continuation of Ser. No. 740,692, Aug. 6, 1991, abandoned, which is a continuation of Ser. No. 484,292, Feb. 26, 1990, abandoned. This application May 25, 1993, Ser. No. 67,329

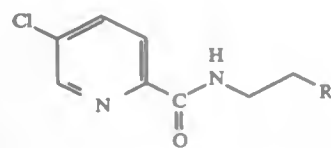
Claims priority, application Switzerland, Feb. 28, 1989, 736/89; Dec. 4, 1989, 4323/89

Int. Cl.⁶ C07D 213/79, 213/81, 213/82; B01J 27/185

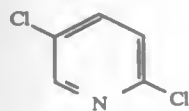
U.S. Cl. 546—323

16 Claims

1. A process for the preparation of pyridine-2-carboxamides of the formula



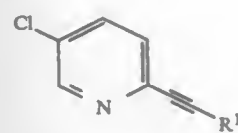
wherein R is amino or a residue convertible into amino, which comprises reacting 2,5-dichloropyridine of the formula



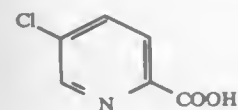
in the presence of a palladium-phosphine catalyst with an alkyne of the formula



wherein R¹ is hydrogen, lower-alkyl, trimethylsilyl or the group —(R²)(R³)—COH and R² and R³ each independently are hydrogen or lower-alkyl or together are cyclopentyl or cyclohexyl, oxidizing the resulting alkyne of the formula



wherein R¹ is as described above, obtain 5-chloropyridine-2-carboxylic acid of the formula



and reacting 5-chloropyridine-2-carboxylic acid with an amino compound of the formula



wherein R is as described above.

5,380,862

PREPARATION OF ISOMER-FREE 2,5-DICHLORO-PYRIDINE

Stefan Sendelbach, Neckarsulm; Wolfgang Weiss, Neckarhausen; Winfried Orth, Hassloch/Pflaz; Hans W. Kleffner, Battenberg/Pflaz, and Albrecht Laufer, Weinheim, all of Germany, assignors to Rütgerswerke Aktiengesellschaft, Germany

Filed Aug. 23, 1993, Ser. No. 110,573

Claims priority, application Germany, Oct. 7, 1992, 4233708

Int. Cl.⁶ C07D 213/61

U.S. Cl. 546—345

16 Claims

1. A process for the preparation of isomer-free 2,5-dichloropyridine comprising alkoxylating at reflux 2-chloro-pyridine or 2-bromo-pyridine in the presence of an alkali metal hydroxide or alkaline earth metal hydroxide at elevated temperatures to form the 2-alkoxy-pyridine, chlorinating with gaseous chlorine the alkoxylated product at ambient temperatures in an aqueous suspension in the presence of an alkali metal or alkaline earth metal hydroxide or oxide as auxiliary bases, a small amount of a catalyst and optionally a small amount of an emulsifier where the auxiliary base is added whenever the pH drops below 7 and the previously added auxiliary base is completely dissolved to form a chloro-2-alkoxy-pyridine isomer reaction mixture, treating the isomer reaction mixture with a Vielsmeier-Haack reagent, subjecting 2,5- and 2,3-dichloro-pyridine mixture to water vapor distillation and crystallizing the crystalline product from an alcohol-water mixture.

5,380,863

HERBICIDAL

SULPHONYLAMINOCARBONYLTRIAZOLINONES HAVING SUBSTITUENTS WHICH ARE BONDED VIA SULPHUR

Klaus-Helmut Müller; Peter Babczinski; Hans-Joachim Santel, and Robert R. Schmidt, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany Division of Ser. No. 870,867, Apr. 20, 1992, Pat. No. 5,276,162, which is a division of Ser. No. 777,824, Oct. 15, 1991, Pat. No. 5,149,356, which is a division of Ser. No. 596,845, Oct. 12, 1990, Pat. No. 5,085,684. This application Oct. 13, 1993, Ser. No. 136,429

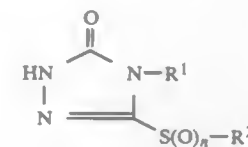
Claims priority, application Germany, Oct. 12, 1989, 3934081; Nov. 3, 1989, 3936622; Nov. 3, 1989, 3936623

Int. Cl.⁶ C07D 249/12

U.S. Cl. 548—263.6

3 Claims

1. A triazolinone of the formula



in which

n represents the numbers 0, 1, or 2,

R¹ represents di-(C₁-C₄-alkyl)-amino, and

R² represents C₁-C₆-alkyl.

5,380,864

HERBICIDAL HALOGENATED

SULPHONYLAMINOCARBONYLTRIAZOLINONES

Klaus-Helmut Müller, Duesseldorf; Peter Babczinski, Wuppertal; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 859,216, Mar. 27, 1992, Pat. No. 5,238,910, which is a continuation-in-part of Ser. No. 580,900, Sep. 11, 1990, abandoned. This application May 10, 1993, Ser. No. 60,075

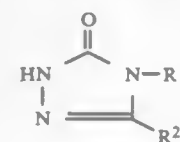
Claims priority, application Germany, Nov. 3, 1989, 3936622

Int. Cl.⁶ C07D 249/12, 249/14

U.S. Cl. 548—263.8

6 Claims

1. A halogenated triazolinone of the formula



in which

R¹ is C₃-C₆-cycloalkyl, C₁-C₆-alkoxy or di-(C₁-C₄-alkyl)-amino, and

R² is fluorine, chlorine or bromine.

5,380,865

2-(SUBSTITUTED PHENYL)IMIDAZOLES AND PESTICIDAL COMPOSITIONS COMPRISING THEM

Susan M. Cramp, and Leslie R. Hutton, both of Chelmsford, England, assignors to May & Baker Limited, Essex, England Division of Ser. No. 488,108, Mar. 5, 1990, Pat. No. 5,206,257, which is a continuation of Ser. No. 163,868, Mar. 3, 1988, abandoned. This application Jan. 8, 1993, Ser. No. 1,771

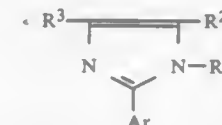
Claims priority, application United Kingdom, Mar. 5, 1987, 8705183; Japan, Oct. 15, 1987, 8724192

Int. Cl.⁶ C07D 233/94, 233/64; A01N 43/50

U.S. Cl. 548—329.5

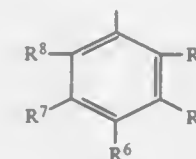
16 Claims

1. A compound of the formula:



wherein R¹ represents hydrogen or straight- or branched-chain alkyl having from 1 to 6 carbon atoms, which is unsubstituted or substituted by straight- or branched-chain alkoxy, alkylthio, alkylsulphonyl or alkylsulphonyl having from 1 to 6 carbon atoms, cyano, carboxy or straight- or branched-chain alkoxy-carbonyl having from 2 to 7 carbon atoms: R² and R³, which can be the same or different, each represents hydrogen, halogen, nitro, carboxy, cyano, straight- or branched-chain alkoxy-carbonyl or alkanoyl having from 2 to 7 carbon atoms, carbamoyl or sulphonoyl which is unsubstituted or substituted by one or two straight- or branched-chain alkyl each having from 1 to 6 carbon atoms, amino which is unsubstituted or substituted on the nitrogen atom by one or two substituents selected from the group consisting of straight- and branched-chain alkyl having from 1 to 6 carbon atoms and straight- and branched-chain alkoxy-carbonyl and alkanoyl having from 2 to 7 carbon atoms, or represents a group R, RO, RS, RSO or RSO₂ in which R represents straight- or branched-chain alkyl having 1 to 6 carbon atoms which is unsubstituted or substituted by one or more halogen; and

Ar represents phenyl which is substituted at least at the 2- and 4-positions and which has the formula:



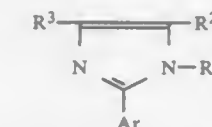
wherein R⁴ represents halogen or a group R or RO, in which R represents straight- or branched-chain alkyl having 1 to 6 carbon atoms which is substituted by one or more halogen,

R⁶ represents a group R or RO, in which R is defined as above,

R⁵ and R⁷, which can be the same or different, each represents a substituent as defined above for R⁴, or hydrogen, and R⁸ represents a substituent as defined above for R⁴, or hydrogen;

or a pesticidally acceptable salt thereof, with the proviso that R² and R³ cannot simultaneously represent hydrogen.

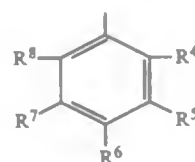
15. A pesticidal composition which comprises, as an active ingredient, a pesticidally effective amount of a compound of the formula:



wherein R¹ represents hydrogen or straight- or branched-chain alkyl having from 1 to 6 carbon atoms, which is unsubstituted or substituted by straight- or branched-chain alkoxy, alkylthio, alkylsulphonyl or alkylsulphonyl having from 1 to 6 carbon atoms, cyano, carboxy or straight- or branched-chain alkoxy-carbonyl having from 2 to 7 carbon atoms: R² and R³ which can be the same or different, each represents hydrogen, halogen, nitro, carboxy, cyano, straight- or branched-chain alkoxy-carbonyl or alkanoyl having from 2 to 7 carbon atoms, carbamoyl or sulphonoyl which is unsubstituted or substituted by one or two straight- or branched-chain alkyl [groups] each having from 1 to 6 carbon atoms, amino which is unsubstituted or substituted on the nitrogen atom by one or two substituents

selected from the group consisting of straight- and branched-chain alkyl having from 1 to 6 carbon atoms and straight- and branched-chain alkoxy-carbonyl and alkanoyl having from 2 to 7 carbon atoms, or represents a group R, RO, RS, RSO or RSO₂, in which R represents straight- or branched-chain alkyl having 1 to 6 carbon atoms which is unsubstituted or substituted by one or more halogen atoms; and

Ar represents phenyl which is substituted at least at the 2- and 4-positions and which has the formula:



wherein R⁴ represents halogen or a group R or RO, in which R represents straight- or branched-chain alkyl having 1 to 6 carbon atoms which is substituted by one or more halogen, R⁶ represents a group R or RO, in which R is defined as above,

R⁵ and R⁷, which can be the same or different, each represents a substituent as defined above for R⁴, or hydrogen, and R⁸ represents a substituent as defined above for R⁴, or hydrogen;

or a pesticidally acceptable salt thereof, with the proviso that R² and R³ cannot simultaneously represent hydrogen, in association with one or more compatible adjuvants.

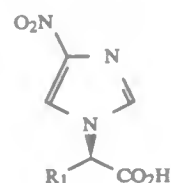
5,380,866 ALKYL SUBSTITUTED NITROIMIDAZOLE ACETIC ACIDS

Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 49,915, Apr. 20, 1993. This application Mar. 15, 1994, Ser. No. 214,889
Int. Cl.⁶ C07D 233/64

U.S. Cl. 548—330.1

1. A compound of the Formula (II)



wherein the configuration is substantially the (R) enantiomer, and R₁ is C₄-C₉ straight chain alkyl, C₄-C₉ straight chain trifluoroalkyl, C₄-C₉ straight chain alkenyl, or C₄-C₉ straight chain trifluoroalkenyl; or a (-)-cinchonidine salt thereof.

5,380,867 SELECTIVE PRECIPITATION OF α-ARYL CARBOXYLIC ACID SALTS

Apurba Bhattacharya; John R. Fritch; Carl D. Murphy; Larry D. Zeagler, and Carina A. McAdams, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 985,083, Dec. 2, 1992, Pat. No. 5,332,834. This application Oct. 19, 1993, Ser. No. 139,245
Int. Cl.⁶ C07B 55/00, 57/00

U.S. Cl. 548—344.1

1. In a process to selectively crystallize a salt of an optically active amino acid and an optically active α-arylcarboxylic acid of the formula Ar(R)CHCO₂H from a reaction mixture comprising said optically active amino acid and first and second enantiomers of said α-arylcarboxylic acid, the improvement

comprising: (1) providing a reaction mixture containing first and second enantiomers of said α-arylcarboxylic acid and a molar quantity of said optically active amino acid, such that the molar quantity of said optically active amino acid is no greater than about the molar quantity of one of said enantiomers of said α-arylcarboxylic acid; and (2) precipitating from said reaction mixture a salt enriched in said first enantiomer of said α-arylcarboxylic acid; wherein R is selected from the group consisting of C₁ to C₈ alkyl and C₁ to C₈ substituted alkyl; Ar is selected from the group consisting of phenyl, substituted phenyl, 2-naphthyl, substituted 2-naphthyl, 2-fluorenyl, and substituted 2-fluorenyl; and said amino acid is selected from the group consisting of lysine, arginine, and histidine.

5,380,868 PROCESS FOR THE PREPARATION OF SUBSTITUTED PYRAZOLINES

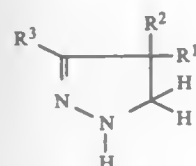
Bernd Gallenkamp, and Rainer Fuchs, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 984,785, Dec. 3, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,936

Claims priority, application Germany, Dec. 13, 1991, 4141187
Int. Cl.⁶ C07D 231/06

U.S. Cl. 548—365.4

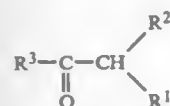
1. A process for the preparation of a substituted pyrazoline of the formula



R³ is optionally substituted phenyl, the substituents being selected from the group consisting of halogen, cyano, nitro, C₁-C₆-alkyl, C₁-C₆-halogenalkyl, C₁-C₆-alkoxy, C₁-C₆-halogenalkoxy, C₁-C₆-alkylthio, C₁-C₆-halogenalkylthio, C₁-C₆-alkylsulphanyl, C₁-C₆-halogenalkylsulphanyl, C₁-C₆-alkylsulphonyl, C₁-C₆-halogenalkylsulphonyl, di-(C₁-C₆-alkyl)-amino, C₁-C₆-alkoxycarbonyl, C₁-C₆-halogenalkoxy-carbonyl, C₁-C₂-alkylenedioxy, C₁-C₂-halogenalkylenedioxy, phenoxy (which is optionally substituted by halogen and/or C₁-C₄-halogenalkyl) and phenylthio (which is optionally substituted by halogen and/or C₁-C₄-halogenalkyl),

R¹ is a pyrrole, pyrazole, imidazole or triazole radical, each of which is optionally substituted by halogen, cyano, nitro, C₁-C₆-alkyl, C₁-C₆-halogenalkyl, C₁-C₆-alkoxy, C₁-C₆-halogenalkoxy, C₁-C₆-alkylthio, C₁-C₆-halogenalkylthio, C₁-C₆-alkylsulphanyl, C₁-C₆-halogenalkylsulphanyl, C₁-C₆-alkylsulphonyl, and/or C₁-C₆-halogenalkylsulphonyl, and

R² is hydrogen, C₁-C₆-alkyl optionally substituted by halogen, C₃-C₆-cycloalkyl optionally substituted by halogen and/or C₁-C₄-alkyl, or phenyl optionally substituted by halogen or C₁-C₆-alkyl, which consists essentially of reacting a substituted ketone of the formula

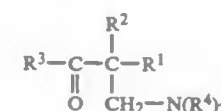


with bis-dialkylamino methane of the formula



in which

R⁴ is alkyl with 1 to 6 carbon atom, in a reaction medium consisting essentially of aliphatic, alicyclic, or aromatic, optionally halogenated hydrocarbons, at a temperature between 0° and 100° C., thereby to form a substituted dialkylaminomethyl ketone of the formula



and, after optional isolation, in a second step reacting the substituted dialkylaminomethyl ketone (IV) with hydrazine hydrate, optionally in the presence of a diluent, at a temperature between 0° and 100° C.

5,380,869 REGIOSELECTIVE SYNTHESIS OF 1,5-DIARYL PYRAZOLE ANTI-INFLAMMATORY AGENTS

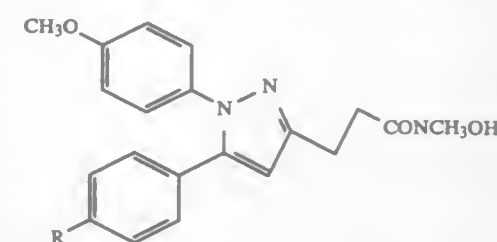
William V. Murray, Belle Mead, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 886,532, May 20, 1992, Pat. No. 5,260,458, which is a division of Ser. No. 766,611, Sep. 26, 1991, Pat. No. 5,117,054. This application Aug. 27, 1993, Ser. No. 113,484

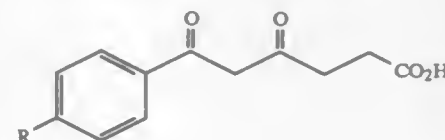
Int. Cl.⁶ C07D 231/12

U.S. Cl. 548—375.1

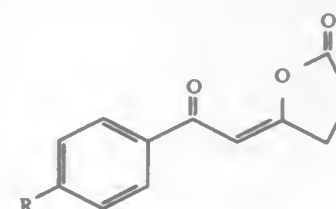
1. A process for preparing a compound of formula IV:



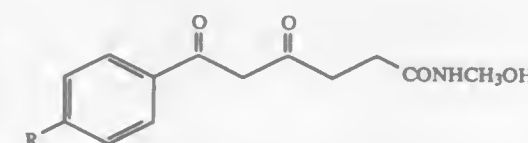
wherein R is selected from either of Cl or CH₃, comprising:
i) reacting a compound of the formula I:



with either of acetic anhydride or acetyl chloride to produce a compound of formula II:



ii) reacting the compound of formula II with N-methylhydroxylamine hydrochloride in the presence of an amine base to produce a compound of formula III:



iii) reacting the compound of formula III with 4-methoxyphenylhydrazine hydrochloride in the presence of an amine base to produce the compound of formula IV.

5,380,870 MIXED CRYSTALS OF SULFONATED DIKETOPYRROLOPYRROLES

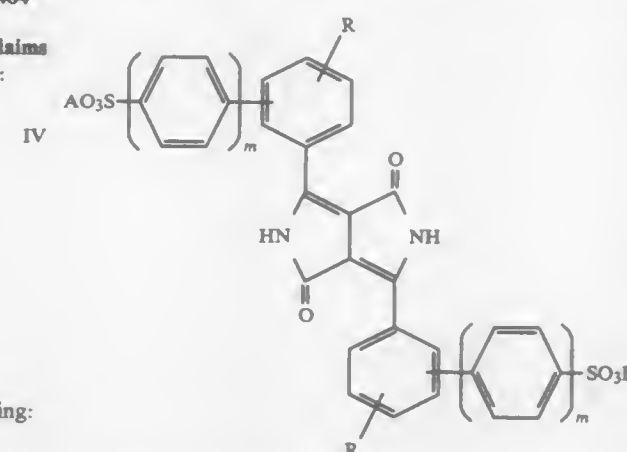
Stefan Hari, Reinach; Olof Wallquist, Marly; Fritz Herren, Düringen, and Thomas Eichenberger, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 14, 1993, Ser. No. 166,750
Claims priority, application Switzerland, Dec. 18, 1992, 3894/92

Int. Cl.⁶ C07D 487/04

U.S. Cl. 548—453

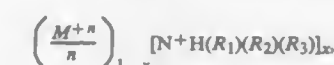
1. Mixed crystals of at least two different compounds of formula



I wherein A and B are each independently of the other a cation of formula



or N⁺H(R₁)(R₂)(R₃) M is an alkali metal cation, an alkaline earth metal cation or a transition metal cation, n is 1, 2 or 3, R₁, R₂ and R₃ are each independently of one another hydrogen, C₁-C₂₂alkyl, C₇-C₂₄aralkyl, C₃-C₆-cycloalkyl or C₆-C₁₈aryl, m is 0 or 1, and R is hydrogen, C₁-C₄alkyl or C₁-C₄alkoxy, in which compounds of formula I that form the mixed crystals the cations A and B constitute a composite structure



wherein x is a value from 0.2 to 0.8 and the X-ray diffraction pattern of said mixed crystals differs from that of the corresponding compounds in which x is 1 or 0.

5,380,871

PREPARATION OF HALOGENATED INDIGO

Reinhold Kohlaupt, Frankenthal; Udo Bergmann, Bensheim, and Lothar Haas, Dannstadt-Schauernheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/00612, § 371 Date Sep. 14, 1993, § 102(e) Date Sep. 14, 1993, PCT Pub. No. WO92/17547, PCT Pub. Date Oct. 15, 1992

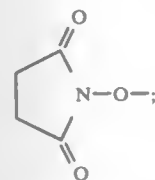
PCT Filed Mar. 19, 1992, Ser. No. 117,075

Claims priority, application Germany, Mar. 30, 1991, 4110458 Int. Cl.⁶ C07D 405/04

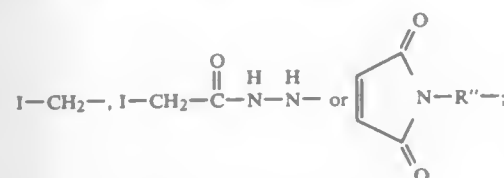
U.S. Cl. 548—459

13 Claims

1. A process for preparing brominated and/or chlorinated indigo comprising reacting indigo with at least one halogen selected from the group consisting of bromine and chlorine, in the presence of a reaction medium and in the presence or absence of iodine wherein thionyl chloride is said reaction medium.



Z₁ and Z₂ may be the same or different when they are



k, m and n are integers from 1 to 10;

X is an alkylene group, a cycloalkylene group, an alkylcycloalkylene group, a bivalent carbocyclic aromatic group, or an aminoalkylene group;

R and R' may be the same or different, and each is a substituted or unsubstituted C₁-C₁₀ straight chain aminoalkylene; and

R'' is a C₂-C₁₀ alkylene or a C₃-C₂₀ cycloalkylene or alkylcycloalkylene.

5,380,872

MODULATORS OF CHOLECYSTOKININ

Elizabeth E. Sugg, Durham; Milana Dezube, Chapel Hill, and Gavin C. Hirst, Carrboro, all of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

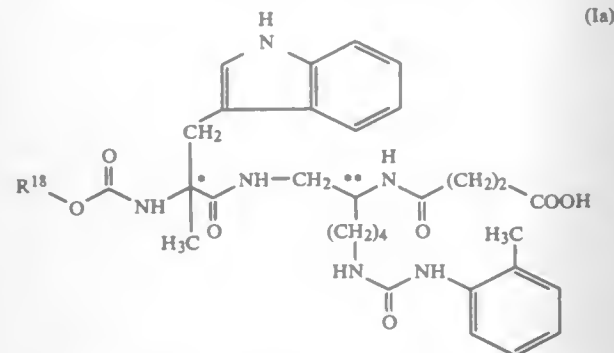
Filed Jul. 14, 1992, Ser. No. 914,918

Int. Cl.⁶ C07D 209/20

U.S. Cl. 548—495

6 Claims

1. A compound which has the following Formula Ia:



wherein R¹⁸ is benzyl, adamantyl, t-butyl or trans-2-methylcyclohexyl.

5,380,873

HOMOBIFUNCTIONAL AGENTS FOR COUPLING ENZYMES AND THE LIKE TO ANTIBODIES AND THE LIKE

Christopher Bieniarz, Highland Park, and Christopher Welch, Urbana, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 600,795, Oct. 22, 1990, abandoned.

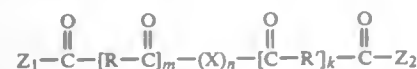
This application Dec. 22, 1992, Ser. No. 999,181

Int. Cl.⁶ C07D 403/12

U.S. Cl. 548—520

10 Claims

1. A coupling agent having the formula



where

Z₁ and Z₂ are the same when they are

5,380,874

INTERMEDIATES FOR PYRIDINECARBOXYLIC ACID DERIVATIVES

Isao Hayakawa, and Shohgo Atarashi, both of Chiba, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan Division of Ser. No. 812,830, Dec. 24, 1991, which is a division of Ser. No. 449,160, Dec. 12, 1989, Pat. No. 5,098,912, which is a continuation of Ser. No. 878,023, Jun. 24, 1986, abandoned.

This application Mar. 4, 1994, Ser. No. 205,638

Claims priority, application Japan, Jun. 26, 1985, 60-139830; Dec. 12, 1985, 60-279991

Int. Cl.⁶ C07D 207/09

U.S. Cl. 548—531

6 Claims

1. 1-benzoyloxycarbonyl-3-(1-tert-butoxycarbonylaminoethyl)pyrrolidine.

5,380,875

HYDROXYPROLINE DERIVATIVES AND PREPARATIVE PROCESS THEREFOR

Yasuo Yamamoto; Yoshiaki Harushima, and Akira Nagai, all of Ibaraki, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 893,994, Jun. 5, 1992. This application May 4, 1994, Ser. No. 224,350

Claims priority, application Japan, Jun. 6, 1991, 3-134908; Jul. 1, 1991, 3-159309; Jul. 2, 1991, 3-160741

Int. Cl.⁶ C07D 207/12

U.S. Cl. 548—533

2 Claims

1. A process for the purification of N-(9-fluorenylmethoxycarbonyl)-4-hydroxyproline contained as a target compound in a liquid medium, which comprises treating the compound-containing liquid medium with anhydrous magnesium sulfate to adsorb the target compound on the anhydrous magnesium sulfate and then collecting the target compound from the anhydrous magnesium sulfate.

5,380,876

2-ARYL-5(TRIFLUOROMETHYL)-2-PYRROLINE COMPOUNDS USEFUL IN THE MANUFACTURE OF INSECTICIDAL, NEMATOCIDAL AND ACARICIDAL ARYLPYRROLES

Robert F. Doehner, Jr.; Jerry M. Barton, both of East Windsor, N.J., and David G. Kuhn, Newtown, Pa., assignors to American Cyanamid Company, Wayne, N.J.

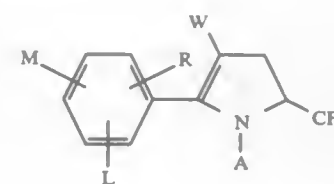
Division of Ser. No. 865,149, Apr. 8, 1992, Pat. No. 5,288,901, which is a division of Ser. No. 634,287, Dec. 26, 1990, Pat. No. 5,118,816. This application Nov. 22, 1993, Ser. No. 156,332

Int. Cl.⁶ C07D 207/18, 207/00, 209/82

U.S. Cl. 548—565

4 Claims

1. A process for the preparation of a compound having structure I



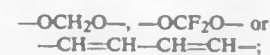
wherein

A is hydrogen or C₁-C₄ alkyl;

W is CN, NO₂ or CO₂R₆

L is hydrogen or halogen and

M and R are each independently hydrogen, C₁-C₃ alkyl, C₁-C₄ alkoxy, C₁-C₄ alkylthio, C₁-C₄ alkylsulfinyl, C₁-C₄ alkylsulfonyl, CN, NO₂, halogen, CF₃, R₁CF₂Z, R₂CO or NR₃R₄ and when M and R are on adjacent positions they may be taken together with the carbon atoms to which they are attached to form a ring in which MR represents the structure



z is s(o)_n or o;

R₁ is hydrogen, F, CHF₂, CHFCI or CF₃;

R₂ is C₁-C₄ alkyl, C₁-C₄ alkoxy or NR₃R₄;

R₃ is hydrogen or C₁-C₄ alkyl;

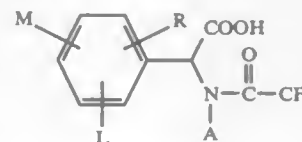
R₄ is hydrogen, C₁-C₄ alkyl or R₅ CO;

R₅ is hydrogen or C₁-C₄ alkyl;

R₆ is C₁-C₆ alkyl, C₃-C₆ cycloalkyl or phenyl;

n is an integer of 0, 1 or 2

which comprises reacting a compound having structure II



wherein A, L, M and R are as defined above with about 1.0 molar equivalent of an olefin having the structure



wherein W is as defined above and optionally a catalytic amount of an organic base in the presence of an acid anhydride and a solvent.

5,380,877

DISUBSTITUTED ACETYLENES BEARING HETEROAROMATIC AND HETEROBICYCLIC GROUPS HAVING RETINOID LIKE ACTIVITY

Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 792,832, Nov. 15, 1991, Pat. No. 5,234,926, which is a division of Ser. No. 326,191, Mar. 20, 1989, Pat. No. 5,089,509, which is a continuation-in-part of Ser. No. 246,037, Sep. 15, 1988, abandoned, which is a continuation of Ser. No. 28,279, Mar. 20, 1987, abandoned. This application Mar. 8, 1993, Ser. No. 27,627

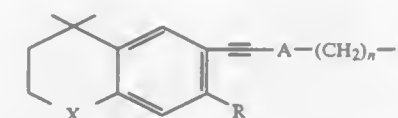
The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.⁶ C07D 311/74; A61K 31/35, 31/38, 31/34

U.S. Cl. 549—60

21 Claims

1. A compound of the formula



where X is O; R is hydrogen or lower alkyl; A is thienyl or furyl; n is 0-4; and B is H, —COOH or a pharmaceutically acceptable salt thereof, or an ester thereof with a saturated aliphatic alcohol of ten or fewer carbon atoms, or with a cyclic or saturated aliphatic cyclic alcohol of 5 to 10 carbon atoms, or with phenol or with a lower alkylphenol, or an amide or a mono or di-substituted amide thereof, the substituents on the amide being selected from a group consisting of saturated aliphatic radicals of ten or fewer carbon atoms, cyclic or saturated aliphatic cyclic radicals of 5 to 10 carbon atoms, and phenyl or lower alkylphenyl radicals, or B is CH₂OH or an ester derivative thereof derived from a saturated aliphatic acid of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic acid of 5 to 10 carbon atoms, or from benzoic acid, or an ether derivative thereof derived from a saturated aliphatic radical of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic radical of 5 to 10 carbon atoms, or from phenyl or lower alkylphenyl radical, or B is —CHO or a lower alkyl acetal derivative thereof, or an acetal derivative thereof formed with a lower alkyl, diol, or B is —COR₁ or a lower alkyl ketal derivative thereof, or a ketal derivative thereof formed with a lower alkyl diol, where R₁ is —(CH₂)_mCH₃ where m is 0-4, or a pharmaceutically acceptable salt of the compound defined in said formula.

5,380,878

BENZO[B]THIOPHEN-5-YL DERIVATIVE AND PROCESS FOR PRODUCING THE SAME

Joji Nakano, Toyama; Nobuhisa Taya, Shinminato; Hisaaki Chaki; Tetsuo Yamafuji, both of Toyama, and Kaishu Momonol, Shinminato, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 42,510, Apr. 5, 1993, abandoned. This application Mar. 29, 1994, Ser. No. 217,960

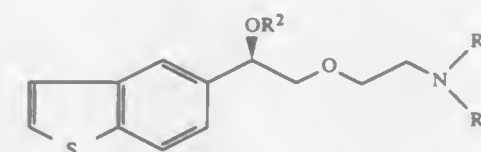
Claims priority, application Japan, Apr. 13, 1992, 4-119740; Mar. 25, 1993, 5-090934

Int. Cl.⁶ C07D 333/52, 307/78, 333/56, 333, 58

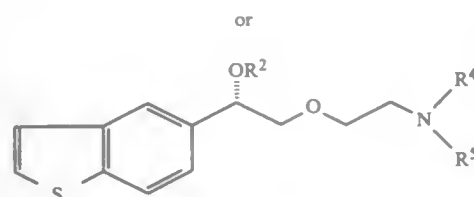
U.S. Cl. 549—60

6 Claims

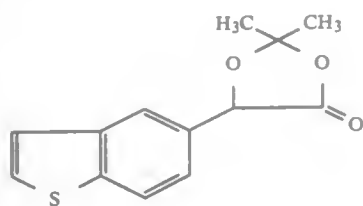
1. A process for producing an optically active benzo[b]thiophen-5-yl derivative represented by formula (6a) or (6b) or a salt thereof:



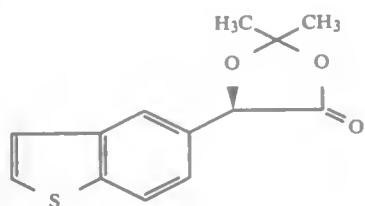
-continued



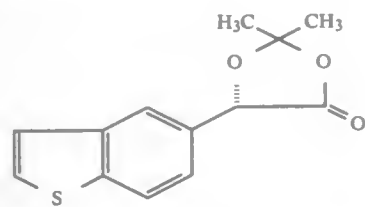
wherein R^2 represents a hydrogen atom or a hydroxyl-protecting group and R^4 and R^5 , which may be the same or different, represent lower alkyl groups, which comprises inoculating into a supersaturated solution of a compound represented by formula (1):



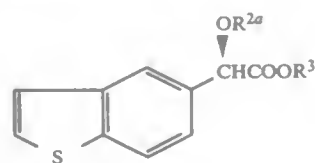
seed crystals of an optically active compound of formula (2a) when production of the compound of formula (6a) is intended or seed crystals of an optically active compound of formula (2b) when production of the compound of formula (6b) is intended, in the presence of a racemization catalyst to crystallize preferentially the corresponding optically active form of the compound of formula (1), to obtain, respectively, an optically active compound represented by formula (2a):



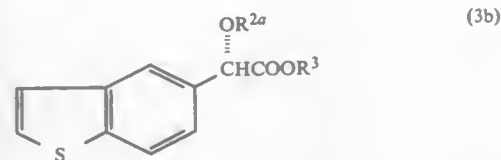
or formula (2b):



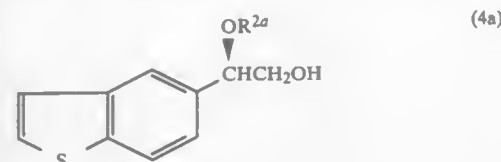
then subjecting the optically active compound obtained to alcoholysis or hydrolysis in the presence of an acid catalyst, subsequently introducing into the resulting product a hydroxyl-protecting group to obtain, respectively, an optically active compound represented by formula (3a):



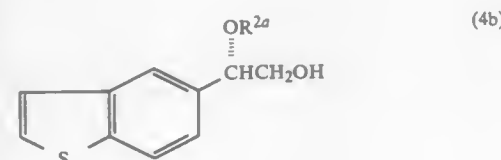
or formula (3b):



wherein R^{2a} represents a hydroxyl-protecting group and R^3 represents a hydrogen atom or a carboxyl-protecting group, and then reducing the optically active compound of formula (3a) or (3b) to obtain, respectively, an optically active compound represented by formula (4a):



or formula (4b):



wherein R^{2a} is as defined above, and subsequently reacting the compound thus obtained with a compound represented by formula (5) or its salt:



wherein R^4 and R^5 are as defined above and X represents a removable group, in the presence of a de-acidifying agent, and then, if desired, removing the hydroxyl-protecting group.

5,380,879

DERIVATIVES OF MYCOPHENOLIC ACID

Eric B. Sjogren, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

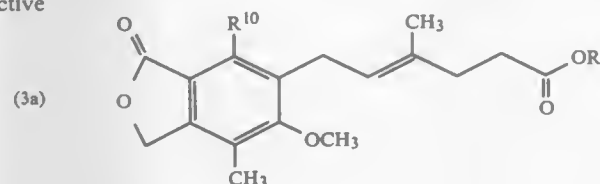
Filed Feb. 18, 1994, Ser. No. 198,817

Int. Cl. 6 C07D 307/88

U.S. Cl. 549—310

1 Claim

1. A compound represented by the formula:



wherein:

R^7 is lower alkyl; and
 R^{10} is $-\text{OSO}_2\text{CF}_3$, $-\text{CN}$, $-\text{CO}_2\text{H}$, or $-\text{NCO}$.

5,380,880

FLUORESCENT PH INDICATORS

J. Bruce Pitner, Durham, and Randal A. Hoke, Cary, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 912,426, Jul. 13, 1992, Pat. No. 5,302,731.

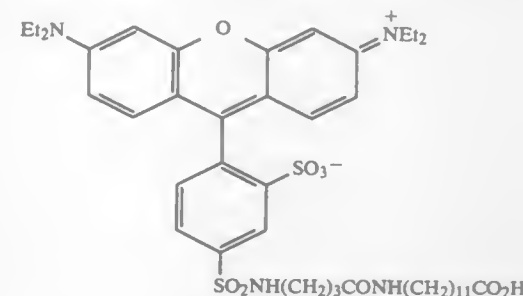
This application Dec. 6, 1993, Ser. No. 163,099

Int. Cl. 6 C07D 311/88

U.S. Cl. 549—394

1 Claim

1. A method for synthesizing a compound having the structure



comprising the steps of:

- reacting sulforhodamine B sulfonyl chloride (SRB) with gamma-amino butyric acid (GABA) in the presence of 4-dimethylaminopyridine and triethylamine to produce an SRB-GABA reaction product;
- reacting the SRB-GABA with N-hydroxy-succinimide (NHS) in the presence of methylene chloride and dicyclohexylcarbodiimide to produce an SRB-GABA NHS ester;
- recovering the SRB-GABA NHS ester;
- reacting the SRB-GABA NHS ester with 12-aminododecanoic acid in the presence of methylene chloride to produce a reaction product, and;
- recovering the compound from the reaction product of step d).

wherein

R_1 is hydrogen, halogen, C_1 - C_5 alkyl, phenyl, phenyl substituted by C_1 - C_4 alkyl, C_1 - C_4 alkoxy or halogen, C_1 - C_5 alkoxy, phenoxy or phenoxy substituted by C_1 - C_4 alkyl, C_1 - C_4 alkoxy or halogen,
 R_2 is hydrogen, C_1 - C_5 alkyl or phenyl,
 R_3 is a saturated or unsaturated hydrocarbon radical of 1 to 20 carbon atoms,
 R_4 and R_5 are each independently of the other hydrogen, halogen, C_1 - C_5 alkyl, C_1 - C_5 alkoxy, phenoxy or substituted phenoxy, and
X is a direct single bond or a methylene or ethylene bridge; and
Z is either a direct single bond or may be a member selected from the group consisting of: $-\text{S}-$, $-\text{O}-$, $-\text{SO}-$, $-\text{SO}_2-$, $-\text{CO}-$, $-\text{C}(\text{R}_6)(\text{R}_7)-$, where R_6 is hydrogen, methyl or phenyl and R_7 is hydrogen or methyl.

5,380,882

PHENYLACETATES AND THE USE THEREOF

Alfred Steinmann, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 30, 1993, Ser. No. 40,230

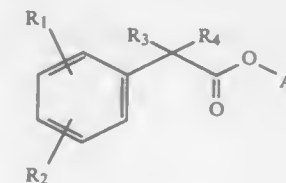
Claims priority, application Switzerland, Apr. 1, 1992, 1054/92

Int. Cl. 6 C07D 309/12, 307/20

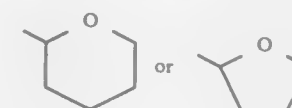
U.S. Cl. 549—420

4 Claims

1. A compound of formula I



wherein A is a radical of formula



5,380,881

ACID LABILE SOLUTION INHIBITORS AND POSITIVE- AND NEGATIVE-ACTING PHOTOSENSITIVE COMPOSITION BASED THEREON

Ulrich Schädeli, Granges-Paccot, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 756,631, Sep. 9, 1991, Pat. No. 5,210,003.

This application Jan. 22, 1993, Ser. No. 7,420

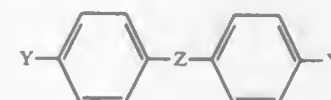
Claims priority, application Switzerland, Sep. 13, 1990, 2971/90

Int. Cl. 6 C07D 309/10

U.S. Cl. 549—415

4 Claims

1. A compound of formula II or III



(II)

5,380,889

METHOD OF FORMING RESIST PATTERN AND ORGANIC SILANE COMPOUND FOR FORMING ANTI-REFLECTION FILM FOR USE IN SUCH METHOD

Tetsuro Hanawa, and Maria Op de Beeck, both of Hyogo, Japan, assigns to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

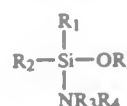
Filed Dec. 30, 1991, Ser. No. 814,632

Claims priority, application Japan, Aug. 8, 1991, 3-199603
Int. Cl.⁶ C07F 7/10

U.S. Cl. 556—410

8 Claims

1. An organic silane compound for forming an antireflection coating film on a substrate prior to application of resist to the substrate to form a resist pattern on said substrate by lithography using deep UV light, the organic silane compound having a structural formula represented by the following formula (2):



wherein each of R₁, R₂, R₃ and R₄ represents hydrogen or an alkyl group, and R represents a substituent group originated from novolak resin and capable of absorbing said deep UV light.

5,380,890

ANTIOXIDANT GLYCERIDE DERIVATIVES

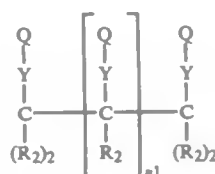
George H. Greene, Croton-Hudson, N.Y. 10520; Robert Miller, 740 Island Ct., Columbus, Ohio 43214; James L. Williams, 819 Crofton Cir., Reynoldsburg, Ohio 43068; James C. Phillips, 510 W. Main St., Plain City, Ohio 43064; Jerry F. Stulta, 4270 Stover Rd., Ostrander, Ohio 43061, and Jan P. E. Tellings, 3151 Parsons Ave., Columbus, Ohio 43207

Continuation-in-part of Ser. No. 488,719, Feb. 28, 1990, Pat. No. 5,155,244. This application Nov. 27, 1991, Ser. No. 799,061
Int. Cl.⁶ C07C 51/00

U.S. Cl. 554—2

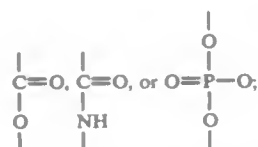
20 Claims

1. An antioxidant-containing derivative of an organic compound, which derivative has the following formula:



wherein Q, which can be the same or different, is an antioxidant moiety or —R₁ with the provisos that (a) at least one Q is an antioxidant moiety and (b) the antioxidant moieties are present in an amount up to about 20% by weight of the derivative;

Y can be the same or different and comprises



R₁, which can be the same or different, is a cyclic or acyclic, unsubstituted or a hydroxy, carboxy, or halogen substituted alkyl, alkenyl, alkynyl, or oxyalkylene group; or a

sulfur, nitrogen or phosphorus derivative of an alkyl, alkenyl, alkynyl, or oxyalkylene group;
R₂ can be the same or different and hydrogen in addition to those R₁ groups described above, and n₁=1-20.

5,380,891

PHASE TRANSFER ASSISTED PROCESS FOR GLUCAMIDE DETERGENTS

Daniel S. Coanor; Jeffrey J. Scheibel, and Jo-Nan Kao, all of Cincinnati, Ohio, assigns to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 590,389, Sep. 28, 1990, abandoned. This application Jun. 11, 1993, Ser. No. 79,202
Int. Cl.⁶ C11C 1/00, 1/06

U.S. Cl. 554—69

1 Claim

1. In a process for manufacturing a glucamide surfactant having a linear structure in a reaction medium comprising a fatty acid ester reactant and an N-alkylglucamine reactant the improvement which comprises, using as a reactant an N-alkylglucamine having a heavy metal content of about 20 ppm or lower and a free sugar content of about 5 ppm or lower and adding a phase transfer agent which is an alcohol polyethoxylate or alkyl phenol polyethoxylate surfactant to said reaction medium, whereby the formation of the glucamide surfactant having said linear structure is about 80 mole percent or higher and the formation of cyclic glucamide or esteramide by-products is about 10 mole percent or lower.

5,380,892

PROCESS FOR SEPARATING ALIPHATIC STRAIGHT-CHAIN COMPOUNDS HAVING TERMINAL FUNCTIONAL GROUPS FROM ALPHA-ISOMERS THEREOF

Gregor Deckers, Xanten, and Dieter Frohning, Wesel, both of Germany, assigns to Hoechst Aktiengesellschaft, Germany
Filed Jul. 6, 1992, Ser. No. 909,365

Claims priority, application Germany, Jul. 12, 1991, 4123084
Int. Cl.⁶ C11C 1/08

U.S. Cl. 554—186

25 Claims

1. A process for separation of an aliphatic, straight chain compound having 8 to 10 carbon atoms and a terminal functional group from an initial mixture containing isomers thereof which have branched chains at their α-positions, said process comprising addition of a solvent and urea to said initial mixture to form an aliphatic urea mixture, which then forms a urea clathrate mixture, cooling said urea clathrate mixture to crystallize out said urea clathrate, and liberating said aliphatic compound from said urea clathrate which has crystallized.

5,380,893

HIGH PURITY FATTY ACID SALT PRODUCTS

M. Stephen Lajoie, Basking Ridge, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 987,706, Dec. 9, 1992. This application Oct. 4, 1993, Ser. No. 130,987

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.⁶ C07C 51/00

U.S. Cl. 554—156

12 Claims

1. A fatty acid salt product in dry granular form which consists essentially of the calcium salts of the following weight proportions of fatty acid constituents:

palmitic acid	20-55
oleic acid	25-50
linoleic acid	2-20
stearic acid	1-15
lauric acid	0-10

wherein less than about 5 weight percent of the fatty acid constituents are in glyceride form.

5,380,894

PRODUCTION OF HYDROXY FATTY ACIDS AND ESTOLIDE INTERMEDIATES

Douglas A. Burg, Easton, Pa.; Robert Kleiman, and Selim M. Erhan, both of Peoria, Ill., assigns to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 1, 1991, Ser. No. 662,606

Int. Cl.⁶ C07C 59/255

U.S. Cl. 554—219

22 Claims

1. An estolide compound of the formula:



wherein R₁ is selected from C₁₁–C₁₆ hydrocarbons which may be saturated or unsaturated, and branched or straight chain; R₂ is independently selected from C₁₀–C₁₇ hydrocarbons which may be saturated or unsaturated, and branched or straight chain; A is selected from C₃–C₆ hydrocarbons which may be saturated or unsaturated, and branched or straight chain; y is 3 or 4; n is greater than or equal to 1; x is 1 or 2; and . . . designates a single or double carbon/carbon bond.

5,380,895

METHOD FOR THE SYNTHESIS OF METAL ALKYL AND METAL ARYL

Terry Kraft, Longmont, Colo., assignor to Bandgap Technology Corporation, Broomfield, Colo.

Filed Feb. 10, 1993, Ser. No. 16,585

Int. Cl.⁶ C07F 3/08, 3/10, 5/00, 7/08

U.S. Cl. 556—1

12 Claims

1. A method of synthesizing metal alkyl compounds of the formula MR_n comprising

- mixing lithium metal and a metal halide of the formula MX_n, wherein M is a metal selected from the Groups consisting of IIB, IIIB or IVB of the Periodic Table; X is a halide selected from the group consisting of chlorine, bromine and iodine; and n satisfies the valence of the metal M; and
- combining an alkyl or aryl halide of the formula RX' with the lithium metal/metal halide mixture of a) to form the metal alkyl or aryl compound R_nM and solid lithium halide in the final reaction mixture, wherein R is independently selected from the group consisting of alkyl groups containing from about 1 to about 10 carbon atoms and of aryl groups containing from about 6 to about 20 carbon atoms and X' is selected from chlorine, bromine and iodine.

5,380,896

PROCESS FOR THE PREPARATION OF DIORGANOTIN MERCAPTOCARBOXYLATES

Reiner Fuchs, Ober-Ramstadt; Johannes Kaufhold, and Kornelia Malzacher, both of Lindenfels, all of Germany, assigns to Ciba-Geigy Corporation, Ardley, N.Y.

Filed Jun. 24, 1993, Ser. No. 82,184

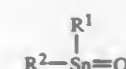
Claims priority, application Switzerland, Jun. 30, 1992, 2040/92-0

Int. Cl.⁶ C07F 7/22

U.S. Cl. 556—91

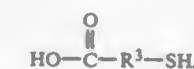
15 Claims

1. A process for the preparation of a pulverulent diorganotin mercaptocarboxylate, which comprises reacting a diorganotin oxide of the formula I



in which R¹ and R², independently of one another, are C₁–C₁₂ alkyl, at a temperature in the range from 35° C. to 70° C. in the

absence of solvents and adsorbents with a mercaptocarboxylic acid of the formula II



in which R³ is alkylene having 1 to 18 C atoms or is phenylene, and subjecting the reaction mixture and product during the reaction and the subsequent cooling phase to constant thorough mixing.

5,380,897

TRI(PLATINUM) COMPLEXES

James D. Hoeschele, 6865 Montfort Dr., Canton, Mich. 48187; Yun Qu, 32 Pitkin St., Burlington, Vt. 05401, and Nicholas Farrell, 20 Marrett Rd., Shelburne, Vt. 05482

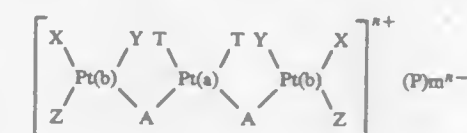
Filed May 25, 1993, Ser. No. 66,581

Int. Cl.⁶ C07F 15/00; A61K 31/28, 31/66

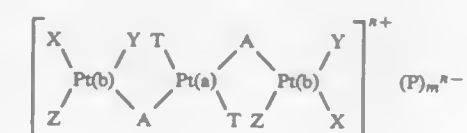
U.S. Cl. 556—137

48 Claims

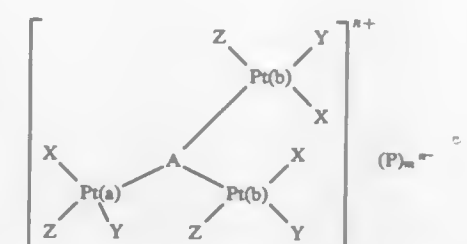
1. A tri(platinum) complex of the general formula:



or

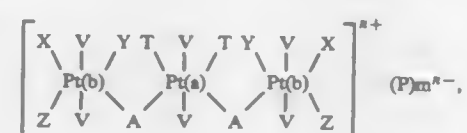


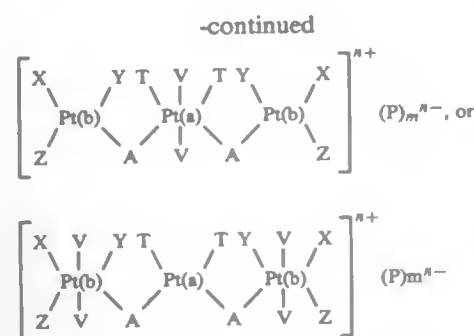
or



where X, Y, Z and T are neutral and/or anionic ligands, which may be the same or different, with the proviso that at least one of the X, Y or Z on each Pt(b) must be an anionic ligand, A is a diamine or triamine bridging agent, n represents the net charge of the three platinum coordination spheres, P represents one or more counterions which may or may not be present dependent upon whether the three platinum coordination spheres have a net charge, and n— represents the net charge of the counterions and is such that the resultant tri(platinum) complex is neutral.

20. A tri(platinum) Pt(IV) complex having the general formula:





wherein X, Y, Z and T are neutral and/or anionic ligands which may be the same or different, with the proviso that at least one of X, Y or Z on each Pt(b) must be an anionic ligand comprises an anionic group, A is a diamine bridging agent, n represents the net charge of the three platinum coordination spheres, P represents one or more counterions which may or may not be present depending upon whether the three platinum coordination spheres have a net charge, and n- represents the net charge of the counterions and is selected such that the resultant tri(platinum) complex is neutral.

5,380,898
PROCESS FOR PREPARING TRIMETHYLALUMINUM BY REACTING METHYLALUMINUM CHLORIDES WITH SODIUM IN SOLIDS REACTORS
 Stefan Gürtzen, Wuppertal; Jürgen Schneider, and Rolf Schrader, both of Unna, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
 Filed Apr. 9, 1993, Ser. No. 45,973
 Claims priority, application Germany, Apr. 22, 1992, 4213202
 Int. Cl.⁶ C07F 5/06

U.S. Cl. 556—187 **12 Claims**
 1. A process for preparing trimethylaluminum from reactants comprising methylaluminum chloride and sodium or magnesium, the process comprising contacting the reactants under reaction conditions in a solids reactor.

5,380,899
PROCESS FOR THE PRODUCTION OF CYCLIC AMIDINE
 Seiji Noda, Chiba, and Takeshi Tsuji, Narashino, both of Japan, assignors to Lion Akzo Co., Ltd., Japan
 Filed Jan. 21, 1994, Ser. No. 183,888
 Claims priority, application Japan, Apr. 22, 1993, 5-118954
 Int. Cl.⁶ C07F 7/10

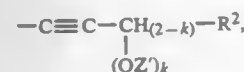
U.S. Cl. 556—407 **14 Claims**
 1. A process for the production of a cyclic amidine, wherein a nitrile is reacted with a polyamine in a liquid phase, said process being characterized in that the reaction is performed in the presence of a mixture of water with a titanium compound as a catalyst.

5,380,900
 α -METHYLENOCYCLOPENTANONE DERIVATIVE AND PROCESS FOR PRODUCING THE SAME
 Fumie Sato, Fujisawa; Kazutaka Arai, and Katsuaki Miyaji, both of Funabashi, all of Japan, assignors to Nissan Chemical Industries, Limited, Tokyo, Japan
 Filed Feb. 12, 1992, Ser. No. 834,348
 Claims priority, application Japan, Feb. 26, 1991, 3-054019
 Int. Cl.⁶ C07F 7/08, 7/10, 7/18

U.S. Cl. 556—436 **15 Claims**
 1. An α -methylenecyclopentanone derivative represented by the formula [I]



wherein X denotes (α -OZ, β -H) or (β -H, β -OZ), with Z representing a hydroxyl protecting group; U denotes (α -H, β -R¹) or (β -R¹, α -H); R¹ denotes



wherein R² denotes a protected hydroxyl group, a substituted or unsubstituted C₁₋₁₅ alkyl group, a substituted or unsubstituted C₂₋₁₅ alkenyl group, a substituted or unsubstituted C₂₋₁₅ alkynyl group, or a substituted or unsubstituted C₆₋₁₅ aryl group; Z' denotes a hydroxyl protecting group; and k is 0 or 1.

5,380,901
MULTIFUNCTIONAL ACRYLATES AND THE SYNTHESIS THEREOF
 Joseph M. Antonucci, Kensington; Jeffrey W. Stansbury, Gaithersburg, both of Md., and Guo-Wei Cheng, Sichuan, China, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.
 Filed Jan. 30, 1992, Ser. No. 828,316
 Int. Cl.⁶ C07F 7/08

U.S. Cl. 556—440 **7 Claims**
 1. A process for synthesizing multifunctional acrylate monomers and oligomers, comprising the steps of: providing a reactant acrylate compound selected from a group consisting of siloxane diacrylate, a polyethylene glycol diacrylate, an aromatic fluorinated diacrylate, and a hydroxylated aliphatic diacrylate; and exposing the acrylate compound to reaction conditions comprising a temperature within the range of about 90° C. to about 95° C. for a time within about 6 hours to about 20 hours effective for resulting in multifunctional acrylate monomers and oligomers having predominant 1,6-arrangement of double bonds.

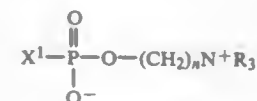
5,380,902
PROCESS FOR THE CONDENSATION AND/OR EQUILIBRATION OF ORGANOSILICON COMPOUNDS
 Rudolf Hager, Altoetting; Otto Schneider, Burghausen, and Johann Schuster, Emmerting, all of Germany, assignors to Wacker-Chemie GmbH, Munich
 Filed May 31, 1994, Ser. No. 250,884
 Claims priority, application Germany, May 28, 1993, 4317909
 Int. Cl.⁶ C07F 7/08; C08G 77/06

U.S. Cl. 556—462 **7 Claims**
 1. A process for the condensation and/or equilibration of an organosilicon compound in the presence of an oxygen-containing phosphazene.

5,380,903
PROCESS FOR THE PREPARATION OF ORGANOCHLOROSILANES
 Bruno Degen, Much; Elke Licht, Leverkusen; Manfred Schulze, Leichlingen; Gebhard Wagner, Odenthal, and Klaus-Peter Minuth, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
 Filed Mar. 17, 1994, Ser. No. 214,731
 Claims priority, application Germany, Mar. 24, 1993, 4309556; Dec. 16, 1993, 4342910
 Int. Cl.⁶ C07F 7/16

U.S. Cl. 556—472 **2 Claims**
 1. In the preparation of organochlorosilanes by the direct reaction of metallic silicon with an organyl chloride, the improvement which comprises reducing the metallic silicon particles measuring at least 5 mm in their smallest dimension and 15 mm in their largest dimension, cooling the silicon from temperature of at least about 700° C., to at most 120° C. within a maximum of 2 seconds, then grinding and reacting the silicon.

5,380,904
PROCESS FOR RENDERING A SURFACE BIOCOMPATIBLE, AND ARTICLES CONTAINING THE SAME
 Dennis Chapman, Buckinghamshire, and Aziz A. Durrani, London, both of England, assignors to Biocompatibles Ltd., London, England
 Continuation of Ser. No. 73,662, Jun. 8, 1993, abandoned, which is a division of Ser. No. 789,894, Nov. 12, 1991, Pat. No. 5,299,162, which is a division of Ser. No. 510,840, Apr. 18, 1990, Pat. No. 5,091,551, which is a division of Ser. No. 328,709, Mar. 27, 1989, Pat. No. 4,937,369, which is a continuation of Ser. No. 114,762, Oct. 29, 1987, abandoned, which is a division of Ser. No. 778,185, Sep. 18, 1985, Pat. No. 4,721,800. This application Dec. 20, 1993, Ser. No. 169,641
 Claims priority, application United Kingdom, Jan. 20, 1984, 8401534
 Int. Cl.⁶ C07F 9/146, 9/10; A01N 1/02; B01J 16/00
 U.S. Cl. 558—166 **9 Claims**
 1. A method for rendering a surface of a material biocompatible comprising the steps of
 (1) applying to said surface a compound of the formula



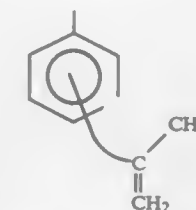
wherein X¹ is a reactive group which forms a covalent bond with a reactive group on said surface of said material to be rendered biocompatible, each R, which may be the same or different, is C₁–C₄ alkyl and n is 2, 3 or 4; and
 (2) reacting said compound and said reactive group on said surface under conditions such that the group X¹ forms a covalent linkage with said reactive group on said surface thereby rendering said surface biocompatible.

5,380,905
MAGNETIC RECORDING MEDIUM HAVING RADIATION CURABLE BINDER WITH α -METHYLSTYRENE UNSATURATION
 John C. Haldos, St. Paul; Ravindra L. Arudi, Woodbury, and Nelson T. Rotto, North St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
 Filed Oct. 9, 1991, Ser. No. 775,145
 Int. Cl.⁶ C07F 9/09, 9/38

U.S. Cl. 558—172 **2 Claims**
 1. An α -methylstyrene functionalized dispersant, wherein said dispersant comprises at least one dispersing moiety selected from the group consisting of



and at least one radiation crosslinkable moiety of the formula



wherein the dispersant is obtained by reacting an α -methylstyrene functionalized isocyanate with a phosphorylated polyoxalkylated polyol.

5,380,906
PROCESS FOR PREPARING CARBONIC DIESTER
 Keigo Nishihira; Shuji Tanaka; Kunio Kodama; Takayoshi Kaneko; Tetsuro Kawashita; Yuki Nishida; Takao Matsuzaki, and Koji Abe, all of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan
 Continuation-in-part of Ser. No. 841,009, Feb. 25, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 25,384
 Claims priority, application Japan, Mar. 1, 1991, 3-57695; Jan. 24, 1992, 4-10867; Mar. 6, 1992, 4-097506; Jun. 30, 1992, 4-210601; Jul. 31, 1992, 4-245411
 Int. Cl.⁶ C07C 69/96

U.S. Cl. 558—210 **19 Claims**
 1. A process for preparing carbonic diester comprising the formation of carbonic diester by the vapor phase catalytic reaction of an alkyl nitrite and carbon monoxide in the presence of a solid catalyst, wherein platinum group metal ion in the solid catalyst is exchanged on an ion exchange zeolite carrier.

5,380,907
METHOD FOR PREPARING AROMATIC CARBONATE
 Masamichi Mizakami; Katsushige Hayashi; Katsuhiko Iura, and Takao Kawaki, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
 Filed Jun. 1, 1993, Ser. No. 69,604
 Claims priority, application Japan, Jun. 1, 1992, 4-140596
 Int. Cl.⁶ C07C 69/96

U.S. Cl. 558—270 **12 Claims**
 1. A process for producing an aromatic carbonate which comprises:
 reacting
 (a) an aromatic hydroxy compound with
 (b) carbon monoxide in the presence of
 (c) an oxidation agent,
 (d) a catalyst comprising (i) palladium, per se, (ii) a palladium compound or (iii) a support impregnated with palladium or a palladium compound,
 (e) a co-catalyst comprising a manganese compound, a cobalt compound or a copper compound, and
 (f) at least one nitrile compound as a solvent in an amount of 0.1 to 10 moles per mole of aromatic hydroxy compound
 (a),
 at a temperature of 20° to 300° C.

5,380,908
CONTINUOUS PRODUCTION OF AROMATIC CARBONATES

Kiyokazu Murata; Kozo Kawahashi, and Mamoru Watabiki, all of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 5, 1993, Ser. No. 131,679

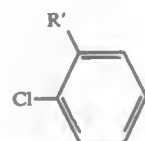
Claims priority, application Japan, Oct. 8, 1992, 4-270238; Nov. 26, 1992, 4-315477

Int. Cl.⁶ C07C 69/96

U.S. Cl. 558—270

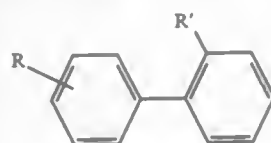
7 Claims

1. A process for continuously producing an alkylaryl carbonate and/or a diaryl carbonate comprising continuously feeding a dialkyl carbonate, an aromatic hydroxy compound, and a catalyst to a reactor equipped with a distillation tower, wherein the production is carried out continuously distilling off a by-produced aliphatic alcohol from the distillation tower so as to keep the aliphatic alcohol concentration in the reactor at 2% by weight or less, and continuously withdrawing produced alkylaryl carbonate and/or diaryl carbonate and the catalyst from the reactor.



(II)

wherein R' is a cyano group or an alkoxy carbonyl group, are reacted in pyridine in the presence of triphenylphosphine, an anhydrous nickel compound and a reducing metal to obtain an asymmetric biaryl compound of the formula:



(III)

with a selectivity of at least 70% for said compound of the formula (III), wherein R and R' are as defined above, and R is attached at the 3- or 4-position.

5,380,909
CAPTIVE CARBONYL HALIDE PROCESS FOR PRODUCTION OF DIARYL CARBONATES

A. Dale Harley; Craig B. Murchison, and Jose Puga, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 720,053, Jun. 24, 1991, abandoned. This application May 28, 1992, Ser. No. 892,395

Int. Cl.⁶ C07C 69/96

U.S. Cl. 558—274

16 Claims

1. A process for the production of a diaryl carbonate comprising:

- contacting an aromatic hydroxy compound with a carbonyl halide in the presence of a catalyst in a reactor system under conditions sufficient for the formation of a diaryl carbonate and a hydrogen halide;
- recovering the aromatic carbonate;
- contacting at least some of the hydrogen halide with a metallic oxide to generate a metallic halide;
- oxidizing the metallic halide to regenerate the metallic oxide and generate a halogen; and
- contacting the halogen with carbon monoxide to regenerate the carbonyl halide.

5,380,911
PROCESS FOR THE MANUFACTURE OF CYCLOPROPYLNITRILE

Henry L. Strong, Somerset, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Dec. 2, 1993, Ser. No. 161,111

Int. Cl.⁶ C07C 253/30, 255/45

U.S. Cl. 558—434

18 Claims

1. An improved process for the manufacture of cyclopropyl nitrile which comprises mixing 4-halobutyronitrile, at least 0.25 moles of an inorganic salt and a catalytic amount of water in the presence of an aprotic polar solvent at an elevated temperature of about 50°–100° C. and reacting the mixture with an alkali metal base at the elevated temperature; wherein the inorganic salt is a metal halide, a metal sulfate or a metal carbonate and the metal is Na, K or Li.

5,380,910
METHOD FOR PRODUCING AN ASYMMETRIC BIARYL DERIVATIVE

Hiroyuki Kageyama, Shizuoka, Japan, assignor to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,861

Claims priority, application Japan, Apr. 28, 1992, 4-136251

Int. Cl.⁶ C07C 255/00

U.S. Cl. 558—359

15 Claims

1. A method for producing an asymmetric biaryl compound, which comprises dehalogenocoupling a halogenated benzene compound, wherein a bromobenzene compound of the formula:



(I)

wherein R is a lower alkyl group or a lower alkoxy group, which is attached at the 3- or 4-position, and a 2-chlorobenzene compound of the formula:



(II)

wherein n is an integer of 7 to 11.

U.S. Cl. 558—440

2 Claims

1. ω -Hydroxy-(ω -3)-ketonitrile represented by the following formula (I):

5,380,912

ω -HYDROXY-(ω -3)-KETONITRILE

Hiroyuki Yoshida; Noboru Kakeya, and Masanori Kashiwagi, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube and Soda Aromatic Co., Ltd., Tokyo, both of Japan

Division of Ser. No. 20,296, Feb. 19, 1993. This application Mar. 31, 1994, Ser. No. 221,096

Int. Cl.⁶ C07C 255/17, 255/12

U.S. Cl. 558—440

2 Claims

1. ω -Hydroxy-(ω -3)-ketonitrile represented by the following formula (I):



(II)

wherein n is an integer of 7 to 11.

5,380,913
PROCESS FOR PRODUCING METHOXYIMINOACETAMIDE COMPOUNDS AND INTERMEDIATES

Akira Takase, Otsu; Hiroyuki Kai, Koriyama; Kuniyoshi Nishida, Koga; Shoji Shinomoto, Matsubara, and Masahiko Nagai, Amagasaki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 964,042, Oct. 21, 1992, abandoned, which is a division of Ser. No. 733,303, Jul. 22, 1991, Pat. No. 5,183,921. This application Sep. 14, 1993, Ser. No. 120,392

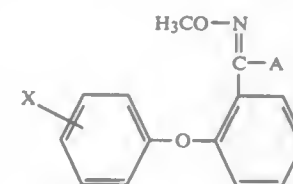
Claims priority, application Japan, Jul. 26, 1990, 2-200696

Int. Cl.⁶ C07C 229/34, 233/11

U.S. Cl. 560—35

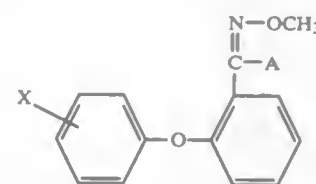
3 Claims

1. A process for producing a E-isomer of the formula:



(VII)

wherein X is hydrogen, lower alkyl, lower alkoxy or halogen; A is —CONHCH₃ or —COOR; and R is lower alkyl, which comprises reacting a Z-isomer of the formula [VI]:



(VI)

wherein X, A and R are as defined above, with hydrogen chloride, hydrochloric acid, sulfuric acid or toluenesulfonic acid in methanol, ethanol or butanol under normal pressure or in a sealed tube at 20° to 150° C.

5,380,915
LIQUID-CRYSTALLINE COPOLYMER, PROCESS FOR THE PREPARATION OF THE SAME, DIENE COMPOUND USED FOR THE PREPARATION OF THE SAME AND PROCESS FOR THE PREPARATION OF THE DIENE COMPOUND

Kazuharu Morita, Katsuta; Satoshi Hachiya, Sodegaura; Fumio Moriwaki, Sodegaura, and Hiroyuki Endo, Sodegaura, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 838,242, Mar. 5, 1992, Pat. No. 5,281,685. This application May 26, 1993, Ser. No. 67,135

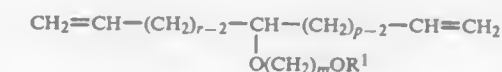
Claims priority, application Japan, Jul. 24, 1990, 2-194065

Int. Cl.⁶ C07C 69/76; C09K 19/20, 19/12; C08G 77/04

U.S. Cl. 560—59

6 Claims

1. A diene compound represented by the following general formula



wherein m is an integer of 1 to 20 each of r and p is an integer of 2 to 5, and R¹ is

5,380,914
FUNGICIDAL 2-METHOXIMINOCARBOXYLIC ESTERS

Wolfgang Krämer, Burscheid; Dieter Berg, Wuppertal; Heinz-Wilhelm Dehne, Monheim, and Stefan Dutzmann, Hilden, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 709,937, Jun. 4, 1991, Pat. No. 5,312,960. This application Dec. 7, 1993, Ser. No. 163,495

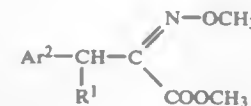
Claims priority, application Germany, Jun. 16, 1990, 4019307

Int. Cl.⁶ C07C 229/34

U.S. Cl. 560—35

1 Claim

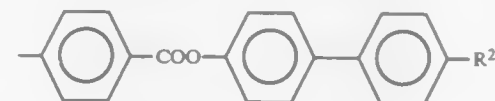
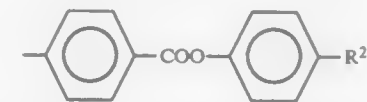
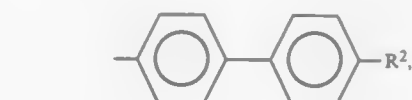
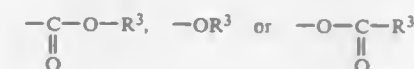
1. A compound of the formula



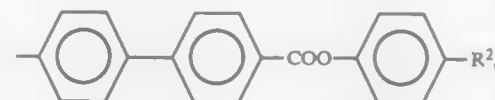
(V)

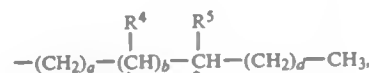
in which R¹ represents hydrogen or methyl and Ar² represents

R² being



or



R³ being

each of R⁴ and R⁵ being —CH₃ or a halogen atom, each of a and d being an integer of 0 to 10, b being an integer of 0 or 1, with the proviso that d is not 0 when R⁵ is —CH₃.

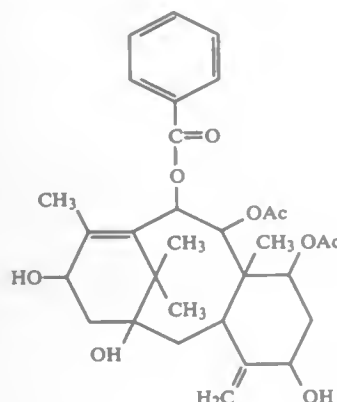
5,380,916 METHOD FOR THE ISOLATION AND PURIFICATION OF TAXANE DERIVATIVES

Koppaka V. Rao, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.
PCT No. PCT/US91/08189, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992

Continuation-in-part of Ser. No. 611,109, Nov. 2, 1990, abandoned. This PCT application Nov. 4, 1991, Ser. No. 915,736
Int. Cl.⁶ C07C 69/76

U.S. Cl. 560—107

1. A taxane having the following structure:



5,380,917
PROCESS FOR THE PRODUCTION OF
BENZOYLOXYBENZENE SULFONATES
Beatrix Kottwitz; Harald Knester, and Andrea Berger, all of
Duesseldorf, Germany, assignors to Henkel Kommanditgesellschaft
auf Aktien, Duesseldorf, Germany
Filed Aug. 31, 1993, Ser. No. 108,652
Claims priority, application Germany, Mar. 4, 1991, 4106843
Int. Cl.⁶ C07C 69/76

U.S. Cl. 560—109

20 Claims
1. In a process for the production of a benzyloxybenzene sulfonate by reaction of a phenol sulfonate with optionally substituted benzoyl chloride in the presence of a base, the improvement wherein the reaction is carried out in a solvent mixture consisting essentially of water and an organic solvent selected from the group consisting of ethanol, isopropanol, dioxane, tetrahydrofuran, and mixtures thereof.

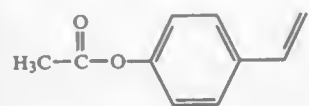
5,380,918
PREPARATION OF 4-ACETOXYSTYRENE
Martin Brudermueller, Mannheim, and Franz Merger, Frankenthal, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 27, 1993, Ser. No. 126,880
Claims priority, application Germany, Oct. 1, 1992, 4233039
Int. Cl.⁶ C07C 67/297

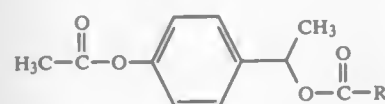
U.S. Cl. 560—130

8 Claims

1. A process for the preparation of 4-acetoxystyrene of the formula I



wherein a 1-(4-acetoxyphenyl)ethyl carboxylate of the formula II



where R is C₁–C₁₀-alkyl, C₃–C₆-cycloalkyl, aryl or C₇–C₁₀-aralkyl, is converted in the presence of an acidic catalyst and of a polymerization inhibitor in an inert high boiling transfer medium at from 160° to 250° C. and from 0.1 to 300 mbar.

5,380,919
PREPARATION OF NEOPENTYL GLYCOL
HYDROXYPIVALATE
Franz Merger, Frankenthal, and Martin Schmidt-Radde, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed Mar. 16, 1993, Ser. No. 32,025
Claims priority, application Germany, Mar. 18, 1992, 4208571
Int. Cl.⁶ C07C 69/675

U.S. Cl. 560—179

9 Claims

1. A process for preparing neopentyl glycol hydroxypivalate by base-catalyzed disproportionation of hydroxypivalaldehyde, which comprises: carrying out in the presence of an aqueous solution of a readily water-soluble alkaline earth metal salt and of an alkali metal hydroxide.

5,380,920
PREPARATION OF R/S-γ-LIPOIC ACID OR
R/S-α-LIPOIC ACID

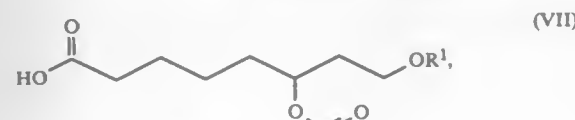
Joachim Paust, Neuhausen; Peter Eckes, Otterstadt; Wolfgang Siegel, Mannheim; Friedhelm Balkenhohl, Limburgerhof; Walter Dohler, Heidelberg, and Michael Hüllmann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 30, 1993, Ser. No. 113,089
Int. Cl.⁶ C07C 53/126, 67/36, 53/02

U.S. Cl. 560—263

2 Claims

1. 8-Alkoxy-6-formyloxyoctanoic acid of the formula VII



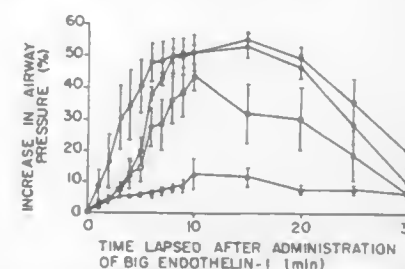
where R¹ is C₁–C₃-alkyl.

5,380,921
AMINOPHOSPHONIC ACID DERIVATIVE
Kiyofumi Ishikawa; Takehiro Fukami; Takashi Hayama; Kenji Matsuyama; Kazuhito Noguchi, and Mitsuo Yano, all of Tokyo, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

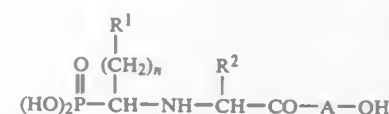
Filed May 4, 1993, Ser. No. 55,872
Int. Cl.⁶ C07F 9/08

U.S. Cl. 562—16

6 Claims



1. An aminophosphonic acid derivative of formula [I]:



wherein n is an integer 2 or 3; R¹ represents a phenyl, naphthyl, indolyl, benzothienyl, benzofuryl or benzoxazolyl group which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of hydroxyl and lower alkoxy groups, or a hydrogen atom; R² represents a lower alkyl group, a benzyl group, a 4-hydroxybenzyl group, a 3-indolylmethyl group or a β-phenethyl group; and A represents an amino acid selected from the group consisting of tryptophan, tyrosine, phenylalanine, homophenylalanine, α-naphthylalanine and N^ω-nitroarginine, or a pharmaceutically acceptable salt thereof.

5,380,922
BENZENEDIMETHANOL SUITABLE FOR
MICRONISATION
Steven F. Beach; David W. S. Latham; Tony G. Roberts, and Colin B. Sidgwick, all of Ware, Great Britain, assignors to Glaxo Group Limited, London, England
Filed May 14, 1993, Ser. No. 50,298
Claims priority, application United Kingdom, Nov. 29, 1990, 9026005

Int. Cl.⁶ C07C 63/34

U.S. Cl. 562—467

39 Claims

1. 1-Hydroxy-2-naphthalenecarboxylate salt of 4-hydroxy-α¹-[[[6-(4-phenylbutoxy)hexyl]amino]methyl]-1,3-benzenedimethanol in the form of spherical accretions of microcrystals, the spherical accretions being free-flowing, friable and micronisable.

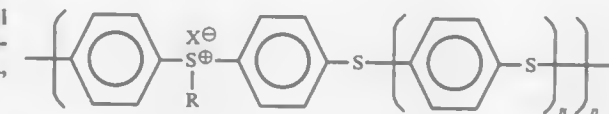
5,380,923
POLYMERIC SULFONIUM SALTS AND METHOD OF
PREPARATION THEREOF
Bradford B. Wright, Cottage Grove; Omar Farooq, Woodbury, and Robert J. DeVoe, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 29, 1993, Ser. No. 55,031
Int. Cl.⁶ C07C 323/65, 381/12

U.S. Cl. 562—113

16 Claims

1. A polymeric triarylsulfonium salt comprising a repeating structural unit having the formula:



wherein
R represents a substituted or unsubstituted aryl group, X⁻ represents a non-nucleophilic anion, n represents an integer greater than or equal to 0 and p represents an integer greater than 2.

5,380,924
POLYMERIZABLE EMULSIFIERS AND REACTIVE
GROUPS AND POLYMERS OF EMULSIFIERS AND
OTHER MONOMERS

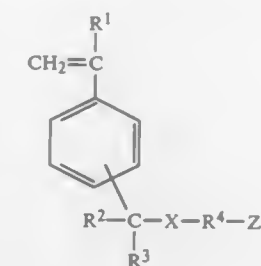
Ludger Heiliger, Leverkusen; Adolf Schmidt, Cologne, and Joachim Probst, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 13, 1993, Ser. No. 3,641

Claims priority, application Germany, Jan. 25, 1992, 4202050
Int. Cl.⁶ C07C 275/16

U.S. Cl. 562—439

10 Claims

1. Compounds corresponding to general formula (I)



in which

X is NH—CO—Y or Y,
Y is NH, oxygen or sulfur,
Z is COOM or SO₃M,
M is hydrogen, sodium, ammonium or potassium,
R¹, R² and R³ independently of one another represent hydrogen or methyl and
R⁴ is C₁₋₁₂ alkylene, C₃ cycloalkylene, phenylene or naphthylene.

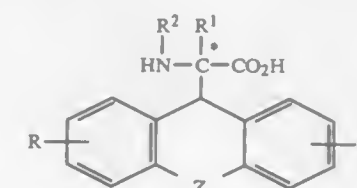
5,380,925
CYCLIC AMINO ACIDS AND DERIVATIVES THEREOF
Vladimir Beylin; Huan G. Chen; Om P. Goel, all of Ann Arbor; Mark E. Marlatt, Grass Lake, and John G. Topliss, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 872,742, Apr. 22, 1992, Pat. No. 5,264,577.
This application Aug. 20, 1993, Ser. No. 109,797

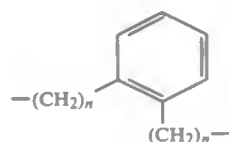
Int. Cl.⁶ C07C 229/14, 233/47; C07B 55/00; C07D 215/38
U.S. Cl. 562—443

1 Claim

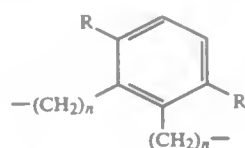
1. A compound of Formula I



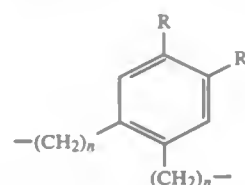
wherein Z is



wherein n is zero or an integer of 1 or 2,



wherein R is as defined hereinafter and n is as defined above,



wherein R is as defined hereinafter and n is as defined above, R is

hydrogen,
methyl,
trifluoromethyl,
methoxy,
hydroxy,
chloro,
bromo,
fluoro,
iodo,
2,4-dibromo,
2,4-dichloro, and
2,4-difluoro;

R¹ is

hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl,
cycloalkylalkyl,
aryl,
aryllalkyl,
heteroaryl, and
fluorenylmethyl;

R² is

hydrogen,
benzyloxycarbonyl,
tertiary-butyloxycarbonyl,
fluorenyloxycarbonyl,
1-adamantyloxycarbonyl,
2-adamantyloxycarbonyl, and



wherein R³ is hydrogen,

alkyl,
alkenyl,
alkynyl,
cycloalkyl,
cycloalkylalkyl,
aryl,

heteroaryl,
fluorenylmethyl,
CX₃, wherein X is halogen or aryl;
stereochemistry at C is D, L, or DL; or a pharmaceutically acceptable salt thereof.

5,380,926

METHOD OF MAKING

3-METHOXY-2,4,5-TRIFLUOROBENZOIC ACID

Lawrence B. Fertel, Williamsville, and William S. Derwin, Buffalo, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 28, 1994, Ser. No. 218,403

Int. Cl.⁶ C07C 65/00

U.S. Cl. 562—474

20 Claims

1. A method of making 3-methoxy-2,4,5-trifluorobenzoic acid comprising

- reacting a tetrafluorophthalimide with an alkali metal hydroxide to produce a mixture of alkali metal salts of 4-hydroxy-3,5,6-trifluoro-N-alkylphthalamic acid and 3-hydroxy-2,4,5-trifluoro-N-alkylbenzamide;
- reacting the products of step (A) with a methylating agent to replace the hydroxy group on said alkali metal salts with a methoxy group;
- reacting the products of step (B) with a non-oxidizing acid to produce a mixture of 4-methoxy-3,5,6-trifluorophthalic acid and 3-methoxy-2,4,5-trifluorobenzoic acid; and
- reacting said 4-methoxy-3,5,6-trifluorophthalic acid with a decarboxylating agent to produce 3-methoxy-2,4,5-trifluorobenzoic acid.

5,380,927

PROCESS FOR PREPARING OPTICALLY ACTIVE 2-ARYL-ALKANOIC ACIDS, IN PARTICULAR 2-ARYL-PROPIONIC ACIDS

Henrich H. Paradies, Iserlohn, Germany; Samir B. Hanna, Rolla, Mo., and Bernd Schnelder, Iserlohn, Germany, assignors to Medice Chem.-Pharm. Fabrik Pütter GmbH & Co. KG, Iserlohn, Germany

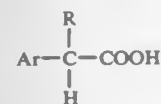
Continuation-in-part of Ser. No. 352,269, May 16, 1989, abandoned. This application May 16, 1990, Ser. No. 524,377

Int. Cl.⁶ C07C 63/04

U.S. Cl. 562—493

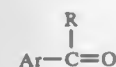
45 Claims

1. A process for preparing a pharmaceutically active acid in stereospecific form selected from the group of compounds having the formula:



and their physiologically compatible salts esters, wherein R is a lower alkyl and Ar is a monocyclic, polycyclic or orthocondensed polycyclic aromatic group having up to 12 carbon atoms in the aromatic ring, and which may be substituted or unsubstituted in the aromatic ring, comprising the steps:

- reacting a carbonyl substrate of the formula



where R and Ar have the meanings given above, with a stereospecific reagent in the presence of a reducing agent and an organic solvent to form the enantiomeric S carbinol;

- reacting the enantiomeric S carbinol with a halogenating agent selected from the group consisting of SO₂X₂, SOX₂, and cyanuric chloride wherein X is Cl or Br, to form the corresponding enantiomeric R halide
- reacting said halide with alkali cyanide dissolved in water

and reacting the resulting product with base and hydrogen peroxide in order to form said acid in the S-enantiomeric form.

5,380,928

TWO STEP OXIDATION PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACIDS SUCH AS AZELAIC ACID FROM UNSATURATED SUBSTRATES

Abdul Malek, Brossard; Clevys J. Monasterios, Montreal; G. Ronald Brown, Dollard des Ormeaux, and Ved P. Gupta, Lasalle, all of Canada, assignors to Synergistics Industries, Inc., Canada

Filed Aug. 18, 1993, Ser. No. 107,979

Int. Cl.⁶ E07C 55/00

U.S. Cl. 562—512.4

23 Claims

1. A process for the preparation of carboxylic acids by the oxidative cleavage of a substrate comprising a hydrocarbon bearing at least one double bond, said process comprising:

- locking and directing the oxidative cleavage of said hydrocarbon at the site of said double bond by conducting a derivatization of said hydrocarbon at said double bond to convert said hydrocarbon into its corresponding hydroxy acyloxy derivative, said resulting derivative having a hydroxy acyloxy moiety at the site of said double bond; oxidizing said hydroxy acyloxy derivative into a carboxylic acid by cleaving said hydroxy acyloxy derivative at said hydroxy acyloxy moiety; and
- recovering the desired carboxylic acid.

5,380,929

PROCESS FOR THE PREPARATION OF ACETIC ACID AND ACETIC ANHYDRIDE

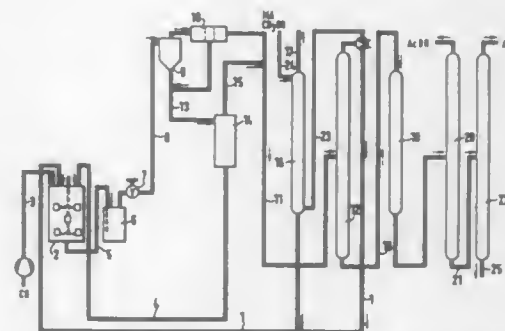
Heinz Erpenbach, Cologne; Klaus Gehrman, Erftstadt; Erhard Jägers, Bornheim, and Georg Kohl, Hürth, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 126,805, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 373,806, Jun. 29, 1989, abandoned. This application May 2, 1994, Ser. No. 236,669

Int. Cl.⁶ C07C 51/12

U.S. Cl. 562—519

7 Claims



1. In a process for the preparation of acetic acid and acetic anhydride by reacting methanol and at least one substance selected from methyl acetate and dimethyl ether with carbon monoxide or mixtures of carbon monoxide and hydrogen in the presence of a catalyst system consisting essentially of carbonyl complexes of noble metals from group VIII of the Periodic Table of the Elements, methyl iodide and, as promoter, a quaternary organophosphonium or organoammonium acetate or iodide, in a reaction zone, the improvement which comprises

- methanol and methyl acetate or dimethyl ether in the molar ratio 10:1 and 1:10 are reacted under anhydrous conditions at temperatures of from 150° to 250° C. and pressures of from 5 to 120 bar;
- the carbonylation mixture leaving the reaction zone at a temperature of from 150° to 250° C. is decompressed to a

pressure of from 1 to 3.5 bar in a vapor-liquid deposition zone, the major part of the volatile components evaporating immediately and, in order to prevent entrainment of liquid drops, being fed via a mist eliminating zone to a first distillation zone for removal of the low-boiling components; the major part of the still volatile components is distilled off in a separation zone at a pressure of from 0.05 to 1 bar and a bottom temperature of from 50° to 170° C. from the liquid stream produced in the vapor-liquid deposition zone and in the mist eliminating zone and is likewise fed to the first distillation zone, and the catalyst solution which remains as the bottom product is fed back to the reaction zone;

- during fractional distillation in the first distillation zone, an offgas, predominantly comprising CO₂, CO, CH₄ and N₂, is withdrawn at the head of the column, freed from residual methyl iodide by washing with the total amount of the starting materials methanol and methyl acetate, and passed to combustion, and the mixture of methanol and methyl acetate is fed to the reaction zone;
- the volatile carbonylation products are split in the first distillation zone by fractional distillation under atmospheric pressure into a low-boiling component predominantly comprising methyl iodide and methyl acetate, and is fed back into the reaction zone, and the bottom product obtained is a mixture of acetic acid and acetic anhydride;
- in order to remove traces of iodide-containing compounds, the mixture of acetic acid and acetic anhydride is passed over a carrier containing a silver salt or treated with peracetic acid, and is split into the pure components, acetic acid and acetic anhydride, by fractional distillation in a second distillation zone and a third distillation zone;
- the residence times of the starting materials in the reaction zone are from 2 to 50 minutes, depending on the flow rates of the catalyst solution fed back to the reaction zone and of the low-boiling components methyl iodide and methyl acetate and of the starting materials methanol and methyl acetate.

5,380,930

PROCESS FOR THE PREPARATION OF ALKOXYALKANOIC ACIDS

Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 17, 1993, Ser. No. 169,088

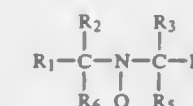
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.⁶ C07C 51/16, 51/235, 51/245, 51/27

U.S. Cl. 562—537

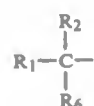
19 Claims

1. A process for the preparation of an alkoxyalkanoic acid of the formula RO(CH₂CHR'O)_nCH₂CO₂H wherein R is an alkyl group of from about 1 to about 22 carbon atoms, R' is hydrogen or methyl or mixtures thereof (on the individual molecule) and n is an integer of from about 1 to about 500, which comprises reacting the corresponding alkoxyalkanol with a stable free radical nitroxide having the formula:

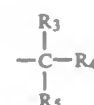


wherein (1) (a) each of R₁, R₂, R₃ and R₄ is an alkyl, aryl or heteroatom substituted alkyl group having 1 to about 15 carbon atoms, and (b) R₅ and R₆ (i) each is an alkyl group having 1 to about 15 carbon atoms provided that R₁-R₆ are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, —CONH₂, —OCOCH₃, OCOC₂H₅, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl,

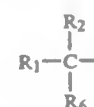
or (ii) together form part of a ring that contains at least 3 carbon atoms and up to two heteroatoms of O or N, (2) the



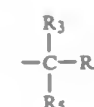
moiety and the



moiety individually are aryl, or (3) the



moiety and the



moiety together form a bicyclic ring with the proviso that the group directly adjacent to the N-° moiety is a bridgehead C-H, or a fully alkylated carbon, in the presence of a NO_x-generating compound, a solvent and an oxidant, at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the alkoxyalkanoic acid.

5,380,931

OXIDATIVE CLEAVAGE OF POLYETHYLENICALLY UNSATURATED COMPOUND TO PRODUCE CARBOXYLIC ACID

Devendra K. Srivastava, Fargo, N. Dak., and Mashupye M. Kgaphola, Maribane, South Africa, assignors to NDSU Research Foundation, Fargo, N. Dak.

Filed Oct. 27, 1993, Ser. No. 144,974

Int. Cl.⁶ C07C 51/16

U.S. Cl. 562—542

22 Claims

1. A method for making carboxylic acid from a polyethylenically unsaturated compound containing a pair of carbon atoms ethylenically bonded to other carbon atoms but singly bonded to each other or a pair of carbon atoms ethylenically bonded to other carbon atoms but separated from each other by a saturated carbon atom, said method comprising reacting the unsaturated compound with a hydroperoxide oxidant in the presence of a salt of vanadic acid in a polar organic solvent.

5,380,932

PROCESS FOR PRODUCING METHACRYLIC ACID AND METHACROLEIN BY OXIDATION OF ISOBUTANE WITH MOLYBDENUM HETEROPOLY ACID CATALYST

Ernst Bielmeyer, Griesheim; Thomas Haebler, Einhausen; Hermann-Josef Siebert, Seeheim-Jugenheim, and Wilhelm Gruber, Darmstadt, all of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Filed Nov. 24, 1993, Ser. No. 156,822

Claims priority, application Germany, Nov. 28, 1992, 4240085

Int. Cl.⁶ C07C 51/25, 57/04

U.S. Cl. 562—543

5 Claims

1. A process for making methacrylic acid and methacrolein, comprising oxidizing isobutane with molecular oxygen in the gaseous phase at a temperature of from 250° to 450° C. on a

solid heteropoly acid catalyst having a formula selected from the group consisting of the formula (I)



where a=0.1 to 1, b=0 to 7.8, c=0.8 to 1.2, d=9 to 12, e=0.5 to 3, and f depends on the molar numbers a to e, the formula (II)



its anhydride (III)



a mixture of the catalyst of the formula (I) with the catalyst of the formula (II) and mixture of the catalyst of the formula (I) with the catalyst of the formula (III).

5,380,933

METHOD FOR PRODUCING AN UNSATURATED CARBOXYLIC ACID

Takashi Ushikubo; Hiroya Nakamura, both of Yokohama; Yukio Koyasu, and Shin Wajiki, both of Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,719

Claims priority, application Japan, Jan. 28, 1993, 5-12616; Jun. 24, 1993, 5-153651; Dec. 8, 1993, 5-308013

Int. Cl.⁶ C07C 51/16

U.S. Cl. 562—549

13 Claims

1. A method for producing an unsaturated carboxylic acid, which comprises subjecting an alkane to a vapor phase catalytic oxidation reaction in the presence of a catalyst containing a mixed metal oxide comprising, as essential components, Mo, V, Te, O and X wherein X is at least one element selected from the group consisting of niobium, tantalum, tungsten, titanium, aluminum, zirconium, chromium, manganese, iron, ruthenium, cobalt, rhodium, nickel, palladium, platinum, antimony, bismuth, boron, indium and cerium, wherein the proportions of the respective essential components, based on the total amount of the essential components exclusive of oxygen, satisfy the following formulas:

$$0.25 < r_{Mo} < 0.98$$

$$0.003 < r_V < 0.5$$

$$0.003 < r_{Te} < 0.5$$

$$0.003 < r_X < 0.5$$

wherein r_{Mo} , r_V , r_{Te} and r_X are molar fractions of Mo, V, Te and X, respectively, based on the total amount of the essential components exclusive of oxygen.

5,380,934

PROCESS FOR PRODUCING ALANYLGUTAMINE

Kunimi Inoue; Yoshiyuki Yamada; Kazumi Amatsu, all of Sakai; Yukiteru Mimura, Shizuoka; Yasunori Nakaguchi; Hiroyuki Shinmura, both of Sakai; Yasuyuki Ono, Isehara; Yutaka Osawa, Ichikawa; Shoichi Mizutaki, Kawachinagano; Masaji Kasai, Fujisawa, and Shinji Tomioka, Hashimoto, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1993, Ser. No. 141,622

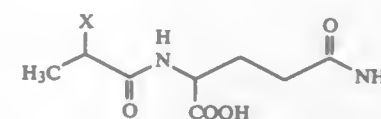
Claims priority, application Japan, Oct. 29, 1992, 4-291139

Int. Cl.⁶ C07C 229/00

U.S. Cl. 562—561

2 Claims

1. A process for producing alanylglutamine, which comprises reacting an N-(2-substituted)-propionylglutamine compound represented by the formula (I):



where X represents halogen, alkylsulfonyloxy, or substituted or unsubstituted arylsulfonyloxy, with ammonia in a reaction mixture at a temperature of 60° C. or below; and recovering alanylglutamine from the reaction mixture.

5,380,935

PROCESS FOR PREPARING 5-AMINOLEVULINIC ACID

Haruhiko Takeya; Toshio Shimizu, and Hiroyuki Ueki, all of Saito, Japan, assignors to Cosmo Research Institute and Cosmo Oil Co., Ltd., both of Tokyo, Japan

Filed Jan. 19, 1994, Ser. No. 183,289

Claims priority, application Japan, Jan. 20, 1993, 5-7738; Dec. 3, 1993, 5-303791

Int. Cl.⁶ C07C 229/00

U.S. Cl. 562—567

7 Claims

1. A process for preparing 5-aminolevulinic acid or a salt thereof, which comprises, reacting furfurylamine, of which the amino group has been protected, with oxygen molecule under irradiation by light in the presence of a sensitizer, hydrogenating the resulting compound in the presence of a metallic catalyst, and hydrolyzing the hydrogenated compound.

5,380,936

PROCESS FOR PREPARING 4-AMINO-5-HEXENOIC ACID

Patrick Casara, Ittenheim, France, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 986,636, Dec. 7, 1992, abandoned. This application Jan. 19, 1994, Ser. No. 184,762

Claims priority, application European Pat. Off., Dec. 10, 1991, 91403351.9

Int. Cl.⁶ C07C 229/00

U.S. Cl. 562—574

1 Claim

1. The process for preparing 4-amino-5-hexenoic acid, or its pharmaceutically acceptable salts thereof which comprises the steps:

- thermally rearranging erythritol to 4-formyloxy-3-hydroxy-1-butene, in the presence of an excess of formic acid,
- thermally rearranging 4-formyloxy-3-hydroxy-1-butene to ethyl 6-formyloxy-4-hexanoate, followed by the conversion of the formate to its corresponding alcohol ethyl 6-hydroxy-4-hexanoate,
- converting the so-produced ethyl 6-hydroxy-4-hexanoate to ethyl 6-trichloroacetimidoxo-4-hexanoate by reaction with trichloroacetonitrile, followed by its thermal rearrangement to ethyl-4-trichloroacetamido-5-hexanoate which, by hydrolysis is converted to the desired 4-amino-5-hexenoic acid, and optionally converting said acid to a pharmaceutically acceptable salt thereof.

5,380,937

DERIVATIVES OF 4-HYDROXYBUTYRIC ACID

Gernot Koehler, and Anita Koehler, both of Hochstrasse 14, 6146 Alsbach, Germany

PCT No. PCT/DE92/00336, § 371 Date Dec. 29, 1992, § 102(e)

Date Dec. 29, 1992, PCT Pub. No. WO92/19581, PCT Pub.

Date Nov. 12, 1992

PCT Filed Apr. 27, 1992, Ser. No. 958,126

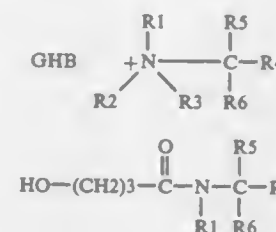
Claims priority, application Germany, Apr. 29, 1991, 4113984

Int. Cl.⁶ C07C 59/01; A61K 31/205, 31/19

U.S. Cl. 562—579

12 Claims

1. Water-soluble salts of 4-hydroxybutyric acid (GHB) with the formula I:



wherein

R₁, R₂ and R₃ are —H, —CH₃, —C₂H₅, —CH₂—CH₂OH or —CH₂—CHOH—CH₂OH groups,

R₄ is an alcohol or polyalcohol with 1 to 5 carbon atoms and 1 to 5 oxygen atoms having a linear or branched structure, and

R₅ and R₆ are each independently —H or —CH₂OH.

5,380,938

PREPARATION OF UNSATURATED CARBOXYLIC ACIDS BY CARBONYLATION OF ALLYLIC BUTENOLS AND/OR ESTERS THEREOF

Philippe Denis, Decines; Francois Metz, Irigny; Carl Patoia, Lyon, and Robert Perron, Charly, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Feb. 24, 1994, Ser. No. 201,020

Claims priority, application France, Feb. 26, 1993, 93 02482

Int. Cl.⁶ C07C 57/02

U.S. Cl. 562—598

23 Claims

1. A process for the preparation of an unsaturated carboxylic acid, comprising reacting an allylic butenol and/or carboxylate ester thereof with carbon monoxide, in the presence of a catalytically effective amount of an iridium catalyst and an iodinated or brominated promoter therefor.

5,380,939

RELEASABLY BOUND CARBOXYLIC ACIDS

Johannes A. C. Van Ootjen, Giesseburg, Netherlands, assignor to BP Chemicals Limited, London, England

Filed Sep. 23, 1993, Ser. No. 126,050

Claims priority, application United Kingdom, Sep. 30, 1992, 9220616; Oct. 14, 1992, 9221528

Int. Cl.⁶ C07C 53/08, 53/10

U.S. Cl. 562—607

7 Claims

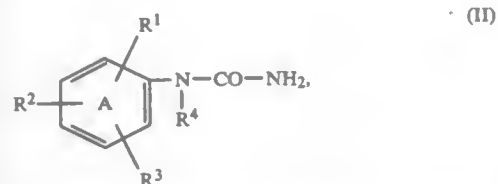
1. A composition consisting essentially of an acetate or a propionate salt of an alkaline earth metal and an aliphatic carboxylic acid which has a lower pK_a value than that of the acetic acid or propionic acid, respectively, said aliphatic carboxylic acid being present in the composition with respect to the alkaline earth metal salt of acetic or propionic acid in the range from 1 to 90% by weight.

5,380,940
BIS(BICYCLO(2.2.2)OCTYL)HALOBORANES
 Herbert C. Brown, West Lafayette, Ind., assignor to Aldrich Chemical Company, Inc., Milwaukee, Wis.
 Filed Jan. 26, 1992, Ser. No. 905,115
 Int. Cl.⁶ C07F 5/02

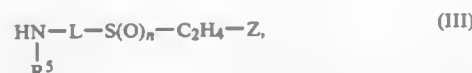
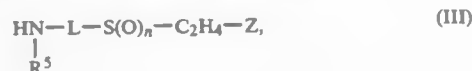
U.S. Cl. 562—806 3 Claims
 1. A di(cycloalkyl)haloborane represented by the formula:



wherein each R is bicyclo[2.2.2]octyl and X is halo.



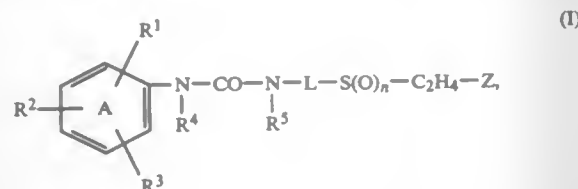
where R¹, R², R³, R⁴ and the ring A each have the abovementioned meanings, with an amine of the formula III



where n, R⁵, L and Z each have the abovementioned meanings, at from 80° to 180° C., in the presence or absence of an inert diluent.

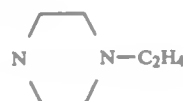
5,380,941
PREPARATION OF AROMATIC UREAS WHICH CONTAIN A THIOETHER OR SULFONYL GROUP
 Bernd Siegel, Ludwigshafen, and Manfred Patsch, Wachenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
 Filed Oct. 1, 1993, Ser. No. 130,176
 Claims priority, application Germany, Oct. 1, 1992, 4233033
 Int. Cl.⁶ C07C 275/28, 273/18

U.S. Cl. 564—48 6 Claims
 1. A process for preparing a urea of the formula I



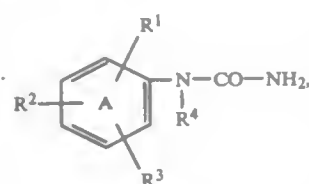
where

n is 0 or 2,
 R¹, R² and R³ independently of one another are each hydrogen, C₁-C₄-alkyl, C₁-C₄-alkoxy, halogen, hydroxyl, hydroxysulfonyl, carboxyl, cyano, nitro, C₂-C₄-alkanoylamino or C₁-C₄-alkoxycarbonylamino, R⁴ and R⁵ independently of one another are each hydrogen, C₁-C₄-alkyl or phenyl,
 L is C₂-C₄-alkylene which may be interrupted once by oxygen, imino or N-(C₁-C₄-alkyl)imino, or NR⁵ and L together are the radical of the formula



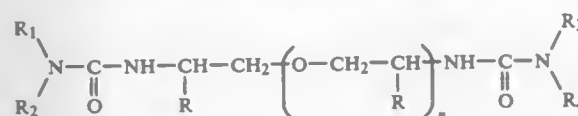
and

Z is hydroxyl or a group which is eliminated under alkaline reaction conditions and where ring A is optionally benzo-fused, which comprises: reacting a phenylurea of the formula II

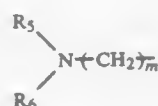


5,380,942
BIS UREIDO COMPOSITIONS
 Syeda Husain, Middletown; Allan P. Piechowski, Califon, and John F. Pilot, Carteret, all of N.J., assignors to Sun Chemical Corporation, Fort Lee, N.J.
 Filed Sep. 9, 1993, Ser. No. 118,556
 Int. Cl.⁶ G03C 1/06; C07C 275/10

U.S. Cl. 564—59 7 Claims
 1. A bis ureido composition having the structure:



wherein R is a C₁-C₈ straight or branched chain alkyl group or hydrogen and n is at least 3 when R is an alkyl group and at least 1 when R is hydrogen; and R₁, R₂, R₃, and R₄ are independently selected from the group consisting of hydrogen, C₆-C₁₈ aryl groups, C₁-C₈ straight or branched chain alkyl groups and at least one dialkylaminoalkyl groups having the structure:



wherein R₅ and R₆ are the same or different C₁-C₈ straight or branched chain alkyl groups and m is 2-6.

5,380,943
PROCESS AND PLANT FOR THE PRODUCTION OF UREA WITH DIFFERENTIATED YIELD REACTION SPACES

Giorgio Pagani, Lugano, and Umberto Zardi, Breganzona, both of Switzerland, assignors to Urea Casale S.A., Lugano, Switzerland

Filed Sep. 16, 1992, Ser. No. 947,287
 Claims priority, application Switzerland, Nov. 14, 1991, 03325/91-2

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
 Int. Cl.⁶ C07C 273/04

U.S. Cl. 564—67 12 Claims

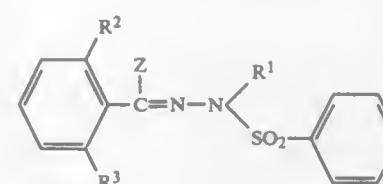
1. A process of producing urea in a plant including at least one reaction space for reacting ammonia and carbon dioxide at high temperature and pressure and a recovery section for recovering unreacted reagents, comprising the steps of:

- reacting highly pure ammonia and carbon dioxide with partial removal of the reaction heat in a first reaction stage at a predetermined pressure less than 300 kg/cm² abs, at a temperature not higher than about 200° C. and at an ammonia/carbon dioxide ratio less than 4;
- flash separating a product stream from the first reaction stage at a pressure at least 30% lower than the pressure in the first reaction stage into a gaseous effluent and a liquid effluent;
- reacting the gaseous effluent thus obtained and a carbamate solution recycled from the recovery section in a second reaction stage at a pressure less than 200 kg/cm² abs and at a temperature sufficient to carry out the reaction, the predetermined pressure in the first reaction stage being greater than the pressure in the second reaction stage;
- feeding the liquid effluents from said first and second reaction stages to the recovery section, decomposing the liquid effluents in the recovery section, withdrawing a urea solution and a carbamate solution therefrom, and recycling the carbamate solution to said second reaction stage.

5,380,944
BENZHYDRAZONE DERIVATIVES AS AN INTERMEDIATE FOR THE PRODUCTION OF TRIAZOLE DERIVATIVES

Masami Ozaki, Reijiro Honami, Takashi Yumita, Atsuhiko Ikeda, all of Iwata; Naokazu Minoguchi; Norihiko Izawa, both of Ogasa, and Tadayoshi Hirano, Kakegawa, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan
 Continuation-in-part of Ser. No. 956,980, Oct. 6, 1992, Pat. No. 5,284,860. This application Oct. 27, 1993, Ser. No. 141,876
 Claims priority, application Japan, Mar. 4, 1992, 4-81412
 Int. Cl.⁶ C07C 311/49

U.S. Cl. 564—81 3 Claims
 1. A benzhydrazone compound having the following formula I:

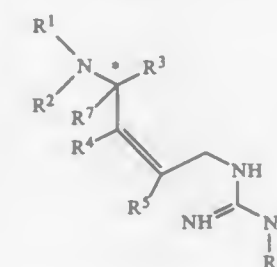


wherein R¹ is a lower alkyl group, R² and R³ are same or different halogen atoms and Z is a chlorine atom or an amino group.

5,380,945
GUANIDINO COMPOUNDS AS REGULATORS OF NITRIC OXIDE SYNTHASE

Ferid Murad, Lake Forest; James F. Kerwin, Grayslake, and Lee D. Gorsky, Highland Park, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
 Continuation-in-part of Ser. No. 755,398, Sep. 5, 1991, Pat. No. 5,288,897, which is a continuation-in-part of Ser. No. 369,364, Jun. 21, 1989, abandoned. This application Nov. 30, 1993, Ser. No. 159,972

Int. Cl.⁶ C07C 249/00; A01N 37/52
 U.S. Cl. 564—108 6 Claims
 1. A compound of the formula:



or a pharmaceutically-acceptable salt, ester, amide or prodrug thereof, wherein

R¹ is selected from the group consisting of

- hydrogen;
- C₁-C₆-alkyl;
- C₆-C₁₂-aryl;
- substituted C₆-C₁₂-aryl;
- C₆-C₁₂-aryl-C₁-C₄-alkyl;
- substituted C₆-C₁₂-aryl-C₁-C₄-alkyl;
- C₂-C₆-alkenyl; and
- N-protecting group;

R² is hydrogen;

R³ is

CH(OH)-R⁸, wherein R⁸ is hydrogen, C₁-C₆-alkyl, or C₆-C₁₂-aryl; or
 CH(OR⁹)-R⁸, wherein R⁸ is defined as above, and R⁹ is C₁-C₆-alkyl or a hydroxy protecting group;

R⁴ is hydrogen or C₁-C₄-alkyl;

R⁵ is hydrogen, C₁-C₄-alkyl or halogen;

R⁶ is selected from the group consisting of:

- hydrogen;
- C₁-C₆-alkyl;
- C₆-C₁₂-aryl-C₁-C₆-alkyl;
- cyano;
- nitro;
- hydroxy;
- amino;
- OR¹⁰, wherein R¹⁰ is a hydroxy protecting group; and
- NHR¹¹, wherein R¹¹ is a N-protecting group;

R₇ is hydrogen or C₁-C₄-alkyl; and * may be a chiral center.

5,380,946
PROCESS FOR PREPARING P-NITROAROMATIC AMIDES AND PRODUCTS THEREOF

Michael K. Stern, University City, and Brian K. M. Cheng, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 30, 1993, Ser. No. 99,973
 Int. Cl.⁶ C07C 231/06, 233/66

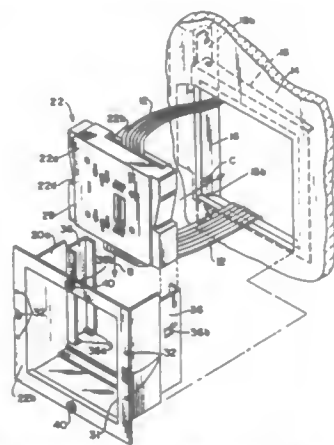
U.S. Cl. 564—124 15 Claims

1. A process for preparing p-nitroaromatic amides comprising:

- contacting a nitrile, nitrobenzene, a suitable base and water in the presence of a suitable solvent system to form a mixture, and
- reacting said mixture at a suitable temperature in a con-

ing to a desired filter operation algorithm and generating the operation parameter for realizing the desired filter characteristic in the filter operation algorithm upon the tone signal.

5,380,951
CONVENIENCE OUTLET ASSEMBLY FOR ELECTRICAL WIRING
 Joseph D. Comercl, Elmhurst; Mark M. Data, Bolingbrook, and Robert DeRoux, Naperville, all of Ill., assignors to Molex Incorporated, Lisle, Ill.
 Filed Jun. 24, 1993, Ser. No. 82,216
 Int. Cl.⁶ H01R 13/60
 U.S. Cl. 174—48 13 Claims



1. In a convenience outlet assembly for interconnecting electrical components to a plurality of wires extending behind a wall in a structure, said components being accessible to said outlet assembly through an opening in the wall, the assembly including

- a mounting bracket secured to a structural support behind the wall and having a peripheral frame about a mounting opening,
- a cable tap subassembly adapted to be terminated to the wires, and
- a mounting box, separate from the mounting bracket, having an open front face and a peripheral flange attachable to the peripheral frame of the mounting bracket with the peripheral flange on the exterior of the wall and the peripheral frame on the interior of the wall, the mounting box being insertable through the opening in the wall and the mounting opening in the bracket, the cable tap subassembly being mountable in a position at the rear of the box,

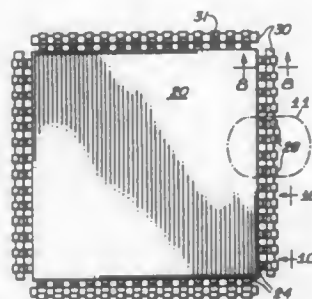
wherein the improvement comprises complementary interengaging mounting means between the cable tap subassembly and the mounting box for mounting the subassembly to the rear of the box automatically in response to locating the subassembly in said position, without the use of any extraneous mounting apparatus and processes.

5,380,952
INTEGRATED CIRCUIT PACKAGE WITH STABILIZER BAR
 Paul S. Levy, Chandler, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.
 Continuation of Ser. No. 918,297, Jul. 22, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 157,963
 Int. Cl.⁶ H01L 23/02
 U.S. Cl. 174—52.4 10 Claims

1. In a high density integrated circuit package having a plurality of leads extending out of at least one side of the package, an improvement including in combination:

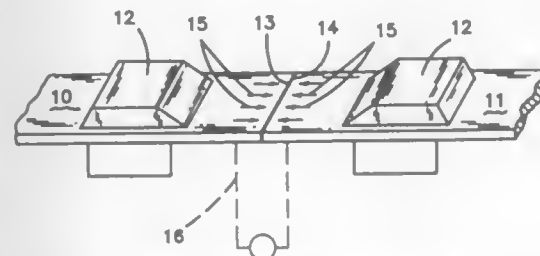
an elongated rigid non-conductive stabilizer bar with de-

pressed grooves in the top surface thereof and spaced from said one side of the integrated circuit package and attached to the top sides of said leads and across said leads intermediate the length thereof outside the integrated circuit package, with said depressed grooves in the top



surface of said stabilizer bar being in alignment with each of the leads of said plurality of leads, said stabilizer bar maintaining co-planarity of said leads, wherein said leads are formed around said stabilizer bar with the ends of said leads located in said grooves.

5,380,953
JOINED COPPER ALLOYS
 Brian Fisk, Franklin Lakes, N.J., and Joseph Winter, New Haven, Conn., assignors to Fisk Alloy Wire, Inc., Hawthorne, N.J.
 Continuation-in-part of Ser. No. 48,816, Apr. 16, 1993. This application Nov. 5, 1993, Ser. No. 147,479
 Int. Cl.⁶ H01R 4/00
 U.S. Cl. 174—94 R 10 Claims



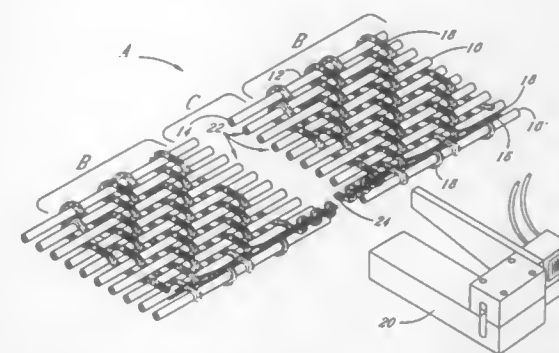
1. Joined copper alloys to be used for electrical conductors, which comprises: copper alloys containing less than about 20% alloying additions and at least 0.01% each of at least one of the alloying elements tin, iron, zirconium, cadmium, beryllium, silver and magnesium, and having substantially planar end faces thereof in contacting relationship and which are joined together in a welding zone under a continuous compressive force below the yield strength of the copper alloy in the room temperature condition at a temperature of at least 300° C. but below the solvus temperature of the copper alloy, said joined copper alloy having good strength and conductivity properties, with the alloying elements substantially out of solution and with the mechanical properties in the welding zone being substantially the same the parent material.

5,380,954
WOVEN ELECTRICAL TRANSMISSION CABLE WITH CUT LINE
 Lawrence W. Orr, Jr., Simpsonville, S.C., assignor to Woven Electronics Corp., Simpsonville, S.C.
 Filed Oct. 4, 1993, Ser. No. 131,740
 Int. Cl.⁶ H10B 7/08
 U.S. Cl. 174—117 M 23 Claims

1. A method of forming a stable, cut woven electrical cable comprising the steps of:

arranging a plurality of insulated warp forming conductive wires in a longitudinally extending parallel array;
 arranging at least two non-conductive warp forming yarns in a longitudinally extending array substantially parallel with and adjacent an edge of said array of conductive warp wires;
 forming stable body zones along a length of said cable by weaving a weft yarn with said conductive warp wires and said non-conductive warp yarns;
 forming cut zones along said length of said cable by causing said weft yarn to break out and weave only with said non-conductive warp yarns so that said cable may be cut at selected cut zones to produce individual electrical cables having controlled cut weft yarn ends.

10. A woven electrically conductive cable having cut sections comprising:
 a plurality of substantially parallel insulated conductor wires forming first warp members;

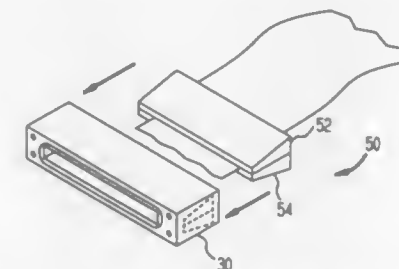


a plurality of substantially non-conductive yarns arranged substantially parallel with said first warp members and forming second warp members;
 a non-conductive weft forming yarn interlacing with said first and second warp members along first lengths thereof, said non-conductive weft yarn and said first and second warp members forming body sections of said conductive cable;
 said non-conductive weft yarn interlacing with only said second warp members along second lengths of said conductive cable to form cut sections in which said conductive first warp members extend unwoven with said non-conductive weft yarn; whereby,
 said second warp members act to stabilize said woven cable by controlling said non-conductive weft yarn along said cut sections.

5,380,955
DEVICE FOR PASSING A MEMBER THROUGH A SEALED CHAMBER WALL
 Straty N. Argyrakakis, Highland; Willard S. Harris, Red Hook; Richard W. Oldrey, Clintondale, and Edward J. Ossolinski, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Dec. 8, 1992, Ser. No. 987,932
 Int. Cl.⁶ H01B 17/26
 U.S. Cl. 174—151 9 Claims

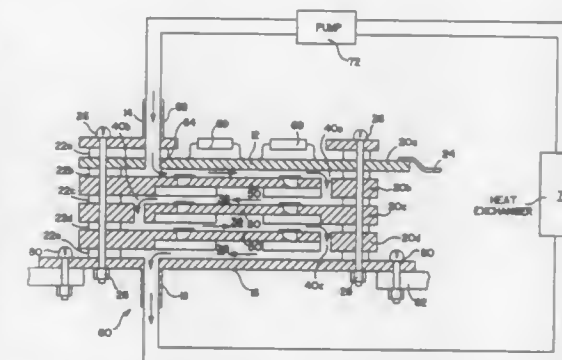
1. A device for passing a flat multi-conductor electrical cable through the wall of a sealed chamber comprising:
 said electrical cable having a first thin, flat, copper shielding layer on the top of said cable and a second thin, flat, copper shielding layer on the bottom of said cable and a copper wedge shaped member surrounding said electrical cable and integrally affixed to said first and second copper shielding layers;
 a flange having an opening therein surrounding and spaced from said wedge shaped member; and
 a solder member completely filling the space between said

flange opening and said wedge shaped member for creating a seal therebetween capable of maintaining a high



pressure differential between opposite sides of said sealed chamber wall.

5,380,956
MULTI-CHIP COOLING MODULE AND METHOD
 Mike C. Loo, San Jose, and Marlin R. Vogel, Fremont, both of Calif., assignors to San Microsystems, Inc., Mountain View, Calif.
 Filed Jul. 6, 1993, Ser. No. 87,950
 Int. Cl.⁶ H05K 1/00
 U.S. Cl. 174—252 23 Claims



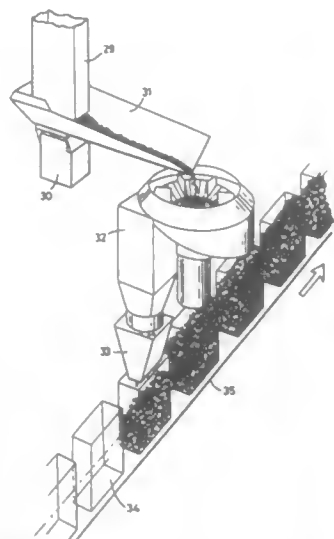
1. A method of cooling a semiconductor chip, comprising the steps of:
 exposing a top surface and a bottom surface of a chip on a substrate; and
 circulating coolant over the exposed top surface and the bottom surface of the chip on the substrate.

5,380,957
PARTICLE WEIGHING APPARATUS AND METHOD
 Alan F. Giles, 63, High Street, Hail Weston, St. Neots, Huntingdon, Cambs, PE19 4JW, Great Britain
 PCT No. PCT/GB91/01990, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO92/08958, PCT Pub. Date May 29, 1992
 PCT Filed Nov. 12, 1991, Ser. No. 50,357
 Claims priority, application United Kingdom, Nov. 14, 1990, 9024731
 Int. Cl.⁶ G01G 11/14, 19/52; B67D 5/08
 U.S. Cl. 177—16 36 Claims

1. Particulate material weighing apparatus comprising:
 (a) means for delivering particulate material to a dish;
 (b) electric drive means for rotating the dish;
 (c) a controlled electric current source for powering the electric drive means;
 (d) rotational speed measuring means for measuring the instantaneous rotational speed of the electric drive means;
 (e) circuit means responsive to variation in the electric current powering the electric drive means and adapted to generate an output signal indicative of the changes in the

instantaneous electric current supplied to the drive means, caused by the changes in loading as particulate material transits the dish, and

- (f) a servo system responsive to signals relating to the speed of rotation for controlling and holding constant the speed of rotation of the drive means,



(g) said apparatus being for controlling a process in relation to an incoming or outgoing mass flow rate, wherein the output signals from the said circuit means are used to control the process.

5,380,958

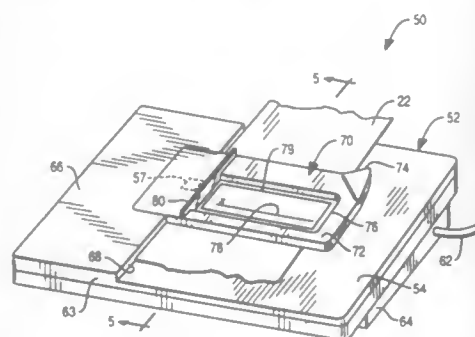
HANDWRITING CAPTURE DEVICE

Robert L. Protheroe; David C. Wills, and Scott M. Klement, all of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 878,671, May 5, 1992, Pat. No. 5,227,590. This application Aug. 12, 1993, Ser. No. 33,690 Int. Cl.⁶ G08C 21/00

U.S. Cl. 178—18

29 Claims



1. A point-of-service-(POS) system comprising:
 - a POS terminal; and
 - a signature capture device coupled to the POS terminal including
 - a housing having a top surface, the top surface having a length;
 - a digitizer, mounted within the top surface;
 - a retainer located externally on the top surface which holds a paper receipt from the POS terminal in a predetermined position on the top surface for allowing a signature to be simultaneously applied to the receipt and the digitizer, wherein the retainer is capable of holding paper receipts from the POS terminal of various

lengths, including lengths greater than the length of the top surface; and

a processing circuit which is coupled to the digitizer and which processes the signature and controls information flow from the signature capture device to the POS terminal.

5,380,959

CONTROLLER FOR AN ACOUSTIC TOUCH PANEL

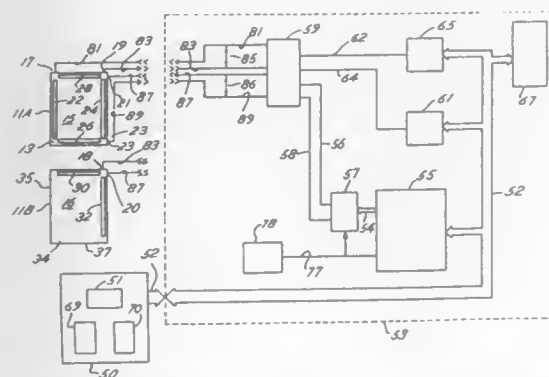
Terence J. Knowles, Hanover Park, Ill., assignor to Carroll Touch, Inc., Round Rock, Tex.

Filed Jun. 15, 1992, Ser. No. 898,281

Int. Cl.⁶ G08C 21/00

U.S. Cl. 178—18

7 Claims



1. A signal conditioning circuit for an acoustic wave touch panel having a substrate, X axis transducer means for imparting acoustic waves into said substrate for propagation therein relative to an associated X axis, said X axis transducer means receiving acoustic waves incident thereto to generate an X axis signal representing sensed acoustic waves from which an X axis coordinate of a touch on said panel can be determined and a Y axis transducer means for imparting acoustic waves into said substrate for propagation therein relative to an associated Y axis said Y axis transducer means receiving acoustic waves incident thereto to generate a Y axis signal representing sensed acoustic waves from which a Y axis coordinate of a touch on said panel can be determined, said circuit comprising:

- means for applying a drive signal to one of said X-axis or Y-axis transducer means to impart an acoustic wave in said substrate with respect to the axis associated with the driven transducer;
- means for simultaneously receiving a sensed X axis signal and a sensed Y axis signal from said respective X axis and Y axis transducer means; and
- differential means coupled to said receiving means for providing a signal representing the difference between said simultaneously received signals, said difference signal corresponding to said sensed acoustic waves propagating relative to the axis associated with said one driven transducer to allow a touch coordinate for said axis to be determined.

5,380,960

PROCESS FOR THE PREPARATION OF FILMS OR DIAPHRAGMS FOR ACOUSTIC APPLICATIONS

Pierre Fontaine, Herblay, France, assignor to Audax Industries, Chateau-du-Loir, France

PCT No. PCT/FR91/00603, § 371 Date Jun. 23, 1993, § 102(e)

Date Jun. 23, 1993, PCT Pub. No. WO92/02108, PCT Pub.

Date Feb. 6, 1992

PCT Filed Jul. 22, 1991, Ser. No. 969,801

Claims priority, application France, Jul. 23, 1990, 90 09369

Int. Cl.⁶ B32B 31/04

U.S. Cl. 181—167

10 Claims

1. Process for preparing a porous film or diaphragm with improved vibration properties comprising the following steps:

- (a) preparing a dispersion in a liquid, of at least one macropolymer containing at least 30,000 atoms,
- (b) adding to the dispersion an agent capable of expanding said at least one macropolymer so that said dispersion substantially has the consistency of a gel, and
- (c) drying said dispersion having the consistency of a gel by evaporating substantially all of the liquid contained in said dispersion, thereby obtaining said porous film or diaphragm.

5,380,961

DEVICE FOR CONNECTING THE CONTACT CABLE FOR VEHICLES RUNNING ON RAILS

Trond A. Ronning, Svorkmo, and Terje Skjetne, Trondheim, both of Norway, assignors to Oy Sekko AB, Borgas, Finland

PCT No. PCT/NO90/00193, § 371 Date Apr. 30, 1993, § 102(e)

Date Apr. 30, 1993, PCT Pub. No. WO91/08923, PCT Pub.

Date Jun. 27, 1991

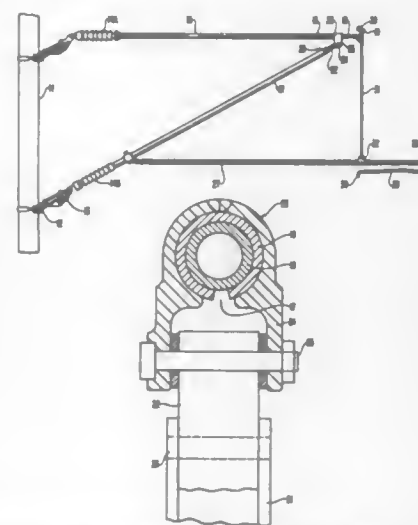
PCT Filed Dec. 20, 1990, Ser. No. 861,815

Claims priority, application Norway, Dec. 20, 1989, 895135

Int. Cl.⁶ B60M 5/00

U.S. Cl. 191—41

4 Claims



1. A device for suspending a contact cable for a vehicle running on rails, the device comprising an upper tension rod, a compression rod, a support mast for holding up a free end of the upper tension rod, a lower horizontal rod jointly linked to the compression rod and supporting a jointed direction rod adapted to contact the contact cable, said compression rod is connected to the support mast, wherein a clamped sleeve surrounds the upper tension rod in an area of a free end thereof, an inner axially movable rod, telescopically inserted into the tension rod, supports a supporting cable, and wherein the inner axially movable rod is adapted to be locked in an axially adjusted position by a clamping force applied by said clamping sleeve.

5,380,962

HIGH-POWER RF SWITCH

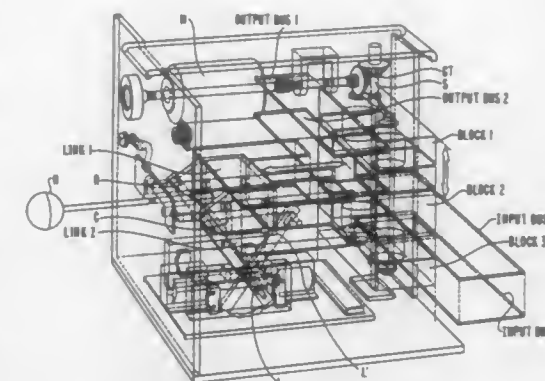
Paul R. Johannessen, Lexington, Mass., assignor to Megapulse, Inc., Bedford, Mass.

Filed Jun. 5, 1992, Ser. No. 893,676

Int. Cl.⁶ H01H 9/00

U.S. Cl. 200—1 R

11 Claims



1. A high-voltage RF switch having, in combination, first and second pairs of longitudinally extending planar input and output unconnected conductive bus strips each having aligned adjacent end portions, and with one pair vertically spaced below but aligned with the upper pair of bus strips; upper and lower link strips, one for each pair of bus strips and horizontally spaced from the said aligned adjacent end portions thereof, and of dimensions sufficient to bridge the space between the said adjacent end portions of the pair of bus strips; means for horizontally moving the upper and lower link strips to extend between the said adjacent end portions of the respective upper and lower pairs of bus strips; and means for thereupon vertically compressing together the end portions of the respective pair of bus strips with the link strip therebetween electrically to connect the same and provide a radio-frequency switch closing.

5,380,963

ROTATING SPARK DISTRIBUTORS FOR A SPARK-FIRED INTERNAL COMBUSTION ENGINE

Lukas Sadikin, J1. Kali Baru Barat No. 36, Jakarta Pusat, Indonesia

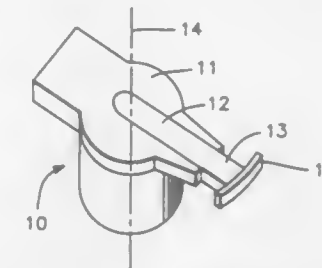
Continuation-in-part of Ser. No. 878,535, May 9, 1992, abandoned. This application May 24, 1993, Ser. No. 111,331

Claims priority, application European Pat. Off., May 26, 1992, 9230472.8

Int. Cl.⁶ H01H 19/00, 1/00; F02P 1/00

U.S. Cl. 200—19 DR

3 Claims



1. A rotor arm distributor for a spark-fired internal combustion engine, said rotor arm comprising:

- a core support,
- a conducting plate extending radially outwardly from said core support, said conducting plate having a predetermined thickness, and
- a free end tip of said conducting plate including a circumfer-

entail extension extending axially and integral therewith and having a thickness greater than said predetermined thickness, said extension being made of a combination of tin and brass so as to increase a contact area of said extension with a stationary metal contact to increase electrical current conducted to said stationary metal contact and eventually to a spark plug resulting in a stronger spark for improved combustion of fuel and increase in power output of an engine.

5,380,964

SWITCH ASSEMBLY

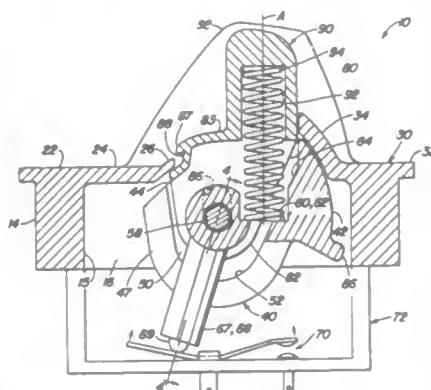
David J. Easton, Cedar Falls, Iowa; Carl R. Thompson, Stratford, Conn., and Corwin L. Klages, Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 18, 1993, Ser. No. 136,854

Int. Cl.⁶ H01H 27/10

U.S. Cl. 200—43.01

15 Claims



1. A switch assembly comprising:
 - a housing having a base having an opening therein;
 - an actuator member mounted in the opening and rotatably coupled to the housing, the actuator having a body forming a pocket therein, the pocket being open at one end thereof and having a bottom surface;
 - a coupling member for coupling the actuator member to electrical switch contacts;
 - a lever having a lever body at least partially received by the pocket, a manually operated arm projecting from the lever body and an abutment surface, the lever body being slidably and rotatably coupled to the housing, the lever body being slidable from a raised position wherein the lever body is spaced apart from the bottom surface of the pocket to a depressed position wherein the lever body engages the bottom surface of the pocket;
 - a spring biased to urge the lever to its raised position;
 - a stop member mounted on the housing, the stop member being engagable with the lever abutment surface to prevent pivoting of the lever in a first direction when the lever is in its raised position, the lever abutment surface being positioned to avoid engagement with the stop member as the lever is rotated in the first direction from its depressed position.

5,380,965

ELECTROMECHANICAL PULSE GENERATOR

Niels T. Møller, Roskilde, Denmark, assignor to Microtronic A/S, Roskilde, Denmark

PCT No. PCT/DK91/00395, § 371 Date Jul. 7, 1993, § 102(e) Date Jul. 7, 1993, PCT Pub. No. WO92/12522, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 17, 1991, Ser. No. 87,780

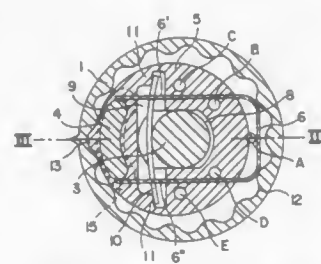
Claims priority, application Denmark, Jan. 11, 1991, 0052/91 Int. Cl.⁶ H01H 21/80

U.S. Cl. 200—11 R

3 Claims

1. An electromechanical pulse generator for digital voltage control in an electronic apparatus, preferably a microelec-

tronic apparatus, such as a volume control in a hearing aid, consisting of a non-electrically conductive housing having a fixed base portion (7) in which an outwardly projecting, single electrically conductive contact member (A) and likewise outwardly projecting electrically conductive pairs of terminals (B-C and D-E) are mounted, a vertical shaft (3) mounted in the base portion (7) and a timing wheel (1) mounted rotatably around the shaft, said timing wheel being fixedly mounted in an outer casing (2), and where the vertical inner surface of the timing wheel (1) is provided with grooves (12) disposed parallel with the axis, and where a circular carrier (5) is also rotatably mounted around the shaft (3) inside the housing and being at its outer periphery provided with a protrusion (13) which engages with the grooves (12) on the inside of the timing wheel (1), and where the circular carrier (5) is furthermore mounted around the shaft (3) in a manner so as to leave an inner space between the lower surface of the carrier (5) and the upper surface of the base portion (7) and to cause the carrier to perform a diametrical movement inside the housing when the protrusion (13) passes the peak between two adjacent grooves (12) during a rotational movement of the timing wheel (1), characterized in that a locking spring (10) is mounted in a cavity (9) inside the



carrier (5) and pretensioned abutting against vertical inner surfaces of the cavity (9) and the vertical surface of the shaft (3) for controlling the diametrical movement of the carrier (5) inside the housing, that the carrier (5) symmetrically in relation to the protrusion (13) and immediately behind same and on the lower surface of the carrier comprises a downwardly facing protrusion (4) parallel with shaft (3), that the base portion (7) is provided with a sectional circular groove (15) of a form similar to that of the protrusion (4) and of a size allowing for a limited movement of the protrusion (4) diametrically as well as circularly, that the outwardly projecting contact member (A) as well as the outwardly projecting pairs of terminals (B-C and D-E) are all mounted in the base portion (7) within the smaller inner circumference of the timing wheel (1) and that a U-shaped contact spring (6) with spring legs is mounted in the space between the carrier (5) and the base portion (7) and with the closed end of the U rigidly attached to the single contact member (A) and in the neutral position of the pulse generator with said spring legs (6,6') abutting partly against the adjacent vertical end surface of the protrusion (4) facing downwardly from the carrier (5) and partly against each of the inner terminals of the pairs of terminals (B-C and D-E), respectively.

5,380,966

HOUSING FOR ACCOMMODATING AN ALARM CONDUCTING CLIPPER

Hung-Chang Liu, No. 1, Lane 56, Sec. 2, Ta Cheng Rd., Tainan City, Taiwan, Prov. of China

Filed Mar. 29, 1994, Ser. No. 219,471

Int. Cl.⁶ H01H 1/06

U.S. Cl. 200—283

1 Claim

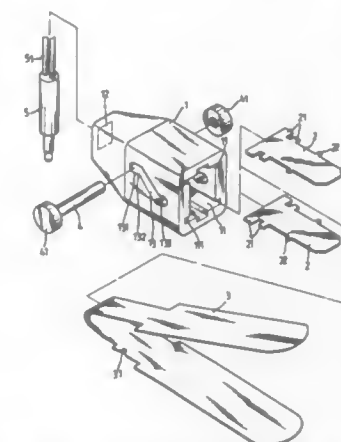
1. A housing for accommodating an alarm conducting clip comprising an electrically insulating housing, a pair of copper plates, an elastic V-shaped clip, an actuating rod, and a cord, and the improvement comprising:

said housing having a small aperture at one end, a large aperture at the opposite end having formed a passage therein along an axis of the housing, and a pair of slots at

respective walls of the housing slanting from a top portion at one side downward to the bottom portion at the other side thereof, said slots having a pair of horizontal troughs with one extending from the top end of said slot and a protuberance thereat, the other horizontal trough extending from the bottom end thereof having arisen slightly upwardly at the endmost;

each of said copper plates having a pair of protuberances at respective sides thereof;

said clip having a V-shaped profile defining a top piece and a lower piece, and having a pair of ratchet teeth at respective sides of said lower piece thereof, said clip being in-



serted into said housing from said large aperture with the top piece slanting toward one direction opposite the slanting direction of said slots, the inserting end of said clip having extending beyond said slanting slots with the top piece located immediately underneath the top portion of said slots, and whereas the top piece being engaged with one of said copper plates located in the top portion of said housing, and whereas the lower piece of said clip being engaged with the other copper plate located in the bottom of said housing;

said actuating rod slidably resting on top of said slanting slots having a pair of enlarged portions at respective ends thereof.

5,380,967

EXTENSION ACTUATOR FOR ELECTRICAL WALL SWITCH

Carson D. Steen, and Robby W. Steen, both of 402 Tillman Rd., Fort Mill, S.C. 29715

Filed Feb. 7, 1994, Ser. No. 192,553

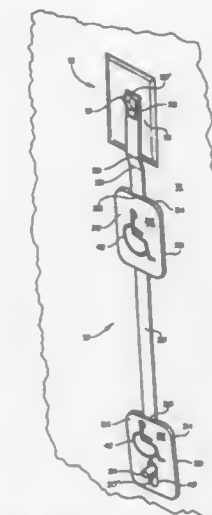
Int. Cl.⁶ H01H 3/20

U.S. Cl. 200—331

2 Claims

1. In combination, a toggle switch mounted to a wall, the toggle switch having a switch covering plate outwardly abutting the wall and a toggle member extending outwardly from the wall through the switch covering plate for pivoting movement between alternate operating positions, and a device for remote actuation of the toggle member, the device comprising an elongate operating arm of a substantially flat planar configuration disposed in essentially continuous slidable outward surface abutment with the wall and the switch covering plate, one end of the arm being connected to the toggle switch only by an opening in the one end of the arm through which the toggle member extends, the opposite end of the arm having an actuating pin affixed rigidly thereto and extending outwardly from the arm away from the wall for manually actuating longitudinal movement of the arm to cause pivoting movement of the toggle member, and a pair of arm guiding plates affixed only adhesively to the wall at spacing from one another for constraining the arm to slide longitudinally along the wall when actuated by the pin, each guiding plate having a substantially flat planar body having a wall-facing side formed of a

pair of flat wall-mounting adhesive surfaces adhered to the wall at lateral spacings from one another at opposite sides of a longitudinal recess spaced from the wall, the arm extending through the recess in each guiding plate, the recess of each guiding plate being configured in close conformity to the flat planar configuration of the arm for defining in conjunction with the wall a pathway in which the arm is constrained for reciprocating longitudinal movement in sliding surface abutment with the wall and the switch covering plate, one of the



guiding plates having an elongate slot formed therethrough in alignment with its arm-receiving recess with the actuating pin of the arm extending outwardly through the slot to be accessible for sufficient movement within the slot to actuate reciprocating longitudinal movement of the arm between opposed limit positions wherein the toggle member is pivoted between its alternate operating positions, whereby installation of the device may be accomplished without tools by placing the arm by its opening onto the toggle member and then adhering the guiding plates to the wall over the arm.

5,380,968

PROTECTIVE COVER FOR SWITCHES

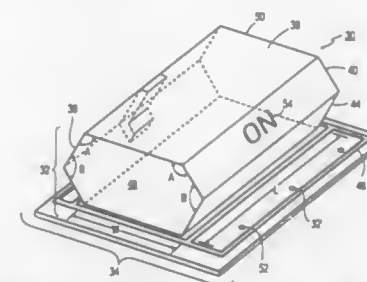
Milton Morse, Fort Lee, N.J., assignor to A.P.M. Hexseal Corporation, Englewood, N.J.

Filed Sep. 29, 1993, Ser. No. 128,992

Int. Cl.⁶ H01H 21/08

U.S. Cl. 200—302.3

14 Claims



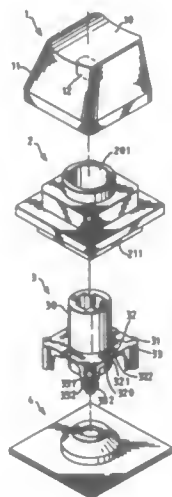
1. An elastomeric protective cover for use in conjunction with a tactily manipulable electrical switch, said protective cover comprising:

- a horizontal top wall;
- a pair of inclined upper sidewalls depending from said top wall; and
- a projection means extending from an interior surface defined by said inclined upper sidewalls, whereby said pro-

jection means is adapted to engage a surface said tactily operated switch upon selective deformation of said cover.

5,380,969
COMPUTER KEY
Yung-Chuan Yang, Taipei, Taiwan, Prov. of China, assignor to Sen-Cheng Wang, Taiwan, Prov. of China
Filed Apr. 28, 1993, Ser. No. 53,398
Int. Cl.⁶ H01H 1/10
U.S. Cl. 200—517

3 Claims



1. A computer key including
 - a socket member confining a receiving space therein and having a top wall which is provided with a through hole,
 - a resilient biasing member disposed inside said receiving space of said socket member,
 - a support member including an upright tubular portion and a flange portion which projects radially outward from an intermediate part of said tubular portion and which is in sliding contact with an inner wall surface of said socket member, said support member being provided inside said receiving space of said socket member such that said tubular portion extends through said through hole of said socket member, said tubular portion having a bottom end resting on top of said biasing member, said biasing member urging said support member upward to a normal unpressed key condition, and
 - a push button secured on top of said support member, wherein the improvement comprises:
 - said flange portion being provided with at least one spring unit to cushion impact between said flange portion and said top wall of said socket member when said biasing member expands to return said support member to the normal unpressed key condition due to removal of an applied force on said push button.

5,380,970
PUSH BUTTON SWITCH
Yoshiyuki Mizuno, and Kikuo Ogawa, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Mar. 17, 1993, Ser. No. 32,635
Claims priority, application Japan, Mar. 18, 1992, 4-014652[U]
Int. Cl.⁶ H01H 13/14

U.S. Cl. 200—523

7 Claims

1. A push button switch having an ON state and an OFF state, comprising:
 - a housing;
 - a fixed contact fixedly mounted on said housing;
 - a movable contact movable along a path into and out of

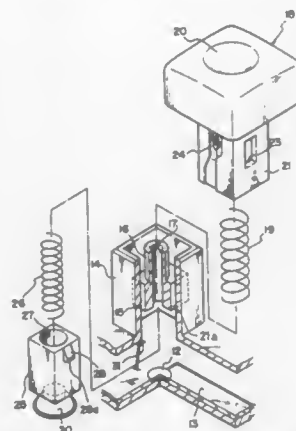
contact with said fixed contact to provide said ON state and said OFF state;

an operating portion supported on said housing to be movable in a direction parallel to said movable contact path;

a contact connect spring located between said housing and said movable contact for urging said movable contact towards said fixed contact;

a contact release spring located between said housing and said operating portion for urging said housing and said operating portion for urging said operating portion away from said fixed contact with an urging force greater than that of said contact connect spring;

a coupling arrangement for coupling said movable contact and said operating portion with said movable contact



- inhibited from being moved away from said operating portion towards said fixed contact; and
- operation control means for maintaining said ON State wherein said operating portion approaches said housing to bring said movable contact into contact with said fixed contact and for releasing maintenance of said ON state when said operating portion is further pushed towards said housing in said ON state,
- wherein said coupling arrangement comprises an engagement aperture formed in said guide wall member, and a sleeve engaged with said engagement aperture in said guide wall member and urged by said contact connect spring towards said fixed contact, said movable contact being fixedly mounted on said sleeve to face said fixed contact.

5,380,971
DYNAMIC BRAKE SWITCH FOR MOTOR
Robert W. Bittel, Parma Hts., and Michael J. Riedel, Northfield, both of Ohio, assignors to Lucerne Products, Inc., Hudson, Ohio
Filed Nov. 9, 1992, Ser. No. 973,183
Int. Cl.⁶ H01H 1/36

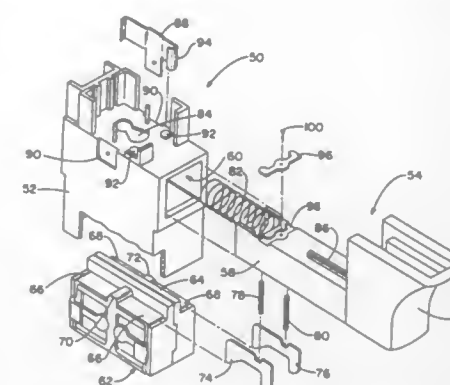
U.S. Cl. 200—536

6 Claims

1. A dynamic brake for a motor, comprising:
 - a switch housing;
 - a first pair of stationary contacts within said switch housing and adapted for interconnection with the motor;
 - a second pair of stationary contacts within said switch housing and adapted for interconnection with a power source;
 - a slide member slidably received within a passage upon said first and second pairs of said stationary contacts;
 - a shorting member received upon said slide member and positioned for interconnecting said contacts of said first pair of stationary contacts when said slide member is in a predetermined position; and

a pair of conductors operatively interconnected with said first pair of stationary contacts and extending into said

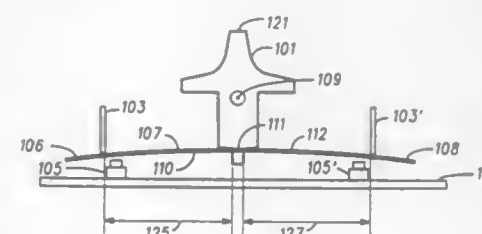
member will be in contact with and thereby actuate said switch means.



5,380,972
ROCKER SWITCH
Donald A. Lunak, Hanover Park, and Declan E. Killarney, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 19, 1993, Ser. No. 154,412
Int. Cl.⁶ H01H 15/02

U.S. Cl. 200—562

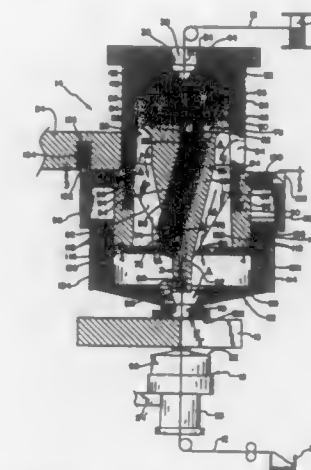
15 Claims



1. A rocker switch comprising:
 - switch means;
 - a spring member wherein a first end of a first side of said spring member is positioned facing said switch means, said spring member having a second end opposing the first end;
 - first and opposing second support members positioned at the first end and the opposing second end respectively on a second side opposing the first side of said spring member; and
 - a rocker actuating mechanism pivotable about an axis, wherein said rocker actuating mechanism is coupled a portion of said spring member proximate a center position between the first and opposing second ends, wherein the rocker actuating mechanism is positioned in a nominal position causing contact between the opposing second side of the first end of said spring member and said first support member, and causing another contact between the opposing second side of the second end of said spring member and said second support member, wherein the spring member is deflected away from said switch means, and a top portion of said rocker actuating mechanism is maintained in a position centered between the first and opposing second ends of said spring member, and wherein responsive to a pivoting of the top portion of said rocker actuating mechanism towards the first end of said spring member the opposing second side of the first end of said spring member and said first support member will be separated, and the first side of the first end of said spring

5,380,973
CURRENT PICKUP INDEXING APPARATUS
Thomas J. Truty, South Barrington, Ill.; Jule L. French, Yoder, and Kevin M. Newell, Marion, both of Ind., assignors to Basix Technologies Ltd., Fort Wayne, Ind.
Continuation-in-part of Ser. No. 995,887, Dec. 23, 1992, Pat. No. 5,319,175. This application Jun. 16, 1993, Ser. No. 78,007
Int. Cl.⁶ B23H 7/10; B23K 9/00
U.S. Cl. 219—69.12

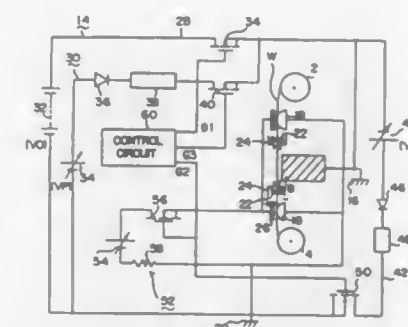
34 Claims



30. An apparatus for transferring electrical current to and from a moving electrically conductive wire, said apparatus comprising:
 - an electrically conductive member in sliding contact with the wire and transferring electrical current to and from the wire;
 - means for supporting said electrically-conductive member; said support means having a working end for facing towards a workpiece; and,
 - wherein the electrically-conductive member is selectively placed on and removed from said support means through said working end of said support means.

5,380,974
WIRE-CUT ELECTROEROSION APPARATUS
Yuji Kaneko, Sakai, Japan, assignor to Sodick Co., Ltd., Yokohama, Japan
Filed Feb. 24, 1994, Ser. No. 201,312
Claims priority, application Japan, Feb. 25, 1993, 5-060925
Int. Cl.⁶ B23H 7/04
U.S. Cl. 219—69.12

15 Claims



1. A power supply for a wire-cut electroerosion apparatus for machining a workpiece, said electroerosion apparatus in-

cluding a wire electrode spaced from said workpiece and defining therewith a machining gap, said power supply comprising:

- a current pickup for delivering current to said wire electrode;
- a first power circuit for applying a first voltage across said machining gap through said current pickup with said workpiece being negatively poled and said wire electrode being positively poled;
- a conductor provided in the vicinity of said current pickup; and
- a second power circuit for applying a second voltage across a spacing formed between said conductor and said current pickup with said conductor being positively poled and said current pickup being negatively poled.

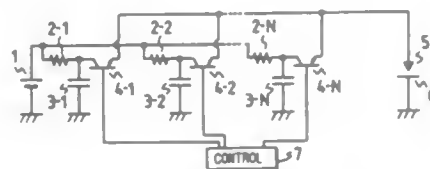
5,380,975

ELECTRIC DISCHARGE MACHINING APPARATUS
Tatsushi Sato, and Yoshikito Imai, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 991,643

Claims priority, application Japan, Dec. 24, 1991, 3-339217
Int. Cl.⁶ B23H 1/02

U.S. Cl. 219—69.18

11 Claims



1. An electric discharge machining apparatus providing power across a machining gap which is formed by a machining electrode and a workpiece, said machining electrode and said workpiece facing each other, said apparatus comprising:

- a plurality of capacitors connected in parallel with said machining gap;
- a charging means for charging said capacitors;
- a plurality of charging resistors, each of said charging resistors being directly connected between said charging means and a respective one of said capacitors;
- a plurality of switches each of which is connected in series between a respective one of said capacitors and said machining gap; and
- a first control means for generating control signals to positively and directly control the on/off operation of said switches sequentially.

5,380,976

PROCESS FOR HIGH QUALITY PLASMA ARC AND LASER CUTTING OF STAINLESS STEEL AND ALUMINUM

Richard W. Couch, Jr., Hanover, N.H.; Nicholas A. Sanders, Norwich, Vt.; Zhipeng Lu; Lifeng Luo, both of Lebanon, N.H., and Staffan C. O. Stenfelt, Lammhult, Sweden, assignors to Hypertherm, Inc., Hanover, N.H.

Continuation-in-part of Ser. No. 989,183, Dec. 11, 1992. This application Mar. 1, 1993, Ser. No. 24,416

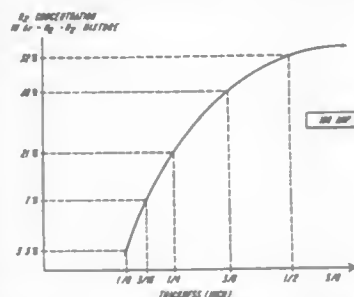
Int. Cl.⁶ B23K 9/00, 10/00, 26/14

U.S. Cl. 219—121.44

13 Claims

1. A metal cutting process for use with a plasma arc cutting torch for producing a high quality kerf in stainless steel and non-ferrous workpieces that have an upper surface adjacent the torch and a bottom surface opposite the torch, where the torch uses a total gas flow to the kerf, comprising, forming a portion of the total gas flow from a reducing gas, and adjusting the ratio of said reducing gas flow to said total gas flow to produce a predominantly reducing atmosphere generally at the region defined by the bottom surface and the kerf, said adjust-

ing including increasing the proportion of said reducing gas introduced into the kerf with respect to the total gas flow in



coordinating with an increasing of the thickness of the workpiece.

5,380,977

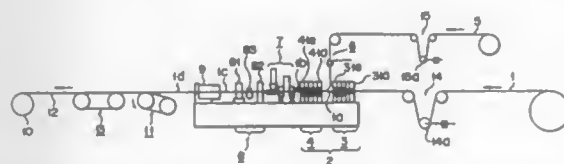
APPARATUS FOR MANUFACTURING METAL TUBE COVERED OPTICAL FIBER CABLE AND METHOD THEREFOR

Yasunori Yoshie, and Takashi Tsukui, Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan
Continuation of Ser. No. 730,915, Jul. 29, 1991, Pat. No. 5,210,391. This application Apr. 19, 1993, Ser. No. 49,510
Claims priority, application Japan, Dec. 5, 1989, 1-314295; Jul. 20, 1990, 2-190714

Int. Cl.⁶ B23K 26/00

U.S. Cl. 219—121.63

12 Claims



1. An apparatus for manufacturing an optical fiber cable covered with a metal tube, comprising: tube forming means for forming a metal sheet into an unsealed metal tube having abutment portions of abutting side edges of the metal tube for sealing said metal tube; and

- optical fiber guide means for guiding at least one optical fiber into said unsealed metal tube while said unsealed metal tube is maintained under traction;
- said optical fiber guide means comprising a guide tube inserted into said unsealed metal tube for guiding said at least one optical fiber into said metal tube and for protecting said at least one optical fiber;
- welding means for welding said abutment portions of said metal tube, with the optical fiber guide means therein, for sealing said metal tube; and
- said guide tube being provided across a welding position of said welding means.

5,380,978

METHOD AND APPARATUS FOR ASSEMBLY OF CAR BODIES AND OTHER 3-DIMENSIONAL OBJECTS
Timothy R. Pryor, 6360 Hawthorne Drive, Windsor, Ontario, Canada N8T 1J9

Filed Jul. 12, 1991, Ser. No. 728,682

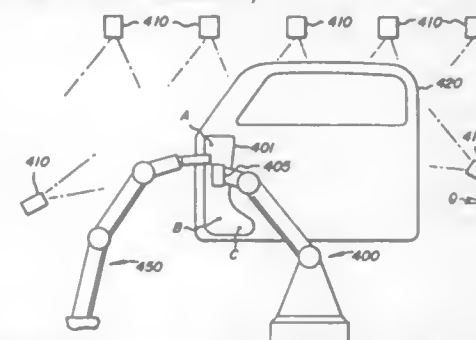
Int. Cl.⁶ B23K 26/00

U.S. Cl. 219—121.64

20 Claims

1. A method for assembly of members into 3 dimensional structures comprising the steps of: electro-optically determining the location of a plurality of datums on a first member, said datums comprising special

targets, projected zone images, natural object features, or a combination thereof, determining from the location of said datums the position of said first member; positioning said first member in contact with respect to one or more second members;



determining a force of contact between at least one point on said first member and said second member; and joining or otherwise assembling said first member to said second member or members.

5,380,979

Patent Not Issued For This Number

5,380,980

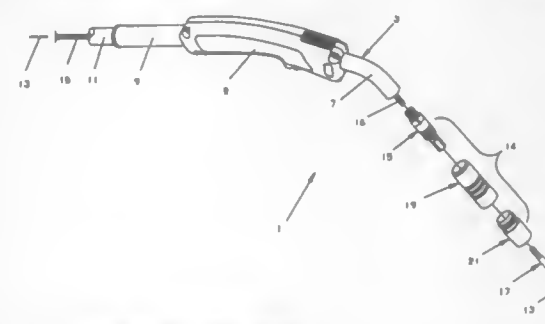
ADJUSTABLE SLIP-FIT WELDING NOZZLE
Ronald W. Colling, Appleton, Wis., assignor to Miller Electric Manufacturing Co., Appleton, Wis.

Filed Oct. 25, 1993, Ser. No. 140,439

Int. Cl.⁶ B23K 9/173

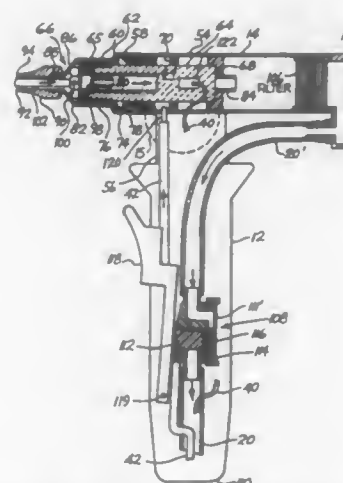
U.S. Cl. 219—137.31

24 Claims



1. A welding gun comprising:

- a. a body;
- b. a generally tubular adapter defining a longitudinal axis and having a back end joined to the body, a front end, and a center section with a predetermined outer diameter between the front and back ends;
- c. a stop secured to the adapter center section;
- d. an elongated welding contact tip having a first end attached to the adapter front end and a second end;
- e. extension means for rotation on the adapter center section about the longitudinal axis through an angle of at least 180 degrees and for cooperating with the stop to continuously translate along the longitudinal axis in response to rotation of the extension means; and
- f. a nozzle attached to the extension means and defining an orifice that is located proximate the welding contact tip second end, the nozzle translating with the extension means to provide adjustment of the welding gun in preparation for and integral to the operation thereof by varying the dimensional relationship between the nozzle orifice and the welding contact tip second end in response to rotation of the extension means.



1. An electrically heated solder-desolder tool comprising:

5,380,981

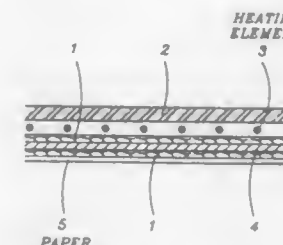
ECONOMICAL BATHROOM MIRROR HEATER
Bernard Feldman, 503-A Avenida Sevilla, Laguna Hills, Calif. 92653, and Dusan P. Pope, 28080 N. Caraway La., Saugus, Calif. 91350

Filed May 4, 1993, Ser. No. 57,713

Int. Cl.⁶ H05B 1/00

U.S. Cl. 219—219

10 Claims



1. An electric heating unit for attachment to a rear surface of a mirror to avoid the formation of condensation on a portion of the mirror surface; the heating unit comprising:

- a layer of closed cell plastic foam; a single continuous insulating coated length of low resistance heater wire mounted on a surface of the foam layer; an aluminum foil covering the surface of the foam layer and the length of heater wire, and connected thereto via an adhesive; an adhesive layer covering the outer surface of the aluminum foil; a peel-off backing covering the adhesive layer to permit attachment of the heating unit to a mirror when the backing is removed; and means for connecting to the length of heater wire for supplying electrical current from a power source; and wherein
- the components of the unit produce less than 120 watts per square meter of heat to a mirror to which the unit is attached, the foam layer is a thin layer with a thermal conductivity factor K of approximately 0.25 BTU/ft²/° F., the heater wire is formed of copper coated with a plastic and having a resistance of approximately 30 ohms, the aluminum foil is approximately 2 mils thick, and the power source is a low voltage supply of less than 30 volts.

5,380,982

METALLIC CONDUCTION - HOT GAS SOLDERING-DESOLDERING SYSTEM
William S. Fortune, 29866 Cathbert Rd., Malibu, Calif. 90265
Filed Jul. 23, 1993, Ser. No. 98,174

Int. Cl.⁶ H05B 1/00, 3/42

U.S. Cl. 219—230

11 Claims

trically resistive metallic heating element, formed by an elongate strip of foil covering at least one-fourth of the surface area of the heating lamina in substantially areally uniform array and of electrical resistivity to generate approximately 0.15 to 1 watt per square inch of mat uniformly over the entire mat, said heating element having contact strips at each end electrically communicating with a connector spacedly distant from the mat to releasably and non-destructively interconnect the heating element to an electrical conductor, and a semi-rigid upper surface layer, of the same configuration and size as the back, supported on the entire upper surface of the heating lamina, said upper surface layer having an exposed upper surface of high frictional nature to aid in preventing slippage of a user of the mat; and an electrical powering system having an output voltage not greater than 50 volts, and through an elongate two-wire electrical conductor to which a plurality of mats are releasably interconnected in electrical parallel in predetermined spaced array by releasably positionable vampire type connectors.

5,380,989

INDUCTIVE HEATING ELEMENT WITH MAGNETIC AND THERMISTOR MATERIALS
Atushi Ohkubo, Mie, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

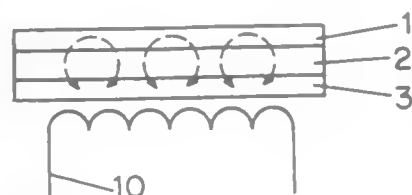
Filed Mar. 23, 1993, Ser. No. 35,973

Claims priority, application Japan, Mar. 26, 1992, 4-067664; Oct. 9, 1992, 4-270638

Int. Cl.⁶ H05B 6/06

U.S. Cl. 219—667

10 Claims



1. An inductive heating device for heating at a characteristic constant temperature, comprising a heating element and induction means operatively coupled to the heating element for inducing current flow in the heating element, the heating element including a thermistor material and a magnetic material disposed to permit an induced current to flow between the thermistor material and the magnetic material.

5,380,990

TILL DRAWER FOR A CASH REGISTER

Günter Baitz, Klantorweg; Joachim Burchart, Schlangen, and Hartmut Kamin, Berlin, all of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

PCT No. PCT/EP91/01821, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO92/05525, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 30,432

Claims priority, application Germany, Sep. 26, 1990, 4030456 Int. Cl.⁶ G07G 1/00

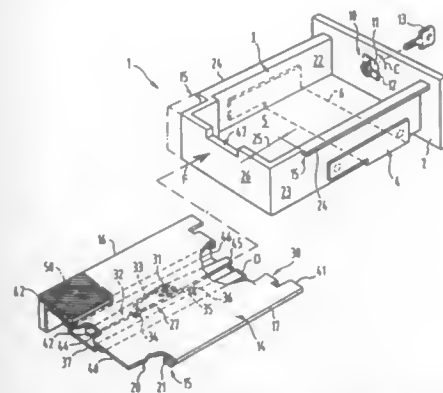
U.S. Cl. 235—7 R

8 Claims

1. A till drawer for a cash register having a drawer housing, comprising:

- a money drawer which is alternately displaceably guided along push-in and draw-out directions in the drawer housing of the cash register;
- a lid selectively closing said money drawer, said lid being displaceably guided on said money drawer; and
- a locking device mounted to detachably lock said lid to said

money drawer in a closed position in which said lid closes said money drawer, said locking device connecting said lid to the drawer housing when said money drawer is slid in the drawer housing and detaching said lid from the drawer housing when said locking device is in a locking attachment to said money drawer, said locking device including a latch device which is actuated to latch-lock said lid to the drawer housing by sliding-in said money



drawer into the drawer housing, said locking device includes a lock bolt provided with a lock, said lock bolt being movable between a locking position blocking any movement of the lid and an unlocking position freeing such a movement; and a stop on said lid which prevents said money drawer from being pulled fully out whenever said lid is connected to the drawer housing.

5,380,991

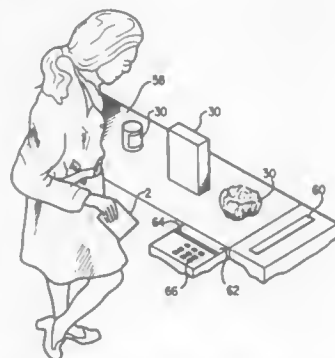
PAPERLESS COUPON REDEMPTION SYSTEM AND METHOD THEREOF

Luis Valencia, 883 Main St., Norwell, Mass. 02061, and John Howe, 19 Roubound Rd., Norwell, Mass. 02061
Filed Nov. 16, 1993, Ser. No. 152,129

Int. Cl.⁶ G06K 15/00

U.S. Cl. 235—383

36 Claims



1. A system for providing discounts to products purchased by a customer at a retail establishment, comprising: a list of the products to which discounts are to be applied; a computer system provided with a memory containing said list of the products, a discount amount applied to the products included in said list, the expiration of said discount amount, as well as the retail value of the products included in said list; at least one checkout station in communication with said computer system, said checkout station including a first terminal for entering information relating to products purchased by the customer and a second terminal provided with a reader/writer device; and a card retained by the customer, said card provided with an

interface device and a memory, said memory initially programmed with a first monetary amount from which discounts based upon the products purchased by the customer are deducted, said first monetary amount read by said second terminal, said second terminal writing a second monetary amount into said memory reflecting the discount applied to the products purchased by the customer based on the information included in said computer system.

5,380,992

BAR CODE DETECTION USING BACKGROUND-CORRELATED BAR CRITERION FOR ASCERTAINING THE PRESENCE OF A BAR

Jozef T. W. Damen, Lelischendam, and Hong S. Tan, Zoetermeer, both of Netherlands, assignors to Koninklijke PTT Nederland B.V., Groningen, Netherlands

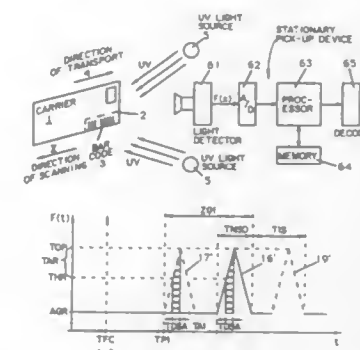
Continuation of Ser. No. 547,691, Jul. 2, 1990, abandoned. This application Jul. 31, 1992, Ser. No. 924,372

Claims priority, application Netherlands, Jul. 10, 1989, 8901759

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

5 Claims



1. A method for detecting a bar code from a response light signal of a first predetermined light wavelength received from a luminescent bar code pattern on a background surface of a moving carrier, which signal is responsive to light of a second predetermined wavelength irradiating said bar code pattern, the bar code pattern including a number of successive bar code positions each containing a bar code element from a predetermined set of two possible bar code elements, such as bar/no bar or thin/thick bar, the response light signal occurring during steady relative movement of said carrier with respect to a signal pick-up device for said response light signal, which device is equipped with a source of said light irradiating said bar code pattern, said response light signal pick-up device having means for converting said response light signal into an electric response signal, said electric response signal including a background signal produced during movement of said carrier by light emanating from said background surface of said carrier and a pulse signal produced by light emanating from each bar code element corresponding to a bar, which pulse signal is additive to said background signal, said method comprising the main steps of:

storing in memory the electric response signal during each said steady relative movement of said carrier with respect to said signal pick-up device for facilitating the performance of other substeps with the assistance of a processor, sub-dividing said electric response signal on a time basis by determining successively, in terms of relative movement of said carrier, a number of electric signal segments each of which corresponds with a bar code position, and classifying each said electric signal segment according to the bar code element contained in the corresponding bar code position, the main step of classifying each said electric signal segment comprising the following substeps: deriving an approximated local background signal value

from the electric response signal value corresponding to the background response light signal from a background corresponding to an electric signal segment under classification, generating a bar criterion signal which is a function of said approximated local background electric signal value, comparing the electric response signal of said electric signal segment under classification with said bar criterion signal, and generating a classification signal in a first sense if said electric response signal of said electric signal segment under classification exceeds said bar criterion signal and generating a classification signal in a second sense if said electric response signal of said electric signal segment under classification fails to exceed said bar criterion signal.

5,380,993

PROCESSING SYSTEM FOR COMPRESSING DATA TO REDUCE THE NUMBER OF DIGITS EXPRESSED BY A MICRO-BAR CODE

Toshiyuki Komai, Nagoya, Japan, assignor to Neorex Co., Ltd., Aichi, Japan

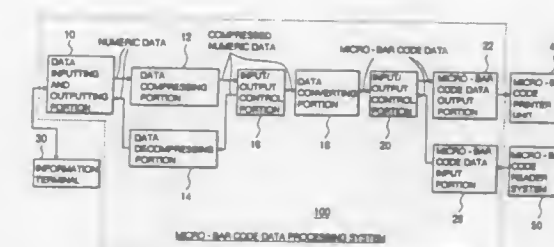
Filed Apr. 7, 1993, Ser. No. 43,740

Claims priority, application Japan, Apr. 10, 1992, 4-118399

Int. Cl.⁶ G06K 7/10

U.S. Cl. 235—462

9 Claims



1. A micro-bar code data processing system comprising: means for receiving an original data to be contained in a micro-bar code; means for reducing a number of digits of said original data by compressing the received original data; means for converting the compressed data into an encoded micro-bar code data; means for outputting the encoded micro-bar code data; means for receiving an encoded data contained in said micro-bar code; means for converting said received encoded data into a compressed data; means for restoring the original data from said compressed data by decompression of the compressed data; and; means for outputting the restored original data; wherein said means for reducing the number of digits of the data comprises: means for setting maximum values A1, A2, A3, . . . An-1, An, wherein A1, A2, A3, . . . An-1, An are positive integers, for respective information items with respect to a plurality of information items are expressed as a1, a2, a3, . . . an-1, an wherein a1, a2, a3, . . . an-1 are integers not less than zero; means for setting an operation parameter m at one of 0 and 1; means for calculating s1, s2, s3, . . . sn-1, sn respectively defined by:

$$s1 = (a1 - m) * (A2 * A3 * A4 * \dots * An)$$

$$s2 = (a2 - m) * (A3 * A4 * \dots * An)$$

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$$s3 = (a3 - m) * (A4 * \dots * An)$$

$$sn - 1 = (an - 1 - m) * (An)$$

$$sn = (an - m)$$

means for deriving the compressed data Ts through
 $Ts = s1 + s2 + s3 + \dots + sn - 1 + sn$

and

said means for restoring the original data from said compressed data comprises:
 means for setting maximum values A1, A2, A3, . . . An-1, An, wherein A1, A2, A3, . . . An-1, An are positive integers, for respective information items with respect to a sequentially arranged plurality of information items are express as a1, a2, a3, . . . , an-1, an wherein a1, a2, a3, . . . , an-1, an are integers not less than zero, and the maximum values A1, A2, A3, . . . An-1, An are known values;
 means for reading in the compressed data Ts derived through compression of said original data consisting of a plurality of information items;
 means for setting an operation parameter m at one of 0 or 1 depending upon the operation parameter m used in a process for deriving said compressed data; and
 means for calculating original values of respective information items in such a manner that processes wherein, by dividing said compressed data Ts with the maximum value An of the lowermost information item to obtain a quotient Ts1 and a remainder an', an original data value of the lowermost information item is derived by $an = an' + m$, by dividing the quotient Ts1 with the maximum value An-1 of the lower information item to obtain a quotient Ts2 and a remainder an-1', an original data value of the next lower information item an-1 is derived by $an-1 = an-1' + m$, are repeated for upper information items in order so that when the quotient becomes zero, the remainder at that time is taken as a1' to obtain an original data value of the uppermost information item by $a1 = a1' + m$.

5,380,994

MICROCOMPUTER ADAPTED FOR INVENTORY CONTROL

William F. Ray, Huntsville, Ala., assignor to Science and Technology, Inc., Huntsville, Ala.

Filed Jan. 15, 1993, Ser. No. 5,380

Int. Cl.⁶ G06F 7/10

U.S. Cl. 235-472



1. Apparatus for retrievably storing information relative to items being electronically scanned by a scanning device for inventory control of said items, said items having a bar code identification label thereon which is read by electronic scanning, said apparatus comprising:

a compact, portable computer including a memory having predetermined information relative to items being scanned by an electronic scanner, said computer including a housing having a plurality of electrical connectors thereon, said housing enclosing first, second, third, and fourth electrically interconnected minimodule circuit boards, said first, second, third and fourth minimodule boards

defined respectively as a core module board, a minimodule serial/serial/parallel (SSP) board, a minimodule solid state disk (SSD) board and a minimodule display controller board, said first minimodule board having the first and second of said electrical connectors connected thereto, said second minimodule board having the third of said plurality of electrical connectors connected thereto and said fourth of said minimodule boards having the fourth of said electrical connectors secured thereto;

a handheld electronic scanner releasably electrically connected to said first minimodule board and disposed for scanning a bar code label carried on an item to be electronically scanned, said label containing information relative to said item, said electronic scanner disposed for transmitting signals indicative of said information stored on said label to said computer, said electronic scanner being releasably secured to said first minimodule board through said second electrical connector;

display means releasably electrically connected to said fourth minimodule board, said portable display means carried on the person of an individual and disposed for visually displaying information relative to the items to be electronically scanned, said portable display means being releasably electrically secured to said fourth minimodule board of said computer through said fourth electrical connector;

handheld keypad means releasably electrically connected to said second minimodule board through said third electrical connector to permit accessing of said computer and to provide said information thereto relative to the items being electrically scanned by said electronic scanner;

a power source releasably electrically connected to said first minimodule board through said first connector for supplying electrical power to said computer, said keypad, said electronic scanner, and said display means, said power source defined as a power pack having battery means therein for supplying the electrical power; and

support means for supporting said computer housing, said power source, said keypad and said electronic scanner on the person of an individual, said support means having a plurality of compartments, each compartment individually respectively disposed for support of said computer housing, said power source, said keypad and said electronic scanner in a respective said compartment.

5,380,995

FIBER OPTIC GRATING SENSOR SYSTEMS FOR SENSING ENVIRONMENTAL EFFECTS

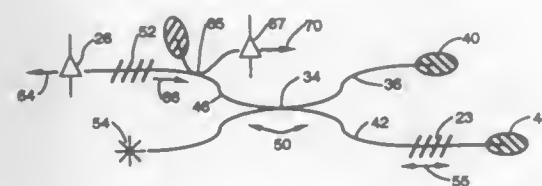
Eric Udd, Huntington Beach, and Timothy E. Clark, Santa Ana, both of Calif., assignors to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Oct. 20, 1992, Ser. No. 963,687

Int. Cl.⁶ G01B 9/02

U.S. Cl. 250-227.18

74 Claims



1. A sensor system to sense an environmental effect, said system including:

a light source producing a first light beam with a relatively broad band of frequencies therein;
 a first fiber grating connected to receive said first light beam and positioned for exposure to the environmental effect, said first fiber grating having:

first periodic variations in its optical properties therealong, the instantaneous location of said first periodic variations being affectable by the environmental effect to instantaneously determine a first relatively narrow band width of frequencies reflected by said first fiber grating, said first fiber grating creating a second light beam from said first light beam whose frequency spectrum depends on the environmental effect;

a first local optical filter connected to receive at least portions of said second light beam and positioned for isolation from the environmental effect, said first local optical filter being capable of reflecting a spectrum having a relatively narrow band width overlapping at least some of the frequency spectrum of said second light beam, so that upon exposure to said second light beam, said first local optical filter creates a third light beam whose intensity is representative of the environmental effect; and
 first detector means positioned to receive said third light beam and to produce therefrom a first electrical output representative of the environmental effect.

5,380,996

OPTICAL CARD RECORDING/REGENERATING METHOD AND APPARATUS FOR DRIVING OPTICAL CARD WITH RESPECT TO OPTICAL HEAD SO AS TO INCREASE OR DECREASE RELATIVE SPEED IN AT LEAST ONE OF ID DIVISIONS OF OPTICAL CARD

Toshio Horiguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

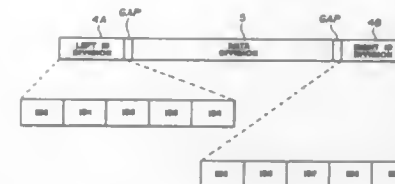
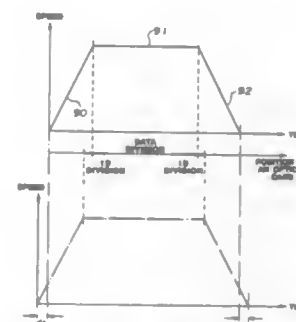
Filed Jul. 7, 1993, Ser. No. 86,904

Claims priority, application Japan, Jul. 10, 1992, 4-183925

Int. Cl.⁶ G06K 13/00

U.S. Cl. 235-475

19 Claims



1. An optical card recording/regenerating apparatus, comprising:

an optical head for irradiating light spots to perform at least either information recording or regenerating on an optical card including a plurality of tracks each of which has ID divisions containing track address information at both ends thereof and a data division between said ID divisions;
 driving means for moving said optical card and said optical head relatively to each other; and
 a control means for controlling said driving means so that said optical card and said optical head will be reciprocated relatively to each other, said control means also for controlling said driving means so that the relative speed between said optical head and said optical card will increase or decrease over at least part of said ID divisions, and become constant over the remaining part of said ID divisions.

sions and said data division, thus achieving at least either information recording or regenerating.

5,380,997

SMART CARD READER

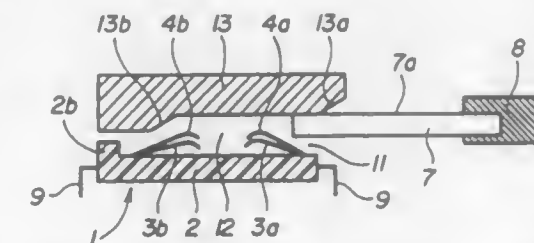
Marc Hania, Paris, and René-Claude Ozouf, Le Bourget, both of France, assignors to Alcatel Radiotelephone, Paris, France
 Filed Jun. 21, 1993, Ser. No. 80,084

Claims priority, application France, Jun. 22, 1992, 92 07575

Int. Cl.⁶ G06K 13/063; H01R 13/62

U.S. Cl. 235-485

4 Claims



1. A smart card reader assembly comprising a compartment with an aperture for the introduction of a card and at least one reading wiper carried by a base part of insulating material forming at least a part of one wall of said compartment, as well as means for placing the card in a reading position in which a free end of said wiper is in contact with at least one operative region of the card, characterized in that, the card (7) being provided with a holder (8) at its end remote from that which is introduced into said aperture, said means for placing the card in a reading position are formed by two inclined planes (13a, 13b) parallel to each other, formed on the surface of a second wall (13) of said compartment (12) facing said base part (1), and by at least one resilient wiper (4a, 4b) of which one end is fixed to the base part (1) and of which the other end is free and is biased into a plane further from that of the base part (1) than that which the free end of said reading wiper (3a, 3b) tends to assume said resilient wiper (4a, 4b) tending to apply said card against said second wall (13) and cooperating with said inclined planes (13a, 13b) to maintain the card constantly parallel to the base part (1).

5,380,998

SINGLE WIDTH BAR CODE WITH END CODE PROVIDING BIDIRECTIONALITY

Douglas C. Bossen, Austin, Tex.; Chin-Long Chen, Fishkill, N.Y.; Ma-Yue Hsiao, Poughkeepsie, N.Y., and James M. Mulligan, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

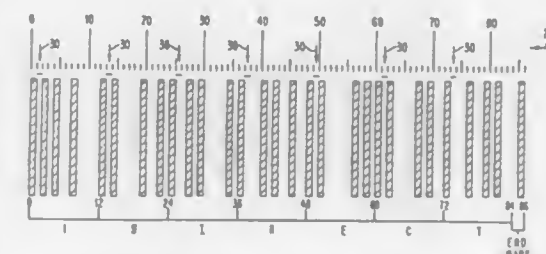
Continuation of Ser. No. 568,302, Aug. 15, 1990, abandoned.

This application Jun. 3, 1993, Ser. No. 72,260

Int. Cl.⁶ G06K 19/06

U.S. Cl. 235-494

6 Claims



1. A method for marking a substrate with a bar code, said method comprising the step of:
 providing adjacently positioned groups of sequences of

marks, said groups including four substantially uniformly wide marks of a first width, W_1 , at selectively spaced intervals within said groups, and also including an equal number of blank intervals within each of said groups, said individual blank intervals having a plurality of different widths which are integral multiples of a second width, W_2 , and wherein in at least one group there is a blank interval which has a width which is three times said second width, said groups thus being such that each group has a width substantially equal to $(4W_1 + 8W_2)$ and wherein said groups include an end mark in the form of a single width blank interval followed by a mark at the end of said groups of sequences.

5,380,999

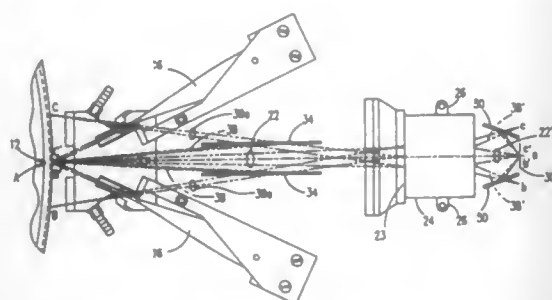
LINEAR SCANNING USING A SINGLE ILLUMINATION AND IMAGING OPTIC STATIONS WITH A FIRST PAIR OF PARALLEL MIRRORS AND A SECOND PAIR OF MIRRORS EXTENDING INTO PATHS OF LIGHT BEAMS

Ravinder Prakash, and Gene D. Rohrer, both of Concord, N.C., assignors to International Business Machines, Corp., Armonk, N.Y.

Filed Dec. 29, 1993, Ser. No. 174,744
Int. Cl.⁶ H01J 3/14

U.S. Cl. 250-216

11 Claims



1. An optical imaging station of an optical scanner for providing multiple images of a single object, comprising:
a document transport for transporting documents to be scanned past a scanning point;
an illumination source;
an illumination concentrating system intermediate said illumination source and said scanning point;
a first pair of parallel mirrors;
a lens assembly having an axis;
said scanning point, said first pair of mirrors and said lens assembly all aligned along said lens assembly axis;
and a second pair of mirrors arranged on the image side of said lens, intermediate said lens assembly and an image plane of said lens assembly, each of said second pair of mirrors extending into paths of light beams passing from said lens assembly to said image plane, whereby multiple images of an object at said scanning point are deflected from their normal path.

5,381,000

IMAGE INTENSIFIER WITH MODIFIED ASPECT RATIO

William J. McKee, Jr., Palo Alto, Calif., assignor to Picker International, Inc., Cleveland, Ohio

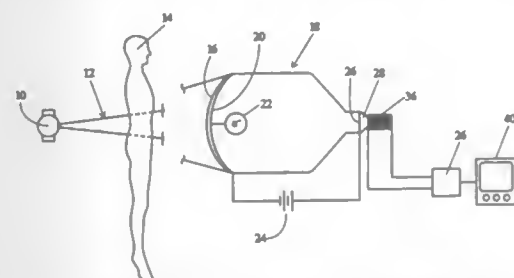
Filed May 7, 1993, Ser. No. 57,848
Int. Cl.⁶ H01J 40/14

U.S. Cl. 250-214 VT

22 Claims

1. An imaging system comprised of:
means for converting radial on Incident on an input surface into a first visible light image on an output surface, said first visible light image having a first aspect ratio;
a fiber optic bundle having an input face, an output face and a longitudinal axis along a central portion therethrough,

said input face optically coupled to the radiation converting means output surface for receiving the first visible light image, said bundle transmitting said received image to said output face, said output face oriented at an angle to



the longitudinal axis other than perpendicular thereto for displaying the transmitted image at a second aspect ratio different from the first aspect ratio, said second aspect ratio related to the angle of orientation of the output face relative to the longitudinal axis.

5,381,001

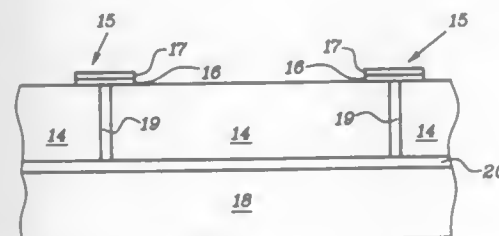
DETECTION CELL, A DETECTOR, A SENSOR, AND A SPECTROSCOPE USING A SUPERCONDUCTIVE TUNNELING JUNCTION

Michael A. C. Perryman, Lelden; Anthony Peacock, Noordwijkerhout, and Clare L. Foden, Den Haag, all of Netherlands, assignors to Agence Spatiale Europeenne, Paris Cedex, France

Filed Oct. 5, 1993, Ser. No. 131,651
Claims priority, application France, Oct. 5, 1993, 92 11753
Int. Cl.⁶ H01J 40/14

U.S. Cl. 250-214.1

16 Claims



1. A cell for detecting photons, the cell comprising a superconducting element, in particular made of niobium or of aluminum, that is sensitive to a photon of the radiation to be detected, or to phonons generated by such a photon by breaking Cooper pairs into quasi-particles and by means of a superconducting tunnel junction including a superconducting electrode, wherein, at its operating temperature, the photosensitive superconducting element has characteristics of energy gap 2Δ and of thickness that enable the energy of each quasi-particle coming from a broken Cooper pair to be reduced while multiplying the number of quasi-particles by a factor comprised between 100 and 1000 in a spectrum extending from near infrared to ultraviolet.

5,381,002

FLUORESCENCE METHOD OF QUANTIFYING HYDROCARBONS, INCLUDING CRUDE OIL, DISPERSED IN WATER

Lawrence R. Morrow, Richmond; Wilson K. Martir, Houston, and Hossein Aghazeynali, Sugar Land, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 982,337, Nov. 27, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 51,710
Int. Cl.⁶ G01N 21/64

U.S. Cl. 250-301

9 Claims

1. A method to determine the amount of hydrocarbon, including dispersed oil, in water at ppm levels, which comprises:
mixing surfactant with water which may contain dispersed hydrocarbon,
said surfactant comprising a non-aromatic linear alcohol having about 10 to about 15 carbon atoms in the alkyl chain, about 3 to about 10 groups of ethylene oxide, and able to solubilize into water the particular oil being tested for;
exciting the mixture of surfactant and water in a fluorometer at an excitation wavelength between about 200 and about 400 nanometers;
determining the amount of dispersed oil in the water by comparing the emission fluorescence of said mixture to previous correlations,
said previous correlations drawn between known amounts of oil-in-water and their emission fluorescence under similar conditions.

5,381,003

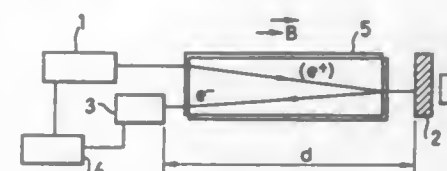
AUGER ELECTRON SPECTROSCOPY

Ryoichi Suzuki, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,759
Claims priority, application Japan, Jun. 19, 1992, 4-186328
Int. Cl.⁶ H01J 37/26

U.S. Cl. 250-305

2 Claims



1. A positron-induced Auger electron spectroscopy comprising:
applying a pulsed positron beam to annihilate with electrons in an element to induce an Auger emission process in a sample;
measuring a flight time t of a number of electrons including an Auger electron emitted from the sample, wherein the electrons including the Auger electron fly from a surface of the sample over a predetermined distance d , the flight time t of the emitted Auger electron being sufficiently greater than either of a pulse time width δt_p of the pulsed positron beam and a lifetime τ from incidence of the pulsed positron beam to the sample to annihilation with the electrons;
determining a velocity distribution of the emitted electrons including the Auger electron from the distance d and the flight time t ;
determining an energy distribution of the emitted electrons including the Auger electron; and
measuring a peak of the emitted Auger electron from the obtained energy distribution to analyze a bonding condition of elements of the sample surface.

5,381,004

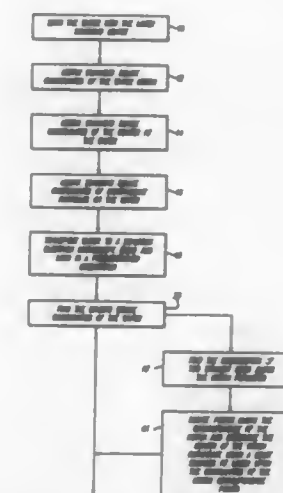
PARTICLE ANALYSIS OF NOTCHED WAFERS

Yuri S. Uritsky, Foster City, and Harry Q. Lee, Mountain View, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Aug. 31, 1993, Ser. No. 115,482
Int. Cl.⁶ H01J 37/26; G01B 11/00

U.S. Cl. 250-307

21 Claims



1. A method for locating particles on a notched semiconductor wafer, the method comprising:
(a) scanning a notched semiconductor wafer with a scanning device to obtain scanning device coordinates pertaining to the positions of: (i) the center of the wafer, (ii) the wafer notch, and (iii) contaminant particles on the wafer;
(b) finding the wafer notch with an imaging device and obtaining its estimated imaging device coordinates;
(c) finding the wafer center with an imaging device and obtaining its estimated imaging device coordinates;
(d) calculating estimated transformation parameters for a coordinate transformation between the coordinate systems of the scanning device and the imaging device based on the scanning device coordinates and the estimated imaging device coordinates of the wafer notch and the wafer center; and
(e) transforming the scanning device coordinates of the particles on the wafer to estimated imaging device coordinates using the estimated transformation parameters.

5,381,005

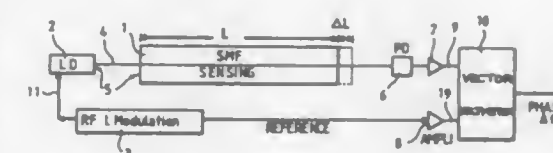
OPTICAL FIBER STRESS DETECTOR USING AMPLITUDE MODULATION

Jean Chazelas, Paris, and Marc Turpin, Bures sur Yvette, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Apr. 2, 1993, Ser. No. 42,020
Claims priority, application France, Apr. 2, 1992, 92 04000
Int. Cl.⁶ H01J 5/16

U.S. Cl. 250-227.19

9 Claims



1. A stress detector, comprising:
an optical radiation source for generating optical radiation, said optical radiation source having an amplitude modulation control input;
an optical fiber having a first end and a second end, said first

end being coupled to said optical radiation source to receive optical radiation from said optical radiation source;

an optical detector having an optical detector input and an optical detector output, said optical detector input being coupled to said second end of said optical fiber for detecting optical radiation from said second end and for providing a signal corresponding to the detected optical radiation to said optical detector output;

means for generating an amplitude modulation signal having an amplitude modulation signal output providing said amplitude modulation signal, said amplitude modulation signal output being coupled to said amplitude modulation control input of said optical radiation source, wherein said amplitude modulation signal controls amplitude modulation of said optical radiation to thereby amplitude modulate said optical radiation;

a phase comparator having first and second phase comparison signal inputs for comparing a phase difference between signals received by said first and second phase comparison signal inputs and for generating a phase difference output signal corresponding to said phase difference, wherein said optical detector output is coupled to the first phase comparison signal input of the phase comparator and the amplitude modulation signal output of said means for generating is coupled to the second phase comparison signal input; and wherein said phase difference output signal is output by the phase comparator.

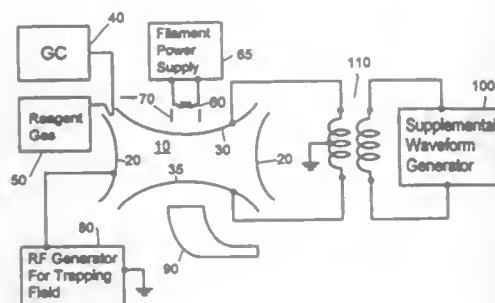
5,381,006 METHODS OF USING ION TRAP MASS SPECTROMETERS

Gregory J. Wells, Fairfield, and Minada Wang, Walnut Creek, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 890,991, May 29, 1992, abandoned. This application Apr. 6, 1993, Ser. No. 43,240
Int. Cl.⁶ B01D 59/44; H01J 49/00

U.S. Cl. 250—282

47 Claims



1. A method of using an ion trap mass spectrometer in the chemical ionization mode, comprising the steps of: adjusting the trapping field parameters of an ion trap mass spectrometer so that ions having mass-to-charge ratios within a desired range will be stably trapped within the ion trap; introducing a sample into the ion trap mass spectrometer; introducing a reagent gas into the ion trap mass spectrometer; ionizing the sample and reagent gas within the ion trap so that sample and reagent ions having mass-to-charge ratios within said desired range are formed within the ion trap; and applying a supplemental AC field to the ion trap to cause sample ions formed during said ionization step to be ejected from the ion trap, reacting said reagent ions and said Sample without changing

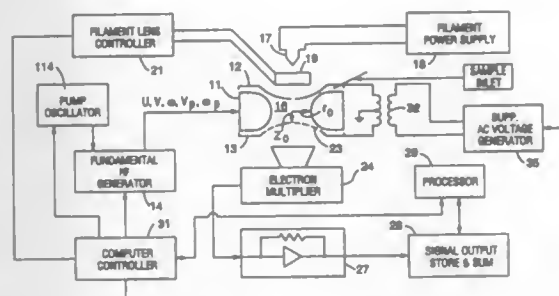
said trapping field parameters determined by said step of adjusting.

5,381,007 MASS SPECTROMETRY METHOD WITH TWO APPLIED TRAPPING FIELDS HAVING SAME SPATIAL FORM

Paul E. Kelley, San Jose, Calif., assignor to Teledyne MEC a division of Teledyne Industries, Inc., Mountain View, Calif. Continuation-in-part of Ser. No. 34,170, Mar. 18, 1993, which is a continuation of Ser. No. 884,455, May 14, 1992, Pat. No. 5,274,233, which is a continuation of Ser. No. 662,191, Feb. 28, 1991, abandoned. This application May 25, 1993, Ser. No. 67,575
Int. Cl.⁶ H01J 49/42

U.S. Cl. 250—282

57 Claims



1. A mass spectrometry method, including the steps of: (a) establishing a trapping field capable of storing ions having mass to charge ratio within a selected range in a trap region; (b) superimposing at least one additional trapping field with the trapping field to form an improved field in the trap region, where the trapping field and each said additional trapping field have substantially identical spatial form; and (c) changing the improved field to sequentially excite trapped ions having different mass to charge ratios in the trap region while detecting the ions excited by said step of changing the improved field.

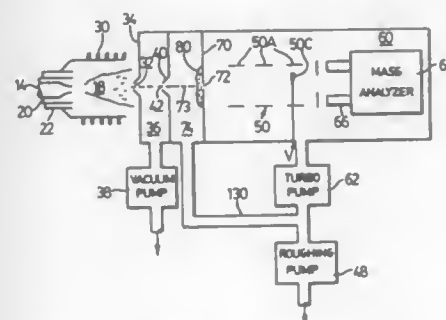
5,381,008 METHOD OF PLASMA MASS ANALYSIS WITH REDUCED SPACE CHARGE EFFECTS

Scott D. Tanner, Aurora; Donald J. Douglas, and Lisa Cousins, both of Toronto, all of Canada, assignors to MDS Health Group Ltd., Etobicoke, Canada

Filed May 11, 1993, Ser. No. 59,393
Int. Cl.⁶ B01D 59/44; H01J 49/00

U.S. Cl. 250—288

29 Claims



23. Apparatus for analyzing an analyte contained in a plasma, said apparatus comprising: (a) a sampler member having a sampler orifice therein for sampling said plasma, (b) a skimmer spaced from said sampler member and having

a skimmer orifice therein, said skimmer orifice being aligned on a common axis with said sampler orifice to receive a portion of matter sampled through said sampler orifice, said sampler member and said skimmer respectively defining portions of opposing walls of a first vacuum chamber,

(c) a reducer member spaced from said skimmer and having a reducer orifice therein, said reducer orifice being offset from said axis and being located between 3.0 and 20 mm from said skimmer orifice, said skimmer and said reducer member respectively defining portions of opposing walls of a second vacuum chamber,

(d) third vacuum chamber means having an inlet wall, said reducer member forming a portion of said inlet wall, said third vacuum chamber means including means therein for directing, for analysis, ions from said plasma passing through said orifices,

(e) said reducer member being substantially blunt adjacent said reducer orifice for a shock wave to form on said reducer member adjacent said reducer orifice.

5,381,010 PERIODICALLY ALTERNATING PATH AND ALTERNATING WAVELENGTH BRIDGES FOR QUANTITATIVE AND ULTRASENSITIVE MEASUREMENT OF VAPOR CONCENTRATION

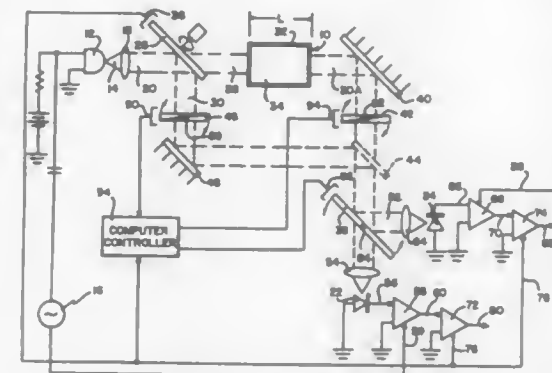
Engene I. Gordon, Mountainside, N.J., assignor to Sleepair Corporation, Mountainside, N.J.

Filed Dec. 3, 1993, Ser. No. 162,443

Int. Cl.⁶ G01N 21/61

U.S. Cl. 250—343

36 Claims



1. An apparatus for measuring optical absorption by a constituent gas in a measurement cell, said apparatus comprising: radiation means for emitting broad band infrared radiation along one of a measurement lightpath and a reference lightpath, the measurement cell being positioned in said measurement lightpath so that said radiation passes there-through; alternating means for alternately and periodically directing said radiation along one of said lightpaths at a first frequency; attenuating means for balancing the relative power of said radiation in each of said lightpaths in the absence of optical absorption of the constituent in the measurement cell; sensor means for sensing radiation from each of said lightpaths and for producing a sensed signal, said sensed signal exhibiting modulation thereupon at said first frequency only when there is optical absorption of the constituent in the measurement cell; and synchronous detection means for demodulating said first frequency from said sensed signal so as to extract a DC signal, said DC signal being proportional to the optical absorption of the constituent in the measurement cell.

5,381,009 MOTION SENSOR ASSEMBLY

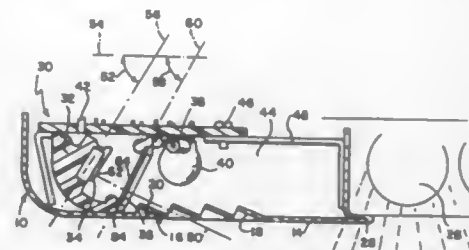
Greg A. Brownell, South Bend, Ind., assignor to SEG Corporation, Mishawaka, Ind.

Filed May 28, 1993, Ser. No. 69,932

Int. Cl.⁶ G08B 13/191, 13/193; G01J 5/08

U.S. Cl. 250—342

39 Claims



1. A motion sensor assembly, comprising: a housing having an interior space bounded by at least one wall, the wall having at least one opening therein; an infrared detector; a lens; a radiation-permeable covering disposed in the opening to conceal the interior space of the housing from view; means positioned to lie within the space of the housing adjacent the radiation permeable covering for mounting the infrared detector and lens adjacent one another within the housing in a fixed relative orientation to focus a field of view through the radiation permeable covering onto the detector and reduce internal reflections between the lens and the detector so that when a source of infrared radiation enters the field of view, the infrared radiation from the source passes through the radiation permeable covering, is focused on the infrared detector by the lens, and causes the detector to output a signal responsive to the infrared energy radiated from the source; and circuit means for providing a signal in response to the output signal of the detector.

5,381,011 MOTION DETECTOR WITH TWO-SIDED PIR SENSOR IN REFRACTIVE ARRANGEMENT

Donald R. Sandell, San Jose, and Wade P. Lee, Lafayette, both of Calif., assignors to Intellectron Products Company, Hayward, Calif.

Filed Jan. 12, 1994, Ser. No. 180,610

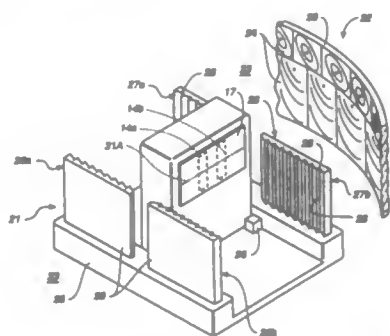
Int. Cl.⁶ G01J 5/08

U.S. Cl. 250—353

5 Claims

1. A passive infrared motion detector having a field of view including frontal and rear regions in front of and behind the motion detector and lateral regions on both sides of the motion detector, comprising: an integrated-circuit infrared sensor package containing an infrared sensor comprising at least one sensing element having front and rear surfaces responsive to incident infrared radiation, said at least one sensing element being mounted in said integrated circuit package to receive infrared radiation at said front and rear surfaces from the area in front of and behind said integrated-circuit package, respectively; first and second infrared-refracting means disposed with

respect to said front and rear surfaces to direct radiation from lateral areas on both sides of said integrated-circuit package to said surfaces, wherein said first and second refracting means are positioned to leave at least a portion of each said surface unobstructed for receiving infrared radiation directed at said respective unobstructed portions from the frontal and rear regions of the field of view; and



focusing means structured and arranged to direct infrared radiation from a plurality of zones in the frontal and rear regions of said field of view directly to said unobstructed portions of said surfaces and from both lateral regions of said field of view to said first and second refracting means for refraction to said front and rear surfaces, whereby the motion detector is provided with a field of view encompassing up to 360°.

5,381,012

COLLIMATOR TRANSFER SYSTEM FOR A NUCLEAR CAMERA

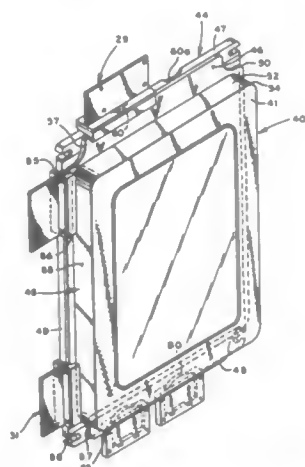
Paul C. Kutolowski, Hudson, Ohio, assignor to Summit World Trade Corp., Hudson, Ohio

Filed Dec. 20, 1993, Ser. No. 169,192

Int. Cl.⁶ G01T 1/161

U.S. Cl. 250—363.1

31 Claims



1. A transfer system for changing the collimator of a nuclear camera rotatable by a gantry about the body of a patient, said transfer system comprising:

- a. a rectilinear collimator frame containing a collimator releasably secured to the face of said camera, said collimator frame having a top and bottom and side outer edge surfaces with at least one contact groove formed in said top and bottom edge surfaces;
- b. a hand pushable transfer cart having a generally C-shaped collimator transfer frame, said transfer frame having generally parallel top and bottom supports and a side support generally perpendicular to said top and bottom supports;
- c. spring biased locking disc means including at least one top

spring biased locking disc extending from said top support and at least one bottom spring biased locking disc extending from said bottom support for slidingly engaging said top and bottom edge surfaces when said camera is rotated to position its collimator in a vertical position by movement of said transfer cart until snap locking said locking discs in said top and bottom contact grooves for retention of said collimator frame within said transfer frame; and

- d. fastener release means on said collimator frame and camera permitting said collimator frame to be released from said camera.

5,381,013

X-RAY IMAGING SYSTEM AND SOLID STATE DETECTOR THEREFOR

John D. Cox, and D. Scott Langford, both of Gainesville, Fla., assignors to General Imaging Corporation, Gainesville, Fla.

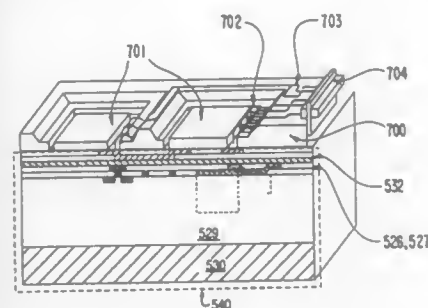
Continuation-in-part of Ser. No. 750,273, Aug. 27, 1991, Pat. No. 5,220,170, which is a continuation-in-part of Ser. No. 462,042, Jan. 8, 1990, Pat. No. 5,043,582, which is a

continuation-in-part of Ser. No. 151,235, Feb. 1, 1988, Pat. No. 4,905,265, which is a continuation-in-part of Ser. No. 807,650, Dec. 11, 1985, abandoned. This application Mar. 18, 1993, Ser. No. 35,344

Int. Cl.⁶ G01T 1/20, 1/24

U.S. Cl. 250—370.09

14 Claims



1. An apparatus, comprising:
 - a scintillator for converting impinging x-rays into visible light;
 - a sensor array having two opposed surfaces with a plurality of sensing cells and interconnect metallization on one of said surfaces and having the other of said surfaces facing said scintillator;
 - a plurality of integrated processing circuits having bond pads and mounted with interconnects to said interconnect metallization;
 - a ceramic layer patterned to overlay said integrated circuits and supporting interconnect conductors, said ceramic layer being attached to said interconnect metallization and said interconnect conductors being connected to said bond pads; and
 - means for causing said visible light to affect a charge on said sensing cells so that said impinging x-rays are sensed by said sensing cells.

5,381,014

LARGE AREA X-RAY IMAGER AND METHOD OF FABRICATION

Lothar S. Jeromin, Newark, Del., and George D. Robinson, Jr., Sewell, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1993, Ser. No. 174,861

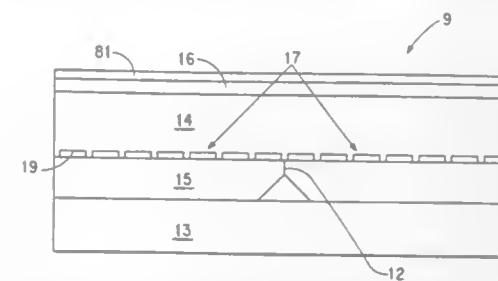
Int. Cl.⁶ G01N 23/04; G01T 1/24; H01L 31/115

U.S. Cl. 250—370.09

20 Claims

1. An X-ray image capture element comprising:
 - a base plate having a top surface and a bottom surface;
 - a plurality of discrete array modules juxtaposed over the top

surface of the base plate such that each module is disposed adjacent at least one other module to form a two-dimensional mosaic of modules, each of said modules including a dielectric substrate having a top surface and a bottom surface disposed adjacent the top surface of said base



plate, and a plurality of transistors arrayed adjacent the top surface of said dielectric substrate; and

- a continuous radiation detecting layer disposed over the plurality of array modules, said radiation detecting layer for producing electrical charges representative of a pattern of incident x-ray radiation.

5,381,015

X-RAY INTENSIFYING SCREENS WITH AN IMPROVED SPEED/IMAGE QUALITY RELATIONSHIP

Philip Doms, Edegem, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

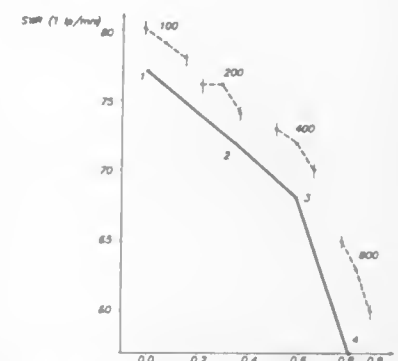
Filed Sep. 10, 1993, Ser. No. 118,740

Claims priority, application European Pat. Off., Sep. 11, 1992, 92202770.1

Int. Cl.⁶ G21K 4/00

U.S. Cl. 290—483.1

12 Claims



1. An X-ray intensifying phosphor screen comprising a support and layer which comprises a mixture of phosphors essentially consisting of

- (1) a monoclinic M' structure yttrium tantalate, niobate or tantalateniobate phosphor, and
 - (2) a rare earth activated alkaline earth fluorohalide phosphor and which may comprise one or more dyes characterized in that the dyes (if any) have a maximum absorption in the wavelength region between 410 and 500 nm and an extinction coefficient at said wavelength of maximum absorption of at least twice that at any wavelength below 410 nm and that the amount of said dye, the ratio by weight of said phosphors characterizing the phosphor mixture, the phosphor coverage, and the reflectance of the support are selected in such a way that the screens belong to one of the 4 classes given hereinafter wherein the amount of dye (if any) is expressed as that causing a determined loss in speed in a reference screen as defined herein and wherein the percentage reflection for each of the selected support materials is determined as defined herein;
- class A comprising

- (1) dye(s) in an amount causing a loss in speed in the range between 0.22 and 0.32 (relative logarithmic values)
 - (2) a ratio by weight of phosphor (1) to phosphor (2) comprised between 99:1 and 95:5
 - (3) a phosphor coverage of 25 to 35 mg/cm² and (4) a support having a degree of reflectance between 0 and 10%;
- class B comprising
- (1) dye(s) in an amount causing a loss in speed in the range between 0.16 and 0.26 (relative logarithmic values)
 - (2) a ratio by weight of phosphor (1) to phosphor (2) comprised between 90:10 and 80:20
 - (3) a phosphor coverage of 40 to 50 mg/cm² and (4) a support having a degree of reflectance between 85 and 100%;
- class C comprising
- (1) a dye(s) in an amount causing a loss in speed in the range between 0.01 and 0.06 (relative logarithmic values)
 - (2) a ratio by weight of phosphor (1) to phosphor (2) comprised between 99:1 and 90:10
 - (3) a phosphor coverage of 53 to 65 mg/cm² and (4) a support having a degree of reflectance between 45 and 60%;
- class D comprising
- (1) dye(s) in an amount causing a loss in speed in the range between 0.00 and 0.03 (relative logarithmic values)
 - (2) a ratio by weight of phosphor (1) to phosphor (2) comprised between 65:35 and 35:65
 - (3) a phosphor coverage of 55 to 83 mg/cm² and (4) a support having a degree of reflectance between 0 and 10%.

5,381,016

METHOD AND APPARATUS FOR MEASURING PHOTOLUMINESCENCE IN CRYSTAL

Kazuo Moriya, Ageo, Japan, assignor to Mitsui Minings & Melting Co., Ltd., Japan

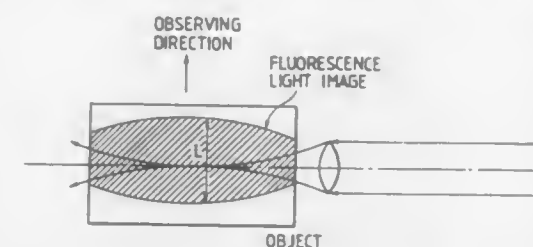
Filed Mar. 25, 1993, Ser. No. 37,994

Claims priority, application Japan, Mar. 30, 1992, 4-074723

Int. Cl.⁶ G01N 21/64

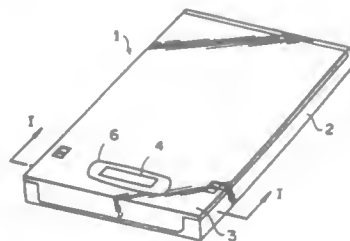
U.S. Cl. 250—458.1

22 Claims



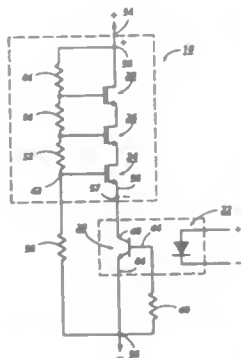
1. A photoluminescence measuring apparatus comprising:
 - a laser source for emitting a laser beam having a wavelength which can go into the inside of an object crystal;
 - a projection optical system for condensing the laser beam into a predetermined diameter then to project it toward the inside of crystal;
 - a light receiving optical system for receiving light generated in the crystal with the projected laser beam;
 - a filter disposed in said light receiving optical system and having a band transmission characteristic to allow only fluorescence in said generated light to pass therethrough; and
 - a processor for evaluating the fluorescence having passed through said filter to analyze an internal structure of the crystal.

5,381,017
CASSETTE FOR RADIATION IMAGE STORAGE PANELS
 Yasunori Ohta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Dec. 23, 1993, Ser. No. 172,163
 Claims priority, application Japan, Dec. 25, 1992, 4-345919
 Int. Cl.⁶ G03B 42/02, 42/04
 U.S. Cl. 250—484.4 4 Claims



1. A cassette for a radiation image storage panel, comprising:
- a box member for housing a radiation image storage panel therein, the box member being provided with an opening, through which the radiation image storage panel is to be fed into and out of the box member,
 - a cover member, which opens and closes the opening,
 - a small window, which is formed in either one of the box member and the cover member and through which an identification mark put on the radiation image storage panel having been housed in the box member is to be read from the exterior of the cassette, and
 - a plate-like member, which is substantially transparent, contains lead, and closes the small window, wherein the plate-like member is releasably engaged with the small window, and the small window is provided with a protective cover, which covers the plate-like member.

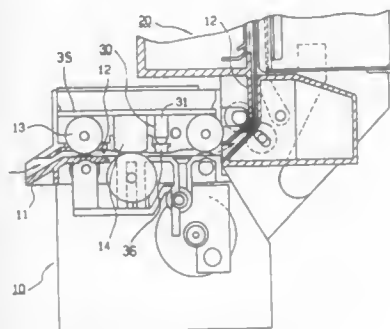
5,381,018
ELECTRONIC CIRCUIT TO REPLACE A LIGHT EMITTING DIODE AND A LIGHT DEPENDENT RESISTOR
 Mohamad M. Mojaradi, Los Angeles, and Tuan A. Vo, Hawthorne, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
 Filed Dec. 20, 1993, Ser. No. 169,023
 Int. Cl.⁶ H03K 3/42; G02B 27/00
 U.S. Cl. 250—551 10 Claims



1. A variable impedance circuit comprising:
- a biased transistor means with a gate terminal, a drain terminal, and a source terminal,
 - biasing means having an input and an output,
 - an optoelectronic transistor means with a collector, an emitter which outputs emitter current, and a base,
 - a positive end node at a given voltage,
 - a negative end node at a given voltage that is less than the positive end node voltage,

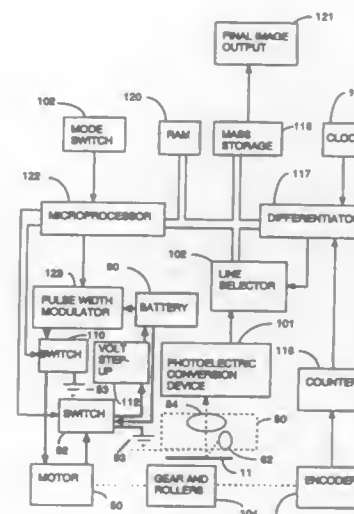
- the drain terminal of said biased transistor means being electrically connected to said positive end node,
- the gate terminal of said biased transistor means electrically connected to the input of said biasing means,
- the source of said transistor means electrically connected to the collector of said optoelectronic transistor,
- the emitter of said optoelectronic transistor electrically connected to the output of said biasing means and said negative end node,
- a light emitting means, and
- the emitter being responsive to light from said light emitting means for changing the amount of emitter current.

5,381,019
CURRENCY VALIDATOR USING A PHOTOCOUPLER FOR IMAGE RECOGNITION USING CYLINDRICAL LENS
 Taichi Sato, Yamato, Japan, assignor to Japan Cash Machine Co., Ltd., Osaka, Japan
 Continuation of Ser. No. 773,019, Oct. 7, 1991, abandoned. This application Jun. 24, 1993, Ser. No. 83,191
 Claims priority, application Japan, Oct. 11, 1990, 2-105931[U]
 Int. Cl.⁶ G06K 5/00 3 Claims



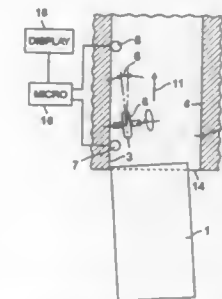
1. A currency validator comprising:
- means for advancing currency in the form of a bill along a predetermined path from a source to a bill stacker,
 - a photocopier for image recognition including a case having a pair of apertures in juxtaposed relation positioned along said path,
 - a light emitting element positioned in one of said apertures,
 - a light sensitive element positioned in the other of said apertures,
 - a cylindrical lens having an elongated flat surface facing both said elements,
 - a convex surface of said lens facing outwardly of said case, said cylindrical lens being positioned normal to the path traversed by said bill, said cylindrical lens being spaced vertically from a portion of said path thereby defining a space therebetween, and
 - a transparent plate means positioned beneath said lens, said plate means having a flat surface facing said bill whereby said plate means
 - forms an optical path between said lens and said bill,
 - fills substantially the space between the said lens and said portion of said path,
 - precludes contact between said bill and said lens and
 - provides smooth passage for said bill minimizing wrinkling as the bill progresses past said case,
 whereby light emitted passes through said cylindrical lens and through said plate means, is reflected by said bill, returns through said input plate means and said cylindrical lens and is received by said light sensitive element.

5,381,020
HAND-HELD OPTICAL SCANNER WITH ONBOARD BATTERY RECHARGING ASSEMBLY
 Richard L. Kochis, Fort Collins, and Eric F. Aas, Windsor, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
 Filed Mar. 31, 1993, Ser. No. 40,817
 Int. Cl.⁶ G06K 7/10
 U.S. Cl. 250—566 12 Claims



1. A hand-held optical scanner comprising:
- hand-displaceable housing means for supporting operating components of said optical scanner;
 - scanner electrical components mounted within said housing means for performing scanner operating functions;
 - battery means disposed in said housing for supplying electrical energy to said scanner electrical components;
 - generator means for supplying electrical energy to charge said battery means;
 - roller means rotatably mounted on said housing means and drivingly linked to said generator means for providing driving torque to said generator means.

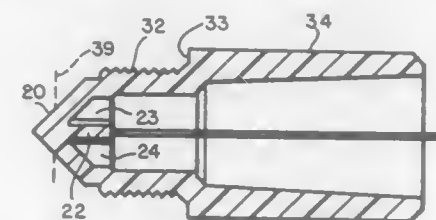
5,381,021
SHEET ALIGNMENT DEVICE HAVING A DISPLAY FOR INDICATING A REASON FOR REJECTING THE SHEET
 Roberto Polidoro, Geneva, Switzerland, assignor to Mars Incorporated, McLean, Va.
 Filed Jun. 2, 1993, Ser. No. 71,303
 Claims priority, application Switzerland, Jun. 6, 1992, 01789/92-8
 Int. Cl.⁶ G01N 21/86
 U.S. Cl. 250—561 14 Claims



1. Selector for rectangular sheets of value, comprising: an input channel into which a bill is introduced, means for conveying said bill along said input channel, said conveying means including means for pressing an edge of

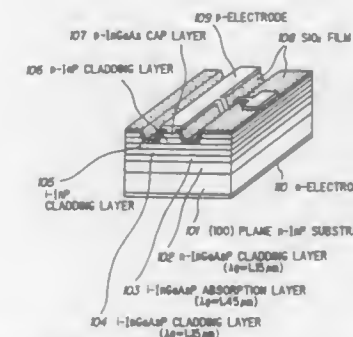
said bill against a reference surface thereby aligning said bill in said input channel, and first and second portion detectors for detecting whether the bill is aligned against the reference surface, wherein the means for pressing is located between the first and second position detectors.

5,381,022
COMBINED OPTICAL WAVEGUIDE AND PRISMATIC LIQUID-LEVEL SENSOR
 Frank A. Nemeth, Harwinton, and James B. Dockendorff, North Haven, both of Conn., assignors to IMO Industries, Inc., Princeton, N.J.
 Filed Dec. 10, 1993, Ser. No. 164,325
 Int. Cl.⁶ G01N 15/06
 U.S. Cl. 250—577 15 Claims



1. As an article of manufacture, a unitary prismatic liquid-level sensor body of light-transmitting material, said body comprising a proximal base portion having a central axis and adapted for selective mounting to a container for liquid and at an elevation at which instantaneous presence or absence of liquid is to be sensed; said body extending distally from said base portion as an integrally formed convergent shell which, in at least one geometric plane that includes said axis, has an apex on said axis and an apex angle of substantially 90 degrees, and a relatively narrow flat waveguide element extending within said shell and including said axis, said waveguide element being integrally united with said shell in the region of shell convergence, said waveguide element having a proximal surface extending transverse to said axis, said surface being adapted for light-beam passage on alignments that are parallel to each other and to said axis at each of two ports which are at symmetrically opposite offsets from the central axis.

5,381,023
SEMICONDUCTOR DEVICE FOR CONTROL OF A SIGNAL LIGHT
 Keiro Komatsu, Tokyo, Japan, assignor to NEC Corporation, Japan
 Filed Aug. 11, 1993, Ser. No. 104,722
 Claims priority, application Japan, Aug. 11, 1992, 4-214255
 Int. Cl.⁶ H01L 29/205, 31/0304
 U.S. Cl. 257—85 3 Claims



3. A semiconductor device for controlling a signal light, said device comprising:

a control gate electrode formed on said second gate insulating film.

5,381,029
SEMICONDUCTOR DEVICE INCLUDING SEMICONDUCTOR LAYER HAVING IMPURITY REGION AND METHOD OF MANUFACTURING THE SAME

Koji Eguchi, Natsuo Ajika, and Kazuyuki Sugahara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

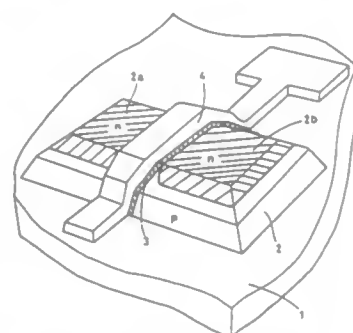
Filed Feb. 21, 1992, Ser. No. 838,993

Claims priority, application Japan, Mar. 1, 1991, 3-036259; Sep. 11, 1991, 3-230648

Int. Cl.⁶ H01L 27/01, 29/06

U.S. Cl. 257—354

3 Claims



1. A semiconductor device comprising: an insulating layer; a semiconductor layer formed on said insulating layer to define source/drain regions; a gate insulating film formed on said semiconductor layer with a substantially uniform thickness; and a gate electrode formed on said gate insulating film; wherein the transverse sectional form of said semiconductor layer comprises a lower trapezoid including a bottom side in contact with said insulating layer, an upper side, and lateral sides and an upper trapezoid including a bottom side which is the upper side of said lower trapezoid, an upper side, and lateral sides, and the included angles between the bottom side and the lateral sides of said lower trapezoid are larger than the included angles between the bottom side and the lateral sides of said upper trapezoid.

5,381,030
SEMICONDUCTOR MEMORY DEVICE WITH IMPROVED STEP PROTECTION AND MANUFACTURING METHOD THEREOF

Naoki Kasai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 886,941, May 22, 1992, abandoned.

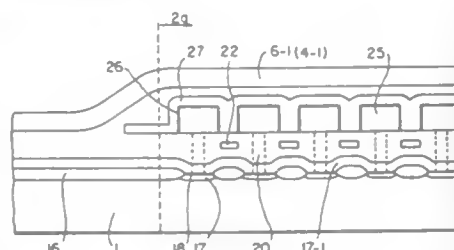
This application Apr. 26, 1994, Ser. No. 233,560

Claims priority, application Japan, May 24, 1991, 3-119681

Int. Cl.⁶ H01L 23/48, 29/40

U.S. Cl. 257—390

4 Claims



1. A semiconductor memory device comprising: a memory cell array region including memory cells arranged in an array form;

a plurality of word lines arranged within said memory cell array region in parallel to one another; first and second row decoders arranged respectively on both sides of said memory cell array region; an insulating film covering said word lines; and a plurality of metallic wirings formed on said insulating film and electrically connected to said word lines by means of contact parts, said metallic wirings having step portions in an area where said metallic wirings pass from one layer to another layer, each of alternate ones of said metallic wirings having an elongated end portion to be connected to said first row decoder and each of remaining ones of said metallic wirings having an elongated end portion to be connected to said second row decoder, said elongated end portions of said metallic wirings having a width greater than remaining portions of said metallic wirings, said greater width being provided substantially at said step portions.

5,381,031
SEMICONDUCTOR DEVICE WITH REDUCED HIGH VOLTAGE TERMINATION AREA AND HIGH BREAKDOWN VOLTAGE

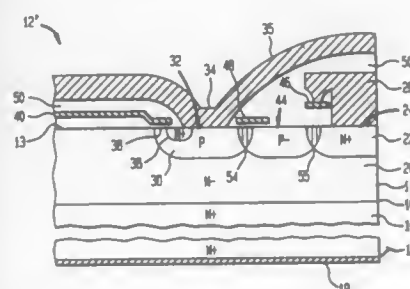
Muhammed A. Shihb, Wyomissing Hills, Pa., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 22, 1993, Ser. No. 172,370

Int. Cl.⁶ H01L 23/58, 29/76, 29/94

U.S. Cl. 257—488

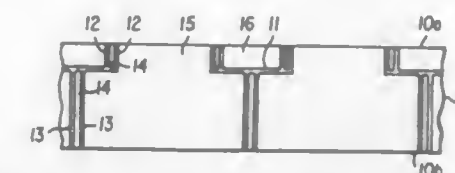
5 Claims



1. A semiconductor device defining an upper, major surface having a reduced high voltage termination area and high breakdown voltage, comprising: a semiconductor substrate having an upper surface, said substrate being of a first electrical conductivity type and having a first doping concentration; a bulk region of said first electrical conductivity type disposed on said upper surface of said substrate, said bulk region defining a side wall and a part of said upper, major surface, and having a doping concentration less than said first doping concentration; a first impurity region contiguous with said bulk region adjacent said side wall and defining a first portion of said upper, major surface, said first impurity region being of said first electrical conductivity type and having a doping concentration greater than said doping concentration of said bulk region; a first conducting material in conductive relation with said first portion of said upper, major surface; a second impurity region contiguous with said bulk region, spaced from said first impurity region and defining a second portion of said upper, major surface, said second impurity region being of a second electrical conductivity type and having a second doping concentration; a third impurity region contiguous with said bulk region between said first and second impurity regions, in region-to-region contact with said second impurity region and defining a third portion of said upper, major surface between said first and second portions of said upper, major surface, said third impurity region being of said second electrical conductivity type and having a doping concentration less than said second doping concentration of said second impurity region; and a second conducting material in conductive relation with said third portion of said upper, major surface, said second conducting material being of said second electrical conductivity type and having a doping concentration less than said second doping concentration of said second impurity region.

tration less than said second doping concentration of said second impurity region; a second conducting material in conductive relation with said second portion of said upper, major surface, a part of said second conducting material extending directly above said third portion of said upper, major surface in spaced relation therefrom; a first field shield plate in contact with said first conducting material and in spaced relation from said upper, major surface directly above said first and third impurity regions, said first field shield plate being electrically isolated from the second conducting material; insulating material disposed on the portions of said upper, major surface not in contact with said first and second conducting materials; and a third conducting material in conductive relation with said semiconductor substrate.

wafer to the rear surface of the wafer and second semiconductor regions are formed that are bounded by the partition dielectric films, the embedded dielectric films, and the face surface of the wafer surface; and wherein the first and second semiconductor regions are electrically isolated from each other.



tric films, the embedded dielectric films, and the face surface of the wafer surface; and wherein the first and second semiconductor regions are electrically isolated from each other.

5,381,032
SEMICONDUCTOR DEVICE HAVING A GATE ELECTRODE OF POLYCRYSTALLINE LAYER AND A METHOD OF MANUFACTURING THEREOF

Yoshiko Kokawa, Tohru Koyama, Kenji Kusakabe, Katsuhiko Tamura, and Yasuna Nakamura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

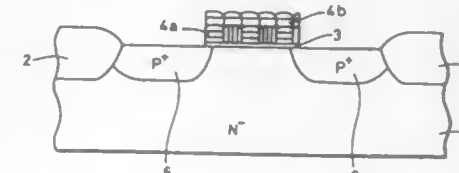
Continuation of Ser. No. 789,711, Nov. 8, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 111,964

Claims priority, application Japan, Nov. 19, 1990, 2-314542

Int. Cl.⁶ H01L 29/76, 29/04, 23/48, 23/52

U.S. Cl. 257—412

1 Claim



1. A semiconductor device comprising: a semiconductor substrate of a first conductivity type; a pair of impurity regions of a second conductivity type formed with a predetermined distance therebetween on said semiconductor substrate; and a gate electrode formed on said semiconductor substrate between said pair of impurity regions, with an insulating film thereunder; wherein said gate electrode includes a first layer of polycrystalline material having crystal orientations of (110) and (111) on said insulating layer, and a second layer of polycrystalline material formed of a plurality of crystal grains which generally having planar orientation (110) on said first polycrystalline layer.

5,381,033
DIELECTRICS DIVIDING WAFER

Kazuo Matsuzaki, Matsumoto, Japan, assignor to Fuji Electric Company, Ltd., Japan

Continuation of Ser. No. 877,723, May 4, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 186,890

Claims priority, application Japan, May 9, 1991, 3-102897

Int. Cl.⁶ H01L 29/34, 27/02, 29/06, 29/40

U.S. Cl. 257—499

2 Claims

1. A dielectrics dividing wafer comprising: dielectric films embedded in the wafer in a predetermined pattern extending laterally parallel to a face surface of the wafer; and partition dielectric films disposed in the form of a vertical wall in the wafer, and extending between a rear surface of the wafer and the embedded dielectric films and between the embedded dielectric films and the face surface of the wafer; wherein first semiconductor regions, surrounded by the partition dielectric films, are formed continuously from the face surface of the

1. An integrated circuit, comprising: (a) a plurality of resistors, each resistor of said plurality of resistors electrically coupled to an output terminal of a plurality of output terminals, and (b) a voltage reference with an output switchably electrically coupled to each resistor of said plurality of resistors; and (c) each resistor of said plurality of resistors comprising a plurality of resistive fuses that are organized in subpluralities of resistive fuses.

5,381,035
METAL-TO-METAL ANTIFUSE INCLUDING ETCH STOP LAYER

Wenn-Jei Chen, 1462 Saskatchewan, Sunnyvale, Calif. 94087; Steve S. Chiang, 19937 Scotland Dr., Saratoga, Calif. 95070, and Frank W. Hawley, 1360 Capri Dr., Campbell, Calif. 95008

Continuation-in-part of Ser. No. 950,264, Sep. 23, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 172,132

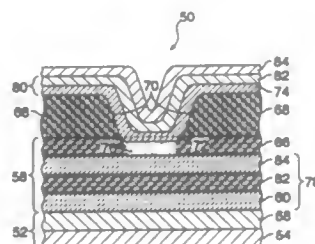
Int. Cl.⁶ H01L 27/02, 23/48

U.S. Cl. 257—530

20 Claims

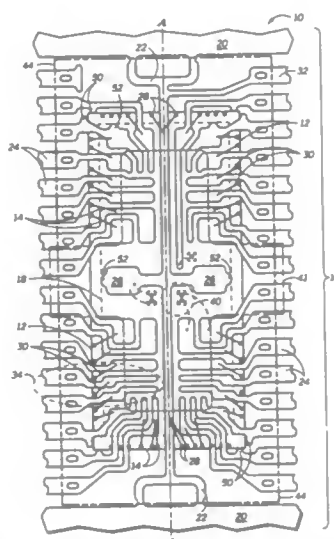
1. An antifuse disposed on an integrated circuit, said antifuse comprising: a first metallization layer disposed on the integrated circuit; an insulating antifuse layer disposed on said first metallization layer; a layer of amorphous silicon disposed on said insulating antifuse layer; a dielectric layer disposed on said layer of amorphous silicon; a via completely penetrating said dielectric layer; said via partially penetrating said amorphous silicon layer; a layer of titanium metal disposed over said via and reacted

with said layer of amorphous silicon to form a region of titanium silicide extending vertically substantially all of the way through said layer of amorphous silicon; and



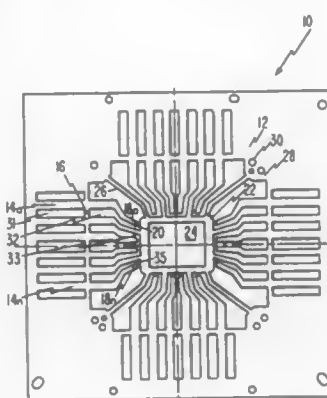
a second metallization layer in electrical contact with said region of titanium silicide.

5,381,036
LEAD-ON CHIP SEMICONDUCTOR DEVICE HAVING PERIPHERAL BOND PADS
Charles G. Bigler; James J. Casto; Michael B. McShane, and David D. Afshar, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 829,870, Feb. 3, 1992. This application Aug. 16, 1993, Ser. No. 107,412
Int. Cl.⁶ H01L 23/48, 29/44, 29/52, 29/60
U.S. Cl. 257-666 17 Claims



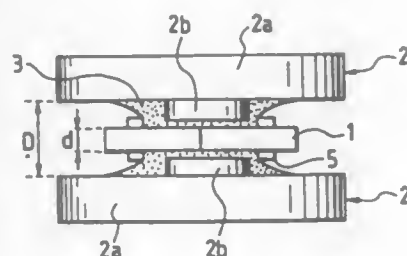
1. A lead-on-chip semiconductor device comprising:
 - a semiconductor chip having a periphery and an active surface, the active surface having a centerline which intersects two opposing sides of the chip;
 - a plurality of bond pads formed on the active surface of the chip along the periphery; and
 - a plurality of leads having portions which overlie the active surface of the chip and being interspersed with the plurality of bond pads, each lead comprising:
 - a central portion overlying the active surface of the chip and electrically coupled to one of the plurality of bond pads by a conductive wire;
 - an inner portion overlying the active surface of the chip and extending from the central portion of the lead toward the centerline of the active surface of the chip; and
 - an outer portion which extends from the central portion of the lead away from and off the active surface of the chip.

5,381,037
LEAD FRAME WITH SELECTED INNER LEADS COUPLED TO AN INNER FRAME MEMBER FOR AN INTEGRATED CIRCUIT PACKAGE ASSEMBLIES
Jerry Olivarez, Milpitas, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jun. 3, 1993, Ser. No. 71,414
Int. Cl.⁶ H01L 23/48, 29/44, 29/52, 29/60
U.S. Cl. 257-666 17 Claims



1. A lead frame of electrically conductive material for providing interconnection to an integrated circuit die in an integrated circuit package assembly comprising:
 - a first predetermined pattern of outer leads;
 - a second predetermined pattern of inner leads integrally connected to the first predetermined pattern of outer leads; and
 - an inner frame member for interconnecting a plurality of inner leads selected from the second predetermined pattern of inner leads, the inner frame member comprising an electrically conductive material defining a cavity within which the integrated circuit die is located, the material peripherally extending in spaced relation around the ends of the inner leads and the inner frame member.

5,381,038
SEMICONDUCTOR DEVICE HAVING PASSIVATION PROTRUSIONS DEFINING ELECTRICAL BONDING AREA
Yoshitomo Ogimura, and Kenzi Motai, both of Kawasaki, Japan, assignors to Fujl Electric Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 808,807, Dec. 18, 1991, abandoned.
This application Apr. 8, 1993, Ser. No. 47,612
Claims priority, application Japan, Dec. 19, 1990, 2-403395; Aug. 5, 1991, 3-194600
Int. Cl.⁶ H01L 23/48, 29/44, 29/52, 29/60
U.S. Cl. 257-689 20 Claims



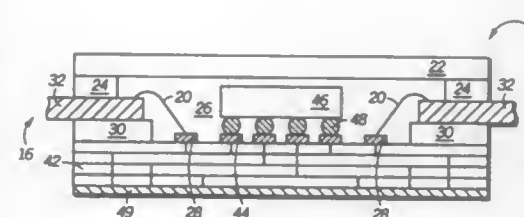
8. A semiconductor element including an electrode construction, comprising:
 - a first electrode plate having a base, a first stepped protrusion, and a second stepped part, said second stepped part protruding from said base and positioned between said

first electrode plate and said first stepped protrusion, said second stepped part surrounding said first stepped protrusion, and said first stepped protrusion being positioned in a central portion of said second stepped part, said second stepped part of said first electrode plate having a smaller area than said first electrode plate;

a second electrode plate having a base, a first stepped protrusion, and a second stepped part, said second stepped part protruding from said base and positioned between said second electrode plate and said first stepped protrusion, said second stepped part surrounding said first stepped protrusion, and said first stepped protrusion being positioned in a central portion of said second stepped part, said second stepped part of said second electrode plate having a smaller area than said second electrode plate; and

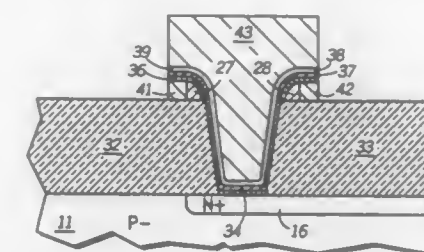
a semiconductor chip having a first pair of protrusions and a second pair of protrusions, said first pair of protrusions defining a first area of solder joint and said second pair of protrusions defining a second area of solder joint, said semiconductor chip being positioned between said first and second electrode plates, each of said first and second electrode plates being joined to respective sides of said semiconductor chip with solder, each of said first stepped protrusions of said first and second electrode plates being positioned between each said pair of protrusions of said semiconductor chip, respectively, said first stepped protrusion and said second stepped part of said first and second electrode plates being smaller in size than said semiconductor chip.

5,381,039
HERMETIC SEMICONDUCTOR DEVICE HAVING JUMPER LEADS
Paul-David Morrison, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 11,612, Feb. 1, 1993, abandoned. This application May 6, 1994, Ser. No. 239,169
Int. Cl.⁶ H01L 39/02
U.S. Cl. 257-701 16 Claims



1. A hermetic semiconductor device comprising:
 - a ceramic base having a first array of conductive pads on a surface and a second array of conductive pads around a periphery of the first array, wherein the first and second arrays of conductive pads are electrically interconnected by means for routing in the ceramic base;
 - a leadframe having a plurality of conductors in a quadrilateral configuration, wherein the plurality of conductors is attached to a periphery of the ceramic base with a glass material, the plurality of conductors having a surface mountable external portion that is curved;
 - a semiconductor die electrically connected to the first array of conductive pads by way of flip-chip bonding with a plurality of conductive interconnect bumps;
 - a plurality of wire bonds connecting the plurality of conductors to the second array of conductive pads to electrically connect the semiconductor die to the leadframe;
 - a cap overlying the semiconductor die and substantially aligning with the ceramic base; and
 - a seal which adhesively couples the ceramic base to the cap to provide a hermetic seal around the semiconductor die.

5,381,040
SMALL GEOMETRY CONTACT
Shih W. Sun, and Michael P. Woo, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 31,085, Mar. 12, 1993, Pat. No. 5,279,990, which is a continuation of Ser. No. 487,336, Mar. 2, 1990, abandoned. This application Aug. 24, 1993, Ser. No. 147,861
Int. Cl.⁶ H01L 29/44, 29/46, 23/48
U.S. Cl. 257-774 17 Claims



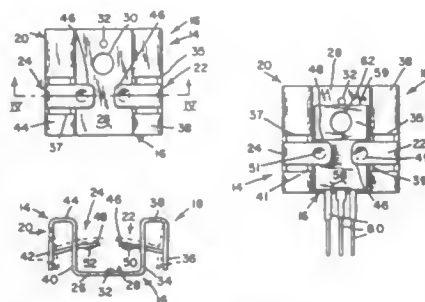
1. A contact structure for an integrated circuit comprising:
 - an element having an elemental width and is a doped region lying adjacent to a primary surface of a semiconductor substrate;
 - a first layer including a first layer opening that overlies the element, wherein:
 - the first layer is an insulating layer and has a first thickness; the first layer opening has a top and bottom;
 - the bottom of the first layer opening lies closer to the element compared to the top of the first layer opening;
 - the first layer opening has a top width at the top of the first layer opening and a bottom width at the bottom of the first layer opening; and
 - the elemental width is at least as wide as the bottom width;
 - a second layer including a second layer opening overlying the first layer opening, wherein:
 - the second layer has a second thickness that is substantially thinner than the first thickness; and
 - the second layer opening has a second width that is wider than each of the top width and the bottom width;
 - a sidewall spacer overlying the first layer and lying at least partially within the second layer opening to define a sidewall spacer opening, wherein:
 - the sidewall spacer includes a material selected from a group consisting of a metal-containing material and a silicon-containing material;
 - the sidewall spacer includes a base which is that surface of the sidewall spacer that is substantially parallel to the primary surface;
 - the sidewall spacer opening has a base width immediately adjacent to the base; and
 - the base width is no less than each of the top width and the bottom width; and
 - a conductive member extending through both the first and second openings and contacting the element, the sidewall spacer, and the second layer.

5,381,041
SELF CLAMPING HEAT SINK
Ronald A. Harmon, Hudson, Mass., assignor to Wakefield Engineering, Inc., Wakefield, Mass.
Filed Apr. 5, 1994, Ser. No. 222,843
Int. Cl.⁶ H01L 23/02, 23/40
U.S. Cl. 257-718 11 Claims

7. A self clamping heat sink for releasable connection to an electrical component having a bottom surface and a top surface, said self clamping heat sink comprising:
 - (a) a base having an upper horizontal surface, a first side and a second side which is opposite said first side;
 - (b) a first inverted U-shaped spring arm which has a vertical inner leg portion which is fixed to the first side of said

base, and a vertical outer leg portion which is spaced from said inner leg portion and which terminates in a free end, said outer end portion being resiliently bendable toward said inner leg portion;

- (c) a first cantilevered clamping finger which is fixed to the outer leg of said first spring arm and which extends toward said base, said first clamping finger having a free end which bears down with biasing pressure from said outer leg portion on the top surface of an electrical component which rests on the upper surface of said base;
- (d) a second inverted U-shaped spring arm which has a vertical inner leg portion which is fixed to the second side of said base, and a vertical outer leg portion which is spaced from the inner leg portion of said second spring arm and which terminates in a free end, the outer end portion of said second spring arm being resiliently bendable toward the inner leg portion of said second spring arm; and



- (e) a second cantilevered clamping finger which is fixed to the outer leg of said second spring arm and which extends toward said base, said second clamping finger having a free end which bears down with biasing pressure from the outer leg portion of said second spring arm on the upper surface of said electrical component, the free ends of said first and second clamping finger moving to a position above the top surface of said electrical component upon application of an external force to said outer leg portions to bend said outer leg portions of said first and second spring arm toward each other to enable said electrical component to be removed from and applied to the upper surface of said base, said first and second clamping fingers engaging the top surface of said electrical component upon removal of said external force to said outer leg portions.

5,381,042

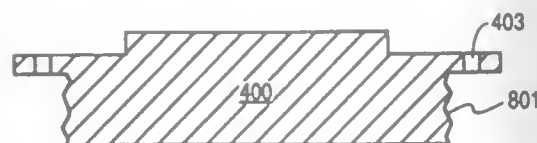
PACKAGED INTEGRATED CIRCUIT INCLUDING HEAT SLUG HAVING AN EXPOSED SURFACE

Steve P. Lerner, Soquel, Calif., and David S. Razu, Garland, Tex., assignors to Amkor Electronics, Inc., Payoli, Pa. Continuation of Ser. No. 861,736, Mar. 31, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 231,341

Int. Cl.⁶ H01L 23/02

U.S. Cl. 257—712

16 Claims



1. A structure, comprising:

- a semiconductor die;
- a leadframe comprised of a die attach pad and a plurality of electrically conductive leads, wherein:
- the leads are formed around a circumference of and are electrically isolated from the die attach pad; and
- the die attach pad has first and second surfaces, the first

surface attached to a surface of the semiconductor die, the second surface being opposite the first surface; a heat slug including:

- a base section having a first base surface and a second base surface opposite the first base surface, a plurality of fins formed on a surface perpendicular to the first and second base surfaces at spaced apart locations around the circumference of the base section;
- a first raised section formed on the first base surface having a die attach pad attachment surface parallel to and raised with respect to the first base surface, the die attach pad attachment surface attached to the second surface of the die attach pad; and
- a second raised section formed on the second base surface having a primary heat transfer surface parallel to and raised with respect to the second base surface, a surface of the second raised section that is perpendicular to the primary heat transfer surface being roughened; and
- insulating material encapsulating the semiconductor die, leadframe and heat slug such that the primary heat transfer surface of the heat slug is exposed to the exterior of the insulating material and such that the insulating material interlocks with the roughened surface of the second raised section;

5,381,043

POWER SUPPLY ARRANGEMENT AND CONNECTOR

Tomohisa Kohiyama, and Jun Kitahara, Kanagawa, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

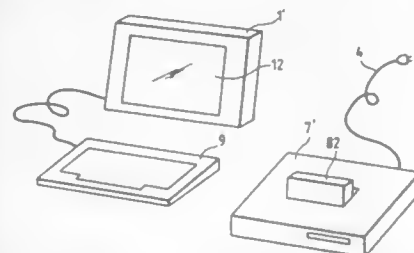
Continuation of Ser. No. 646,392, Jan. 28, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 13,999

Claims priority, application Japan, Jan. 29, 1990, 2-18298

Int. Cl.⁶ H05K 5/02; 7/20; G06F 1/04

U.S. Cl. 307—116

11 Claims



1. A power supply arrangement for a main unit of a portable information processing apparatus including at least a microprocessor and a battery and without means for converting an a.c. voltage to a d.c. voltage, the power supply arrangement comprising an expansion unit of the portable information processing apparatus for expanding the operation of the main unit of the information processing apparatus upon connection therewith, the expansion unit including power circuit means for converting an a.c. voltage into a d.c. voltage, the power circuit means of the expansion unit enabling supply of d.c. power to the main unit when the expansion unit is connected with the main unit, the main unit only being operable by d.c. power, wherein the main unit includes switching means for selecting one of an output of the battery and an output of the power circuit means, and switching control means for detecting connection of the expansion unit with the main unit and for enabling operation of the switching means in accordance therewith, wherein the microprocessor of the main unit is operable at at least first and second frequencies different from each other, and the switching control means enables operation of the microprocessor at one of the first and second frequencies, and wherein the first frequency is higher than the second frequency and the second frequency is utilized when the microprocessor is operated by the battery, the switching control means enabling operation of the microprocessor at the first

frequency at least in response to the detection of the connection of the expansion unit with the main unit.

5,381,044

BOOTSTRAP CIRCUIT FOR DRIVING A POWER MOS TRANSISTOR

Michele Zisa, Comiso; Massimiliano Belluso, Catania, and Mario Paparo, San Giovanni La Punta, all of Italy, assignors to Consorzio Per La Ricerca Sulla Microelettronica Nel Mezzogiorno, Catania and SGS-Thomson Microelectronics s.r.l., Milan, both of Italy

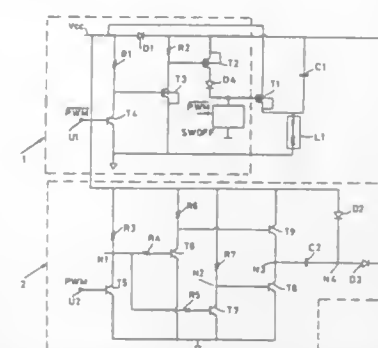
Filed Jul. 22, 1992, Ser. No. 918,440

Claims priority, application Italy, Jul. 24, 1991, MI9-1A002045

Int. Cl.⁶ H03K 17/687

U.S. Cl. 327—109

7 Claims



1. Bootstrap circuit for a power MOS transistor having a drain connected to a power supply terminal and a source connected to a load, comprising a first capacitor chargeable to a first voltage which is a function of the supply voltage of the power transistor, wherein said first capacitor has a first terminal connected to the load and a second terminal connected to said power supply through a first diode and to the gate of the power MOS transistor through first switching means controlled by an activating signal, and including a second capacitor having a first terminal connected to the second terminal of the first capacitor through a second diode and a second terminal connected to ground through second switching means, and further including means, connected to said second terminal of said second capacitor and said second switching means for generating a second voltage on said second capacitor which is higher than said first voltage by an amount at least as great as a threshold voltage of the power MOS transistor.

5,381,045

CIRCUIT FOR AC VOLTAGE APPLICATION IN SYNCHRONISM WITH PATTERN SIGNAL GENERATOR

Eiji Kojima, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1993, Ser. No. 103,848

Claims priority, application Japan, Aug. 28, 1992, 4-253790

Int. Cl.⁶ H03L 1/00; H03K 4/00

U.S. Cl. 327—141

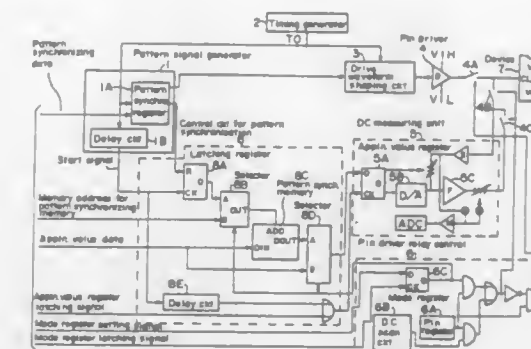
4 Claims

1. A circuit for applying AC voltage in synchronism with a pattern signal generator which comprises:

- a pattern signal generator (1) for generating a pattern signal, including a pattern synchronizing register (1A) to a first input terminal of which are inputted pattern synchronizing data and to a second input terminal of which is inputted a timing signal;
- a timing generator (2) for generating said timing signal;
- a driving waveform shaping circuit (3) having an input terminal for receiving said pattern signal from the pattern signal generator said circuit (3) functioning to shape said pattern signal with the timing of said timing signal from the timing signal generator (2) to form a driving waveform;
- a pin driver circuit (4) which receives as an input said driv-

ing waveform from said driving waveform shaping circuit (3) to output signal to a device under test;

- a DC measurement unit (5) including an application value register 5A and applying a signal to the device (7);
- a relay control circuit (6) for controlling the pin driver circuit including a mode register (6C) for selecting one of the output of the DC measurement circuit 5 and the output of the pin driver circuit (4);
- a pattern synchronizing control circuit (8) comprising a latching register (8A) for latching the output of the pattern synchronizing register (1A), a selector (8B) having a first input terminal for receiving the output of the latching register (8A) and having a second input terminal for receiving a pattern synchronizing memory address signal for selecting one of them, a pattern synchronizing mem-



ory (8C) having an address input terminal for receiving the output of the selector (8B) and a data input terminal for receiving an application value data, and a selector (8D) having a first input terminal for receiving the output of said pattern synchronizing memory (8C) and a second input terminal for receiving the application value data for selecting one of them;

whereby, when said mode register (6C) sets a mode for synchronizing the voltage of the DC measurement unit (5) with the pattern signal generator (1), said relay control circuit (6) connects the DC measurement unit (5) with the device (7), and the selector (8B) and the selector (8D) select their respective first inputs as their respective outputs so as to vary the input data to the application value register (5A) of the DC measurement unit (5) with the timing of the pattern signal generator (1).

5,381,046

STACKED CONDUCTIVE RESISTIVE POLYSILICON LANDS IN MULTILEVEL SEMICONDUCTOR CHIPS

Carl Cederbaum, Paris; Roland Chancelou, Perthes; Myriam Combes, Evry, and Patrick Mone, Ponthierry, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 19,488, Feb. 19, 1993, abandoned, which is a division of Ser. No. 728,929, Jul. 12, 1991, Pat. No. 5,275,963. This application Dec. 1, 1993, Ser. No. 160,470

Claims priority, application European Pat. Off., Jul. 31, 1990, 90480108.1

Int. Cl.⁶ H01L 23/522, 23/532, 29/52, 29/54

U.S. Cl. 257—760

8 Claims

1. A semiconductor structure having a semiconductor substrate (18/19) and completed the Master Slice processing steps, said structure having active regions (21) of devices (T1) formed therein and polysilicon lines (23-1) formed thereon, comprising the following successive elements:

- a first thick passivating layer, said first thick passivating layer including an etch stop layer of intrinsic polysilicon formed on said substrate, a layer of phosphosilicate glass (PSG) formed on said etch stop layer, a diffusion barrier layer on said PSG layer and said first passivating layer

having a plurality of first metal contact studs (30-1) therein contacting at least one of said active regions (21) and at least one of said polysilicon lines (23-1); a surface of said first contact studs being coplanar with a surface of said first thick passivating layer; and



a plurality of polysilicon lands (31-1) on the coplanar surface, at least one of said polysilicon lands being in contact with at least one of said first contact studs.

5,381,047

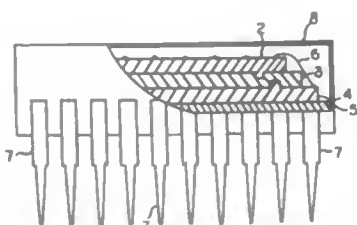
SEMICONDUCTOR INTEGRATED CIRCUIT HAVING MULTIPLE SILICON CHIPS
Kazumasa Kanno, 991, Kuno Sowa-machi, Sashima-Gun, Ibaraki Ken 306-02, Japan

Filed May 20, 1993, Ser. No. 63,911

Claims priority, application Japan, May 27, 1992, 4-042215
Int. Cl.⁶ H01L 25/08, 23/12, 23/32

U.S. Cl. 257-777

5 Claims



1. A semiconductor integrated circuit of the laminated type, comprising:

- an upper silicon chip;
- a lower silicon chip;
- a layer of electrical insulative material interposed between said upper silicon chip and said lower silicon chip, wherein said upper silicon chip and said lower silicon chip are electrically connected to each other via a number of lead wires extending therebetween, wherein a lower surface of said upper silicon chip includes at least one first projection having a predetermined sectional shape projected downward, and an upper surface of said electrical insulative material layer includes a first fitting groove having the same sectional shape as that of said first projection therein, and wherein an upper surface of said lower silicon chip includes at least one second projection having a predetermined sectional shape projected upward, and a lower surface of said electrical insulative material layer includes a second fitting groove having the same sectional shape as that of said second projection and adapted to receive said second projection therein, wherein connections between said first projection and said first fitting groove, and between said second projection and said second fitting groove are non-conductive.

5,381,048

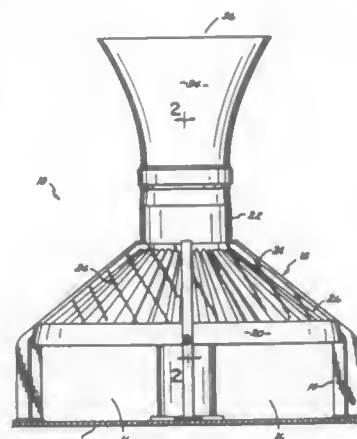
SOLAR VENTURI TURBINE

William R. Baird, 1101 Monroe St., Sturgis, Ky. 42459

Continuation-in-part of Ser. No. 48,481, Apr. 16, 1993, Pat. No. 5,300,817. This application Mar. 29, 1994, Ser. No. 219,220
Int. Cl.⁶ F03D 9/00; F03G 6/04

U.S. Cl. 290-55

18 Claims



1. A solar venturi turbine for generating electrical power from sunlight comprising:

- an upwardly oriented venturi tube having a sloped thermopane glass surface extending between a larger lower neck and a smaller upper neck of said venturi tube;
- a tapered centrifugal fan mounted within said venturi tube adjacent said thermopane glass surface and having a plurality of fan vanes being covered with a thermal absorbent coating, said vanes being configured on said fan so as to spiral radially outwardly in a clockwise direction when viewing said fan in top plan, said thermopane glass surface being spaced from said centrifugal fan to define a volume of air being heated by the sunlight projecting through said thermopane glass surface and impinging upon said thermal absorbent coating, said volume of air rising toward said venturi tube upper neck due to said heating thereby rotating said centrifugal fan;
- a high velocity fan positioned within said venturi tube upper neck and having a plurality of high velocity fan blades mounted on a rotatable fan shaft, said fan blades rotating in response to and increasing the velocity of said rising volume of air;
- a high pressure compressor positioned above said high velocity fan in said venturi tube upper neck, said rising volume of air further increasing in velocity upon passing through said high pressure compressor;
- a turbine positioned above said high pressure compressor in said venturi tube upper neck and having a turbine wheel rotatable in response to said rising volume of air;
- an electrical generator; and
- means for driving said electrical generator from the rotation of said turbine wheel to enable said electrical generator to produce electricity in response to said driving means.

5,381,049

POWER SUPPLY APPARATUS FOR A SYSTEM COMPOSED OF PLURAL ELECTRONIC UNITS

Hideki Onuma, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 888,499, May 27, 1992, abandoned.

This application May 16, 1994, Ser. No. 243,043

Claims priority, application Japan, Jun. 7, 1991, 3-163474

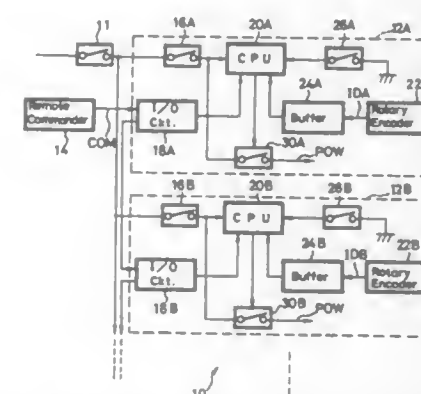
Int. Cl.⁶ H02J 3/00

U.S. Cl. 307-86

6 Claims

1. A power supply apparatus for energizing a multiple-unit system composed of a plurality of electronic units, comprising:

establishing means for establishing a plurality of different time delays and including a plurality of encoders each mounted on a respective one of said plurality of electronic units and each encoder being operable by a user of the system to select a different time delay for respective one of the plurality of electronic units;



receiving means for receiving a remote control signal; and control means responsive to said remote control signal and connected to said establishing means for energizing the electronic units successively at different times corresponding to said different time delays.

5,381,050

MULTI-POSITION ELECTRICAL CONNECTOR AND ELECTRICAL DEVICES INCORPORATING SAME

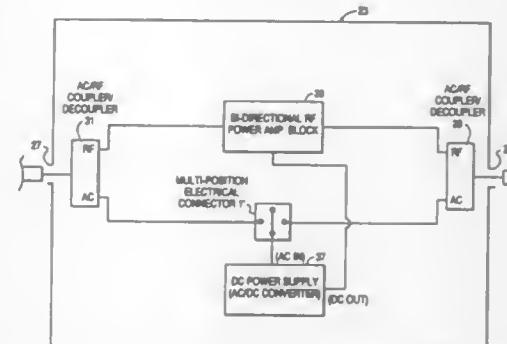
Scott R. Sclari, Lawrenceville, and Munther A. Al-Khalil, Norcross, both of Ga., assignors to Scientific Atlanta, Inc., Norcross, Ga.

Filed Jul. 30, 1993, Ser. No. 99,462

Int. Cl.⁶ H01R 29/00

U.S. Cl. 307-112

24 Claims



10. A signal amplification device for amplifying an RF signal transmitted along an RF cable, comprising:

- first and second RF cable ports;
- a first AC/RF coupler/decoupler electrically connected to said first RF cable port, and having separate AC and RF terminals, for (a) coupling separate AC power and RF signals fed to said AC and RF terminals and passing a composite signal to said first RF cable port; and (b) decoupling a composite AC/RF signal from said first cable port into separate AC and RF signals and providing the decoupled signals to said AC and RF terminals, respectively;
- a second AC/RF coupler/decoupler electrically connected to said second RF cable port, and having separate AC and RF terminals, for (a) coupling separate AC power and RF signals fed to said AC and RF terminals of the second coupler/decoupler and passing a composite signal to said second RF cable port; and (b) decoupling a composite AC/RF signal from said second cable port into separate

AC and RF signals and providing the decoupled signals to the AC and RF terminals of the second coupler/decoupler, respectively;

bi-directional RF signal amplifier means electrically connected between the RF terminals of said first and second AC/RF couplers/decouplers, for amplifying an RF signal carried by the RF cable;

a DC power supply for powering said amplifier means; and a multi-position electrical connector for selectively providing AC power to said DC power supply by connecting said power supply to either one or both of the AC terminals of said first and second couplers/decouplers, said electrical connector comprising:

a first connector member having only one conductor, said conductor having only three electrical contacts, said contacts being symmetrically arranged with respect to each other; and

a second connector member comprising a set of three symmetrically arranged lead terminals, said lead terminals being electrically connected, respectively, to said AC terminals of the first and second couplers/decouplers, and said DC power supply;

said first and second connector members being arranged to be engageable with each other in three different relative positions such that said conductor selectively provides three direct paths of electrical continuity between:

- (a) all three said lead terminals;
- (b) only the two lead terminals connected to said DC power supply and said AC terminal of the first coupler/decoupler; and
- (c) only the two lead terminals connected to said DC power supply and said AC terminal of the second coupler/decoupler;

wherein said second connector member comprises four engagement locations for selectively engaging said three electrical contacts, and said three direct paths of electrical continuity are attainable by selectively engaging said three contacts with said second connector member at said four engagement locations.

5,381,051

HIGH VOLTAGE CHARGE PUMP

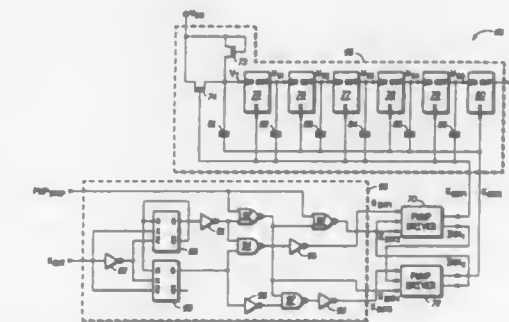
Bruce L. Morton, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Mar. 8, 1993, Ser. No. 28,000

Int. Cl.⁶ H03K 17/687, 19/01

U.S. Cl. 327-390

20 Claims



1. A charge pump, comprising:
logic means for receiving an external clock signal at a predetermined frequency, performing a logic operation, and producing first, second, third, and fourth internal clock signals;

a first pump driver circuit, coupled to said logic means, for receiving said first and second internal clock signals, and in response, providing a first boosted clock signal having

a voltage swing with a magnitude greater than a magnitude of a power supply voltage;

a second pump driver circuit, coupled to said logic means, for receiving said third and fourth internal clock signals, and in response, providing a second boosted clock signal having a voltage swing with a magnitude greater than a magnitude of said power supply voltage, wherein said first and second boosted clock signals are characterized as being two-phase nonoverlapping clock signals; and

a plurality of series-connected pump stages, odd numbered pump stages of said plurality of series-connected pump stages coupled to said first pump driver circuit, for receiving said first boosted clock signal, and even numbered pump stages of said plurality of series-connected pump stages coupled to said second pump driver circuit for receiving said second boosted clock signal, said plurality of series-connected pump stages generating a desired output voltage having a magnitude greater than a magnitude of said power supply voltage.

5,381,052

PEAK DETECTOR CIRCUIT AND APPLICATION IN A FIBER OPTIC RECEIVER

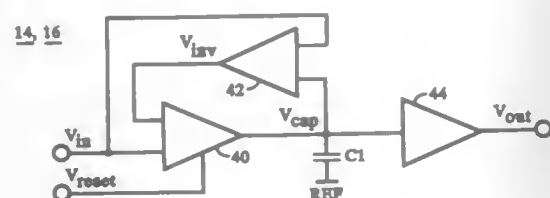
Ravindra N. Kolte, Boxborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 6, 1993, Ser. No. 88,291

Int. Cl.⁶ H03K 5/153

U.S. Cl. 327—60

11 Claims



1. A peak detector, comprising:
 - a capacitor having one terminal whereupon appears a capacitor voltage;
 - a differential inverter having inputs respectively coupled to an input terminal of said peak detector and to said terminal of said capacitor to generate on an output an inverter voltage equal to the difference between twice said capacitor voltage and an input voltage appearing on said input terminal; and
 - an input amplifier having inputs respectively coupled to said input terminal and to said output of said differential inverter and having an output coupled to said terminal of said capacitor to cause said capacitor voltage to equal said input voltage when the difference between said input voltage and said inverter voltage has a predetermined polarity, and to cause said capacitor voltage to equal the average of said input voltage and said inverter voltage when the difference between said input voltage and said inverter voltage has the opposite polarity.

5,381,053

VOLTAGE COMPARATOR CIRCUIT CAPABLE OF AVOIDING ERRONEOUS OPERATION

Susumu Yasuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 24, 1993, Ser. No. 126,383

Claims priority, application Japan, Sep. 29, 1992, 4-259189

Int. Cl.⁶ H03K 5/24

U.S. Cl. 327—65

10 Claims

1. A voltage comparator circuit comprising:
 - a first voltage terminal;
 - a second voltage terminal;
 - a first voltage sampling means, connected to said first and

second voltage terminals, for sampling the voltage at said first voltage terminal minus the voltage at said second voltage terminal;

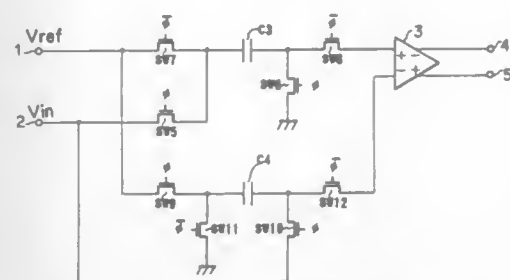
a second voltage sampling means, connected to said first and second voltage terminals, for sampling the voltage at said second voltage terminal minus the voltage at said first voltage terminal;

a differential amplifier, connected to said first and second voltage sampling means, for amplifying the difference in potential between the outputs of said first and second voltage sampling means; and

a ground terminal;

said first voltage sampling means comprising:

- a first capacitor having first and second electrodes;
- a first switch connected between said second voltage terminal and the first electrode of said first capacitor;
- a second switch connected between the second electrode of said first capacitor and said ground terminal;
- a third switch connected between said first voltage terminal and the first electrode of said first capacitor; and



- a fourth switch connected between the second electrode of said first capacitor and a first input of said differential amplifier,
- said second voltage sampling means comprising:
 - a second capacitor having first and second electrodes;
 - a fifth switch connected between said first voltage terminal and the first electrode of said second capacitor;
 - a sixth switch connected between said second voltage terminal and the second electrode of said second capacitor;
 - a seventh switch connected between the first electrode of said second capacitor and said ground terminal; and
 - an eighth switch connected between the second electrode of said second capacitor and the second input of said differential amplifier,
- said first, second, fifth and sixth switches being turned ON when said third, fourth, seventh and eighth switches are turned OFF,
- said first, second, fifth and sixth switches being turned OFF when said third, fourth, seventh and eighth switches are turned ON.

5,381,054

MULTIPLE INPUT COMPARATOR CIRCUIT FOR A SWITCHED RESISTIVE NETWORK

David L. Standley, Westlake Village, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 7, 1993, Ser. No. 163,315

Int. Cl.⁶ H03K 5/24

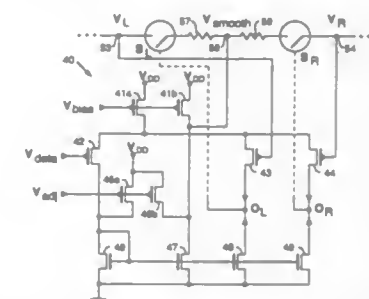
U.S. Cl. 327—82

13 Claims

1. A comparator circuit for a switched resistive network, comprising:
 - a current splitter circuit having a current input connected to a plurality of voltage comparators;
 - means for providing a reference voltage to said current splitter circuit and generating a reference output;
 - means for providing a plurality of voltage inputs from said switched resistive network, each of said comparators

connected to receive at least one of said voltage inputs and to generate a corresponding comparator output;

a current mirror circuit connected to receive said reference output from said current splitter circuit and to generate a plurality of mirror outputs, each of said mirror outputs



joined with a corresponding one of said plurality of comparator outputs; and

means for connecting said plurality of joined mirror and comparator outputs to operate a corresponding plurality of switches in said switched resistive network.

5,381,055

CMOS DRIVER USING OUTPUT FEEDBACK PRE-DRIVE

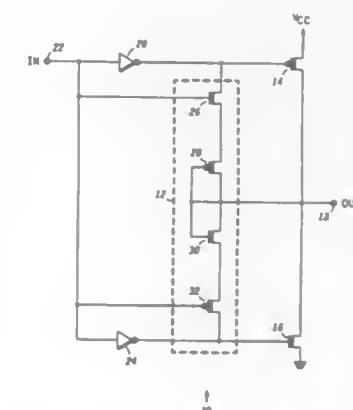
Stephen W. Lai, Chandler; Gregory Djaja, Tempe, and Solomon G. Meskel, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1993, Ser. No. 98,993

Int. Cl.⁶ H03K 19/0948, 17/16

U.S. Cl. 326—27

4 Claims



1. A CMOS driver circuit having first and second output transistors for supplying output drive current at an output, the first output transistor having first and second current carrying electrodes coupled between the output and a first supply voltage terminal and a control electrode responsive to an input signal, the second output transistor having first and second current carrying electrodes coupled between the output and a second supply voltage terminal and a control electrode responsive to the input signal, the CMOS driver including an output feedback circuit comprising:
 - a first pair of complementary transistors responsive to the input signal and being coupled across the control and first current carrying electrodes of the first output transistor; and
 - a second pair of complementary transistors responsive to the input signal and being coupled across the first current carrying and control electrodes of the second output transistor.

5,381,056

CMOS BUFFER HAVING OUTPUT TERMINAL OVERVOLTAGE-CAUSED LATCH-UP PROTECTION

Brian Murphy, Brombach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

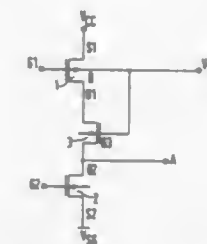
Filed Sep. 15, 1993, Ser. No. 121,725

Claims priority, application European Pat. Off., Sep. 16, 1992, 92115841.6

Int. Cl.⁶ H03K 19/003

U.S. Cl. 326—21

9 Claims



1. A CMOS buffer circuit, comprising:
 - a p-channel MOS transistor having a source terminal connected to an operating voltage source and a substrate terminal connected to a pump voltage source;
 - a first n-channel MOS transistor being connected in series with said p-channel MOS transistor and having a source terminal connected to a reference potential and a drain terminal connected to an output terminal; and
 - a second n-channel MOS transistor being connected between and in series with said p-channel MOS transistor and said first n-channel MOS transistor, said second n-channel MOS transistor having a gate terminal connected to the pump voltage source.

5,381,057

ECL GATE HAVING ACTIVE PULL-DOWN TRANSISTOR

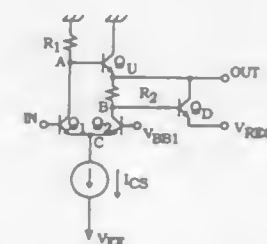
Tadahiro Kuroda, Kawasaki, Japan, and David A. Gray, Santa Clara, Calif., assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan and Synergy Semiconductor Corporation, Santa Clara, Calif.

Filed May 3, 1993, Ser. No. 58,314

Int. Cl.⁶ H03K 19/003, 19/013

U.S. Cl. 326—126

39 Claims



1. An integrated circuit comprising:
 - a first transistor and a second transistor, each of said transistors having an emitter, a base and a collector, wherein said emitter of said first transistor and said emitter of said second transistor are coupled together, and wherein said base of said first transistor comprises a first node, and wherein said base of said second transistor comprises a second node;
 - a third transistor having an emitter, a base and a collector, wherein said base of said third transistor is coupled to said collector of said first transistor, and wherein said emitter of said third transistor comprises a third node characterized by a third node potential;
 - a first resistive element, said first resistive element being

coupled to said collector of said second transistor and to said emitter of said third transistor;

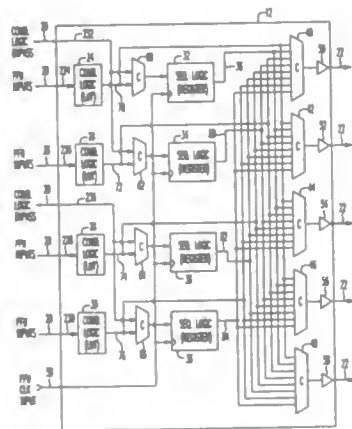
a fourth transistor having an emitter, a base and a collector, wherein said emitter of said third transistor is coupled to said collector of said fourth transistor, and wherein said collector of said second transistor is coupled to said base of said fourth transistor;

a first reference potential;

a second resistive element coupled to said collector of said first transistor and to said first reference potential, wherein said collector of said third transistor is coupled to said first reference potential; and

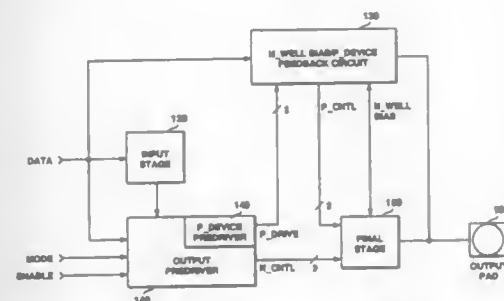
a constant voltage source, said constant voltage source generating a constant voltage signal, wherein said constant voltage source is coupled to said emitter of said fourth transistor, and wherein said constant voltage source is regulated such that the time required for said third node potential to switch from a first level to a second level is substantially equal to the time required for said third node potential to switch from said second level to said first level.

5,381,058
FPGA HAVING PFU WITH PROGRAMMABLE OUTPUT DRIVER INPUTS
 Barry K. Britton, Schnecksville, Pa., and Dwight D. Hill, San Carlos, Calif., assignors to AT&T Corp., Murray Hill, N.J.
 Filed May 21, 1993, Ser. No. 65,823
 Int. Cl.⁶ H03K 19/177
 U.S. Cl. 326—41 29 Claims



1. A field programmable gate array, comprising:
 at least one programmable function unit, each of said at least one programmable function unit having a plurality of logic circuits and a plurality of output drivers, each of said plurality of logic circuits having an output, each of said plurality of output drivers having an input adapted to be selectively coupled to any of the outputs of the plurality of logic circuits, one of said plurality of logic circuits comprising a sequential logic circuit; and
 a programmable interconnection adapted to selectively couple the input of each of the plurality of output drivers to the output of a selected one of the plurality of logic circuits, whereby any of the logic circuit outputs may be coupled as an input to any one of the output drivers.

5,381,059
CMOS TRISTATEABLE BUFFER
 Kenneth R. Douglas, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.
 Filed Dec. 30, 1993, Ser. No. 175,643
 Int. Cl.⁶ H03K 19/00, 19/0175
 U.S. Cl. 326—58 11 Claims

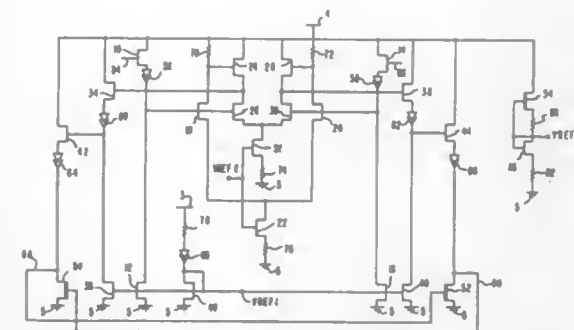


1. A CMOS tristateable output buffer operable from a low-voltage power supply, said buffer tolerating a relatively high voltage at an output node when said buffer is in a tristate mode of operation, said buffer comprising:
 an output predriver circuit generating a pair of drive signals and a first pair of control signals in response to an enable signal and a mode signal, one of said pair of control signals being driven low and one of said pair of drive signals being driven high whenever said mode signal is inactive, said first pair of control signals being driven low and said pair of drive signals being driven high whenever said enable signal is inactive such that said buffer is in said tristate mode;
 a second pair of control signals coupled to said pair of drive signals and also coupled to said output node;
 a final stage circuit coupled to said output node and also coupled to receive said first pair of control signals and said second pair of control signals, said final stage circuit providing relatively fast switching at said output node when said mode signal is active, and relatively slow switching at said output node when said mode signal is inactive; and
 a feedback circuit coupled to said output node, said feedback circuit receiving said pair of drive signals from said output predriver circuit and generating said second pair of control signals in response.

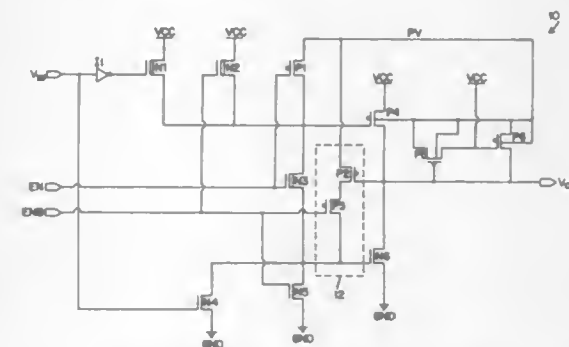
5,381,060
DIFFERENTIAL CURRENT SWITCH TO SUPER BUFFER LOGIC LEVEL TRANSLATOR
 Herschel A. Ainspan, White Plains, and John F. Ewen, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Feb. 14, 1992, Ser. No. 837,461
 Int. Cl.⁶ H03K 19/0175, 17/16
 U.S. Cl. 326—68 15 Claims

1. A translator circuit comprising:
 an input stage for receiving a first and second input having a first minimum voltage level of 2.4 volts, said input stage shifts said first and second inputs to a lower voltage level than said first minimum voltage level;
 said input stage having an output connected to a gain stage, said gain stage transmits an enhanced signal from said input stage to an output stage, said enhanced signal having

a voltage level greater than a second minimum voltage level of 1.6 volts;



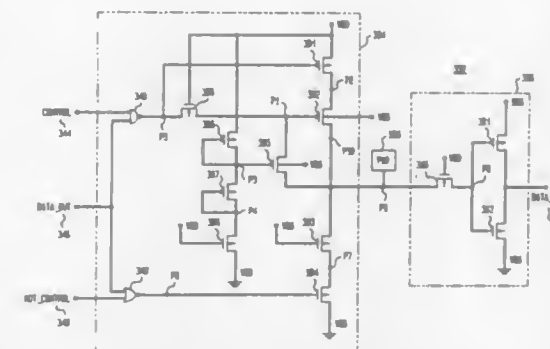
5,381,061
OVERVOLTAGE TOLERANT OUTPUT BUFFER CIRCUIT
 Jeffrey B. Davis, Raymond, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.
 Filed Mar. 2, 1993, Ser. No. 24,942
 Int. Cl.⁶ H03K 19/0175, 19/0948
 U.S. Cl. 326—57 29 Claims



21. An output buffer circuit having a data input for receiving input signals and an output for delivering output signals, a P channel output pullup transistor coupled between the output and a high potential power rail and an output pulldown transistor coupled between the output and a low potential power rail for driving output signals on a common bus, said P channel output pullup transistor being formed in an NWELL, the improvement for tolerating overvoltage greater than the high potential power rail voltage level VCC at the output comprising:

a high potential level pseudorail coupled to the NWELL of the P channel output pullup transistor; and
 a comparator circuit coupling the pseudorail to the output, said comparator circuit comprising passgates constructed to couple the pseudorail to the high potential power rail if the voltage level at the output VOUT is less than the voltage level of the high potential power rail ($V_{OUT} < V_{CC}$) and to couple the pseudorail to the output if the voltage level at the output is greater than the voltage level of the high potential power rail ($V_{OUT} > V_{CC}$);
 at least one N channel pullup transistor coupled between a control gate node of the output pullup transistor and high potential power rail to is plate overvoltage at said output pullup transistor control gate node from the high potential power rail, said N channel pullup transistor having a control gate node coupled to the input.

5,381,062
MULTI-VOLTAGE COMPATIBLE BIDIRECTIONAL BUFFER
 Bernard L. Morris, Allentown, Pa., assignor to AT&T Corp., Murray Hill, N.J.
 Filed Oct. 28, 1993, Ser. No. 144,594
 Int. Cl.⁶ H03K 19/0185, 19/0948
 U.S. Cl. 326—68 7 Claims

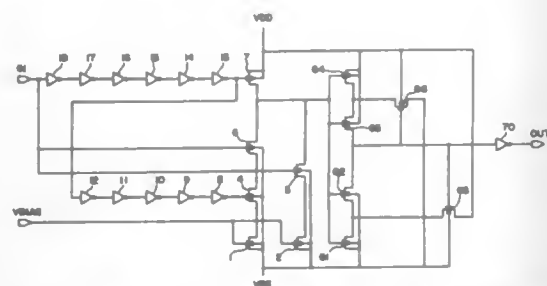


1. An integrated circuit, comprising:
 a first field effect transistor having a drain connected to a first node and a gate connected to a second node;
 a second field effect transistor for protecting said first transistor from voltages applied to said first node which are greater than a predetermined nominal voltage, said second transistor having a drain connected to said second node, a source connected to said first node, and a gate connected to a third node;
 a constant voltage source, coupled to said third node, for supplying a gate voltage to said gate of said second transistor such that a drain-source path of said second transistor does not conduct while voltage applied to said first node is generally less than said gate voltage plus a threshold voltage of said second transistor;
 said constant voltage source comprising a third field effect transistor having a drain and a gate connected to said third node, and a source coupled to a first power supply voltage, said gate voltage being substantially equal to said first power supply voltage minus a threshold voltage of said third transistor; and
 said second and third transistors each having a back gate, the back gate of said second transistor being coupled to a second power supply voltage and the back gate of said third transistor being coupled to said first power supply voltage, said second power supply voltage being greater than said first power supply voltage such that said second transistor threshold voltage is greater than said third transistor threshold voltage.

5,381,063
AC OFFSET COMPENSATION FOR ACTIVE LCD DRIVERS
 Richard A. Erhart, Chandler, and Thomas W. Ciccone, Paradise Valley, both of Ariz., assignors to Medtronic, Inc., Minneapolis, Minn.
 Filed Nov. 13, 1992, Ser. No. 976,126
 Int. Cl.⁶ H03K 5/13
 U.S. Cl. 327—288 2 Claims

1. A signal processing apparatus, comprising:
 a digital input for receiving a digital signal;
 a ramp generator generating a signal with increasing amplitude initiated in response to input of said digital signal;
 a plurality of delay means for defining a hold delay interval as a function of said digital signal;
 a plurality of output means for generating an output signal

corresponding to said amplitude of said ramp generator at expiration of a said hold delay interval; and



wherein each said delay means comprises a compensation means for compensating the said hold delay interval defined by said delay means in opposite proportion to signal propagation speed through said delay means.

5,381,064

PRINT WHEEL MOTOR FOR ENCODER

Richard I. Bennet, Crewe, and Ian Gibb, Nantwich, both of United Kingdom, assignors to Macon Management & Design Limited, United Kingdom

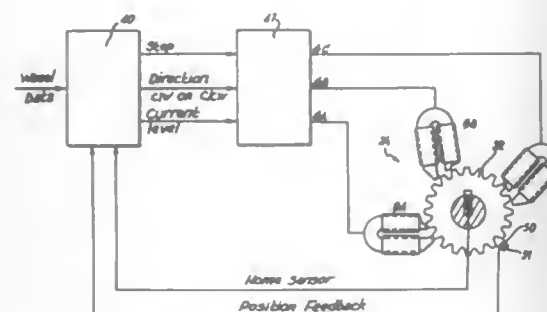
Filed Jan. 13, 1993, Ser. No. 4,100

Claims priority, application United Kingdom, Jan. 15, 1992, 9200792

Int. Cl.⁶ H02K 24/00; H03M 1/22

U.S. Cl. 310—49 R

11 Claims



1. Apparatus comprising a plurality of wheels arranged in a row, each wheel comprising a plurality of formations at equidistantly spaced positions around the wheel at a particular radius except for one position, known as a blank position, where the formation is missing, each wheel further including a home formation disposed adjacent the blank position but on a different radius, each wheel being movable relative to the others into one of a plurality of positions in which a processing member of each wheel is disposed at a processing point, one of said plurality of positions being designated a home position, each wheel being formed such that a sensor beam is transmitted through aligned formations in order to determine the home position of each wheel, said apparatus further comprising two position sensors which are disposed respectively on said particular radius and said different radius, respectively.

5,381,065

VEHICLE WINDOW AND LOCK SECUREMENT

Thomas Jones, 1422 N. Lockwood, Chicago, Ill. 60651

Continuation-in-part of Ser. No. 865,350, Apr. 8, 1992, abandoned. This application Mar. 23, 1993, Ser. No. 35,662

Int. Cl.⁶ B60R 25/00; G05D 3/10

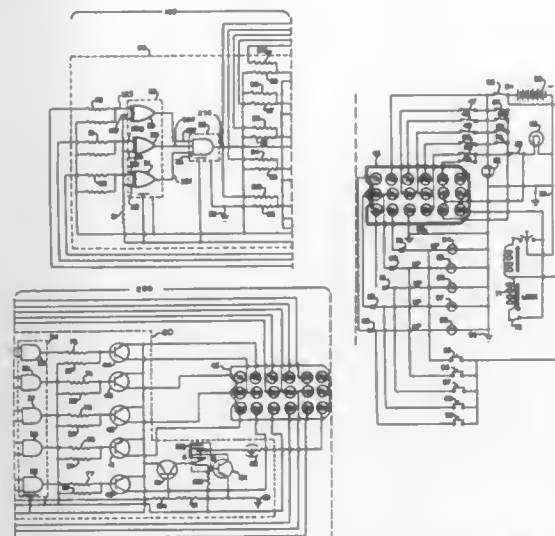
U.S. Cl. 318—454

10 Claims

1. A window closing and openable body panel locking device in a vehicle having a power driven, opening and closing window, a power operated openable body panel lock actuat-

able between a locked and unlocked position, a seat occupancy sensor for indicating whether a person is seated in the vehicle, an openable body panel ajar sensor for indicating whether an openable body panel is open or closed, a key operated ignition, and an electrical power source, comprising:

- a first switch electrically connected to said power source and providing a first predetermined signal when the key is in the ignition;
- a second switch electrically connected to said power source and providing a second predetermined signal when the seat is occupied;
- a third switch electrically connected to said power source and providing a third predetermined signal when the openable body panel is open;
- a first electrical circuit adapted to read said first, second and third signals, and determining if said first, second, and third signals are present or absent, and if said signals are all absent, sending a fourth signal to close said window;
- said window having a fourth switch sending a fifth signal when the window is open; said fourth switch being electrically connected to a second circuit adapted to receive said fourth and fifth signals and if both signals are present, to send a sixth signal to energize a motor to close said window;



- a first X-OR GATE having a first input electrically connected to said first switch and a second input electrically connected to said power source so that a first output signal is produced when said seat is occupied;
- a second X-OR GATE having a first input electrically connected to said second switch and a second input electrically connected to said power source so that a second output signal is produced when said openable body panel is open;
- a third X-OR GATE having a first input electrically connected to said third switch and a second input electrically connected to said power source so that a third output signal is produced when key is in said ignition; and
- an AND GATE having a first AND GATE input for receiving said first output signal, a second AND GATE input for receiving said second output signal and a third AND GATE input for receiving said third output signal, said AND GATE generating said fourth signal when all of said inputs are present.

6. An automatic window closing and openable body panel locking device for a vehicle having an occupant seat, an ignition key and openable body panel having a motor driven, electrically controlled window and solenoid operated openable body panel lock, comprising:

5,381,066

SPINDLE MOTOR WITH A SEALING MEMBER

Itsuo Miyaji, Yokaichi, and Hiroshi Matsumoto, Hikone, both of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

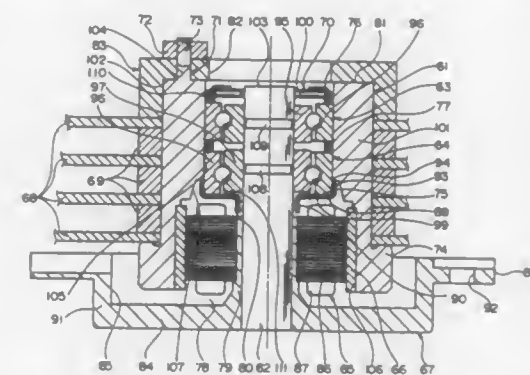
Filed Feb. 25, 1993, Ser. No. 22,514

Claims priority, application Japan, Feb. 28, 1992, 4-079055; Mar. 28, 1992, 4-102065

Int. Cl.⁶ H02K 5/16

U.S. Cl. 310—90

2 Claims



- means for sensing whether said seat is occupied and generating a first positive voltage if said seat is occupied;
- means for sensing whether the key is in the ignition and generating a second positive voltage if said key is in the ignition;
- means for sensing whether said openable body panel is ajar and generating a third positive voltage if said openable body panel is ajar;
- means for receiving said first positive voltage and generating a fourth positive voltage if the first positive voltage is absent;
- means for receiving said second positive voltage and generating a fifth positive voltage if the second positive voltage is absent;
- means for receiving said third positive voltage and generating a sixth positive voltage if the third positive voltage is absent;
- means for receiving said fourth, fifth and sixth positive voltages and generating a controlling output when all of said fourth, fifth and sixth positive voltages are present;
- means for energizing the window motor responsive to said controlling output, means for simultaneously energizing said solenoid operated lock;
- said means for receiving said first voltage comprising an X-OR GATE having a first and a second input, the first input being a common input and the second input being electrically connected to receive said first voltage;
- said means for receiving said second voltage comprising an X-OR GATE having a first and a second input, the first input being a common input and the second input being electrically connected to receive said second voltage; and
- said means for receiving said third voltage comprising an X-OR GATE having a first and a second input, the first input being a common input and the second input being electrically connected to receive said third voltage.

9. An automatic device for a vehicle having a seat, a key ignition and an openable body panel with a window driven by a motor for closing said window and a solenoid for locking said openable body panel, comprising:

- an electrical circuit having first, second and third logical elements;
- said first logical element being electrically connected to a sensor associated with one of said openable body panel, said seat or said ignition and producing a first output depending on the condition of said openable body panel, said seat or said ignition;
- said second logical element being electrically connected to a sensor associated with a second one of said openable body panel, said seat or said ignition and producing a second output depending on the condition of said second one of said openable body panel, seat or ignition;
- said third logical element being electrically connected to a sensor associated with the remaining one of said openable body panel, said seat or said ignition and producing a third output depending on the condition of said remaining one of said openable body panel, seat or ignition;
- a fourth logical element receiving said three conditional outputs and sending a fourth output when the conditions of the seat unoccupied, the key out of the ignition and the openable body panel closed are met;
- said fourth output controls a second circuit which closes said window when said conditions are met, and said second circuit locking said openable body panel;
- said first, second and third logical elements comprises X-OR GATES each having one common input and another input connected to receive a positive voltage generated by the respective sensor with which the respective X-OR GATE is associated;
- said sensors include a door light switch, a seat occupancy switch and an ignition key buzzer switch; and
- said positive voltage is supplied by the respective switch.

1. A spindle motor comprising a stationary member, a shaft mounted on said stationary member, a hub which is mounted through a pair of bearings rotatably on said shaft and on which at least one recording disk is mounted, a rotor magnet mounted on said hub and a stator provided face to face with said rotor magnet, wherein at least one of the pair of bearings comprises an outer ring to be fitted on the hub, an inner ring to be fitted on said shaft and a plurality of balls between said outer ring and said inner ring, a seal member is provided on said at least one of the pair of bearings, said seal member comprises a disk-like flat portion, a large-sized first annular wall provided on an outer periphery of said flat portion and a small-sized second annular wall provided on an inner periphery of said flat portion, and the large-sized first annular portion is fitted on the outer ring of the at least one of the pair of bearings to define a small gap between said flat portion and said inner ring and between the second small-sized annular wall and the shaft respectively.

5,381,067

ELECTRICAL IMPEDANCE NORMALIZATION FOR AN ULTRASONIC TRANSDUCER ARRAY

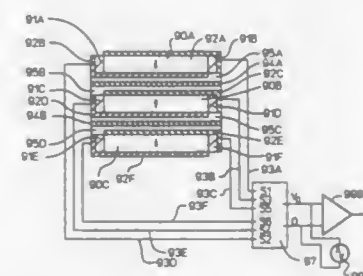
Michael Greenstein, Los Altos, and Hewlett E. Melton, Jr., Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 10, 1993, Ser. No. 29,212

Int. Cl.⁶ H01L 41/08

U.S. Cl. 310—334

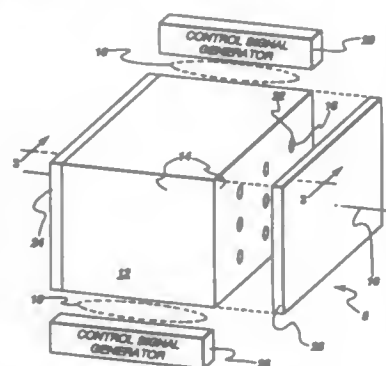
16 Claims



1. A transducer device comprising, excitation means for supplying a signal to generate waves in piezoelectric material, an array of piezoelectric transducer elements electrically coupled to said excitation means, each transducer element

having an impedance per unit area, said array including first and second transducer elements having radiating regions having different transverse areas, said first and second transducer elements thereby having different impedances, and means to adjust impedance per unit area for at least partially offsetting said difference between said impedances of said first and second transducer elements, said means to adjust including a connection of said first transducer element to drive circuitry in a manner electrically different from a connection of said second transducer element to drive circuitry.

5,381,068
ULTRASONIC TRANSDUCER WITH SELECTABLE CENTER FREQUENCY
Peter W. Lorraine, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 20, 1993, Ser. No. 169,248
Int. Cl.⁶ H01L 41/08
U.S. Cl. 310—358 17 Claims

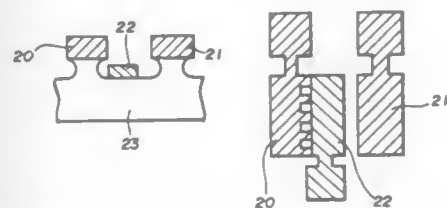


1. An ultrasonic transducer comprising: a transducer element which generates a beam of ultrasound energy propagating substantially along a transducer axis; said transducer element made of a composite including a piezoelectric base and a plurality of elongated rods extending in said base substantially parallel to said transducer axis, said plurality of rods made of a material selected from the group consisting of magnetostrictive and shape memory alloys substantially responsive to a predetermined control signal applied thereto and cooperating in response to said control signal to selectively shift a center frequency of said beam of ultrasound energy.

5,381,069
FIELD EMISSION ELEMENT AND PROCESS FOR MANUFACTURING SAME
Shigeo Itoh; Terno Watanabe; Hisashi Nakata; Norio Nishimura, all of Mobara; Junji Itoh, and Seigo Kanemaru, both of Tsukuba, all of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara and Agency of Industrial Science and Technology, Tsukuba, both of Japan
Continuation of Ser. No. 766,215, Sep. 27, 1991, abandoned. This application Nov. 30, 1993, Ser. No. 159,114
Claims priority, application Japan, Sep. 27, 1990, 2-255053
Int. Cl.⁶ H01J 19/24, 19/02
U.S. Cl. 313—310 6 Claims

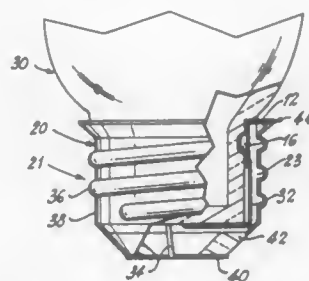
1. A field emission element comprising: an insulating substrate having a planar surface and a recess; an emitter and a collector formed on said planar surface in a coplanar configuration and spaced apart by said recess; and a gate formed on said recess between said emitter and said collector; wherein said emitter has a pectinate shape when viewed from above including rectangular projections of a pre-

terminated pitch at a distal end and wherein said rectangular projections have edges which lie substantially on a same



plane with an edge of said gate and wherein said gate is formed entirely below said planar surface.

5,381,070
LAMP BASE LOCKING CLIP
Billy W. Tuttle, Londonderry; Huiling Zhu, and Robert B. Dolan, both of Manchester, all of N.H., assignors to Osram Sylvania Inc., Danvers, Mass.
Filed Oct. 19, 1993, Ser. No. 139,474
Int. Cl.⁶ H01J 5/48, 5/50
U.S. Cl. 313—318 5 Claims

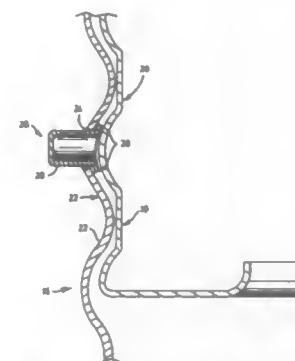


1. A lamp comprising: a hollow body including a light source, said body terminating in a neck; at least two lead-in wires extending from said neck, said neck being substantially circular in cross-section and having a longitudinal axis with a given circumference about said axis; a keyway formed in said neck parallel to said axis and having a circumferential extent less than said given circumference; a lamp base locking clip having a flat portion and a projecting lip extending away from said neck, said flat portion being positioned in said keyway; a first of said lead-in wires being electrically connected to said flat portion of said clip; a lamp base shell having first and second electrically conductive portions separated by an insulator fitted on said neck, said first portion of said lamp base shell being electrically connected to said clip; and the other of said lead-in wires being electrically connected to said second electrically conductive portion.

5,381,071
LAMP BASE FOR A POSITION DEPENDENT LAMP UTILIZING A WINGED POSITIONING PIN
Huiling Zhu, Manchester, N.H., assignor to Osram Sylvania Inc., Danvers, Mass.
Filed Apr. 12, 1994, Ser. No. 226,794
Int. Cl.⁶ H01J 5/48
U.S. Cl. 313—318 5 Claims

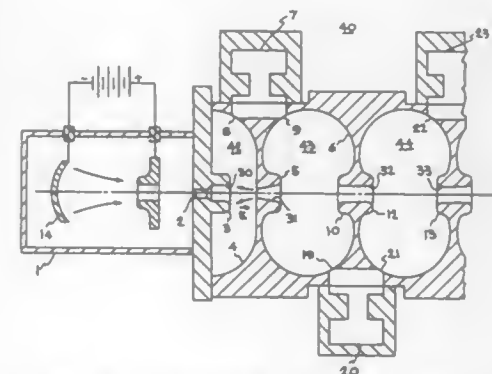
1. A base for a position-dependent lamp comprising: an inner shell; an outer shell; an aperture in said outer shell; and a hollow pin projecting from said aperture, said pin having a substantially tubular body with a pair of oppositely disposed

wings extending from an end thereof, said wings having a length about two and one half to three times the height of said



body and being sandwiched between said inner shell and said outer shell.

5,381,072
LINEAR ACCELERATOR WITH IMPROVED INPUT CAVITY STRUCTURE AND INCLUDING TAPERED DRIFT TUBES
Eiji Tanabe, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Feb. 25, 1992, Ser. No. 846,498
Int. Cl.⁶ H05H 9/04
U.S. Cl. 315—5.41 4 Claims



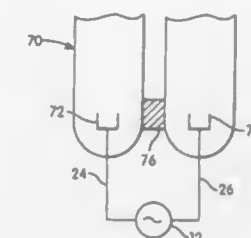
1. A linear accelerator for accelerating a beam of charged particles produced by a charge particle source, said linear accelerator comprising:

- (a) an inlet port for directing said charged particles from said source into said linear accelerator, said inlet port having a diameter;
- (b) at least first and second center line cavities disposed linearly along an axis, each of said cavities having interior walls and having respective entrance openings and exit openings about said axis, said entrance opening of said first cavity connected to said inlet port; said entrance opening of said first cavity shaped as a re-entrant nose projecting inwardly toward said interior wall of said first cavity in a direction of said exit opening, said re-entrant nose having a channel passing therethrough, said channel defining a first drift region for said charged particles being injected into said first cavity through said inlet port, said channel having a diameter which is larger than the diameter of said inlet port;
- (c) conduit means placed between said first and second cavity and defining a second drift region for conducting said charged particles from said first to said second cavity, said conduit means having first and second opposed ends with first and second apertures respectively, said first and second apertures having first and second diameters, respectively, said first end connected to said exit opening of said first cavity, and said second end connected to said

entrance opening of said second cavity, wherein said second diameter of said second aperture is larger than said first diameter of said first aperture, a cross section of said conduit means has a continuous taper between said first and said second end;

(d) microwave power means coupled to said first and second cavities for exciting a standing wave field therein.

5,381,073
CAPACITIVELY COUPLED RF FLUORESCENT LAMP WITH RF MAGNETIC ENHANCEMENT
Valery A. Godyak, Brookline; Robert B. Piejak, Wayland, and Benjamin M. Aleksandrovich, Brookline, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.
Division of Ser. No. 961,753, Oct. 16, 1992, Pat. No. 5,300,860.
This application Jun. 29, 1993, Ser. No. 84,393
Int. Cl.⁶ H01J 7/44
U.S. Cl. 315—58 2 Claims

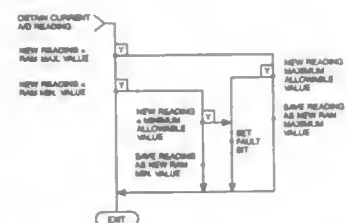
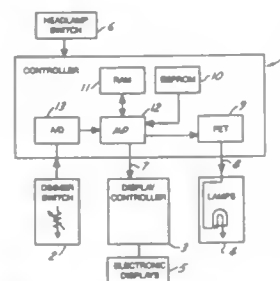


1. A fluorescent light source comprising: a fluorescent lamp including an envelope having two straight tube sections separated from each other and an interconnection between said straight tube sections at or near one end, first and second electrodes located adjacent to each other at or near the other end thereof for capacitively coupling of RF electrical energy to a low pressure discharge within said fluorescent lamp, each of said first and second electrodes each comprising a cold cathode electrode located within said fluorescent lamp; starting means for initiating a low pressure discharge within said fluorescent lamp comprising a high permittivity dielectric material between said straight separated tube sections and confined to an area adjacent to said first and second electrodes; and an RF source having a first output lead electrically coupled to said first electrode and a second output lead electrically coupled to said second electrode.

5,381,074
SELF CALIBRATING LIGHTING CONTROL SYSTEM
Robert G. Rudzewicz, Sterling Heights; Gary B. Flaishans, Clarkston, and Michael A. Dahl, Royal Oak, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Jun. 1, 1993, Ser. No. 69,480
Int. Cl.⁶ B60Q 7/00
U.S. Cl. 315—77 20 Claims

1. A method of controlling illumination intensity of lighting devices in a lighting system having a potentiometer dimmer switch, said method comprising: reading a voltage from said dimmer switch; comparing said dimmer voltage to a self calibration maximum voltage, said self calibration maximum voltage being stored in a first memory location of said system; replacing said self calibration maximum voltage in said first memory location with said dimmer voltage if said dimmer voltage is greater than said self calibration maximum voltage; comparing said dimmer voltage to a self calibration mini-

maximum voltage, said self calibration minimum voltage being stored in a second memory location of said system; replacing said self calibration minimum voltage in said second memory location with said dimmer voltage if said dimmer voltage is less than said self calibration minimum voltage; extracting a maximum illumination intensity data from a third memory location; extracting a minimum illumination intensity data from a fourth memory location;

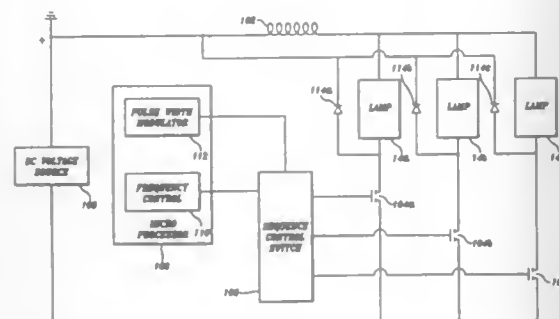


interpolating an illumination intensity level, using said self calibration maximum and minimum voltages stored in said first memory location and said second memory location, said maximum and said minimum illumination intensity data, and said dimmer voltage; generating an illumination control signal based upon said illumination intensity level; and transmitting said illumination control signal to said lighting devices to control illumination of said lighting devices in proportion thereto.

5,381,075
METHOD AND APPARATUS FOR DRIVING A FLASHING LIGHT SYSTEMS USING SUBSTANTIALLY SQUARE POWER PULSES
Jeff P. Jordan, Kailua, HI., assignor to Unisyn, Waimanalo, HI.
Continuation-in-part of Ser. No. 855,306, Mar. 20, 1992. This application Mar. 18, 1993, Ser. No. 33,771
Int. Cl. H05B 37/00

U.S. Cl. 315-200 A

5 Claims



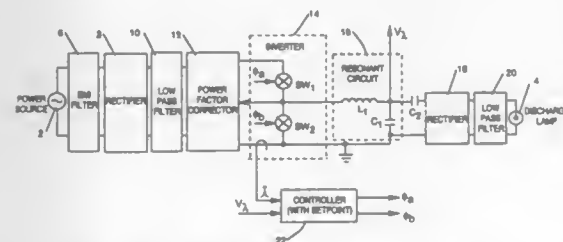
1. A flashing light system for enhancing algae photosynthesis of algae in a nutrient medium, comprising:
a plurality of light source elements that are arranged to

illuminate the algae medium and that are electrically connected to form n banks of light source elements;
a DC power supply for supplying power to said banks of light source elements;
switching means for switching power among the banks of light source elements in a predetermined sequence to substantially evenly supply each bank of light source elements with a series of power pulses that cause current to flow through said bank of light source elements, said power pulses being substantially square waves; and means for routing current from a prior fired bank of light source elements when said prior fired bank of light source element is being turned off to a subsequent bank of light source elements that is being turned on, wherein said means for routing current is an inductor disposed between said DC power supply and said banks of light source elements.

5,381,076
METAL HALIDE ELECTRONIC BALLAST
Louis R. Nerone, Brecksville, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 18, 1993, Ser. No. 136,840
Int. Cl. H05B 37/02

U.S. Cl. 315-209 R

18 Claims

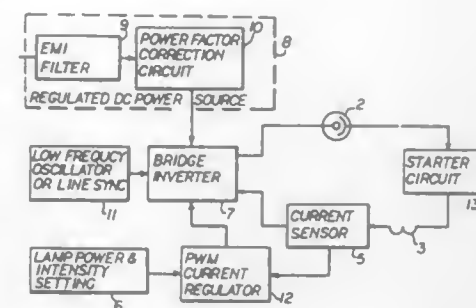


1. An electronic ballast which can be connected between a DC power supply and a gas discharge lamp and control the electrical power supplied to said gas discharge lamp, said electronic ballast comprising:
a. an inverter circuit receptive of a DC signal from said power supply and effective so as to generate a periodic waveform at a controlled frequency;
b. a resonant circuit connected to said inverter circuit and tuned to resonate at a predetermined frequency and generate an output voltage;
c. a coupling capacitor connected between said resonant circuit and said discharge lamp and effective so as to supply said resonant circuit output voltage to said discharge lamp; and
d. a control circuit arrangement connected to said inverter circuit and effective so as to control said inverter circuit to a frequency of operation near the resonant frequency of said resonant circuit, wherein said control circuit arrangement is responsive to at least a predetermined setpoint control voltage and to the output voltage of said resonant circuit, with the resonant circuit tuned to increase the voltage from the inverter circuit to a level sufficient to cause the discharge lamp to enter a glow mode of operation, and with the coupling capacitor and resonant circuit having an appropriate impedance to maintain sufficient power flow to the discharge lamp to carry it through the glow mode of operation, into an arc mode of operation and to a steady-state mode of operation.

5,381,077
POWER CONTROL CIRCUIT FOR HIGH INTENSITY DISCHARGE LAMPS
Thomas B. McGuire, 3449 Mt. Aachen Ave., San Diego, Calif. 92111

Filed Dec. 20, 1993, Ser. No. 169,364
Int. Cl. H05B 41/16
U.S. Cl. 315-247

13 Claims



1. A circuit for controlling the operation of a lighting element, which comprises:
an induction coil mounted in series with said element;
means for pulsing and applying a voltage-regulated DC power source across said element and coil without using any magnetic coupling device, wherein said means for pulsing and applying comprise means for alternately reversing the current flowing through said element including an H-bridge that does not have any magnetic coupling component;
means for sensing a current flowing through said element;
means for setting the light intensity of said element;
pulse-modulation means, responsive to said means for sensing and setting, for regulating the current flowing through said element; and
wherein said H-bridge comprises:
a first switch between a first pole of said power source and a first terminal of said element, a second opposite terminal of said element being connected to a first terminal of said induction coil;
a second switch between said first pole and a second terminal of said induction coil;
a third switch between the first terminal of said element and a first terminal of said means for sensing, a second terminal of said means for sensing being connected to a second pole of said power source;
a fourth switch between said second terminal of said induction coil and the first terminal of said means for sensing;
a first toggling component for alternately opening said first and second switches; and
means for opening said third and fourth switches in response to said pulse-modulation means.

5,381,078
CONTROL AND COMMUNICATION PROCESSOR POTENTIOMETER SYSTEM FOR CONTROLLING FLUORESCENT LAMPS
Stefan Szuba, Park Ridge, Ill., assignor to North American Philips Corporation, New York, N.Y.

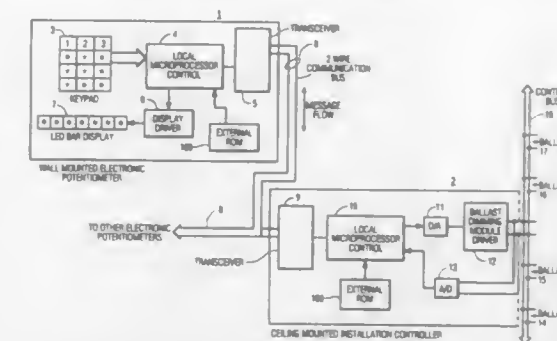
Filed Mar. 15, 1993, Ser. No. 31,440
Int. Cl. H05B 37/00

U.S. Cl. 315-316

3 Claims

1. A system for controlling a plurality of ceiling mounted fluorescent lamps comprising
(a) at least one electronic potentiometer means disposed on a wall for adjusting light levels of a plurality of fluorescent lamps disposed on a ceiling, said at least one electronic potentiometer means including a local operating network system;
(b) at least one electronic controller means disposed on said

ceiling for controlling ballasts of said fluorescent lamps, said at least one electronic controller means also including a local operating network system; and



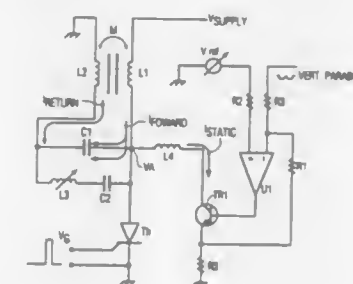
(c) a 2-wire communication bus connecting said at least one electronic potentiometer means to said at least one electronic controller means.

5,381,079
LOW POWER CONSUMPTION DYNAMIC FOCUSING CIRCUIT
Jean M. Perreant, Dijon, and Bruno F. Roussel, Genlis, both of France, assignors to Thomson Tubes and Displays, S.A., Paris, France

Filed Jan. 6, 1993, Ser. No. 1,103
Claims priority, application European Pat. Off., Jan. 10, 1992, 92400067

Int. Cl. H01J 29/58
U.S. Cl. 315-382

12 Claims



1. A focusing circuit for a scanning electron beam, comprising:
at least one focus coil having a winding coupled between a power supply and a current sink for providing a magnetic field due to current in said focus coil; and,
a resonant circuit having an additional coil magnetically coupled to said focus coil for generating a current in said focus coil, said resonant circuit being operable to store a portion of energy developed during trace intervals of said beam and to return said portion of energy to said power supply during retrace intervals of said beam.

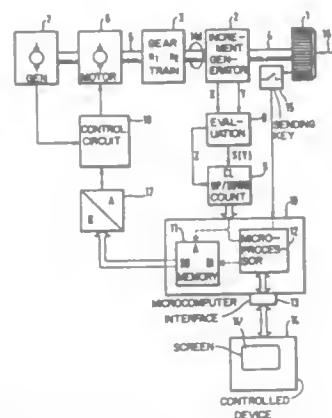
5,381,080
CONTROL DEVICE
Klaus Schnell, Gau-Algesheim, and Günther Hahlgans, Krefeld, both of Germany, assignors to VDO Adolf Schindling AG, Frankfurt Am Main, Germany
Filed Feb. 18, 1993, Ser. No. 18,823
Claims priority, application Germany, Feb. 26, 1992, 4205875
Int. Cl. B23Q 35/24; B25J 19/02

U.S. Cl. 318-566

12 Claims

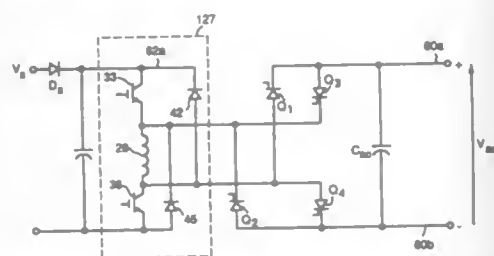
1. A control device for manually inputting information into an electronic device, comprising

- a setting member the position of which can be varied under the action of an actuating force;
- a transducer connected to said setting member for the production of electrical signals which characterize a position of the setting member; and



- a drive element which is connected with the setting member and is operative in response to electrical signals, said drive element exerting a force on said setting member, the size and direction of said force being dependent on the position of the setting member.

5,381,081
SWITCHED RELUCTANCE GENERATOR FOR GENERATING AC POWER
 Arthur V. Radun, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.
 Filed May 27, 1993, Ser. No. 67,879
 Int. Cl.⁶ H02P 8/00, 9/00
 U.S. Cl. 322-94 11 Claims



comparing a count of said pulses from the phase lock loop against an expected count of pulses to determine accuracy of the output signal of the phase lock loop.

5,381,086

WIDE POWER RANGE RADIATION MONITOR

Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corp., Hauppauge, N.Y.

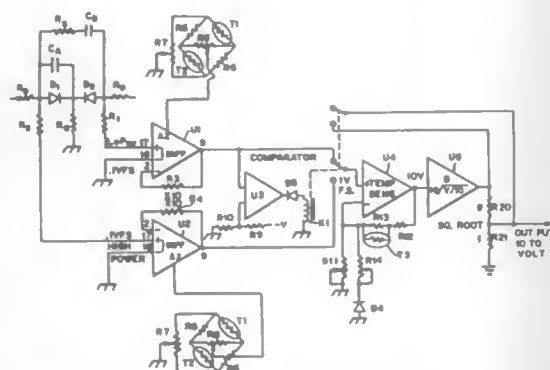
Continuation of Ser. No. 843,544, Feb. 28, 1992, Pat. No.

5,266,888. This application Oct. 5, 1993, Ser. No. 132,104

Int. Cl.⁶ G01R 21/06, 15/08, 19/22

U.S. Cl. 324-95

10 Claims



1. An electromagnetic field radiation monitor, which comprises:

a diode detector, the diode detector receiving an input signal corresponding to a received electromagnetic field, the diode detector having first and second diodes, each of the first and second diodes having a shunt capacitance and having a first end and a second end which is opposite in polarity to the first end, the first end and the second end of the first diode being respectively the same polarity as the first end and the second end of the second diode, the first ends of the first and second diodes being electrically interconnected, the diode detector further including a first capacitor, the first capacitor being connected in parallel with the first diode, the total capacitance of the parallel combination of the first capacitor and the first diode being greater than the shunt capacitance of the second diode, the shunt capacitance of the first and second diodes in combination with the first capacitor defining a capacitive divider, the received electromagnetic field input signal being provided to the second ends of the first and second diodes and being divided proportionally across the first and second diodes in correspondence with the capacitive divider, the diode detector having a first output coupled to the second end of the second diode and generating a low power output signal thereon, and a second output coupled to the second end of the first diode and providing a high power output signal thereon;

a low and high power output signal selection circuit, the selection circuit being coupled to the diode detector and receiving at least one of the low power output signal and the high power output signal from the diode detector, the selection circuit comparing the at least one output signal with a predetermined threshold signal and providing an output signal corresponding to one of the low power output signal and the high power output signal in response to the comparison made by the selection circuit; and an attenuation circuit, the attenuation circuit being coupled to the output signal of the selection circuit and selectively attenuating the output signal of the selection circuit in response to the comparison made by the selection circuit, the attenuation circuit providing a radiation monitor output signal.

5,381,087
LSI WITH BUILT-IN TEST CIRCUIT AND TESTING METHOD THEREFOR

Masashi Hirano, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

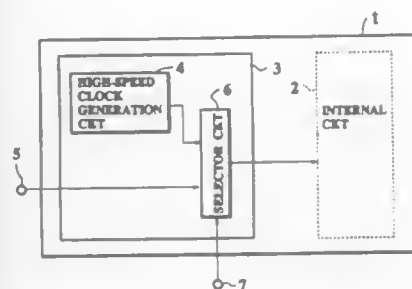
Filed Apr. 28, 1992, Ser. No. 874,889

Claims priority, application Japan, Apr. 30, 1991, 3-098820

Int. Cl.⁶ G01R 31/00

U.S. Cl. 324-158.1

13 Claims



1. An integrated circuit having an internal circuit capable of being tested by a high-speed semiconductor chip tester to test and characterize the internal circuit comprising:

a clock input terminal connected to the semiconductor chip tester;

an on-chip clock supply circuit for supplying clock signals; a clock selection signal input terminal connected to the on-chip clock supply circuit; and

the internal circuit connected to the clock supply circuit and receiving the clock signals, said clock selection signal input terminal supplying a test pattern to be applied to the internal circuit; wherein

the clock supply circuit includes:

a clock generation circuit for generating the clock signals; and

a selection circuit for selecting an appropriate clock signal to be supplied to the internal circuit, the selection circuit being connected to the clock generation circuit, the clock input terminal, and the clock selection signal input terminal.

5,381,088

CHANGE-OVER TYPE OF TESTING EQUIPMENT FOR NON-UTILITY POWER GENERATORS OR THE LIKE

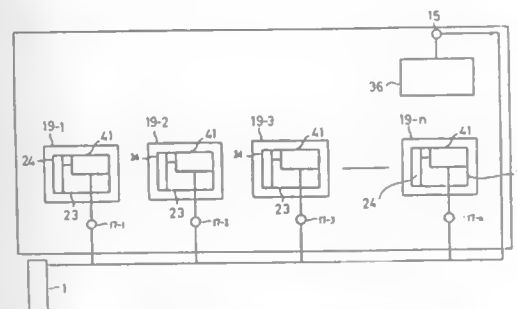
Toyoshi Kondoh, Tokyo, Japan, assignor to Tatsumi Corporation, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 135,161

Int. Cl.⁶ G01R 31/34; G05F 3/00

U.S. Cl. 324-158.1

1 Claim



1. A change-over type of testing equipment for non-utility power generators, etc., which includes; a current-passing tank through which is charged with a resistance liquid, a main electrode disposed in the tank so as to receive power from the non-utility power generator to be tested, a movable insulator located between the main electrode and

the tank to regulate the quantity of the current passing from the main electrode to the tank, a pipe system to cool or filter the resistance liquid within the tank for feeding the liquid back to the tank, thereby recycling the liquid, and a feed pipe connected to the pipe system on the upstream side of the tank to feed the liquid into the tank, said feed pipe serving as a holding member for holding the main electrode inserted into the tank from above and as a power supply member for supplying power from the non-utility power generator to be tested to the main electrode, said main electrode including a small capacity type of water loading device selectively preset at a low or high voltage depending on the standard voltage of the non-utility power generator to be tested, a connecting terminal provided on the water loading device, and a plurality of fixed loading elements having connecting terminals, which are connected in parallel with each other together with the water loading device,

said fixed loading elements including a circuit set up by combining and connecting a plurality of resistors with each other and having a loading element body to which the output voltage of the power generator is applied, and a change-over unit for selecting the resistors in the circuit so that the withstand voltage of the circuit corresponds to the output voltage of the power generator 1,

whereby said testing equipment can be accommodated to testing a low or high voltage type of power generator by selectively presetting the main electrode at a low or high voltage and changing over the connection of the resistors in the circuit by the change-over unit, or to testing a small or large capacity type of power generator by changing over the connection of the water loading device 36 and the fixed loading elements.

5,381,089

HIGH OUTPUT AND ENVIRONMENTALLY IMPERVIOUS VARIABLE RELUCTANCE SENSOR

David A. Dickmeyer; Kenneth G. Maurer, III, and Larry L. Redmon, all of Fort Wayne, Ind., assignors to Component Sales & Consultants, Inc., Fort Wayne, Ind.

Continuation of Ser. No. 888,334, May 22, 1992, Pat. No.

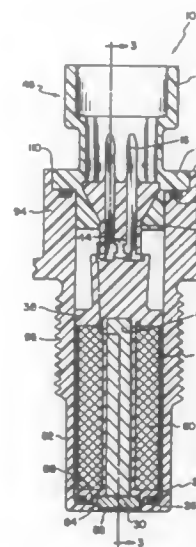
5,278,496. This application Jan. 10, 1994, Ser. No. 179,147

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.⁶ G01P 3/488; H01F 27/02, 27/30; H05K 5/06

U.S. Cl. 324-174

6 Claims



1. A sealed variable reluctance magnetic sensor, comprising:

a bobbin including a barrel portion having a cavity therein, a rear end and a front end including a front flange; a pole piece provided in said cavity; a magnet secured to said bobbin adjacent said pole piece, said magnet being disposed in front of said pole piece at the front end of said bobbin; an electric coil wound around said barrel portion and electrically connected to output conductors for transmitting an electrical signal to an output device; an outer hollow shell surrounding said bobbin and including an open rear end portion and front end portion having a front wall with an opening therein adjacent said magnet to permit said magnet to be exposed therethrough; an elastomer front seal compressed between said front flange and said front end portion for sealing said electric coil from fluid flow through said opening; and a rear piece covering said open rear end portion, wherein said rear piece includes a flanged portion that is ultrasonically welded to an inner diameter surface of said rear end portion of said outer shell, thereby completely closing and sealing said open rear end portion from fluid flow there-through.

5,381,090

HUB AND BEARING ASSEMBLY WITH INTEGRATED ROTATION SENSOR AND TEMPERATURE MEASUREMENT FEATURE

Jonathan M. Adler, and Kevin J. Fontenot, both of Ypsilanti, Mich., assignors to NTN Technical Center, Ann Arbor, Mich.

Continuation of Ser. No. 946,944, Sep. 16, 1992, abandoned,

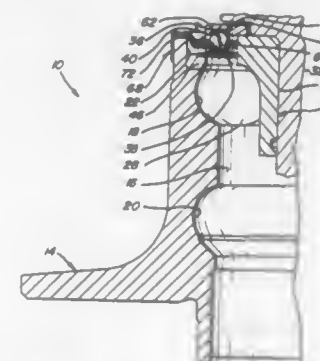
which is a division of Ser. No. 800,056, Nov. 11, 1991, Pat. No.

5,200,697. This application Jan. 31, 1994, Ser. No. 190,243

Int. Cl.⁶ G01P 3/487, 3/488; F16C 32/00; G01K 7/00

U.S. Cl. 324-174

10 Claims



1. A bearing assembly comprising: an inner bearing race located radially within an outer bearing race, one of said inner or outer bearing races being fixed relative to said bearing assembly, means for permitting relative rotation between said inner and outer bearing races, said means for permitting relative rotation located radially between said inner and outer races,

a source of magnetic field including a set of magnetic poles in mechanical communication with one of said inner or outer bearing races and a magnetically conductive element in mechanical communication with the other of said inner or outer bearing races, said set of magnetic poles and said magnetically conductive element rotating relative to each other and magnetically interacting and providing a source of magnetic flux of varying direction and magnitude through said magnetically conductive element; an electrical conductor winding integrally connected to and about a circumference of said other bearing race; said electrical conductor winding magnetically communicating with said source of magnetic flux and conducting a magnetically induced voltage having an alternating component related to the speed of relative rotation between

said inner race and said outer race, said voltage induced by said source of varying magnetic flux, and temperature responsive means operatively connected to said electrical conductor winding for providing an output voltage signal related to the resistance of said electrical conductor winding where a direct current input signal having a predetermined amplitude is applied to said electrical conductor winding and said resistance varies in accordance with the temperature of said electrical conductor winding, said direct current input signal varying in accordance with said resistance to yield said output voltage, said output voltage being superimposed on said magnetically induced voltage.

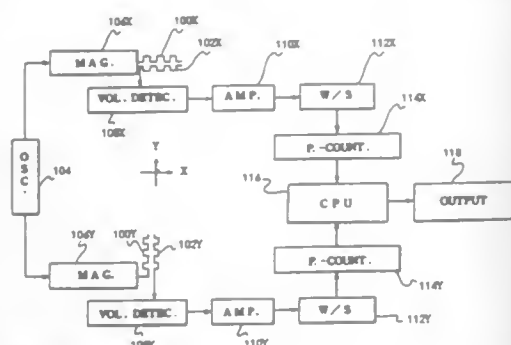
5,381,091

SENSOR HAVING MUTUALLY PERPENDICULAR SECTIONS USING ZIGZAG COILS FOR DETECTING DISPLACEMENT

Takanori Kobayashi, Yoshifumi Nagano, and Kiyohito Yamasawa, all of Nagano, Japan, assignors to Techno Excel Kabushiki Kaisha, Nagano, Japan

Filed Dec. 30, 1992, Ser. No. 998,664

Claims priority, application Japan, Jan. 14, 1992, 4-24490
Int. Cl.⁶ G01B 7/14; G01P 3/50; G01L 9/10; H01F 21/04
U.S. Cl. 324-207.17 2 Claims



1. A sensor comprising:
 - a first sensor section and a second sensor section, each of which having:
 - at least one planar zigzag coil, each planar zigzag coil being provided on a substrate, said planar zigzag coils having a same coil pitch and being formed in a zigzag shape in one direction, said planar zigzag coils being capable of moving relative to one another by at least a displacement length in the one direction, said planar zigzag coils including a first planar zigzag coil for the first sensor section, which is a primary coil, and a plurality of second planar zigzag coils for the second sensor section, which are secondary coils, each of the second planar zigzag coils being a different distance from the first planar zigzag coil and each being shifted by a prescribed interval relative to an adjacent second planar zigzag coil;
 - magnetizing means for magnetizing said first planar zigzag coil; and
 - first detecting means for detecting induced electromotive force, which is induced in said second planar zigzag coil by said first planar zigzag coil when the first planar zigzag coil is magnetized, the first detecting means being operatively connected to at least one of the second planar zigzag coils,
 - wherein the planar zigzag coils of each sensor section are mutually perpendicular; and
 - second detecting means for detecting the displacement length between said first planar zigzag coil and said second planar zigzag coils of each sensor section on the basis of the induced electromotive force in said second planar zigzag coils, the second detecting means being operatively connected to the first detecting means.

5,381,092

METHOD AND APPARATUS FOR COMPRESSING DATA PRODUCED FROM A WELL TOOL IN A WELLBORE PRIOR TO TRANSMITTING THE COMPRESSED DATA UPHOLE TO A SURFACE APPARATUS

Robert Freedman, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 970,332, Nov. 2, 1992, Pat. No.

5,291,137. This application Sep. 28, 1993, Ser. No. 127,978

Int. Cl.⁶ G01R 33/20

U.S. Cl. 324-303

51 Claims

1. A system adapted to be disposed in a wellbore, comprising:
 - means for stimulating a porous earth formation traversed by said wellbore;
 - means responsive to the stimulation of said formation for receiving a plurality of signals from said formation, said plurality of signals being representative of a set of characteristics relating to physical properties of said formation;
 - compression means responsive to said plurality of signals received from said formation for generating a plurality of values expressed in units of volts, said plurality of values generated by said compression means being less in number than said plurality of signals received by said compression means; and
 - means for transmitting said plurality of values uphole from said system when said system is disposed in said wellbore to a surface of said wellbore.

5,381,093

MAGNETIC RESONANCE IMAGING APPARATUS

Hiroshi Kawamoto, Yaita, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

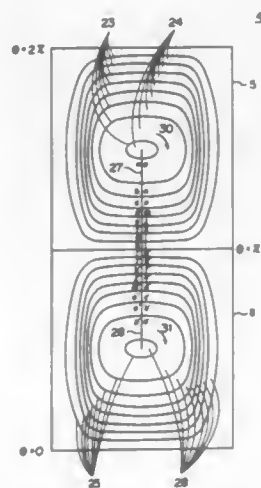
Filed Dec. 7, 1992, Ser. No. 986,352

Claims priority, application Japan, Dec. 9, 1991, 3-324780

Int. Cl.⁶ G01R 33/20

U.S. Cl. 324-318

21 Claims



1. An MR imaging apparatus comprising:
 - a magnet means for applying a static magnetic field to a specimen, the static magnetic field being oriented along a first axis direction of a three-axis coordinate system for the specimen;
 - a gradient coil means for providing a magnetic gradient superimposed on the static magnetic field;
 - an RF coil means, positioned between the gradient coil means and the specimen, for transmitting an RF pulse to the specimen in a second axis direction orthogonal to the first axis direction and receiving an echo data from the specimen; and
 - an RF shield interposed between said gradient coil means and said RF coil means,

wherein said RF shield comprises a first electrically-conductive sheet member and a second electrically-conductive sheet member coupled to each other, each of said first and second electrically-conductive sheet members having a plurality of generally C-shaped electrically-conductive loop portions defined by at least one electrically-nonconductive line formed therethrough and parallel to eddy RF current flows induced therein in response to excitation of the RF coil means and a single radial cut line across the electrically-nonconductive line so as to form the generally C-shaped electrically-conductive loop portions and at least one of said C-shaped electrically-conductive loop portions in said first electrically-conductive sheet member and a corresponding one of said C-shaped electrically-conductive loop portions in said second electrically-conductive sheet member, symmetrically positioned with respect to said C-shaped loop portion in said first sheet member and electrically connected to each other by a connecting means to form an electrical loop through which the eddy currents flow in a same direction around the second axis direction.

5,381,094

PHANTOM FOR SIMULATING THE ELECTRIC LOADING IN A MAGNETIC RESONANCE APPARATUS

Teunis R. van Heelsbergen, and Antonius M. C. Tinus, both of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

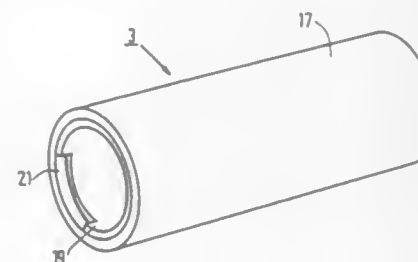
Filed Jun. 17, 1993, Ser. No. 79,433

Claims priority, application European Pat. Off., Jun. 22, 1992, 92201816.3

Int. Cl.⁶ G01R 33/20

U.S. Cl. 324-318

16 Claims



1. A phantom for simulating an electric load constituted by an object to be examined by means of an RF coil having a shape and which is a part of a magnetic resonance apparatus, comprising a loop adapted to be inductively coupled to the RF coil and wherein the loop has a predetermined electric resistance, wherein the loop includes a member having a shape which corresponds mainly to the shape of the RF coil and which is made of a solid material having a specific electric resistance and a thickness chosen so that the square resistance measured on a surface of the member is between predetermined limits.

5,381,095

METHOD OF ESTIMATING LOCATION AND ORIENTATION OF MAGNETIC DIPOLES USING EXTENDED KALMAN FILTERING AND SCHWEPPE LIKELIHOOD RATIO DETECTION

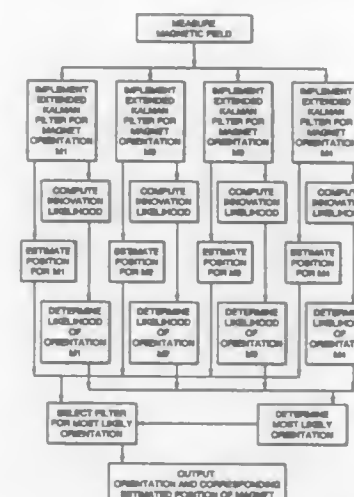
Angus P. Andrews, Westlake Village, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 21, 1993, Ser. No. 80,907

Int. Cl.⁶ G01V 3/10; G01R 33/02; G08G 1/0968; G06F 15/50
U.S. Cl. 324-326 10 Claims

1. A method of determining the location and orientation of a magnet having one of a known set of orientations, comprising the steps of:
 - providing a plurality of extended Kalman filters, each of said

extended Kalman filters corresponding to an assumed one of the known set of possible magnet orientations; measuring a magnetic field produced by the magnet; providing sensor signals corresponding to said measured magnetic field to each of said plurality of extended Kalman filters; each of said extended Kalman filters generating an estimate of the relative location of the magnet based on said as-



sumed orientation and generating a likelihood that said assumed orientation corresponds to the orientation of the magnet; determining the most likely one of said assumed orientations; selecting the one of said Kalman filters corresponding to said most likely one of said assumed orientations; and providing output signals corresponding to said most likely orientation and estimate of the relative location of the magnet generated by said selected Kalman filter.

5,381,096

METHOD AND APPARATUS FOR MEASURING THE STATE-OF-CHARGE OF A BATTERY SYSTEM

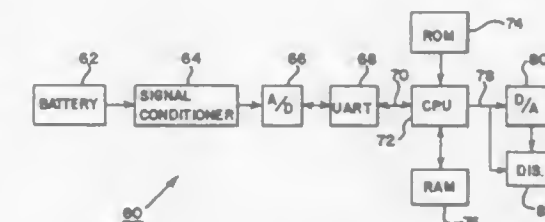
Edgar A. Hirtzel, 17447 Lahey St., Granada Hills, Calif. 91344

Continuation of Ser. No. 866,333, Apr. 9, 1992, abandoned. This application Oct. 5, 1993, Ser. No. 132,160

Int. Cl.⁶ G01N 27/416

U.S. Cl. 324-427

11 Claims



1. A system coupled to a battery for measuring the state-of-charge of the battery while a device attached to said battery is operating, comprising:
 - a battery;
 - means for measuring the actual terminal voltage of the battery during operation of the device;
 - means for simulating at least some of the internal electrical characteristics of the battery, said means for simulating including:
 - circuit means for simulating the internal impedance of the battery with respect to time, said circuit means includ-

ing capacitance means for simulating the internal capacitance of the battery; and
means responsive to a function of the simulated internal impedance for simulating the terminal voltage of the battery;
means for equating the simulated terminal voltage to said measured actual terminal voltage of the battery; and
means for developing a signal representing the state-of-charge of the battery in response to the voltage across said simulated internal capacitance of the battery.

5,381,097

LIQUID LEAKAGE DETECTOR LINE

Taizo Takatori, Nara; Akihiro Ishihara, Tondabayashi; Tadaaki Masui, Osaka; Yoshinori Kawakami, Nara; Takahisa Okumura, and Masuo Ishizaka, both of Higashiosaka, all of Japan, assignors to Tatsuta Electric Wire & Cable Co., Ltd., Higashiosaka, Japan

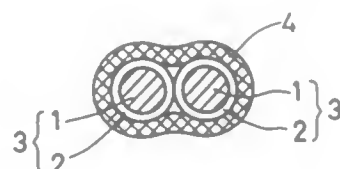
Filed Feb. 26, 1993, Ser. No. 22,913

Claims priority, application Japan, Feb. 28, 1992, 4-019300; Feb. 28, 1992, 4-019301; Feb. 28, 1992, 4-019302; Mar. 25, 1992, 4-025441; Mar. 25, 1992, 4-025442; Nov. 30, 1992, 4-345606; Nov. 30, 1992, 4-345607; Dec. 29, 1992, 4-360373

Int. Cl.⁶ G01R 31/08

U.S. Cl. 324—512

18 Claims



1. A liquid leakage detector line provided with a coating layer disposed at the outer periphery of a core, the core containing a pair of wiry electrodes having an extrusion coating disposed nearly parallel with each other, characterized in that said wiry electrodes are formed with conductors which have the extrusion coating of a thermoplastic polyester elastomer thereon as the insulator thereof, and in that the coating layer possesses waterproof and liquid-absorbent properties.

5,381,098

TRANSMISSION LINE SPARKING LOCATOR

Marvin O. Loftness, 115 W. 20th Ave., Olympia, Wash. 98501

Filed Jan. 4, 1993, Ser. No. 144

Int. Cl.⁶ G01R 31/12

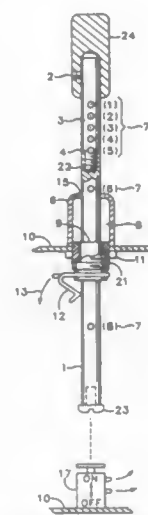
U.S. Cl. 324—536

7 Claims

1. Apparatus for detecting electromagnetic radiation emanating from power lines operating at voltages up through extra high voltages, comprising:

- a hollow metallic housing;
- a hollow metallic attenuation collar grounded to said housing;
- an elongated antenna having a metallic portion and a non-conducting portion joined in lengthwise relationship, said antenna extending slidably through and insulated from said attenuation collar with the non-conducting portion projecting outwardly from said attenuation collar, the metallic portion projecting into and insulated from said hollow housing,

d) receiver means in the housing, the receiver means including an audio amplifier, and



e) means for connecting said metallic portion of the antenna to said receiver means.

5,381,099

STREAK DETECTION FOR INK-JET PRINTER WITH OPTICALLY CONNECTED SEGMENT PAIRS

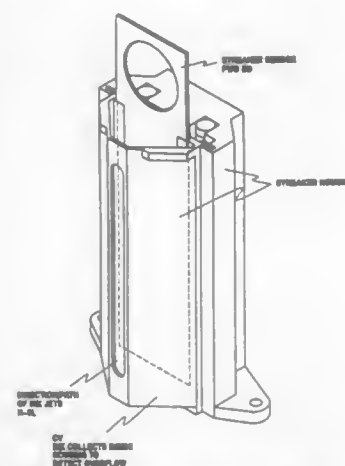
Andrew J. Balousek, Berkeley, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 2, 1993, Ser. No. 24,999

Int. Cl.⁶ G01R 31/02

U.S. Cl. 324—555

20 Claims



1. A method of detecting streaking and like erroneous fluid projection on any arrangement adapted to project one or more conductive fluid streams along prescribed stream axes onto selected portions of a subject target, said method comprising: placing a non-conductive substrate means in line with said axes, behind the position of the subject target and spaced therefrom, said substrate means being adapted to intercept fluid that misses said target; disposing at least one pair of spaced conductor segments on a first surface of said substrate opposite said streams to intersect all said stream axes, said segments being arranged and adapted so that opposed portions thereof will intercept said streaking and like erroneous fluid projection and be ohmically connected thereby when the conductive fluid is gravity-urged down said first surface; coupling detection means to said pairs of segments to detect

and register the ohmic connection of said segments resultant from said streaking and like erroneous fluid projection; and, indicating said streaking and like erroneous fluid projection.

5,381,100

PULSE SIGNAL MEASURING INSTRUMENT

Mishio Hayashi, Tokyo, Japan, assignor to Advantest Corporation, Tokyo, Japan

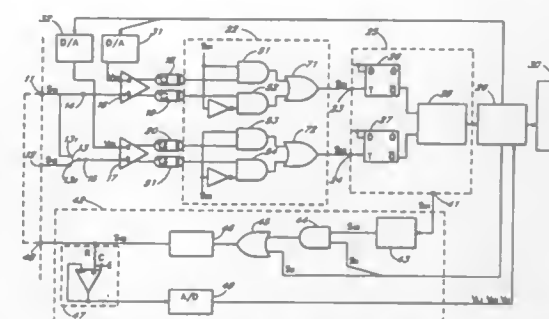
Filed Oct. 15, 1993, Ser. No. 138,460

Claims priority, application Japan, Oct. 16, 1992, 4-072410[U]

Int. Cl.⁶ G04F 10/00

U.S. Cl. 324—601

6 Claims



1. A pulse signal measuring instrument apparatus for measuring pulse signal parameters of an input pulse signal, comprising:

- an input terminal which receives an input signal or a calibration signal;
- first and second comparators provided with threshold voltages for changing the signal from said input terminal to square waves having sharp rising and falling edges, each of said comparators generates said square waves at an inverting output and a noninverting output;
- a first gate circuit for receiving said square waves from said inverting output and said noninverting output of said first comparator and selectively output either one of said noninverting output or said inverting output;
- a second gate circuit for receiving said square waves from said inverting output and said noninverting output of said second comparator and selectively output either one of said noninverting output or said inverting output;
- a time difference measuring circuit for measuring the time difference between positive edges or negative edges of said output from said first gate circuit and said output from said second gate circuit;
- a calibration signal generator for generating said calibration signal having a known signal period;
- a controller for controlling a calibration operation wherein said calibration signal is provided to said input terminal to obtain calibration data including information on time differences between signal paths in the measuring instrument, said signal period and a standard pulse width of said calibration signal, said controller controlling a subsequent operation for signal measurement wherein said signal parameters are compensated by said calibration data.

5,381,101

SYSTEM AND METHOD OF MEASURING HIGH-SPEED ELECTRICAL WAVEFORMS USING FORCE MICROSCOPY AND OFFSET SAMPLING FREQUENCIES

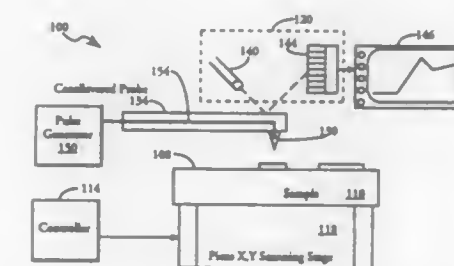
David M. Bloom, Portola Valley; Francis Ho, Stanford, and Alfred S. Hou, Menlo Park, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Dec. 2, 1992, Ser. No. 984,891

Int. Cl.⁶ G01B 5/28

U.S. Cl. 324—676

20 Claims



1. An apparatus for measuring a periodic electrical waveform existing proximate the surface of a sample, said periodic waveform having a predefined repetition frequency, comprising:

- a sampling signal generator that generates a sampling signal having a sample signal repetition frequency offset from said predefined repetition frequency by a difference frequency;
- a cantilever coupled to said sampling signal generator for carrying said sampling signal to a position proximate the surface of said sample so as to generate an electrical force on said cantilever that is a nonlinear function of differences in amplitude between said sampling signal and said periodic electrical waveform, said electrical force displacing said cantilever such that said cantilever's displacement replicates said electrical waveform at a repetition rate equal to said difference frequency;
- wherein said cantilever has a mechanical resonance frequency that limits said cantilever's speed of movement, said mechanical resonance frequency is substantially less than said predefined repetition frequency, and said sample signal repetition frequency is set such that said difference frequency is less than said mechanical resonance frequency; whereby said cantilever low pass filters, with a cutoff frequency corresponding to said mechanical resonance frequency, said electrical force on said cantilever; and
- a displacement sensor for detecting said displacement of said cantilever.

5,381,102

DEVICE WITH A CURRENT DIVIDER FOR CONTROLLING ADJUSTMENT OF SIGNALS FROM SENSORS

Karl-Heinz Schmidt, Oberwart, Austria, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 59,712, May 18, 1993, which is a continuation of Ser. No. 874,723, Apr. 27, 1992. This application May 16, 1994, Ser. No. 243,423

Claims priority, application Germany, May 10, 1991, 4115288 Int. Cl.⁶ G01R 27/26

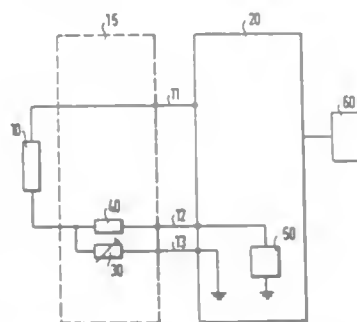
U.S. Cl. 324—720

7 Claims

1. A device for evaluating a current provided at an output of a sensor, the sensor output current being indicative of a value of a preselected parameter, the device comprising:

- a current divider circuit coupled between the output of the sensor and ground, the current divider circuit dividing the

sensor output current between first and second current branches of the current divider circuit, the first and second current branches being coupled in parallel; the first current branch including a first resistor having a resistance value that is adjustable for controlling the division of the sensor output current between the first and second current branches in order to provide a preselected current through the second current branch of the current divider circuit for a preselected value of the preselected parameter, the first resistor having a predetermined temperature dependence;



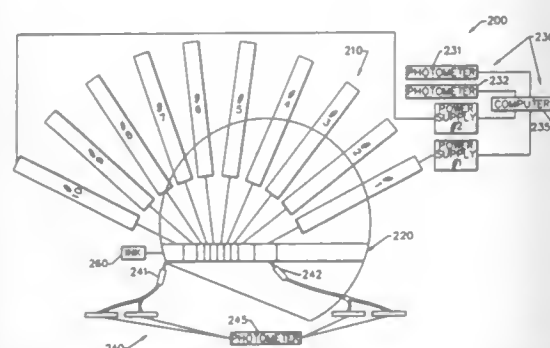
the second current branch including a second resistor coupled in series with a current measuring device, the second resistor having the predetermined temperature dependence and being arranged physically close to the first resistor such that the division of the sensor output current between the first and second current branches is independent of temperature, the current measuring device measuring a portion of the sensor output current flowing through the second current branch and thereby providing an indication of the value of the preselected parameter.

5,381,103
**SYSTEM AND METHOD FOR ACCELERATED
DEGRADATION TESTING OF SEMICONDUCTOR
DEVICES**

John A. Edmond, Apex; Douglas A. Asbury, Chapel Hill; Calvin H. Carter, Jr., Cary, and Douglas G. Waltz, Durham, all of N.C., assignors to Cree Research, Inc., Durham, N.C.
Filed Oct. 13, 1992, Ser. No. 959,714
Int. Cl.⁶ G01R 1/04

U.S. Cl. 324—753

39 Claims



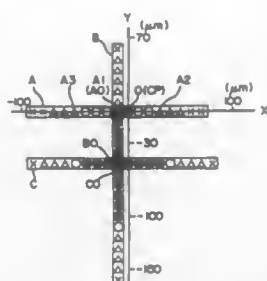
1. A method of testing semiconductor device, comprising the steps of:
pulsing a semiconductor device being tested with a predetermined level of current higher than the average operational current level of the semiconductor device being tested for a duration of time of less than 15 seconds so as to cause an inadequate device being tested to degrade and to cause an adequate device being tested to stabilize; and
measuring predetermined electrical or optical performance

characteristics for the semiconductor device after the current pulse.

5,381,104
METHOD FOR THE INSPECTION OF CIRCUIT BOARD
Kiyoshi Kimura, Chiba; Yuiti Haruta, Yokohama, and Keikichi Yagil, Tama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan
Filed Jan. 26, 1993, Ser. No. 9,230
Claims priority, application Japan, Jan. 31, 1992, 4-040745
Int. Cl.⁶ G01R 1/073

U.S. Cl. 324—758

11 Claims



1. A method for inspecting a circuit board, which comprises electrically connecting electrodes to be inspected of a circuit board to be inspected to inspection electrodes of a tester corresponding to said electrodes to be inspected and, in this state, inspecting the electrical conditions of the electrodes to be inspected of the circuit board using the tester, characterized in that a fine alignment operation is effected between the electrodes to be inspected and the inspection electrodes in the following two steps:

the first step comprising repeating the measurement of conduction state between the electrodes to be inspected of the circuit board and the inspection electrodes of the tester, the circuit board being kept face to face with the inspection electrodes portion of the tester, each time changing the relative positions of the circuit board and the inspection electrodes portion of the tester by a small distance, to detect at least one position of high conduction state and at least two positions of low conduction state which are distant from said at least one position and located so that said at least one position is held between them, in each of a direction in the plane formed by the inspection electrodes portion of the tester and another direction in the same plane which is not parallel to the former direction and, from the information thus obtained, determining the desired connection position in which the inspection electrodes are to be in the highest conduction state in relation to the electrodes to be inspected in one or both of said directions, and

the second step comprising moving the inspection electrodes portion of the tester relatively to the circuit board in a direction, another direction or both the directions so that the inspection electrodes are placed in the desired connection position determined in the first step.

5,381,105
**METHOD OF TESTING A SEMICONDUCTOR DEVICE
HAVING A FIRST CIRCUIT ELECTRICALLY ISOLATED
FROM A SECOND CIRCUIT**

John P. Phipps, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 12, 1993, Ser. No. 17,159

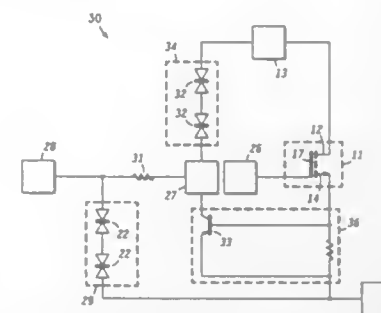
Int. Cl.⁶ G01R 1/04

U.S. Cl. 324—765

14 Claims

1. A method of testing a semiconductor device comprising: providing a power MOS FET having a gate electrode cou-

pled to a gate bonding pad, and a source electrode coupled to a source bonding pad;
providing an input protection network having a plurality of series connected back-to-back diode pairs, the input protection network having a first terminal coupled to the source bonding pad, and a second terminal coupled to an input protection bonding pad;



testing a gate oxide rupture voltage of the power MOS FET by applying a test voltage between the gate bonding pad and the source bonding pad, and monitoring a gate-to-source current of the power MOS FET; and
electrically connecting the gate bonding pad to the input protection bonding pad.

5,381,106
**CLIPPER CIRCUITRY SUITABLE FOR SIGNALS WITH
FRACTIONAL-VOLT AMPLITUDES**

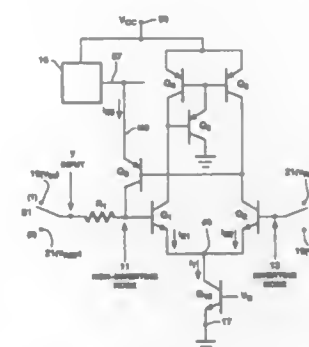
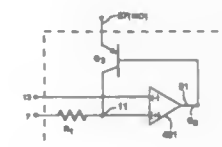
Allen L. Limberg, Ringoes, N.J., assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 28, 1992, Ser. No. 967,854

Int. Cl.⁶ H03K 5/00, 5/22

U.S. Cl. 327—104

34 Claims



1. A combination comprising:
an input terminal and an output terminal;
a differential-input amplifier having a non-inverting input node, an inverting input node, and an output node;
a feedback amplifier having an input connection to said output node, an inverting first output connection to said non-inverting input node for completing a degenerative feedback loop and for supplying current into said non-inverting input node tending to maintain the potential at said non-inverting input node equal to the potential at said inverting input node, and a non-inverting second output connection to said output terminal;

a resistive element having an ohmic value between said non-inverting input node and said input terminal;
means for applying a reference voltage to one of said inverting input node and said input terminal and for applying an AC signal which varies about said reference voltage to the other one of said inverting input node and said input terminal; and
further circuitry having an input circuit connected from said output terminal, for utilizing a clipped signal current that flows through said output terminal responsive to said AC signal.

5,381,107
**TIME-BASE INVERSION TYPE LINEAR PHASE FILTER
OF THE INFINITE IMPULSE RESPONSE TYPE HAVING
LINEAR PHASE CHARACTERISTICS**

Yasuo Hamamoto, Higashiosaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

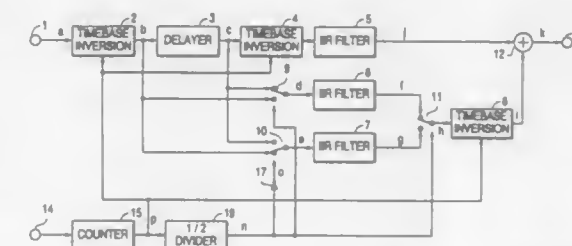
Filed Apr. 7, 1993, Ser. No. 43,741

Claims priority, application Japan, Apr. 10, 1992, 4-090501

Int. Cl.⁶ H03B 1/04

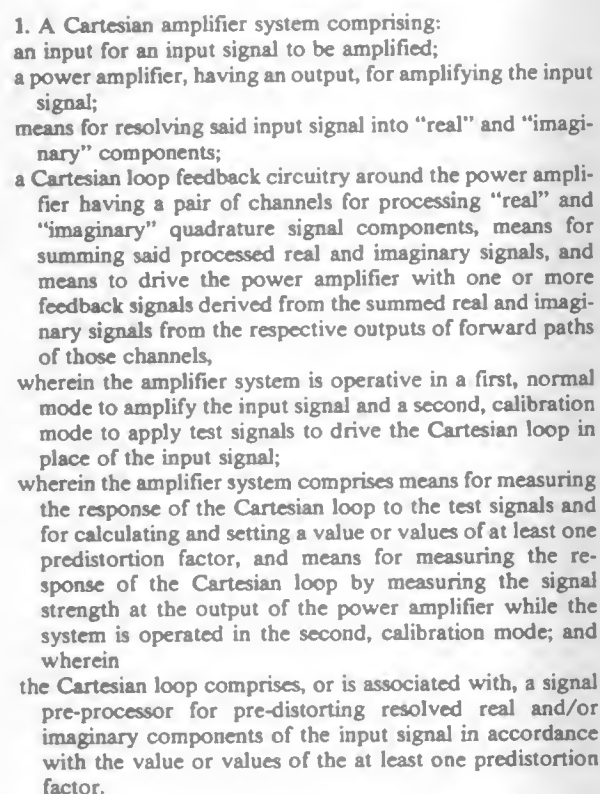
U.S. Cl. 327—306

6 Claims



1. A time-base inversion type linear phase filter comprising:
a first time-base inverting circuit for inverting a time sequence of an input signal in each of consecutive time units each having a predetermined period;
a delay circuit for delaying an output signal of the first time-base inverting circuit by a period which is twice the predetermined period;
a second time base inverting circuit for inverting a time sequence of an output signal of the delay circuit in each of the consecutive time units each having the predetermined period in the same time sequence as that of the input signal in each time unit;
a first IIR filter for filtering an output signal of the second time-base inverting circuit;
a first selector for alternately selecting the output signals of the first time-base inverting circuit and the delay circuit by switching at intervals of the predetermined period;
a second selector for alternately selecting the output signals of the delay circuit and the first time-base inverting circuit by switching at intervals of the predetermined period and opposite in phase to the switching of the first selector;
a second IIR filter for filtering an output signal of the first selector;
a third IIR filter for filtering an output signal of the second selector;
a third selector for alternately selecting output signals of the second and third IIR filters by switching at intervals of the predetermined period and the same in phase as the switching of the first selector;
a third time-base inverting circuit for inverting a time sequence of an output signal of the third selector in each of the consecutive time units each having the predetermined period; and
an adder for adding an output signal of the first IIR filter and an output signal of the third time-base inverting circuit to obtain an output signal of the time-base inversion type linear phase filter.

16 Claims

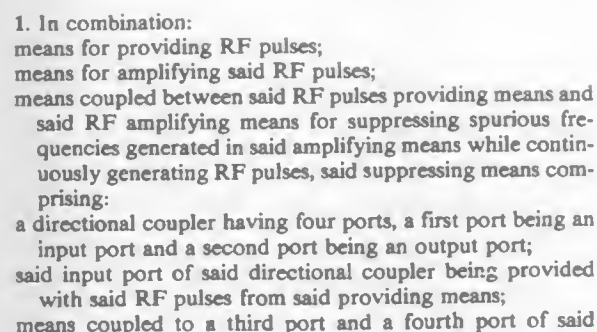


20 Claims

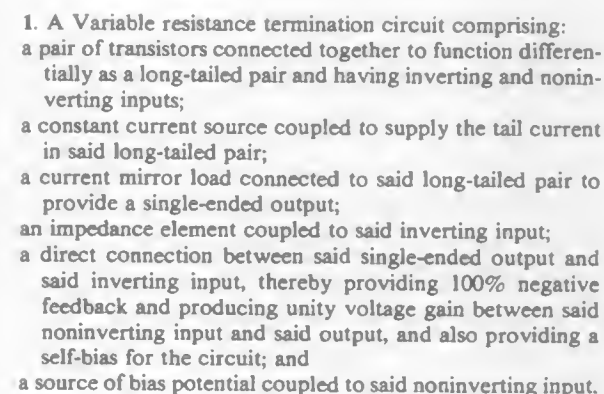
an output circuit connected to said modules for providing an output signal to a load wherein the magnitude of the

fault detector means for monitoring the operation of each said module for fault conditions and providing for each said module a first signal representative that the module has faulted in an on condition or a second signal representative that the module has faulted in an off condition; and means for varying the number of said turn on signals dependent upon the fault conditions detected by said fault detector means to compensate for any faulted modules.

13 Claims

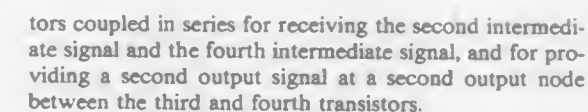


10 Claims



20 Claims

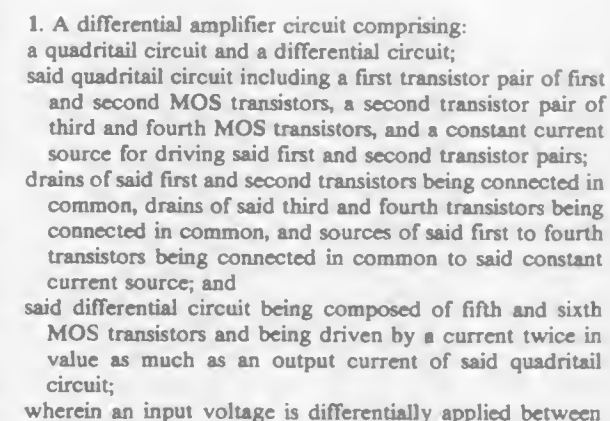
a first output driver stage having first and second transistors coupled in series for receiving the first intermediate signal and the third intermediate signal, and for providing a first



U.S. Cl. 330-253

16 Claims

Int. Cl.⁶ H03F 3/45



gates of said first and second transistors and between gates of said fifth and sixth transistors, respectively;
a DC voltage is applied to common-connected gates of said third and fourth transistors of said second transistor pair; and
an output current of the differential amplifier circuit being derived from an output end of said differential circuit.

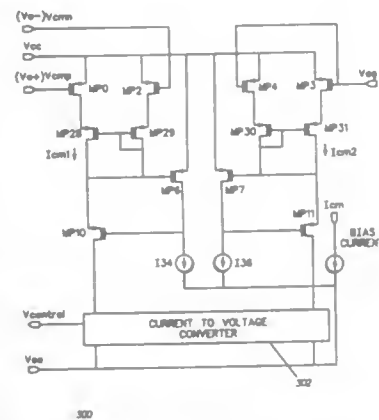
5,381,114 CONTINUOUS TIME COMMON MODE FEEDBACK AMPLIFIER

Jesus S. Pena-Flool, Coral Springs; Mark J. Chambers, and James B. Phillips, both of Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1994, Ser. No. 223,416
Int. Cl.⁶ H03F 3/45

U.S. Cl. 330—258

13 Claims



12. A fully differential operational amplifier comprising:
a main differential amplifier providing a first response time; and
a continuous time common mode feedback amplifier operatively coupled to the main differential amplifier and providing a second response time,
said first and second response times independently biased so as to provide a fast transient response time of the fully differential operational amplifier.

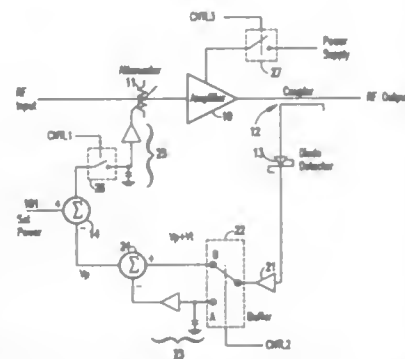
5,381,115 METHOD AND APPARATUS FOR REGULATING OUTPUT POWER OF SIGNAL AMPLIFIER

Richard P. Timmons, Forest, Va., and Lanh T. Trinh, Carlsbad, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 30, 1993, Ser. No. 114,794
Int. Cl.⁶ H03G 3/10

U.S. Cl. 330—279

8 Claims



1. A method of controlling the output power of an amplifier

having a negative feedback control system, comprising the steps of:

- detecting a thermally induced voltage, V_t , within the feedback control system;
- detecting an amplifier power indicating voltage V_d , within the feedback control system;
- using V_t and V_d to obtain a true power indicating voltage, V_p ;
- comparing V_p with a preset control voltage, V_s , and adjusting an input signal level to set a proper overall gain to achieve a desired output power of the amplifier based on a result of the comparison of V_p and V_s ; and storing the detected thermally induced voltage, V_t ; and periodically updating the stored thermally induced voltage, V_t .

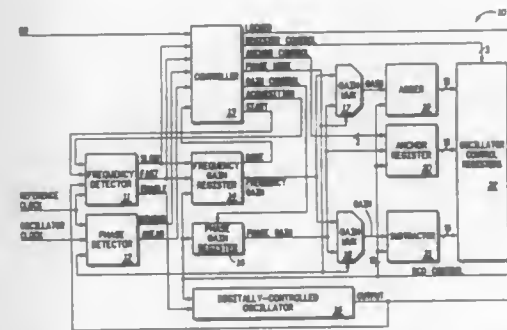
5,381,116 METHOD AND APPARATUS FOR PERFORMING FREQUENCY TRACKING IN AN ALL DIGITAL PHASE LOCK LOOP

Charles E. Neckolls, and James R. Lundberg, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 13, 1993, Ser. No. 165,682
Int. Cl.⁶ H03L 7/087

U.S. Cl. 331—1 A

17 Claims



1. In a system having a digitally controlled variable oscillator and a phase detector for comparing a rising edge of a reference clock signal to a rising edge of an oscillator output signal, a controller coupled to said oscillator, a set of oscillator control registers and a logic circuit for controlling frequency operation of said digitally controlled variable oscillator, a method for performing frequency tracking after said system completes frequency and phase acquisition, said method comprising the steps of:

- loading a control value from a first oscillator control register into a second oscillator control register in a logic circuit, said control value initially corresponding to a target frequency of said digitally controlled variable oscillator;
- determining, via said controller, whether said phase detector has provided either a consecutive number of ahead output signals or a consecutive number of behind output signals, during a predefined number of cycles, and providing an oscillator control signal indicative thereof;
- incrementing or decrementing said control value stored in said second control register by a gain value stored in a third control register to determine an intermediate control value, in response to said oscillator control signal; and
- loading said intermediate control value stored in said second control register into said first control register when said phase detector indicates a change in polarity.

5,381,117 RESONATOR HAVING LOOP-SHAPED ELECTRODE

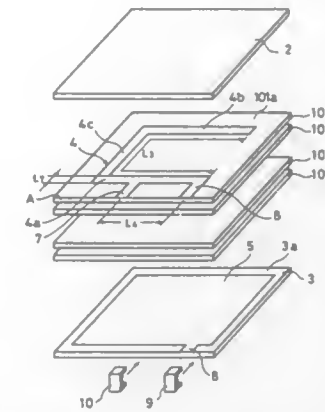
Hisatake Okamura; Masahiro Kasahara, and Tetsuo Taniguchi, all of Nagakakyō, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 832,793, Feb. 7, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,627
Claims priority, application Japan, Feb. 15, 1991, 3-021875; Jun. 11, 1991, 3-138836; Jan. 10, 1992, 4-021749; Jan. 10, 1992, 4-021750

Int. Cl.⁶ H03H 7/01

U.S. Cl. 333—175

19 Claims



1. A resonator comprising:
a first electrode formed in a non-spiral loop shape;
a second electrode formed in a plane shape opposite said first electrode with a plate which comprises a dielectric material between said first electrode and said second electrode;
an earth terminal drawn out from said first electrode toward an edge of said plate;
an input/output terminal drawn out from said first electrode toward said edge of said plate at a distance along said edge from said earth terminal, said distance being selected to provide a predetermined impedance; and
another earth terminal drawn out from said second electrode toward said edge of said plate.

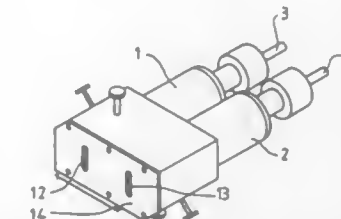
5,381,118 DUAL-MODE CAVITY FILTER HAVING INPUT AND OUTPUT COUPLING IRISES

Patrick Bachelaine, Le Vesinet, and Jean-Louis Lambert, Nanterre, both of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Oct. 22, 1993, Ser. No. 139,836
Claims priority, application France, Oct. 22, 1992, 92 12650
Int. Cl.⁶ H01P 1/208

U.S. Cl. 333—209

2 Claims



1. An agile microwave bandpass filter having an input port and an output port and having a plurality of parallel-coupled cylindrical two-mode cavities of adjustable volume that have parallel axes, each cavity having an end face perpendicular to the cylindrical cavity axis at one end of said cavity, one of the cavities being coupled to the other via an iris, said input port of said filter being located in said end face of one of said cylindrical

cal cavities and said output port of said filter being located in said end face of another of said cylindrical cavities, to thereby obtain a symmetrical frequency response.

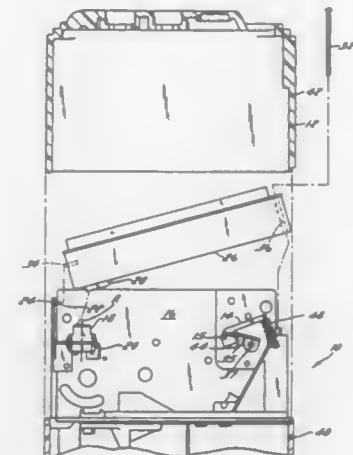
5,381,119 CIRCUIT BREAKER TRIP UNIT INTERLOCK

W. Dale Robbins, Snellville; Curtis J. Ayers, Lithonia, and David A. Leone, Lawrenceville, all of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Division of Ser. No. 832,548, Feb. 7, 1992, Pat. No. 5,239,144. This application Mar. 22, 1993, Ser. No. 35,350
Int. Cl.⁶ H01H 67/02

U.S. Cl. 335—132

11 Claims



1. A switching device comprising:
a support member including walls defining a receptacle having an opening;
a trip unit for insertion into the receptacle along a rocking motion translation path about a pivot axis which is generally normal to the opening;
a female engagement formation on one of the trip unit and support member wall; and
a male engagement formation on the other of the trip unit and support member wall for insertable engagement with the female engagement formation and establishment of the pivot axis, the male engagement formation being oriented along the translation path to prevent inadvertent separation of the trip unit from the receptacle through the opening in the event of an internal pressure build-up within the device during interruption.

5,381,120 MOLDED CASE CIRCUIT BREAKER THERMAL-MAGNETIC TRIP UNIT

David Arnold, Chester, and Roger N. Castonguay, Terryville, both of Conn., assignors to General Electric Company, New York, N.Y.

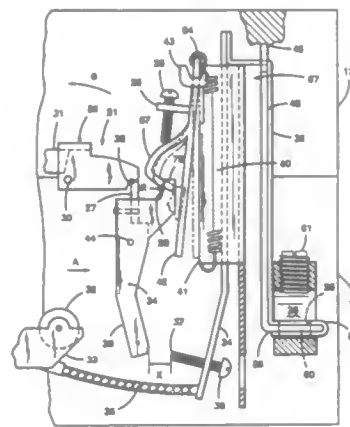
Filed Nov. 15, 1993, Ser. No. 151,652
Int. Cl.⁶ H01H 75/12

U.S. Cl. 335—35

9 Claims

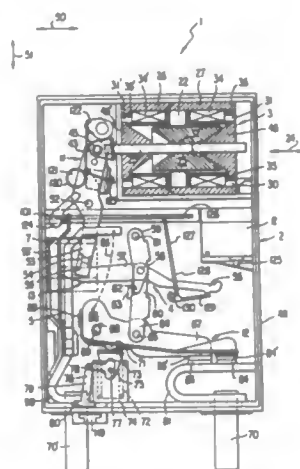
1. A thermal-magnetic trip unit for molded case circuit breakers comprising:
a load strap having means for attachment to a circuit breaker load terminal at one end and joined to a bimetal element at an opposite end;
a support plate arranged on said load strap intermediate said bimetal and said attachment means;
a magnet having support tabs extending from a top thereof and magnetic means extending from a front for concentrating magnet forces in a forward direction;
an armature on said support tabs and arranged for rotation

toward said magnetic means upon transport of overcurrent through said bimetal;
means on said armature biasing said armature away from said magnetic means during transport of quiescent current through said bimetal, said biasing means comprises a spring arranged on a slotted tab extending from a top of said armature;



a trip tab projecting from said armature and arranged for contacting a circuit breaker trip bar; and
a calibration tab extending from said top of said armature and a calibration screw extending through said calibration tab, an end of said screw contacting a part of said trip tab for setting overcurrent response to said armature.

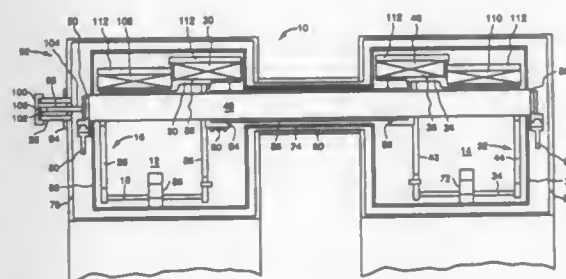
5,381,121
REMOTE CONTROLLED OVERLOAD PROTECTIVE SWITCH
Josef Peter, Altdorf; Peter Meckler, Sengenthal; Fritz Krasser, Altdorf, and Gerhard Endner, Nürnberg, all of Germany, assigns to Ellenberger & Poensgen GmbH, Altdorf, Germany
Filed Mar. 31, 1993, Ser. No. 41,216
Claims priority, application Germany, Mar. 31, 1992, 9204342[U]; Jun. 15, 1992, 9208010[U]
Int. Cl.⁶ H01H 83/00
U.S. Cl. 335—20 25 Claims



1. A remotely controllable circuit breaker comprising:
a remote-control switch;
an electronic control unit coupled to the remote-control switch;

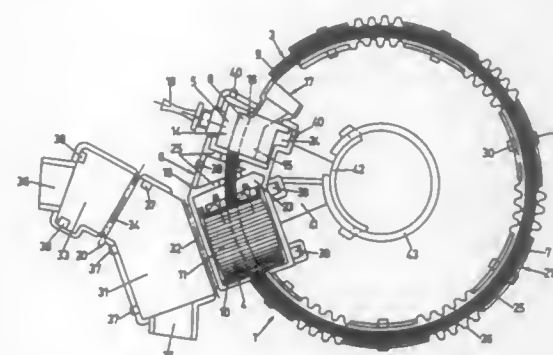
an electromagnetic switch drive, controlled by the electronic control unit, for switching an electric circuit;
a switch lock for latching the electromagnetic switch drive in a first switching position when the electric circuit is closed;
a bi-metal, coupled to the electric circuit, for providing a bi-metal release of the electromagnetic switch drive by unlatching the switch lock from the electromagnetic switch drive in response to an overcurrent condition of the electric circuit so that the electric circuit is interrupted; and
an auxiliary switch, actuated by the switch lock in response to the bi-metal release, for providing a signal to the electronic control unit for turning off the remote control switch and for re-latching the electromagnetic switch drive by the switch lock in a second switching position of the electromagnetic switch drive.

5,381,122
OPEN MRI MAGNET HAVING A SUPPORT STRUCTURE
Evangelos T. Laskaris, Schenectady, and Constantinos Minas, Slingerlands, both of N.Y., assigns to General Electric Company, Schenectady, N.Y.
Filed Jan. 14, 1994, Ser. No. 181,514
Int. Cl.⁶ H01F 1/00, 5/00; G01V 3/00
U.S. Cl. 335—216 10 Claims



1. An open magnetic resonance imaging magnet comprising:
a) first and second spaced-apart superconductive coil assemblies each including:
(1) a generally toroidal-shaped coil form having:
(a) radially spaced-apart inner and outer generally cylindrical shells, said outer cylindrical shell having an outer surface and said inner cylindrical shell having a generally horizontally extending longitudinal axis, and wherein said longitudinal axis of said inner cylindrical shell of said coil form of said first coil assembly is generally coaxially aligned with said longitudinal axis of said inner cylindrical shell of said coil form of said second coil assembly; and
(b) longitudinally spaced-apart inner and outer generally annular plates each attached to both said inner and outer cylindrical shells; and
(2) a superconductive coil surrounding, and attached to, said outer surface of said outer cylindrical shell; and
b) a plurality of spaced-apart structural posts each having a first end portion attached to said coil form of said first coil assembly and each having a second end portion attached to said coil form of said second coil assembly, wherein said first coil assembly also includes a thermally conductive ring having a coefficient of thermal conductivity higher than that of said coil form of said first coil assembly and contacting said coil form of said first coil assembly, and wherein said first coil assembly also includes a heat exchanger coil contacting said thermally conductive ring and having an inlet and an outlet disposed outside said first coil assembly.

5,381,123
TRANSFORMER, ESPECIALLY A MEASUREMENT TRANSFORMER, FOR DETECTING FAULTS ON ELECTRICAL CABLES
Alain Lefevre, Fublaines, and Jack Saintier, Souris, both of France, assigns to Etablissements Bardin, Boulogne-Billancourt, France
Filed Jan. 4, 1994, Ser. No. 177,131
Claims priority, application France, Jan. 8, 1993, 93 00149
Int. Cl.⁶ H01F 27/02, 27/26
U.S. Cl. 336—90 10 Claims

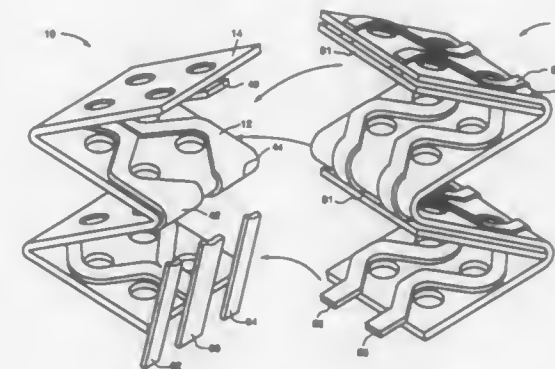


1. Transformer comprising a split laminated cylindrical toroidal magnetic circuit which can be opened by elastic deformation and locked in a closed position with ends thereof overlapping by a screw-type assembly member and a coil providing a secondary fitted to said toroidal magnetic circuit, and a casing adapted to enclose the transformer entirely and including a rigid first casing part having, side by side, a housing for receiving the coil and a housing for receiving the assembly member, the coil and the assembly member being fitted to a first end of the toroidal magnetic circuit, and a deformable second casing part of an annular ring segment shape adapted to enclose a remaining part of the toroidal magnetic circuit, a first end of the deformable casing part being joinable to the rigid casing part, at the same end as the coil housing, and the second end of the deformable casing part being provided with means for locking to the rigid casing part at the same end as the assembly member housing, the assembly member including an abutment for defining the position of the first end of the toroidal magnetic circuit and the deformable casing part having a length such that the second end thereof cannot be locked to the rigid casing part unless the second end of the toroidal magnetic circuit is engaged in the assembly member to a depth required to be in the position overlapping the first end of the toroidal magnetic circuit, and therefore in the assembly position.

5,381,124
MULTI-TURN Z-FOLDABLE SECONDARY WINDING FOR A LOW-PROFILE, CONDUCTIVE FILM TRANSFORMER
Waseem A. Roshen, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 29, 1993, Ser. No. 174,922
Int. Cl.⁶ H01F 27/28
U.S. Cl. 336—200 17 Claims

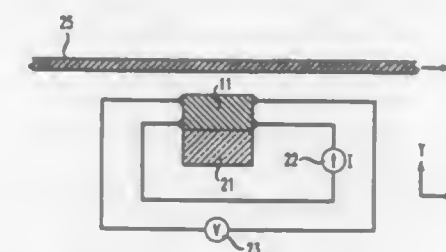
1. A transformer, comprising:
a primary winding comprising a primary conductive film disposed on a primary dielectric membrane, said primary conductive film being z-foldable to form a multi-layer primary winding;
a secondary winding interleaved with said primary winding, said secondary winding comprising a secondary conductive film disposed on at least one surface of a secondary dielectric membrane and having two ends, said secondary conductive film having at least two portions arranged as mirror images of each other, each of said portions com-

prising a plurality of sections, each of said sections including an even number of apertures, each of said apertures corresponding to a separate respective magnetic pole such that there are at least two adjacent poles per section along at least one longitudinal pole axis, said conductive film being z-foldable to form a stack of winding layers with a single turn per two adjacent layers about each said magnetic pole, each of said layers comprising one of said sections, each single turn about each respective adjacent



pole along said at least one longitudinal pole axis being connected in series to form a total number of secondary winding turns corresponding to the number of sections in each of said portions;
an end terminal at each end of said secondary conductive film, said end terminals being connected together; and
at least one additional terminal situated where said at least two portions meet, each corresponding additional terminal being connected together, each of said portions of said winding being connected in parallel to each other.

5,381,125
SPINODALLY DECOMPOSED MAGNETORESISTIVE DEVICES
Li-Han Chen, Summit; Sungbo Jin, Millington, and Thomas H. Tiefel, North Plainfield, all of N.J., assigns to AT&T Corp., Murray Hill, N.J.
Filed Jul. 20, 1993, Ser. No. 95,124
Int. Cl.⁶ H01L 43/00
U.S. Cl. 338—32 R 21 Claims

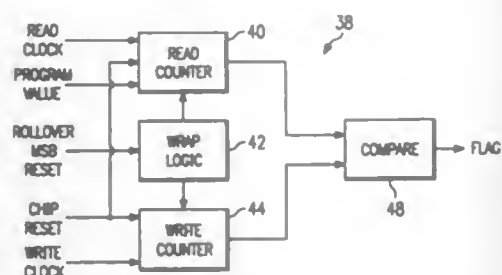


1. A magnetoresistive device comprising a magnetoresistor for sensing magnetic fields, the magnetoresistor being a metallic alloy medium in which there are embedded an effective number of spinodally decomposed ferromagnetic particles each having at least one dimension equal to or less than approximately 0.01 μm , whereby the magnetoresistance of the alloy medium is significantly enhanced.

5,381,126
PROGRAMMABLE DIFFERENCE FLAG LOGIC
 David C. McClure, Carrollton, Tex., assignor to SGS-Thompson Microelectronics, Inc., Carrollton, Tex.
 Filed Jul. 31, 1992, Ser. No. 923,855
 Int. Cl.⁶ G05B 1/00

U.S. Cl. 340—146.2

57 Claims

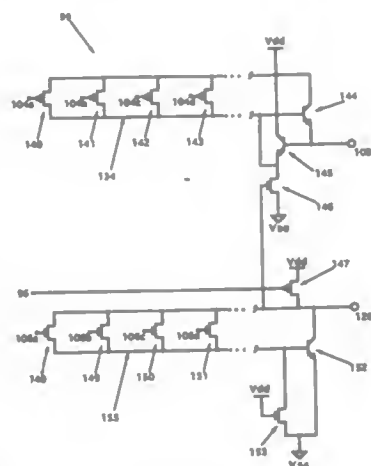


1. Difference flag circuitry, comprising: a comparator which compares the magnitude between a first binary value and a second binary value; a first counter and a second counter which generate said first binary value and said second binary value, respectively, wherein at least one of said first counter or said second counter is programmable; means for generating a flag, by initializing said first binary value to a value which is programmably offset from said second binary value by the value of said flag through the use of said first counter and said second counter.

5,381,127
FAST STATIC CROSS-UNIT COMPARATOR
 Cong Q. Khieu, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.
 Filed Dec. 22, 1993, Ser. No. 172,424
 Int. Cl.⁶ G06F 7/04

U.S. Cl. 340—146.2

23 Claims



1. A static comparator circuit capable of operating at high speeds while consuming very little power, said comparator circuit comprising:

- a first stage accepting a first bit string and a second bit string, said first stage generating a first output, said first output comprising a plurality of voltages corresponding to an XOR function applied to at least a portion of said first bit string and an equivalent portion of said second bit string, said first stage also generating a second output, said second output comprising a plurality of voltages corresponding to an XNOR function applied to at least a portion of said first bit string and an equivalent portion of said second bit string; and
- a second stage comprising a hit-miss detection circuit, said

hit-miss detection circuit comprising a hit line and a miss line, said hit-miss detection circuit further comprising NMOS transistors having NMOS transistor gates and PMOS transistors having PMOS transistor gates, each of said NMOS transistor gates and each of said PMOS transistor gates being controlled by each of said first plurality of voltages and each of said second plurality of voltages respectively, said NMOS transistors being connected in parallel to each other and said PMOS transistors being connected in parallel to each other such that when any one of said NMOS transistor gates goes high and any one of said PMOS transistor gates goes low, said hit line is pulled down and said miss line is pulled up.

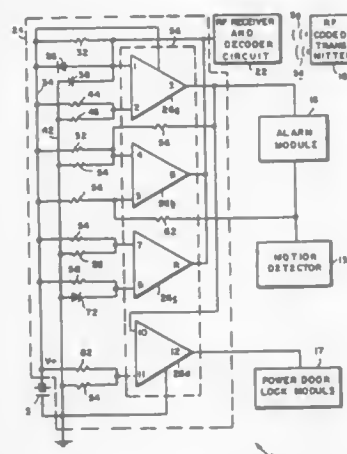
5,381,128
VEHICLE SECURITY SYSTEM WITH EMERGENCY OVERRIDE

Neil B. Kaplan, 2239 Quail Ridge S., Palm Beach Gardens, Fla. 33418

Continuation-in-part of Ser. No. 943,058, Sep. 10, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 100,731
 Int. Cl.⁶ B60R 25/10

U.S. Cl. 340—426

7 Claims



1. A security system for a vehicle having an engine with an ignition switch movable between an engine START position wherein said switch carries a current pulse and an OFF position, said system comprising vehicle securing means; actuator means for actuating the vehicle securing means; deactivating means responsive to a selected number of attempts to start the engine for deactivating the vehicle securing means, and means for disabling the deactivating means after a number of attempts to start the engine other than the selected number have been made a plurality of times.

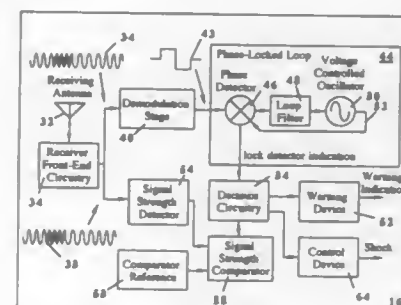
5,381,129
WIRELESS PET CONTAINMENT SYSTEM
 Allen H. Boardman, Maryville, Tenn., assignor to Radio Systems, Inc., Knoxville, Tenn.
 Filed Mar. 23, 1994, Ser. No. 216,691
 Int. Cl.⁶ G08B 21/00; A01K 15/02

U.S. Cl. 340—573

15 Claims

1. A pet containment system comprising: (a) a transmitter for transmitting a series of electromagnetic signals, wherein said transmitter further includes: (1) means for modulating the electromagnetic signals, wherein the signals are modulated to produce non-random patterns of electromagnetic energy, (2) means for transmitting the non-random patterns of electromagnetic energy, and

- (3) at least one transmitting antenna; and
- (b) a receiver removably attached to the pet, said receiver for receiving the series of electromagnetic signals from said transmitter, wherein said receiver further includes: (1) at least one receiving antenna, (2) means for comparing the signal level of the received electromagnetic signals from said transmitter with a predetermined level and for producing an electronic indication of a loss of signal, wherein if the signal level of the received electromagnetic signals from said transmitter is less than the predetermined level then the electronic indication of a loss of signal is produced, (3) means for comparing the phase of the received electromagnetic signals from said transmitter with a predetermined phase and for producing an electronic indication



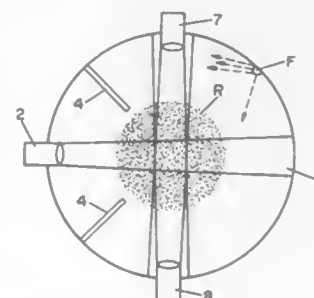
- of a loss of phase, wherein if the phase of the received electromagnetic signals from said transmitter are not substantially in phase with the reference phase then the electronic indication of a loss of phase is produced, (4) means for producing a warning stimulus to the pet, and (5) means for producing a control stimulus to the pet, such that when there is no electronic indication of a loss of signal and there is no electronic indication of a loss of phase, then there is no warning stimulus and there is no control stimulus to the pet, when there is an electronic indication of a loss of signal and there is no electronic indication of a loss of phase, then there is a warning stimulus to the pet, and when there is an electronic indication of a loss of signal and there is an electronic indication of a loss of phase, then there is a control stimulus to the pet.

5,381,130
OPTICAL SMOKE DETECTOR WITH ACTIVE SELF-MONITORING
 Marc Thuillard, Männedorf; Andreas Scheidweiler, Mäseltrangen, and Kurt Hess, Wolfhausen, all of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland
 Filed Sep. 8, 1992, Ser. No. 942,141
 Claims priority, application Switzerland, Sep. 6, 1991, 2626/91

U.S. Cl. 340—630

Int. Cl.⁶ G08B 17/10

12 Claims



1. A smoke detector comprising:

- a measurement chamber with ambient-atmospheric access; source means disposed in the measurement chamber for emitting first electromagnetic radiation; detector means disposed in the measurement chamber for detecting second electromagnetic radiation comprising radiation due to scattering of first electromagnetic radiation by smoke particles in a measurement volume in the measurement chamber; and evaluation-and-signalling means (FIGS. 6-11) connected to the detector means
- (i) for generating an alarm signal upon detection of second electromagnetic radiation having at least a first portion produced essentially homogeneously in the measurement volume, and
- (ii) for generating a trouble signal upon detection of second electromagnetic radiation having at least a second portion produced with significant non-homogeneity in the measurement chamber.

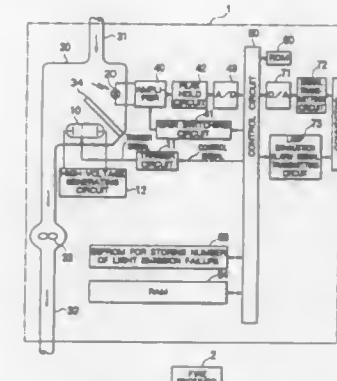
5,381,131
SMOKE DETECTING APPARATUS FOR FIRE ALARM
 Mikio Mochizuki; Hideo Ito, and Ryousaku Kobayashi, all of Chiyoda, Japan, assignors to Nohmi Bosai Ltd., Tokyo, Japan
 Filed Jun. 28, 1993, Ser. No. 82,856

Claims priority, application Japan, Jun. 29, 1992, 4-194730; Jun. 30, 1992, 4-196506

Int. Cl.⁶ G08B 17/10

U.S. Cl. 340—630

12 Claims



1. A smoke detecting apparatus comprising: a lamp for emitting light; a light receiving element for receiving light from said lamp and for generating a corresponding output signal; a smoke detecting means, operatively coupled to said lamp and said light receiving element, for outputting a light emission instruction to said lamp to cause said lamp to emit light, and for receiving the output signal of said light receiving element and determining a smoke density in accordance with the output signal received from said light receiving element; light emission failure detecting and counting means, operatively coupled to said smoke detecting means, for monitoring the light emission instruction from said smoke detecting means and a light emission of said lamp so as to detect a light emission failure in which said lamp fails to emit light in response to the light emission instruction from said smoke detecting means, and for counting the number of light emission failures; and storage means, operatively coupled to said light emission failure detecting and counting means, for storing the number of light emission failures counted by said light emission failure detecting and counting means in a predetermined period of time.

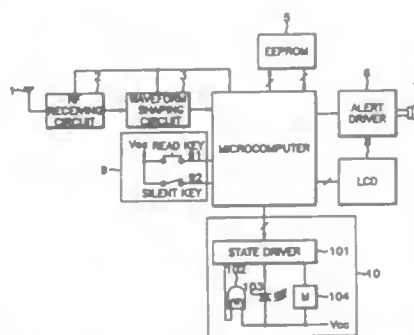
5,381,132

METHOD OF DISPLAYING SELF-ADDRESS DATA IN A PAGER RECEIVER

Young-Han Yoo, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Continuation of Ser. No. 356,694, May 25, 1989, abandoned.
This application Jul. 25, 1991, Ser. No. 737,598
Claims priority, application Rep. of Korea, Sep. 29, 1988, 1988-12636

Int. Cl. H04Q 1/00
U.S. Cl. 340—825.44

7 Claims



1. A method of displaying a self address decimal code in a pager receiver for receiving a calling signal, said pager receiver having a memory, a read key and a display, said method comprising the steps of:

- storing a first plurality of bits representative of address data and a second plurality of bits representative of frame data, wherein said address data and said frame data are derived from said self address decimal code, in a first location of said memory for enabling said pager receiver to receive said calling signal;
- storing binary-coded decimal representations of said self address decimal code in a second location of said memory; and
- reading out said binary-coded decimal representations in response to activation of said read key when no calling signal is being received by the pager receiver; and
- displaying on said display of said pager receiver the self address decimal code represented by said binary-coded decimal representations in response to said binary-coded decimal representations being read out.

5,381,133

SELECTIVE CALL RECEIVER WITH BATTERY SAVING FEATURES AND METHOD THEREFOR

Richard A. Erhart, Chandler, Ariz.; Renee Zuleta, Delray Beach, and David J. Hayes, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 25, 1993, Ser. No. 8,124
Int. Cl. H04Q 7/00

U.S. Cl. 340—825.44

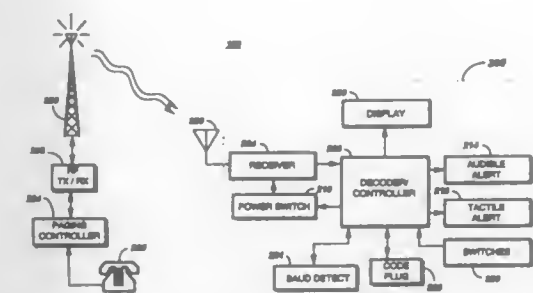
8 Claims

1. A selective call receiver, comprising:
- a receiver for receiving paging signals including a preamble, a synchronization codeword, and at least an address;
 - a power switch for controlling a supply of power to said receiver for receiving the paging signals;
 - a baud rate detector, coupled to the receiver, for detecting a baud rate of the paging signals;
 - a decoder controller, coupled to said receiver, for obtaining synchronization to the paging signals, the decoder/controller comprising:
 - a preamble detector, responsive to the baud rate detector detecting a valid baud rate, for detecting preamble in the paging signals; and
 - a synchronization codeword detector, in response to the preamble being detected, for detecting the synchronization codeword; and
 - an address decoder, responsive to the synchronization

codeword being detected, for decoding the address in an assigned frame of the paging signals;

the decoder/controller maintaining synchronization to the paging signals during address decoding by selectively enabling the power switch for controlling the supply of power to the receiver for receiving the paging signals;

said baud rate detector, responsive to power being supplied to said receiver, detects baud rate during a time period when the address decoder is decoding at least a first por-



tion of the address, the address having at least the first portion and a second portion; and

the power switch supplies power to said receiver and the address decoder decodes the second portion of the address while the baud rate detector detects baud rate during said second portion of the address wherein the decoder/controller, in response to an invalid baud rate being detected, initiates the preamble detector for detecting preamble during the second portion of the address.

5,381,134

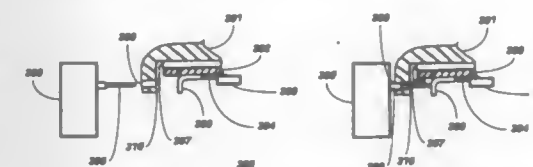
STATIC DISCHARGE PROTECTION FOR PROGRAMMING PORTS ASSOCIATED WITH AN ELECTRONIC DEVICE

Ronald S. Friday, Jupiter; Brian N. Nover, Boynton Beach, and Eric T. Eaton, Lake Worth, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,063
Int. Cl. H01R 13/453

U.S. Cl. 340—825.44

20 Claims



1. An electronic device having a housing forming a cavity that enshrouds a circuit supporting substrate having at least one electrical contact coupled to a conductor that couples an electrical signal between the electrical contact and electronic circuitry associated with the circuit supporting substrate; the electronic device comprising:
- an aperture in the housing through which the at least one electrical contact is accessed; and
 - an articulating cover contiguous to a surface of the housing for blocking the aperture when the electronic device is disengaged from a peripheral device, wherein the cover is formed of elastomeric material.

5,381,135

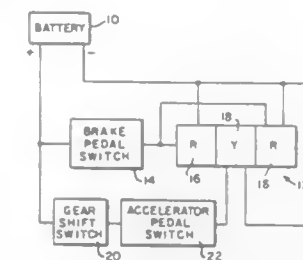
VEHICLE DECELERATION ALERTING DEVICE

Robert L. Blount, 1833 New Hampshire Ave., NW, Apartment #510, Washington, D.C. 20009, assignor to Robert L. Blount, Washington, D.C.

Filed Oct. 8, 1992, Ser. No. 957,800
Int. Cl. G08B 5/24; B60Q 1/50

U.S. Cl. 340—487

4 Claims



1. A motor vehicle driving condition warning system comprising:

- A rearwardly facing brake warning light adjacent a rear window of a motor vehicle, wherein the brake light shines red;
- A rearwardly facing engine coasting condition warning light adjacent the brake warning light, wherein the coasting light shines yellow;
- Electrical circuit means for energizing the red brake warning light when the vehicle brakes are applied and for only energizing the yellow coasting warning light when a driver of the vehicle eases off of the accelerator pedal to indicate vehicle deceleration; and
- wherein the electrical circuit means cannot energize the yellow coasting warning light when the motor vehicle transmission selector shift lever is in reverse/neutral or park.

5,381,136

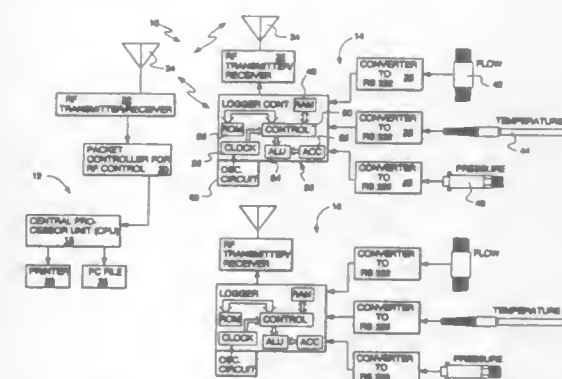
REMOTE DATA COLLECTION AND MONITORING SYSTEM FOR DISTRIBUTION LINE

Robert D. Powers, Shorewood, and Harold L. Ryterski, Naperville, both of Ill., assignors to Northern Illinois Gas Company, Aurora, Ill.

Filed Mar. 19, 1993, Ser. No. 34,504
Int. Cl. G08B 1/08

U.S. Cl. 340—539

13 Claims



1. Apparatus for monitoring a distribution line such as for gas, water or oil at a plurality of remote locations and providing status and alarm information for said distribution line, said apparatus comprising:

- a plurality of remote logger units each located at a respective remote site and including a plurality of sensors coupled to the distribution line for providing status signals

representing operating parameters of the distribution line, wherein each of said logger units includes:

- alarm means for comparing each of said status signals with predetermined upper and/or lower limits associated with a respective operating parameter of the distribution line and for providing an alarm signal when a given status signal exceeds an upper or lower limit associated with said respective operating parameter;
- RF transmitter/receiver means for providing RF signals representing said status and alarm signals and for receiving RF signals from another of said logger units; and
- control means coupled to said RF transmitter means for transmitting an RF signal representing said status signals at predetermined time intervals and for transmitting an RF signal representing said alarm signal when said alarm signal occurs;
- a central controller responsive to said transmitted RF signals for recording and displaying said status and alarm signals; and
- message routing means in each of said remote logger units for directing said RF signals from a first remote logger unit to said central controller via one or more second remote logger units.

5,381,137

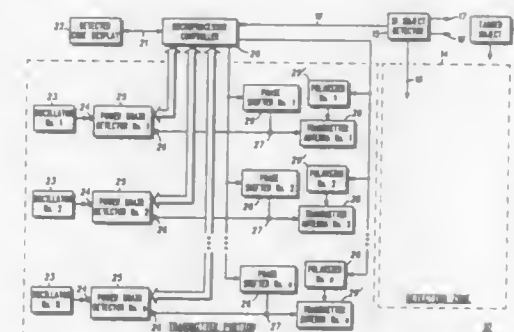
RF TAGGING SYSTEM AND RF TAGS AND METHOD

Sanjar Ghaem, Palatine; Rudyard L. Istvan, Winnetka, and George L. Lauro, Lake Zurich, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1992, Ser. No. 966,653
Int. Cl. G08B 13/187; H05K 3/02, 3/12

U.S. Cl. 340—572

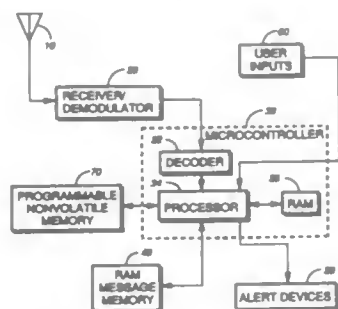
41 Claims



1. RF tagging system comprising:
- a tag having thereon a plurality of passive resonant circuits, each of said passive resonant circuits resonant at a different resonant frequency selected from a predetermined plurality of known resonant frequencies;
 - means for detecting said plurality of passive resonant circuits on said tag, when said tag is in a detection zone, and then providing a corresponding code signal, out of plurality of possible code signals, indicative of which of said resonant frequencies for said passive resonant circuits were detected in said detection zone;
 - wherein said detection means comprises means for producing a plurality of different oscillator signals, one at each of said plurality of known resonant frequencies, means for simultaneously radiating each of said different frequency oscillator signals in said detection zone, and means for providing said one code signal by measuring signals indicative of absorption of radiated energy at each one of said known resonant frequencies in said detection zone by said passive resonant circuits on said tag, said absorption occurring during said simultaneous radiation of each of said different frequency oscillator signals.

5,381,138
INTELLIGENT OVER-THE-AIR PROGRAMMING
 Mark T. Stair, Delray Beach, and Edward L. Ehmke, Wellington, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
 Continuation of Ser. No. 786,156, Oct. 31, 1991, abandoned.
 This application Feb. 4, 1994, Ser. No. 191,744

Int. Cl.⁶ H04Q 7/00
 U.S. Cl. 340—825.44 13 Claims



1. A selective call receiver comprising:
 receiving means for receiving selective call signals comprising reprogramming messages;
 decoding means coupled to said receiving means for decoding said reprogramming messages to produce data comprising program information and reprogramming data;
 reprogrammable memory means for storing option information; and
 control means coupled to said decoding means and said memory means for loading said program information and thereafter executing said program information to reprogram said option information in response to said reprogramming data and according to said loaded program information.

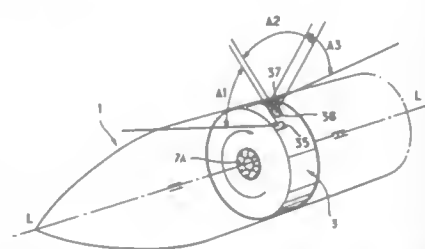
5,381,139
DETECTOR SYSTEM FOR A ROLL-STABILIZED AIRCRAFT

Joseph Bensimon, L'Hayes Les Roses, France, assignor to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Continuation of Ser. No. 657,122, Feb. 19, 1991, abandoned.
 This application Jan. 6, 1993, Ser. No. 1,212

Claims priority, application France, Mar. 16, 1990, 90 03410
 Int. Cl.⁶ G08B 21/00

U.S. Cl. 340—945 12 Claims



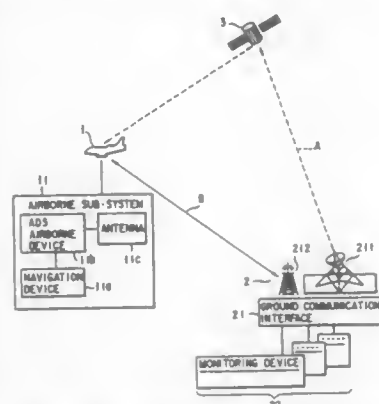
1. A detection system for a roll-stabilized aircraft having a roll axis, comprising:
 a hollow rotatable ring adapted to rotate about the roll axis of said aircraft, said ring being defined by an outer peripheral, generally cylindrical wall substantially flush with an outer surface of the aircraft, an inner generally cylindrical wall spaced from said outer wall which rotates around an inner surface of the aircraft, and a pair of parallel spaced planar walls perpendicular to said roll axis and intersecting said outer and inner cylindrical walls to enclose a toroidal volume within the ring;
 means disposed within the toroidal volume defined by the

inner, outer and planar walls of said hollow ring for rotating said ring about said roll axis;
 photosensitive means disposed inside said ring, rotatable together therewith and suitable for observing and delivering information on the environment around said aircraft through the outer peripheral wall of said ring,
 said observation window being rigidly fixed to said outer peripheral wall of said ring and observing a field of view of at least about 180°;
 measurement means indicating at all times the angular position of said ring about said roll axis and delivering information on said angular position; and
 processor means receiving the information delivered by said photosensitive means and by said measurement means.

5,381,140
AIRCRAFT POSITION MONITORING SYSTEM
 Yuichi Kuroda, and Yoshikatsu Mizuna, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 18, 1993, Ser. No. 19,573
 Claims priority, application Japan, Feb. 18, 1992, 4-030547
 Int. Cl.⁶ G08G 5/04

U.S. Cl. 340—961 2 Claims



1. An aircraft position monitoring system for monitoring the position of each of a plurality of aircraft in a ground station, the system comprising:
 first monitor data acquisition means, provided in each aircraft, for automatically and periodically acquiring, from a navigation device mounted in each aircraft, position data and monitor data including aircraft position determination precision data and aircraft identification (ID) data which accompany the position data;
 air/ground communication means for sending the monitor data to the ground station from each aircraft;
 an interface, provided in the ground station, receiving the monitor data sent from each aircraft by the air/ground communication means;
 a track file, provided in the ground station, which stores track data including the position data and the position determination precision data in units of ID data of each aircraft, and stores track data prepared on the basis of flight schedule data for each aircraft in an initial state;
 first tracking processing means provided in the ground station, the first tracking processing means including:
 ID data determination means for retrieving, from the track file, track data which coincides with the ID data included in the monitor data received by the interface;
 data storage means for allowing the contents of the monitor data to be stored as new track data in the track file, when the ID data determination means retrieves no track data which coincides with the ID data;
 deterioration determining means for comparing the position determination precise data included in the monitor

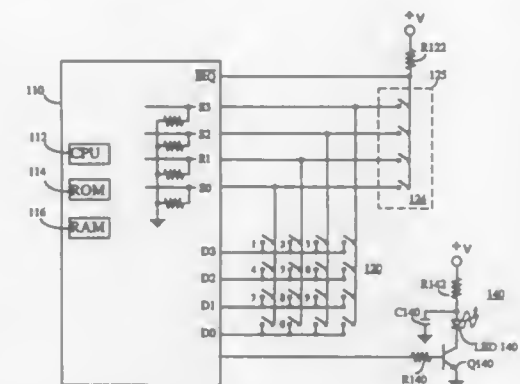
5,381,142
REMOTE CONTROL UNIT HAVING ADDITIONAL KEYS SERVICED VIA AN INTERRUPT

Carlton J. Simmons, Jr., Carmel, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Feb. 19, 1993, Ser. No. 14,102

Int. Cl.⁶ H03K 17/94

U.S. Cl. 341—26 8 Claims



1. A remote control unit, comprising:
 a first plurality of keys arranged in a matrix;
 an additional key, not in said matrix; and
 a controller coupled to said first plurality of keys and to said additional key for determining which of the keys is pressed;
 said controller having a group of drive lines, a group of bidirectional sense lines, and an input terminal for receiving an interrupt signal for causing an interruption of a currently existing mode of operation of said controller;
 said first plurality of keys being coupled between said group of drive lines and said group of sense lines;
 said additional key being coupled between one of said bidirectional sense lines and said interrupt input terminal;
 wherein activation of a key of said first plurality of keys or activation of said additional key causes said interruptions; and
 in response to said interruption, said controller interrogates said first plurality of keys and said additional key to determine which of said keys is pressed.

5,381,143
DIGITAL SIGNAL CODING/DECODING APPARATUS, DIGITAL SIGNAL CODING APPARATUS, AND DIGITAL SIGNAL DECODING APPARATUS

Osamu Shimoyoshi; Kenzo Akagiri; Miki Abe, all of Kanagawa, and Takahiro Watanabe, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Sep. 8, 1993, Ser. No. 118,495

Claims priority, application Japan, Sep. 11, 1992, 4-243575
 Int. Cl.⁶ H03M 7/00

U.S. Cl. 341—51 34 Claims

1. A digital signal processing system wherein a digital input signal is compressed to provide a compressed signal for recording on a medium, and the compressed signal, reproduced from the medium, is expanded to provide a digital output signal, the system comprising:
 a compressor, the compressor including:
 non-block frequency analysis means for carrying out a frequency analysis of the digital input digital signal to provide a frequency range signal in each of plural frequency ranges, the non-block frequency analysis means carrying out the frequency analysis without dividing the digital input signal into blocks,
 block frequency analysis means for carrying out a block frequency analysis of the frequency range signals from the non-block frequency analysis means to provide a

data with the previous position determination precise data included in the track data which coincided with ID data, determining whether or not there is deterioration in the position determination precise data included in the monitor data, and discarding the monitor data when there is deterioration in the position determination precise data included in the monitor data;
 position correlation determining means for determining whether or not there is correlation between position data included in the monitor data which have been determined to be free from deterioration and the previous position data included in the track data; and
 track data updating means for adding data contents of the monitor data which correlates to ID track data included in the track file, when the position correlation determining means determines that there is correlation between the position data and the previous position data, and replacing contents of ID track data with contents of the monitor data, when there is no correlation between the position data and the previous position data; and
 display means, provided in the ground station, for displaying the position of each of the aircraft and the ID in a predetermined format on the basis of the monitor data processed by the first tracking processing means.

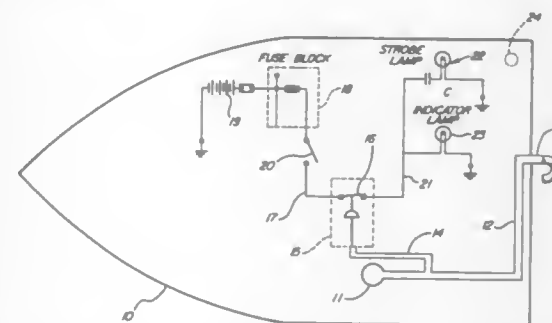
5,381,141
METHOD AND APPARATUS FOR WARNING OTHER BOATS IN THE PROXIMITY OF A WATER CRAFT FOR TOWING WATER SKIERS AND OTHER PERSONS TO BE TOWED THAT THE WATER SKIER IS DOWN OR THE PERSON IS INACTIVE IN THE WATER

Wayne L. Stahl, Indian River, Mich., assignor to Technological Safety Designs, Inc., Indian River, Mich.

Filed Sep. 21, 1993, Ser. No. 125,026

Int. Cl.⁶ G08B 23/00

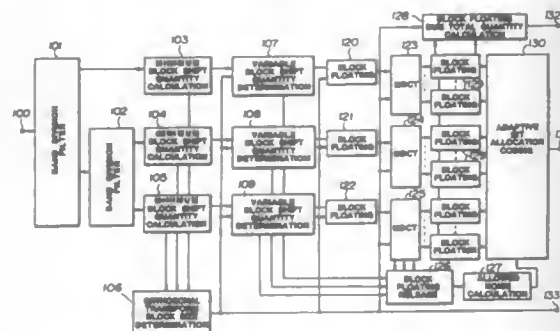
U.S. Cl. 340—984 12 Claims



1. A method of warning boats in the proximity of a towing watercraft for water skiers, and other persons being towed in the water that the water skier or other person is down or inactive in the water via an electrically activated strobe light signal mounted to be visible to boats in the vicinity which is connected to the electrical system for energizing the craft and to a pressure sensitive element including a fluid inlet tube, the element being responsive to a fluid pressure condition in the inlet tube created by movement of the craft through the water, and there being a pressure switch which is closed when the pressure condition is at a predetermined value, connected to energize the strobe light signal when the pressure switch is closed, the steps of:

- measuring the speed of the craft through the water via the pressure condition of the fluid in the inlet tube;
- visually warning boats in the vicinity by energizing the strobe light visual signal responsive to the speed of the craft falling off to less than a predetermined value and changing the pressure condition in said inlet tube; and
- automatically deenergizing the strobe light visual signal by returning the pressure condition switch to open position responsive to an increase in the speed of the boat.

block of spectral coefficients, the block frequency analysis means including means for dividing the frequency range signals in time into blocks, and means for quantizing the block of spectral coefficients from the block frequency analysis means to provide a block of the compressed signal; an expander, the expander including: block frequency synthesis means for performing a block frequency synthesis to transform, from a frequency base to a time base, the spectral coefficients in each of the frequency ranges in each block of the compressed signal reproduced from the medium, the block frequency synthesis means providing, in each of the frequency ranges, a block of a reproduced frequency range signal, and



non-block frequency synthesis means for conducting frequency synthesis of the reproduced frequency range signals from the block frequency synthesis means to provide the digital output signal, the non-block frequency synthesis means conducting the frequency synthesis without dividing the reproduced frequency range signals into blocks; and scale-down means for scaling down values in one of the block frequency analysis performed by the block frequency analysis means and the block frequency synthesis performed by the block frequency synthesis means, the scale-down means operating to cause noise levels resulting from scaling down the values to be different in each of the frequency ranges.

5,381,144

VERSATILE ESCAPE RUN-LEVEL CODER FOR DIGITAL VIDEO SIGNAL PROCESSING APPARATUS
William B. Wilson, and San-Tien Lim, both of Singapore, Singapore, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1993, Ser. No. 140,416

Claims priority, application Japan, Oct. 28, 1992, 4-290479 Int. Cl.⁶ H03M 7/46

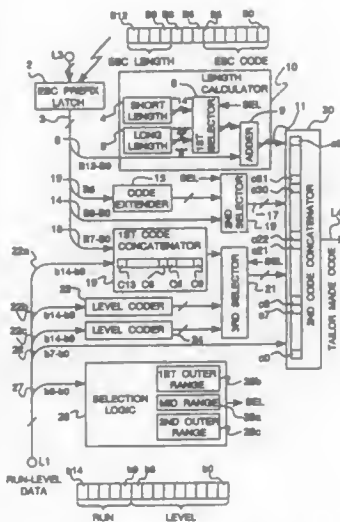
U.S. Cl. 341—63

7 Claims

1. A versatile escape run-level coder for use in a digital video signal processing apparatus which produces run-level data and an escape prefix code, said versatile escape run-level coder comprising:

means for detecting a level of said run-level data, for detecting whether said detected level is in a first range, and for producing a first range signal when said detected level is in said first range, and an outer range signal when said detected level is outside said first range; first sending means for sending, in response to said first range signal, said run-level data without any meaningful data; second sending means for sending, in response to said outer range signal, said run-level data with an insertion of predetermined meaningful data; means for calculating, in response to said first range signal and in response to said outer range signal, a length of said run-level data together with said escape prefix code, in

which the calculated length calculated in response to said first range signal is greater than the calculated length calculated in response to said outer range signal, and for producing effective length data; and



means for concatenating said run-level data, said escape prefix code and said effective length data.

5,381,145

METHOD AND APPARATUS FOR PARALLEL DECODING AND ENCODING OF DATA

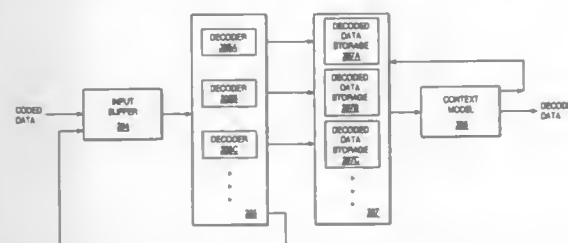
James D. Allen, Castro Valley; Martin Bollek, Palo Alto, and Edward L. Schwartz, Sunnyvale, all of Calif., assignors to Ricoh Corporation, Menlo Park, Calif. and Ricoh Company Ltd., Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 16,035

Int. Cl.⁶ H03M 7/30

U.S. Cl. 341—107

84 Claims



1. A system for decompressing a data stream of a plurality of codewords comprising: channel means for receiving the plurality of codeword of the data stream; and decoding means coupled to said channel means for decoding each codeword in the data stream according to its context and a probability estimate, wherein codewords of different contexts in the data stream are decoded at the same time, such that the data stream is decoded in parallel.

5,381,146

VOLTAGE-TRACKING CIRCUIT AND APPLICATION IN A TRACK-AND-HOLD AMPLIFIER

Ravindra N. Kolte, Boxborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 6, 1993, Ser. No. 88,004

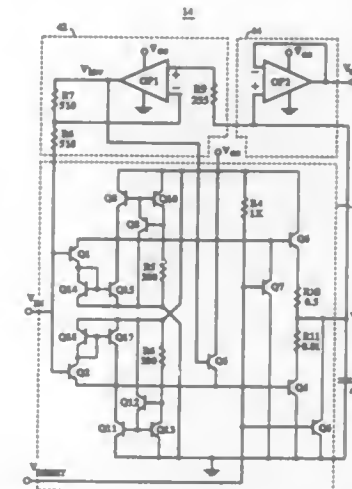
Int. Cl.⁶ H03M 1/00; H03K 5/153

U.S. Cl. 341—132

11 Claims

1. A circuit, comprising:

a capacitor having one terminal coupled to a supply reference node; a PNP input transistor having its emitter coupled to a positive supply reference node, its collector coupled to a negative supply reference node, and its base coupled to a first input node of said circuit; an NPN input transistor having its emitter coupled to said negative supply reference node, its collector coupled to said positive supply reference node, and its base coupled to said first input node; and an NPN output transistor having its collector coupled to



said positive supply reference node, its base coupled to the emitter of said PNP input transistor, and its output coupled to the other terminal of said capacitor; a PNP output transistor having its collector coupled to said negative supply reference node, its base coupled to the emitter of said NPN input transistor, and its output coupled to said other terminal of said capacitor; and a transistor of the same type as one of said input transistors having its emitter coupled to the emitter thereof, its collector coupled to the same supply reference node as is the collector thereof, and its base coupled to a second input node of said circuit.

5,381,147

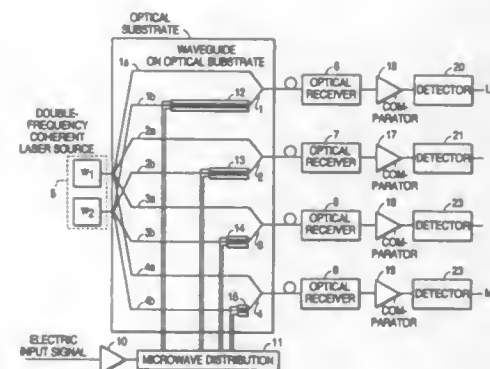
PROCESS FOR THE ANALOG-TO-DIGITAL CONVERSION OF MICROWAVE SIGNALS
Wolfram Birkmayer, Maxhütte-Haidhof, Germany, assignor to Deutsche Aerospace AG, Germany

Filed May 17, 1993, Ser. No. 61,803

Claims priority, application Germany, May 15, 1992, 4216065 Int. Cl.⁶ H03M 1/00

U.S. Cl. 341—137

20 Claims



1. Process for analog to digital conversion of a microwave

signal by means of an arrangement of at least one optical modulator/interferometer having an optical wave guide, said process comprising the steps of:

providing said optical wave guide of said at least one modulator with at least two inputs, each input being adapted to couple an optical signal into said optical wave guide; coupling a first laser carrier signal having a first optical frequency into a first one of said at least two inputs; coupling a second laser carrier signal having a second optical frequency into a second one of said at least two inputs, said first and second carrier signals having a difference frequency which corresponds to a center frequency of said microwave signal; modulating optical phase of said first laser carrier signal with said microwave signal; detecting an interference signal of said first and second carrier signals and generating an electric signal having an intensity indicative of a level of interference between said first and second signals; and comparing intensity of said electric signal with a predetermined threshold value.

5,381,148

METHOD AND APPARATUS FOR CALIBRATING A GAIN CONTROL CIRCUIT

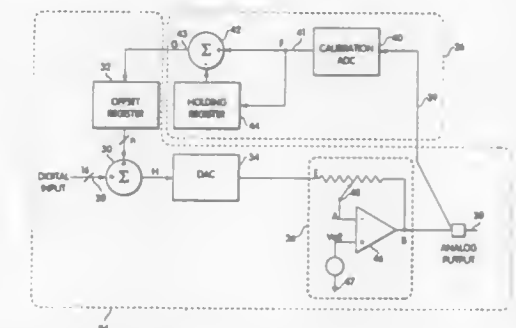
Michael Mueck, Bradford, and Paul F. Ferguson, Jr., Dracut, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jul. 12, 1993, Ser. No. 90,799

Int. Cl.⁶ H03M 1/10

U.S. Cl. 341—139

19 Claims



1. A system comprising: a gain control circuit having an input terminal and an output terminal, receiving an input signal on the input terminal and providing an output signal on the output terminal; a calibration circuit, coupled to the gain control circuit, receiving the output signal and producing and storing a correction value for the gain control circuit during a calibration cycle; and a summing block, coupled to the calibration circuit and the gain control circuit, combining the stored correction value with the input signal such that, for a predetermined input signal, the output signal remains substantially constant despite any changes in the amount of attenuation or gain provided by the gain control circuit.

mitting a radar signal toward the target, and receiving a radar signal echoed back from the target, comprising:

means for transmitting an illumination waveform $s(t)$ towards the target responsive to a transmitted signal;
means for receiving an echo signal from the target;
signal optimizing means for optimizing $s(t)$ according to the equation

$$s(t) = \mu \int_0^T s(\tau) \gamma(t, \tau) d\tau$$

where

μ is an Eigenvalue solution of the integral,
 τ is a dummy variable of integration representing the time over which $s(t)$ interacts with the target, and
 γ is the autocorrelation function of the impulse response of the target;

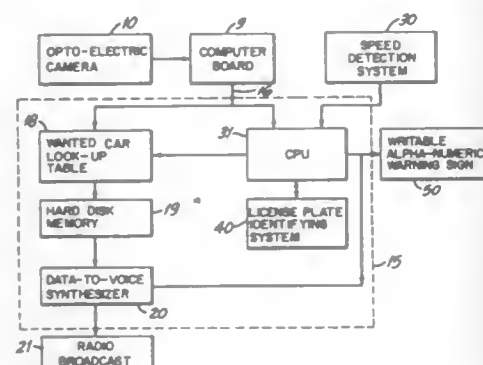
a plurality of matched filter means, each of which is matched to a particular target, responsive to the echo signal for generating identification signals of different intensity; the identification signal of maximum intensity being indicative of a detected target.

5,381,155 VEHICLE SPEEDING DETECTION AND IDENTIFICATION

Eliot S. Gerber, 9 Frog Rock Rd., Armonk, N.Y. 10504
Continuation-in-part of Ser. No. 164,010, Dec. 8, 1993, abandoned. This application Jun. 9, 1994, Ser. No. 257,267
Int. Cl.⁶ G08G 1/01

U.S. Cl. 342—104

26 Claims



1. A method in traffic control for the detection and identification of moving vehicles on a roadway whose vehicle speed exceeds a predetermined speed limit, the method including:

- measuring the speed of the vehicles and determining if any of the vehicles are speeding vehicles because their speed exceeds the predetermined speed limit;
- automatically reading the license plate number of the speeding vehicles using an opto-electric reader which converts license plate alpha-numerics into digital signals;
- automatically, in a computer system, matching the license plate digital signals with a database of vehicle license numbers and deriving associated information therefrom associated with the matched license plate digital signals, including the name of the speeding vehicle's registered owner; and
- displaying the name of the speeding vehicle's registered owner to the speeding vehicles.

5,381,156

MULTIPLE TARGET DOPPLER TRACKER

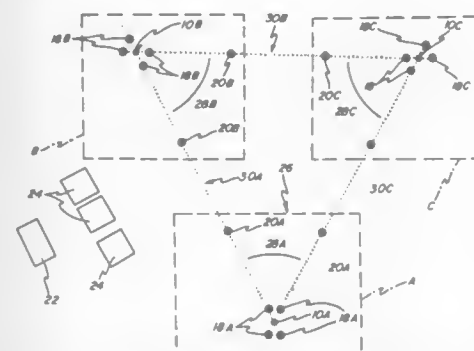
Ditmar H. Bock, Hamburg; Marjorie A. Rude, Cheektowaga, and Frederick W. Kiefer, Williamsville, all of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Apr. 15, 1993, Ser. No. 47,824

Int. Cl.⁶ G01S 13/72

U.S. Cl. 342—126

7 Claims



1. A method of tracking a multiple of components, including submunitions and debris, of a munition which is burst apart above the ground, the method comprising the steps of:
determining a probable location of the burst event;
placing a plurality of transmitters in spaced apart predetermined locations surrounding the probable burst event location, each of the transmitters operating at a different frequency;
placing a plurality of proximal receivers at predetermined locations in the vicinity of each transmitter;
placing a plurality of distal receivers at predetermined locations and predetermined distances from each transmitter on either side of a line from the transmitter to the probable burst event location;
comparing the signals received at both the proximal and the distal receivers associated with each transmitter with the radiated frequency of that transmitter to obtain a signal signature representing the velocity of each component of the munition relative to each receiver;
analyzing the signal signatures from each receiver to identify the position and path of each component;
selecting certain of the components for tracking by a plurality of tracking devices;
assigning one tracking device to each of the multiple components; and
providing tracking data to each of the tracking devices.

5,381,157

MONOLITHIC MICROWAVE INTEGRATED CIRCUIT RECEIVING DEVICE HAVING A SPACE BETWEEN ANTENNA ELEMENT AND SUBSTRATE

Nobuo Shiga, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 28, 1992, Ser. No. 875,015

Claims priority, application Japan, May 2, 1991, 3-100888; May 31, 1991, 3-129688

Int. Cl.⁶ H01Q 1/38

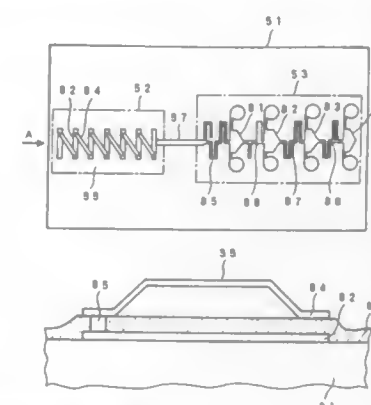
U.S. Cl. 343—700 MS

17 Claims

1. A microwave receiving device comprising:
a semiconductor substrate;
a plurality of first-layer lines formed on said semiconductor substrate in parallel with each other, each of said first-layer lines having a first end and a second end;
an insulating film formed on said semiconductor substrate and on said first-layer lines except at regions of said first end and said second end;
a plurality of second-layer lines provided above said insulating film in parallel with each other, each of said second-layer lines connecting said first end of one of said first-

layer lines with a said second end of an adjacent one of said first-layer lines whereby said first-layer lines and said second-layer lines form a helical antenna;

the indexes vary in accordance with the positions of the index display images in the three-dimensional image space.



- a transmission line; and
- a receiving unit formed on said semiconductor substrate and connected to said helical antenna by said transmission line.

5,381,158

INFORMATION RETRIEVAL APPARATUS

Kenichi Takahara, Tokyo; Atsuko Kawamoto, Yokohama, and Takao Suzuki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

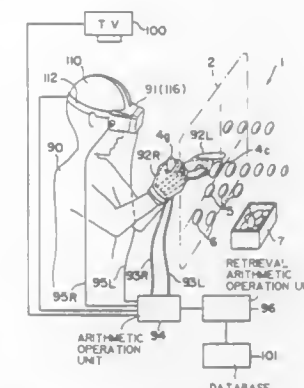
Continuation of Ser. No. 911,480, Jul. 10, 1992, abandoned. This application Apr. 5, 1994, Ser. No. 223,132

Claims priority, application Japan, Jul. 12, 1991, 3-172770

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—156

9 Claims



1. An information retrieval apparatus, comprising:
a three-dimensional display unit for displaying a set of indexes controlling attributes of a database in a three-dimensional image space in the sight of a user with index display images so as to allow the user to visually recognize said set of indexes;
an input unit for detecting a motion pattern of the user's body against said index display images as input information and for displaying the motion patterns in said three-dimensional image space; and
an arithmetic operation unit for recognizing the input information of the motion patterns received through said input unit, for selecting indexes displayed with the corresponding index display images in accordance with the motion patterns and for performing set logical operations of the selected indexes in accordance with the motion patterns so as to collate and retrieve information from said database, wherein the index display images can be moved in the three-dimensional image space in accordance with the motion patterns of the user's body, and the index information of

5,381,159

COORDINATE INPUT DEVICE

Toshiki Oohori, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

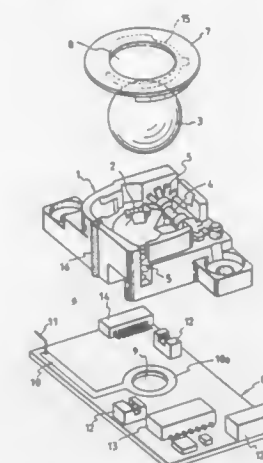
Filed May 24, 1993, Ser. No. 66,450

Claims priority, application Japan, May 29, 1992, 4-036455[U]

Int. Cl.⁶ G09G 5/00

U.S. Cl. 345—163

8 Claims



1. A coordinate input device comprising:
a lower housing having a ball accommodating portion;
a ball rotatably accommodated in said ball accommodating portion;
a ball retaining member having an open portion from which part of said ball protrudes, said ball retaining member retaining said ball in said ball accommodating portion;
a rotational amount detection means for detecting a rotational amount of said ball;
a substrate connected to said lower housing and including an electrical conduction pattern formed on a surface thereof;
a static electricity conducting member contacting said ball;
a static electricity releasing member provided on said lower housing and electrically connected to said static electricity conducting member to externally release the static electricity; and
a static electricity releasing pattern formed on said substrate and electrically connected to said static electricity releasing member.

5,381,160

SEE-THROUGH DIGITIZER WITH CLEAR CONDUCTIVE GRID

Waldo L. Landmeier, Phoenix, Ariz., assignor to CalComp Inc., Anaheim, Calif.

Continuation-in-part of Ser. No. 767,102, Sep. 27, 1991, abandoned. This application Oct. 30, 1991, Ser. No. 784,929

Int. Cl.⁶ G09G 3/00

U.S. Cl. 345—174

6 Claims

1. A combined display and cordless electromagnetic digitizing input device for a computer comprising:
a) a graphics display panel having a viewing surface and a non-viewing back surface;
b) a cordless electromagnetic digitizing input device comprising:
b1) a first grid of parallel transparent conductors including means for connection to electromagnetic digitizing electronics to sense the location of an electromagnetic

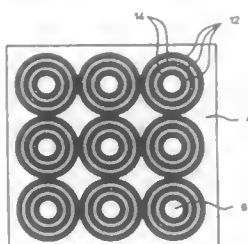
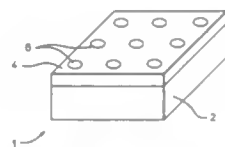
1. An imaging system for forming multiple image exposure frames on a photoconductive member moving in a process direction including:

- a plurality of units, each of said ROS units associated with the formation of one of said multiple image exposure frames, each of said ROS units forming a plurality of scan lines, at a given low scan resolution in a fast scan direction across a width of said member, by reflecting modulated beams from multi-faceted surfaces of a rotating polygon associated with each one of said ROS units, each polygon driven by a separate drive motor,
- means for detecting at least the beginning of each of the scan lines and providing a signal representing such detection.

means for encoding said photoconductive member motion in the process direction and generating a stable reference frequency output signal equal to a slow scan resolution, means for comparing the phase and frequency of said reference output signal with that of the SOS signal, and means for generating an error output signal when a difference in phase and frequency exists motor of each of said ROS systems, and means for pulse width modulating drive signals to each said polygon motor in response to each said error output signal thereby changing polygon drive motor speed whereby the phase of the SOS signal is continually adjusted in a feedback loop until said comparing means error output signal is reduced to zero.

5,381,166
INK DOT SIZE CONTROL FOR INK TRANSFER PRINTING

Si-Ty Lam, Pleasanton; An-Chung R. Lin, Cupertino, and Young-Soo Yoo, Los Altos, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 30, 1992, Ser. No. 983,010
Int. Cl.⁶ B41J 2/005; G01D 15/16
U.S. Cl. 346—140.1 18 Claims

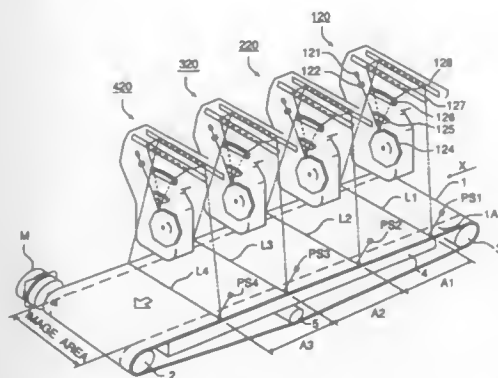


1. In an ink transfer printing device wherein ink is transferred from an ink reservoir to a printing media via an ink transfer surface having a plurality of orifices, wherein the improvement comprises forming a plurality of flow barriers on the ink transfer surface about each of the orifices to control the spread of the ink so as to produce ink dots of various sizes.

5,381,167
COLOR IMAGE FORMING APPARATUS
Yozo Fujii; Tadashi Miwa; Hisao Satoh; Atsushi Ogane; Isao Matsuoka, and Tadayoshi Ikeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Oct. 19, 1992, Ser. No. 962,862
Claims priority, application Japan, Oct. 24, 1991, 3-277948; Oct. 24, 1991, 3-277949; Oct. 24, 1991, 3-277950; Oct. 24, 1991, 3-277980
Int. Cl.⁶ G03G 15/01; G01D 15/14
U.S. Cl. 346—157 6 Claims

1. A color image forming apparatus comprising: moving means for moving an image carrier in a secondary direction perpendicular to a primary direction; first charging means for charging said image carrier; first imagewise exposure means for scanning said image carrier with a light beam in said primary direction to form a first latent image thereon; first developing means for developing said first latent image to form a first toner image on said image carrier;

second charging means for charging said image carrier having said first toner image registered thereon; second imagewise exposure means for scanning said image carrier with a light beam in said primary direction to form a second latent image on said image carrier having said first toner image registered thereon; second developing means for developing said second latent image to form a second toner image on said image carrier having said first toner image registered thereon; a registration mark provided on a non-image forming area of said image carrier;

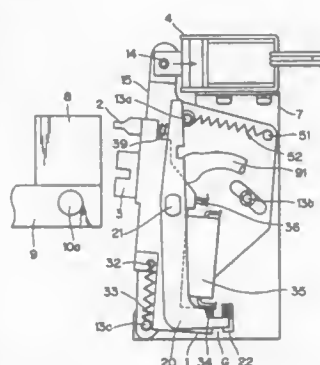


first detecting sensor for detecting said registration mark using said light beam of said first imagewise exposure means and sending a first detecting signal; second detecting sensor for detecting said registration mark using said light beam of said second imagewise exposure means and sending a second detecting signal; and controlling means for controlling timing of said first and second imagewise exposure means and movement of said image carrier in response to said first detecting signal and said second detecting signal.

5,381,168
SUCTION-PURGING UNIT AND SUCTION PURGING METHOD FOR AN INK JET PRINTER

Norimasa Kondo; Takao Matsuoka; Masayuki Aino; Takuji Torii; Kazunobu Hayashi; Shuichi Morio, and Shinya Tomita, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 43,842
Claims priority, application Japan, Apr. 30, 1992, 4-111149
Int. Cl.⁶ B41J 2/165 20 Claims

U.S. Cl. 347—30



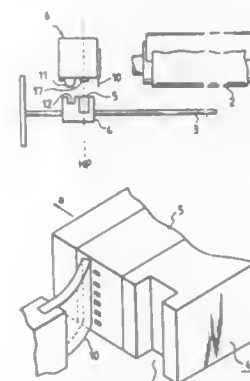
17. A method for suction-purging nozzles of an ink jet printer, using a suction purging unit for purging at least one nozzle of a nozzle array of a print head of the ink jet printer, the suction purging unit comprising a body portion for temporarily accumulating an ink sucked from the at least one of the nozzles and discharging the sucked ink through an ink discharge port, the body portion being movable toward and away from the print head and being movable in a vertical direction; at least one contact portion provided on the body portion and operative to sealingly communicate with the at least one of the nozzles in accordance with the movement of the body portion; a pump in communication with the body portion for applying a negative pressure in the at least one of the nozzles through the body portion and the at least one contact portion in a suction purging of the at least one of the nozzles; first moving means for moving the body portion to bring the at least one contact portion into contact with the at least one of the nozzles for the suction purging and to separate the at least one contact portion from the at least one of the nozzles in a non-suction purging mode; and second moving means for vertically moving the body portion thereby vertically moving the at least one contact portion to align the at least one contact portion with the at least one of the nozzles of the nozzle array, the second moving means comprising a pin member extending from the body portion toward the print head, the pin member being slidable on a top surface of the print head, and means for normally urging the body portion downwardly for maintaining surface contact of the pin with the top surface of the print head during passage of the print head relative to the pin, the method comprising the steps of:

charge port, the body portion being movable toward and away from the print head and being movable in a vertical direction; at least one contact portion provided on the body portion and operative to sealingly communicate with the at least one of the nozzles in accordance with the movement of the body portion; a pump in communication with the body portion for applying a negative pressure in the at least one of the nozzles through the body portion and the at least one contact portion in a suction purging of the at least one of the nozzles; first moving means for moving the body portion to bring the at least one contact portion into contact with the at least one of the nozzles for the suction purging and to separate the at least one contact portion from the at least one of the nozzles in a non-suction purging mode; and second moving means for vertically moving the body portion thereby vertically moving the at least one contact portion to align the at least one contact portion with the at least one of the nozzles of the nozzle array, the second moving means comprising a pin member extending from the body portion toward the print head, the pin member being slidable on a top surface of the print head, and means for normally urging the body portion downwardly for maintaining surface contact of the pin with the top surface of the print head during passage of the print head relative to the pin, the method comprising the steps of:

closing the ink discharge port; contacting the at least one contact portion with the at least one of the nozzles; energizing the pump for suction purging of the at least one of the nozzles; deenergizing the pump for stopping the suction-purging of the at least one of the nozzles; separating the at least one contact portion from the at least one of the nozzles after a predetermined period is elapsed from the deenergization; and opening the ink discharge port for discharging an ink from the body portion, the ink having been sucked in the body portion during the suction purging.

5,381,169
INK JET APPARATUS WITH RECOVERY MECHANISM
Atsushi Arai, Kawasaki, and Tetsuji Kurata, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 21, 1992, Ser. No. 871,729
Claims priority, application Japan, Apr. 22, 1991, 3-090741
Int. Cl.⁶ B41J 2/165 8 Claims

U.S. Cl. 347—33

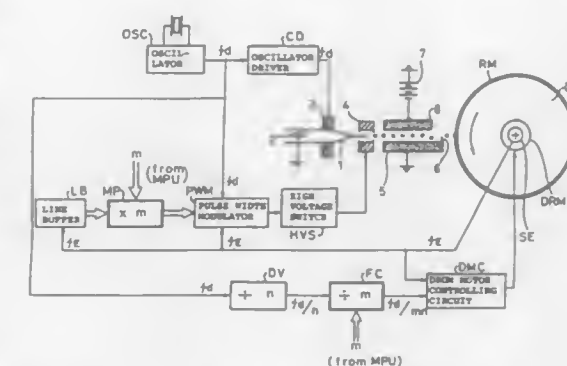


1. An ink jet recording apparatus comprising: a carriage for mounting a recording head having a discharge port for discharging ink onto a recording medium, said carriage being moveable between a recording area where recording is performed on the recording medium and a non-recording area; capping means disposed at the non-recording area for performing a capping operation by moving relative to a

surface of the recording head at which the discharge port is disposed to cap the discharge port; and cleaning means adjacent said capping means for cleaning the surface of the recording head, wherein said carriage has a recess adjacent the recording head, said recess having a corner edge for scraping any foreign material deposited on said cleaning means when said cleaning means rubs said corner edge after cleaning the head, and wherein an absorbing member is disposed adjacent said capping means so that said absorbing member contacts said recess in a capping operation to collect the foreign material scraped from said cleaning means by said corner edge.

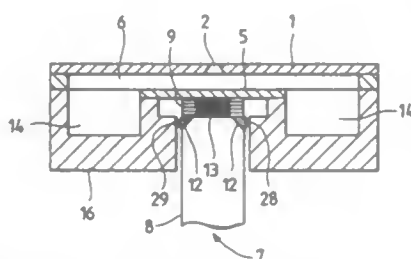
5,381,170
INK JET RECORDING APPARATUS OF THE CONTINUOUS JET TYPE
Masayuki Mutoh, Machida, Japan, assignor to SR Technos Ltd., Japan
Filed Jan. 28, 1993, Ser. No. 10,393
Claims priority, application Japan, Feb. 10, 1992, 4-057387
Int. Cl.⁶ B41J 2/02 4 Claims

U.S. Cl. 347—74



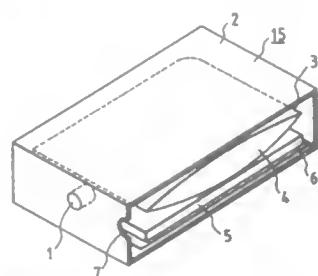
1. An ink jet recording apparatus of the continuous jet type, comprising: frequency signal generating means for outputting a disintegrating frequency signal; means for disintegrating a jet of ink into a series of ink drops in synchronism with the disintegrating frequency signal; pulse width modulating means for converting the disintegrating frequency signal into a charging controlling signal having a pulse width that increases in proportion to a number of drops of ink per picture element equal to picture element data of a number n of gradations multiplied by a density coefficient m being variably set, n being a positive integral number, m being equal to 1, 2, 3, . . . or $\frac{1}{2}$, $\frac{1}{4}$, . . . under the condition that mn is an integral number equal to or greater than 1; charging means for charging the drops of ink in accordance with the charging controlling signal; deflecting means for deflecting the drops of ink charged by said charging means; and record face moving means, including a rotatable record-face supporting drum driven by a drum rotating motor, for frequency dividing the disintegrating frequency signal by a maximum ink drop number mn per picture element obtained by multiplication of the gradation number n by the density coefficient m to produce a picture element recording frequency signal and for controlling said drum rotating motor for moving a record face of a record medium supported on said drum relative to said deflecting means at a speed in accordance with the picture element recording frequency signal.

5,381,171
INK-JET RECORDING HEAD
 Satoru Hosono, and Nobumasa Abe, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
 Filed Jun. 25, 1993, Ser. No. 82,451
 Claims priority, application Japan, Jun. 26, 1992, 4-169328; Dec. 8, 1992, 4-328157; Jun. 11, 1993, 5-166251
 Int. Cl.⁶ B41J 2/045
 U.S. Cl. 347—72



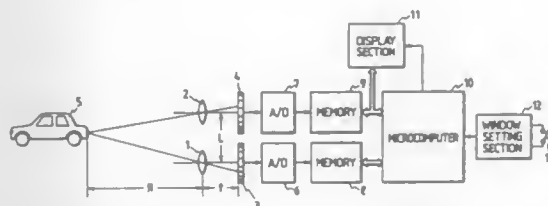
1. An ink-jet recording head comprising:
 - a piezoelectric vibrator having laminated layers of an electrode forming material and a piezoelectric material alternately stacked, an active region being formed in a center portion of said piezoelectric vibrator so as to extend and contract in a lamination direction, said electrode forming material constituting segment electrodes and common electrodes;
 - a fixing substrate to which said piezoelectric vibrator is fixed at one end hereof; and
 - a flow path component which contacts with another end of said piezoelectric vibrator and in which ink is compressed by the extension and contraction of said piezoelectric vibrator to produce ink drops,
- wherein a contacting area is formed between said piezoelectric vibrator and said fixing substrate only in a portion of said active region, and said piezoelectric vibrator is fixed to said fixing substrate only through said contacting area.

5,381,172
INK JET HEAD CARTRIDGE, INK TANK CARTRIDGE USING DEGRADABLE PLASTIC AS PART OF CONSTRUCTION OR PACKAGE THEREOF AND INK JET APPARATUS HAVING FITTING PART FOR THE CARTRIDGES
 Toohiko Ujita, Yamato, and Hirohiko Kozawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Dec. 5, 1991, Ser. No. 802,489
 Claims priority, application Japan, Dec. 7, 1990, 2-406207; Nov. 21, 1991, 3-306346
 Int. Cl.⁶ G01D 15/18
 U.S. Cl. 347—86



1. An ink tank comprising a storing member for storing ink and a case body for housing the storing member, wherein the storing member is made of a photodegradable plastic of which a degradation is promoted by an irradiation of light and the case body is made of a biodegradable plastic of which a degradation is promoted by microorganism.

5,381,173
INTER-CAR DISTANCE DETECTING DEVICE FOR TRACKING A CAR RUNNING AHEAD
 Yoshiaki Asayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Aug. 25, 1992, Ser. No. 934,215
 Claims priority, application Japan, Aug. 28, 1991, 3-217028
 Int. Cl.⁶ H04N 7/18
 U.S. Cl. 348—170

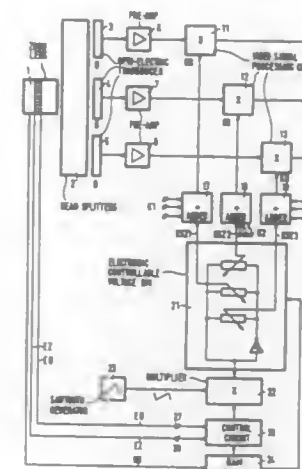


1. An inter-car distance detecting device installed on a first car for tracking a second car running ahead of said first car, said inter-car distance detecting device comprising:
 - a pair of image sensors each for picking up an image of objects including said second car and background;
 - window setting means for setting a plurality of distance measuring windows in predetermined positions in the image picked up by one of said image sensors, respectively;
 - distance detecting means for comparing the image contained within each of said distance measuring windows with a corresponding image picked up by the other of said image sensors, to detect distances from said first car to parts of said objects contained within each of said distance measuring windows;
 - window selecting means for selecting said distance measuring windows which contain the image of said second car according to a detection value of said distance detecting means;
 - tracking window setting means for automatically setting a tracking window for tracking the image of said second car with reference to said distance measuring windows selected by said window selecting means; and
 - tracking distance detecting means for detecting a distance to said second car in the image contained within said tracking window,
- wherein said window selecting means compares said distances detected by said distance detecting means with each other to select said distance measuring windows which are adjacent to one another and contain the image of the second car having distances which are equal and shorter than those of nonselected distance measuring windows.

5,381,174
METHOD OF AND ARRANGEMENT FOR CORRECTING VIGNETTING
 Gert Jan de Groot, Unterägeri, Switzerland, and Hans Hamerling, Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
 Filed Oct. 8, 1992, Ser. No. 958,411
 Claims priority, application Germany, Oct. 25, 1991, 4135210
 Int. Cl.⁶ H04N 5/30, 5/14
 U.S. Cl. 348—207

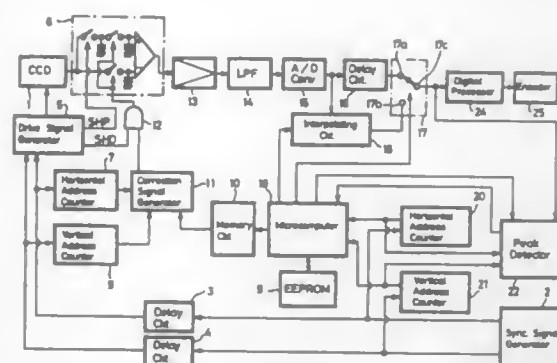
1. A method of correcting vignetting in the upper or lower range of the pick-up area of opto-electric transducers of a multichannel color television camera comprising a zoom lens, said vignetting being produced when an objective-specific diaphragm aperture threshold value is exceeded and which is dependent on the zoom setting, said method comprising the steps:
 - deriving signals representative of a diaphragm aperture setting and a zoom setting of the zoom lens;

transforming said representative signals into a shaping signal, said transformation being dependent on the diaphragm aperture threshold value;
 modulating a field frequency sawtooth signal with said shaping signal to obtain a shaped field frequency sawtooth signal; and



correcting with said shaped field frequency sawtooth signal the gain of video signal processing circuits coupled to the respective opto-electrical transducers for a vignetting compensation.

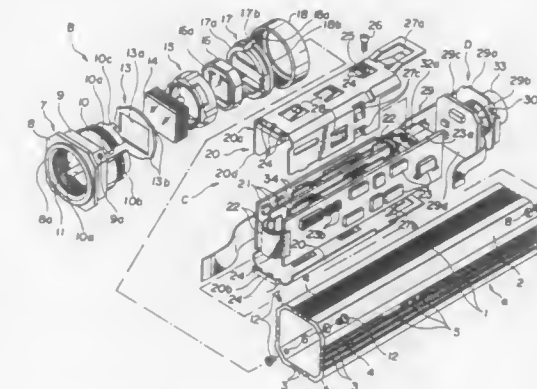
5,381,175
APPARATUS FOR CORRECTING FOR DEFECTIVE PIXELS IN AN IMAGE SENSOR
 Fumihiko Sudo, and Taku Kihara, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
 Filed Apr. 6, 1993, Ser. No. 42,769
 Claims priority, application Japan, Apr. 10, 1992, 4-091201
 Int. Cl.⁶ H04N 3/14
 U.S. Cl. 348—246



1. A solid state image pickup apparatus comprising:
 - a solid state imager having a plurality of pixels which output analog signals corresponding to light incident thereon;
 - a sample and hold circuit for sampling and holding said analog signals output from respective pixels of said solid state imager in response to a sampling signal;
 - a low-pass filter connected to said sample and hold circuit for eliminating a high frequency component from the analog output signal of said sample and hold circuit so as to output a filtered signal;
 - an analog-to-digital converter connected to said low-pass filter for converting the filtered signal to a digital filtered signal;

a memory for storing position data indicative of a position of a defective pixel;
 means for stopping supplying of said sampling signal to said sample and hold circuit in accordance with said position data so that the analog output signal from a respective defective pixel is replaced with the analog output signal from the pixel which is read immediately prior to the defective pixel;
 interpolating means connected to said analog-to-digital converter for interpolating a digital signal in place of the digital signal corresponding to the position data indicating a defective pixel from digital signals corresponding to other pixels in surrounding relation to the defective pixel so as to generate an interpolated digital signal; and
 switching means for selectively outputting the digital filtered signal and the interpolated digital signal in accordance with said position data.

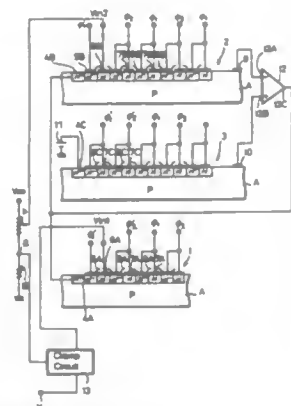
5,381,176
MINIATURIZED VIDEO CAMERA
 Ikuro Tanabe, Yoshinori Yoshida, Kiyoshi Saitoh, all of Kanagawa, and Masanobu Morioka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
 Filed Nov. 4, 1992, Ser. No. 971,330
 Claims priority, application Japan, Aug. 11, 1991, 3-293461; Nov. 11, 1991, 3-294312
 Int. Cl.⁶ H04N 5/225
 U.S. Cl. 348—273



1. A video camera comprising:
 - a tubular outer casing having openings at opposite ends and a transverse cross-sectional configuration that is symmetrical about the center thereof;
 - front and rear block assemblies respectively secured within said openings at the opposite ends of said tubular outer casing;
 - an image pick-up element included in said front block assembly;
 - connector means included in said rear block assembly for outputting a video signal; and
 - a base plate assembly disposed within said tubular outer casing between said front and rear block assemblies and including a plurality of elongated base plates arranged in longitudinally overlapped folded relation and having electronic elements mounted thereon, means connecting said elongated base plates end-to-end and through which said electronic elements are connected to form a circuit, means connecting said circuit to said image pick-up element at an end of one of said elongated base plates and to said connector means at an end of another of said elongated base plates, and plate-like members of elastomeric heat-conductive material interposed between said elongated base plates and being contacted by said electronic elements mounted on at least one adjacent elongated base

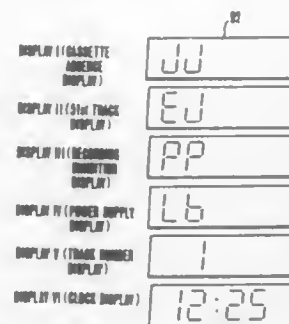
plate for equalizing temperatures along said base plate assembly.

5,381,177
CCD DELAY LINE CAPABLE OF AUTOMATIC ADJUSTMENT OF AN INPUT BIAS VOLTAGE TO CHARGE TRANSFER REGIONS
 Katsunori Noguchi, and Tetsuya Kondo, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
 Filed Mar. 30, 1993, Ser. No. 40,284
 Claims priority, application Japan, Apr. 6, 1992, 4-084170
 Int. Cl.⁶ H04N 5/335
 U.S. Cl. 348—313 8 Claims



1. A CCD delay line comprising:
 - a semiconductor substrate;
 - a first transfer region formed in said semiconductor substrate and in which signal charge is transferred, said first transfer region having a first input source, a first input gate electrode and a first output portion;
 - a second transfer region formed in said semiconductor substrate and having a second input source with a structure substantially the same as said first input source, said second transfer region further having a second input gate electrode and a second output portion;
 - a third transfer region formed in said semiconductor substrate and having a third input source, said third transfer region further having a third output portion with a structure which is substantially the same as said structure of said second output portion, and having a maximum amount of charge which is a predetermined portion of a maximum amount of charge of said second transfer region;
 - a plurality of transfer electrodes formed in each of said first, second and third transfer regions;
 - differential amplifier means connected with said second and third output portions for detecting amounts of charge of said second and third transfer regions, and maintaining amounts of charge transferred in said second transfer region and said third transfer region to be substantially equal to each other; and
 - means for supplying an input bias voltage to said first input gate electrode and a reference bias voltage to said second input gate electrode, and including means for changing one of said input and reference bias voltages independently of the other so as to vary the output charge from said first transfer region, wherein said means for changing comprises a variable resistor.

5,381,178
RECORDING APPARATUS WITH OVERRIDING DISPLAY CONDITIONS
 Ryosuke Miyamoto, and Shinji Sakai, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 106,194, Aug. 12, 1993, abandoned, which is a continuation of Ser. No. 841,242, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 711,264, Jun. 4, 1991, abandoned, which is a continuation of Ser. No. 598,797, Oct. 15, 1990, abandoned, which is a continuation of Ser. No. 467,318, Jan. 18, 1990, abandoned, which is a continuation of Ser. No. 51,047, May 15, 1987, abandoned. This application Apr. 12, 1994, Ser. No. 226,402
 Claims priority, application Japan, May 21, 1986, 61-116373
 Int. Cl.⁶ H04N 5/225
 U.S. Cl. 348—333 12 Claims

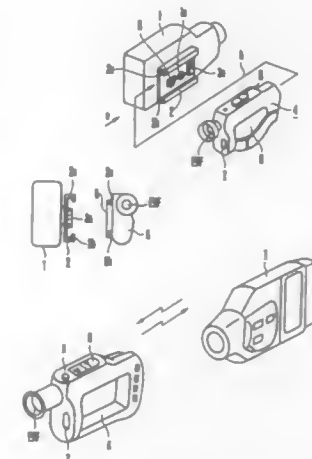


1. A recording apparatus comprising:
 - recording means for recording an image signal on a recording medium;
 - electrical power supply means for supplying electrical power for operating said recording means;
 - discriminating means for detecting that a recording operation of said recording means is in progress and producing an output indicative thereof;
 - detecting means for detecting whether a supplying capacity of said electrical power supply means is proper or not and producing an output when it is not proper; and
 - display means for alternatively effecting a display corresponding to the outputs of said discriminating means and said detecting means, said display means arranged to preferentially display an indication of the output of said detecting means over the output of said discriminating means.

5,381,179
CAMERA-INTEGRATED VIDEO RECORDER APPARATUS
 Kazunori Kashimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 908,486, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 798,350, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 683,122, Apr. 9, 1991, abandoned, which is a continuation of Ser. No. 499,901, Mar. 27, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 164,993
 Claims priority, application Japan, Mar. 30, 1989, 1-80883
 Int. Cl.⁶ H04N 5/225, 5/232
 U.S. Cl. 348—376 17 Claims

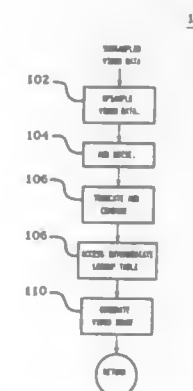
1. A camera-integrated video recorder in which a camera means and a recorder means are disposed in a single casing, comprising:
 - a casing having a first power source;
 - a grip having an electronic viewfinder and a control portion for controlling operations of said camera means and said recorder means, and having a second power source;
 - an attachment base for fastening said grip and rotatably fastened to said casing, said attachment base having a locking mechanism capable of locking the fastened state of

said grip and electric connectors for electrically connecting said grip to said casing in the state that said grip has been fastened thereto;
 selecting means for making to supply said casing and said grip with power by only the second power source in the state that said grip has been fastened to said attachment base;



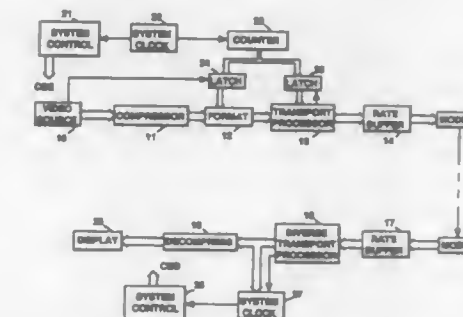
said grip detachably fastened to said attachment base, said grip being arranged to be capable of effecting remote control of said camera means and/or said recorder means by using said control portion in the state where said grip is detached from said attachment base.

5,381,180
METHOD AND APPARATUS FOR GENERATING CLUT-FORMAT VIDEO IMAGES
 Michael Keith, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
 Filed Aug. 16, 1993, Ser. No. 107,260
 Int. Cl.⁶ H04N 11/04
 U.S. Cl. 348—396 24 Claims



1. A method for generating a video image, comprising the steps of:
 - (a) providing full-resolution three-component video data corresponding to said video image;
 - (b) processing said full-resolution three-component video data to generate N-bit index data for a lookup table;
 - (c) generating M-bit CLUT index data in accordance with said lookup table and said N-bit index data, wherein M is less than N; and
 - (d) generating said video image in accordance with said M-bit CLUT index data.

5,381,181
CLOCK RECOVERY APPARATUS AS FOR A COMPRESSED VIDEO SIGNAL
 Michael S. Deiss, Zionsville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
 Filed May 13, 1993, Ser. No. 60,923
 Int. Cl.⁶ H04N 7/13
 U.S. Cl. 348—423 9 Claims



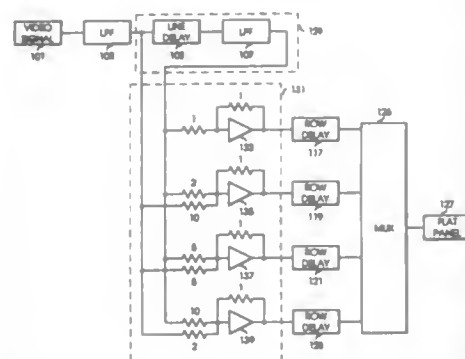
1. Apparatus for providing a compressed video signal, including a plurality of signal components, comprising:
 - a source of video signal;
 - compression means coupled to said source for providing compressed video data including descriptive headers and data representing pixel information;
 - a system clock for providing clock pulses;
 - a counter for counting said clock pulses modulo M, where M is a value greater than 2¹⁰;
 - means for periodically storing, in synchronism with a component of said video signal, count values (PTR's) provided by said counter;
 - means for formatting said compressed video data and stored count values to form a compressed video signal according to a predetermined protocol;
 - further means for periodically storing, further count values (PCR's) provided by said counter, independently of said signal components, which further count values are normally different from said count values (PTR's);
 - a transport processor coupled to receive formatted compressed video data, for dividing said compressed video data into transport packet payloads of predetermined amounts of video data, and for forming transport headers, said transport processor concatenating said transport packet payloads, including said PTR's, with respective transport headers, to form respective transport packets, said transport processor also forming further transport packets of information including payloads of at least said further count values (PCR's), and interspersing said further transport packets with compressed video signal transport packets; and
 - means for conveying said compressed video signal transport packets interspersed with said further transport packets.

5,381,182
FLAT PANEL IMAGE RECONSTRUCTION INTERFACE FOR PRODUCING A NON-INTERLACED VIDEO SIGNAL
 David W. Miller, Longmont, Colo.; Larry A. Nelson, Bellevue, Wash., and Ronald C. Robinder, Albuquerque, N. Mex., assignors to Honeywell Inc., Minneapolis, Minn.
 Filed Sep. 28, 1993, Ser. No. 127,534
 Int. Cl.⁶ H04N 5/70, 7/01
 U.S. Cl. 348—448 20 Claims

1. A video interface apparatus to convert an incoming interlaced video signal to an outgoing non-interlaced video signal suitable for an LCD flat panel, the apparatus comprising:
 - (a) line splitter means for splitting the incoming video signal into an original signal and at least one delayed signal for

later use in generating the outgoing non-interlaced video signal;

(b) interpolation means connected to the line splitter means for weighting the delayed signal and for providing an interpolated analog output signal of the delayed signal and the original signal, wherein the interpolated analog output signal comprises a plurality of discrete non-interlaced scan line signals which are both actual and interpolated, and



wherein each of the plurality of interpolated scan line signals comprise an average signal between two adjacent scan line signals; and

(c) output means connected to the interpolation means for converting the plurality of actual and interpolated scan line signals into an integrated, sequential, non-interlaced signal output having a frequency corresponding to the horizontal resolution of a scan line of the flat panel.

5,381,183 MOTION-ADAPTIVE SCANNING-LINE CONVERSION CIRCUIT

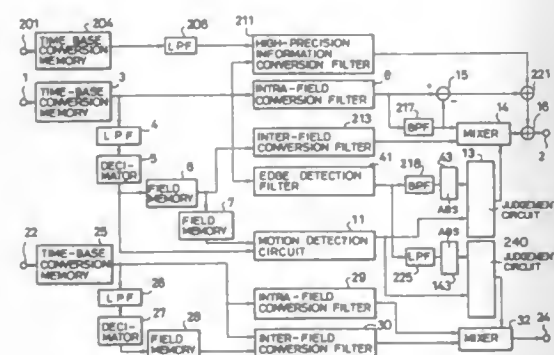
Mitsuru Ishizuka; Noriyuki Yamaguchi; Hitoshi Hasegawa; Masaharu Yao; Hiroshi Ohnishi; Yuuzi Yamamoto, and Masayuki Tuzi, all of Nagakakyō, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 21, 1993, Ser. No. 79,509

Claims priority, application Japan, Jul. 3, 1992, 4-176902; Jul. 3, 1992, 4-176903; Feb. 25, 1993, 5-036686; Feb. 25, 1993, 5-036687; Feb. 25, 1993, 5-036688

Int. Cl.⁶ H04N 7/02

U.S. Cl. 348—458

64 Claims



1. A motion-adaptive scanning-line conversion circuit for converting at least part (M) of a first video signal having a first number (N) of scanning lines into a second video signal having a second number (L) of scanning lines, each video signal being in the form of a sequence of samples, the motion-adaptive scanning-line conversion circuit comprising:

a data reducing circuit for lowering the sampling frequency of said first video signal to reduce the amount of data of said first video signal;

a first field delay circuit for delaying, by one field, the video signal output from the data reducing circuit;

a second field delay circuit for delaying, by one field, the video signal output from the first field delay circuit;

a motion detecting circuit for locally detecting motion of an image on the basis of the correlation between the adjacent frames as obtained by the first and second field delay circuits;

an inter-field scanning-line conversion circuit for performing inter-field scanning-line conversion using the signal obtained by one of the first and second field delay circuits;

an intra-field scanning-line conversion circuit for performing intra-field scanning-line conversion; and

a mixer mixing the output of the inter-field scanning-line conversion circuit and the output of the intra-field scanning-line conversion circuit in accordance with a mixing ratio determined on the basis of the result of the motion detection.

5,381,184 METHOD OF AND ARRANGEMENT FOR INSERTING A BACKGROUND SIGNAL INTO PARTS OF A FOREGROUND SIGNAL FIXED BY A PREDETERMINED KEY COLOR

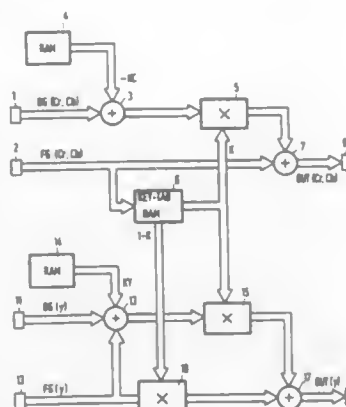
Rainer Gehrmann, Alsbach-Hähnlein, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1992, Ser. No. 986,329

Claims priority, application Germany, Dec. 30, 1991, 4143180
Int. Cl.⁶ H04N 9/74

U.S. Cl. 348—586

7 Claims



1. A method of inserting a background signal into parts of a foreground signal, said parts being fixed by a predetermined key color, said method including the step of deriving a control signal from the foreground signal, said control signal having a first value when the foreground signal represents a color in the region of the key color, and a second value when the foreground signal represents a different color, and in which the control signal has a transition range between the first and the second values, characterized in that said method further comprises the steps forming a difference, influenced by the control signal, between a vector of the background signal and a vector of a signal representing the key color, and vectorially adding said difference to the foreground signal.

5,381,185 METHOD AND APPARATUS FOR CORRECTING FLESH COLOR

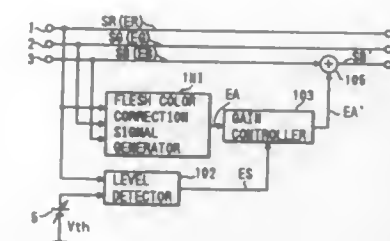
Hideaki Ohki, Fujisawa, and Masanori Kamiya, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video and Information, Kanagawa, both of Japan

Filed Jul. 20, 1993, Ser. No. 94,335

Claims priority, application Japan, Jul. 20, 1992, 4-191885
Int. Cl.⁶ H04N 9/64

U.S. Cl. 348—652

11 Claims



1. A method for correcting flesh color, including the steps of generating an I-axis component and Q-axis component of a color-difference signal from R-Y, G-Y, and B-Y color-difference signals; generating a flesh color correction signal on the basis of the generated I-axis and Q-axis components; and correcting the B-Y color-difference signal by the generated flesh color correction signal, said method comprising the steps of: detecting an amplitude level of the R-Y color-difference signal; and controlling the gain of said flesh color correction signal according to the detected amplitude level of the R-Y color-difference signal.

5,381,186 VIDEO SIGNAL DECODER MUTING CIRCUIT AND METHOD OF MUTING

Gi-seok Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

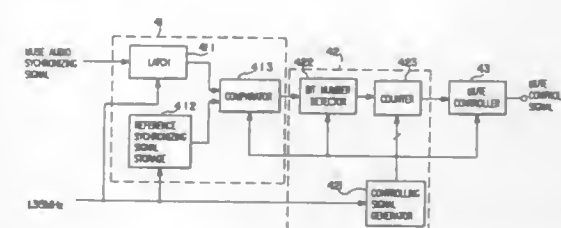
Filed Oct. 7, 1993, Ser. No. 132,852

Claims priority, application Rep. of Korea, Mar. 31, 1993, 93-5194

Int. Cl.⁶ H04N 5/60

U.S. Cl. 348—738

24 Claims



1. In a video signal decoder, a mute circuit comprising: a synchronizing signal comparator for comparing an audio frame synchronizing signal of including data bits in a received signal with a standard frame synchronizing signal the standard frame synchronizing signal including a predetermined number of synchronizing bits per frame and producing a comparison signal in response; an unequal bit number detector which receives the comparison signal for detecting the number of synchronizing bits per frame in the audio frame synchronizing signal of the received signal and the standard audio frame synchronizing signal that do not match; and a mute controller for controlling muting in response to the number of synchronizing bits per frame that do not match.

16. A mute method wherein a mute circuit comprises a synchronizing signal comparator for comparing an audio frame synchronizing signal of a received signal with a standard

frame synchronizing signal, an unequal bit number detector for receiving the compared synchronizing signal to detect the number of unequal synchronizing bits per frame, and a mute controller for controlling muting according to the detected number of unequal bits comprising the steps of:

comparing a frame synchronizing signal of a received audio signal with a standard frame synchronizing signal;

detecting the number of unequal synchronizing bits per frame of the compared synchronizing signals;

detecting the number of unequal bits in the next frame according to the detected number of unequal bits; and

muting according to the detected number of unequal bits.

5,381,187 IMAGE DISPLAY APPARATUS

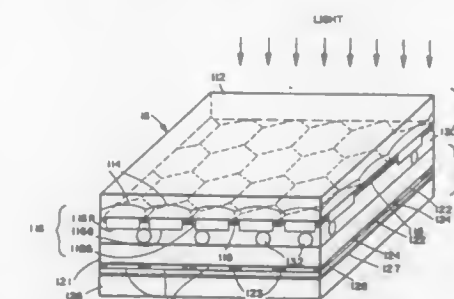
Toshiaki Takamatsu, Yamatokoriyama; Shinichi Ogawa, Nara; Masao Yoshikawa, Gose; Hiroshi Hamada; Noriko Watanabe, both of Nara, and Fumiaki Funada, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 552,750, Jul. 16, 1990, abandoned. This application Feb. 13, 1992, Ser. No. 833,612

Claims priority, application Japan, Jul. 19, 1989, 1-187715; Jul. 31, 1989, 1-199723; Dec. 15, 1989, 1-326536; Dec. 15, 1989, 1-326538

Int. Cl.⁶ H04N 5/74, 9/31

U.S. Cl. 348—759

8 Claims



1. An image display apparatus comprising: an optical system including a light source and at least one projection lens; a display means for forming a display image, said display means including a liquid crystal display panel disposed on a substrate and a microlens array disposed on the light-incidence side of said display panel, wherein said display panel has a plurality of picture elements arranged in a delta-shaped matrix and said microlens array includes a plurality of microlenses arranged in a delta-shape so as to correspond to the picture elements of said display panel and includes a plurality of color filters formed independently of the microlenses and arranged at positions corresponding to the microlenses, said color filters being made in at least three primary colors and being disposed on said microlens array; and at least one projection lens for projecting the display image; wherein said display panel and said microlens array are combined with each other by means of an adhesive made of a transparent material having a refractive index which is virtually equal to that of the microlenses and that of the display panel substrate.

5,381,188

LIGHT TO LIGHT MODULATOR WITH READING LIGHT OF SPECIFIED WAVELENGTH

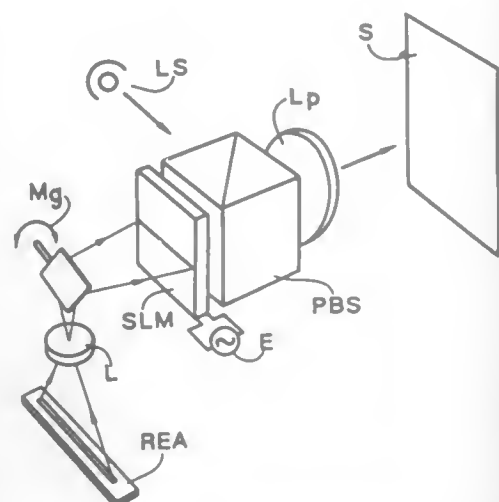
Toshio Koano, Hoya; Shintaro Nakagaki, Miura; Ichiro Negishi; Tetraji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama; Ryusaku Takahashi, and Keiichi Maeno, both of Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 4, 1992, Ser. No. 878,046

Claims priority, application Japan, May 8, 1991, 3-132007
Int. Cl.⁶ H04N 5/74

U.S. Cl. 348—766

3 Claims



1. A display system for displaying information comprising:
 - a linear array of N light-emitting devices emitting light of a predetermined wavelength range, the N light-emitting devices being arranged correspondingly with N pixels, a stream of the information being divided into pieces each of which containing the N pixels;
 - means for causing the N light-emitting devices to simultaneously emit N light beams in a form of array during a given period for every piece of the information, the N light beams being intensity-modulated respectively with a divided piece of the information;
 - deflecting means for deflecting the N light beams simultaneously in a direction perpendicular to a direction of the array of the N light beams;
 - a spatial light modulator comprising a photomodulation layer, a photoconductor layer and a dielectric mirror directly provided on the photoconductive layer which photomodulation layer, photoconductive layer and dielectric layer are interposed between two electrodes, the photoconductive layer being made of a photoconductive material that sensitively responds substantially to an incidental light having said predetermined wavelength range of the light emitted from the linear array of the N light-emitting devices;
 - focusing means which focuses the N light beams deflected by said deflecting means as writing light onto the photoconductive layer of a spatial light modulator; and
 - means for irradiating the photomodulation layer of the spatial light modulator with a reading light for reading out and displaying information written on the spatial light modulators, said reading light having a visible wavelength range excluding said predetermined wavelength range, wherein wavelengths contained in said visible wavelength range are shorter than wavelengths contained in said predetermined wavelength range of the light emitted from the linear array of the N light-emitting devices.

5,381,189

PROJECTOR IN A PROJECTION TELEVISION

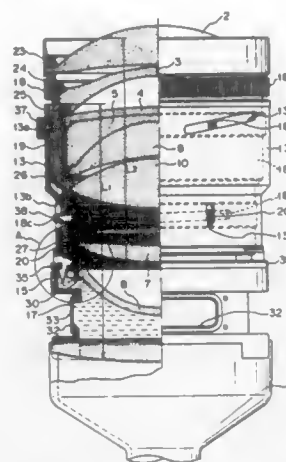
Takashi Terai; Takayuki Yoshioka, and Hideki Yamamoto, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 836,379, Feb. 18, 1992. This application Oct. 28, 1993, Ser. No. 141,357

Claims priority, application Japan, Jul. 18, 1991, 3-178474
Int. Cl.⁶ H04N 5/74

U.S. Cl. 348—776

3 Claims



1. A projector comprising:
 - a projection picture tube for producing an image to be projected;
 - a projection lens unit, arranged at a distance from the projection picture tube, for projecting the image onto a screen;
 - a cylindrical frame coupled at a rear end to the projection picture tube in liquid-tight fashion and receiving the projection lens unit therein;
 - a movable inner member to which at least part of the projection lens unit is mounted, including a rear-end lens of the projection unit;
 - a liquid-sealing means, interposed between and sealingly coupling the inner member and the frame, for sealing off a liquid-sealing space formed between the projection picture tube, the cylindrical frame and the rear-end lens of the projection lens unit and providing a liquid-tight condition;
 - a cooling liquid filled in the liquid-sealing space; and
 - retaining means for retaining said inner member in said frame and displacing said inner member toward and away from said projection picture tube to move said inner member relative to the frame along its optical axis;
 - said liquid-sealing means maintaining the liquid-tight condition regardless of the position of the inner member relative to the frame.

5,381,190

LOW VISION LENS ASSEMBLY WITH ADHESIVE COUPLING RING

Denis Rehse, St. Petersburg; Frank Rumsey; Tim Petito, both of Pinellas Park; Samuel Garrett, Tampa; Giovanna Olivares, Pinellas Park; David Welsh; Roger Antici, both of Largo, and Josepha Bruno, St. Petersburg, all of Fla., assignors to Unilens Corp., U.S.A., Largo, Fla.

Filed Dec. 11, 1992, Ser. No. 990,847

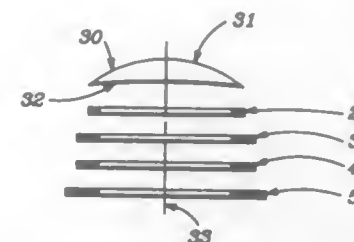
Int. Cl.⁶ G02B 7/02; G02C 9/00

U.S. Cl. 351—57

13 Claims

13. A method for manufacturing a low vision lens which comprises:
 - attaching a low vision lens having a rear surface to an adhesive coupling ring comprising a first adhesive ring to which the rear surface of the lens is attached, and rear-

- wardly therefrom, a first removable non-adhesive liner, a second low-tack adhesive ring, and a second removable non-adhesive liner;
- removing the second non-adhesive liner from the coupling ring;
- aligning the low vision lens onto an ophthalmic lens for best placement for the user and adhering the low vision lens to the ophthalmic lens in the aligned position;



- marking the reverse side of the ophthalmic lens indicating the aligned position and removing the low vision lens from the ophthalmic lens;
- removing the first removable non-adhesive liner from the coupling ring; and
- adhering the low vision lens to the ophthalmic lens.

5,381,191

GLASSES FOR REDUCING EYE STRAIN DURING VIEWING OF A CRT SCREEN

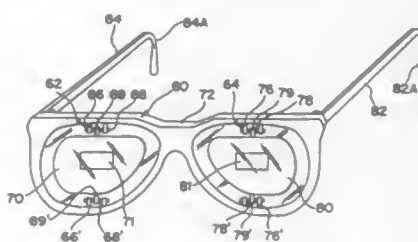
Channey F. Levy, 1299 Portland Ave., Rochester, N.Y. 14621

Filed Apr. 14, 1993, Ser. No. 45,710

Int. Cl.⁶ G02C 7/08

U.S. Cl. 351—57

3 Claims



1. A pair of glasses adapted to be used by an individual viewing a CRT screen for easing eye strain comprising:
 - a pair of lenses, each said lens including a prism being disposed within the thickness of the lens for refracting light from an object to a user's eyes for moving the light to avoid normal convergence of the individual's eyes for reducing eye strain as an individual views a CRT screen; and
 - frames adapted for securing the pair of lenses in an operative position relative to a user's eyes, each said lens is disposed on said frames by right and left lens retainers each of which include a mounting flange attached directly to said frames, a bracket attached to each of said lenses, and adjustment means for connecting each of said mounting flanges and said brackets and for adjusting the lateral disposition of each individual lens relative to an individual's eyes.

5,381,192

PROTECTIVE EYEGLASSES CONSTRUCTION WITH ADJUSTABLE TEMPLES

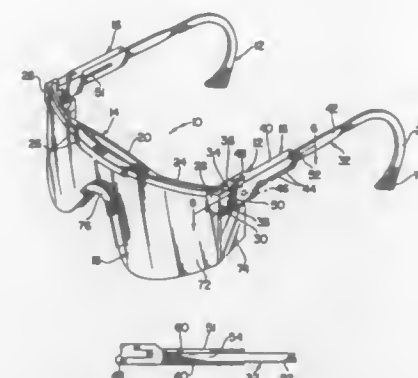
Richard W. Canavan, East Woodstock, Conn., and John G. Mathews, Providence, R.I., assignors to Uvex Safety, LLC, Smithfield, R.I.

Continuation of Ser. No. 741,557, Aug. 7, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 984,243

Int. Cl.⁶ G02C 5/20

U.S. Cl. 351—118

1 Claim



1. In a protective eyeglasses construction comprising a frame portion including a lens frame piece and a pair of temple frame pieces hingeably attached to said lens frame piece, and lense means on said lens frame piece, the improvement comprising each of said temple frame pieces including telescoping front and rear portions, each of said front portions being at least partially of generally tubular configuration, each of said rear portions including a tapered terminal end portion which is received in the respective tubular front portion thereof, each of said front portions having a plurality of longitudinally spaced adjustment slots therein, each of said rear portions including a detent which is receivable in the adjustment slots in the respective front portion thereof for adjustably securing the relative positions of the front and rear portions of said temple frame pieces, each of said front portions having front and rear ends and having an elongated longitudinally extending guide slot therein, each of said guide slots having front and rear ends, each of said tapered terminal end portions having a substantially straight-sided pin thereon which travels in the elongated longitudinally extending guide slot in the front portion thereof, each of said pins being disposed adjacent the terminal end of the tapered portion thereof and each being engageable with the front and rear ends of the respective guide slot thereof for limiting the extent of the longitudinal travel of the rear portion thereof relative to the front portion thereof, each of said front portions being constructed such that the distance between the rear end thereof and the rear end of the guide slot therein is no greater than the length of the tapered terminal end portion of the respective rear portion received therein.

5,381,193

PROTECTIVE FILTER LENSES

Brent M. Wedding, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,782

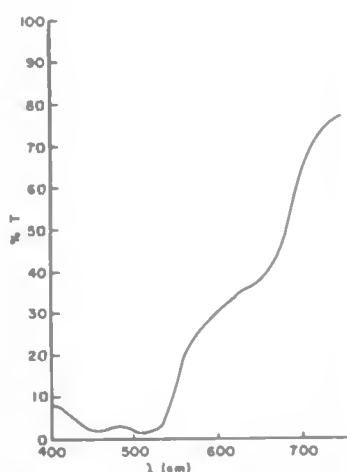
Int. Cl.⁶ G02C 7/10; G03B 11/08

U.S. Cl. 351—163

14 Claims

1. An ophthalmic protective filter lens having a scotopic transmittance (Y_S) lower than the photopic transmittance (Y_P)

by more than a factor of two, a dominant wavelength within the ranges of 580-605 nm and a color purity of 75-85 whereby



colors perceived through the lens are approximately those of the scene being viewed.

5,381,194

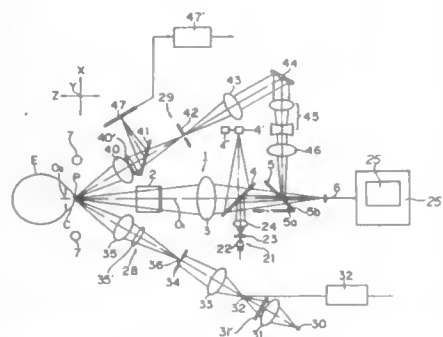
APPARATUS FOR PHOTOGRAPHING A CORNEAL ENDOTHELIUM

Kouji Nishio, and Akio Morimoto, both of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan
Filed Feb. 5, 1993, Ser. No. 13,800

Claims priority, application Japan, Feb. 7, 1992, 4-022447
Int. Cl.⁶ A61B 3/14, 1/04; G06F 15/42

U.S. Cl. 351-208

7 Claims



1. An apparatus for photographing a corneal endothelium of an eye, comprising:

an observing optical system for observing the anterior segment of said eye to align optical systems of said apparatus in the up, down, right, and left directions with said eye; an illumination optical system for projecting each illumination light emitted by respective light sources for observation and photography onto the cornea of said eye; an observing and photographing optical system for observing and photographing the corneal endothelium of said eye by receiving a reflected image from said endothelium, said observing and photographing optical system including an image receiving element for aligning the optical systems of said apparatus by movement in a direction to or from said eye;

display means for separately displaying respective images of the anterior segment observed immediately before photographing the corneal endothelium of said eye; and switching means for switching the display means to display one or the other of the respective images.

5,381,195

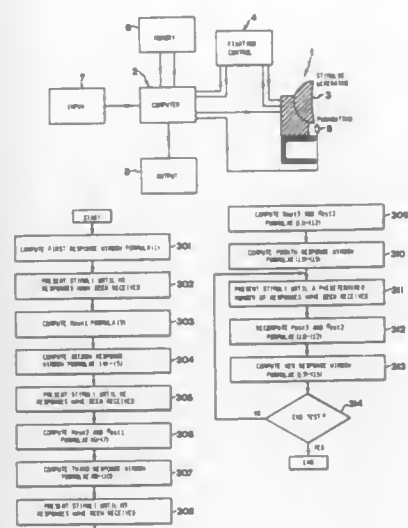
METHOD AND APPARATUS FOR TESTING A SUBJECT'S PERCEPTION OF VISUAL STIMULI

Holger Rootzen, Olshögsvägen 6, S-223 60 Lund, Sweden; Anders Heijl, Danska vägen 62, S-226 39 Lund, Sweden, and Jonny Olsson, Fasanvägen 5A, S-227 31 Lund, Sweden
Filed Mar. 22, 1993, Ser. No. 35,271

Int. Cl.⁶ A61B 3/02

U.S. Cl. 351-222

22 Claims



1. A method of testing a subject's response to visual stimuli, comprising the steps of:
successively presenting a plurality of visual stimuli to the subject;
detecting whether the subject responds to each stimulus and, for each stimulus to which a response is detected, recording the time of the subject's response;
determining a subject-adapted response time window based upon recorded times; and
classifying at least some of the presented stimuli as "seen" or "not seen" in dependence upon whether a response to the stimulus was detected within the subject-adapted response time window following the presentation of the stimulus.

5,381,196

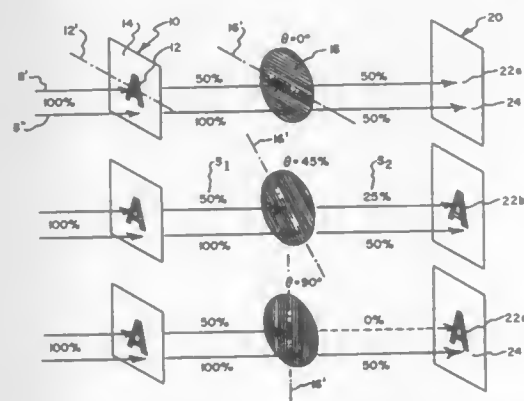
CONTRAST SENSITIVITY TESTER

David A. Luce, Clarence Center, N.Y., and Bernard Grolman, Worcester, Mass., assignors to Leica Inc., Depew, N.Y.
Filed Jul. 13, 1993, Ser. No. 90,541

Int. Cl.⁶ A61B 3/02, 3/032

U.S. Cl. 351-232

6 Claims



3. A visual acuity test system which comprises, a test axis, a

corrective lens positioned on said test axis, first support means for positioning said corrective lens on said test axis, a polarization analyzer positioned on said test axis, said analyzer having a direction of polarization, a second support means for positioning said analyzer on said test axis, means for varying the direction of polarization of said analyzer and means for providing a polarized test symbol having a surrounding unpolarized reference background on said test axis, whereby the contrast between said polarized test symbol and said surrounding reference background therefor is varied by changing the direction of polarization of said analyzer for testing visual acuity under varying contrast conditions.

5,381,197

REFLECTING ILLUMINATION PROJECTING DEVICE

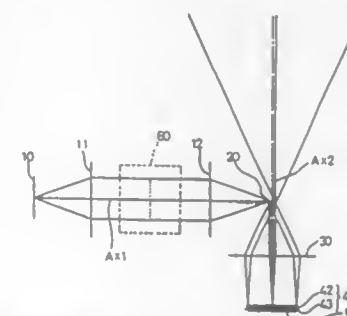
Kazushi Yoshida, and Ryota Ogawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 642,234, Jan. 16, 1991, Pat. No. 5,231,433. This application May 24, 1993, Ser. No. 65,745
Claims priority, application Japan, Jan. 19, 1990, 2-11658
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.⁶ G03B 21/28

U.S. Cl. 353-98

9 Claims



1. A reflecting illumination projecting device comprising:
a light source which emits illuminating light,
a transmission type image forming device which is provided in a path of the illuminating light of said light source to form a pattern to be projected,
a projecting lens which is provided between said light source and said image forming device to project an image of said transmission type image forming device onto an image projection plane,
optical path separating means disposed in the vicinity of an exit pupil of said projecting lens, said optical path separating means comprising a first portion for introducing substantially all illuminating light to said projecting lens and a second portion for introducing light received from said projecting lens onto the image projection plane, and
a polarized beam collector located between said light source and said optical path separating means.

5,381,198

ADAPTOR FOR INSTANT CAMERA

Donald E. Mauchan, Marlboro, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 803,101, Dec. 5, 1991, Pat. No. 5,262,808. This application Nov. 15, 1993, Ser. No. 152,960

Int. Cl.⁶ G03B 17/24

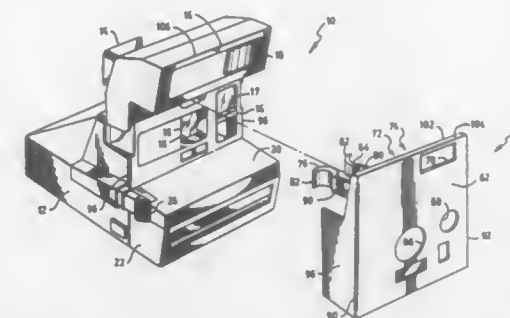
U.S. Cl. 354-108

19 Claims

1. An adaptor for attachment to an instant camera to enable said camera to produce an exposed film unit having indicia imprinted thereon during photographic exposure of said film unit, said camera having in face surfaces thereof an objective lens opening, a view finder window, and a light source, said adaptor comprising
an opaque face plate,

attachment structure extending from said face plate and adapted to releasably connect said adaptor to said camera, said face plate having therein provision for

a lens orifice adapted to be in alignment with said camera objective lens opening when said adaptor is connected to said camera,
a view finder orifice adapted to be in alignment with said camera view finder window when said adaptor is connected to said camera, and



a light source orifice adapted to be off-set from alignment with said camera light source when said adaptor is connected to said camera,
a side of said face plate adapted to be opposed to said camera face surfaces when said adaptor is connected to said camera having thereon a light reflective surface, whereby light from said camera light source is in part directed to said reflective surface and directed thereby to said camera objective lens opening.

5,381,199

SHUTTER FOR CAMERA

Tsuyoshi Fukuda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 923,498, Aug. 3, 1992, abandoned, which is a division of Ser. No. 666,446, Mar. 11, 1991, Pat. No. 5,159,371, which is a continuation of Ser. No. 347,287, May 4, 1989, abandoned. This application Dec. 6, 1993, Ser. No. 161,438
Claims priority, application Japan, May 6, 1988, 63-111331; May 17, 1988, 63-121081; May 17, 1988, 63-121082; May 17, 1988, 63-121083; May 17, 1988, 63-121084

Int. Cl.⁶ G03B 9/36

U.S. Cl. 354-226

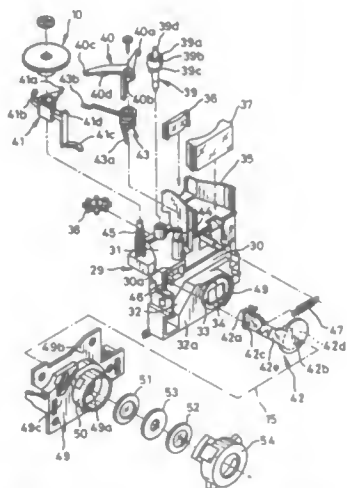
6 Claims



1. A shutter for a camera, comprising:
a shutter base member having an aperture formed therein, said shutter base member being formed by molding a synthetic resin; and
a number of irregularities formed at an edge of said aperture integrally with said shutter base member, wherein said irregularities disperse incident light more than portions adjacent to said edge where said irregularities are formed.

5,381,200
LENS-FITTED PHOTOGRAPHIC FILM UNIT
 Junichi Takagai, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed May 17, 1993, Ser. No. 62,185
 Claims priority, application Japan, May 18, 1992, 4-124519; Mar. 3, 1993, 5-042879
 Int. Cl.⁶ G03B 9/10, 17/02
 U.S. Cl. 354—250

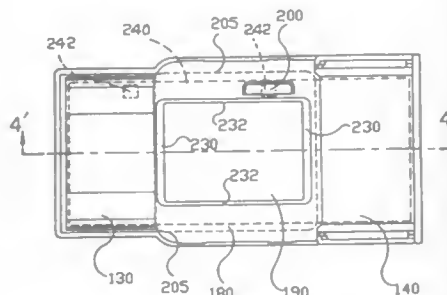
25 Claims



1. A lens-fitted photographic film unit having a preloaded photographic film on which an image is formed through a taking lens system upon depression of a shutter release button, said film unit comprising:
 a shutter mount and a projecting portion projecting forward of said shutter mount along an optical axis of the taking lens system, said projecting portion having a flat surface on a front side thereof;
 a shutter opening on said optical axis formed in said flat surface of said projecting portion; and
 a shutter blade attached to said shutter mount, said shutter blade having a claw portion, an arm portion and a masking portion for opening and closing said shutter opening, said shutter blade being bent in a crank shape in the middle of said arm portion in a direction along said optical axis such that said masking portion is disposed farther forward than said claw portion so as to correspond in shape to said shutter mount and said projecting portion.

5,381,201
FILM CARTRIDGE
 Yet Chan, Hong Kong, Hong Kong, assignor to Achiever Industries Limited, Kowloon, Hong Kong
 Filed Mar. 18, 1993, Ser. No. 33,903
 Claims priority, application United Kingdom, Mar. 18, 1992, 9205912
 Int. Cl.⁶ G03B 17/26
 U.S. Cl. 354—275

6 Claims

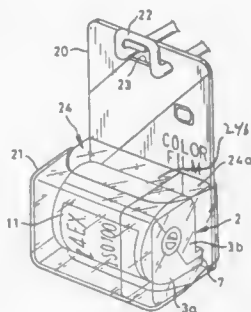


1. A film cartridge operable by a 126 format camera com-

prising casing means defining a film supply chamber, a film take-up chamber having a film wind-on spindle, the chambers being connected via a film transport path in which a film exposure window formed and defined in the casing means is disposed, and wherein the film exposure window is of at least full frame 135 format size, and at least one peripheral edge of the film exposure window is slanted.

5,381,202
PHOTOGRAPHIC FILM CASSETTE, METHOD OF MANUFACTURING THE SAME, AND PACKAGE FOR THE SAME
 Kazunori Mizuno, and Takuya Arai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Apr. 19, 1993, Ser. No. 47,296
 Claims priority, application Japan, Apr. 17, 1992, 4-098136
 Int. Cl.⁶ G03B 17/26, 1/04; B65D 85/66
 U.S. Cl. 354—275

35 Claims



1. A cassette package including at least one photographic film cassette and packaging means for packaging said photographic film cassette;
 said photographic film cassette comprising:
 a spool;
 photographic film wound around said spool in a form of a roll; and
 a cassette shell for containing said photographic film, said cassette shell having a passage mouth formed therein, said photographic film being entirely contained in said cassette shell before use;
 said packaging means comprising:
 an inner packaging for containing said photographic film cassette in a rotationally fixed fashion, said inner packaging having at least portions thereof which are transparent; and
 an outer packaging arranged around said inner packaging for holding said inner packaging in a rotationally fixed fashion, said outer packaging including an opaque first portion arranged in opposition to said passage mouth of said photographic film cassette.

5,381,203
TEXTURED SURFACE WITH CANTED CHANNELS FOR AN AUTOMATIC TRAY PROCESSOR
 Ralph L. Piccinino, Jr., Rush; John H. Rosenburgh, Hilton; David L. Patton, Webster, and Joseph A. Manlco, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Continuation-in-part of Ser. No. 56,451, May 3, 1993. This application Mar. 10, 1994, Ser. No. 209,093
 Int. Cl.⁶ G03D 3/02

18 Claims

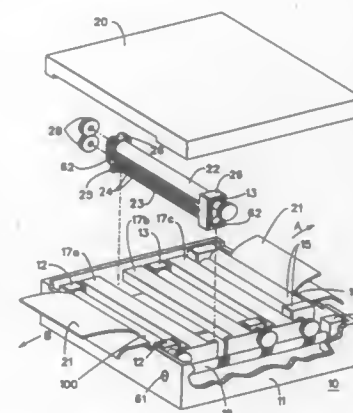
1. An apparatus for processing photosensitive materials, said apparatus comprising:
 a processing module comprising a container, at least one processing assembly placed in said container and at least one transport assembly disposed adjacent said at least one

processing assembly, said at least one processing assembly and said at least one transport assembly forming a substantially continuous channel through which a processing solution flows, said processing channel comprising at least 40% of the total volume of processing solution available for the processing module and having a thickness equal to or less than about 100 times the thickness of the photosensitive material to be processed in said processing channel, at least one discharge opening is provided in said at least

portion inhibiting said hooks from being removed from said aperture.

5,381,205
PARALLAX CORRECTING APPARATUS IN A CAMERA
 Noriyasu Kotani, Tokyo, and Hiroshi Wakabayashi, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
 Filed Jun. 23, 1993, Ser. No. 80,239
 Claims priority, application Japan, Jul. 24, 1992, 4-198450
 Int. Cl.⁶ G03B 13/14
 U.S. Cl. 354—400

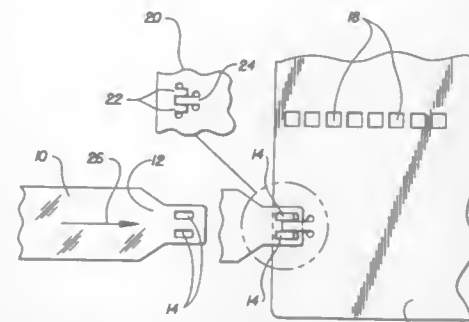
6 Claims



one transport assembly or said at least one processing assembly for introducing processing solution to said channel, said channel having at least one surface which is textured so as to facilitate transport of the photosensitive material and processing solution through said channel; and
 means for circulating the processing solution from said small volume provided in said module directly to said at least one discharge opening.

5,381,204
LEADER CARD ATTACHABLE TO A PHOTOGRAPHIC FILMSTRIP HAVING A LEAD END WITH AT LEAST ONE APERTURE
 Rodney J. Grusetski, Kendall, and Robert J. Blackman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Filed Aug. 26, 1993, Ser. No. 112,159
 Int. Cl.⁶ G03D 13/10
 U.S. Cl. 354—345

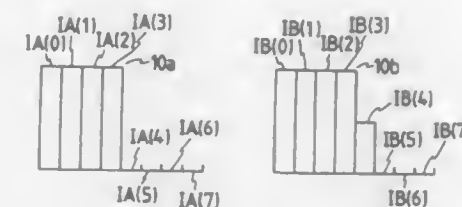
13 Claims



1. A combination of a leader card and a lead end of a photographic filmstrip for use in a photofinishing apparatus, comprising:
 a leader card having a tab portion and a pair of hooks, said tab portion and said pair of hooks being essentially parallel with each other; and
 a lead end of a photographic filmstrip, said lead end having a pair of apertures, said pair of hooks being sized to extend respectively through said pair of apertures to secure the leader card and lead end of the filmstrip together, said tab

5,381,206
FOCUS DETECTING DEVICE
 Akira Akashi, Yokohama, and Hiroshi Matsushima, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jul. 20, 1992, Ser. No. 914,580
 Claims priority, application Japan, Jul. 22, 1991, 3-180978; Jul. 23, 1991, 3-182516
 Int. Cl.⁶ G03B 13/36
 U.S. Cl. 354—402

9 Claims



1. A detection device comprising a first sensor portion provided with a plurality of light receiving portions and a second sensor portion provided with a plurality of light receiving portions and performing signal processing for focusing on the

basis of outputs of said first and second sensor portions, said detection device comprising:

- (a) a first circuit for transforming an output signal of each of said light receiving portions of said first sensor portion into a plurality of output signals which have the same signal level as said output signals, said transformation being performed on every output signal of each of said light receiving portions;
- (b) a second circuit for transforming an output signal of each of said light receiving portions of said second sensor portion into a plurality of output signals which have the same signal level as said output signals, said transformation being performed on every output of each of said light receiving portions;
- (c) a correlation calculation circuit for performing correlation calculation between the plurality of output signals transformed by said first circuit and the plurality of output signals transformed by said second circuit.

5,381,207

OPTICAL APPARATUS RESPONSIVE TO AN EXTERNAL INFORMATION OUTPUT DEVICE

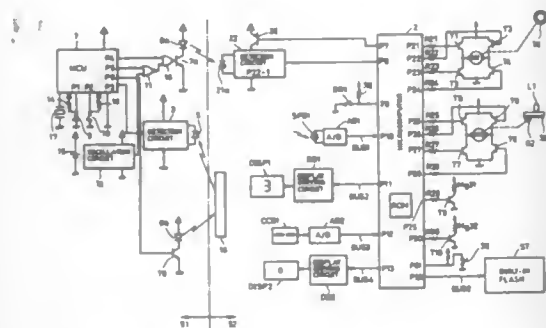
Jiro Kazumi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 47,013, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 633,220, Dec. 24, 1990, abandoned. This application Nov. 12, 1993, Ser. No. 151,054

Claims priority, application Japan, Dec. 28, 1989, 3-344810 Int. Cl.⁶ G03B 7/00

U.S. Cl. 354—412

35 Claims



1. A camera comprising:
 - (a) detection means for detecting a selecting signal transmitted from an external information output device;
 - (b) switching means for switching said detection means to a detectable state;
 - (c) limitation means for making said detection means nonoperable, in response to the beginning of at least one of a photographing operation, a film feeding operation, and a mode changing operation, irrespective of any state of said switching means; and
 - (d) control means for controlling the operation of the camera according to information detected by said detection means.

5,381,208

AUTOMATIC LIGHT ADJUSTMENT DEVICE FOR CAMERA

Tadao Takagi, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 890,708, May 29, 1992, abandoned.

This application Sep. 28, 1993, Ser. No. 127,484

Claims priority, application Japan, Jan. 3, 1991, 3-160140 Int. Cl.⁶ G03B 15/05

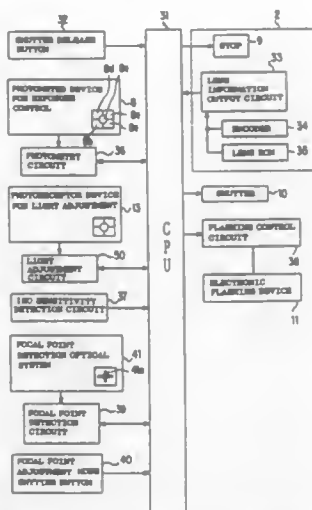
U.S. Cl. 354—415

33 Claims

1. An automatic light adjustment device for a camera having:
 - an automatic focal point adjusting device for controlling a

photographic lens to a focusing position in accordance with a result of focal detection;

- a photometry device which divides light emitted from a flashing device at each time of main flashing and preliminary flashing prior to said main flashing, and reflected by a subject into a plurality of photometry regions so as to receive light; and
- a control device for adjusting light to be emitted from said flashing device in accordance with a plurality of photometry outputs transmitted from said photometry device;
- said automatic light adjustment device for a camera comprising:
 - a focal point adjustment information output device for outputting information relating to a focal adjustment of said automatic focal point adjusting device such as a continuous automatic focus mode in which said photographic lens is continuously moved so as to always focus on an object, a single automatic focus mode in which, if said photographic lens once focuses on said object, an ensuing focal point adjustment operation is stopped, and information relating to a focus deviation quantity obtained by said automatic focal point adjusting device;
 - a light adjustment region determining device for determining from said plurality of photometry regions a substan-



- tially central photometry region, which superimposes a focus detection area in said continuous automatic focus mode to be said light adjustment region which is mainly used in light adjustment performed by said control device at said main flashing, and, in said single automatic focus mode, for determining from said plurality of photometry regions a substantially central photometry region, which superimposes a focus detection area to be said light adjustment region if said focus deviation quantity is smaller than said predetermined value, and determining from said plurality of said photometry region to be said light adjustment region in accordance with each photometry output at the time of said preliminary flashing if said focus deviation quantity is larger than said predetermined value; and
- a calculating device for calculating a ratio of contribution of each photometric output transmitted from said photometry device at the time of said preliminary flashing to light adjustment in such a manner that said ratio of said light adjustment region determined by said light adjustment region determining device is large compared to said ratio of a photometry region other than said light adjustment region which is substantially zero;
- wherein said control device controls light emitted from said flashing device during said main flashing in accordance with a calculated ratio.

5,381,209

PROCESS AND APPARATUS FOR PROCESSING STRIPS OF PHOTOGRAPHIC TAPE MATERIAL

Erich Binder, Buchs, and Jürg Kunz, Bülach, both of Switzerland, assignors to Gretag Imaging AG, Regensdorf, Switzerland

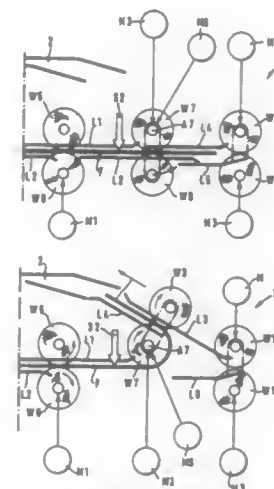
Filed Jun. 25, 1993, Ser. No. 81,164

Claims priority, application European Pat. Off., Jun. 29, 1992, 92810497

Int. Cl.⁶ G03B 27/32, 27/52

U.S. Cl. 355—27

5 Claims



1. A device for processing a strip of photographic tape material having a surface that is at least partially coated, said device comprising:

- means for determining a position of a side of the strip having a coated surface;
- a turning device having a turning channel which runs in a direction opposite to a direction of transport of the strip into which a strip to be turned is introduced with one end first and then conducted out of the turning channel with another end, opposite said first end, being guided out first for further processing; and
- a switch for advancing the strip for further processing without modification when, in a first case, the side of the strip with the coated surface is in a desired position, and for advancing the strip automatically into said turning device before said strip is further processed when, in a second case, the strip with the coated surface is not in the desired position said switch further comprising:
 - a first guide plate, a second guide plate, a first pair of transport rollers for transporting the strip, and a disk secured to the first and second guide plates of the switch, said disk being coaxially positioned relative to an axis of rotation of a first transport roller of the first transport roller pair and being rotatable between two terminal positions around said axis of rotation, along with the first guide plate and along with a second transport roller of the first transport roller pair, such that in a first terminal position of the disk the first and second guide plates guide the strip unturned, and in a second terminal position the first and second guide plates guide the strip into the turning channel.

5,381,210

EXPOSING APPARATUS

Shigeru Hagiwara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 3, 1993, Ser. No. 160,950

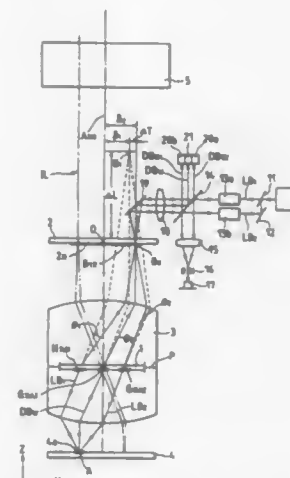
Claims priority, application Japan, Dec. 3, 1992, 4-324022 Int. Cl.⁶ G03B 27/42

U.S. Cl. 355—53

8 Claims

1. An exposing apparatus which has an alignment apparatus for detecting the relative positional relation between a mask

having a pattern for transfer formed thereon and a photosensitive substrate having an alignment mark thereon by applying alignment light to said alignment mark and which exposes said photosensitive substrate to exposure light transmitted through said pattern for transfer, through a projection optical system, including:



- (a) an alignment optical system for causing said alignment light to pass at least once through said projection optical system; said alignment light being of a wavelength in the vicinity of three times the wavelength of said exposure light.

5,381,211

TEXTURING OF OVERCOATED IMAGING MEMBER FOR CLEANING

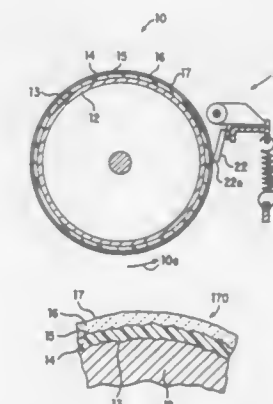
Ronald E. Godlove, Bergen, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 24, 1993, Ser. No. 65,051

Int. Cl.⁶ G03G 5/00

U.S. Cl. 355—211

7 Claims



1. An electrophotographic image reproducing apparatus that uses toner material comprising at least:
 - an imaging member having at least one photosensitive layer and an overcoat layer formed on said photosensitive layer, wherein said overcoat layer has a pattern of parallel grooves formed laterally upon said overcoat layer in a uniform pattern, such that said parallel grooves are disposed parallel to a process direction and extend along a circumference of said imaging member; and
 - a cleaning blade for deformably engaging said imaging member to remove said toner material therefrom, wherein said parallel groove pattern reduces friction between said

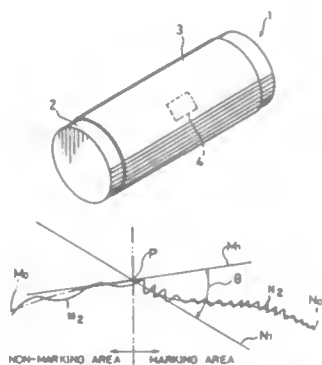
cleaning blade and said imaging member without degrading image reproduction quality.

5,381,212
PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY
 Teruhiko Noguchi, Sakai; Hiroshi Kinashi, Tsuzuki; Jitsuo Masuda, Yamatotakada; Katsushi Inoue, Yamatokoriyama; Tatsuo Tanaka, Matsumoto; Kunio Otsuki, Higashichikuma; and Kazuya Adachi, Matsumoto, all of Japan, assignors to Sharp Kabushiki Kaisha and Fuji Electric Co., Ltd., both of Japan

Filed Jul. 8, 1993, Ser. No. 88,874
 Claims priority, application Japan, Jul. 13, 1992, 4-185515
 Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—211

10 Claims



1. A photoreceptor for electrophotography comprising: an electrically conductive substrate including a first surface having a first optical reflection property and a second surface having a second optical reflection property which differs from the first optical reflection property, said second surface being formed in a portion of said first surface; and a photoconductive layer formed on said electrically conductive substrate, wherein an acute angle θ between a tangent line M₁ and a tangent line N₁ is within a range of $0^\circ \leq \theta \leq 30^\circ$, the tangent line M₁ touching an average line M₀ at an intersection P of the average line M₀ and an average line N₀, the tangent line N₁ touching the average line N₀ at intersection P, the average line M₀ being an average line of a first profile curve of said first surface, the average line N₀ being an average line of a second profile curve of said second surface, the first profile curve and the second profile curve being obtained by vertically cutting said first and second surfaces along a perpendicular line to a border line between said first and second surfaces at an arbitrary point on the border.

5,381,213
PHOTORECEPTOR DRUM, CHARGE ROLLER AND DEVELOPER BRUSH SPINNER DEVICE
 Steven B. Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322

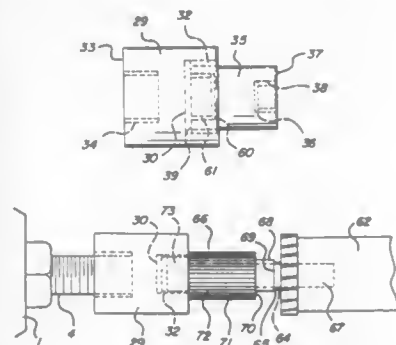
Filed Aug. 3, 1993, Ser. No. 101,020
 Int. Cl.⁶ G03G 15/00, 21/00

U.S. Cl. 355—211

14 Claims

1. A spinning means for modifying a lathe so it may be used to turn the photoreceptor drums, charge rollers and developer brushes used in dry toner copying, printing and facsimile machines, said drums, rollers and brushes including end extensions, said spinning means comprising an adapting means having a bore in a first end, said bore being lined by flexible material for snugly receiving said end extension of said drum, roller

or brush, and a drive means for turning said adapting means when said lathe is in operation, wherein said flexible material is



a piece of hose and said adapting means and said drive means are a unitary component.

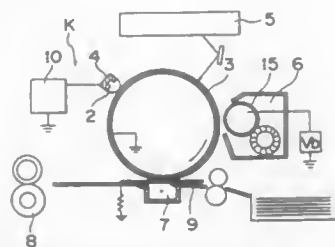
5,381,214
ELECTROPHOTOGRAPHIC CHARGING DEVICE
 Akira Kumon, Katano; Katsutoshi Ogawa, Hirakata; Masachiro Tatekawa, Mino; Hitoshi Hisada, Toyonaka; Junichi Nawama, Moriguchi; Noboru Katakabe, Uji, and Masahiro Aizawa, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1993, Ser. No. 48,514
 Claims priority, application Japan, Apr. 20, 1992, 4-099158; Jun. 15, 1992, 4-154641

U.S. Cl. 355—219

Int. Cl.⁶ G03G 15/02

8 Claims



1. A charging member for charging a photosensitive member from above toner in an electrophotographic process in which charging, exposure, development, and transfer steps are performed repeatedly and in which a step of cleaning the toner remaining on the photosensitive member after the transfer step is eliminated, the charging member consisting: an electrically conductive charging wire which is disposed in contact with the photosensitive member; wherein the charging wire forms an angle of less than 90° with a direction of a rotational axis of the photosensitive member and is arranged at an interval in the direction of the rotational axis of the photosensitive member; and wherein a pulse voltage having a polarity identical with that of the toner is applied to the charging wire so as to vibrate the toner.

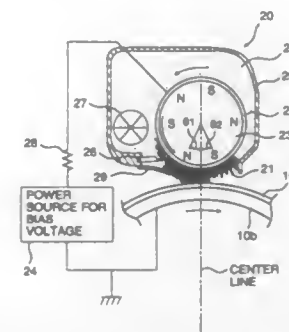
5,381,215
IMAGE FORMING APPARATUS HAVING CHARGER TO CHARGE IMAGE CARRIER WITH MAGNETIC BRUSH
 Satoshi Haneda; Kunio Shigeta; Sachie Hosokoezawa; Masakazu Fukuchi; Shizuo Morita, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,985
 Claims priority, application Japan, Oct. 15, 1992, 4-277370; Oct. 15, 1992, 4-277371; Dec. 7, 1992, 4-326819

U.S. Cl. 355—219

Int. Cl.⁶ G03B 15/02

7 Claims



1. An image forming apparatus, comprising: a photoreceptor having an imaging surface on which a toner image is formed; a rotatable sleeve disposed to face the photoreceptor with a space therebetween so that a charging section is formed between the photoreceptor and the rotatable sleeve; wherein magnetic particles are arranged to move on the rotatable sleeve according to the rotation of the rotatable sleeve, and are arranged to contact with the photoreceptor; at least two magnetic poles disposed inside of the rotatable sleeve, one of the magnetic poles being arranged so as to be upstream of a closest point between the photoreceptor and the rotatable sleeve, and the other magnetic pole being arranged so as to be downstream of the closest point; an electric power source providing an oscillatory electrical field in the charging section; and wherein the at least two magnetic poles comprise two magnets which are located respectively with angles of 5 to 45 degrees from the closest point.

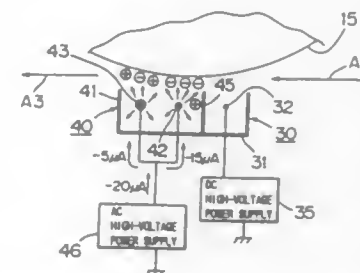
5,381,216
SEPARATING DEVICE FOR IMAGE FORMING APPARATUS
 Haruya Osaka, and Yoshiaki Tabata, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jan. 28, 1993, Ser. No. 10,384
 Claims priority, application Japan, Jan. 31, 1992, 4-016286

U.S. Cl. 355—221

Int. Cl.⁶ G03G 15/02

21 Claims



1. A separating device for applying a separating discharge to

a recording medium used in an electrophotographic image forming apparatus so adapted as to form an electrostatic latent image on the surface of a photoreceptor, develop the electrostatic latent image using toner, transfer a toner image to a sheet-shaped recording medium by adhering a sheet-shaped medium transferred in a predetermined direction to the surface of the photoreceptor and applying a transferring discharge to the recording medium, and to separate the recording medium to which the toner image is transferred from the surface of the photoreceptor by applying a separating discharge to the recording medium, said separating device comprising:

- first discharging means;
- second discharging means; and
- alternating current power supply means, the first discharging means being arranged on an upstream side, on the basis of the delivery direction, of the sheet-shaped recording medium and being formed in a shape that provides for easy inducement of discharge relative to the second discharge means;
- the second discharging means being arranged on a downstream side, on the basis of the delivery direction, of the sheet-shaped recording medium and being formed in a shape that does not provide for easy discharge relative to the first discharging means; and
- the alternating-current power supply means being connected to both the first discharging means and the second discharging means for supplying alternating discharge-current to both the first and second discharging means wherein the discharge current flowing through the first and the second discharge means is offset by a predetermined value.

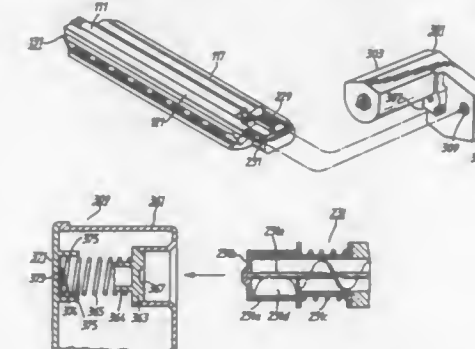
5,381,217
DETACHABLY MOUNTED TONER UNIT HAVING A TONER SUPPLY UNIT AND A TONER RECOVERY HOUSING UNIT

Takao Ishida, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed May 22, 1992, Ser. No. 886,863
 Claims priority, application Japan, Jun. 21, 1991, 3-150578
 Int. Cl.⁶ G03G 15/06

U.S. Cl. 355—260

16 Claims



1. A toner unit adapted to be detachably mounted on an image forming apparatus including a developing device for developing a latent image formed on an image bearing member with a toner and a cleaning device for removing the toner remaining on the image bearing member, the toner unit characterized by:

a toner supply unit for storing toner to be supplied to the developing device and a toner recovery housing unit, integrated with the toner supply unit, for accommodating recovered toner removed from the image bearing member by the cleaning device, the toner recovery housing unit having an air flow portion for permitting air to flow from inside of the toner recovery housing unit to outside to decrease internal pressure of the toner recovery housing unit as recovered toner collects when the toner unit is mounted on the image forming apparatus.

5,381,218 CONDUCTIVE CLEANING BRUSH BELT AND DETONING THEREOF

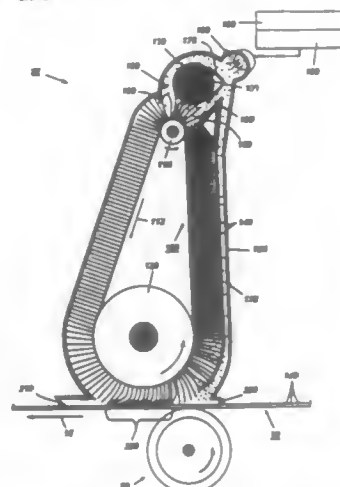
Douglas A. Landy, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 155,321

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—298

4 Claims



1. An apparatus for cleaning particles from a surface, comprising:

- a housing, defining an open ended chamber;
- a flexible brush belt, mounted in the chamber of said housing, including a multiplicity of fibers extending outwardly therefrom with the fibers contacting the surface for removal of particles therefrom;
- a supporting device including a first support spaced from a second support for movably supporting said flexible brush;
- a detoning device to remove the particles from said brush to ensure sufficient cleaning of said brush, said detoning device including:
 - vacuum means, said housing defining a first vacuum port and said vacuum means generating air flow through the first vacuum port to remove the particles from the fibers, said housing defining a second vacuum port, located downstream from the first port in the direction of motion of said brush, said vacuum means generating air flow through the second vacuum port to remove the particles from the fibers, said vacuum means transporting the particles from said housing, said housing having a channel with an end adjacent to the first vacuum port, the end removing particles from the fibers of said brush as said brush rotatingly makes contact therewith so that air entrained with the particles passes through the channel;
 - a flicker bar, adjacent said second support, located downstream from the first port in a direction of motion of said brush; and
 - a detoning roll, adjacent said second support, located downstream from the first port in the direction of motion of said brush, said second support spreading the fibers of said brush adjacent said detoning roll to facilitate removal of particles therefrom.

5,381,219 SIZE DISTRIBUTION OF CARRIER PARTICLES FOR USE IN A MAGNETIC BRUSH

Edward T. Miskinis, Orville C. Rodenberg, and Bljay S. Saha, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,520

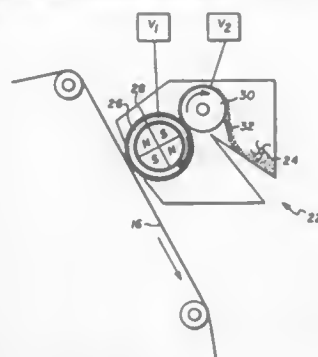
Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—305

16 Claims

1. For use in an image reproduction machine which includes

a magnetic cleaning brush and an imaging member, carrier particles which are utilized by the magnetic cleaning brush to clean the imaging member, said carrier particles comprising: magnetic particles wherein at least about 50% by weight of



said magnetic particles have a diameter of less than about 45 microns and wherein said magnetic particles have a particle size distribution ranging from about 1 micron in diameter to about 150 microns in diameter.

5,381,220 SHEET HANDLING SYSTEM FOR PLURAL CYCLE PRINTING MACHINES

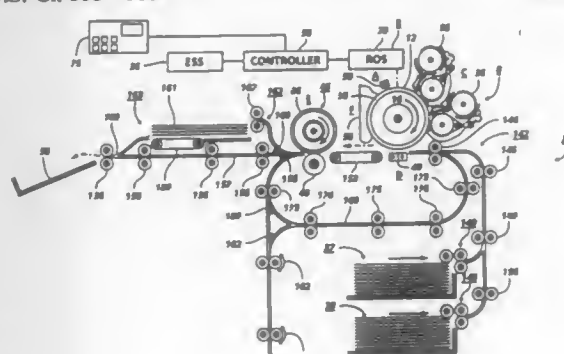
Thomas Acquaviva, Penfield, and Cyril G. Edmunds, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 4, 1993, Ser. No. 55,885

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—308

2 Claims



1. A sheet handler for transporting sheets to and from multipass electrophotographic image processing stations comprising:

- a sheet input port;
- a sheet output port;
- a primary sheet path which includes a transfer station for transfer of developer materials to the sheets and a fuser station for bonding the developer material to the sheets and which extends between said input port and said output port;
- sheet drivers for transporting sheets in said path from said input port through the transfer station and the fuser station;
- a return path connecting a portion of said primary path after the fuser station with a portion of the primary path before the transfer station;
- a first decision gate to divert selected sheets to said return path for retransport to the transfer station and fuser station;
- a shunt path positioned proximate to said output port;
- a second decision gate to divert selected other sheets to said shunt path; and
- a sheet actuator to return the selected other sheets in said shunt path to said primary sheet path so that the sheets

passing to said output port are in a predetermined sequence.

5,381,221 DOT IMAGE FORMING APPARATUS HAVING CONTROLLED DOT ADHESION

Yoshimi Mizoguchi, Hiroshi Ishii, Kiyoshi Kimura, Masakazu Fukuchi, and Makoto Takeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

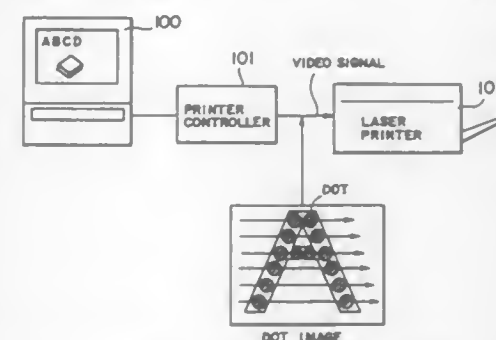
Filed Oct. 1, 1992, Ser. No. 955,362

Claims priority, application Japan, Oct. 17, 1991, 3-269594; Feb. 25, 1992, 4-038028

Int. Cl.⁶ G03G 21/00

U.S. Cl. 355—326 R

40 Claims



23. A color image forming apparatus comprising:

- (a) first exposure control means for controlling an imagewise dot exposure means to form a first latent dot image with a first amount of exposure on an image carrier;
- (b) first developing means for developing said first latent dot image to form a first colored toner dot image on said image carrier;
- (c) second exposure control means for controlling said imagewise dot exposure means to form a second latent dot image with a second amount of exposure on said image carrier;
- (d) second developing means for developing said second latent dot image to form a second colored toner dot image on said image carrier;
- (e) adjusting means for adjusting a ratio of said first amount of exposure to said second amount of exposure by controlling said first and second exposure control means;
- (f) discriminating means for discriminating one of an isolated dot image and a dot image at an edge of a solid image in a first area from a second area that excludes said first area, said discriminating means providing a discriminating output signal which is representative of a discriminating result ascertained by said discriminating means; and
- (g) control means for controlling said adjusting means in response to said discriminating output signal so that an exposure ratio for the first area differs from an exposure ratio for the second area.

5,381,222 METHOD OF REMOTE SENSING OF OCEAN SURFACE CURRENTS

A. Jay Palmer, Longmont, Colo., assignor to The United States of America as represented by the Department of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 886,216, May 20, 1992, Pat. No. 5,221,927. This application May 24, 1993, Ser. No. 65,007

Int. Cl.⁶ G01C 3/08

U.S. Cl. 356—4

10 Claims

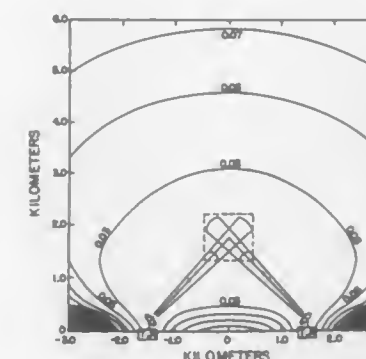
1. A method of remote sensing of a water surface with increased signal to noise ratio and reduced dwell time, comprising the steps of:

- illuminating a section of water surface with a first laser radiation source having a first frequency;

illuminating the section of water surface with a second laser radiation source having a second frequency distinct from the first frequency;

collecting laser radiation from the first and second laser sources scattered from the section of water surface, the scattered radiation including first and second-frequency components;

multiplying the first and second frequency components of the scattered radiation to obtain a product having a low frequency component;



determining the power spectrum of the low frequency component of the product, said power spectrum having a resonant peak at a frequency of the surface waves present on the section of water surface; and

determining an amplitude and a frequency of the resonance peak to determine a surface gravity wave spectrum and a surface current along a look direction at the first and second radiation sources.

5,381,223

Patent Not Issued For This Number

5,381,224 SCANNING LASER IMAGING SYSTEM

Arthur E. Dixon, Waterloo, Canada, and Savvas Damaskinos, Kitchener, Canada, assignors to A. E. Dixon, Waterloo, Canada

Filed Aug. 30, 1993, Ser. No. 113,172

Int. Cl.⁶ G01N 21/64

U.S. Cl. 356—72

17 Claims

1. A scanning-beam optical imaging system for macroscopic specimens comprising

means for supporting a specimen to be observed and measured,

an illumination source producing a light beam directed along an optical path toward said specimen,

means for focusing the light beam to a spot in a prescribed specimen plane,

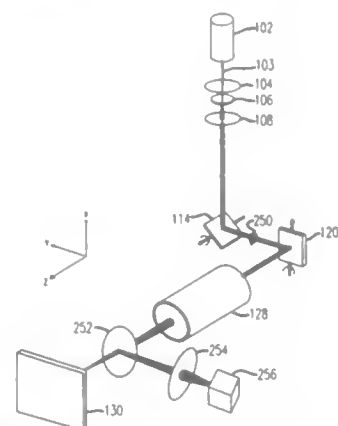
means for scanning the light beam to move the spot in a predetermined scan pattern on said specimen plane,

a detection arm receiving light reflected, scattered or emitted from said spot in said specimen plane comprising

a condensing lens for collecting said reflected, scattered or emitted light,

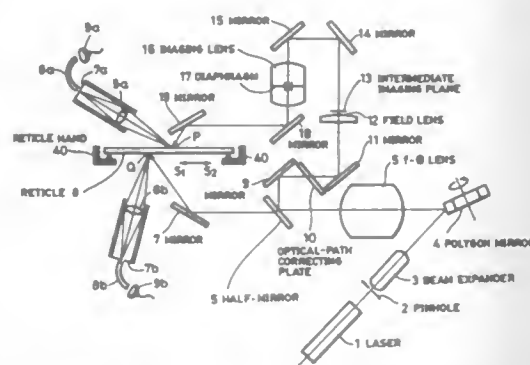
a detector placed behind said condensing lens, a beam-

splitter directing light returning from said specimen into said detection



arm, said beamsplitter placed between said focusing means and said specimen.

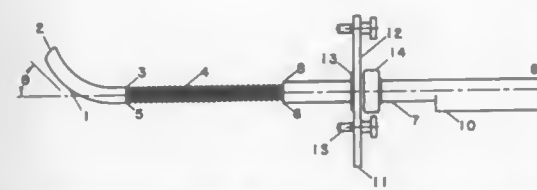
5,381,225
SURFACE-CONDITION INSPECTION APPARATUS
Michio Kohno, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 84,327, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 841,845, Feb. 26, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,971
Claims priority, application Japan, Feb. 28, 1991, 3-055558
Int. Cl.⁶ G01N 21/88, 21/89
U.S. Cl. 356—237 34 Claims



1. An apparatus for inspecting a surface condition of an object having at least a first surface to be inspected and a second surface to be inspected with a higher detection resolution than the first surface, said apparatus comprising:
a holding mechanism for holding the object, said holding mechanism being configured to hold the object so as to dispose the second surface at a constant position irrespective of the distance between the first surface and the second surface;
a first inspection system for inspecting the first surface of the object held by said holding mechanism, comprising an irradiator, producing a first condensed light beam of a first diameter, and a receiver, said first inspection system inspecting said first surface by irradiating the first surface with the first condensed light beam from said irradiator and receiving light from the first surface irradiated by the first condensed light beam with said receiver; and
a second inspection system for inspecting the second surface of the object held by said holding mechanism, comprising an irradiator, producing a second condensed light beam of a second diameter, greater than the first diameter, and a receiver, said second inspection system inspecting the second surface by irradiating the second surface with the second condensed light beam from said irradiator of said

second inspection system and receiving light from the second surface irradiated by the second condensed light beam with said receiver of said second inspection system.

5,381,226
FLEXIBLE GUIDE TUBE ASSEMBLY
Robert A. Brunell, Webster, and John M. Smith, Southbridge, both of Mass., assignors to Schott Fiber Optics, Southbridge, Mass.
Filed Jul. 15, 1993, Ser. No. 91,710
Int. Cl.⁶ G02B 23/24, 23/26
U.S. Cl. 356—241 6 Claims

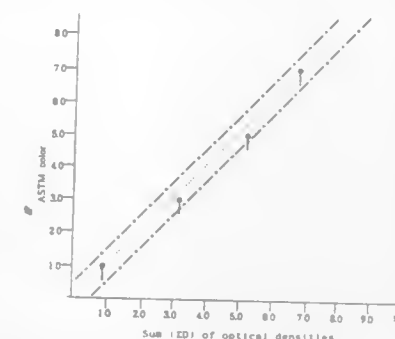


1. A flexible guide tube assembly for endoscopic inspection of an engine comprising:
(a) a tubular front elbow section for guiding an endoscope through an interior space, the elbow section having an entrance end and an exit end through which an endoscope can be exited;
(b) a tubular flexible coil spring section for urging the tubular front elbow section through the interior space, the coil spring having an entrance end and an exit end, wherein the entrance end of the elbow section is attached to the exit of the coil spring section forming a continuous tubular compartment;
(c) a tubular handle section having an entrance end through which an endoscope can be inserted and an exit end, wherein the entrance end of the coil spring section is attached to the exit end of the handle section forming a continuous tubular compartment; and
(d) an adjustable mounting flange movable along the tubular axis of the handle section, the adjustable mounting flange having a mounting plate and an adjustable clamping means secured to the mounting plate for immobilizing the mounting plate at a position on the tubular handle section; the mounting plate having a plurality of fasteners for attaching it to the engine.

5,381,227
STANDARD MATERIALS AND METHODS FOR INSTRUMENTAL MEASUREMENT FOR ASTM COLOR OF PETROLEUM PRODUCTS USING SAID STANDARD MATERIALS
Akihiko Niiizawa, and Masahiro Yamaguchi, both of Yokohama, Japan, assignors to Nippon Petroleum Refining Co., Ltd. and The Japan Petroleum Institute, Tokyo, Japan
Filed Mar. 18, 1993, Ser. No. 32,881
Claims priority, application Japan, Mar. 31, 1992, 4-103879
Int. Cl.⁶ G01J 1/02 2 Claims

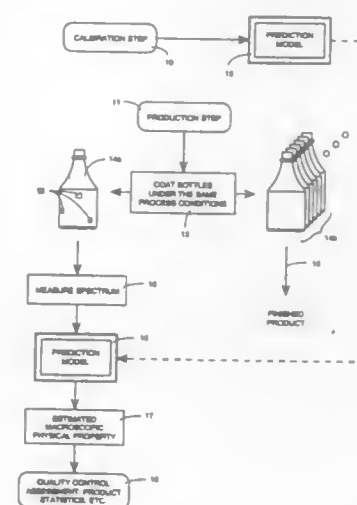
U.S. Cl. 356—243
1. A set of standard materials, which comprises at least two kinds of standard materials, for calibration of a photoelectric colorimeter used for the instrumental measurement of petroleum products for their ASTM color, comprising at least two kinds of standard materials each of which is a mixed solution having a color corresponding to an ASTM color and comprises (a) at least five colorants selected from the group consisting of (i) 3-methyl-1-phenyl-4-(phenylazo)-pyrazol-5-ol, (ii) 1-(phenylazo)-2-naphthalenol, (iii) 1-[[4-[(dimethylphenyl)azo]dimethylphenyl]azo]-2-naphthalenol, (iv) 1,5(or 1,8)-bis[(4-methylphenyl)amino]-9,10-anthracenedione, (v) 1-hydroxy-4-[(4-methylphenyl)amino]-9,10-anthracenedione, (vi) 1,4-bis(butylamino)-9,10-anthracenedione and (vii) 1,4-bis[(4-

butylphenyl)amino]-5,8-dihydroxy-9,10-anthracenedione, (b) 1-phenyl-1-xylylethane as a solvent for said colorants, and (c) dodecane as a diluent for the resulting solution; said colorants (i)-(vii) being mixed together in a ratio by volume selected from the group consisting of



(1) (i)210:(ii)26:(iii)0:(iv)13:(v)0:(vi)2:(vii)3,
(2) (i)200:(ii)29:(iii)7:(iv)6:(v)4:(vi)2:(vii)4,
(3) (i)200:(ii)58:(iii)10:(iv)16:(v)8:(vi)0:(vii)8, and
(4) (i)183:(ii)53:(iii)13:(iv)11:(v)16:(vi)1:(vii)3.

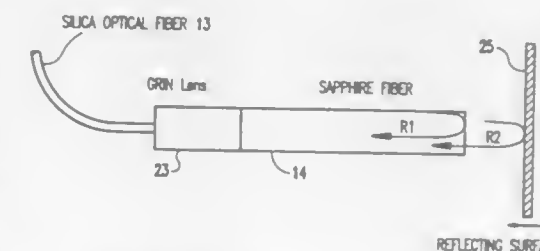
5,381,228
RAPID ESTIMATION OF THE OXYGEN PERMEATION RATE OF A THIN FILM ON A PLASTIC CONTAINER
John G. Brace, Brown Deer, Wis., assignor to Hoover Universal, Inc., Plymouth, Mich.
Filed Sep. 30, 1993, Ser. No. 129,509
Int. Cl.⁶ G01B 11/06; G01J 3/00
U.S. Cl. 356—300 11 Claims



1. A method for measuring the oxygen permeation rate of an unknown solid, inorganic thin film coating applied on a surface of a plastic container for a consumable food product, said solid thin film coating having a thickness ranging from approximately 16 nanometers to 300 nanometers, the method comprising the steps of:
(a) preparing a prediction model which accepts as an input at least one input spectral component value corresponding to absorption of electromagnetic radiation in at least one frequency band of the radiation, and which outputs an estimated measurement for oxygen permeation rate based on said input;
(b) performing spectroscopic analysis of the unknown thin film coating on said plastic container to obtain at least one sample spectral component value corresponding to the

absorption of electromagnetic radiation in said at least one frequency band by the unknown thin film coating; and
(c) evaluating the prediction model with said at least one sample spectral component value as the input spectral component value, wherein the output of prediction model is thereby a measurement of the oxygen permeation rate exhibited by the unknown thin film coating on said plastic container.

5,381,229
SAPPHIRE OPTICAL FIBER INTERFEROMETER
Kent Murphy, Roanoke, Va.; Ashish Vengsarkar, Allentown, Pa.; Shari Feth, Blacksburg, Va.; Richard Claus, Christiansburg, Va.; Sridhar Gollapudi, and Anbo Wang, both of Blacksburg, Va., assignors to Center for Innovative Technology, Herndon, Va.
Continuation-in-part of Ser. No. 677,420, Mar. 29, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 937,651
Int. Cl.⁶ G01R 9/02
U.S. Cl. 356—345 10 Claims



1. An optical interferometer for use in high temperature environments, comprising:
a laser light source;
a single mode optical fiber coupled at one end to said laser light source and conducting light to an opposite end;
a sapphire fiber having a first end and a second end;
said opposite end of said single mode optical fiber coupled to said first end of said sapphire fiber to form a first interface that reflects a portion of said light conducted by said single mode optical fiber back into said single mode fiber optical fiber and transmits a portion of said light conducted by said single mode optical fiber into said sapphire fiber;
a second interface at said second end of said sapphire fiber to reflect at least a portion of said light transmitted into said sapphire fiber back through said sapphire fiber into said single mode optical fiber, whereby said sapphire fiber forms a cavity of said interferometer with light reflected from said first interface serving as a reference reflection and light reflected from said second interface serving as a sensor reflection responsive to changes in an optical path length of said sapphire fiber; and
detector means for receiving an interference pattern generated by said reference reflection and said sensor reflection, said detector means analyzing optical fringes produced by said interference pattern to detect changes in said optical path length of said sapphire fiber.

5,381,230
EMISSION SOURCE SPECTRUM STABILIZER
James N. Blake, College Station, Tex.; Clarence E. Laskoskie, Scottsdale, and Bogdan Szafraniec, Cave Creek, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 12, 1993, Ser. No. 17,685
Int. Cl.⁶ G01B 9/02; G01C 19/72
U.S. Cl. 356—345 27 Claims

1. A spectrum stabilizer for stabilizing with respect to wavelength an emission spectrum of those source electromagnetic waves from a source which are inserted into a selected optical

means for analyzing said collimated p-polarized light beam having exited the object to determine the property of the object.

5,381,235 THREE-DIMENSIONAL SHAPE MEASURING DEVICE AND THREE-DIMENSIONAL SHAPE MEASURING SENSOR

Yasuo Inoue; Tadashi Nishimura; Takashi Ipposhi, and Toshiaki Iwamatsu, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

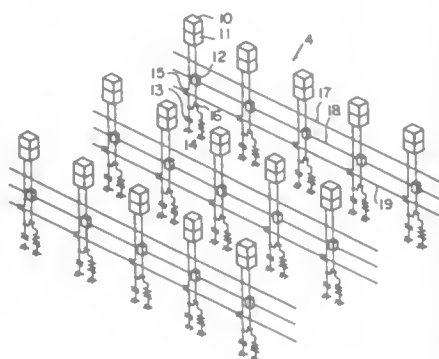
Filed Dec. 15, 1992, Ser. No. 990,460

Claims priority, application Japan, Dec. 26, 1991, 3-344771

Int. Cl.⁶ G01B 11/24

U.S. Cl. 356—376

16 Claims



1. A three-dimensional shape measuring device, comprising: a light source for scanning plane light over the surface of an object;
- an optical system for forming an image of a bright line appearing on the surface of an object;
- a plurality of shape measurement units, each shape measurement unit including an image sensor opposed to the object and;
- defining a pixel, a capacitor having a first grounded terminal and a second terminal, discharging means connected to the capacitor for gradually discharging the capacitor from when plane light scanning starts until the bright line image passes through the pixel, the discharging means having 1) a discharge resistor including a first grounded terminal and a second terminal and 2) a plurality of interconnected discharge switching transistors, one of the discharge switching transistors having a gate and being connected to the second terminal of the discharge resistor and the second terminal of the capacitor; and
- an arithmetic logic means for computing charges remaining in said plurality of capacitors after plane light scanning is completed thus providing a three-dimensional shape of an object.

5,381,236
OPTICAL SENSOR FOR IMAGING AN OBJECT
Colin G. Morgan, Horspath, United Kingdom, assignor to Oxford Sensor Technology Limited, Summertown, United Kingdom

Filed Aug. 10, 1993, Ser. No. 104,084
Claims priority, application United Kingdom, Feb. 12, 1991, 9102903

Int. Cl.⁶ G01B 11/24

U.S. Cl. 356—376

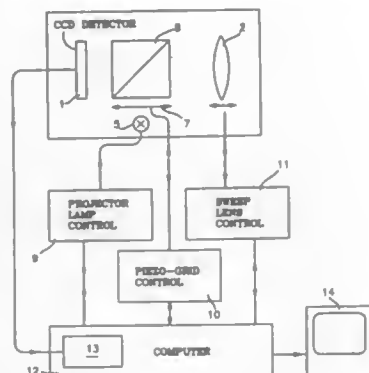
16 Claims

1. An optical sensor comprising: a structured light source for producing a pattern of contrasting areas;
- a detector which comprises an array of detector elements having dimensions matched to the pattern produced by the light source;
- an optical system for projecting a primary image of the light source onto an object that is to be sensed and for forming a secondary image on the detector of the primary image thus formed on the object;
- adjustment means for adjusting at least part of the optical system to vary the focussing of the primary image on the

object, such that when the primary image is in focus on the object, the secondary image on the detector is also in focus; and

processing means for analyzing signals produced by the detector in conjunction with information on the adjustment of the optical system;

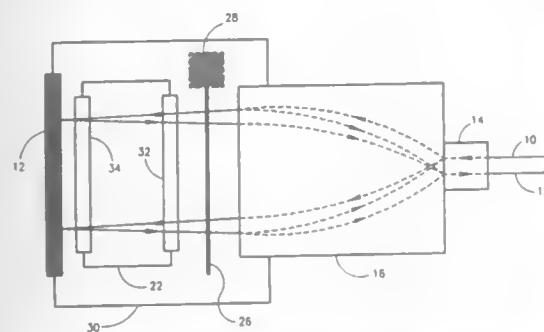
wherein the structured light source is adjustable to inter-



change at least two positions of contrasting areas of the pattern produced by the light source and in that the processing means is arranged to analyze the secondary images received by the detector elements with the contrasting areas in the interchanged positions to determine those parts of the secondary images which are in focus on the detector and thereby determine the range of corresponding parts of the object which are thus in focus.

5,381,237
MULTI-PURPOSE OPTICAL HEAD PROBE
Ilan Sela, Haifa, Israel, assignor to Petrometrix Ltd., Migdal Haemek, Israel
Filed Aug. 18, 1993, Ser. No. 107,871
Int. Cl.⁶ G01N 21/41, 21/59, 21/64, 21/65
U.S. Cl. 356—436

3 Claims



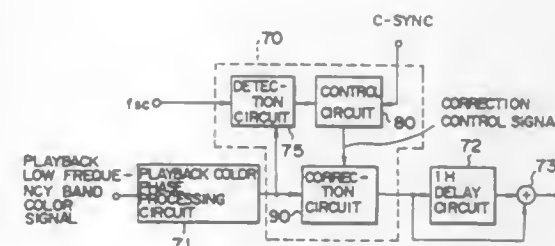
1. An optical probe head for determining the absolute transmission or absorption of a sample, comprising:
 - (a) a gradient index lens;
 - (b) a mirror placed so as to reflect radiation coming through said gradient index lens back to said gradient index lens through the sample;
 - (c) a moveable partition located between said gradient index lens and said mirror, said partition serving to alternately block and unblock radiation between said mirror and said gradient index lens;
 - (d) at least one transmitting optical fiber for inputting radiation into said gradient index lens;
 - (e) at least one receiving optical fiber, said at least one transmitting optical fiber and said at least one receiving optical fiber being fixedly held relative to said gradient index lens so that said gradient index lens and said optical fibers are aligned such that radiation input into said gradient index

lens by said transmitting optical fiber which passes through said gradient index lens and the sample to said mirror is reflected by said mirror through the sample and through said gradient index lens and is received by said at least one receiving optical fiber when said moveable partition is not blocking radiation between said mirror and said gradient index lens. Radiation input into said gradient index lens by said transmitting optical fiber is reflected from an interface of said gradient index lens and air and is received by said at least one receiving optical fiber.

5,381,238
HELICAL SCAN TYPE PLAYBACK APPARATUS FOR VIDEO DATA RECORDED ON MAGNETIC TAPE
Yasuomi Namiki; Masaru Tanaka, and Yoshio Tokuyama, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Division of Ser. No. 515,395, Apr. 27, 1990, Pat. No. 5,223,941.
This application Mar. 16, 1993, Ser. No. 31,894
Claims priority, application Japan, Apr. 28, 1989, 1-111074; Jan. 17, 1990, 2-9127; Jan. 17, 1990, 2-9128
Int. Cl.⁶ H04N 9/89

U.S. Cl. 358—320

4 Claims



1. A helical scan type magnetic playback apparatus for reproducing an image signal in which a frequency of color signals is changed in a frequency band lower than a luminance signal of which frequency is modulated, the color signal being reproduced from a magnetic recording medium which records the color signals in tracks as a low frequency color signal of which a phase shift is changed at every track, a phase of the color signals being shifted by a predetermined angle at each horizontal period in order not to overlap spectrums of the color signal between two adjacent tracks, the apparatus comprises:

a plurality of magnetic heads;

position signal generator means for generating a position signal indicative of each position of the plurality of magnetic heads;

head switching control signal generation means for generating a head switching control signal responsive to said position signal;

switching means responsive to said head switching control signal from said head switching control signal generation means to switch image signals reproduced by said plurality of magnetic heads;

color signal processing means for separating the low frequency color signal from an output signal output from said switching means, for converting a frequency of the separated low frequency color signal, and for performing a phase shift which is substantially opposite to the phase at recording;

sense means for sensing an error of the phase of said low frequency color signal produced at the time of reproduction by a shift between the switching point of a predetermined rule at the time of recording and the switching of a predetermined rule at the time of reproduction; and

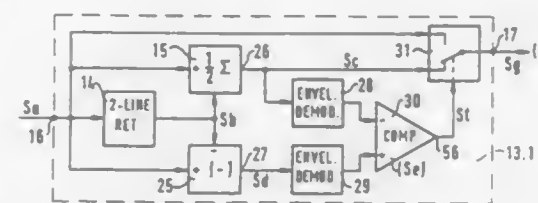
correction means for correcting the phase of said low frequency color signal at the time of reproduction on the

basis of a sense signal of a phase error output from the sense means.

5,381,239
COMB FILTER CIRCUIT IN THE CHROMINANCE SIGNAL CHANNEL ON THE PLAYBACK SIDE OF A VIDEORECORDER
Gerd Reime, Schomberg, Germany, assignor to Nokia (Deutschland) GmbH, Pforzheim, Germany
Division of Ser. No. 878,822, May 5, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 213,382
Claims priority, application Germany, May 10, 1991, 4115213
Int. Cl.⁶ H04N 9/79

U.S. Cl. 358—329

10 Claims



1. A comb filter circuit for use in a chrominance signal transmission channel on a playback side of a video player for counteracting crosstalk occurring during scanning of the chrominance signal from a video tape, comprising:

a comb filter (14, 15), responsive to an input chrominance signal (Sa) having crosstalk thereon and chrominance signal edges therein, wherein the signal edges may be changing between a first and a second video line, for providing a corrected chrominance signal (Sc) free of crosstalk and a retarded input chrominance signal (Sb), which is retarded through at least one video line;

detection means (25) for detecting the chrominance signal edges, responsive to the input chrominance signal (Sa) and the retarded chrominance signal (Sb), for providing a difference chrominance signal (Sd), which includes chrominance in periods of difference in chrominance between the input chrominance signal (Sa) and the retarded chrominance signal (Sb), wherein the chrominance in the difference chrominance signal (Sd) in these periods has a magnitude greater than the chrominance in the corrected chrominance signal (Sc);

steering means, responsive to the corrected signal (Sc) and the difference chrominance signal (Sd), for providing a steering signal (Sf); and

switching means (31), responsive to the input chrominance signal (Sa), the corrected chrominance signal (Sc) and the steering signal (Sf), for providing an output signal (Sg) which is the input chrominance signal (Sa) during the periods of difference in chrominance and otherwise it is the corrected chrominance signal (Sc).

5,381,240
COMMUNICATION APPARATUS
Masahiro Murayama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 1, 1992, Ser. No. 891,819
Claims priority, application Japan, Jun. 3, 1991, 3-131197
Int. Cl.⁶ H04N 1/00

U.S. Cl. 358—436

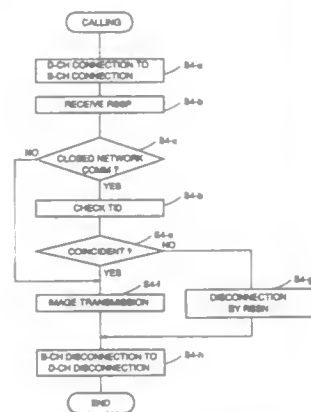
13 Claims

1. A communication apparatus for performing a communication in accordance with a predetermined communication procedure, comprising:
 - storage means for storing in advance data indicating a name of a distant station to communication with;
 - control means for comparing data indicating a name of a distant station included in a received predetermined com-

munication procedure signal with the data stored in said storage means, and changing a communication procedure according to the comparison result; and setting means for setting a comparison range of the data stored in said storage means, wherein said control means compares the stored data in the comparison range set by said setting means with the received data indicating the name of the distant station.

4. A communication apparatus for performing a communication in accordance with a predetermined communication procedure, comprising:

storage means for storing in advance data indicating a name of a distant station to communicate with; control means for comparing data indicating a name of a distant station included in a received predetermined communication procedure signal with the data stored in said storage means, and changing a communication procedure according to the comparison result; and means for designating arbitrary character data in said storage means,



wherein said control means compares the stored data excluding the designated character data with the received data indicating the name of the distant station.

9. A communication apparatus for performing a communication through a digital communication line in accordance with a communication procedure specified in a CCITT recommendation, comprising:

storage means for storing in advance collation data to be compared with a terminal identifier included in a procedure signal in the communication procedure; means for designating arbitrary character data of the collation data; and control means for comparing the received terminal identifier with the collation data stored in said storage means, and changing the communication procedure according to the comparison result, wherein said control means performs comparison processing excluding the designated character data.

5,381,241

METHOD FOR DISCRIMINATING BETWEEN FIGURE AND TEXT AREAS OF AN IMAGE

Seido Kawanaka; Shiro Ida; Hideo Takemura, and Kouji Kumetani, all of Osaka, Japan, assignors to Sharp Corporation, Osaka and Ezel Inc., Tokyo, both of Japan

Filed Aug. 11, 1992, Ser. No. 928,012

Claims priority, application Japan, Aug. 13, 1991, 3-228335; Aug. 13, 1991, 3-228350; Aug. 13, 1991, 3-228351

Int. Cl.⁶ H04N 1/40

U.S. Cl. 358-462

35 Claims

1. A method for classifying areas in an image to extract a half-tone area, said method comprising the steps of: for each pixel in said image, performing convolutions of a predetermined size with said each pixel as a center pixel in said convolutions, thereby determine a maximal convolu-

tion brightness and a minimal convolution brightness for said pixel; calculating a brightness difference between said maximal and minimal convolution brightnesses of said center pixel; defining the center pixel as a half-tone pixel when said difference is less than or equal to a first predetermined value, said maximal brightness is less than or equal to a second



predetermined value and said minimal brightness is greater than or equal to a third predetermined value; counting a number of half-tone pixels within a given area; and defining areas in said image as half-tone areas when said number of half-tone pixels is greater than or equal to a fourth predetermined value.

5,381,242

FACSIMILE APPARATUS AND ITS MAINTENANCE CHARGE CONTROL APPARATUS

Yoshiharu Fujii, Sukurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

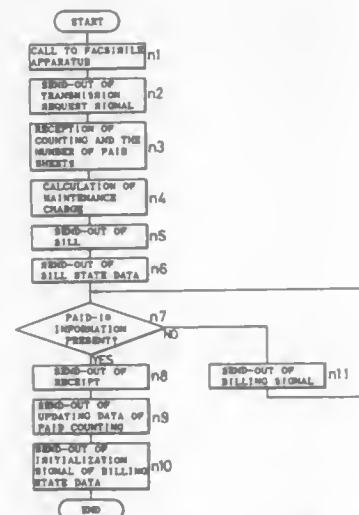
Filed Jan. 29, 1993, Ser. No. 12,136

Claims priority, application Japan, Feb. 3, 1992, 4-017694; Feb. 28, 1992, 4-043447

Int. Cl.⁶ H04N 1/00, 1/32, 1/34; H04M 11/00

U.S. Cl. 358-468

7 Claims



1. A facsimile apparatus connected to a maintenance charge control apparatus for communicating and determining maintenance charges associated with the facsimile apparatus by way of public telephone networks, said facsimile apparatus comprising:

means for recording image data on a recording paper, means for counting the number of sheets recorded by the recording means, means for storing a number of sheets corresponding to a previously paid maintenance charge, and means for controlling for causing the transmitting of the count of the counting means to said maintenance charge control apparatus, and for causing the storing of said number of sheets corresponding to the paid maintenance

charge received from the maintenance charge control apparatus in the storing mean, said maintenance charge controlling apparatus including: means for causing the transmission of the count of said counting means from the facsimile apparatus, and for storing the received count, maintenance charge calculating means for calculating the maintenance charge on the basis of a basic charge, the number of previously paid sheets and the received count bill issuing means responsive to said maintenance charge calculating means for preparing a bill on the basis of the calculated maintenance charge and converting said bill into bill image data and transmitting the bill image data to said facsimile apparatus, input means for entering the amount of a maintenance charge paid by the user of the facsimile apparatus, receipt issuing means responsive to said input means for converting a receipt prepared on the basis of the entered amount into receipt image data and transmitting the receipt image data to said facsimile apparatus, and means responsive to said receipt issuing means for transmitting the number of sheets corresponding to the paid maintenance charge to said storing means of the facsimile apparatus.

5,381,243

ARRANGEMENT AND METHOD FOR ATTACHING IMAGE SENSOR TO ELECTRONIC MACHINE

Masaya Imamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

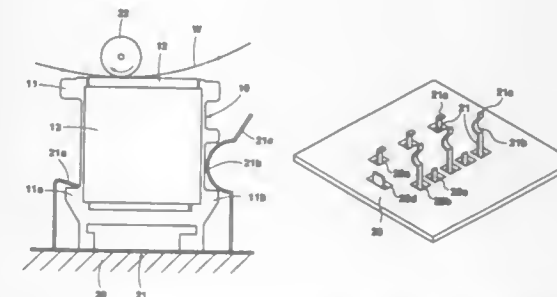
Filed Dec. 22, 1992, Ser. No. 995,191

Claims priority, application Japan, Jan. 7, 1992, 4-000426

Int. Cl.⁶ H04N 1/028

U.S. Cl. 358-471

14 Claims



1. An arrangement for attaching an image sensor to an electronic machine comprising:

a frame incorporated into said image sensor and having a bottom surface which is in contact with the mounting portion of said electronic machine to which said image sensor is attached, and two longitudinal side surfaces which are approximately orthogonal to said bottom surface and respectively provided with protruding portions; at least one fitting guide arranged on said mounting portion of said electronic machine and having two engaging portions which engage the respective protruding portions so that said image sensor is attached to said mounting portion of said electronic machine, wherein at least one of said protruding portions has an inclined surface which faces said bottom surface of said frame, and one of said engaging portions of said fitting guide is bent rectilinearly at not less than 90 degrees and the other is bent into an arc.

6. An assembly for attachment to an electronic machine having a mounting portion, the assembly comprising: an image sensor including a frame having a bottom portion which is in contact with the mounting portion, and first and second longitudinal side portions which extend from the bottom portion and are disposed substantially orthog-

onal to the mounting portion, the first side portion having a first protruding portion; and a fitting guide coupled to the mounting portion and having a first engaging member which has an end and an arcuate portion intermediate the mounting portion and the end, the arcuate portion of the engaging member engaging the first protruding portion to apply a force at least partially in a direction toward the mounting portion to attach the image sensor to the mounting portion of the electronic machine.

11. An apparatus comprising:

an electronic machine having a mounting portion which includes a plate member having holes; an image sensor including a frame having a bottom portion which is in contact with the mounting portion; and a U-shaped fitting guide coupled to the mounting portion and having engaging members and a middle portion intermediate the engaging members, the engaging members each passing through the holes in the plate member, wherein the fitting guide and the frame clamp the mounting portion so that the image sensor is rigidly fixed to the electronic machine.

5,381,244

IMAGE READING SYSTEM USING AN INTERRUPTION OF A PULSE TRAIN TO ADJUST A SCANNING PERIOD

Akira Kamiyama, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 938,579, Sep. 2, 1992, Pat. No. 5,278,675, which is a continuation of Ser. No. 442,873, Nov. 29, 1989, abandoned. This application Oct. 14, 1993, Ser. No. 135,972

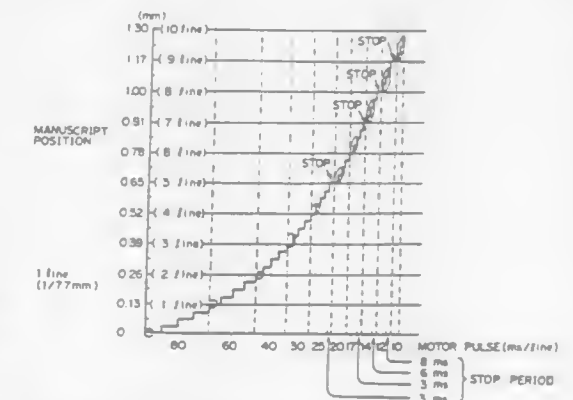
Claims priority, application Japan, Nov. 30, 1988, 63-303008

The portion of the term of this patent subsequent to Jan. 11, 2014, has been disclaimed.

Int. Cl.⁶ H04N 1/04

U.S. Cl. 358-486

2 Claims



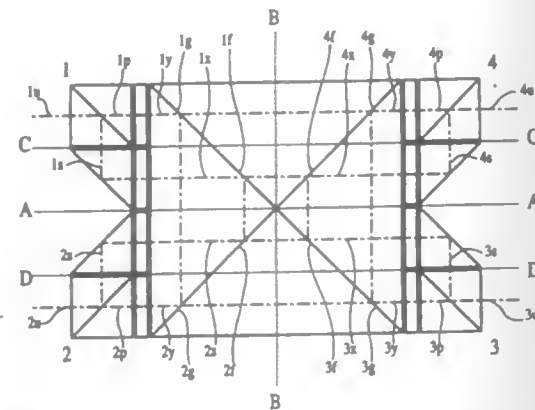
1. An image reading system comprising:

a charge storing type image sensor; driving means for driving a manuscript relative to said image sensor; a driving control means for outputting a driving pulse for driving said driving means; a speed setting means for determining a driving state of said driving means, and outputting to said driving means a predetermined number of pulses within one scan period; and stopping means for stopping the driving pulse for a predetermined time period to vary a reading speed during said one scan period based on an output of said speed setting means so that a difference in a driving speed, of the driving pulse, between different scan periods is decreased.

four port modules each conducting one bi-directional beam of collimated light into and out of the switch, each port module comprising:

- one primary polarizing beam splitter means disposed to intercept the beam of collimated light and to reversibly divide the beam into a pair of component beams comprising one reflected component beam having a first linear polarization and one transmitted component beam having a second linear polarization orthogonal to the first;
- one light deflecting means disposed to intercept and deflect

the reflected component beam into a path parallel to the transmitted component beam; and
two electro-optic means, comprising separate regions of at least one electro-optic device, each with means for applying an electrical signal and each disposed to intercept and transmit one of the component beams, each electro-optic means having a first state which changes the linear polarization of an incident component beam to the orthogonal linear polarization and a second state in which the linear polarization of the incident component beam is left unchanged, said first and second states being selected in accordance with an electrical signal applied to the electro-optic means;



said optical switch further comprising eight secondary polarizing beam splitter means comprising separate regions of at least one polarizing beam splitter device, each disposed to intercept one component beam, each polarizing beam splitter means causing the incident component beam to be transmitted when it has a particular one of the mutually orthogonal linear polarizations and to be reflected when it has another of the mutually orthogonal linear polarizations, said transmitted light comprising a secondary transmitted beam and said reflected light comprising a secondary reflected beam, said secondary reflected and transmitted beams of each port module each being collinear and directed toward transmitted or reflected beams of the other port modules.

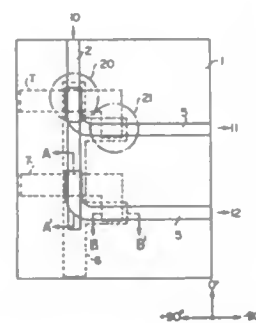
5,381,251
OPTICAL SWITCH ELEMENT AND A LIQUID CRYSTAL LIGHT DIRECTIONAL COUPLER USED IN THE OPTICAL SWITCH ELEMENT

Keisaku Nonomura, Nara, and Mitsuhiro Shigeta, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 7, 1993, Ser. No. 44,144

Claims priority, application Japan, Apr. 7, 1992, 4-085429
Int. Cl.⁶ G02F 1/13, 1/137

U.S. Cl. 359—39

13 Claims



1. An optical switch element for selectively transmitting or

shielding light from a first optical wave guide to a second optical wave guide, said optical switch element comprising:

said first optical wave guide;
said second optical wave guide partially overlapping said first optical wave guide;

a first optical switch portion formed at a portion where said first optical wave guide and said second optical wave guide are overlapped with each other, said first optical switch portion including a part of said first optical wave guide, a part of said second optical wave guide, and a first liquid crystal layer interposed between said part of said first optical wave guide and said part of said second optical wave guide;

first voltage applying means for applying voltage to said first liquid crystal layer to change a refractive index of said first liquid crystal layer in order to control the transmission of light from said first optical wave guide to said second optical wave guide in accordance with a change of said refractive index;

a second optical switch portion formed at another part of said second wave guide, said second optical switch portion including said another part of said second optical wave guide, a second liquid crystal layer formed at said another part of said second optical wave guide; and

second voltage applying means for applying voltage to said second liquid crystal layer to change a refractive index of said second liquid crystal layer in order that leakage light penetrated through said first optical switch portion is transmitted out of said second optical wave guide,

in a case where light is transmitted from said first optical wave guide to said second optical wave guide, said first optical switch portion being in a transmitting state, and said second optical switch portion being in a shielding state, and in another case where light is shielded from said first optical wave guide to said second optical wave guide, said first optical switch portion being in a shielding state, and said second optical switch portion being in a transmitting state.

5,381,252
OPPOSED SCANNING ELECTRON BEAMS LIGHT SOURCE FOR PROJECTION LCD

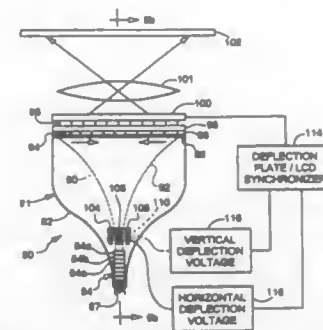
Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan, Prov. of China
Filed Jun. 22, 1993, Ser. No. 79,900

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.⁶ G02F 1/1335; H04N 5/74

U.S. Cl. 359—48

18 Claims



5,381,255

FERROELECTRIC LIQUID CRYSTAL DISPLAY WITH SEAL LARGER THAN CELL GAP PLUS HALF COLOR FILTER THICKNESS AND 1.2-5MM FROM FILTER EDGE

Kenji Ohnuma, Isehara; Masaaki Suzuki, and Keishi Danjoh, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 752,277, Aug. 28, 1991, abandoned.

This application Dec. 29, 1993, Ser. No. 174,171

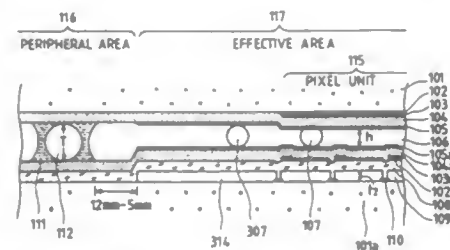
Claims priority, application Japan, Aug. 30, 1990, 2-226589;

Oct. 22, 1990, 2-285260; Aug. 23, 1991, 3-235645

Int. Cl.⁶ G02F 1/1335, 1/1339

U.S. Cl. 359—68

7 Claims



1. A liquid crystal color-display panel, comprising: a substrate which bears thereon a color filter having thereon a passivation layer, said passivation layer having thereon a first electrode;

another substrate which bears thereon a second electrode intersecting the first electrode so as to form a pixel area at the intersecting area; and

a liquid crystal being disposed between said substrates at a film thickness of 1-2 μm in said pixel area, wherein: said substrates are mutually adhered so as to form different cell gaps in said pixel area and in the peripheral area, the diameter T of a first gap-retaining material contained in sealant provided in the peripheral area satisfies a relationship:

$$t_1 + (t_2/2) \leq T$$

in which t_1 is the cell gap of the pixel area and t_2 is the thickness of said color filter,

a second gap-retaining material is provided in a space between said pixel area and a sealed portion of the peripheral area, and

an edge portion of the color filter is extended to a position of a distance of 1.2-5 mm from a position at the sealed portion of the peripheral area.

5,381,256

FERROELECTRIC LIQUID CRYSTAL DEVICE WITH FINE PARTICLES ON INSULATOR, HAVING DIAMETER LESS THAN SUBSTRATE GAP

Yukio Hanyu, Atsugi; Kenji Onuma, Isehara; Yoshio Hotta, Atsugi; Osamu Taniguchi, Chigasaki; Hideaki Takao, Sagami; Masanobu Asaka, Yokohama; Tadashi Mihara, Isehara; Yasuto Koda, Fujisawa; Makoto Kojima, Hino; Katsutoshi Nakamura, and Takatsugu Wada, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,830

Claims priority, application Japan, Dec. 10, 1991, 3-349775; Dec. 13, 1991, 3-351280; Jan. 6, 1992, 4-018150; Jan. 8, 1992, 4-018430; Jan. 23, 1992, 4-031358; Jan. 24, 1992, 4-032860; Jan. 29, 1992, 4-036901; Jan. 31, 1992, 4-040606

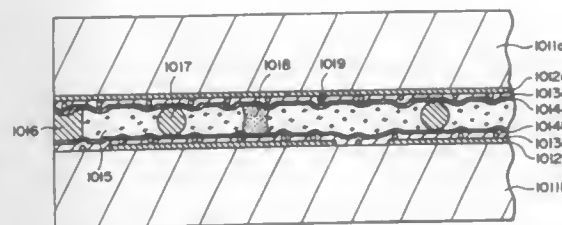
Int. Cl.⁶ G02F 1/1337, 1/1333, 1/13

U.S. Cl. 359—75

36 Claims

1. A liquid crystal device, comprising: a first substrate having an inner surface, a second substrate having an inner surface, and a liquid crystal disposed

between the inner surfaces of said first and second substrates; said device further comprising between the first and second substrates a spacer contacting the inner surfaces of the first and second substrates; and



fine particles dispersed on the first substrate providing corresponding projections on the inner surface of the first substrate, the projections contacting the liquid crystal but not contacting the inner surface of the second substrate.

5,381,257

SIMULTANEOUS DATA COMMUNICATION AND FIBER PERTURBATION DETECTION SYSTEM

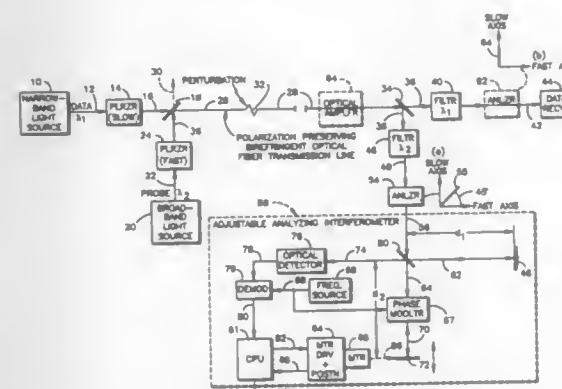
Carl M. Ferrar, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 1, 1993, Ser. No. 12,114

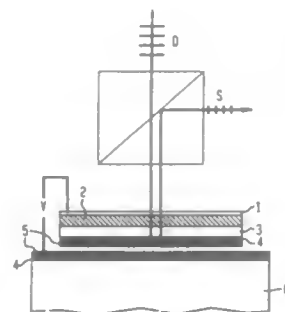
Int. Cl.⁶ G01B 9/02

U.S. Cl. 359—156

11 Claims



comprising the multiple quantum well heterostructure is smaller than a splitting of the heavy and light holes due to any uniaxial strain which is placed on the multiple quantum well heterostructure;
a polarizing light beam splitter means disposed above the multiple quantum well structure; and



means to apply an electric field to the multiple quantum well heterostructure;
wherein an anisotropic strain is induced in the plane of the multiple quantum well heterostructure when the multiple quantum well structure is heated to an elevated temperature to form a bond and then cooled.

5,381,261

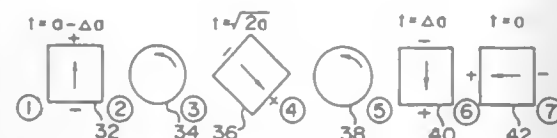
OPTICAL ISOLATOR

Shigeru Hirai; Youichi Ishiguro; Yasuji Hattori; Masayuki Nishimura; Masayuki Shigematsu; Minoru Watanabe, and Kouji Nakazato, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
PCT No. PCT/JP92/00171, § 371 Date Nov. 5, 1992, § 102(e) Date Nov. 5, 1992, PCT Pub. No. WO92/15040, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 19, 1992, Ser. No. 937,896
Claims priority, application Japan, Feb. 20, 1991, 3-026231; Feb. 20, 1991, 3-026232; Feb. 20, 1991, 3-026233
Int. Cl.⁶ G02B 5/30

U.S. Cl. 359—282

1 Claim

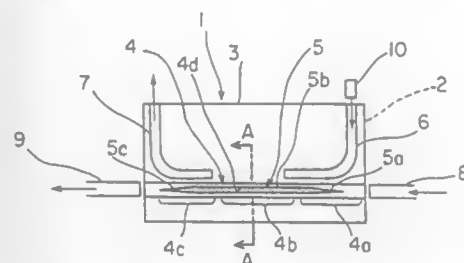


1. An optical isolator comprising:
a first parallel flat double refractive crystal having a crystal optical axis and a thickness of $a - \Delta a$, wherein a is a predetermined thickness;
a first Faraday rotor for rotating the plane of polarization of a beam;
a second parallel flat double refractive crystal having a crystal optical axis and a thickness of $\sqrt{2}a$;
a second Faraday rotor for rotating the plane of polarization of a beam;
a third parallel flat double refractive crystal having a crystal optical axis and a thickness of a ;
a fourth parallel flat double refractive crystal having a crystal optical axis and a thickness of a ; and
at least one permanent magnet for magnetizing said first and second Faraday rotors;
wherein Δa is determined to satisfy the condition that a beam emitted from said optical isolator is coincident with an axial direction of an incident beam entering said first parallel flat double refractive crystal of said optical isolator.

5,381,262
PLANAR WAVE GUIDE TYPE OPTICAL AMPLIFIER
Tadao Arima, and Koji Okamura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 11, 1993, Ser. No. 104,662
Claims priority, application Japan, Aug. 18, 1992, 4-219027
Int. Cl.⁶ G02B 6/26

U.S. Cl. 359—341

11 Claims



1. A planar wave guide type optical amplifier for amplifying a light signal, comprising:
a first core formed to a bar shape on a substrate; and
a light amplifying region composed of a part of said first core, having a configuration extending to the longitudinal direction of said first core, and doped with a rare earth element;
said amplifying region having a taper-shaped configuration at least on one of the ends in the longitudinal direction thereof.

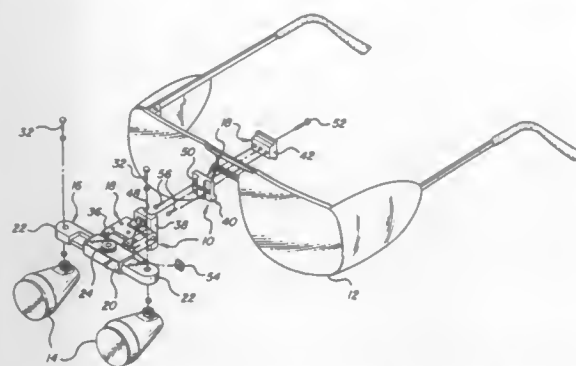
5,381,263
FIVE-DEGREE-OF-FREEDOM OCULAR MOUNTING ASSEMBLY

David Nowak, Dexter, and Richard Kim, Ann Arbor, both of Mich., assignors to General Scientific Corporation, Ann Arbor, Mich.

Filed Jul. 19, 1993, Ser. No. 93,831
Int. Cl.⁶ G02B 23/18; G02C 9/00

U.S. Cl. 359—411

8 Claims

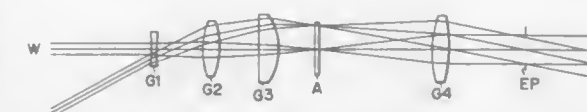


1. A five-degree-of-freedom ocular mounting assembly, comprising:
a rectangular-shaped ocular support assembly housing having a rigidly attached view angle hinge pin with opposing ends;
a pair of ocular support arms slidably disposed within the assembly housing for supporting a pair of ocular devices rotatably attached to the ends of the ocular support arms, each ocular support arm having a slot with a set of serrated teeth, the teeth being substantially enclosed within the housing during operation;
an interpupillary adjustment knob on the assembly housing having a set of serrated teeth which engage with the serrated teeth in the slots of the ocular support arms;
an eyeglass mount having a protruding pad with parallel

sides and a rigidly-attached flip-up hinge pin with opposing ends;
a pair of clamp assembly members having slots that engage the flip-up hinge pin and the view-angle hinge pin, the assembly providing means for independent adjustment of each end of each pin;
a height adjustment rail that engages with the pad on the eyeglass mount to allow the height of the ocular devices to be adjusted; and
means to lock the pad into the channel at a desired height, wherein rotation of the interpupillary adjustment knob causes the ocular support arms to slide in and out of the assembly housing for adjustment of the interpupillary distance between the two ocular devices, the convergence angle and view direction of the two ocular devices being adjusted by rotating the ocular devices, the ocular support assembly about the view angle hinge pin and the ocular devices are flipped up out of the way by rotating the ocular support assembly and clamp assembly members about the flip-up hinge pin.

5,381,265
KEPLERIAN ZOOM FINDER OPTICAL SYSTEM
Koichi Ohshita, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Apr. 9, 1993, Ser. No. 44,600
Claims priority, application Japan, Apr. 16, 1992, 4-096642
Int. Cl.⁶ G02B 23/14, 15/17
U.S. Cl. 359—422

6 Claims



1. A Keplerian zoom finder optical system having an objective lens comprising, in succession from the object side, a first lens unit of negative refractive power, a second lens unit of positive refractive power and a third lens unit of positive refractive power and having positive refractive power as a whole, and an eyepiece of positive refractive power for enlarging and observing the focus image of said objective lens there-through, the air gap between said first lens unit and said second lens unit being varied to thereby vary finder magnification, said Keplerian zoom finder optical system satisfying the following condition:

$$0.44 < D/f_w < 0.80$$

(1)

where

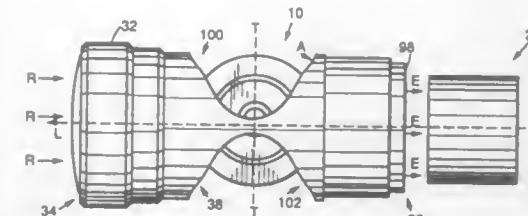
D : the back focal length of the whole objective lens;
 f_w : the focal length of the objective lens at the wide angle end.

5,381,264
MULTIPLE FIELD OF VIEW SENSOR LENS ASSEMBLY
David R. Wickholm; James S. Tingstad; Robert S. Haek, and Rene D. Perez, all of Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Division of Ser. No. 765,787, Sep. 19, 1991, Pat. No. 5,282,087.

This application Jun. 1, 1993, Ser. No. 69,333
The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.
Int. Cl.⁶ G02B 23/00

U.S. Cl. 359—419

7 Claims



1. In an imaging system having an optical axis and a sensor aligned therewith, a multiple field of view sensor lens assembly comprising:

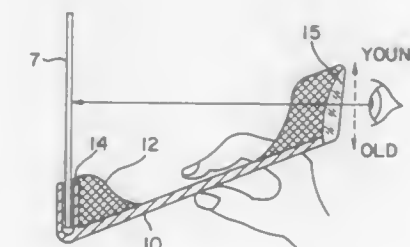
rotatable telescope means for providing first and second fields of view for said sensor, said first field of view being along a first axis thereof and said second field of view being along a separate second axis thereof; and
means for rotating said telescope means from a first orientation at which said first axis is aligned with said optical axis to a second orientation at which said second axis is aligned with said optical axis and to a third orientation at which said first axis is aligned with said optical axis;
wherein said telescope means includes a housing and a first lens arrangement having first, second and third lens elements circumscribing said first axis, said first lens arrangement positioned within said housing proximate a first end thereof and a second lens arrangement having fourth, fifth, sixth and seventh lens elements circumscribing said first axis, said second lens arrangement positioned within said housing proximate a second end thereof.

5,381,266
STEREOVIEWER INCLUDING LENSES OF VARYING FOCAL DISTANCE

Shigeo Mizukawa, and Tsuneo Yokoyama, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan
Division of Ser. No. 813,530, Dec. 26, 1991, Pat. No. 5,218,470.
This application Feb. 9, 1993, Ser. No. 15,341
Claims priority, application Japan, Jan. 19, 1991, 3-12867; Jan. 19, 1991, 3-12868

Int. Cl.⁶ G02B 27/22, 3/10
U.S. Cl. 359—466

3 Claims



1. A stereoviewer comprising binocular lenses for observing stereoscopic photographs three-dimensionally, wherein the thickness of said binocular lenses is varied so that the focal distance is different between the upper portion and the lower portion of said binocular lenses.

5,381,267
MOVABLE HEAD-UP-DISPLAY (HUD) COMBINER
ASSEMBLY INCLUDING LOCKING LINKAGE
MECHANISM

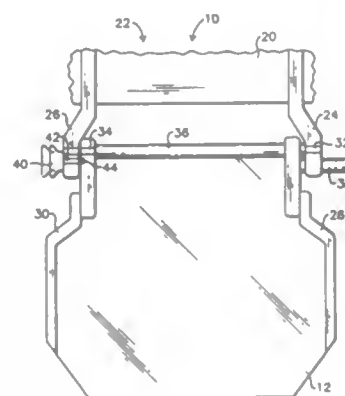
George R. Woody, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 12, 1993, Ser. No. 44,786

Int. Cl.⁶ G02B 27/14

U.S. Cl. 359—632

14 Claims



1. A movable head-up-display (HUD) combiner assembly, comprising:
- a combiner;
 - a four bar linkage means for supporting the combiner for movement between an upper storage position and a lower operating position, including:
 - a fixed link;
 - a movable primary link which is pivotally connected to the fixed link and carries the combiner;
 - a movable secondary link which is pivotally connected to the fixed link; and
 - a connecting link which is pivotally connected to the primary link and to the secondary link;
 - stop means for stopping movement of the primary link when the combiner is moved away from said storage position to said operating position; and
 - overcenter lock means for locking the linkage means against the stop means when the combiner is in said operating position.

5,381,268
COMPACT WIDE ANGLE ZOOM LENS

Harnao Sato, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,221

Claims priority, application Japan, Mar. 5, 1992, 4-047446

Int. Cl.⁶ G02B 15/14

U.S. Cl. 359—691

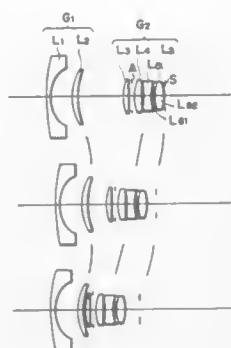
26 Claims

1. A wide angle zoom lens comprising a first lens group and a second lens group:
- wherein said first lens group is disposed closer to an object than said second lens group and consists of a negative meniscus lens and a positive lens in the named order from the object side, said negative meniscus lens having at least one aspherical surface and being convex on the object

side, said positive lens being convex on the object side, whereby said first lens group has a negative overall refracting power;

wherein said second lens group comprises a plurality of lenses and has a positive overall refracting power;

wherein a magnification change is effected by changing an air gap between said first lens group and said second lens group; and



wherein when a focal length of said first lens group is f_1 and an axial air gap between said negative meniscus lens and said positive lens in said first lens group is d_{1-2} , the following condition is satisfied:

$$0.2 \leq d_{1-2}/|f_1| \leq 0.5.$$

5,381,269
ZOOM LENS

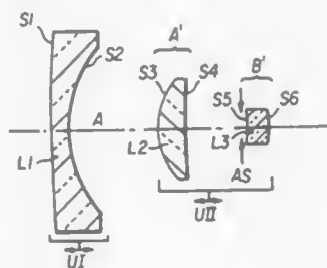
Lee R. Estelle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1993, Ser. No. 40,231

Int. Cl.⁶ G02B 15/14

U.S. Cl. 359—691

33 Claims



1. A zoom lens comprising in order from the object side:
- a front lens unit having a negative refractive power, said

5,381,271

Patent Not Issued For This Number

5,381,272
LENS BARREL WITH IMPROVED DRUM
ARRANGEMENT

Minoru Kato, Kawasaki; Hiroshi Terunuma, Ichikawa, and Yoshihiro Takeuchi, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

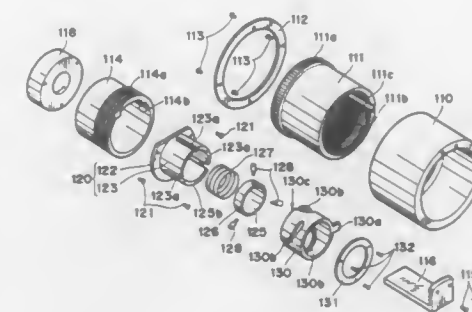
Filed Jan. 22, 1993, Ser. No. 8,361

Claims priority, application Japan, Jan. 27, 1992, 4-002434[U]; Sep. 25, 1992, 4-256968

Int. Cl.⁶ G02B 7/02

U.S. Cl. 359—823

6 Claims



1. A lens barrel comprising:
- a fixed drum;
 - a rotary drum rotatably fitted in said fixed drum;
 - a lens drum, disposed in said rotary drum, for accommodating a lens, said lens drum being movable in an optical-axis direction of the lens with a rotation of said rotary drum; and
 - an adjusting drum disposed in a subject-side position between said fixed drum and said rotary drum, said adjusting drum thread-engaging with said fixed drum and rotatably supporting said rotary drum, and being rotatable relative to said fixed drum for adjusting a position of said rotary drum with respect to said fixed drum in said optical-axis direction.

5,381,273
OBJECT LENS HOLDER, METHOD FOR
PREPARATION OF THE OBJECT LENS HOLDER AND
OBJECT LENS DRIVING DEVICE EMPLOYING OBJECT
LENS HOLDER

Yoshimasa Goda, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,661

Claims priority, application Japan, Apr. 26, 1991, 3-123030

Int. Cl.⁶ G02B 7/02; G11B 7/00

U.S. Cl. 359—827

9 Claims

1. An object lens holder for holding an object lens comprising:
- a bobbin part formed by abutting and connecting first and second bobbin halves which are counterparts to each other;
 - a holder part formed by abutting and connecting first and second holder halves which are counterparts to each other;

front lens unit being movable on an optical axis for zooming operation, said front lens unit comprising a negative lens element and including no positive lens elements; and a rear lens unit having positive refractive power, said rear lens unit being movable on the optical axis for zooming operation, said rear lens unit comprising a plurality of optical elements arranged into two subunits, one of said subunits having positive optical power, the other of said subunits having negative optical power, said zoom lens having only two lens units.

5,381,270

COMPACT ZOOM LENS SYSTEM

Michio Cho, Saitama, Japan, assignor to Fujifilm Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 22, 1993, Ser. No. 79,740

Claims priority, application Japan, Jun. 22, 1992, 4-162964

Int. Cl.⁶ G02B 15/14

U.S. Cl. 359—692

4 Claims

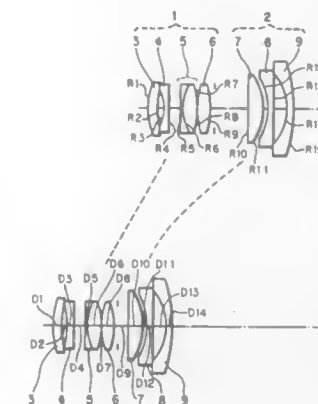
1. A zoom lens system having a shortened overall length and consisting of: a forward lens group of a positive power and a rearward lens group of a negative power arranged in this order from the object side, the magnification of said zoom lens system being changed by changing the spacing between said forward lens group and said rearward lens group, said forward lens group comprising first lens means of a positive power with a highly convex surface directed to the object, second lens means of a negative power, third lens means including at least a negative lens and a positive lens and having a positive power as a whole, and fourth lens means of positive power, arranged in this order from the object side, said rearward lens group comprising fifth lens means of a positive power with a highly convex surface directed to the image surface side, sixth lens means of a negative power, and seventh lens means of a negative power with a highly concave surface directed to the object, arranged in this order from the object side, said zoom lens system satisfying the following conditions:

$$1.40 < f_w/f_F < 2.0$$

(1)

$$N_p < N_n$$

(2)



$$-0.45 < f_6/f_7 < -0.1$$

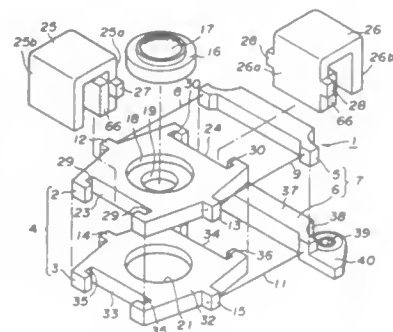
(3)

$$0.5 < f_6/f_7 < 0.8$$

(4)

wherein f_F is the focal length of said forward lens group, f_w is the focal length of said zoom lens system in the wide-angle mode, N_p is the index of refraction of said positive lens of the third lens means, N_n is the index of refraction of said negative lens of the third lens means, f_6 is the focal length of the sixth lens means, f_7 is the focal length of the seventh lens means, and f_6/f_7 is the resultant focal length of the sixth and seventh lens means.

said holder part being used as a mounting supporting part to a supporting base plate;
first and second resilient deflecting members arranged in parallel to each other for interconnecting said first bobbin half and said first holder half; and



third and fourth resilient deflecting members arranged in parallel to each other and to said first and second resilient deflecting members for interconnecting said second bobbin half and said second holder half.

5,381,274

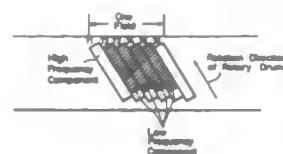
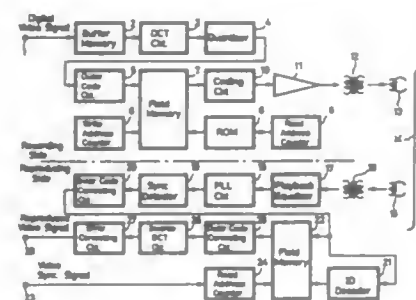
APPARATUS AND METHOD FOR RECYCLING AND REPRODUCING A DIGITAL VIDEO SIGNAL
Mamoru Ueda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,701

Claims priority, application Japan, Mar. 26, 1992, 4-068481
Int. Cl.⁶ G11B 5/09; H04N 5/76

U.S. Cl. 360—48

26 Claims



1. Apparatus for recording a digital video signal, comprising:

- means for receiving a digital video signal comprised of successive fields;
- means for orthogonally transforming each field of said digital video signal to produce a transformed signal;
- means for quantizing said transformed signal to produce a quantized signal having a low frequency component and a high frequency component;
- means for arranging said quantized signal in a predetermined format for recording, said format including beginning and ending portions containing substantially only said high frequency component of said quantized signal and a middle portion between said beginning and ending portions

and containing substantially only said low frequency component of said quantized signal; and
means for recording said high frequency component of said quantized signal for each said field substantially only in beginning and ending tracks of a plurality of tracks on a magnetic tape and said low frequency component of said quantized signal for each said field substantially only in middle tracks of said plurality of tracks disposed between said beginning and ending tracks on said magnetic tape.

5,381,275

APPARATUS AND METHOD FOR RECORDING DIGITAL DATA WITH A CONTROLLED DATA COMPRESSION RATIO

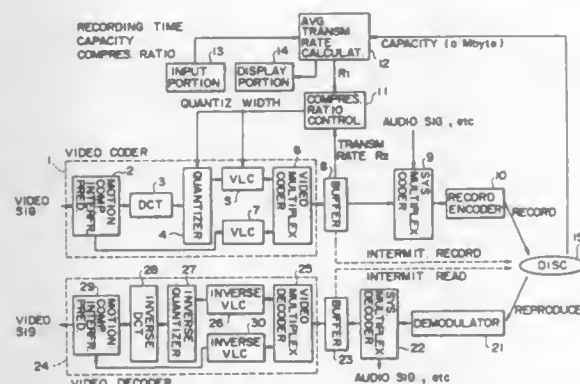
Hajime Nitta, Kanagawa; Masatoshi Takashima, Tokyo; Takehiko Saito, Chiba; Tomihiro Nakagawa, Kanagawa, and Keitaro Yamashita, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 102,841

Claims priority, application Japan, Aug. 28, 1992, 4-254063
Int. Cl.⁶ G11B 5/09; H04N 5/76

U.S. Cl. 360—48

6 Claims



1. Apparatus for recording digital data, comprising:
compression means for compressing digital data in accordance with a compression ratio to produce compressed digital data;
means for calculating an average transmission rate at which said compressed digital data is to be transmitted for recording on a recording medium, said average transmission rate being calculated in accordance with a quantity of information of said digital data and a remaining recording capacity of said recording medium;
control means for controlling the compression ratio of said compression means in accordance with said average transmission rate; and
recording means for recording said compressed digital data on said recording medium.

5,381,276

OPTIMUM RECORDING/REPRODUCING APPARATUS
Kyung-hwan Choi, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Sep. 2, 1993, Ser. No. 115,139

Claims priority, application Rep. of Korea, Sep. 2, 1992, 92-15934

Int. Cl.⁶ G11B 05/09

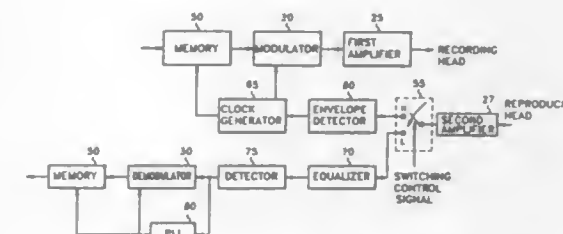
U.S. Cl. 360—51

18 Claims

1. An optimum recording/reproducing apparatus for recording and reproducing digital data, comprising:
(A) a recording apparatus comprising:
a recording head for recording the digital data on a recording medium as recorded data;
a reproducing head for reproducing the recorded data from the recording medium;
a first memory for storing a digital signal;

a modulator for modulating read-out data read out from the first memory according to a modulating clock signal and channel characteristics, and producing modulated data to be supplied at a modulated clock rate to the recording head;

envelope detecting means for detecting and outputting a detected output and an envelope value from the recorded data reproduced by the reproducing head simultaneously with the recording of the modulated data on the recording medium using the recording head, said envelope value being a function of values of the recorded data input to the envelope detecting means; and
clock generating means for generating a generated clock signal whose frequency varies according to the envelope value, whereby the modulating clock signal and the rate at which the read-out data is read out from the



first memory and applied to said modulator are determined according to the generated clock signal; and
(B) a reproducing apparatus comprising:

- a detector for detecting a reproduced digital signal from the recorded data reproduced by the reproducing head and producing an output signal thereby;
- a phase-locked loop (PLL) circuit for detecting the modulated clock rate from the output signal and producing a reproduction clock signal therefrom;
- a demodulator for demodulating the reproduced digital signal according to the reproduction clock signal and the channel characteristics, and producing demodulated data thereby; and
- a second memory for temporarily storing therein the demodulated data and for outputting the demodulated data according to the reproduction clock signal.

5,381,277

METHOD AND APPARATUS FOR DECREASING A TRANSITION TIME OF A READ HEAD FROM A WRITE MODE TO A READ MODE

Jean-Luc Jaffard, Saint Egreve, and Yann Desprez-Le Goarant, Grenoble, both of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Jul. 30, 1993, Ser. No. 100,497

Claims priority, application France, Jul. 31, 1992, 92 09799
Int. Cl.⁶ G11B 15/12, 15/14

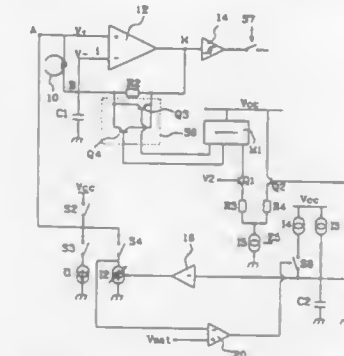
U.S. Cl. 360—62

19 Claims

1. An apparatus for switching a read head from a write mode to a read mode, the apparatus comprising:

- a read head having two ports, a first port connected to a first input terminal of a differential amplifier, a second port connected to a second input terminal of the differential amplifier, wherein the second port is linked to a constant voltage through a capacitor and to an output of the amplifier through a resistor;
- means for generating and outputting a voltage ramp, after a write operation of the read head;
- means for discharging an initial current in the read head, after the write operation, and a means for controlling said discharging means proportionally to said voltage ramp between a first time frame corresponding to a beginning voltage value of the voltage ramp and a second time frame

corresponding to a first threshold voltage value of the voltage ramp;
switching means for shorting out said resistor at least between the first time frame and a third time frame corre-



sponding to a second threshold voltage value of the voltage ramp; and
means for detecting the second threshold voltage and for progressively controlling, upon detection of said threshold voltage, the switching means.

5,381,278

POLARIZATION CONVERSION UNIT, POLARIZATION ILLUMINATION APPARATUS PROVIDED WITH THE UNIT, AND PROJECTOR PROVIDED WITH THE APPARATUS

Junko Shingaki, Atsugi; Hideaki Mitsutake, Tokyo, and Kazumi Kimura, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

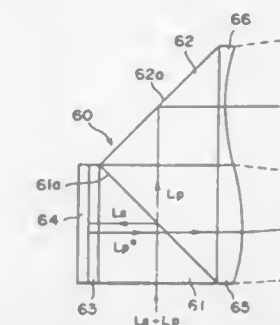
Continuation of Ser. No. 878,723, May 5, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 146,801

Claims priority, application Japan, May 7, 1991, 3-130265; May 17, 1991, 3-140594; May 17, 1991, 3-140683; Jul. 17, 1991, 3-176735

Int. Cl.⁶ G02B 5/30, 27/28; G02F 1/1335; G03B 21/14

U.S. Cl. 359—256

23 Claims



5. A polarization conversion unit for splitting light into a pair of polarized light components having different polarization states, causing the polarization states of the pair of split polarized light components to coincide with each other, and separately outputting the pair of polarized light components having the coinciding polarization states, comprising at least one of:

- a first optical element for converging the polarized light component having a smaller light amount per unit sectional area than that of the other polarized light component of the pair of polarized light components, and a second optical element for diverging the polarized light component having a larger light amount per unit sectional area than that of the other polarized light component of the pair of polarized light components.

5,381,279

DISK DRIVE SYSTEM WITH ADJUSTABLE SPINDLE AND ACTUATOR POWER TO IMPROVE SEEK AND ACCESS PERFORMANCE

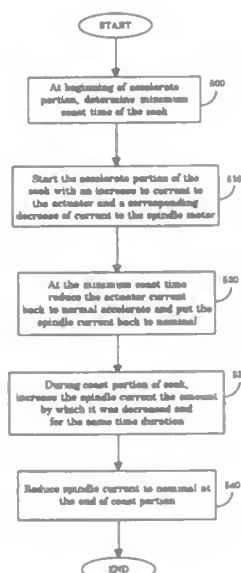
Paul F. Dunn, Longmont, Colo., assignor to Maxtor Corporation, San Jose, Calif.

Filed Oct. 13, 1993, Ser. No. 135,071

Int. Cl.⁶ G11B 21/04, 15/46, 21/02, 5/596

U.S. Cl. 360—70

22 Claims



1. A disk drive system comprising:
 - a disk rotated by a spindle;
 - a spindle motor coupled to the spindle to drive the spindle;
 - a head assembly to perform operations on the disk;
 - an actuator coupled to the head assembly to position the head assembly on predetermined tracks of the disk, said actuator performing a seek of a track by performing at least two sequences comprising an acceleration to a coast velocity and a deceleration from a coast velocity to locate to a predetermined track;
 - an actuator motor coupled to the actuator to drive the actuator;
 - a power supply coupled to the spindle motor and actuator motor to supply power to operate the spindle motor and power to operate the actuator motor; and
 - a controller to control the amount of power supplied to the actuator motor and the amount of power supplied to the spindle motor, said controller providing approximately constant power to the spindle motor in order for the spindle to rotate at a predetermined spindle velocity, said controller providing increased power to the actuator motor during at least one of the sequences, said controller further decreasing the power to the spindle motor during at least a part of the at least one of the sequences to compensate at least in part for the increase in power used by the actuator and decrease the total power used in the system during the at least one sequence portion, said controller further increasing the power to the spindle during a coast portion of the seek during which the actuator moves at an approximate constant coast velocity and decreasing the increased power to the actuator during the coast portion of the seek, said total power increased to the spindle motor being approximately equal to the total power decreased to the spindle motor during the acceleration portions of the seek;
- wherein the seek performance of the actuator is increased while the peak power consumed is minimized.

5,381,280

MAGNETIC RECORDING AND REPRODUCING APPARATUS FOR RECORDING AND REPRODUCING IN BOTH ANALOG AND DIGITAL MODES

Min-su Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Feb. 16, 1993, Ser. No. 21,173

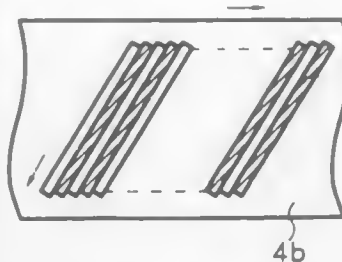
Claims priority, application Rep. of Korea, Feb. 15, 1992,

92-2235

Int. Cl.⁶ G11B 5/02

U.S. Cl. 360—75

6 Claims



1. A magnetic recording and reproducing apparatus for recording information on a magnetic tape and for reproducing information recorded on the magnetic tape, said apparatus comprising:
 - a rotating head drum having at least one analog signal head and at least one digital signal head mounted on an outer surface thereof;
 - control means for selectively activating one of said analog and digital signal heads and causing said rotating head drum to rotate in a first direction when said at least one analog signal head is activated and a second direction when said at least one digital signal head is activated.

5,381,281

DISK DRIVE SYSTEM USING MULTIPLE EMBEDDED QUADRATURE SERVO FIELDS

Louis J. Shrinkle, and John P. Squires, both of Boulder, Colo., assignors to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 860,299, Mar. 27, 1992, abandoned,

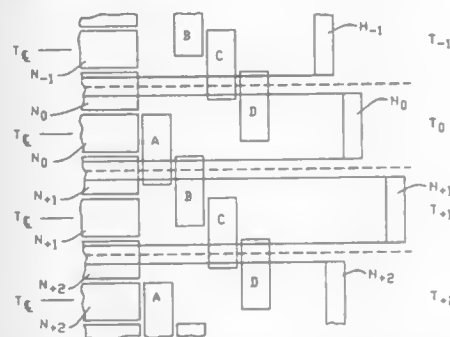
which is a continuation of Ser. No. 780,443, Oct. 17, 1991,

abandoned, which is a continuation of Ser. No. 386,504, Jul. 27, 1989, abandoned. This application Jun. 24, 1993, Ser. No. 83,192

Int. Cl.⁶ G11B 5/596

U.S. Cl. 360—77.08

18 Claims



1. A servo pattern for providing servo information for the positioning of a head with respect to concentric data tracks provided on the surface of a data storage media, wherein each data track includes a series of data sectors, said servo pattern comprising plurality of servo burst fields provided in each data sector and in a series ordered along the length of each data sector, wherein a subset of at least two of said servo burst fields in a predetermined data sector define the data track center line of a predetermined data track as the mid-point of the mutual

radial overlap of said subset and wherein each one of said plurality of servo burst fields radially uniformly overlaps its two radially-nearest ones of said plurality of servo burst fields, wherein each said subset includes a quad of servo burst fields, wherein the radial width (W) of a servo burst field is related to the track radial width (T) by $0.5T < W \leq 1.0T$, wherein radially-nearest pairs of servo burst fields of said quad overlap by $W-(T/2)$, and wherein a data track center line is defined as crossing at the radial mid-point in the overlap of a pair of servo burst fields, wherein said head obtains a read voltage amplitude (V) corresponding to the proportion of the whole of a servo burst field that it crosses over, wherein a quad of servo burst fields are designated as A, B, C, and D, respectively, and wherein said head is aligned with a predetermined data track center line when a position error signal equals $(V_A + V_B) - (V_C + V_D) = 0$.

5,381,282

INTER-SAMPLE SWITCHING OF SERVO CONTROL IN DIRECT ACCESS STORAGE DEVICES

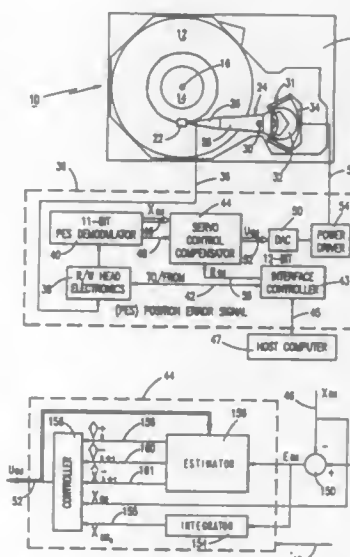
Koichi Arai, Fujisawa, Japan; Hal H. Ottesen, Rochester, Minn.; Arun Sharma, New Rochelle; Muthuthamby Sri-Jayantha, Ossining, both of N.Y., and Michael C. Stich, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1991, Ser. No. 779,438

Int. Cl.⁶ G11B 5/596

U.S. Cl. 360—78.09

28 Claims



1. A direct access storage device including a servo loop for positioning a head for interaction with a storage medium having position data recorded in selected regions thereon, comprising:

- an actuator means for positioning the head so that the head periodically acquires said position data from the medium;
- decoding means for decoding the position data acquired by the head from the medium and for providing decoded position data;
- a driver circuit for supplying energy to said actuator means;
- a controller for providing an output for controlling said driver circuit to supply said energy based on inputs representative of at least a position of said head as defined by said decoded position data received from said decoding means, and data representative of a position to which said head is to be moved; and
- output control means for changing magnitude of the output of said controller at times between times of receipt of position data from the medium, said output control means including:

- estimating means for estimating an actual velocity of said head at a time of receipt of subsequent position data;
- interpolation means for calculating an estimated time when the actual velocity of the head will match a desired velocity; and
- switching means for causing the magnitude of said output to change at the estimated time calculated by said interpolation means.

5,381,283

TAPE LOADING APPARATUS

Pil-hong Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

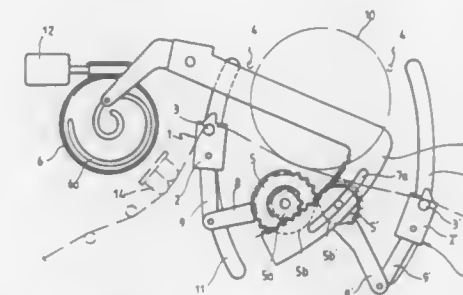
Filed Aug. 20, 1992, Ser. No. 932,546

Claims priority, application Rep. of Korea, Sep. 26, 1991, 9116818

Int. Cl.⁶ G11B 5/027, 5/008

U.S. Cl. 360—85

19 Claims



1. A tape loading apparatus having a rotary head drum wherein a tape is extracted from a cassette and wrapped around at least a portion of the rotary head drum during a loading operation, said apparatus first performing a half-loading operation, wherein the tape is placed in contact with a relatively small portion of the rotary head drum, and then a fully-loading operation, wherein the tape is placed in contact with a relatively large portion of the rotary head drum, the apparatus comprising:

- a pair of tape movement guides;
- a pair of gear members each coupled to a different one of said tape movement guides; and
- drive means coupled to said pair of gear members for driving said pair of gear members such that during the half-loading operation, one of said gear members moves one of said tape movement guides from a first position which is remote from said rotary drum head to a half-loaded position to accomplish said half-loading operation, and the other one of said gear members idles so that the other one of said tape movement guides remains at a second position which is remote from the rotary drum head, and then during the fully-loading operation each of said gear members moves to move each of said tape movement guides to accomplish said fully-loading operation.

5,381,284

SPACER RING RESERVOIR FOR MAGNETIC RECORDING DISK LUBRICANT

Thomas A. Gregory, and Christopher G. Keller, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 885,323, May 18, 1992, abandoned.

This application Jun. 17, 1994, Ser. No. 261,654

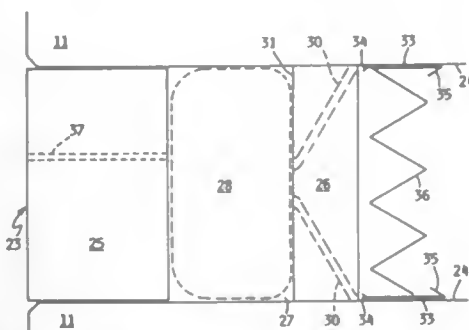
Int. Cl.⁶ G11B 17/32, 5/60

U.S. Cl. 360—97.02

23 Claims

1. A magnetic disk data storage device comprising:
 - a disk assembly including at least one magnetic data storage disk with an inner diameter and an outer diameter including a liquid lubricant film overlying a disk data storage

surface, said disk having a plurality of data storage tracks for recording data on said data storage surface;
a lubricant reservoir system adjacent the disk inner diameter and radially inward of the data storage tracks on said data storage surface;
said reservoir system including a lubricant reservoir and a metering means for releasing lubricant from said reservoir during device operation at a rate substantially equal to a

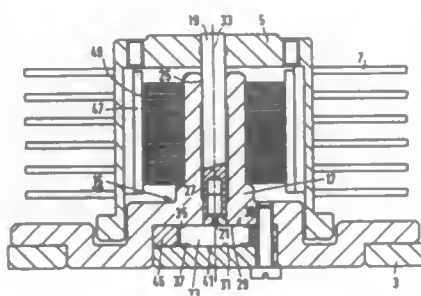


rate of lubricant film depletion caused by disk rotation, said metering means being located radially outward from said lubricant reservoir and comprising a compliant element urged against the disk surface, wherein metering is provided by surface irregularities in at least one of the confronting surfaces of said disk and said compliant element; and
means for delivering lubricant metered from said reservoir to the disk data storage surface.

5,381,285 BEARING ARRANGEMENT, DEVICE WITH ROTATABLE DISC, AND MAGNETIC-TAPE APPARATUS

Marinus J. J. Dona, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 876,849, Apr. 30, 1992, abandoned.
This application May 9, 1994, Ser. No. 240,194
Claims priority, application European Pat. Off., Jul. 5, 1991, 91201738

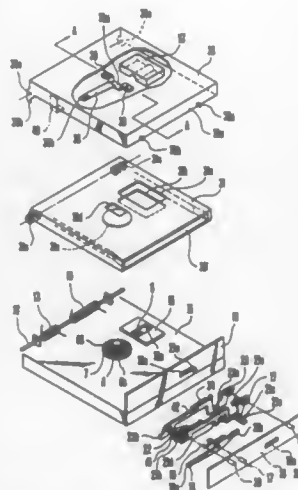
Int. Cl.⁶ G11B 5/027, 17/08; F16C 23/04
U.S. Cl. 360—98.07 13 Claims



1. A bearing arrangement comprising a rotatable shaft having a central axis, an auxiliary member and a housing, which shaft is secured to the auxiliary member, the shaft being radially supported only and the auxiliary member being axially supported only in the housing, the shaft being secured to the auxiliary member by a hinge, the hinge being axially rigid so as to prevent relative axial displacement between the shaft and the auxiliary member while permitting small angular displacements therebetween.

5,381,286 RECORDING OR REPRODUCING APPARATUS INCLUDING A DISC CARTRIDGE LOADING MECHANISM

Nobuo Tezuka, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 526,190, May 18, 1990, Pat. No. 5,119,247.
This application Mar. 27, 1992, Ser. No. 859,345
Claims priority, application Japan, Apr. 25, 1983, 58-72429; Oct. 27, 1983, 58-201517; Mar. 9, 1984, 59-45196
Int. Cl.⁶ G11B 5/016, 5/012
U.S. Cl. 360—99.05 12 Claims



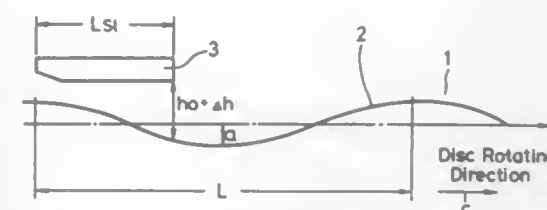
1. An apparatus for recording and/or reproducing information on and/or from a disc-shaped recording medium housed in a cassette, comprising:
 - (a) recording or reproducing means for recording and/or reproducing the information on and/or from said recording medium;
 - (b) rotary driving means for engaging an engaging part formed on said recording medium and for rotating said recording medium;
 - (c) cassette holding means movable from a first position where said cassette holding means can receive said cassette to a second position where said cassette can engage with said rotary driving means;
 - (d) pressing means having a pressing part for pressing the engaging part of said recording medium, wherein as said recording medium is moved by said cassette holding means from said first position to said second position, said pressing part is caused to come into contact with said engaging part and said pressing part is pressed against said engaging part under the action of a pressing force of said pressing means to press said engaging part onto said rotary driving means to mount it thereon, and said pressing force of said pressing means is released to separate said pressing part from said engaging part; and
 - (e) control means for enabling operation of said recording or reproducing means after the pressing force of said pressing means against the engaging part of said recording medium has been released.

5,381,287 HARD DISC DRIVE

Kazuhide Kawazoe, and Osamu Morita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 946,612, Sep. 18, 1992, abandoned. This application May 10, 1994, Ser. No. 240,495
Claims priority, application Japan, Sep. 20, 1991, 3-242091
Int. Cl.⁶ G11B 5/60

U.S. Cl. 360—103 2 Claims
1. A hard disc drive utilizing a discrete type recording me-

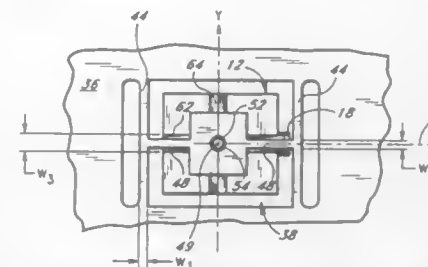
dium having an information pattern with concave and convex portions formed therein characterized in that the ratio between a maximum wavelength L_{max} of said information pattern of said discrete type recording medium and a length L_{SL} of a



floating slider in the running direction relative to said recording medium is given by:

$$L_{SL}/L_{max} > 1.$$

5,381,288
CENTER MOMENT SUSPENSION ASSEMBLY
Raymond M. Karam, II, Goleta, Calif., assignor to Applied Magnetics Corporation, Inc., Goleta, Calif.
Filed Jan. 16, 1992, Ser. No. 899,449
Int. Cl.⁶ G11B 5/48
U.S. Cl. 360—104 17 Claims

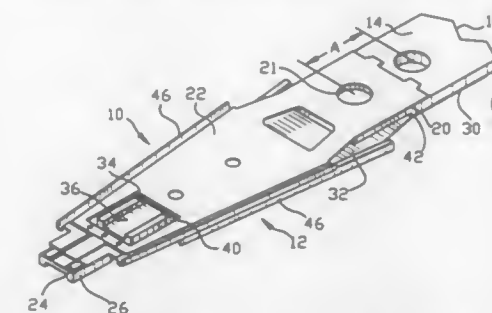


1. A suspension for suspending a magnetic head over a spinning disk, wherein said magnetic head flies above said spinning disk, said suspension comprising:
 - a generally rigid support member defining a plane and a longitudinal axis;
 - a bonding tab having a center point positioned within the plane defined by said support member; and
 - two flexible transverse arms supporting said bonding tab and being positioned generally parallel to an intersecting axis that is generally perpendicular to said longitudinal axis of said support member allowing said bonding tab to pitch around said intersecting axis, said transverse arms extending from opposite sides of said bonding tab, wherein said center point remains positioned within said plane as said bonding tab pitches around said intersecting axis.

5,381,289
SUSPENSION FOR IN-LINE OFFSET HEAD MOUNTING
Richard G. Fiedler, Hutchinson, Minn., assignor to Hutchinson Technology Incorporated, Hutchinson, Minn.
Filed Feb. 26, 1993, Ser. No. 23,620
Int. Cl.⁶ G11B 5/48

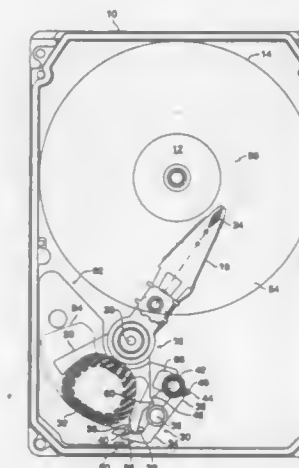
- U.S. Cl. 360—104 41 Claims
1. In a disk drive for positioning transducer heads at selected locations on respective surfaces of a plurality of axially mounted rotatable disk-media, a head suspension for attachment to a rigid actuator arm of said disk drive, said head suspension comprising:
 - a first load beam joined by its proximal end to a first face of the rigid actuator arm, said first load beam having a transducer head on a distal end of said first load beam, a center surface of the first load beam provided with an aperture,

sized and adapted for permitting a transducer head of a second load beam to project therethrough, so that the transducer head of the second load beam is in position for



accessing a surface of a second disk media, said second disk media surface being opposed to a first disk media surface, which is in position for being accessed by the transducer head of the first load beam.

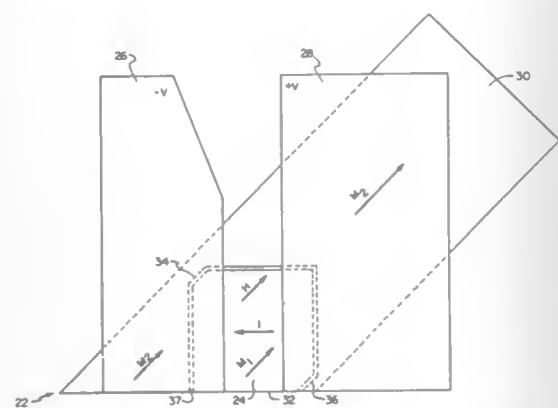
5,381,290
BI-STABLE MECHANICAL LATCH FOR DISK DRIVE
ACTUATOR
Chunjer C. Cheng, Saratoga, Calif., assignor to Ministor Peripherals International Limited, San Jose, Calif.
Filed Mar. 3, 1992, Ser. No. 922,040
Int. Cl.⁶ G11B 5/54
U.S. Cl. 360—105 5 Claims



1. In a disk drive mechanism including an actuator mounted at a first pivot point, said actuator including a first radially-extending arm including a data head mounted thereon and a second radially-extending arm having an actuator coil mounted thereon, said first pivot point positioned with respect to a data disk so that said data head may be positioned over a data zone and a landing zone on said data disk, a static bi-stable mechanical disk drive actuator latch comprising:
 - a latch member mounted at a second pivot point, said latch member rotatable between an open position defined by an opened-position stop and a closed position defined by a closed-position stop, said latch member including first and second arms radially extending from said pivot point, said first arm including a hook located proximate to a distal end thereof and having a first magnetic mass mounted thereon, said second arm including a latch coil and a second magnetic mass mounted thereon, and having a tang extending in a direction generally towards said actuator;
 - said second radially extending arm of said actuator including

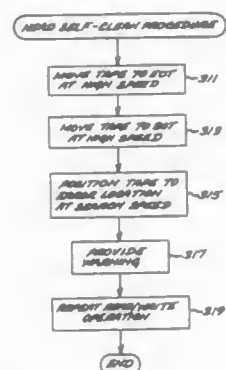
a protuberance extending in a direction generally towards said tang, and a tip nestable in said hook;
said first and second pivot points positioned with respect to one another such that said tang will engage said protuberance at a predetermined position when said actuator is rotating so as to place said data head over said landing zone and such that said tip will be captured by said hook when said actuator is positioned such that said data head is over said landing zone and said latch member is in said closed position; and
a magnet positioned proximately to said actuator coil, said latch coil, and said first and second magnetic masses; wherein said magnet has a field strength selected such that, said magnet is positioned such that, and said first and second magnetic masses are sized such that, the rotational position of said actuator may be controlled by passing electric current through said actuator coil, a magnetic force of attraction between said magnet and said first magnetic mass will hold said latch member at said closed position, passing an electric current through said latch coil will move said latch member to said open position, and a magnetic force of attraction between said magnet and said second magnetic mass will hold said latch member at said open position after the electric current is turned off.

5,381,291
**VERTICAL CONTACT - CANTED MAGNET
MAGNETORESISTIVE SENSOR**
Timothy A. Madsen, Bloomington, and Daniel J. O'Connor, Prior Lake, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Feb. 25, 1994, Ser. No. 202,052
Int. Cl.⁶ G11B 5/127
U.S. Cl. 360—113 7 Claims



1. A magnetoresistive sensor comprising:
an air bearing surface;
a generally rectangular magnetoresistive region having a first edge that is parallel to the air bearing surface and a plurality of additional edges that are not parallel to the air bearing surface;
first and second current contacts electrically coupled to the magnetoresistive region and having contact edges generally perpendicular to the air bearing surface; and
a permanent magnet layer having a magnetization vector directed at approximately 45° to the air bearing surface, wherein the plurality of additional edges are generally within the permanent magnet layer.

5,381,292
METHOD FOR SELF-CLEANING DAT DRIVE TAPE HEADS
Robert C. Richmond, Laguna Hills, Calif., assignor to Archve Corporation, Costa Mesa, Calif.
Division of Ser. No. 679,668, Apr. 3, 1991, Pat. No. 5,253,126.
This application Jul. 13, 1993, Ser. No. 90,972
Int. Cl.⁶ G11B 5/10
U.S. Cl. 360—128 13 Claims



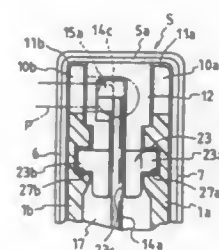
1. A process for cleaning the tape heads of a DAT drive pursuant to the occurrence of an error during a data read or write operation, where the error is one that could not be corrected by alternated re-reads or re-writes of a corresponding, desired section of an engaged tape, said tape having a predefined length with first and second end portions, said read or write operation each having a normal tape speed associated therewith, said method comprising the sequential steps of:
(a) first moving the engaged tape relative to the tape heads at a speed higher than the normal read or write speed, so as to pass the length of engaged tape from the desired section to the first end of tape portion across the heads at said higher speed;
(b) second moving the engaged tape relative to the tape heads at said higher-than normal speed so as to pass the length of engaged tape from the first end of tape portion to the second end of tape portion across the heads at said higher speed;
(c) third moving the engaged tape relative to the tape heads so as to place the heads over the desired tape section; and
d) after said third moving step, repeating the operation that resulted in occurrence of the error.

5,381,293
DISK CARTRIDGE HAVING SLIDER SUPPORTED SHUTTER WITH COMPRESSIBLE PROJECTIONS TO SECURE THE SHUTTER-SLIDER TO THE CARTRIDGE
Noboru Akiyama, and Katsumi Kameda, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan
Division of Ser. No. 116,807, Sep. 3, 1993, Pat. No. 5,325,257.
This application Apr. 12, 1994, Ser. No. 226,752
Claims priority, application Japan, Feb. 14, 1990, 2-013181[U]; Feb. 19, 1990, 2-015465[U]; Feb. 26, 1990, 2-018575[U]; Mar. 15, 1990, 2-026509[U]; Mar. 15, 1990, 2-026510[U]; Mar. 28, 1990, 2-032587[U]; Apr. 17, 1990, 2-040851[U]; Apr. 17, 1990, 2-040853[U]; Apr. 17, 1990, 2-040854[U]; Apr. 17, 1990, 2-040855[U]; Apr. 17, 1990, 2-040856[U]; Apr. 17, 1990, 2-040857[U]; Apr. 17, 1990, 2-040858[U]; Apr. 17, 1990, 2-040859[U]; Apr. 17, 1990, 2-040860[U]; Apr. 17, 1990, 2-040861[U]
Int. Cl.⁶ G11B 23/03
U.S. Cl. 360—133 9 Claims

1. A structure of a slider for supporting a shutter provided slidably on a case for accommodating a disk to open and close a head hole for receiving a reading/writing head and a spindle hole for receiving a spindle hole for rotating the disk, the shutter being urged by a spring member in its closing direction,

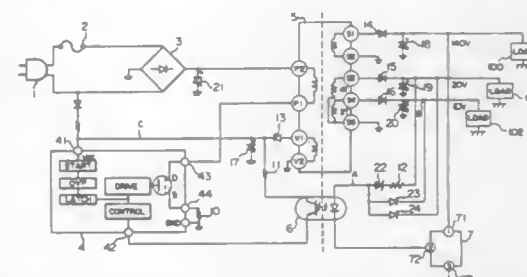
the slider being slid in a guide portion provided on a front end of the case, which comprises:

a shutter support portion for supporting the shutter; and
a pair of engaging projection bodies respectively provided at front and rear portions of the shutter support portion, the



engaging projection bodies being pushed into the guide portion, each engaging projection being provided with a dividing groove to permit each engaging projection to shrink in its widthwise direction thereby to enable the slider to be pushed into the guide portion.

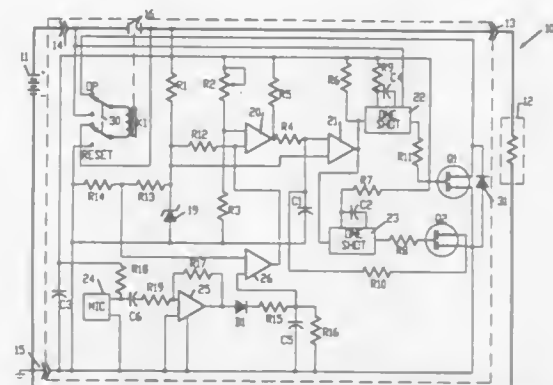
5,381,294
DEVICE FOR PROTECTING POWER SUPPLY CIRCUIT
Hirofumi Konishi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 3, 1992, Ser. No. 940,321
Claims priority, application Japan, Sep. 10, 1991, 3-229962
Int. Cl.⁶ H02H 7/10
U.S. Cl. 361—18 14 Claims



1. A device for protecting a power supply, comprising:
a power transformer including a primary first winding having a first end which is connected to an output of a full-wave rectifier of an a.c. voltage;
a power supply output control means including a switching output unit connected to a second end of the primary first winding of said power transformer and having a power supply voltage input which is connected to an a.c. voltage via a first diode;
a primary second winding having a first end connected to the voltage input of said power supply output control means via a second diode and a second end which is grounded;
a power supply voltage feedback control photocoupler disposed between the primary second winding and a first secondary winding of said power transformer;
a third diode having an anode connected to said power supply voltage feedback control photocoupler and a cathode connected to an output terminal of the first secondary winding of said power transformer; and
a voltage control error amplifier disposed between the secondary winding of said power transformer and the ground;
said power supply voltage feedback control photocoupler having an emitter connected to a control terminal of said power supply output control means, a collector connected to said power voltage input, a cathode connected to a load voltage control terminal of said voltage control error

amplifier, and an anode connected to said anode of said third diode.

5,381,295
RESETABLE BATTERY DRAIN LIMITATION CIRCUIT WITH IMPROVED LATCHING RELAY
Larry Rund, Idyllwild; Richard P. Hewitt, Romoland, and Stuart Sigafos, Perris, all of Calif., assignors to Datamax Electronics, Inc., Romoland, Calif.
Continuation-in-part of Ser. No. 806,867, Dec. 12, 1991. This application Jul. 14, 1992, Ser. No. 912,800
Int. Cl.⁶ H02H 7/00; B60L 1/00
U.S. Cl. 361—92 50 Claims



1. In an engine powered vehicle or equipment having a battery operated electric starter motor and other electrical accessories, said battery having a threshold voltage level below which there may not be enough energy in said battery to operate said electric starter motor to start said engine, a battery drain limitation device, comprising:
a first detection means for determining a low voltage condition on said battery, said low voltage condition being a battery voltage at or below said threshold voltage level;
a second detection means for determining whether said engine is running;
interrupting means, responsive to said first and second detection means, for disconnecting the flow of current from said battery when said low voltage condition is detected and when said engine is not running;
reset means for reconnecting the flow of current from said battery to said starter motor and said accessories; and
means for guarding against inadvertent failure of a human operator to reactivate said battery drain limitation device following activation of said reset means, said guarding means further comprising means for reactivating said battery drain limitation device upon activation of said reset means and means for delaying operation of said interrupting means for a preset period of time, said preset period being sufficient to allow starting said engine said guarding means being usable to operate said accessories in an emergency for said preset period of time.

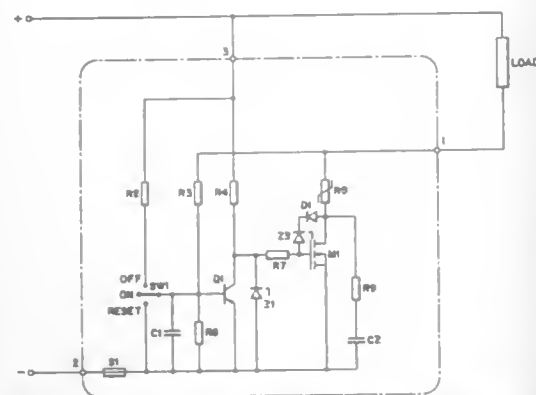
5,381,296
SHORT CIRCUIT LIMITING PROTECTOR
Folke Ekelund, Norsborg, and Leif Hansson, Rönninge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Nov. 15, 1993, Ser. No. 151,819
Claims priority, application Sweden, Nov. 16, 1992, 9203432
Int. Cl.⁶ H02H 5/04
U.S. Cl. 361—106 6 Claims

1. An electronic short-circuit limiter having minimum power losses at nominal currents and including in the current path a MOS field effect transistor and a temperature-dependent resistor, said transistor being controlled by a detection circuit which diagnoses the short-circuiting current, wherein

said current limiter uses a combined electronic and thermal feedback, since the temperature of the temperature-dependent resistor is also influenced by thermal energy emitted by said field effect transistor;

said temperature-dependent resistor being connected electrically in series to the collector electrode of said field effect transistor, the current to be monitored passing through said field effect transistor from its collector to its emitter; said field effect transistor fully conducting in normal operating conditions, since the voltage on the gate of said transistor is maintained at a maximum high level with the aid of the resistor and a zener diodes;

the electric short-circuit current limiter further comprising: a feedback loop which in addition to said temperature-dependent resistor forms a first voltage divider in series with a load;



a second voltage divider comprising two resistors and a second transistor, said second transistor being connected in parallel with said zener diode, which is thereby short-circuited by said second transistor when said second transistor begins to conduct current as a result of the potential on its base electrode exceeding a threshold value via said first and said second voltage divider when said second transistor begins to conduct; and

said electronic short-circuit current limiter having two stable states, a first state in which the second transistor is essentially non-conducting and the field effect transistor is fully conducting, and a stable second state in which the second transistor is conducting and said field effect transistor is non-conducting, said current limiter not being able to occupy a stationary state within a linear working range of said field effect transistor.

5,381,297

SYSTEM AND METHOD FOR OPERATING HIGH SPEED SOLENOID ACTUATED DEVICES

Robert E. Weber, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Jan. 18, 1993, Ser. No. 79,140
Int. Cl.⁶ H01H 47/00

U.S. Cl. 361—153

12 Claims

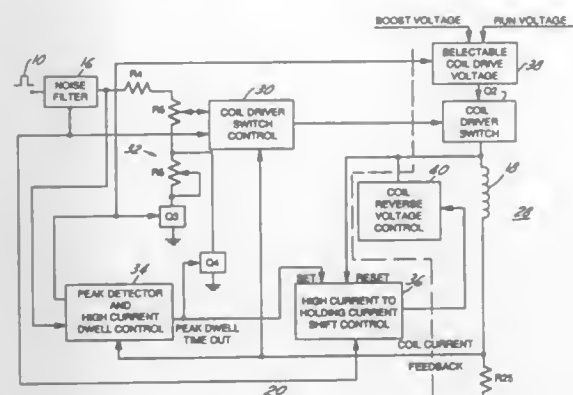
1. An electronic power control system for actuating a solenoid operated device for controlling at least three levels of current, namely peak level, dwell level and hold level, applied to the solenoid operated device having an armature means, the control system comprising:

an input means for receiving an input pulse indicating the actuation time of a solenoid operated device comprising a solenoid coil and generating an actuation pulse having five time stages;

a coil driver switch control means operatively coupled to said input means and responsive to the leading edge of said actuation pulse for controlling a switch for applying a first voltage level for a first stage time period to the solenoid operated device to generate an electromagnetic field in the solenoid to initiate movement of the armature means

from its rest position toward its end position; peak current detection means responsive to the magnitude of the current flowing through the solenoid coil for generating an electrical signal representing the peak current, said electrical signal representing the peak current operable to remove said first voltage level for a second stage time period for reducing the current flowing through the solenoid coil;

time delay means responsive to said electrical signal representing the peak current for generating a dwell level current electrical signal at the end of said delay, said dwell level current electrical signal operable to apply a normal voltage to the solenoid coil for a third stage predetermined time period to continue the electromagnetic field in the solenoid coil for maintaining the movement of the armature means to its end position;



de coupling means responsive to an end of said dwell level current electrical signal for de coupling said normal voltage from the solenoid coil for a fourth stage predetermined time causing said dwell level current to decrease to a lower hold level current; means responsive to said lower hold level current for applying said normal voltage to the solenoid coil to continue the electromagnetic field in the solenoid coil for maintaining the armature means at its end position for a fifth stage time period; and

means responsive to the trailing edge of said actuation pulse to remove said normal voltage from the solenoid coil allowing the induced the electromagnetic field in the solenoid coil for returning the armature means to its rest position.

5,381,298

ELECTRIC FENCE CHARGER

David L. Shaw, and Gerald D. Wyatt, both of Rochester, Minn., assignors to Waters Instruments, Inc., Rochester, Minn.

Filed Sep. 9, 1992, Ser. No. 942,740
Int. Cl.⁶ H05C 1/04

U.S. Cl. 361—232

22 Claims

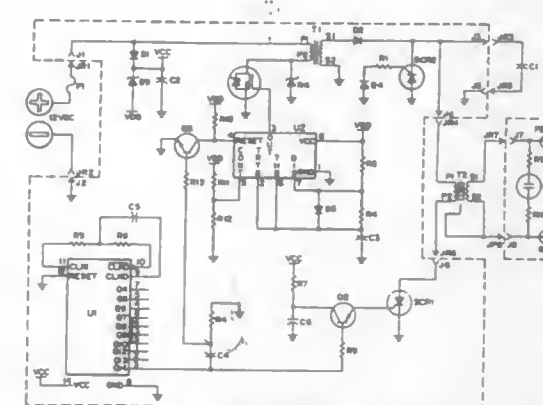
1. An electric fence charger of the type that periodically provides high voltage electrical shock pulses through an electric fence wire comprising:

a low voltage electrical power source for powering the electric fence charger and supplying a charging current; high voltage storage means for storing high voltage; energy conversion means coupled between the low voltage power source and the high voltage storage means and operable to convert the low voltage and charging current derived from the low voltage power source to high voltage energy stored in the high voltage storage means; timer means powered by the source of electrical power for emitting pulse discharge control signals on a periodic basis;

means for discharging the high voltage storage means and delivering high voltage shocking pulses into the electric

fence wire under the control of the periodically generated discharge control signals;

means for establishing a power source voltage reference; and



regulator means responsive to the voltage reference and the power source voltage for adjusting the operation of the energy conversion means to provide a minimum high voltage energy level as long as the power source voltage exceeds the voltage reference.

5,381,299

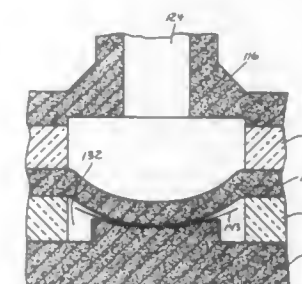
CAPACITIVE PRESSURE SENSOR HAVING A SUBSTRATE WITH A CURVED MESA

Paul L. Provenzano, West Hartford; James L. Swindal, East Hampton; Robert J. Kuhlberg, Windsor; Charles B. Brahm, Ellington; Harold D. Meyer; Frank W. Gobetz, both of South Windsor; Walter J. Wiegand, Glastonbury, and Robert H. Bullis, Avon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 28, 1994, Ser. No. 188,952
Int. Cl.⁶ H01G 7/00

U.S. Cl. 361—283.4

17 Claims



13. A capacitive pressure sensor, comprising:

a. a flexible diaphragm that is electrically-conductive;

b. a rigid substrate that is electrically-conductive; and

c. a dielectric spacer disposed between the diaphragm and the substrate such that an enclosed cavity is formed bonded by the spacer, an inner surface of the diaphragm and an inner surface of the substrate, wherein the inner surface of the substrate is non-planar, and wherein the non-planar inner surface of the substrate has formed therein one or more concentric rings, each of the rings having a step shape with a predetermined rise and predetermined run, the rings increasing overall in step height outwardly from a lowest point at a center of the non-planar inner surface of the substrate to a highest point at the ring that is disposed farthest from the center point of the non-planar inner surface of the substrate, each of the rings having a step height and a step diameter such that a curve formed by corners of the steps is of a predetermined radius of curvature, the predetermined radius of curvature of the curve formed by the corners of the steps of the non-planar

inner surface of the substrate is greater than a radius of curvature of the diaphragm when the diaphragm has attained a maximum flexing position, wherein when the diaphragm has achieved the maximum flexing position a center point of the diaphragm is in contact with the center of the non-planar inner surface of the substrate.

5,381,300

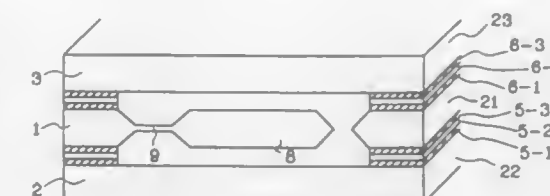
CAPACITIVE MICRO-SENSOR WITH A LOW STRAY CAPACITY AND MANUFACTURING METHOD

Isabelle Thomas; Pierre O. LeFort, and Christophe Legoux, all of Valence, France, assignors to Sextant Avionique, Cedex, France

Filed Feb. 19, 1993, Ser. No. 20,079
Claims priority, application France, Feb. 20, 1992, 92 02190
Int. Cl.⁶ G01P 15/125

U.S. Cl. 361—280

6 Claims



1. A capacitive micro-sensor including a sandwich of three silicon wafers (1, 2, 3), a peripheral stripe of each surface of the central plate being assembled to a corresponding stripe of an opposing external plate through an insulating layer (5, 6), at least one of said external plates forming a first electrode (22, 23), the central plate forming a second electrode (21) and at least one portion of said central plate forming a variable capacity with at least one of said external plates, wherein at least one of said insulating layers is formed by a sandwich of a first insulating layer (5-1, 6-1), a conductive layer (5-2, 6-2) and a second insulating layer (5-3, 6-3), said conductive layer being associated with connection means (25, 26).

5,381,301

LEAK-TIGHT AND RUPTURE PROOF, ULTRASONICALLY-WELDED, POLYMER-ENCASED ELECTRICAL CAPACITOR WITH PRESSURE SENSITIVE CIRCUIT INTERRUPTER

Martin Hudis, Mattapoisett, Mass., assignor to Aerovox Incorporated, New Bedford, Mass.

Filed May 11, 1993, Ser. No. 60,421
Int. Cl.⁶ H01G 1/11

U.S. Cl. 361—275.2

18 Claims

1. A leak-tight and rupture-proof polymer encased electrical capacitor having a pressure sensitive interruption system, the capacitor comprising:

a polymer case having an open end portion with an end surface;

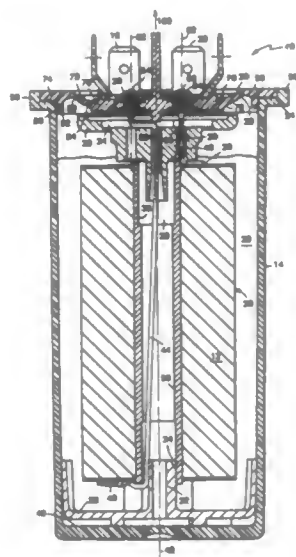
a polymer cover having an outer portion ultrasonically sealed to said end surface of said polymer case at a sealed region, thereby providing a rupture-proof enclosure, the outer portion of the cover having a substantially uniform thickness from the sealed region to radially extending regions thereto;

said polymer cover having a movable region that moves outwardly in a longitudinal direction in response to an overpressure condition within said polymer case, and

a capacitor element disposed in said case, said capacitor element immersed in a dielectric material,

an electrical connector mounted on said movable region of said polymer cover and connected to said capacitor element by an associated electrical conductor, said associated electrical conductor being configured to break when said

movable region moves outwardly in said overpressure condition, and

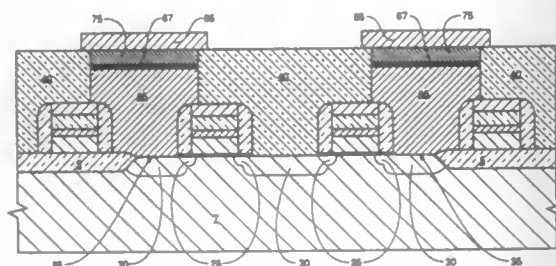


an outer flange extending upwardly from an outer edge of said open end of said case, said flange being shaped and sized to provide alignment of said outer portion of said cover prior to ultrasonic sealing.

5,381,302
CAPACITOR COMPATIBLE WITH HIGH DIELECTRIC CONSTANT MATERIALS HAVING A LOW CONTACT RESISTANCE LAYER AND THE METHOD FOR FORMING SAME
Gurtej S. Sandhu, and Pierre C. Fazan, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Continuation-in-part of Ser. No. 44,331, Apr. 2, 1993. This application Aug. 10, 1993, Ser. No. 104,525
Int. Cl.⁶ H01G 1/01

U.S. Cl. 361—305

15 Claims



1. A capacitor having a storage node electrode, comprising:
 - a) a plug region having a bottom surface, a top surface, and a sidewall, said bottom surface contacting a substrate, said sidewall adjacent to an electrically insulative region, and said top surface recessed from a top surface of said electrically insulative region;
 - b) a diffusion barrier region overlying said plug rigid, said diffusion barrier region having at least a portion of a top surface substantially planar to said top surface of said electrically insulative region;
 - c) a contact region interposed between said diffusion barrier region and said plug region; said contact region minimizing an electrical resistance between said diffusion barrier region and said plug region; and
 - d) protective region selected in order to prohibit oxidation of said storage node electrode, said protective region overlying said diffusion barrier region, said diffusion barrier region minimizing diffusion of atoms between said

plug and said protective region, said plug region, said diffusion barrier region, said contact region and said protective region forming the storage node electrode.

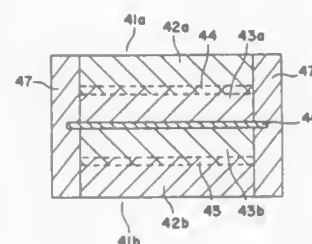
5,381,303
ELECTRIC DOUBLE LAYER CAPACITOR AND METHOD FOR MANUFACTURE THEREOF
Akihiko Yoshida, Hirakata; Kiyooki Imoto, Takaishi; Seiji Nonaka, Hirakata, and Ichiro Aoki, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 20, 1993, Ser. No. 64,933
Claims priority, application Japan, May 20, 1992, 4-127060; May 20, 1992, 4-127061; Sep. 7, 1992, 4-238045; Sep. 14, 1992, 4-244852; Sep. 14, 1992, 4-244853

Int. Cl.⁶ H01G 9/00

U.S. Cl. 361—502

11 Claims



1. An electric double layer capacitor comprising:
 - a plurality of unit electrodes, each one of said plurality of unit electrodes including a collector layer made of a collector material, a diffusion layer made of a collector material and a polarizable electrode material and at least one polarizable electrode layer made of a polarizable electrode material, wherein said diffusion layer exists between said collector layer and said polarizable electrode layer,
 - an ion permeable, electron-insulating separator interposed between two of said plurality of unit electrodes,
 - a liquid electrolyte saturating at least one of said plurality of unit electrodes, and
 - a sealing member disposed around said two of said plurality of unit electrodes and said separator.

5,381,304
REWORKABLE ENCAPSULATED ELECTRONIC ASSEMBLY AND METHOD OF MAKING SAME
Gili Theroux, Phoenix, Ariz.; Allen G. Baca, Las Cruces, N. Mex., and Charles H. Hamp, III, Seattle, Wash., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jun. 11, 1993, Ser. No. 75,972
Int. Cl.⁶ H05K 7/20

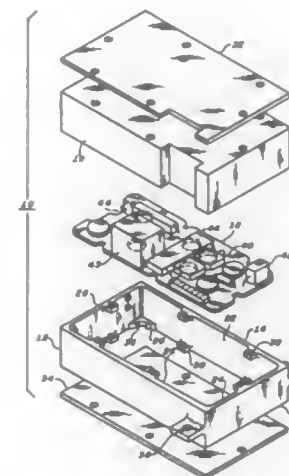
U.S. Cl. 361—706

6 Claims

1. A reworkable encapsulated electronics assembly, comprising:
 - a generally rectangular housing open at its top and bottom surfaces, having a flexible wall for accommodating deflection induced by thermal expansion of an encapsulating medium disposed therein, said wall further defining arcuate interior corners,
 - a removable planar top cover secured to said top surface of said housing,
 - a removable planar bottom cover secured to said bottom surface of said housing,
 - a circuit board resiliently disposed within said housing and supporting a plurality of electronic components mounted thereupon,
 - said encapsulating medium being thermally conductive, having a predetermined thermal coefficient of expansion compatible with that of said electronic components and said flexible wall, so that expansion of said medium with increased temperature results in temporary deflection of

said wall, and contraction of said medium with return to ambient temperature results in said wall resuming an un-flexed configuration, said medium substantially filling the space defined by said housing and surrounding said circuit board, whereat said circuit board is relatively resiliently constrained with respect to said housing with expansion and contraction of said medium, so that stress applied to

section, said first vertical leg extending downwardly from said first resilient end section and having a first projection, said first projection having a first upwardly facing edge surface which slants downwardly toward said grid; and (c) a second vertical leg which is fixed to said second resilient end section and having a second projection, said second projection having a second upwardly facing edge surface which slants downwardly toward said grid, said first and second projections moving towards each other when said first and second resilient end sections are moved from said non-clamping position to said clamping position.



said electronic components is minimized, said medium having a density when cured for resiliently securing said electronic components from shock and vibration, while allowing dissipation of heat generated by said components through said medium to said housing, said medium further having a density allowing removal with a razor-edged cutting tool so as to permit exposing said electronic components for test and repair.

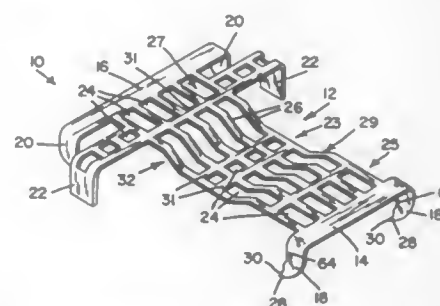
5,381,305
CLIP FOR CLAMPING HEAT SINK MODULE TO ELECTRONIC MODULE
Ronald A. Harmon, Hudson, and Giovanni Urrata, Wakefield, both of Mass., assignors to Wakefield Engineering, Inc., Wakefield, Mass.

Filed Dec. 22, 1993, Ser. No. 172,530

Int. Cl.⁶ H05H 7/20

U.S. Cl. 361—704

19 Claims



1. A clip for clamping a heat sink module to an electronic module, said clip comprising:
 - (a) a substantially horizontal grid which includes a plurality of spaced ribs, said grid having a central section which has a first end and an opposite second end, a first resilient end section which is fixed to the first end of said central section and a second resilient end section which is fixed to the second end of said central section, said first and second resilient end sections extending upwardly from said central section, said first and second end sections being resiliently deflectable relative to said central section from an upper non-clamping position to a lower clamping position;
 - (b) a first vertical leg which is fixed to said first resilient end

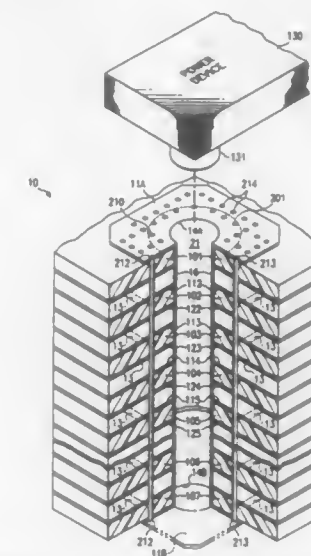
5,381,306
METHOD AND APPARATUS FOR DELIVERING POWER USING A MULTIPLANE POWER VIA MATRIX
Richard A. Schumacher, Dallas, and James R. Day, Plano, both of Tex., assignors to Convex Computer Corporation, Richardson, Tex.

Filed Aug. 20, 1993, Ser. No. 109,650

Int. Cl.⁶ H05K 1/11; H01K 3/10

U.S. Cl. 361—792

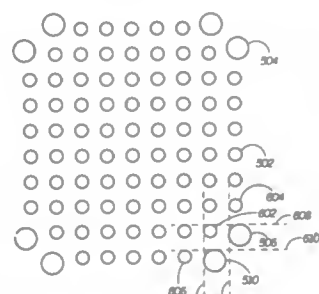
9 Claims



1. A multilayer device, each layer of which is capable of being electrically interconnected with other layers, said device comprising:

at least one layer of electrically conductive material on certain of said device layers;
a plurality of vias forming a via group having an outer boundary with all vias in said via group extending from an outside layer of said device through a plurality of other device layers, each via in said group electrically conductive and electrically connected to said electrically conductive material on selected ones of said plurality of other layers;
wherein said electrically conductive material on selected ones of said layers is interrupted at said outer boundary of said via group; and
wherein all of said vias in said via group are electrically interconnected at said outside layer.

5,381,307
SELF-ALIGNING ELECTRICAL CONTACT ARRAY
 Allen D. Hertz, Boca Raton; David A. Tribbey, Boynton Beach, and Kenneth R. Thompson, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
 Continuation of Ser. No. 901,000, Jun. 19, 1992, abandoned.
 This application Sep. 29, 1993, Ser. No. 129,010
 Int. Cl.⁶ H05K 7/10, 7/02
 U.S. Cl. 361—767 6 Claims



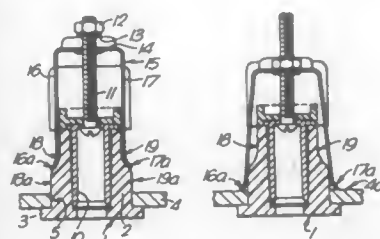
1. A mounting pad arrangement for improved reliability of placement of a surface mount component with respect to the mounting pad arrangement, the mounting pad arrangement comprising:

- a circuit supporting substrate having an interconnection surface;
- a first pad array disposed throughout an area of predetermined shape on said interconnection surface, said area having four outside corners, the first pad array comprising:
 - a plurality of contact pads arranged in a first linear grid pattern; and
 - eight aligning pads, larger than the contact pads, two of the aligning pads positioned proximate each of said four outside corners, each of the aligning pads further positioned off center with respect to the first linear grid pattern such that a tangential line can be drawn between an innermost point of the aligning pad and corresponding innermost points of the contact pads that are collinear on the first linear grid pattern;
- a second pad array disposed on the surface mount component and arranged in a second linear grid pattern that aligns with the first linear grid pattern, eight pads of the second pad array also aligning with points of intersection of the first linear grid pattern that fall within each of the eight aligning pads, each pad of the second pad array being equal in size to any other pad of the second pad array; and
- solder disposed between and contacting each pad of the first and second pad arrays.

5,381,308
ELECTRICAL COMPONENT ARRANGED FOR LOCKING AND ELECTRICALLY CONNECTING IN AN OPENING OF A PANEL FROM EXTERNALLY OF THE PANEL
 Richard W. Wolpert, 15 Elm St., Roslyn Heights, N.Y. 11577; Alan T. Wolpert, 8 Stanford Ct., Wantagh, N.Y. 11793, and Richard A. Wolpert, 11 Ripley Dr., Northport, N.Y. 11768
 Filed Oct. 20, 1993, Ser. No. 138,115
 Int. Cl.⁶ H05K 7/02, 3/30; F16B 21/00; H01R 9/00
 U.S. Cl. 361—809 5 Claims

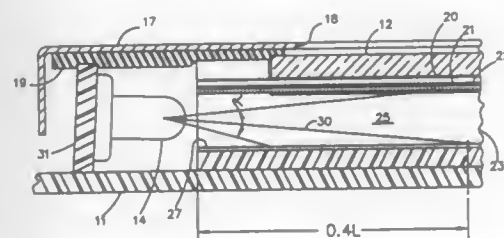
1. In a component including a body portion and a flange portion and intended for insertion through an opening of a panel having first and second surfaces bounding said opening, such that said flange portion abuts said first panel surface adjacent said opening, in combination:
- (i) a cam means on said body portion;
 - (ii) cam follower means positioned on said body portion to co-act with said cam means;
 - (iii) actuator means carried by said body portion and coupled

to said cam follower means for moving said cam follower means relative to said cam means in a direction towards said second surface of said panel, said cam means and said cam follower means being respectively shaped and dimensioned such that, in moving from a first position of said



cam follower means more remote from said second panel surface to a second position of said cam follower means less remote from said second panel surface, said cam follower means is moved so as then to project from said body portion sufficiently to abut said second panel surface.

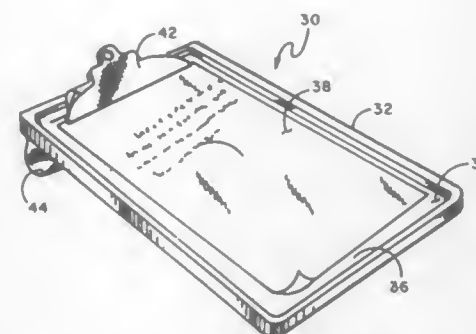
5,381,309
BACKLIT DISPLAY WITH ENHANCED VIEWING PROPERTIES
 Jerry L. Borchardt, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
 Filed Sep. 30, 1993, Ser. No. 130,084
 Int. Cl.⁶ F21V 13/00
 U.S. Cl. 362—31 10 Claims



1. A high aspect ratio, backlit display device with enhanced viewing properties, comprising:
- a message carrying member having a display surface of predetermined length and width of which at least a portion is translucent, said message carrying member having a first side from which the message is to be readable within a viewing space bounded by predetermined angles relative to the first side, said message carrying member having a second side opposite the first side;
 - an optical structure having first and second generally parallel major walls at least partially enclosing a thin cavity having a length and width at least as great as the predetermined length and width of the display surface, the cavity having a first end substantially parallel with the width of the cavity and transverse to the first and second major walls thereof, the first major wall of said optical structure including an inner layer of transparent material having an interior surface bounding the cavity, an intermediate optical diffusion layer and an outer brightness enhancing film layer having an inner surface adjacent the diffusion layer and an outer surface adjacent the display surface, the interior surface of the inner layer and the outer surface of the outer layer each being configured with an array of regularly spaced triangular prisms parallel with the width of the cavity, the second major wall of said optical structure being adapted to provide specular reflection; and
 - a light source adapted to project light from the end of the cavity onto the second major wall of said optical structure in a direction transverse to the triangular prisms on the

inner layer at a small angle relative to an interior surface of the second major wall.

5,381,310
SHEET-ILLUMINATING SYSTEM
 Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081
 Continuation-in-part of Ser. No. 892,268, Jun. 2, 1992, which is a continuation-in-part of Ser. No. 765,517, Sep. 25, 1991, Pat. No. 5,118,138. This application Apr. 8, 1994, Ser. No. 224,821
 Int. Cl.⁶ F21V 8/00, 9/16, 33/00
 U.S. Cl. 362—32 7 Claims



1. An illumination device for enabling an individual to read and/or write on a sheet under poor or no light conditions, said sheet having a top surface and a bottom surface, comprising: an electroluminescent sheet; means to illuminate said electroluminescent sheet, said electroluminescent sheet of a size to be disposed under said sheet to be read/written on, said illuminated electroluminescent sheet passing light through said sheet to make any printing or writing thereon visible to said individual; an electrical power source and means to interconnect said power source to said electroluminescent sheet; a clipboard having a top surface, said electroluminescent sheet disposed on said clipboard's top surface with said sheet to be read/written positioned on top of said electroluminescent sheet such that when said electrical power source illuminates said electroluminescent sheet, the light from said electroluminescent sheet passes through said sheet, making the printing/writing thereon visible to said individual; and a recess defined in said top surface of said clipboard of a size to receive and retain said electroluminescent sheet.

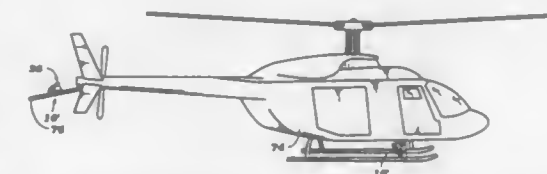
5,381,311
CHEMILUMINESCENCE DEVICE
 Masahiko Fujita, Munakata, Japan, assignor to Nihon Kagaku Hakko K.K., Kukuoka, Japan
 Filed Jul. 16, 1993, Ser. No. 91,924
 Int. Cl.⁶ F21K 2/06
 U.S. Cl. 362—34 22 Claims



1. A chemiluminescence device, comprising: a first sealed container containing first substance therein which emits light chemically when it mixes with second substance, light being able to pass through said first sealed

container, said first sealed container having one of an oval and a circular cross-section; a hollow protrudent portion protruded from said first sealed container, a shape of said hollow protrudent portion being able to be changed by external force; and a second sealed container containing said second substance therein and arranged in said first sealed container, at least a part of said second sealed container being breakable and arranged in said hollow protrudent portion, said part of said second sealed container being able to be broken by changing said shape of said hollow protrudent portion, the ratio of first substance to second substance being from 10-20:1.

5,381,312
AIRCRAFT ILLUMINATION DEVICE
 Ricky J. Authier, 11304 110th Ave. E., Payallup, Wash. 98374
 Filed Aug. 4, 1993, Ser. No. 101,936
 Int. Cl.⁶ B64D 47/02
 U.S. Cl. 362—62 12 Claims

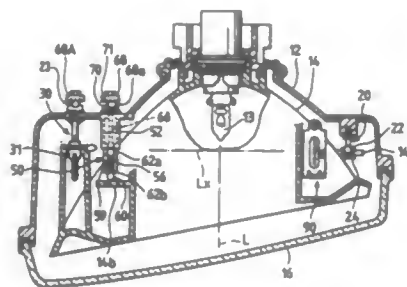


1. A system for illuminating parts of an aircraft, comprising: at least three low-intensity position lights mounted on the aircraft, with two of the position lights mounted in a forward location and spaced laterally from a longitudinal centerline of the aircraft and a third position light mounted in an aft location centrally positioned on the longitudinal centerline of the aircraft, for providing a triangular light formation to indicate the position of the aircraft during tactical covert operations, each low-intensity position light including: a chemiluminescent light source including a chemiluminescent substance and a translucent container for encapsulating the chemiluminescent substance, a housing for holding the chemiluminescent light source, the housing including a chamber for receiving the chemiluminescent light source, an opening for inserting and removing the chemiluminescent light source into and from the chamber, and at least one side opening for exposing the translucent container to the exterior of the housing, and a bracket portion for securing the housing to the aircraft.

5,381,313
HEADLAMP WITH DISPLACEMENT GAUGE
 Masataka Choji, Shizuoka, Japan, assignor to Koltu Manufacturing Co., Ltd., Tokyo, Japan
 Filed May 27, 1993, Ser. No. 67,799
 Claims priority, application Japan, Jul. 7, 1992, 4-047304[U]
 Int. Cl.⁶ F21M 3/22
 U.S. Cl. 362—66 2 Claims

1. An automobile headlamp comprising: a fixed member; a movable member including a light source and a reflector having an optical light beam axis; an aiming mechanism for pivotally supporting said movable member on said fixed member; a displacement gauge, said displacement gauge being mounted between said fixed member and said movable member for measuring an amount of rightward or leftward movement of said light beam axis of said movable member, said displacement gauge comprising a wherein

horizontal movement of said movable member causes said slide pin to move within said movable holder;
 a gear fitted over a rearward extending segment of said zeroing adjustment screw at an external rear wall of said fixed member, said gear being engagable by a screwdriver inserted from above said fixed member, said gear comprising a crown gear having teeth facing said fixed member;



a screwdriver guide for guiding a screwdriver to said crown gear, said screwdriver guide being secured to an external surface of said fixed member, said screwdriver guide having an arched notch for positioning a head of said screwdriver and preventing disengagement of said screwdriver from said crown gear.

5,381,314

HEAT DISSIPATING EMI/RFI PROTECTIVE FUNCTION BOX

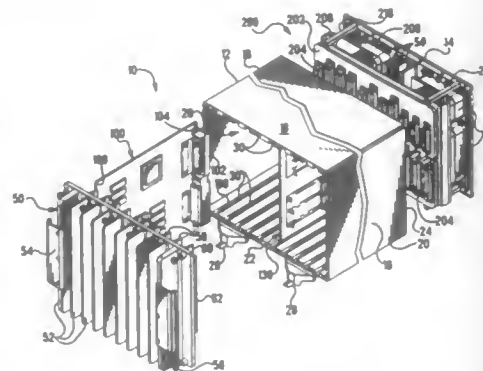
William J. Rudy, Jr., Annville; Howard R. Shaffer, Millersburg, and Daniel E. Stahl, Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 11, 1993, Ser. No. 76,654

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361-712

11 Claims



1. A junction box for a plurality of electrical interconnections of circuits of circuit cards with electrical conductors extending into the junction box at an input/output interface, comprising:

a body member defining opposed side walls and opposed top and bottom walls extending from a front face to a rear face, a front panel member removably secured to said front face to define a front wall traversing a card-receiving opening, and a backplane assembly removably attached to said rear face and including a transverse interior wall positioned rearwardly of a card-receiving region proximate said front panel and a rear wall, all generally defining a card cage;

said side walls and top wall and bottom wall and rear wall and front panel member being formed of thermally and electrically conductive material of substantial thickness and being substantially free of openings, said side walls and said top and bottom walls adjoined to edges of adjacent ones thereof and said rear wall being adjoined to rear edges of said opposed side walls and said top and bottom

walls in a manner to eliminate any gap thereat through which electromagnetic and radiofrequency energy could otherwise pass;

said rear wall including an array of electrical input/output connectors mounted thereon adapted to be mated with complementary electrical connectors and defining an input/output interface, said rear wall including shield sections surrounding respective said input/output connectors in a manner eliminating any gap peripherally therearound through which electromagnetic and radiofrequency energy could otherwise pass,

said interior wall including an array of card connectors mounted thereon to mate with corresponding connectors of a plurality of circuit cards insertable into said body member, and one of said opposing side walls or said top and bottom walls including pairs of card guide means extending from front edges thereof to said interior wall and cooperating to guide movement of respective said circuit cards during insertion and removal, with said card connectors aligned with respect to respective said pairs of card guide means to mate with complementary connectors along leading ends of respective said circuit cards during card insertion;

said backplane assembly defining an array of electrical circuits connecting terminals of said card connectors mounted on said interior wall to terminals of said input/output connectors mounted on said rear wall;

said front panel member being secured to said body member to tightly abut front edges of said opposed side walls and said top and bottom walls in a manner to eliminate any gap thereat through which electromagnetic and radiofrequency energy could otherwise pass, and securable in a manner facilitating removal thereof to permit insertion and removal of a said circuit card;

said front panel member including an array of first fins extending outwardly to facilitate dissipation of thermal energy into ambient air flow, and further including an array of second fins extending inwardly to facilitate absorption of thermal energy from said card-receiving region,

whereby a compact card cage of robust construction is defined adapted to shield said circuit cards and electrical interconnections thereof with said electrical conductors from electromagnetic and radiofrequency interference and to facilitate dissipation of thermal energy therefrom.

5,381,315

SHELF ASSEMBLY IN ELECTRONIC SWITCHING SYSTEM

Akihiro Hamaguchi; Hisao Osone; Hirotohi Takada, all of Kawasaki, and Jun Ohta, Fukuoka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 3, 1993, Ser. No. 115,770

Claims priority, application Japan, Mar. 9, 1993, 5-047772

Int. Cl.⁶ H05K 7/20

U.S. Cl. 361-727

5 Claims

5. A shelf assembly in an electronic switching system, comprising:

a shelf including a pair of side walls, at least a pair of upper cross beams for connecting said side walls together, and at least a pair of lower cross beams likewise connecting said side walls together;

a plurality of upper stationary rails firmly secured to and between said upper cross beams in such a manner as to be spaced away from each other;

a plurality of upper slide rails slidably mounted on said upper stationary rails respectively;

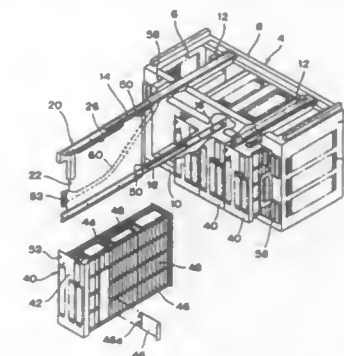
a plurality of lower stationary rails firmly secured to and between said lower cross beams in such a manner as to be spaced away from each other;

a plurality of lower slide rails slidably mounted on said lower stationary rails respectively;

a plurality of cable boxes respectively mounted on said

upper slide rails and also on said lower slide rails, said cable boxes each having a plate spreading vertically and defining an area for receiving a cable on one side surface of said vertical plate;

a plurality of drawer units each removably inserted in each of said cable boxes along the other side surface of said vertical plate, each of said drawer units having a plurality of per-line packages which are withdrawably inserted in each of said drawer units, said per-line packages each storing the contents of service per subscriber;



a common unit withdrawably inserted in said shelf;
 a plurality of cables for electrically connecting said common unit to said drawer units, said cables each extending so far as to a front end of said vertical plate of each of said cable boxes along said one side surface of said vertical plate; and
 a plurality of connectors for connecting one ends of said cables to front end portions of said drawer units respectively.

5,381,316

ELECTRONIC PART ASSEMBLY USING A SHAPE MEMORY ALLOY ELEMENT

Minoru Hirai, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

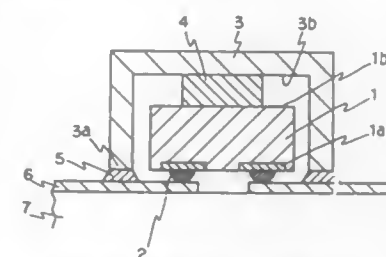
Filed Apr. 9, 1993, Ser. No. 45,594

Claims priority, application Japan, May 15, 1992, 4-148802

Int. Cl.⁶ H05K 7/02

U.S. Cl. 361-760

5 Claims



1. An electronic part assembly comprising:

(a) electronic parts wherein a projecting electrode, formed on an electrode pad of said electronic parts, is pressed against a wiring pattern of a circuit board;

(b) a cover member arranged so as to cover said electronic parts, and said cover member having a leg portion designed to be joined to said circuit board; and

(c) a shape memory alloy member, arranged between said cover member and said electronic parts, said shape memory alloy member pressing a reverse side surface of said electronic parts so that electric connection between said projecting electrode and said wiring pattern is maintained.

5,381,317

SNAP-FIT RIGHT ANGLE ADJUSTOR MECHANISM

Karl R. Schmitt, Rockford, and Douglas E. Pherigo, Loves Park, both of Ill., assignors to Textron, Inc., Providence, R.I.

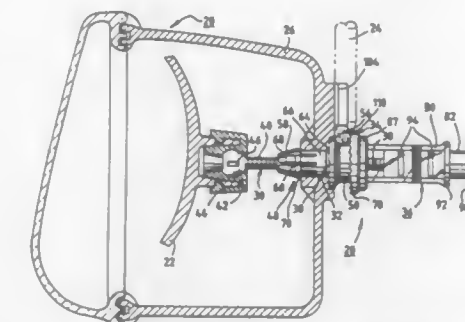
Continuation of Ser. No. 36,817, May 5, 1993, abandoned. This

application Apr. 19, 1994, Ser. No. 229,480

Int. Cl.⁶ B60Q 1/06

U.S. Cl. 362-66

10 Claims



1. An adjustment assembly for use in an automotive headlamp arrangement having a movable component and stationary component, said adjustment assembly being operatively associated with said headlamp arrangement to effect pivotal motion of said movable component relative to said stationary component through which aiming of the headlamp beam is attained, said adjustment assembly comprising:

a bushing portion operatively associated with said stationary component;

an adjusting screw having an elongate threaded shaft operatively associated with said bushing, a first end of said threaded shaft being adapted for operable engagement with said movable component of said headlamp arrangement;

a hollow member operatively associated with said bushing portion, said hollow member extending over said second end of said adjusting screw and having a transparent portion positioned therealong;

first indicia disposed on said transparent portion of said hollow member;

an indicator member cooperatively positioned in an open end of said hollow member and engaging said second end of said adjusting screw; and

second indicia disposed on said indicator member being alignable with said first indicia disposed on said transparent portion of said hollow member upon selective positioning thereof for providing an indication of a zero position of said adjusting screw and operatively associated movable component and also providing an indication of variance therefrom.

5,381,318

PORTABLE LIGHT GENERATING BELT DEVICE

Chung-Ho Fang, No. 41, Hsin-Le Rd., Tainan City, Prov. of China

Filed Apr. 26, 1994, Ser. No. 233,868

Int. Cl.⁶ F21L 15/08; G01B 3/10

U.S. Cl. 362-108

4 Claims

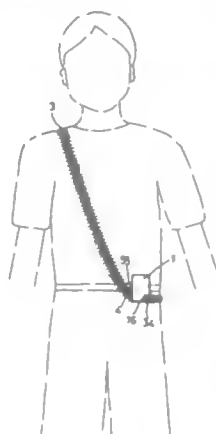
1. A portable light generating belt device comprising:

a housing including a wall with an aperture formed there-through, a shaft fixed in said housing, and a retaining unit disposed on an outer surface of said housing;

a pulley including a pulley body rotatably disposed on said shaft of said housing and having an annular groove formed in an outer surface thereof, and a cavity formed in side walls of said pulley body, and a torsion spring received within said cavity of said pulley body and secured at one end portion thereof to said shaft of said housing and at side walls end portion thereof to said pulley body;

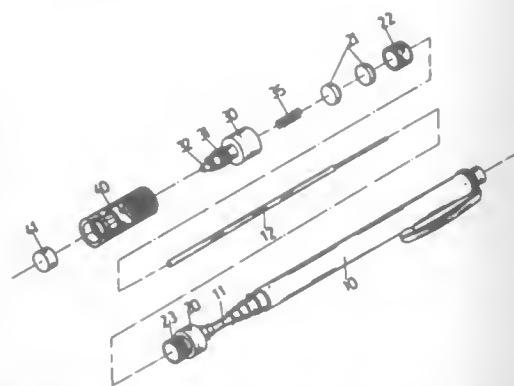
a light generating belt wound on said pulley and provided

with an electroluminescent strip that is capable of being powered to generate light, said light generating belt having an inner end portion secured to said pulley, and an outer end portion extending through said aperture of said housing and having an enlarged end which is located outside said housing and which is sized so that said enlarged end of said belt cannot pass through said aperture into said housing, said spring biasing said pulley body to rotate in a direction so as to wind said belt on said pulley, said enlarged end of said belt being capable of being retained on said retaining unit of said housing when moved



away from said aperture of said housing when said device is in use; and
a battery operated power supply unit mounted in said housing and connected electrically to said strip on said belt, said power supply unit capable of being actuated so as to supply electrical current to said strip, thereby lighting said strip on said belt;
whereby, by pulling said belt, a portion of said belt is extracted from said housing when in use, and when pull on said belt is released, said portion of said belt can be retracted into said housing except for said enlarged end of said belt.

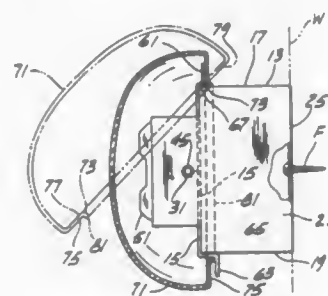
5,381,319
TELESCOPIC SHAFT MAGNETIC RETRIEVER WITH ILLUMINATING MEANS
Hsuan-Sen Shiao, No. 15-1, Alley 369, Min-Chuan Rd., Taichung City, Taiwan, Prov. of China
Filed Apr. 4, 1994, Ser. No. 222,239
Int. Cl.⁶ F21V 33/00
U.S. Cl. 362—120



1. A telescopic shaft magnetic retriever comprising a telescopic shaft having a conductive battery holder at a tip thereof to hold an insulative socket and a battery set within said insulative socket, a lamp holder fastened to the battery holder to

hold a lamp bulb and having a central contact metal plate connected between a tip contact of said lamp bulb and a positive pole of said battery set and a side contact metal plate connected between a ring contact of said lamp bulb and said conductive battery holder, a spring mounted around said central contact metal plate and stopped against the positive pole of said battery set, a transparent tube fastened to said lamp holder to allow passage of light emitted from said lamp bulb and to hold a magnet for retrieving screws, nuts, tools and other steel parts from inaccessible places, and a control rod received in a longitudinal passage inside said telescopic shaft and said conductive battery holder, and wherein a negative pole of said battery set is pushed away from a bottom wall of said conductive battery holder by said control rod causing said battery set electrically disconnected from said lamp bulb when said telescopic shaft is in a retracted position, and said lamp bulb is deactivated; said spring pushes said battery set backwardly toward the bottom wall of the conductive battery holder, when said telescopic shaft is extended out, the negative pole of said battery set contacts the bottom wall of said conductive battery holder again with the control rod maintain within the longitudinal passage of the telescopic shaft, and therefore said battery set is electrically connected to said lamp bulb causing said lamp bulb to activate.

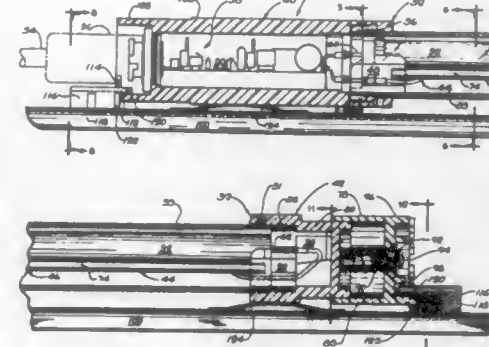
5,381,320
LIGHT FIXTURE
Randy L. Jordan, Bethalto, Ill., assignor to International Lighting Manufacturing Company, St. Louis, Mo.
Filed Jan. 22, 1993, Ser. No. 7,520
Int. Cl.⁶ F21V 17/00
U.S. Cl. 362—147



1. A light fixture comprising
a housing,
fasteners for mounting the housing in a first orientation on a vertical wall,
said housing, as mounted in said first orientation, having a first wall constituting a generally vertical front wall and a second wall constituting a generally horizontal top wall extending rearwardly from the front wall,
a lip on the housing adapted to project up above the top wall of the housing generally adjacent the front wall of the housing when the housing is mounted in said first orientation,
means for mounting at least one lamp on the housing forward of the front wall of the housing, and
a light diffuser comprising a hollow shell defining an interior space, said shell having a back with an opening therein to permit entry of said lamp and said lip on the housing into the interior space of the shell, the arrangement being such that when the housing is mounted in said first orientation, the diffuser may be installed on the housing in an installed position wherein (1) the opening in the back of the diffuser shell lies in a generally vertical plane, (2) an upper portion of the back of the diffuser shell above said opening bears on the top wall of the housing to support the diffuser on the housing, and (3) said lip on the housing extends up in the interior space of the shell closely adjacent an interior

surface of the back of the shell above said opening in the back of the shell,
said lip and interior surface of the shell being engageable to hold the diffuser on the housing, without the need for mechanical fasteners, in said installed position in which the back of the diffuser shell is in close, generally abutting relation with the front, generally vertical wall of the housing.

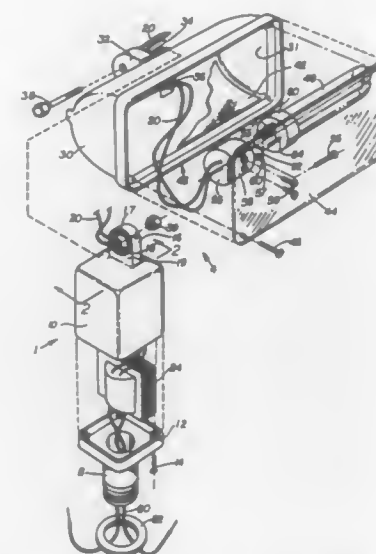
5,381,321
LUMINAIRE FOR HAZARDOUS ATMOSPHERES AND EXPLOSION PROOF ENCLOSURE FOR POWER SUPPLY THEREFOR
Oliver H. Fearing, Jr., Huntington; Peter J. Green, Barboursville, and Richard E. Kirby, Ona, all of W. Va., assignors to Service Machine Co., Huntington, W. Va.
Filed Jun. 2, 1992, Ser. No. 892,558
Int. Cl.⁶ F21S 3/02
U.S. Cl. 362—217



1. A luminaire which is readily removable and replaceable, and readily assembleable and disassembleable, comprising:
a transparent enclosure tube, housing means comprising a pair of end housings connected to opposite ends of the tube, a light carriage within the tube, and a base;
said light carriage comprising a unitary subassembly consisting of a rigid, elongated reflector having light bulb holders secured at its opposite ends;
a tubular light bulb removably supported between said holders and assembleable as a unit with the light carriage;
means for energizing said light bulb comprising an electrical power input coupling means on said housing means, and electrical contact connections between the housing means and the light bulb holders and between the bulb holders and light bulb;
complementary plug and socket formations connected to and between the light carriage and housing means requiring said light carriage to be rotated to align said electrical contact connections between the housing means and the bulb holders moving the light carriage to close said contact connections;
first interengageable means being effective when engaged to secure one of said housings to the base;
second interengageable means being effective when engaged to secure the other of said housings to the base;
said first interengageable means comprising a pair of latch elements carried respectively on said one housing and on the base, one of said latch elements being movable to and from a locked position engaged with the other latch element, spring biasing means associated with said one housing urging the movable latch element toward said locked position to secure said one housing to the base while the other housing is secured to the base by the second interengageable means;
means for manually moving the movable latch element from said locked position against the bias of the spring biasing means to disengage the first interengageable means to

release said one housing and enable movement of said one housing relative to the base;
said movement of said one housing relative to the base serving to automatically disengage the second interengageable means to release said other housing from the base.

5,381,322
LIGHT KNUCKLE WITH BALLAST
Michael P. D. Humphreys, Santa Rosa, Calif., assignor to Humphreys Injection Molds, Inc., Santa Rosa, Calif.
Filed Jun. 15, 1992, Ser. No. 899,631
Int. Cl.⁶ F21S 3/00; F21V 21/30
U.S. Cl. 362—220



1. Pivot joint apparatus for a fluorescent light fixture including:
a first pivot member having a first aperture in a first planar face, the first face lying perpendicular to a transverse axis; ballast means for a fluorescent lamp contained within the first member;
a second pivot member having a hood containing a socket for a fluorescent lamp and having a second aperture in a second planar face, the second face parallel to the first, the faces rotatable with respect to each other about the axis so that the apertures are sealed externally but remain in open communication with each other when the faces are pressed flush together; and
electrically conductive wire passing from the ballast through the apertures to the socket.

5,381,323
SENSOR HOUSING AND ADJUSTABLE MAST ARM FOR A SWIVEL LIGHTING FIXTURE
Mitchell M. Orsteen, Zirconia; Suleyman O. Sumer, Chapel Hill; Charles L. Dozier, Camden, and Santiago Singarayar, Burlington, all of N.C., assignors to Regent Lighting Corporation, Burlington, N.C.
Filed Oct. 1, 1993, Ser. No. 130,280
Int. Cl.⁶ F21S 1/14

U.S. Cl. 362—276
1. A lighting fixture, said fixture comprising:
(a) a lampholder for receiving at least one floodlight or the like;
(b) a base for establishing electrical and mechanical connections with a source of electrical power, said base having an aperture for receiving one end of said lampholder;
(c) means connected between said base and the end of said lampholder for supporting said lampholder and permitting

15. An electrical power inverter comprising:
an input port for receiving a source of electrical energy having a unipolar input voltage and an output port for providing electrical energy to a load, said output port including first and second terminals;
means for generating a reference waveform having a reference frequency;
a first transformer having a first primary winding and a second primary winding each coupled to said input port and at least one secondary winding;
first switch means coupled to said first primary winding for alternately enabling electrical energy to couple from said input port to said first primary winding at a switching frequency substantially greater than said reference frequency, and a second switch means for alternately enabling electrical energy to couple from said input port to said second primary winding at a switching frequency substantially greater than said reference frequency, said first and second switch means each having ON states in which electrical energy is enabled to couple to said first and second primary windings, respectively, and OFF states in which electrical energy is substantially prevented from coupling to said first and second primary windings, respectively, wherein said first switch means and said second switch means are not in their respective ON states at the same time;
a node coupled to said secondary winding;
a first rectifier coupled to said secondary winding such that electrical energy is enabled to couple substantially only in the direction from said secondary winding to said node;
a capacitor coupled to the first terminal of said output port such that electrical energy coupled to said output port is enabled to be stored on said capacitor, said capacitor having an output voltage that is a function of the amount of stored energy;
a return transformer having a primary winding and a secondary winding coupled in a flyback relationship, wherein the primary winding of said return transformer is coupled between said node and the first terminal of said output port and the secondary winding of said return transformer is coupled to said input port;
third switch means coupled between said node and the second terminal of said output port for alternately enabling electrical energy to couple from said output port through said primary winding of said return transformer at a frequency substantially greater than said reference frequency, said third switch means having an ON state in

which electrical energy is enabled to couple from said output port through said primary winding of said return transformer and an OFF state in which electrical energy is substantially prevented from coupling from said output port through said primary winding of said return transformer;

a second rectifier coupled to said secondary winding of said return transformer such that electrical energy is enabled to couple substantially only in the direction from said secondary winding of said return transformer to said input port; and

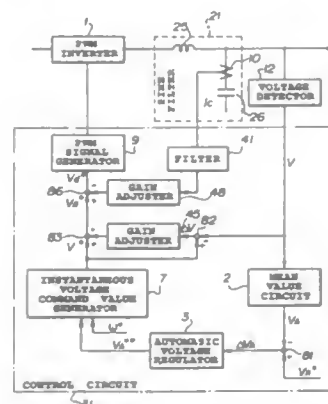
control means for controlling said first, second, and third switch means to generate said output voltage with an output voltage waveform that closely corresponds to said reference waveform, said control means controlling the duration of the ON states of said first and second switch means such that said output voltage waveform is caused to approximately correspond to said reference waveform, and controlling the duration of the ON state of said third switch means such that energy is selectively coupled from said output port to cause said output voltage waveform to more closely correspond to said reference waveform under a wide range of load conditions, and controlling said first, second, and third switch means such that only one of them is in its ON state at one time.

5,381,328
PWM INVERTER CONTROL SYSTEM AND METHOD
Kazuyoshi Umezawa, and Osamu Sato, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Oct. 29, 1993, Ser. No. 142,994

Claims priority, application Japan, Oct. 30, 1992, 4-291845; Feb. 2, 1993, 5-015034; Oct. 6, 1993, 5-249613
Int. Cl.⁶ H02M 1/12

U.S. Cl. 363—41

22 Claims



1. A PWM inverter control system for controlling a PWM inverter comprising:

a low-pass filter connected to an output of the PWM inverter, said low-pass filter including a reactor and a capacitor;

means for detecting an instantaneous output voltage (V) of the low-pass filter;

means for generating an instantaneous voltage command value (V*) on the basis of a predetermined output voltage reference value and the instantaneous output voltage (V) of the low-pass filter;

means for detecting an instantaneous capacitor current (I_c) flowing through the capacitor of said low-pass filter;

first correcting means for correcting the instantaneous voltage command value (V*) by a detected value of the instantaneous capacitor current (I_c); and

a PWM signal generator for generating a pulse signal for controlling the PWM inverter on the basis of the corrected instantaneous voltage command value (V*).

5,381,329
SWITCH MODE POWER SUPPLY FOR A TELEVISION RECEIVER AND METHOD OF CONTROLLING THEREFOR

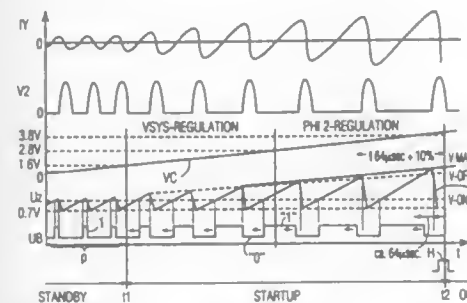
Rudolf Koblitz, Meylan, France; Steffen Lehr, VS-Marbach, and Franz Dieterle, Schiltach, both of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villigen-Schwenningen, Germany

Filed Mar. 4, 1993, Ser. No. 26,052

Claims priority, application Germany, Jul. 10, 1990, 4021940
Int. Cl.⁶ H02M 3/24; H04N 5/63

U.S. Cl. 363—49

7 Claims



4. A switch mode power supply for a television receiver having a display operable at line and field frequencies, said receiver operable in a standby mode, a start-up mode, and an ON mode, comprising:

a) a switching transistor which controls the power to said receiver;

b) means for causing said transistor to be alternately conductive and non-conductive by generating pulses; said pulses being generated at a frequency above the line frequency during the standby mode;

c) means for periodically interrupting the pulses during the standby mode, so as to produce bursts of pulses;

d) means for increasing the width of said pulses during the start-up mode while maintaining constant the time between pulses, so as to reduce the pulse frequency, and

e) means for synchronizing said pulses with said line frequency during said ON mode, and controlling the width of said pulses to regulate the power to said receiver.

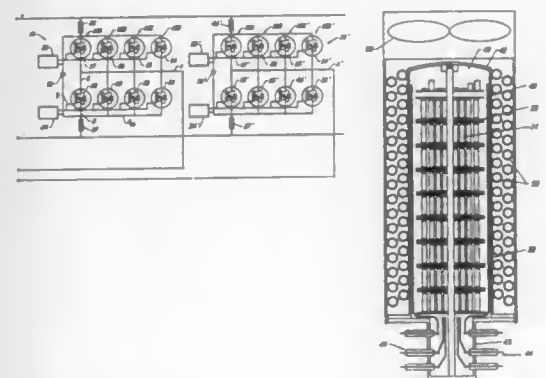
5,381,330
HALF-BRIDGE ARRANGEMENT FOR SWITCHING ELECTRICAL POWER

Andreas Gröndl, Munich, and Bernhard Hoffmann, Starnberg, both of Germany, assignors to Gröndl & Hoffmann, Germany
Filed Sep. 8, 1993, Ser. No. 118,035

Int. Cl.⁶ H02M 7/5387

U.S. Cl. 363—132

15 Claims



1. A half-bridge arrangement for switching electrical power, wherein

a) at least first and second semiconductor switches (14, 21; 15, 20; 16, 19; 17, 18) forming a half-bridge (12a; 12b; 12c; 12d) are connected in series;

b) each semiconductor switch (14, 21; 15, 20; 16, 19; 17, 18) is provided with a control input (G) which is connected to a driving means (23, 24);

c) each first semiconductor switch (14; 15; 16; 17) is at a high voltage potential (V_{SS}) with its source terminal (S);

d) each second semiconductor switch (18; 19; 20; 21) is at a low voltage potential (V_{DD}) with its drain terminal (D);

e) the drain terminal (D) of each first semiconductor switch (14; 15; 16; 17) is connected with the source terminal (S) of each respective second semiconductor switch (18; 19; 20; 21) for providing an output terminal (A); and

f) at least one capacitor assembly (30) is arranged between the high and the low voltage potential (V_{SS}, V_{DD}); characterized in that

g) said driving means (23, 24) activates said semiconductor switches (14, 21; 15, 20; 16, 19; 17, 18) by means of a control signal with a switching frequency of more than 20 kHz;

h) said capacitor assembly (30) is made up by at least one sheet capacitor (30a) on a printed circuit board (33) carrying said semiconductor switches (14, 21; 15, 20; 16, 19; 17, 18) and by at least one wrap capacitor (30b) designed as a hollow coil (40);

i) said semiconductor switches (14, 21; 15, 20; 16, 19; 17, 18) being arranged within said wrap capacitor (30b); and

j) a fluid cooling being provided within the hollow coil (40).

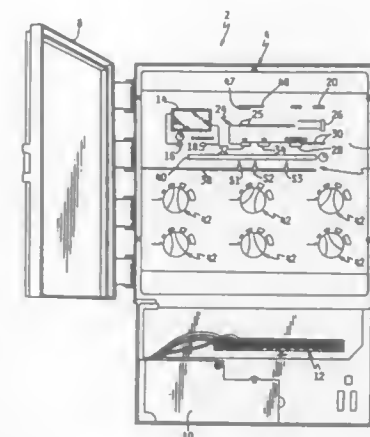
5,381,331
IRRIGATION CONTROLLER
Gerald L. Mock, Corona; Kurt Maloney, Pomona, and Alberto D. Benmergui, Alto Loma, all of Calif., assignors to The Toro Company, Minneapolis, Minn.

Division of Ser. No. 37,495, Mar. 24, 1993, Pat. No. 5,272,620, which is a continuation of Ser. No. 554,685, Jul. 18, 1990, abandoned. This application Dec. 21, 1993, Ser. No. 172,524

Int. Cl.⁶ G06F 15/46

U.S. Cl. 364—145

8 Claims



8. An improved irrigation controller for individually and automatically controlling water flow to a plurality of individual watering stations in accordance with a programmed watering schedule over a period of days, the controller including:

(a) a digital alpha-numeric display means for displaying the time and day to the user;

(b) data input means for allowing the user to input a watering schedule which includes a parameter having a selectively changeable value thereof, wherein the data input means for the selectively changeable value of the parameter comprises an analog data input device which inputs the changeable value of the parameter as a function of the position of the analog data input device relative to a housing of the controller, and wherein the analog data input

device is accessible to a user for manual manipulation on the housing of the controller and is set by a user by moving the data input device on the controller housing between physically different positions relative to the controller housing with each different position of the data input device relative to the controller housing representing a different value for the parameter;

(c) a scale on the controller housing adjacent the analog data input device for visually indicating to the user the particular value that has been set for the parameter by the particular position relative to the controller housing of the analog data input device; and

(d) microcomputer means connected to the data input means and display means for performing the following functions:

(i) executing the programmed watering schedule in accordance with the passage of time; and

(ii) monitoring the data input means to detect when a change in the value that has been previously set by the analog data input device is being input and to display the new value for the parameter in the digital, alpha-numeric display means during the period in which the previously set value of the parameter is being changed and for a predetermined time period following completion of the change, whereby the value of the parameter is indicated to the user both by the display in the digital, alpha-numeric display means when such display occurs during a change and for the predetermined time period following completion of the change and additionally by the scale on the controller housing.

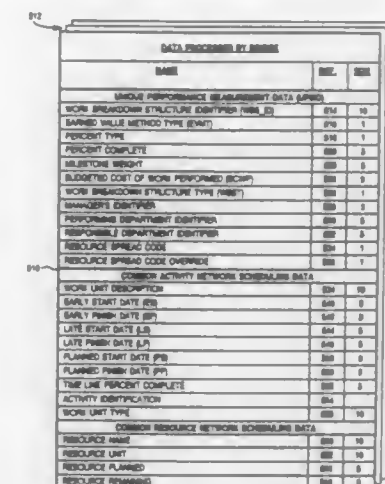
5,381,332
PROJECT MANAGEMENT SYSTEM WITH AUTOMATED SCHEDULE AND COST INTEGRATION
Mark A. Wood, Fort Wayne, Ind., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 9, 1991, Ser. No. 803,850

Int. Cl.⁶ G06F 15/21

U.S. Cl. 364—401

20 Claims



1. A method executed by a computer system as part of a computer program, said system for coordinating the management of a project, said method using a network scheduling tool (NST) that collects, stores, and processes network schedule data (NSD) and a performance measurement tool (PMT) that collects, stores, and manipulates performance measurement data (PMD), said method maintaining alignment of information between said NST and said PMT, said method comprising the steps of:

collecting a first and second portion of said NSD and customized data by said NST, said first portion of said NSD including information required only by said NST, said second portion of said NSD including information re-

quired by both said NST and said PMT, said customized data comprising a portion of said PMD required only by said PMT, said collecting step performed by said NST operating on a computer that is part of said computer system;

first transferring by a data transfer means said second portion of said NSD and said customized data from said NST to a bridging tool operating on said computer; generating said PMD by processing, in said bridging tool, said second portion of said NSD and said customized data, said PMD generated in a form aligned for use by said PMT and including said customized data; storing said PMD in a storage means located in said computer system, said storing step performed by said bridging tool operating on said computer; and second transferring by said bridging tool said PMD to said PMT for allocating budgets and reporting costs of said specific project

wherein:

said collecting step comprises the steps of:

associating said second portion of said NSD and said customized data into work unit data records with respect to said NST, said work unit data records being of the type to specify an activity work unit which includes a beginning of an activity at a particular point in time and specifies a duration which said activity is to continue;

configuring a first portion of said customized data in said work unit data records to specify a work breakdown structure type (WBST) for said PMT, said WBST defining a type of work breakdown structure (WBS) element including a work package, cost account or planning element, said WBST specifying a work package WBST when said first portion of said customized data includes scheduled start and completion dates and a budget for said activity; and

configuring a second portion of said customized data in said work unit data records to specify an earned value method type (EVMT) for said PMT, said EVMT specifying a method to calculate a budgeted cost of work performed (BCWP) for said work package and said EVMT being of the type to specify an X/Y EVMT when said X/Y EVMT includes an "X" percentage of a budget for said work package earned upon starting said work package and a "Y" percentage of said budget earned upon completion of said work package; and

said generating step comprises the steps of:

detecting activity work unit records that are characterized as having said work package WBST and said X/Y EVMT, and

forming a PMT data record which includes start and complete milestone data elements therein for work unit data records having said work package WBST with said X/Y EVMT.

5,381,333

CURRENT PATTERNS FOR ELECTRICAL IMPEDANCE TOMOGRAPHY

David Isaacson, Latham; Jonathan C. Newell, Glenmont, and David G. Glasser, Albany, all of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Jul. 23, 1991, Ser. No. 734,591

Int. Cl.⁶ A61B 5/05

U.S. Cl. 364-413.13

1 Claim

1. In an electrical impedance tomography system that includes a body with an array of electrodes on its surface, a method for finding the values of an unknown distribution of conductivities from which an image may be formed, the method comprising:

(a) selecting an arbitrary guessed conductivity distribution and applying an arbitrary guessed set of current patterns to the electrodes to generate a voltage pattern on the array for each current pattern;

(b) measuring all electrode voltages for each current pattern applied;

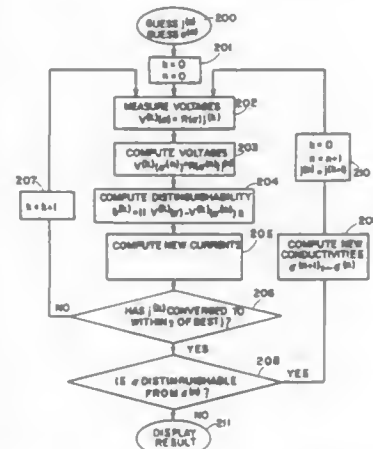
(c) calculating values of all theoretical voltages that should have appeared on the electrodes for the body due to the arbitrary set of guessed current patterns and arbitrary guessed conductivity distribution;

(d) calculating a new set of current patterns based on differences between the measured and calculated voltage values;

(e) calculating the differences between electrode currents of the arbitrary set of current patterns and the calculated new set of current patterns, to form current differences;

(f) if any of the current differences are greater than a selected tolerance, applying the new set of current patterns to the electrode array and repeating steps (b) to (e);

(g) when the current differences are smaller than the selected tolerance, considering the new set of current patterns to be an optimal set of spatial current patterns, meaning that the optimal set of spatial current patterns can be



used to best distinguish the actual conductivity distribution from that previously assumed, for a fixed limit on peak current values;

(h) testing whether any of the voltage differences between the measured and calculated values at the electrodes, using the optimal current patterns, are larger than a predetermined value;

(i) if so, computing a new conductivity distribution as a function of the new set of current patterns and the measured voltage values;

(j) repeating steps (b) to (g) using the new conductivity distribution to replace the previously assumed distribution in order to find a set of current patterns that better distinguishes the actual conductivity distribution from the new conductivity distribution; and

(k) repeating steps (h) to (j) as many times as are necessary to produce a calculated conductivity distribution whose calculated voltages are substantially identical to those measured, from which a conductivity image may be produced.

5,381,334

FAULT DIAGNOSIS APPARATUS FOR CREW PROTECTING APPARATUS IN VEHICLE

Takashi Fumi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,070

Claims priority, application Japan, Dec. 26, 1991, 3-344681

Int. Cl.⁶ G06F 15/50; B60R 21/08

U.S. Cl. 364-424.03

35 Claims

1. A fault diagnosis apparatus for a crew protecting apparatus which protects the crew of a vehicle, comprising:

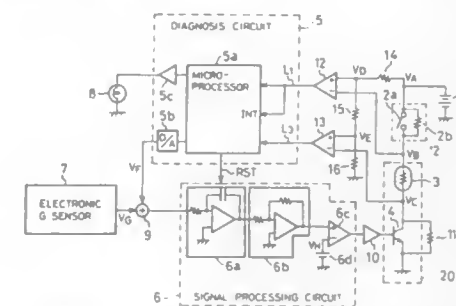
a first acceleration sensor for detecting acceleration of said vehicle;

signal processing means for calculating a strength of impact applied to said vehicle based on the acceleration detected by said first acceleration sensor;

first comparing means for comparing the calculated strength of impact with a predetermined strength of impact;

a second acceleration sensor for detecting acceleration of said vehicle;

second comparing means for comparing acceleration detected by said second acceleration sensor to a predetermined acceleration;



starting means for starting said crew protecting apparatus, as a result of comparison by said first comparing means, when the strength of the impact is larger than the predetermined strength and, as a result of comparison by said second comparing means, when the acceleration detected by said second acceleration sensor is larger than said predetermined acceleration;

diagnosis signal output means for outputting a signal indicating the predetermined strength of impact for fault diagnosis to said signal processing means, as a result of comparison by said second comparing means, when the acceleration detected by said second acceleration sensor is less than or equal to said predetermined acceleration; and diagnosis means for executing a diagnosis regarding whether said starting means is operating normally or abnormally, when said signal indicating the predetermined strength of impact is output to said signal processing means.

5,381,335

DEVICE FOR CONTROLLING A VEHICLE COMPONENT IN DEPENDENCE UPON TRANSVERSE ACCELERATION

Fritz Wolf, Bergheimfeld, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jul. 31, 1992, Ser. No. 923,321

Claims priority, application Germany, Aug. 7, 1991, 4126078

Int. Cl.⁶ B62D 7/16

U.S. Cl. 364-424.05

2 Claims

1. A device for controlling a vehicle component that is controllable in dependence upon transverse acceleration of and transverse jolt to the vehicle, comprising:

steering angle sensor means for detecting and producing a steering angle signal indicative of the steering angle of the vehicle,

tachogenerator means for detecting and producing a speed signal indicative of the speed of the vehicle,

computer means connected to said steering angle sensor means and said tachogenerator means for receiving and processing said steering angle signal and said speed signal to provide a first control signal representing the transverse acceleration for controlling said vehicle component and derived according to the formula:

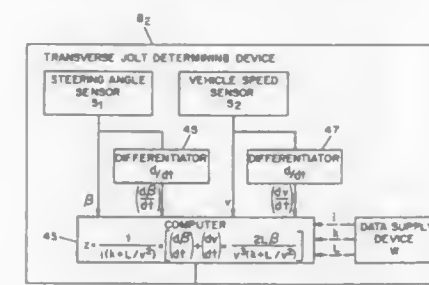
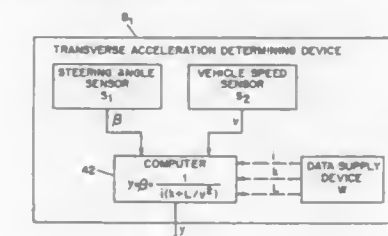
$$y = \beta \frac{1}{(k + L/v^2)}$$

in which y is the value of the first control signal representing the transverse acceleration, β is the value of the steering angle

signal, v is the value of the speed signal, and i, k and L are constants specific to the vehicle, and a second control signal representing the transverse jolt for controlling said vehicle component derived according to the formula:

$$z = \frac{1}{(k + L/v^2)} \left[\frac{d\beta}{dt} + \frac{dv}{dt} \left(\frac{2L\beta}{v^3(k + L/v^2)} \right) \right]$$

in which z is the value of the second control signal representing the transverse jolt, β is the value of the steering angle signal, $d\beta/dt$ is the value of the time derivation of the steering angle signal, v is the value of the speed signal, dv/dt is the value of the time derivation of the speed signal, and i, k and L are constants specific to the vehicle,



the computer means having a first differentiator for deriving the value $d\beta/dt$ and a second differentiator for deriving the value dv/dt , and

vehicle component control means for receiving said first control signal and said second control signal and for controlling the vehicle component in accordance with said first control signal and said second control signal.

5,381,336

SPEED AVERAGING FOR VARIABLE EFFORT POWER STEERING

Michael J. Shorkey, Noblesville, Ind., assignor to Delco Electronics Corp.

Continuation of Ser. No. 704,237, May 22, 1991, abandoned.

This application Dec. 3, 1993, Ser. No. 161,189

Int. Cl.⁶ B62D 6/02, 5/00

U.S. Cl. 364-424.05

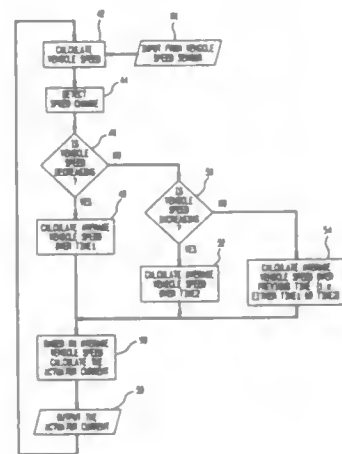
2 Claims

1. In a variable effort steering system having a steering effort controlled to increase in predetermined relation to vehicle speed, a method of control, comprising the steps of:

periodically sampling instantaneous vehicle speed values; controlling the steering effort in accordance with a first average vehicle speed signal when successively sampled instantaneous vehicle speed values indicate increasing vehicle speed with respect to time, said first average speed signal being an average of the instantaneous speed values sampled over a first time period; and

controlling the steering effort in accordance with a second average vehicle speed signal when successively sampled instantaneous vehicle speed values indicate decreasing vehicle speed with respect to time, said second average speed signal being an average of the instantaneous speed values sampled over a second time period which is longer than said first time period, so as to include more instanta-

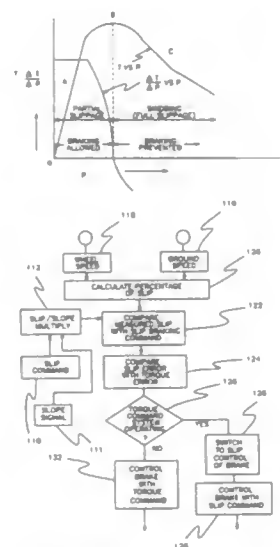
neous vehicle speed values than said first time period, and so that the rate of change in steering effort for a given rate



of change in vehicle speed is lower during decreasing vehicle speed than during increasing vehicle speed.

5,381,337
NO SKID BRAKE CONTROL
James Q. Burgess, Dayton, Ohio, assignor to Systems Research Laboratories, Inc., Dayton, Ohio
Filed Aug. 6, 1993, Ser. No. 102,883
Int. Cl.⁶ B60T 8/32; B60K 28/16
U.S. Cl. 364—426.02

17 Claims



1. A method of controlling a brake system to prevent skidding of a wheel associated with the brake system of a vehicle comprising the steps of:

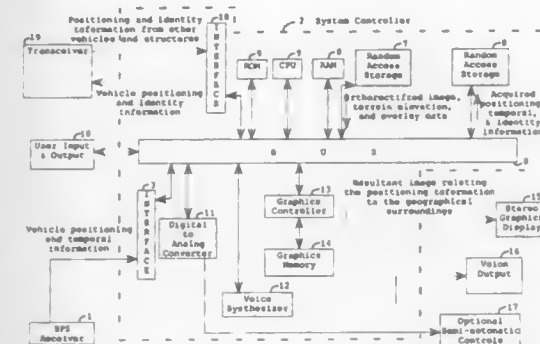
- producing a brake pressure signal representing braking pressure being applied to the brakes of the braking system;
- measuring a torque developed on a wheel from the brakes being applied to the wheel and producing a brake torque signal representing said torque;
- calculating a slope of a phase relationship between said brake pressure signal and said brake torque signal; and
- controlling the braking pressure to maintain said slope of said phase relationship of said brake pressure signal and said brake torque signal positive or zero, but not negative.

5,381,338
REAL TIME THREE DIMENSIONAL
GEO-REFERENCED DIGITAL
ORTHOPHOTOGRAPH-BASED POSITIONING,
NAVIGATION, COLLISION AVOIDANCE AND
DECISION SUPPORT SYSTEM

David A. Wysocki, and Paul S. Hooper, both of Unitech Research, Inc., 3802 Packers Ave., Madison, Wis. 53704
Continuation of Ser. No. 718,618, Jun. 21, 1991, abandoned.
This application Nov. 18, 1993, Ser. No. 154,994
Int. Cl.⁶ G06F 15/50

U.S. Cl. 364—449

29 Claims



1. A vehicle position tracking and display system, comprising:

- positioning means for providing positional coordinate signals corresponding to spatial coordinates of a current position of a vehicle;
- computational means for accessing an image library of differentially rectified images for predefined geographic area, indexed by spatial coordinates, and a data library of terrain elevational data of said predefined geographic areas, indexed by said spatial coordinates of said current position of said vehicle; for receiving said positional coordinate signals; and for analyzing said positional coordinate signals by selecting said differentially rectified images from said image library and said terrain elevational data from said data library;
- processing said positional coordinate signals, said selected differentially rectified images, and said terrain elevational data into resultant differentially rectified image signals corresponding to the current position and terrain of said vehicle; and
- display means responsive to said resultant differentially rectified image signals for translating said resultant differentially rectified image signals into visual, pictorial information corresponding to the current position and geographic surroundings of said vehicle.

5,381,339
OPERATION CONTROL APPARATUS OF WORKING
SYSTEM

Hiroyoshi Yoko, Susono; Takashi Mizutani, Numazu; Nobuyuki Aiso; Hirotoshi Mochizuki, both of Mishima, and Hirohiko Honda, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 91,055

Claims priority, application Japan, Jul. 14, 1992, 4-187006
Int. Cl.⁶ G06F 15/46

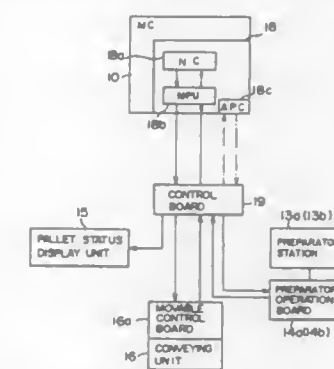
U.S. Cl. 364—468

3 Claims

1. An operation control apparatus of a working system which comprises a machining center numerically controlled, a pallet stocker disposed in the vicinity of the machining center and storing a number of pallets therein, a preparatory station for setting-up a work on a pallet, a conveying unit for automatically conveying the pallet from the pallet stocker to the preparatory station or the machining center, and a control apparatus

tus for controlling an operation of the working system, said operation control apparatus comprising:

- a control unit provided for the machining center and including a numerically control (NC) section executing instructions regarding a working schedule table display, a working schedule table edition, a scheduled operation start, a calling of a next working part program, an automatic cycle start, a tool exchanging, a completion of the scheduled operation, a cutting abnormal detection, a retraction of a working pallet on an abnormality, a selection of a tool to be exchanged, and a self-diagnosis information report of a machine and further including a Micro Processor Unit (MPU) section executing a schedule data management concerning rewriting of pallet existing data and rewriting of schedule data, a sequence operation completion information, a preparation of self-diagnosis information report, a transmission of conveying instructions to the pallets and a status information of the pallet;



- a preparatory operation board disposed in association with the preparatory station and instructing a pallet interruption conveyance instruction and preparation completion and vacant pallet return information;
- a control board operatively connected to the control unit and adapted to receive the conveying instructions to the pallets and the pallet status information, and to transmit the pallet status displaying instructions and the pallet conveying operation execution instructions on the basis of each information of a pallet interruption conveyance and the preparation completion and vacant pallet return from the preparatory operation board and to transmit each report of the pallet interruption conveyance completion, the pallet existing data and the self-diagnosis to the MPU section of the control unit; and
- a movable control board provided in the conveying unit and adapted to receive the conveying operation execution instructions and to transmit an operation condition of the conveying unit to the control board.

5,381,340
QUALITY CONTROL SYSTEM IN A SPINNING MILL
Yutaka Ueda, Nara; Keizo Obori, Kyoto; Tsuneo Shimizu, Anjo, and Shoji Mizutani, Toyohashi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto and Kondo Cotton Spinning Co., Ltd., Nagoya, both of Japan
Continuation of Ser. No. 689,370, Apr. 22, 1991, abandoned.
This application Sep. 28, 1993, Ser. No. 128,259
Claims priority, application Japan, Apr. 24, 1990, 2-106510
Int. Cl.⁶ G06F 15/46

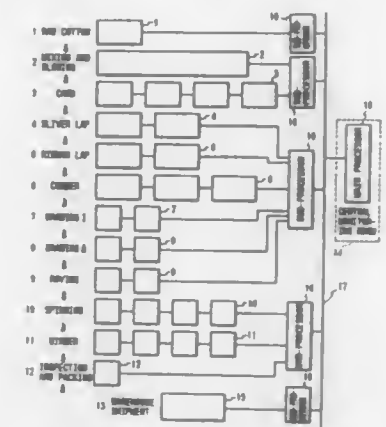
U.S. Cl. 364—470

8 Claims

1. In a material processing mill, a quality control system comprising:
- a plurality of different processing machines for performing a plurality of different processing steps to produce a plurality of different intermediate products, each of the plurality of different processing machines having associated therewith production information, each of the plurality of different intermediate products having associated there-

with quality information, at least one of the processing machines comprising a plurality of processing units for performing a processing step to produce a plurality of substantially similar intermediate products, each of the processing units having associated therewith production information, each of the intermediate products produced by the processing units having associated therewith quality information,

- a plurality of sub-processors, each of the plurality of sub-processors monitoring a corresponding one of the plurality of different processing machines, for determining the production information associated with the monitored



- processing machine and for determining the quality information associated with the intermediate product produced by the monitored processing machine, at least one of the sub-processors comprising means for monitoring the processing units to determine production information associated with the monitored processing units and to determine quality information associated with intermediate products produced by the monitored processing units,
- a main processor, and
- means for inputting the quality information and the production information from the plurality of sub-processors to the main processor.

5,381,341
CONTROL SYSTEM FOR A PAPER OR BOARD
MACHINE

Juha Herrala; Jouko Hytönen, both of Jyväskylä; Jarmo Järvinen, Jyväskylä; Markku Salmela, Keski-Palokka, and Harri Vähitalo, Jyväskylä, all of Finland, assignors to Valmet Paper Machinery Incorporated, Helsinki, Finland

Continuation of Ser. No. 531,877, Jun. 1, 1990, abandoned. This application Feb. 18, 1993, Ser. No. 20,251

Claims priority, application Finland, Jun. 1, 1989, 892670
Int. Cl.⁶ G06F 15/46; D21F 1/02

U.S. Cl. 364—471

16 Claims

1. A control system for regulating a transverse profile of a web in a paper or board machine, having a sensor for detecting the web transverse property profile and producing feedback information, said control system comprising:
- a plurality of intelligent actuator controllers, each independently executing a predetermined control algorithm and being responsive to an actuator control parameter received as a set value controller signal from a control bus and producing an actuator control signal;
 - a plurality of controllable displacement actuators arranged at profile adjustment points across the width of the web, each being responsive to said actuator control signal from a corresponding one of said plurality of intelligent actuator controllers, each of said plurality of controllable displacement actuators being effective to adjust a transverse property of the web at a corresponding profile adjustment

1. A radio transceiver, comprising:
 - a plurality of operating hardware-dependent components and functions;
 - a plurality of operating hardware-independent components and functions;
 - a plurality of hardware-dependent tasking means for collecting asynchronous data generated by the hardware-dependent components and functions, each of the plurality of tasking means include a translator for translating the collected information;
 - a plurality of highly time critical interrupt software routine drivers for providing the plurality of tasking means with high priority and uninterruptable information;
 - a plurality of virtual sourcing means for distributing asynchronous data generated by the plurality of hardware-dependent tasking means and the plurality of interrupt software routine drivers;
 - a plurality of hardware-independent tasking controllers for executing radio control processes of the hardware-dependent components and functions, the controllers comprising:
 - first means for directing the plurality of hardware-depend-

ent tasking means to commence collecting data generated by the hardware-dependent components and functions;
 second means for directing the plurality of hardware-dependent tasking means to cease collecting data generated by the hardware-dependent components and functions;
 third means for directing the virtual sourcing means as to when to commence delivering data to the hardware-independent tasking controllers and when to stop the delivery;
 a plurality of buffers for storing a table comprising a list of hardware-independent tasking controllers that are subscribed to receive translated information from the plurality of hardware-dependent tasking means; and
 a virtual source manager for copying and sending messages to all the subscribed hardware-independent tasking controllers including sending prioritized stop messages when the hardware dependent tasking means stops collecting data.

5,381,347
METHOD AND SYSTEM FOR DISPLAYING IMAGES ON A DISPLAY DEVICE USING AN OFFSCREEN VIDEO MEMORY

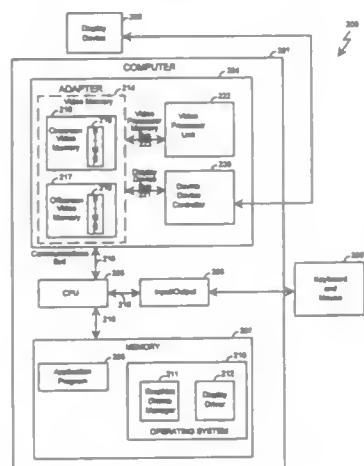
Ron O. Gery, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Dec. 21, 1992, Ser. No. 993,410

Int. Cl.⁶ G06K 15/00

U.S. Cl. 364—514

11 Claims



1. A method executed in a computer system for displaying images on a display device, the computer system including a central processor, a system memory, and a system bus, the method comprising the steps of:

- providing an adapter allowing the computer to communicate with the display device, the adapter including an offscreen video memory and an onscreen video memory separate from the system memory, and a dedicated video processor separate from the central processor, and an adapter bus separate from the system bus;
- sending a create bitmap command to the central processor for creating a bitmap directly in the offscreen video memory without creating the bitmap in the system memory;
- executing the create bitmap command in the central processor to create the bitmap directly in the offscreen video memory without creating the bitmap in the system memory;
- sending a copy bitmap command to the dedicated video processor for copying the bitmap directly from the offscreen video memory to the onscreen video memory;
- executing the copy bitmap command in the dedicated video processor to copy the bitmap directly from the offscreen video memory to the onscreen video memory over the

adapter bus, without first copying the bitmap to the system memory; and
 displaying the bitmap in the onscreen video memory on the display device.

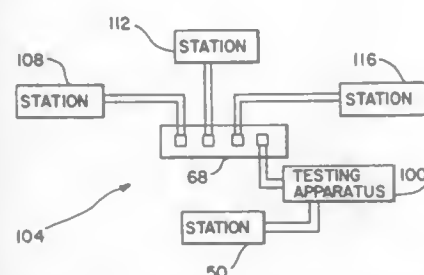
5,381,348
TOKEN RING LOCAL AREA NETWORK TESTING APPARATUS USING TIME DELAY REFLECTORY
 Steve Ernst, and Gordon A. Jensen, both of Colorado Springs, Colo., assignors to Fluke Corporation, Everett, Wash.

Filed Jan. 11, 1993, Ser. No. 3,250

Int. Cl.⁶ G06K 7/00

U.S. Cl. 364—514

19 Claims



1. A method for determining whether a fault exists in a cable conductor including a cable conductor end adjacent to a testing apparatus, comprising:

- providing a testing apparatus including a directional coupler and detecting means for supplying an output indicative of whether a fault exists in a cable conductor;
- connecting a cable conductor end to said testing apparatus;
- transmitting a transmit signal to the cable conductor using said testing apparatus;
- receiving by said testing apparatus after said transmitting step a return signal when a fault exists in the cable conductor;
- using said directional coupler in communication with said transmit signal to avoid applying said transmit signal to said detecting means, wherein said output of said detecting means, when said transmit signal is present, is the same as occurs in the absence of said transmit; and
- determining using said detecting means that a fault exists in the cable conductor when said return signal is received by said testing apparatus, wherein said return signal changes said output of said detecting means.

5,381,349
SYSTEM FOR CALIBRATING A COLOR DISPLAY TO ENABLE COLOR-MATCHING

Kirt A. Winter, Escondido, and Francis E. Bockman, San Diego, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 29, 1993, Ser. No. 84,375

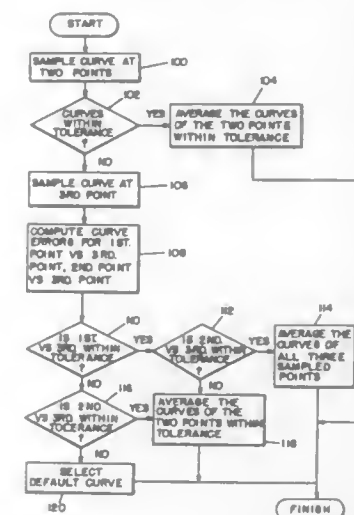
Int. Cl.⁶ H04N 1/46

U.S. Cl. 364—526

12 Claims

- 1. A system for enabling a user to determine a transfer function of a color display means, said system comprising:
- color display means for displaying at least a calibration color patch and a comparison color patch, said calibration color patch manifesting a calibration color of predetermined intensity, said comparison color patch manifesting a user-determined comparison color that matches to a determined binary value;
- color intensity variation means for enabling a user to vary an intensity of said comparison color;
- memory means for storing a transfer function threshold value; and
- processor means for operating said color display means to display said calibration color patch with determined calibration color intensities, and responsive to a user's indica-

tion of a perceived color match between said calibration color patch and a comparison color patch, to determine a transfer function that enables conversion of a binary value that matches said comparison color to a binary value matching said calibration color, said processor means further responsive to plural user inputs indicating perceived color matches of first and second comparison color



patches with first and second different intensity calibration color patches, to determine if first and second transfer functions determined for said first and second comparison color patches are within said transfer function threshold value of each other, and if so, to employ a combination of said first and second transfer functions for calibration of said color display means.

5,381,350
PROCESS FOR DETERMINING THE BACKUP TIME OF A BATTERY

Jean-Noël Fiorina, Seyssinet-Pariset, and Patrick Lailier, Clichy, both of France, assignors to Merlin Gerin, France

Filed Jul. 16, 1993, Ser. No. 91,915

Claims priority, application France, Aug. 5, 1992, 92 09818

Int. Cl.⁶ G06F 15/20

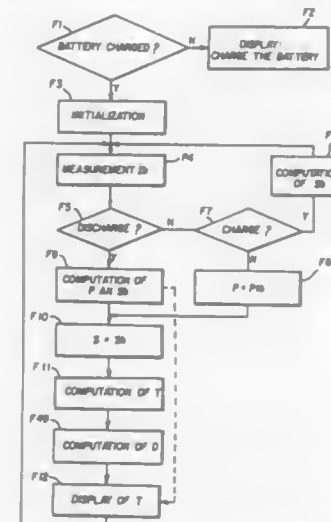
U.S. Cl. 364—550

10 Claims

1. A process for determining the backup time of a battery comprising:

- measuring a voltage at terminals of the battery,
- measuring a charging or discharging current of the battery,
- computing a discharge power of the battery from the measured voltage and current, and
- determining a backup time of the battery in terms of the computed discharge power using an estimation process to estimate the discharging of the battery during successive estimated time intervals, said estimation process comprising the steps of, for each estimated time interval, computing an estimated voltage at the terminals of the battery taking account of the computed discharge power and of predetermined parameters characteristic of the battery, comparing the estimated voltage with a minimum discharging voltage of the battery, and summing the succes-

sive estimated time intervals, wherein the determined backup time of the battery is equal to the sum of the time



intervals obtained when the estimated voltage reaches the minimum discharging voltage.

5,381,351
AMBULATORY MONITOR ECG PULSE CALIBRATION METHOD

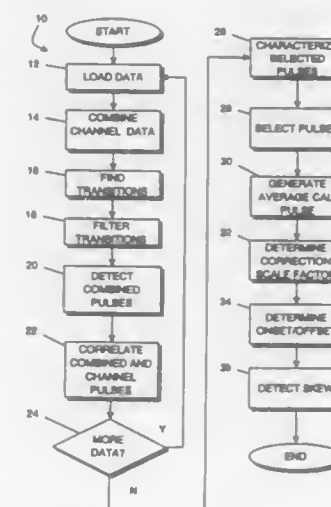
Manlik Kwong, Beaverton; Edward L. Feldhousen, Tualatin, and Dennis E. Ochs, McMinnville, all of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Oct. 15, 1993, Ser. No. 137,441

Int. Cl.⁶ G01C 25/00

U.S. Cl. 364—571.04

16 Claims



1. A method of calibrating an ECG ambulatory monitor from calibration pulses recorded on a plurality of tape channels having ECG waveform data, the method comprising:
 loading the channel calibration pulses;
 combining the channel calibration pulses to form a series of combined calibration pulses;
 selecting combined calibration pulses having certain predetermined characteristics;
 correlating the selected combined pulses to the corresponding channel calibration pulses;
 selecting channel calibration pulses having at least a prede-

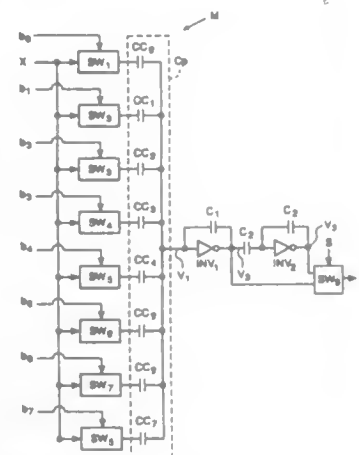
terminated correlation to the corresponding selected combined pulses;
 generating a calibration scale factor for each channel based on the selected channel calibration pulses for the corresponding channel; and
 calibrating each channel of the ECG monitor using the calibration scale factor.

5,381,352
CIRCUIT FOR MULTIPLYING AN ANALOG VALUE BY
A DIGITAL VALUE

Guoliang Shou; Weikang Yang; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,731
Claims priority, application Japan, Dec. 22, 1992, 4-357672
Int. Cl.⁶ G06J 1/00

U.S. Cl. 364—606 11 Claims



1. A multiplication circuit comprising:
 - i) a capacitive coupling element which comprises a plurality of first capacitors connected in parallel with capacitive values corresponding to weights of each bit of a digital data;
 - ii) a first switching circuit connected with the first capacitors of said capacitive coupling element, said switching circuit being opened and closed by a digital voltage corresponding to each bit of said digital data;
 - iii) a first inverter connected with an output of said capacitive coupling element;
 - iv) a second capacitor connected with an output of said first inverter;
 - v) a second inverter connected with said first inverter through said second capacitor;
 - vi) a second switching circuit connected with an output of the second inverter and said output of said first inverter for outputting alternatively one of said outputs; and
 - vii) an analog input voltage connected with said first switching circuit.

5,381,353
SCIENTIFIC ELECTRONIC CALCULATOR FOR
PERFORMING MATHEMATICAL OPERATIONS WITH
PREDETERMINED PRIORITY

Toshiro Oba, Nara, Japan, assignor to Sharp Kabushiki Kaisha,
Osaka, Japan

Filed Jun. 8, 1993, Ser. No. 73,661
Claims priority, application Japan, Jun. 10, 1992, 4-150586
Int. Cl.⁶ G06F 3/147

U.S. Cl. 364—710.08 2 Claims
1. A scientific electronic calculator for performing mathe-

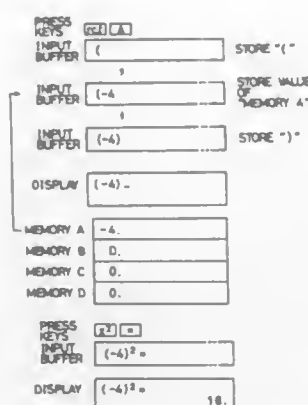
mathematical operations with a predetermined priority in the performance, said calculator comprising:

an input means for inputting to the calculator operational information including numeral, numeral term, or numeral expression operands and operators;

a control means operably connected to said input means for controlling the input of operational information, operations and displays;

a display means operably connected to said control means for displaying input operational information and results of performed mathematical operations;

a first storage means operably connected to said control means for storing a program of sequential operations to be executed by said control means;



a second storage means operably connected to said control means including a plurality of storages for storing numeral, numeral term, or numeral expression operands; and

a storage and display buffer means operably connected to said control means for storing an operand assembly having an order of a parenthesis open, a numeral, numeral term or numeral expression operand stored in said second storage means, and a parenthesis close;

whereby said control means, in response to an instruction by said input means to display a numeral, numeral term or numeral expression operand stored in said second storage means in said display means, instructs the operand assembly stored in the storage and display buffer means to be displayed in the display means.

5,381,354

**DIGITAL FILTERING OF BLOCKS OF DATA VALUES
WITH SYMMETRIC DATA EXTENSION AT EDGES OF
THE BLOCKS**

Jonathan M. Soloff, Basingstoke, United Kingdom, assignor to
Sony United Kingdom, Ltd., Staines, United Kingdom
Filed Aug. 30, 1993, Ser. No. 112,971

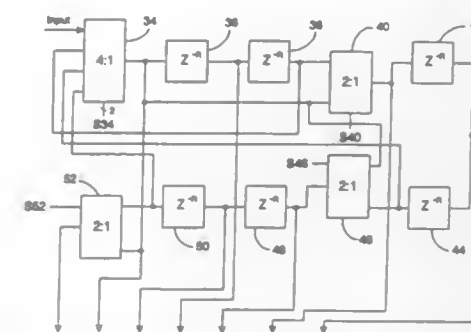
Claims priority, application United Kingdom, Dec. 17, 1992,
9226277

Int. Cl.⁶ G06F 15/31
U.S. Cl. 364—724.01 9 Claims

1. A digital filter for filtering blocks of data values, said digital filter comprising:

a chain of delay elements for storing data values; and
means for effecting symmetric edge extension of said blocks.

of data values including multiplexer means, and means for connecting said multiplexer means with said chain so that

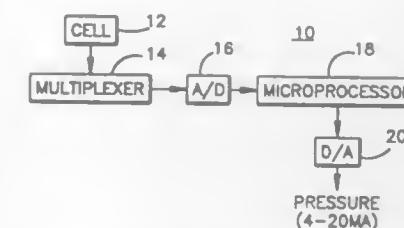


said multiplexer means selectively passes data values between inputs of non-adjacent delay elements.

5,381,355
METHOD FOR FILTERING DIGITAL SIGNALS IN A
PRESSURE TRANSMITTER

Tourang Birangi, Eastlake, and Joseph C. Nemer, Mayfield Heights, both of Ohio, assignors to Elsag International N.V., Amsterdam Zuidoost, Netherlands

U.S. Cl. 364—724.01 12 Claims



1. A method for use in an instrument that measures a parameter of a process, said instrument having a computing device therein, said computing device having a repetitive operating cycle, said method comprising the steps of:
 - a) using a means to sense said process parameter, said means developing an analog signal representative of said sensed process parameter;
 - b) sampling during each of said computing device operating cycles said analog signal representative of said sensed process parameter;
 - c) converting said sampled analog signal representative of said sensed process parameter to a digital signal;
 - d) filtering in said computing device during each of said repetitive operating cycles said digital signal representative of said analog signal representative of said sensed process parameter sampled during each of said operating cycles, said filtering providing a filtered digital output signal from said computing device representative of said sensed process parameter at the end of each of said operating cycles,said filtering comprising the steps of:
 - i. determining if said digital signal, N, representative of said sensed process parameter sampled during the presently occurring one of said repetitive operating cycles and said digital signal, O, representative of said sensed process parameter sampled during said repetitive operating cycle occurring just previous to said presently occurring operating cycle are both greater or less than said filtered digital output signal, F_O , at the end of said previously occurring operating cycle;
 - ii. determining, if both N and O are greater than F_O , if N is greater than O or if O is greater than N or, if both N

and O are less than F_O , if N is less than O or if O is less than N ; and

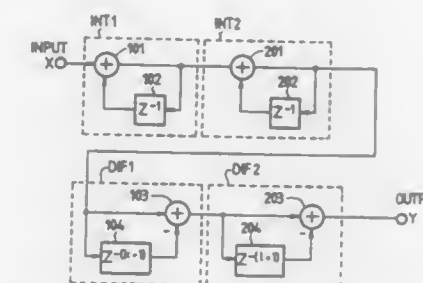
iii. calculating said filtered digital output signal at the end of said presently occurring operating cycle, F_N , as a function of F_0 and either:

1) O when N is greater than O and O is greater than F_O
or N when O is greater than N and N is greater than F_O or

2) O when N is less than O and O is less than F_O or N when O is less than N and N is less than F_O .

5,381,356
CASCADE DIGITAL FILTERS FOR REALIZING A
TRANSFER FUNCTION OBTAINED BY
CASCADE-CONNECTING MOVING AVERAGE FILTERS
Yutaka Takahashi, Tokyo, Japan, assignor to NEC Corporation,
Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 27,247
Claims priority, application Japan, Mar. 3, 1992, 4-045085
Int. Cl.⁶ G06F 15/31
U.S. Cl. 364—724.17 8 Claims



1. In a digital filter for realizing a transfer function obtained by cascade-connecting a plurality of moving average filters, said digital filter comprising a plurality of pairs of integrators and differentiators which are cascade-connected, each of said pairs of integrators and differentiators realizing a moving average filter transfer function, the improvement wherein:
- each integrator of said pairs comprises a first adder and a first delay element, said first adder having a function to invert its polarity on overflow, said first adder adding an input signal of said integrator and an output signal of said first delay element, said first delay element delaying the output signal of said first adder, and
 - each differentiator of said pairs comprises a second adder and a second delay element, said second adder having a same number of bits as said first adder and having a function to invert its polarity on overflow, said second adder adding an input signal of said differentiator and a negative output signal of said second delay element, said second delay element delaying the input signal of said differentiator.

5,381,357
COMPLEX ADAPTIVE FIR FILTER
Janet E. Wedgwood, Bethpage, and John F. Petrasoric, New
Hyde Park, both of N.Y., assignors to Grumman Corporation,
Bethpage, N.Y.

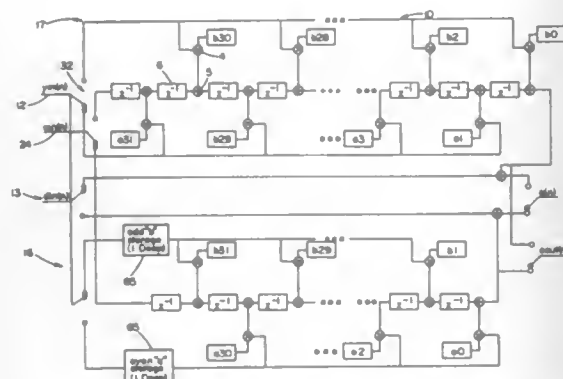
Filed May 28, 1903, Ser. No. 68,932
Int. Cl.⁶ G06F 15/31

U.S. Cl. 364-724.16 13 Claims
1. A finite impulse response filter with adaptive weights for

- a) a first data processing circuit for generating a real data output component of a complex signal output for said filter, said first processing circuit having a first input connected to a first plurality of multiplier means for multi-

plying said real input data component with a first set of adaptive weights during a first time interval and successive first time intervals, and generating corresponding first sets of weighted data for output at each said multiplier means of said first plurality, and a second input connected to a second plurality of multiplier means for multiplying said imaginary input data component with a second set of adaptive weights during a second time interval and successive second time intervals, and generating corresponding second sets of weighted data for output at each said multiplier means of said second plurality;

- b) a second data processing circuit for generating an imaginary output data component of said complex signal output for said filter, said second processing circuit having said first input connected to a third plurality of multiplier means for multiplying said real input data component with a third set of adaptive weights during said successive second time intervals, and generating corresponding third sets of weighted data for output at each said multiplier means of said third plurality, and said second input connected to a fourth plurality of multiplier means for multiplying said imaginary input data component with a fourth set of adaptive weights during successive first time intervals, and generating corresponding fourth sets of weighted data for output at each said multiplier means of said fourth plurality;
- c) sampling means for inputting said real input data component at said first input during said first time interval and



successive first time intervals thereafter, and for inputting said imaginary input data component at said second input during said second time interval and successive second time intervals thereafter;

- d) a first input storage means located at said first input in said second data processing circuit for delaying the multiplication of said real input data component with said third plurality of multiplier means for one time interval and a second input storage means located at said second input in said second data path for delaying the multiplication of said imaginary input data component with said fourth plurality of multiplier means for one time interval;
- e) first plurality of accumulator circuit means interconnecting outputs of each said first plurality of multiplier means with outputs of each said second plurality of multiplier means for successively accumulating selective first sets of weighted data and selective second sets of weighted data to form said real data output component of said complex output signal, and a second plurality of accumulator circuit means interconnecting outputs of each said third plurality of multiplier means with outputs of each said fourth plurality of multiplier means for successively accumulating selective third sets of weighted data and selective fourth sets of weighted data to form said imaginary data output component of said complex output signal;
- f) control circuit means for simultaneously directing said first plurality of accumulator circuit means and said second plurality of accumulator circuit means to accumulate said first sets of weighted data and said fourth sets of weighted data.

data, respectively, during successive said second time intervals, and for simultaneously directing said first plurality of accumulator circuit means and said second plurality of accumulator circuit means to accumulate said second sets of weighted data and said third sets of weighted data, respectively during successive said first time intervals; and g) coefficient swapping circuit means for updating the adaptive weight values of said predetermined coefficient sets, said means simultaneously updating the values of said first plurality and said fourth plurality of adaptive weights means during said successive second time intervals, and simultaneously updating the values of said second plurality and said third plurality of adaptive weight means during said successive first time intervals.

5,381,358
CYCLIC DIGITAL FILTER

Etsuro Sakamoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 861.033, Mar. 31, 1992, abandoned.

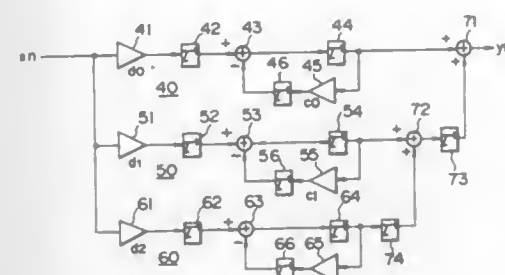
This application Aug. 23, 1993, Ser. No. 110,627

Claims priority, application Japan, Apr. 12, 1991, 3-108736;
Oct. 24, 1991, 3-305478

Int. Cl.⁶ G06F 15/31

U.S. Cl. 364—724,17

5 Claims



1. A cyclic digital filter, comprising:
- a plurality of feedback loops connected in parallel, each of said plurality of feedback loops including:
 - an adder for adding a respective input signal and subtracting a respective delayed feedback signal from said respective input signal to form a respective subtraction result;
 - a first unit time delay circuit connected to said adder for delaying said subtraction result and for outputting said delayed subtraction result as a respective output signal of the feedback loop;
 - a coefficient multiplier connected to said first time delay circuit for multiplying said delayed subtraction result by a respective predetermined coefficient to form a respective feedback signal;
 - a second unit time delay circuit for delaying said respective feedback signal formed by said coefficient multiplier to provide said respective delayed feedback signal to said adder; and
 - means for adding the respective output signals of said plurality of feedback loops.

5,381,359
ADAPTATION AND TRAINING OF DIGITAL FINITE
IMPULSE RESPONSE FILTER WITHIN PRML
SAMPLING DATA DETECTION CHANNEL

William L. Abbott, Portola Valley, and Hung C. Nguyen, San Jose, both of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Aug. 27, 1992, Ser. No. 936,761

Int. Cl.⁶ G06F 7/38; H03H 7/30

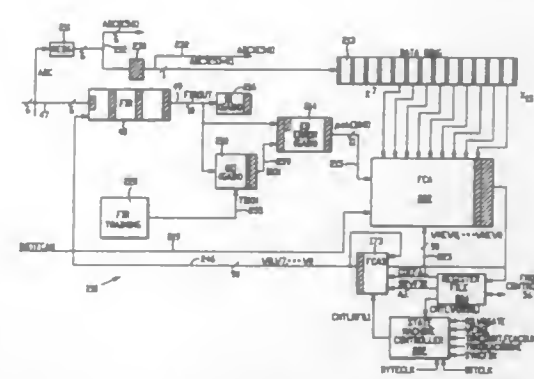
U.S. Cl. 364—724.19

13 Claims

1. A digital adaptive finite impulse response filter circuit within a partial response, maximum likelihood sampled data detection channel having characteristics which change during

operation of the detection channel in a controlled way and also including an analog to digital sampling and conversion means (46) for receiving and quantizing a coded data stream within the detection channel into raw digital samples and for providing the raw digital samples to an input (47) of the digital adaptive finite impulse response filter circuit and a sampled data detector means (50) for detecting coded digital data from conditioned digital samples received from an output (49) of the digital adaptive finite impulse response filter circuit, the digital adaptive finite impulse response filter circuit comprising:

- a multi-tap transversal filter (48) including a series of unit delays connected between the input (47) and the output (49) and wherein each delay is related to a sampling interval of the analog to digital sampling and conversion means, taps between the unit delays for providing tap values, process nodes connected to respective taps, and a summing circuit for summing products put out from the



- process nodes, and wherein each process node is connected to multiply a tap value received from a respective tap by a coefficient of a selected set of coefficients, a digital register file (804) for storage of a plurality of sets of coefficients, each set of coefficients for changing data detection channel characteristics, a multiplexer (173) connected to said digital register file (804) for selecting and providing said selected set of coefficients from the plurality of sets of coefficients and for supplying the selected set to the process nodes of the transversal filter (48), and control means for changing the detection channel characteristics of the data detection channel by controlling said digital register file and said multiplexer (173) for selecting and providing a different one of the plurality of sets of coefficients to the process nodes of the transversal filter (48) to change detection channel characteristics during operation of the detection channel.

5,381,360
MODULO ARITHMETIC ADDRESSING CIRCUIT
 Avadhani Shridhar, San Bruno, and Douglas J. Gorny, Boulder
 Creek, both of Calif., assignors to Hitachi America, Ltd.,
 Tarrytown, N.Y.

Filed Sep. 27, 1993, Ser. No. 127,431

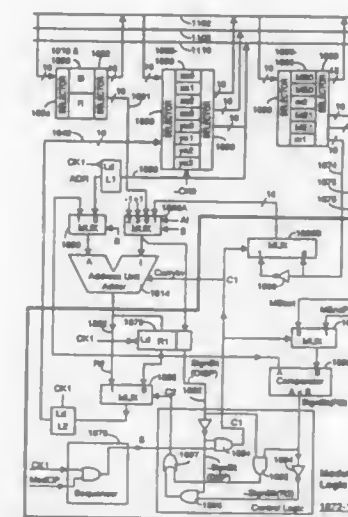
Int. Cl.⁶ G06F 7/72

U.S. Cl. 364-746

14 Claims

1. A modulo adder circuit coupled to control circuitry that provides a sequencing signal indicating first and second portions of a predefined computation cycle, said modulo adder circuit comprising:
- an adder circuit;
 - registers for storing data including a starting value, a displacement value and a modulo value;
 - input selection circuitry coupled to said registers, said adder circuit and said sequencing signal for directing data stored in said registers to said adder circuit, said input selection circuitry directing said starting value and said displacement value to said adder circuit during said first portion of

said predefined computation cycle; said adder circuit computing a first result R1 during said first portion of said predefined computation cycle;
said registers including a register coupled to said adder circuit for storing said first result R1;
said input selection circuitry including circuitry responsive to said sequencing signal for directing said first result R1 and data corresponding to said modulo value to said



- adder circuit during said second portion of said predefined computation cycle; said adder circuit computing a second result R2 during said second portion of said predefined computation cycle; and
- output circuitry, coupled to receive said first results, for selecting one of said first and second results and outputting a result corresponding selected result such that the result output by said output circuitry falls inside a predefined value range.

5,381,361
METHOD AND APPARATUS FOR REAL-TIME
CONSTRAINT SOLUTION

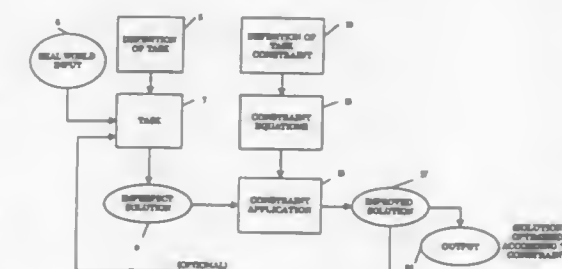
David B. Kirk, South Pasadena, and Alan H. Barr, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 14, 1993, Ser. No. 61,848

Int. Cl.⁶ G06G 7/00

g U.S. Cl. 364—807

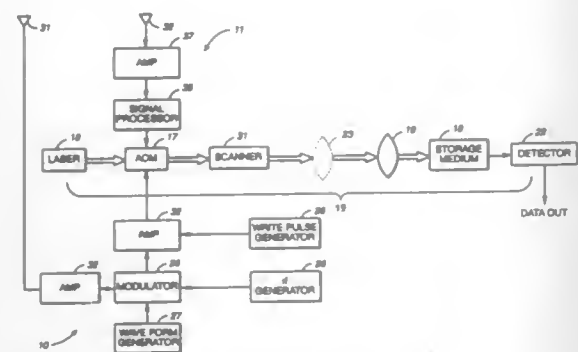
22 Claims



1. A system for implementation of real time constraint solution of a task, comprising:
 - means for defining the task as a first process to be performed;
 - means for defining constraints of the task;
 - means for translating the constraints to at least one second process to be solved;
 - execution means for performing the first process to generate an imperfect solution;
 - optimization means for minimizing a first difference between

the constraints as translated to a second process to be solved and the imperfect solution to produce an improved solution of the task.

5,381,362
REPROGRAMMABLE MATCHED OPTICAL FILTER
AND METHOD OF USING SAME
 Xiao An Shen, San Bruno; Yu Sheng Bai, Palo Alto, and Eric M. Pearson, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.
 Filed Jul. 30, 1993, Ser. No. 100,600
 Int. Cl.⁶ G06G 7/02; G06E 3/00
 U.S. Cl. 364—825 9 Claims

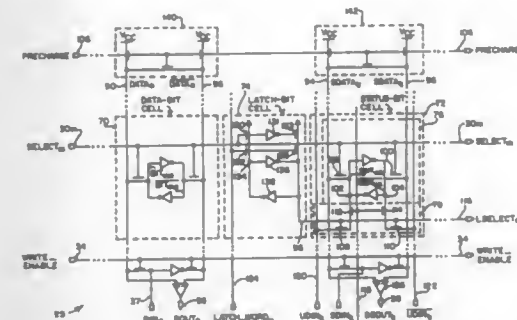


1. Optical filter apparatus for processing a data signal comprising:
 - a coherent time-domain optical storage material;
 - means for providing a reference pulse of coherent optical radiation phase modulated according to a predetermined phase modulation, said reference pulse being in coherent time-domain optical storage relation with said material;
 - means for optically storing said phase modulated reference pulse on a spatial region of said coherent time-domain optical storage material;
 - means for providing a data pulse of coherent optical radiation modulated with said data signal, said data pulse also being phase modulated according to said predetermined phase modulation and being in coherent time-domain optical storage relation with said material;
 - means for exposing said spatial region of said material to said phase modulated data pulse so as to generate an echo pulse representative of the correlation of said data pulse and reference pulse over said spatial region; and
 - means for detecting said echo pulse, whereby said echo pulse displays a single peak if said data pulse matches said reference pulse.

5,381,363
METHOD AND CIRCUITRY FOR PERFORMING A
HIDDEN READ-MODIFY-WRITE
 Mel Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.
 Filed Dec. 12, 1991, Ser. No. 807,134
 Int. Cl.⁶ G11C 5/02, 5/06, 7/00

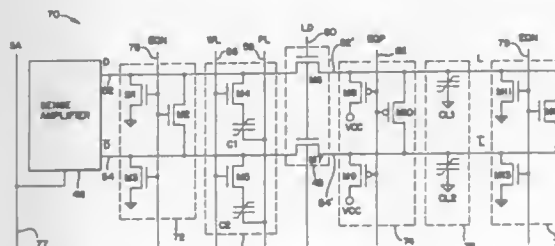
- U.S. Cl. 365—51 19 Claims
1. Circuitry for overlapping a write access of a read-modify-write cycle of a first bit stored in a first SRAM cell with an active state of a precharge signal preceding a read access of a second bit stored in a second SRAM cell, the first bit being read in response to an active state of a select signal, the circuitry comprising:
 - a) latching means for latching the active state of the select signal; and
 - b) modify-write means for modifying a state of the first bit while the update write enable signal is active, the modify-

write means coupled to the first SRAM cell and the latching means, the modify-write means responsive to an up-



date write enable signal having an active state during the active state of the precharge signal.

5,381,364
FERROELECTRIC-BASED RAM SENSING SCHEME
INCLUDING BIT-LINE CAPACITANCE ISOLATION
 Wen-Foo Chern, and Brett Meadows, both of Colorado Springs, Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo.
 Filed Jun. 24, 1993, Ser. No. 83,883
 Int. Cl.⁶ G11C 11/22
 U.S. Cl. 365—145 27 Claims

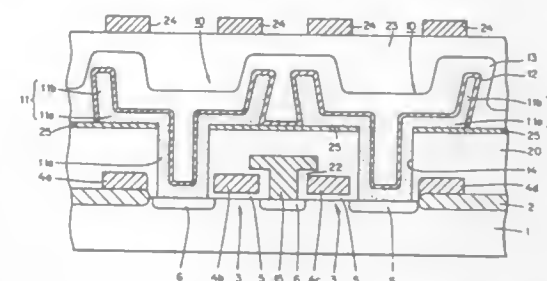


1. A ferroelectric memory comprising:
 - a bit line;
 - a selected ferroelectric memory cell having a data input/output node coupled to the bit line;
 - a load capacitor;
 - a sense amplifier coupled to the bit line; and
 - isolation circuitry for electrically coupling the load capacitor to the ferroelectric memory and the sense amplifier during an initial portion of a read cycle to maximize bit line signal, and for isolating the load capacitor from the sense amplifier and the ferroelectric memory cell during a subsequent portion of the read cycle to allow the sense amplifier to resolve full logic levels on the bit line without the extra capacitance of the load capacitor.

5,381,365
DYNAMIC RANDOM ACCESS MEMORY HAVING
STACKED TYPE CAPACITOR AND MANUFACTURING
METHOD THEREFOR
 Natsuo Ajika; Hideaki Arima, and Atsushi Hachisuka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Continuation-in-part of Ser. No. 645,980, Jan. 23, 1991. This application Jun. 30, 1993, Ser. No. 91,675
 Claims priority, application Japan, Jan. 26, 1990, 2-16960; Apr. 3, 1990, 2-89869; Sep. 19, 1990, 2-251306
 Int. Cl.⁶ H01L 29/68, 27/10

- U.S. Cl. 365—149 5 Claims
1. A DRAM comprising:
 - a semiconductor substrate of a second conductivity type

having a main surface and an impurity region of a first conductivity type on the main surface, an insulation layer formed on the main surface of said semiconductor substrate and having an opening portion exposing said impurity region, said insulation layer having an upper surface substantially parallel to the main surface of said substrate,

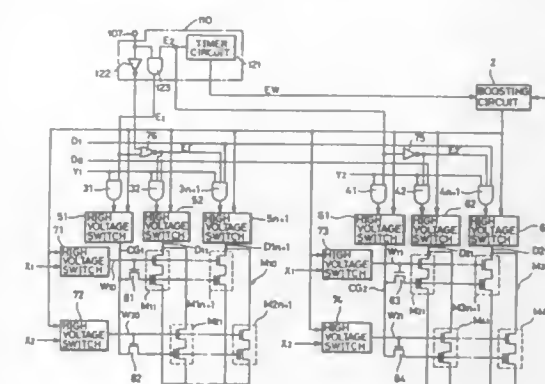


a first electrode layer including a first portion formed on and in contact with a surface of said impurity region and said upper surface of said insulation layer, and a second portion having a frusto-conical shape and extending vertically from said upper surface of said insulation layer, a dielectric layer covering a surface of said first electrode layer, a second electrode layer covering a surface of said dielectric layer.

5,381,366
NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE
WITH TIMER CONTROLLED RE-WRITE INHIBIT
MEANS

Koichi Kawauchi, and Seichiro Asari, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 798,095, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 771,832, Oct. 8, 1991, Pat. No. 5,278,786, which is a continuation of Ser. No. 461,585, Jan. 5, 1990, abandoned. This application May 2, 1994, Ser. No. 236,002

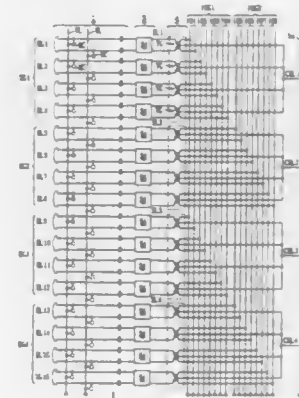
Claims priority, application Japan, Apr. 11, 1989, 1-92533
 Int. Cl.⁶ G11C 11/40
 U.S. Cl. 365—185 6 Claims



1. A non-volatile semiconductor memory device in which electrical rewriting of data is possible, comprising:
 - non-volatile semiconductor memory means including first and second memory areas in which electrical rewriting of data is possible;
 - a single line to which an external control signal is input; and
 - control means for allowing rewriting of data to said first and second memory areas in response to the signal input to said line which is at a first level, and for inhibiting rewriting of data to said first memory area and for allowing rewriting of data to said second memory area, in response

to the signal input to said line which is at a second level different from said first level, said control means comprising timer means for generating an internal control signal supplied together with said external control signal to control rewriting of data to said first memory area.

5,381,367
SEMICONDUCTOR MEMORY DEVICE AND AN
OPERATING METHOD OF THE SAME
 Takeshi Kajimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 24, 1993, Ser. No. 36,571
 Claims priority, application Japan, Jul. 21, 1992, 4-194097
 Int. Cl.⁶ G11C 7/00, 8/00
 U.S. Cl. 365—189.01 18 Claims



1. A semiconductor memory device comprising:
 - a memory array including a plurality of memory cells arranged in a plurality of rows and a plurality of columns and each storing data; and a plurality of bit lines provided corresponding to said plurality of columns and each connected to memory cells in the corresponding column, said plurality of bit lines being divided into a plurality of bit line groups each including a predetermined number of bit lines, said plurality of bit line groups being classified into n main groups;
 - n input/output line groups provided corresponding to said n main groups and each including a predetermined number of input/output lines;
 - a plurality of connecting means provided corresponding to said plurality of bit line groups and each connected between the corresponding bit line group and the corresponding input/output line group; and
 - column selecting means for selectively generating a plurality of selecting signals corresponding to said plurality of bit line groups; wherein
 - each of said plurality of connecting means is activated in response to the corresponding selecting signal and connects each bit line in the corresponding bit line group to each input/output line in the corresponding input/output line group; and
 - said column selecting means includes means for activating a plurality of connecting means connected to different input/output line groups in said memory array at the same time or with a predetermined time difference.

5,381,368
HARDWARE IMPLEMENTED ROW COPY ENABLE
MODE FOR DRAMS TO CREATE REPETITIVE
BACKGROUNDS FOR VIDEO IMAGES OR DRAM
TESTING

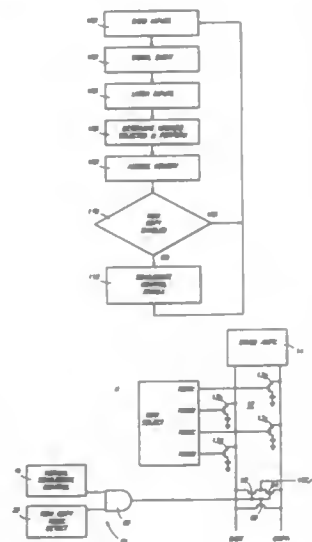
Donald M. Morgan, and Michael A. Shore, both of Boise, Id.,
 assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Dec. 10, 1993, Ser. No. 165,773

Int. Cl.⁶ G11C 11/40

U.S. Cl. 365—189.01

3 Claims



2. A DRAM device, comprising:

- a memory array having multiple rows and multiple paired digit lines that intersect one another, the memory array also having a plurality of memory cells coupled at intersections of individual rows and paired digit lines, the paired digit lines being used to carry data to and from the memory cells;
- an equilibrate control, electrically coupled to the digit lines of the memory array, to erase data on the paired digit lines; and
- a copy circuit, located on the DRAM device and electrically coupled to the memory array and the equilibrate control, for copying data carried by the paired digit lines and placed in a first row of memory cells to at least another row of memory cells by suspending activation of the equilibrate control to prevent erasure of the data on the paired digit lines.

5,381,369
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE
USING A COMMAND CONTROL SYSTEM

Shinichi Kikuchi; Kiyotaka Uchigane, both of Yokohama, and
 Hideo Kato, Kawasaki, all of Japan, assignors to Kabushiki
 Kaisha Toshiba, Tokyo, Japan

Filed Feb. 3, 1994, Ser. No. 191,334

Claims priority, application Japan, Feb. 5, 1993, 5-018277;
 Jan. 17, 1994, 6-003143

Int. Cl.⁶ G11C 7/00

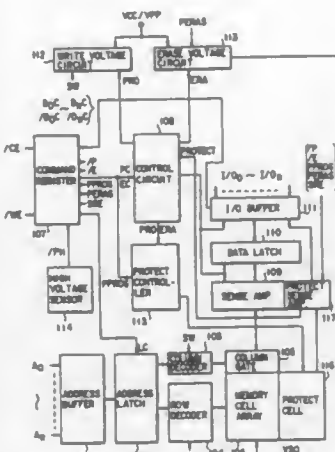
U.S. Cl. 365—189.01

10 Claims

1. An electrically programmable semiconductor memory
device comprising:

- memory cell array means composed of electrically programmable nonvolatile memory cells;
- memory peripheral circuit means for specifying an address according to an external signal for said memory cell array means and performing an access operation;
- high-voltage supplying means for data program-related control of said memory cell array means;
- command register circuit means for supplying a command signal for performing a programmed operation to said

memory cell array means according to an external control signal;
 command signal transfer means for controlling said memory peripheral circuit to perform at least one of a programmed and a reading operation on a given memory cell in said memory cell array means according to said command signal;
 nonvolatile protect memory means from which data is read whenever a programmed operation is performed on said memory cell array means;
 sensing means for supplying to said command register circuit



means a control signal used when a programmed operation is performed on said protect memory means;
 protect sense amplifier circuit means for reading data from said protect memory means;
 protect control circuit means for controlling said protect memory means and said protect sense amplifier circuit means on the basis of the command signal from said command register circuit means; and
 control circuit means for controlling said high-voltage supplying means to control a programmed operation on said memory cell on the basis of the readout data from said protect sense amplifier circuit means.

5,381,370
MEMORY WITH MINIMIZED REDUNDANCY ACCESS
DELAY

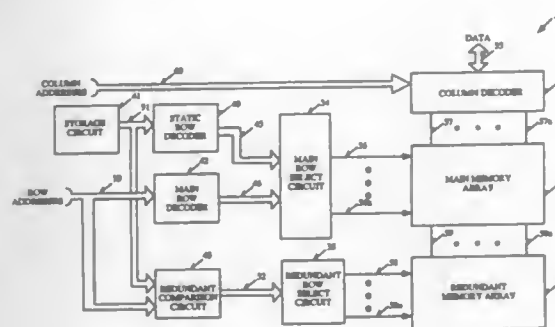
Timothy M. Lacey, Cupertino, and Christopher S. Norris, Sunnyvale, both of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Aug. 24, 1993, Ser. No. 111,164

Int. Cl.⁶ G11C 7/00, 8/00

U.S. Cl. 365—200

16 Claims



1. A memory, comprising:

- (A) a main memory array having a plurality of memory locations;

- (B) a main select circuit coupled to the main memory array for decoding an address received from an external circuit to access a selected one of the plurality of memory locations;
- (C) a redundant memory array having a plurality of redundant memory locations;
- (D) a storage circuit for pre-storing the address of the selected one of the plurality of memory locations when the selected one of the plurality of memory locations is defective;
- (E) a redundant comparison circuit coupled to the redundant memory array and the storage circuit for comparing the address received from the external circuit with the address pre-stored in the storage circuit in order to access a selected one of the plurality of redundant memory locations;
- (F) a static decoding circuit coupled to the storage circuit and the main select circuit for decoding the address received from the storage circuit and for statically disabling the main select circuit from accessing the selected one of the plurality of memory locations such that when the redundant comparison circuit accesses the selected one of the plurality of redundant memory locations, the main select circuit has already been disabled from accessing the selected one of the plurality of memory locations, wherein the static decoding circuit decodes the address from the storage circuit to disable the main select circuit from accessing only the selected one of the plurality of memory locations based on the address pre-stored in the storage circuit, wherein when the static decoding circuit disables the main select circuit from accessing the selected one of the plurality of memory locations, the main select circuit can still access other ones of the plurality of memory locations that are not defective.

5,381,371
SEMICONDUCTOR MEMORY DEVICE
INCORPORATING REDUNDANCY MEMORY CELLS
CAPABLE OF ACCESSING DEFECTIVE MEMORY
CELLS

Yoshinori Haraguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

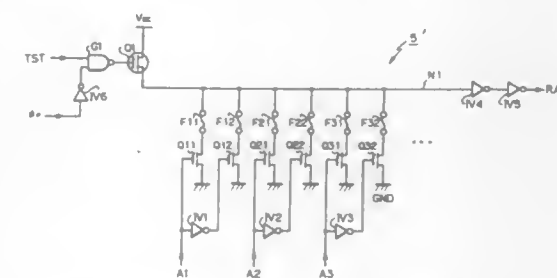
Filed Sep. 7, 1993, Ser. No. 116,673

Claims priority, application Japan, Sep. 4, 1992, 4-236726

Int. Cl.⁶ G11C 29/00

U.S. Cl. 365—200

6 Claims



1. A semiconductor memory device comprising:

- a plurality of memory cells;
 - a plurality of redundancy memory cells;
 - a normal decoder means, connected to said memory cells, for accessing said memory cells by a first address; and
 - a redundancy decoder means, connected to said redundancy memory cells, for accessing said redundancy memory cells by a second address and disabling said normal decoder means, to thereby replace at least one of said memory cells with their corresponding redundancy memory cells,
- said redundancy decoder means receiving a test signal and being always disabled when said test signal is at a test mode level.

5,381,372
SEMICONDUCTOR MEMORY DEVICE
 Eiji Kozuka, and Naokazu Miyawaki, both of Yokohama, Japan,
 assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

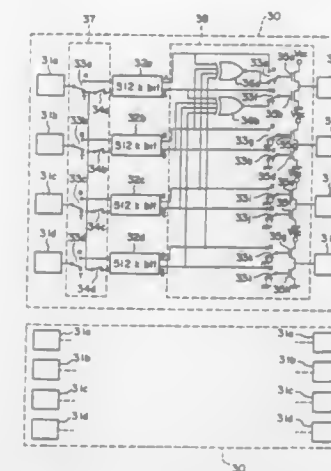
Filed May 5, 1993, Ser. No. 56,919

Claims priority, application Japan, May 6, 1992, 4-113756

Int. Cl.⁶ G11C 29/00

U.S. Cl. 365—201

7 Claims



1. A semiconductor memory device, comprising:
 N2-unit memory cell blocks each having N1-unit memory cell arrays, where N1 and N2 denote integers greater than one;
 (N1×N2)-unit input and output sections, arranged so as to correspond to each of said memory cell arrays, for inputting and outputting signals to and from said memory cell array;
 a write circuit disposed for each memory block, for inputting information signals to be written in each memory cell array through said corresponding input and output sections in a normal mode, and for writing test signals inputted through N3-unit input and output sections to N1/N3-unit memory cell arrays, respectively in each of said memory cell blocks in a test mode, where N3 is an integer less than N1; and
 a read circuit disposed for each memory block, for outputting information signals read from said N1-unit memory cell arrays, respectively through said corresponding input and output sections in the normal mode, and outputting a discriminating result indicative of whether signals read from said N1/N3-unit memory cell arrays in which the same test signals have been written match each other, through said N3-unit input and output sections, the same as used when the test signals have been written, in said test mode.

5,381,373
VOLTAGE STRESS TEST CIRCUIT FOR A DRAM
 Takashi Ohsawa, Yokohama, Japan, assignor to Kabushiki
 Kaisha Toshiba, Japan

Filed Jun. 11, 1993, Ser. No. 75,313

Claims priority, application Japan, Jun. 12, 1992, 4-153482;
 Jun. 12, 1992, 4-153485

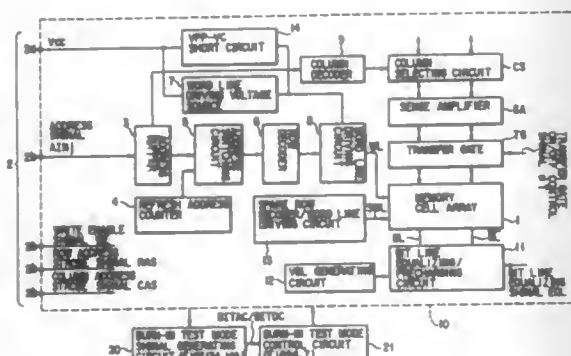
Int. Cl.⁶ G11C 7/00

U.S. Cl. 365—201

17 Claims

1. A semiconductor memory device comprising:
 a DRAM circuit;
 a voltage stress test mode signal generating circuit for generating a voltage stress test mode signal on the basis of a predetermined signal input through some of external terminals used in a normal operation of said DRAM circuit; and
 a control circuit for receiving the test mode signal from said

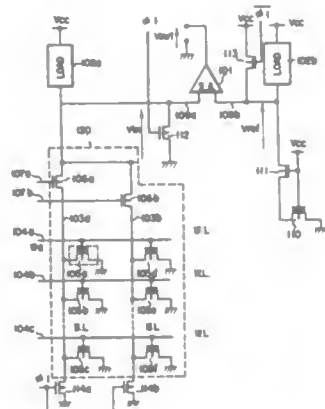
voltage stress test mode signal generating circuit, and performing control such that a plurality of bits of an out-



put signal from a refresh address counter of said DRAM circuit are fixed at the same level, and bits other than the plurality of bits are subjected to a normal count operation.

5,381,374
MEMORY CELL DATA OUTPUT CIRCUIT HAVING IMPROVED ACCESS TIME
Mikio Shirahashi, Yokohama, and Toshimasa Kawai, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 30, 1992, Ser. No. 998,907
Claims priority, application Japan, Jan. 9, 1992, 4-002114
Int. Cl.⁶ G11C 7/00
U.S. Cl. 365—203 11 Claims

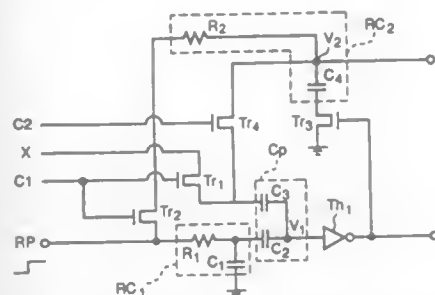


11. A data output circuit for outputting data from a memory cell, comprising:

- a reference potential;
- a sense amplifier having a first input connected to said reference potential and a second input connected to said memory cell, said sense amplifier operating to sense and amplify a potential difference between said first input and said second input;
- a first switch for selectively connecting said first input to a first potential;
- a second switch for selectively connecting said second input to a second potential different from said first potential; and
- means for applying control signals to said first switch and said second switch to bring said first input and said second input to said first potential and said second potential, respectively, for a time period prior to a time said sense amplifier operates.

5,381,375
MEMORY DEVICE
Guoliang Shou, Weikang Yang, Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

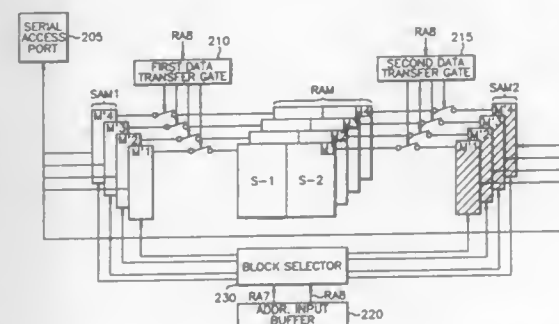
Filed Oct. 19, 1993, Ser. No. 137,736
Claims priority, application Japan, Oct. 21, 1992, 4-308267
Int. Cl.⁶ G11C 16/00, 7/00
U.S. Cl. 365—204 3 Claims



1. A memory device comprising:
 - i) a threshold element having a gate and an output, said threshold element outputting a voltage at said output when a voltage at said gate reaches a threshold voltage;
 - ii) a capacitive coupling circuit including a first capacitance and a second capacitance and having a first input, a second input, and an output, said output of said capacitive coupling circuit being connected to said gate of said threshold element and said second input receiving an input voltage;
 - iii) a first RC circuit connected to said first input of said capacitive coupling circuit, said first RC circuit including a third capacitance therein, said first RC circuit receiving a predetermined reference voltage and being connected so that said third capacitance is charged over a predetermined period of time, the voltage of said third capacitance being output to said first input of said capacitive coupling circuit; and
 - iv) a memory element whose parameter is time, wherein an input of said memory element is connected to said output of said threshold element.

5,381,376
VIDEO RAM HAVING BLOCK SELECTION FUNCTION DURING SERIAL WRITE TRANSFER OPERATION
Min-Tae Kim, Suwon; Doog-Jae Lee, and Seung-Mo Seo, both of Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 19, 1992, Ser. No. 976,920
Claims priority, application Rep. of Korea, Nov. 22, 1991, 20913/1991
Int. Cl.⁶ G11C 7/00
U.S. Cl. 365—230.03 23 Claims

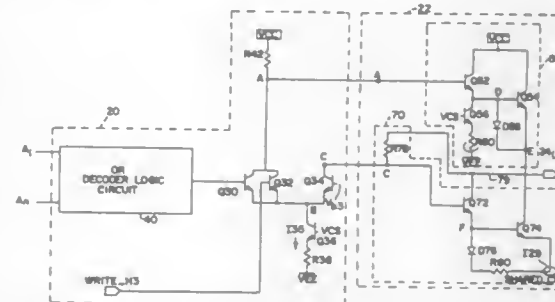


1. A video random access memory for performing serial read

and write data transfer operations, said video random access memory comprising:

- a random access memory having a plurality of blocks each having a plurality of memory cells in a matrix;
- a serial access memory having a plurality of blocks each having a plurality of memory cells connected to each column of corresponding blocks of said random access memory; and
- block selection means for enabling transfer of serial write data from said serial access memory to selected blocks of said random access memory after writing said serial write data to all of said plurality of blocks of said serial access memory.

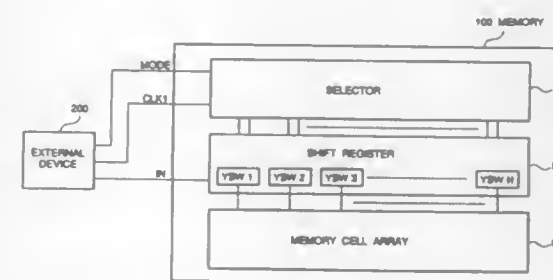
5,381,377
WORD LINE DRIVER CIRCUIT AND METHOD
Gary W. Bewick, Palo Alto; Mark R. Santoro, and Lee S. Tavor, both of Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 91,948, Jul. 15, 1993, which is a continuation-in-part of Ser. No. 960,616, Oct. 14, 1992. This application Sep. 27, 1993, Ser. No. 131,058
Int. Cl.⁶ G11C 11/40
U.S. Cl. 365—230.06 23 Claims



14. A method of providing a word line driver circuit capable of operating in a driving state, and an active pull down state, comprising the steps of:

- providing a word line coupled to an output node;
- providing a pull up circuit coupled to the output node;
- providing a pull down circuit coupled to the output node;
- providing a control feedback element coupled between the output node and the pull down circuit for controlling the activation of the pull down circuit based on the state of the driver circuit.

5,381,378
SEMICONDUCTOR MEMORY DEVICE
Yasunori Okimura, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 29, 1993, Ser. No. 128,235
Claims priority, application Japan, Sep. 29, 1992, 4-283664
Int. Cl.⁶ G11C 8/04
U.S. Cl. 365—233 2 Claims

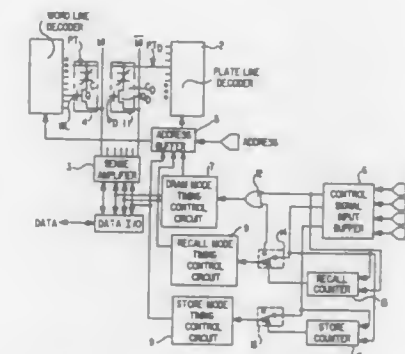


1. A semiconductor memory circuit comprising:

- a memory cell array for storing data;
- a bit structure selection circuit for performing a data transfer between said memory cell array and an external device either in a first transfer mode in which said data is transferred in units of a first bit number or in a second transfer mode in which said data is transferred in units of a second bit number different from the first bit number, said bit structure selection circuit including:
 - a selector which receives an input clock signal and a mode signal, and which is configured to generate a first clock signal and a second clock signal derived from said input clock signal in correspondence with said mode signal, said first clock signal and said second clock signal being in the same phase when said mode signal is at a first logical level, and said first clock signal and said second clock signal being in a phase complementary to each other when said mode signal is at a second logical level;
 - a shift register, having a plurality of stages, receiving an input signal and controlled by said first clock signal and said second clock signal to selectively output a plurality of memory selection signals from said plurality of stages to said memory cell array, said input signal being shifted through said shift register by a first shift width when said first clock signal and said second clock signal are in the same phase, and by a second shift width different from said first shift width when said first clock signal and said second clock signal are in a phase complementary to each other.

5,381,379
NON-VOLATILE DYNAMIC RANDOM ACCESS MEMORY DEVICE; A PAGE STORE DEVICE AND A PAGE RECALL DEVICE USED IN THE SAME; AND A PAGE STORE METHOD AND A PAGE RECALL METHOD

Katsumi Fukumoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 3, 1993, Ser. No. 163,180
Claims priority, application Japan, Dec. 3, 1992, 4-324506; May 6, 1993, 5-105740
Int. Cl.⁶ G11C 8/00, 14/00
U.S. Cl. 365—238.5 27 Claims



1. An NVDRAM memory device which performs a recall operation in which non-volatile data stored in a memory cell is converted to volatile data in a recall mode, a store operation in which the volatile data stored in the memory cell is converted to the non-volatile data stored in a store mode, and a read/write operation in which the volatile data stored in the memory cell is read or written in a DRAM mode, comprising:

- counting means for counting the number of the recall or store operations, which generates an inhibit signal in the case where a counted value exceeds a predetermined value and resets the counted value in response to an external reset signal; and
- inhibit means for inhibiting the recall or store operation in

corner of said stack, said via segment being in electrical communication with said electrode means.

5,381,386

MEMBRANE HYDROPHONE

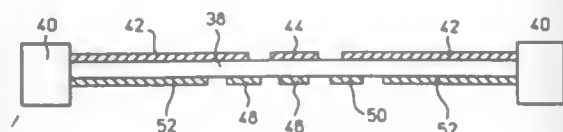
Paul Lum, and Michael Greenstein, both of Los Altos, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 19, 1993, Ser. No. 64,611

Int. Cl.⁶ H04R 17/00

U.S. Cl. 367-163

13 Claims



1. A membrane hydrophone comprising:
 - a semiconductor substrate having an opening therethrough;
 - a patterned layer on said semiconductor substrate, said patterned layer forming a raised frame on said semiconductor substrate;
 - a flexible membrane of piezoelectric material, said membrane having a piezoelectrically active region and a piezoelectrically inactive region, said bottom surface of said active region being formed within the perimeter of said inactive region, said active region having an area substantially less than the area of said inactive region, the periphery of said inactive region being attached to said frame on a side of said frame opposite to said semiconductor substrate in parallel relationship with said semiconductor substrate, said active region being aligned with said opening of said substrate such that said bottom surface is exposed therethrough; and
 - electrode means on said membrane of piezoelectric material for conducting electrical charge from said active region.

5,381,387

SOUND PORT FOR A WRIST TELEPHONE

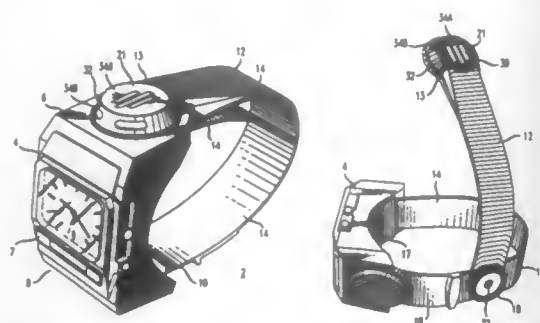
Greg E. Blonder, Summit; Bertrand H. Johnson, Murray Hill, and George Knoedl, Jr., Milford, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed May 6, 1994, Ser. No. 239,436

Int. Cl.⁶ G04B 47/00; H04M 1/03

U.S. Cl. 368-10

16 Claims



1. A radiotelephone device comprising:
 - a case including a transceiver;
 - a multilayer strap attached to the case for fastening the device to a user's wrist, said multilayer strap including a top layer and a bottom layer;
 - a microphone electrically connected to the transceiver;
 - a speaker located at an end of the top layer of the strap and electrically connected to the transceiver, said speaker located in a housing comprising a first surface substan-

tially parallel to the top layer of the strap, and at least one other surface integrally connected to said first surface and positioned at an angle with respect to said first surface; and

at least one sound port located within the at least one other surface of the housing.

5,381,388

DIGITAL CLOCK

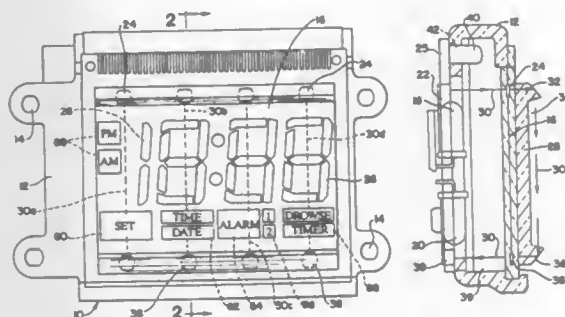
John L. Beiswenger, Strasburg, Pa., and Robert I. Schwimmer, Glencoe, Ill., assignors to Technomarket, L.P., Chicago, Ill.

Filed Jul. 28, 1993, Ser. No. 98,464

Int. Cl.⁶ G04C 17/00, 19/00; G09F 9/35

U.S. Cl. 368-69

24 Claims



1. A digital clock which comprises an electronic timekeeping circuit, an electronic digital display connected to said timekeeping circuit to display time as controlled by said circuit, and an electronic control to permit changing of individual numerals displayed by said display in a plurality of locations by manually pointing at said individual numerals, in which said electronic control comprises at least one light beam emitter, at least one light beam sensor, and means for passing at least one light beam from the emitter to the sensor in front of said numerals in a position to permit selective occlusion of said at least one light beam by manual pointing, the occlusion being detectable by the electronic control.

5,381,389

TIMEKEEPING SYSTEM FOR TIMING OF A START SIGNAL

Naoyuki Shimbo, Urawa, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

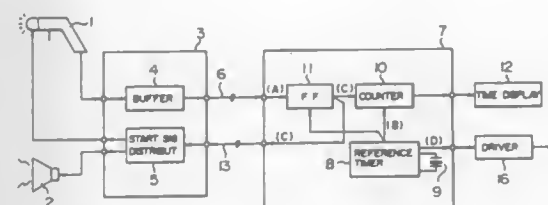
Filed Mar. 22, 1994, Ser. No. 215,730

Claims priority, application Japan, Mar. 22, 1993, 5-086716

Int. Cl.⁶ G04F 8/00, 10/00

U.S. Cl. 368-110

5 Claims



1. A timekeeping system comprising:
 - start commanding means for generating a start command signal;
 - reference clock generating means for generating reference clock pulses for timekeeping;
 - start signal generating means for generating a start signal in synchronism with a reference clock pulse received after receiving said start command signal, said start signal generation means being connected to said start commanding means and said reference clock generating means;

start signing means for notifying competitors of competition start timing in response to the start signal supplied from said start signal generating means; and

timekeeping means for measuring elapsed time after said start signal has been generated by counting reference clock pulses supplied from said reference clock generating means in response to the start signal supplied from said start signal generating means.

5,381,390

DIRECTLY OVERWRITE INFORMATION BY USING TWO RADIATION BEAMS ONTO A SINGLE MAGNETO-OPTICAL RECORDING

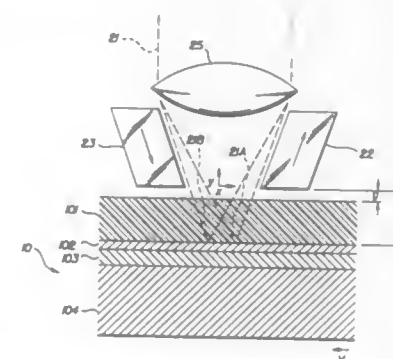
Charles F. Brucker, Fairport, N.Y., and Neil Smith, San Diego, Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 3, 1993, Ser. No. 72,262

Int. Cl.⁶ G11B 13/04

U.S. Cl. 369-13

31 Claims



1. Apparatus for the direct overwriting of an optical storage medium having a magneto-optical recording layer, wherein said recording layer is protected by a spacer layer, said medium being moved relative to said apparatus, said apparatus comprising:

- a first and a second radiation source;
- a condensing lens for focusing radiation from said first and said second radiation source on a first and a second region respectively of said recording layer, wherein a region illuminated by said first radiation source is thereafter illuminated by said second radiation source;
- a first and a second magnet, said first magnet proximate said first radiation beam and having a first magnetic pole proximate said first region without contacting said storage medium, said second magnet proximate said second radiation beam and having a magnetic pole opposite to said first magnetic pole proximate said second region, wherein said first magnet and said first radiation beam are selected to provide a first orientation of magnetic domains in said magneto-optical recording layer, said second magnet and said second radiation beam selected to provide a second orientation of magnetic domains in said magneto-optical storage medium.

5,381,391

OPTICAL RECORDING MEDIUM HAVING A THIRD NON-LINEAR OPTICAL REFLECTION FILM

Takuma Yanagisawa, and Selichi Ohsawa, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 125,294

Claims priority, application Japan, Sep. 25, 1992, 4-256703

Int. Cl.⁶ G11B 13/00

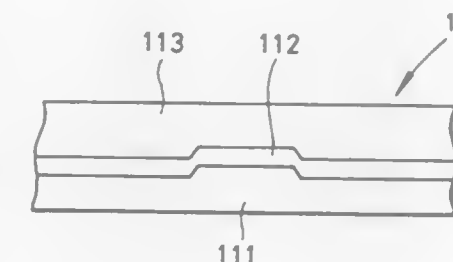
U.S. Cl. 369-14

2 Claims

1. An optical disk comprising:
 - a first transparent film;

a reflection film layered on said first transparent film and carrying pits as recording portions; and

a second transparent film layered on said reflection film; wherein said reflection film is made of a third non-linear optical material with a light-intensity-on-reflectance dependency such that its reflectance increases according to an increment of intensity of an incident light thereto, and having a refractive index n_{II} represented by the following equation 1:



$$n_{II} = n_0 + n_2 I_{in} \quad (1)$$

where n_0 is a linear refractive index of the third non-linear optical material, n_2 is a non-linear refractive index of the third non-linear optical material, and I_{in} is a light intensity in a main lobe of a diffraction pattern formed on said reflection film by said incident light; the reflection film having a multiple-reflectance R represented by the following equation 2:

$$R = \left| \frac{r_1 - r_2 \cdot \exp(-i\epsilon)}{1 - r_1 \cdot r_2 \cdot \exp(-i\epsilon)} \right|^2 \quad (2)$$

$$r_1 = \frac{n_I - n_{III}}{n_I + n_{III}}$$

$$r_2 = \frac{n_{II} - n_{III}}{n_{II} + n_{III}}$$

$$\epsilon = 4\pi \cdot \frac{h}{\lambda} \cdot n_{II} = 4\pi \cdot \frac{h}{\lambda} \cdot (n_0 + n_2 I_{in})$$

$$\therefore R = R \left(I_{in}, \frac{h}{\lambda} \right)$$

where r_1 is a first Fresnel's amplitude reflectance in the interface between the first transparent film and the reflection film,

r_2 is a second Fresnel's amplitude reflectance in the interface between the reflection film and the second transparent film,

n_I is a first refractive index of the first transparent film, n_{III} is a second refractive index of the second transparent film,

h is a thickness of the reflection film, and λ is a wavelength of said incident light; and said reflection film having the thickness h satisfying the following inequalities:

$$\frac{dR \left(I_{in}, \frac{h}{\lambda} \right)}{dI_{in}} \geq 0$$

$$I_e \leq I_{in} \leq I_o$$

where I_0 and I_e are center and peripheral intensities of said main lobe respectively.

5,381,392
OPTICAL DISK REPRODUCING APPARATUS FOR IDENTIFYING WHETHER THE DISK IS A BLANK DISC, PARTIAL DISC, OR A FINALIZED DISK

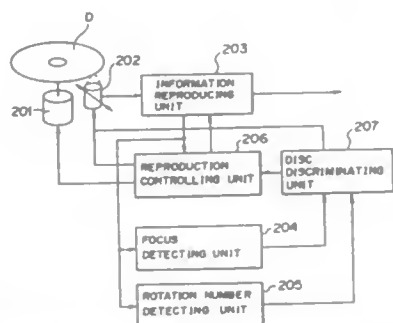
Osamu Hira, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 50,547, Apr. 20, 1993, abandoned. This application May 10, 1994, Ser. No. 240,491

Claims priority, application Japan, Apr. 24, 1992, 4-131575
 Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—54

13 Claims



1. An optical disc reproducing apparatus for reproducing an optical disc having an information recording surface on which record information and control information are recorded, said apparatus comprising:

- means for rotationally driving the optical disc;
- a reading means for forming a light spot on the information recording surface, and receiving a reflected light to generate a read signal of the reflected light;
- means for reproducing the record information and the control information from the read signal;
- means for detecting whether a focus of the light spot is normal or not according to the read signal;
- means for detecting whether a rotation number of the optical disc is normal or not according to the read signal; and
- means for discriminating whether the optical disc is a partial optical disc recordable or not on the basis of conditions of the detected focus and the detected rotation number.

5,381,393
DISC LOADING MECHANISM FOR DISC DRIVING APPARATUS

Hisao Ohtani, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 932,642, Aug. 20, 1992, abandoned.

This application Mar. 17, 1994, Ser. No. 214,152

Claims priority, application Japan, Aug. 21, 1991, 3-232483; Feb. 25, 1992, 4-073192

Int. Cl.⁶ G11B 33/02

U.S. Cl. 369—77.2

10 Claims

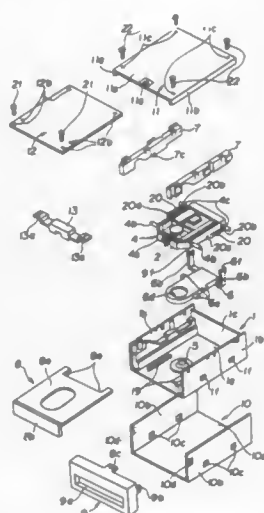
1. A disc loading mechanism for a disc driving apparatus comprising

- a disc transport member having a tray for setting a disc thereon and substantially translationally movable between an open position in which the disc may be attached to or detached from said tray and a closed position in which the disc is positioned on a turntable for rotationally driving said disc;
- a turntable supporting member having said turntable and operatively linked to movement of said disc transport member towards said closed position for being moved substantially parallel to said disc transport member to a loading position in which said disc is positioned on said turntable;
- a pair of side plates; and
- a pair of guide plates mounted on said side plates and having a first guide surface for guiding the movement of said disc transport member and second guide surfaces for engaging with and guiding a guided member provided on said turn-

table supporting member and for moving said turntable towards said tray into engagement with said turntable when said turntable supporting member is moved to said loading position in unison with said disc transport member.

9. A method for assembling a disc driving apparatus comprising the steps of:

- (a) positioning a chassis horizontally in an upside-down position;
- (b) setting clamping means slidable on an upper plate of the chassis in an upside-down position;
- (c) setting a disc tray on the chassis in an upside-down position so that left and right guide rails of the disc tray are set



horizontally on left and right guide surfaces of the chassis, respectively;

- (d) setting a movement block which has a pair of first guide parts and a pair of second guide parts on the chassis in an upside-down position so that the first guide parts are rotatably fitted to the clamping means and the second guide parts are fitted to the pair of guide surfaces which are formed on the chassis;
- (e) setting a pair of guide components on the chassis in an upside-down position so that the second guide parts are fitted to a pair of guide surfaces formed on the chassis; and setting a lower plate on the chassis in an upside-down position.

5,381,394
OPTICAL PICKUP FOR AN OPTICAL DISC PLAYER
 Naoharu Yanagawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 1,972

Claims priority, application Japan, Feb. 27, 1992, 4-076023
 Int. Cl.⁶ G02B 26/08

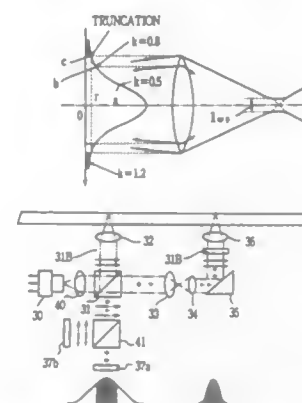
U.S. Cl. 369—100

2 Claims

1. An optical pickup for an optical disc player having a laser for emitting a laser beam, and at least one objective for focusing the laser beam on optical discs which are different from each other in recording density, comprising:

- a beam expander for expanding an intensity distribution of the laser beam, applied to a first optical disc having a low recording density, so that a first diameter of a spot is formed on the first optical disc by truncating a skirt of a Gaussian distribution of the laser beam by a first amount; and
- means for forming a second diameter of the spot of the laser beam, applied to a second optical disc having a high re-

cording density, by truncating the skirt of the Gaussian distribution by a second amount, wherein said first diame-



ter is larger than said second diameter and said first amount is smaller than said second amount.

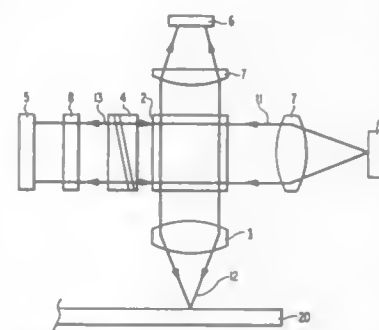
5,381,395
INFORMATION DETECTION OF A PHASE-CHANGE TYPE OPTICAL RECORDING MEDIUM BY SHIFTING THE PHASE OF A REFERENCE LIGHT
 Mitsuya Okada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,375

Claims priority, application Japan, Jun. 2, 1992, 4-140816
 Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—112

6 Claims



1. An optical disk device comprising:
 - a phase-change type optical disk medium including a recording film for recording a recording data by changing phase of a portion of said recording film to one of crystalline state and amorphous state;
 - a light source for emitting a reference light;
 - a beam splitter for dividing the reference light from said light source into a first reference light and a second reference light, for supplying the first reference light to said phase-change type optical disk medium, and for passing the first reference light reflected by said phase-change type optical disk medium to an optical detector, the first reference light reflected by said phase-change type optical disk medium being phase-shifted by data recorded thereon;
 - phase shifting means for shifting phase of the second reference light and outputting it as a phase shifted reference light to the optical detector; and
 - said optical detector for receiving the first reference light reflected by said phase-change type optical disk medium and passed through said beam splitter, and the phase shifted reference light, and outputting an electric signal corresponding to the recorded data.

5,381,396
MAGNETO-OPTICAL RECORDING METHOD AND APPARATUS FOR RECORDING INFORMATION ON A MAGNETO-OPTICAL RECORDING MEDIA

Tsutomu Tanaka; Keiji Shono; Yoshiyuki Namba; Koji Matsumoto, and Miyozo Maeda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

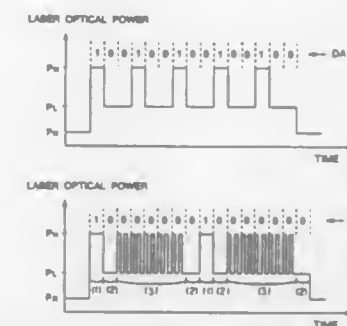
Filed Jul. 20, 1993, Ser. No. 93,641

Claims priority, application Japan, Oct. 15, 1992, 4-277535; May 7, 1993, 5-106941

Int. Cl.⁶ G11B 11/10

U.S. Cl. 369—116

6 Claims



1. A magneto-optical recording method for recording information on a magneto-optical recording medium in response to a binary recording pulse, said binary recording pulse being modulated such that at least those bits located before and after a bit that has a first logic value, have a second, opposite logic value, said information being recorded on said magneto-optical recording medium by means of a laser beam in the form of a recording mark such that said recording mark is formed, in response to said recording pulse having said first logic value, by radiating said laser beam having a first laser power, and such that formation of said recording mark on said magneto-optical recording medium is suppressed, in response to said recording pulse having said second logic value, by radiating said laser beam that has a second laser power, characterized in that:

- said step of irradiating said magneto-optical recording medium with said second laser power is conducted by alternately repeating the steps of:
 - (a) irradiating said magneto-optical recording medium with said first laser power except for a region of said magneto-optical recording medium immediately adjacent to said recording mark; and
 - (b) irradiating said magneto-optical recording medium with said second laser power; said steps (a) and (b) being repeated for a predetermined number of times to erase information from said magneto-optical recording medium.

5,381,397
DATA RECORDING MEDIUM, METHOD OF RECORDING DATA THEREON, AND APPARATUS FOR AND METHOD OF REPRODUCING IT

Shinichi Okada, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 52,270

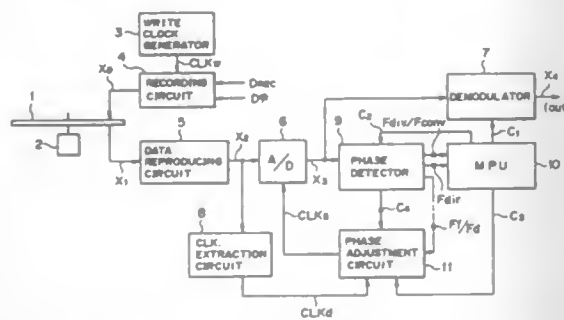
Claims priority, application Japan, Apr. 24, 1992, 4-107094
 Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—124

11 Claims

1. A method of recording data onto a recording medium comprising the steps of:
 recording data to be recorded onto a recording medium, and recording phase adjustment pattern data together with said

data to be recorded, as a plurality of phase adjustment pits with intervals therebetween so that a reproducing signal



of the phase adjustment pits is composed of a solitary wave.

5,381,398 INFORMATION SIGNAL REPRODUCING SYSTEM HAVING AMPLIFIER WITH SELECTIVELY DECREASED GAIN

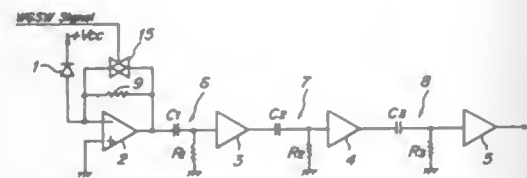
Nobuyuki Kaneko, Kokubunji, and Nobumitsu Chiyomatsu, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 742,384, Aug. 8, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,642

Claims priority, application Japan, Aug. 9, 1990, 2-209101
Int. Cl.⁶ G11B 7/00

U.S. Cl. 369—124

17 Claims



13. An information signal reproducing circuit for use in an optical information recording and reproducing apparatus, comprising:

- a detecting means for detecting a light beam reflected by an information recording medium used in said optical information recording and reproducing apparatus;
- an amplifying means for amplifying a signal produced by said detecting means, said amplifying means comprising a plurality of amplifiers including a first amplifier which receives said signal produced by said detecting means;
- a coupling means for coupling said plurality of amplifiers in series with each other;
- a feedback resistor connected between an input and an output of said first amplifier; and
- a cut-off means for cutting off a supply of an input signal to said coupling means for a recording or erasing time period during which information is recorded or erased in said optical information recording and reproducing apparatus, said cut-off means comprising a switching means connected in parallel with said feedback resistor, said switching means being controlled to be closed during said recording or erasing time period.

5,381,399

HEAD SHIFTING APPARATUS

Tsukasa Uehara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

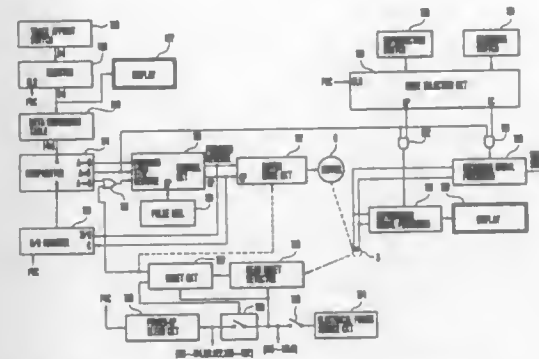
Continuation of Ser. No. 830,983, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 675,030, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 315,193, Feb. 23, 1989, abandoned, which is a continuation of Ser. No. 890,835, Jul. 25, 1986, abandoned, which is a continuation of Ser. No. 567,547, Jan. 3, 1984, Pat. No. 4,627,043. This application May 3, 1993, Ser. No. 56,964

Claims priority, application Japan, Jan. 7, 1983, 58-975

Int. Cl.⁶ G11B 17/30, 21/02

U.S. Cl. 369—215

11 Claims



5. An apparatus for moving a load, comprising:

- (A) moving means for moving said load;
- (B) instructing means for instructing a position of said load;
- (C) power supply means for supplying power to said apparatus; and
- (D) control means for controlling said moving means to move said load toward a mechanically absolute reference position in said apparatus with a first control condition when said power supply means starts to supply power to said apparatus and moving said load with a second control condition different from said first control condition after said load reaches said mechanically absolute reference position, said first and said second control conditions relating to control accuracy of positioning of said load and said first control condition being more accurate than said second control condition, said control means being arranged to control said moving means in said second control condition in the case that said load is moved to the instructed position according to the instruction of said instructing means.

5,381,400

INFORMATION CARRIER, INFORMATION RECORDING AND/OR REPRODUCING APPARATUS, AND INFORMATION DETECTING APPARATUS

Hideyuki Kawagishi, Ayase; Toshihiko Miyazaki, Hiratsuka; Hisaaki Kawade, Yokohama; Etsuro Kishi, Kawasaki; Kiyoshi Takimoto, Isehara, and Toshihiko Takeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 845,958, Mar. 4, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,143

Claims priority, application Japan, Mar. 8, 1991, 3-068989

Int. Cl.⁶ G11B 5/84

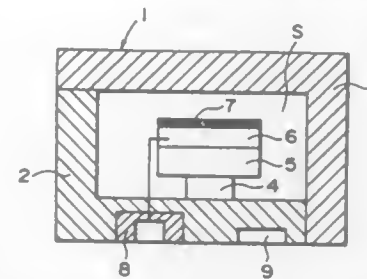
U.S. Cl. 369—272

16 Claims

1. An information carrier by which information recording and/or reproducing are performed through a probe provided in an information recording and/or reproducing apparatus, comprising:

- an information recording medium for performing information recording and/or reproducing through said probe, said information recording medium having a recording plane; and
- a frame in which said information recording medium is

airtightly contained, said frame being detachably mounted in said information recording and/or reproducing apparatus, said frame having a mechanism which is opened or closed to allow the recording plane of said information recording medium to be open when mounted in said information recording and/or reproducing apparatus, wherein



the recording plane of said information recording medium faces said probe by opening of said mechanism, and said mechanism performs the opening in a closed space formed by cooperation of said frame and said information recording and/or reproducing apparatus when said frame is mounted in said information recording and/or reproducing apparatus.

5,381,401

MULTIPLE DATA SURFACE OPTICAL DATA STORAGE SYSTEM

Margaret E. Best, San Jose; Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

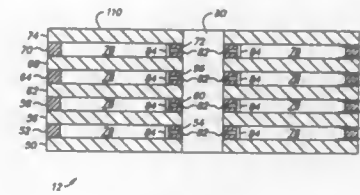
Division of Ser. No. 710,226, Jun. 4, 1991, Pat. No. 5,255,262.

This application Jun. 18, 1993, Ser. No. 79,483

Int. Cl.⁶ G11B 7/24

U.S. Cl. 369—275.1

98 Claims



1. An optical data storage medium comprising:

- a first light transmissive member consisting of a nonmetallic material and having a noncoated first data surface, the first data surface having marks which are optically detectable, the marks being integral to the first light transmissive member;
- a second member having a second data surface, the second data surface having marks which are optically detectable, the marks being integral to the second member; and
- a spacer means located between the first and second members for defining a space between the first and second data surfaces, the space containing a gas, such that a light beam is selectively focussed through the first light transmissive member to one of the first and second data surfaces.

5,381,402

REMOVABLE DISK CARTRIDGE FOR USE WITH A ROTARY ACTUATED DISK DRIVE

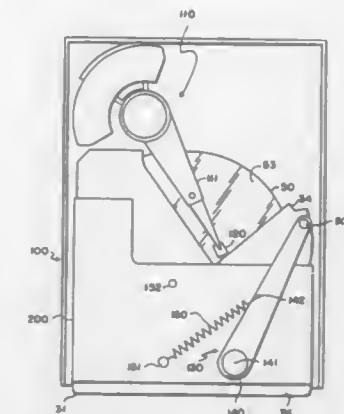
Neville K. Lee, Sherborn; Amit Jain, Marlborough, and Hisashi Katano, Shrewsbury, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 7, 1993, Ser. No. 88,933

Int. Cl.⁶ G11B 23/03

U.S. Cl. 369—291

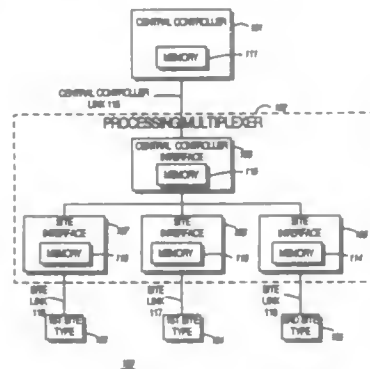
16 Claims



1. A disk cartridge, comprising:

- an enclosure having a top, a bottom, and a side, said side connecting said top and bottom, said enclosure having a cutout formed by removal of a segment shaped portion of said top, removal of a facing segment shaped portion of said bottom, and removal of a portion of said side connecting said removed top portion and said removed bottom portion, a fixed latch formed on an interior surface of said enclosure, said enclosure made of a top casing and a bottom casing, said top and bottom casing substantially symmetrical in length and width, said top and bottom casing fixed to each other to form said enclosure, said bottom casing includes a centrally located access hole for receiving a spindle, said access hole surrounded by an annular permanent magnet and an annular rib;
- a disk mounted for rotation inside said enclosure, said disk rotated by said spindle, said disk exposed at a top surface, a bottom surface, and an edge within said cutout, a ferrous-metal washer mounted on a central portion of one side surface of said disk opposing said annular magnet, said washer attracted by said annular magnet to seal said enclosure when said cartridge is not in operation;
- a door pivotally mounted inside said enclosure on an axis approximately coincident with the axis of rotation of said disk, said door generally U-shaped in cross section and said door generally segment shaped in planar section, said door having a top surface to shield said top surface of said disk, a lower surface to shield said bottom surface of said disk, and a side surface to shield said edge of said disk, said door having a closed position to fully seal said cutout, and said door having an open position to fully expose said cutout, access to said top surface, said bottom surface, and said edge of said disk provided by said exposed cutout, the internal clearance thickness of said enclosure is marginally greater than the external clearance thickness of said door, and said door is retracted inside said enclosure when said door is in open position, said cutout and said door when retracted providing access for a rotary actuator positioning a read/write head along an accurate path adjacent to said top surface and said bottom; and
- a locking mechanism for maintaining said door in said closed position, said locking mechanism mounted inside said door, said locking mechanism including a movable spring-loaded lever having a hook at a first end for engaging with said latch when said door is in said closed position.

5,381,403
METHOD FOR ESTABLISHING AND MAINTAINING SYSTEM CONFIGURATION INFORMATION
 John W. Maher, Woodstock, and Arns Yongyuth, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
 Filed Apr. 2, 1993, Ser. No. 42,224
 Int. Cl.⁶ H04J 3/14; H04L 12/52; G06F 11/00
 U.S. Cl. 370-13 12 Claims

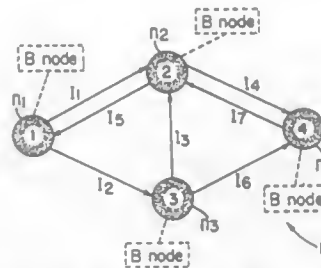


1. In a multi-site communication system that includes a plurality of sites, a central controller, and a processing multiplexer, wherein the processing multiplexer includes a central controller interface and a plurality of site interfaces, a method for the central controller to establish and maintain system configuration information, the method comprises the steps of:
 - a) establishing, by both the central controller and the central controller interface, a central controller communication link between the central controller and the central controller interface;
 - b) when the central controller communication link between the central controller and the central controller interface is established, assigning, by the central controller, the central controller communication link a link address and initializing, by the central controller, a predetermined period of time;
 - c) after the predetermined period of time elapses, requesting, by the central controller, site interface configuration information from the central controller interface, wherein the site interface configuration information includes an indication of site interfaces of the plurality of sites interfaces that are active to produce active site interfaces;
 - d) when a site communication link is established between one of the active site interfaces and a site of the plurality of sites, determining, by the central controller, site type of the site;
 - e) when the site type of the site is a first site type, assigning, by the central controller, a first unique link address to the site communication link between the active site interface and the site to produce said first unique link address; and
 - f) storing, by the central controller in a database, the site type of the site, the first site type link address of the site communication link, and the link address of the central controller communication link.

5,381,404
PACKET-SWITCHING COMMUNICATION NETWORK AND METHOD OF DESIGN
 Masashi Sagano, Osaka; Hideo Miyahara, Nishinomiya, and Masayuki Murata, Toyonaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
 Filed Jul. 12, 1993, Ser. No. 89,860
 Claims priority, application Japan, Jul. 14, 1992, 4-187132; Sep. 16, 1992, 4-246918
 Int. Cl.⁶ H04L 5/22, 12/56
 U.S. Cl. 370-13 30 Claims

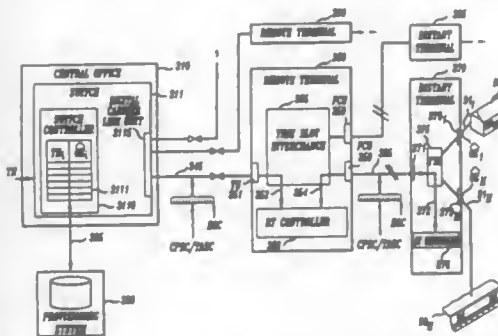
1. A method for designing a packet-switching communication network having at least two nodes and at least one link from node-to-node for transmitting packets,

- the method comprising the steps of:
- (1) setting an initial capacity for each link of said network;
 - (2) determining a most congested link based on delay distribution functions, each delay distribution function defining a relationship between a delay time and a probability that packets reach a destination node from a source node within said delay time;
 - (3) modifying the capacity of said most congested link; and



- (4) repeating steps 2 and 3 until the value of each distribution function at a predetermined maximum allowable delay time is equal to or greater than a selected probability value for all paths from source nodes to destination nodes, resulting in a network which allows all packets to reach a destination node from a source node within said predetermined maximum allowable delay time with said selected probability value or greater probability value.

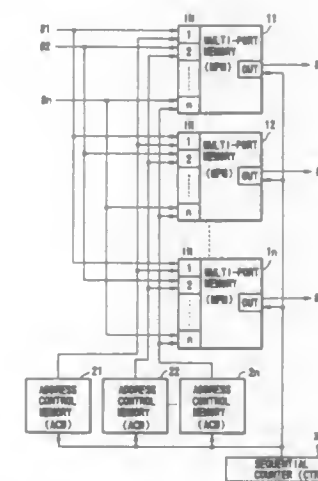
5,381,405
COMMUNICATIONS ACCESS NETWORK ROUTING
 Thomas H. Daugherty, Succasunna, N.J.; Dennis L. DeBruler, Downers Grove, Ill.; Daniel S. Greenberg, Parsippany-Troy Hills, N.J.; David J. Hodgdon, Parsippany-Troy Hills Twp., Morris County, N.J., and Douglas J. Murphy, Middletown, N.J., assignors to AT&T Corp., Murray Hill, N.J.
 Continuation-in-part of Ser. No. 33,477, Mar. 18, 1993, abandoned. This application Aug. 27, 1993, Ser. No. 113,481
 Int. Cl.⁶ H04Q 11/04; H04M 3/42
 U.S. Cl. 370-54 24 Claims



20. Apparatus for use in a local loop access network to provide communications between a telephone central office switch and individual distant terminals each associated with a respective plurality of endpoints served by said switch, said apparatus comprising
 - a plurality of remote terminals,
 - a plurality of links interconnecting said switch with said distant terminals via said remote terminals,
 - means for storing routing information identifying for each of a plurality of said distant terminals a respective one of said links which extends from said each remote terminal and connects to said each distant terminal through said access network, and
 - packet switching means in each of said remote terminals for packet switching messages relating to said endpoints from said switch to those endpoints' associated distant terminals

via said links by receiving from a first one of said links a message which includes an identifier of a particular one of said endpoints and its associated distant terminal, recovering said identifier from said message, using said identifier to identify from the routing information stored in said first remote terminal a second link which connects to said particular one of said distant terminals, and transmitting over said second link a message which includes at least said endpoint identifier, said switch being one which receives dial tone requests from the endpoints that it serves and, in response, provides dial tone thereto, and further being one which causes ringing signals to be extended to the endpoints that it serves in response to the receipt of telephone calls that are delivered to said switch and are intended for said endpoints.

5,381,406
TIME SWITCHING CIRCUIT
 Hiroshi Yamashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
 Filed Aug. 31, 1992, Ser. No. 938,432
 Claims priority, application Japan, Aug. 30, 1991, 3-220289
 Int. Cl.⁶ H04J 3/02
 U.S. Cl. 370-58.2 5 Claims



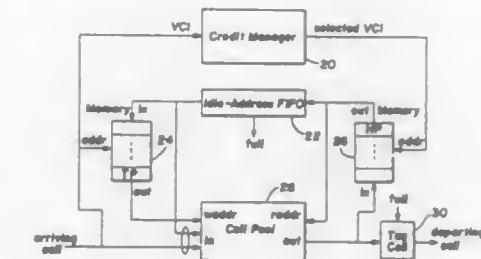
1. A time switching circuit comprising:
 - n, n being an integer of not less than 2, data memories each having n input ports corresponding to n data strings and one output port, said n input ports being multi-connected to each other;
 - an address control memory for writing the n data strings in said data memories as written data strings, the address control memory comprising a plurality of distinct address control memories which are respectively arranged for n sets of multi-connected input ports, wherein write access is performed to each of said data memories in units of said multi-connected input ports; and
 - a control section for selectively reading out the written data strings from each of said data memories and outputting the written data strings as readout data strings.

5,381,407
METHOD AND SYSTEM FOR CONTROLLING USER TRAFFIC TO A FAST PACKET SWITCHING SYSTEM
 Hung-Hsiang J. Chao, Lincroft, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.
 Filed Jun. 4, 1992, Ser. No. 893,274
 Int. Cl.⁶ H04J 3/14; H04Q 11/04
 U.S. Cl. 370-60 10 Claims

1. A method for controlling user traffic to a fast packet switching system, each of the packets originating at a source of

packets and having a virtual channel identifier (VCI), the method comprising the steps of:

- receiving the packets, each of the packets having associated therewith an arrival time;
- storing each of the received packets at an addressable location in a first memory, the first memory having a plurality of addressable locations;
- storing in a second memory addresses corresponding to the addressable locations in the first memory in which a packet not yet stored, the addresses stored in the second



5,381,409

METHOD AND INSTALLATION FOR SWITCHING PACKETS

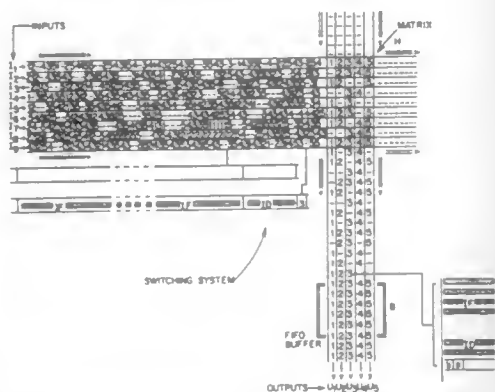
Rein J. Folkert de Vries, Leidschendam, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands
Continuation of Ser. No. 678,685, Apr. 1, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,286

Claims priority, application Netherlands, Apr. 3, 1990, 9000780

Int. Cl. H04L 12/56

U.S. Cl. 370-60

7 Claims



1. Method for switching, in a switching system, data packets each comprising a control code, said switching system comprising a number of inputs and a number of outputs, said packets being transferable from that one of said inputs at which said packet arrives, to one of said outputs, that one of said outputs being selected by said control code, each of said packets being transmitted, via one of a number of first transmission channels containing first transmission cells having a first transmission speed, to one of a number of second transmission channels, containing second transmission cells having a second transmission speed greater than said first transmission speed, said one of a number of second transmission channels leading to said selected output of the switching system, characterized in that said second transmission speed (s2), expressed in bits per second, at which the second transmission cells are transmitted, is equal to the product of a constant (L) and said first transmission speed (s1), expressed in bits per second, at which the first transmission cells are transmitted, said constant (L) being equal to a positive simple proper fraction of the number of said inputs (n) of the switching system, and said second transmission speed is used only within said switching system, the output of said switching system, like the input thereof being at said first transmission speed.

5,381,410

TRANSIT SWITCH FOR AN ASYNCHRONOUS NETWORK, NOTABLY AN ATM NETWORK

Thierry Grenot, Clamart, France, assignor to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 805,036, Dec. 11, 1991, abandoned.

This application Jun. 8, 1993, Ser. No. 73,612

Claims priority, application France, Dec. 20, 1990, 90 15998

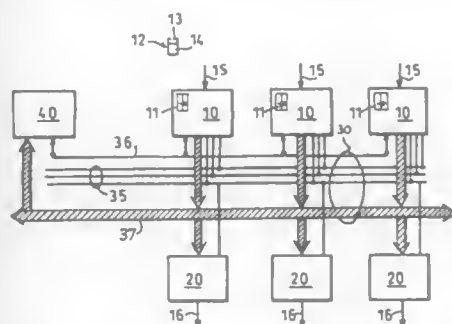
Int. Cl. H04Q 11/04

U.S. Cl. 370-60.1

1 Claim

1. A transit switch of an asynchronous network for handling of information elements in the form of packets having a header part for identification of a destination and an information element part wherein said transit switch comprises:
a plurality of input junctors to receive packets coming from associated input channels;
a plurality of output junctors connected to the input junctors by a synchronous bus and to output channels to transfer a packet from an input channel to at least one output channel through the synchronous bus;
said plurality of input junctors comprising at least a transla-

tion table for providing at least an output junctor reference and a new packet header for each packet coming from associated input channels,
a bus allocator connected to the synchronous bus for allocating the bus when the input junctors received a packet



wherein each input junctor emits a request to the bus allocator each time it has to transmit a packet to an output junctor and generates a marker information element read in the translation table from the header part of the packet for transferring the packet on the output junctor pointed by the marker information.

5,381,411

APPARATUS FOR CONTROLLING ATM CELL GENERATION RATE

Koichi Ohno, Yokohama, and Tetsuo Tachibana, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

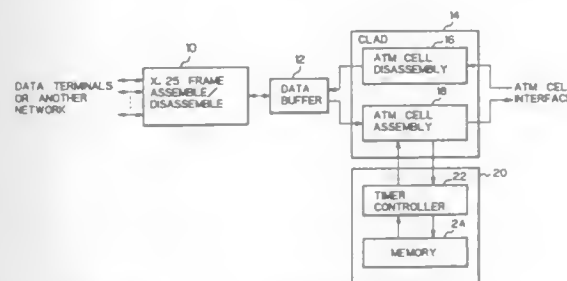
Filed Jan. 31, 1994, Ser. No. 189,057

Claims priority, application Japan, Sep. 7, 1993, 5-221756

Int. Cl. H04J 3/16; H04L 12/66

U.S. Cl. 370-60

6 Claims



1. An apparatus for controlling generation of cells including data received from a plurality of data channels, the generation of cells being required to accord to bit rates assigned to the respective data channels, comprising:

- a memory for storing data determined based on the bit rates of the respective data channels; and
- a controller for accessing the data stored in the memory at constant intervals to determine timing for generating the cells, and for issuing commands to generate the cells according to the determined timing.

5,381,412

MULTIMEDIA COMMUNICATION APPARATUS

Masatoshi Otani, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 944,075

Claims priority, application Japan, Oct. 2, 1991, 3-283558

Int. Cl. H04M 11/06; H04N 1/42; H04J 3/22

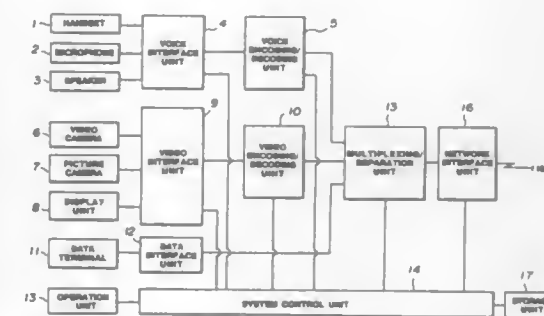
U.S. Cl. 370-84

14 Claims

1. A multimedia communication apparatus for communicating with a destination apparatus, said communication appara-

tus and the destination apparatus each having a respective capability to transmit and receive data within predetermined limits, and each being operable in any one of a respective plurality of communication modes for transmitting and receiving data within the limits set by the respective capability, wherein in each communication mode, at least one channel for data communication is set, said communication apparatus comprising:

data communication means for communicating first and second data to the destination apparatus, the first data being a different kind of data from the second data;
determination means for determining which of the communication modes can be used to communicate data between said communication apparatus and the destination apparatus, to designate one communication mode that can be so used, and to set the communication apparatus to operate in the designated communication mode, the determination being made in accordance with the capability of the destination apparatus and the capability of said communication apparatus;



setting means connected to said determination means and responsive to the determination and the designation of the determination means for setting at least a first channel having a structure defining how data is communicated therein between said communication apparatus and the destination apparatus; and

comparison means connected to said determination means and said setting means for deriving a transmission rate at which said first data can be communicated within the first channel in accordance with the structure of the first channel, and for comparing the derived transmission rate with a defined value indicative of a sufficient transmission rate of said first data within the first channel,

wherein said setting means does not set a second channel between said communication apparatus and the destination apparatus, even if a second channel is settable within the designated communication mode, when the derived transmission rate is greater than the defined value.

5,381,413

DATA THROTTLING SYSTEM FOR A COMMUNICATIONS NETWORK

Fouad A. Tobagi, Los Altos, and Randall B. Baird, San Jose, both of Calif., assignors to Starlight Networks, Mountain View, Calif.

Filed Dec. 28, 1992, Ser. No. 996,912

Int. Cl. H04L 12/28

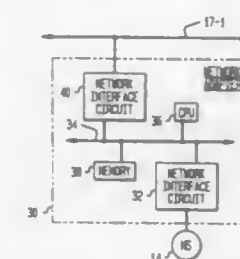
U.S. Cl. 370-85.6

37 Claims

1. A station connected to a network having a shared transmission medium for transmitting and receiving first and second types of data packets having different priorities, comprising:
a memory for maintaining a plurality of queues, including one queue for each type of data packet, for storing the corresponding data packets,
a media access controller, which is unable to differentiate among said first and second types of data packets having different priorities, for enabling said first and second types

of data packets stored in said queues of said memory to access said transmission medium, and

a CPU in communication with said memory and said media access controller, and separate from said media access controller, for maintaining one or more protocols for processing said first and second types of data packets, for



determining priority of the data packets and for executing a throttling algorithm for controlling the submission of data packets based on said determined priority from said queues to said media access controller depending on the type of data packets, to provide an appropriate amount of bandwidth to, and to limit an access delay of said first type of data packets in said shared transmission medium.

5,381,414

METHOD AND APPARATUS FOR DETERMINING IF A DATA PACKET IS ADDRESSED TO A COMPUTER WITHIN A NETWORK

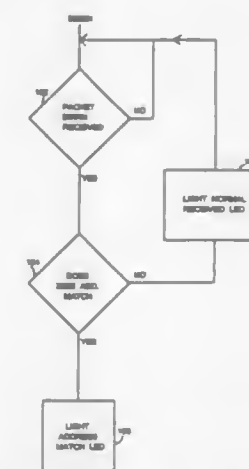
Glen Gibson, San Ramon, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 5, 1993, Ser. No. 147,367

Int. Cl. H04J 3/24

U.S. Cl. 370-94.2

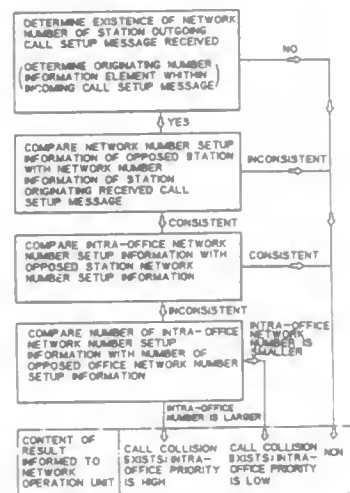
12 Claims



1. A method for determining if a data packet is addressed to a computer system in a network, the computer system having an address, the data packet comprising a plurality of addresses indicating which computer systems in the network the data packet is intended to be addressed, the method comprising the steps of:

- determining if the data packet has been received;
- determining if one of the addresses on the data packet matches the address of the computer system if the data packet has been received;
- generating a first signal if one of the addresses on the data packet matches the address of the computer system; and
- turning on the computer system from a sleep mode in a power management scheme in response of the first signal when one of the addresses in the data packet matches the address of the computer system.

5,381,415
CALL COLLISION SIDESTEP SYSTEM FOR TWO-WAY SIMULTANEOUS CALLS IN AN ISDN NETWORK
 Yasunao Mizutani, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
 Continuation of Ser. No. 778,484, Oct. 17, 1991, abandoned.
 This application Jul. 8, 1993, Ser. No. 87,351
 Claims priority, application Japan, Oct. 18, 1990, 2-280494
 Int. Cl.⁶ H04J 3/12
 U.S. Cl. 370-110.1 **3 Claims**



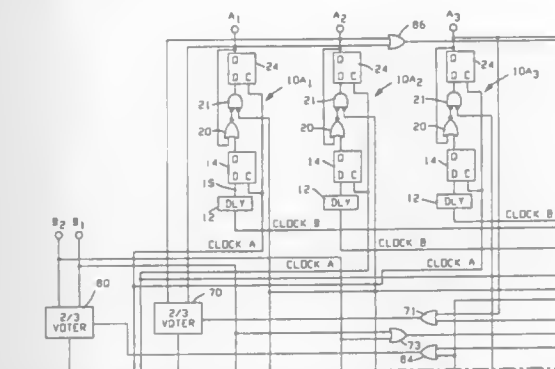
1. A method of controlling a network comprising first and second terminals connected to the network, wherein a call collision state exists when the first terminal transmits a corresponding connect request to the network for connection to the second terminal while, simultaneously, the second terminal transmits a corresponding connect request to the network for connection to the first terminal, the method, during a call collision state, comprising the steps of:

- withdrawing from the network the corresponding connect request of one of the first and second terminals while maintaining the corresponding connect request of the other of the first and second terminals;
- transmitting connect request information from the network to the one of the first and second terminals for which the connect request is withdrawn, the connect request information corresponding to the connect request of the one of the first and second terminals for which a connect request is maintained;
- receiving, by the one of the first and second terminals for which the connect request information is withdrawn, the connect request information;
- transmitting a connect allowance signal to the network from the one of the first and second terminals for which the connect request is withdrawn;
- transmitting, from the network to the one of the first and second terminals for which the connect request is maintained, connect allowance information corresponding to the connect allowance signal; and
- connecting the first terminal and the second terminal together through the network.

5,381,416
DETECTION OF SKEW FAULT IN A MULTIPLE CLOCK SYSTEM
 Kelvin S. Vartti, Vadnais Heights, and Gregory B. Wiedenman, Woodbury, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.
 Filed Nov. 8, 1993, Ser. No. 148,246
 Int. Cl.⁶ G06F 15/20
 U.S. Cl. 371-1 **8 Claims**

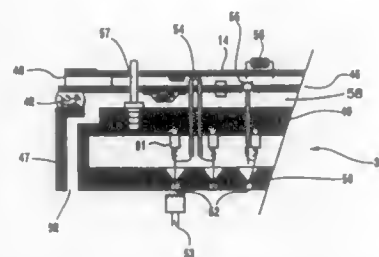
1. A skew fault detecting circuit for detecting clock skew between a first clock pulse from a first clock pulse train and a

second clock pulse from a second clock pulse train skew fault occurs when one of said first and second clock pulses leads the other of said first and second clock pulses by a predetermined duration comprising first and second D-type flip-flops that are both initially in the same first state, and each of which has a clock input and a data input and an output, wherein said clock inputs of both of said flip-flops are coupled to receive said one clock pulse and said data input of said first flip-flop is coupled to receive said another clock pulse, and further comprising logic circuit means having a first input coupled to the output of said



first flip-flop and a second input coupled to the output of said second flip-flop, said logic circuit means being constructed so that said first flip-flop changes to its second state upon the occurrence of a said one clock pulse, said second flip-flop changes to its second state upon the occurrence of the next said one clock pulse, and said second flip-flop is locked-out from further changing its state until said second flip-flop receives an externally produced reset signal that is coupled to said second flip-flop from said logic circuit means.

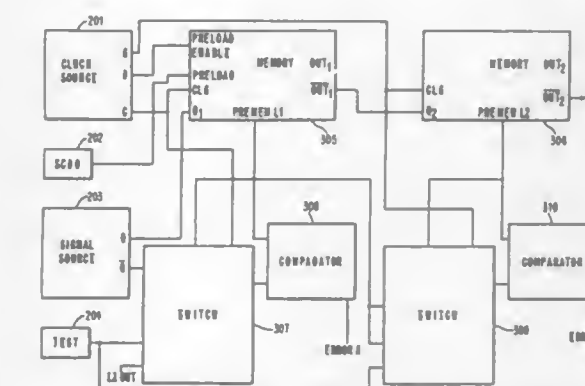
5,381,417
CIRCUIT TESTING SYSTEM
 Alex Loopik, Rijswijk, Netherlands, and David T. Crook, Loveland, Colo., assignors to Hewlett Packard Company, Palo Alto, Calif.
 Filed Jan. 25, 1993, Ser. No. 8,472
 Claims priority, application European Pat. Off., Feb. 25, 1992, 92301573
 Int. Cl.⁶ G06F 15/20
 U.S. Cl. 371-15.1 **15 Claims**



1. Apparatus for testing circuit assemblies comprising:
 means for storing data relating to a topology of a circuit assembly;
 means for storing testing data for said circuit assembly;
 means for performing tests on said circuit assembly in accordance with said testing data and storing test results therefrom;
 means for generating and storing possible causes of test failures based, at least in part, on the stored topology;
 means for predicting test results which can be caused by said possible causes of test failures;
 logic means for detecting inconsistencies between observed test results and predicted test results, and

means responsive to detected inconsistencies from said logic means for indicating possible causes of test failure which are consistent with said observed test results.

5,381,418
TESTABLE LATCH SELF CHECKER
 Robert K. Montoye, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
 Continuation of Ser. No. 410,555, Sep. 20, 1989. This application Feb. 10, 1992, Ser. No. 833,812
 Int. Cl.⁶ G11C 29/00
 U.S. Cl. 371-21.2 **7 Claims**



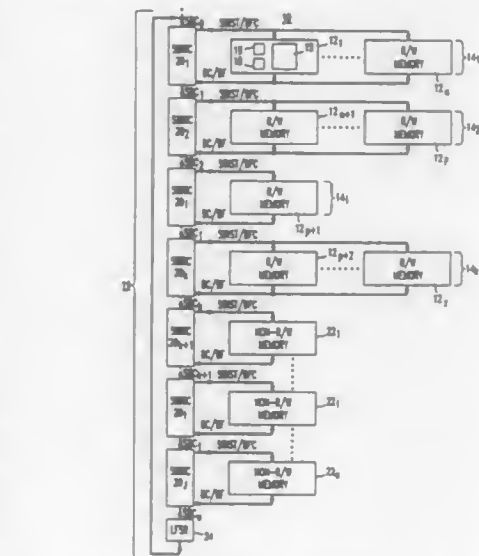
7. A system for verifying correct operation of a plurality of storage devices in an electronic logic circuit, said system including comparison circuitry, said system comprising:

- means for concurrently storing a plurality of input logic values in the plurality of storage devices;
- comparison means for: a) concurrently performing a plurality of comparisons between each of the plurality of stored logic values and a corresponding one of a plurality of reference values, wherein each of said plurality of reference values is derived from the plurality of input logic values, each of said plurality of reference values represents a respective one of a plurality of logic values; and b) for indicating an error condition if at least one of the plurality of comparisons does not produce a predetermined expected result on an output terminal of the comparison circuitry;
- means for placing known logic levels on each input terminal of the comparison circuitry;
- means for examining the output terminal of the comparison circuitry for an expected logic value and for signalling an error condition if the expected value is not found; and
- operational verification means for verifying operation of said comparison means independent of said plurality of stored logic values.

5,381,419
METHOD AND APPARATUS FOR DETECTING RETENTION FAULTS IN MEMORIES
 Yervant Zorian, Princeton, N.J., assignor to AT&T Corp., Murray Hill, N.J.
 Filed Mar. 1, 1993, Ser. No. 24,695
 Int. Cl.⁶ G11C 29/00
 U.S. Cl. 371-21.3 **11 Claims**

5. A method for fault testing at least one self-testing non-read/write memory element and each of a plurality of self-testing read and write memory elements arranged in banks, each read and write memory element in each bank containing first, second and third sequences of read and/or write operations, comprising the steps of:
 signaling each of the banks of read and write memory elements in succession for a first time to cause each memory read and write element in a successive bank to execute the first sequence of mad and write operations without any delay between operations, the first sequence containing a

write operation, which, when executed, causes a first pattern of bits to be present in the read and write memory element at the completion of the first sequence of operations;
 signaling the non-mad and write memory element to commence self-testing after the banks of mad and write memory elements have been successively signaled;
 signaling the banks of mad and write memory elements in succession for a second time, after a first predetermined interval following signaling of the banks of read and write memory elements for the first time, to cause each read and write memory element in a successive bank to execute the second sequence to read and write operations without any delay between operations, the second sequence including a mad operation which is executed to read the read and

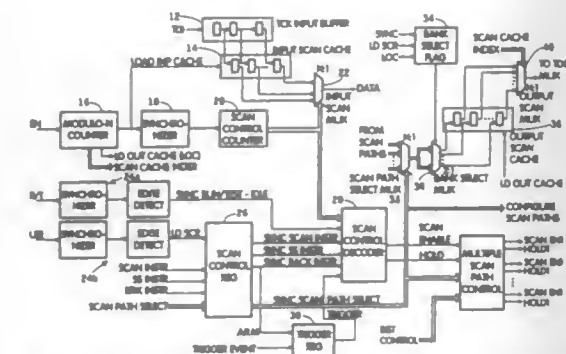


write memory element to determine if the first pattern of bits is present, and a write operation, which upon execution, causes a second pattern of bits, complementary to the first pattern, to be present in the read and write memory element at the completion of the second sequence of operations; and
 signaling the banks of read and write memory elements in succession for a third time, after a second predetermined interval following signaling for the second time, to cause each read and write memory element in a successive bank to execute the third sequence of operations without any delay between operations, the third sequence including a read operation which is executed to determine if the second pattern of bits is present in the read and write memory element.

5,381,420
DECOUPLED SCAN PATH INTERFACE
 Matthew R. Henry, Albuquerque, N. Mex., assignor to Honeywell Inc., Minneapolis, Minn.
 Filed Dec. 22, 1993, Ser. No. 173,393
 Int. Cl.⁶ G06F 11/28
 U.S. Cl. 371-22.3 **14 Claims**

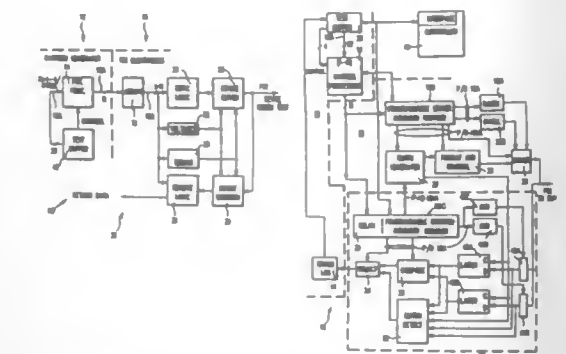
1. A scan path interface circuit for interfacing a testing device to an electronic system for testing the electronic system, comprising:
 an input buffer for serially receiving input test data from the testing device for temporary storage, the buffer clocked at a test clock rate of the testing device;
 an input cache for receiving the input test data in parallel from the input buffer every Nth count of the test clock;
 an input multiplexer for serially clocking the input test data from the input cache through a scan path in the electronic

system at a system clock rate of the electronic system to produce output test data; an output cache for receiving the output test data from the scan path in parallel every Nth count of the test clock; and



an output multiplexer for serially clocking the output test data from the output scan cache to the testing device at the test clock rate.

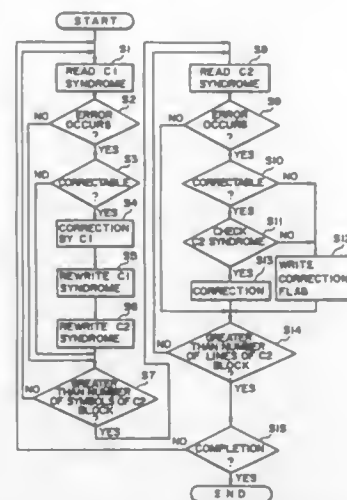
5,381,421
PER PIN CIRCUIT TEST SYSTEM HAVING N-BIT PIN INTERFACE PROVIDING SPEED IMPROVEMENT WITH FREQUENCY MULTIPLEXING
John E. Dickol, Poughkeepsie; Algirdas J. Gruodis, Wappingers Falls, and Dale E. Hoffman, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y. Continuation-in-part of Ser. No. 464,473, Jan. 12, 1990, Pat. No. 5,127,011. This application Mar. 5, 1992, Ser. No. 846,320 Int. Cl.⁶ G01R 31/28; G06F 11/00
U.S. Cl. 371—27 25 Claims



1. A test system having a plurality of test pins, for each of the test pins the system comprising:
pattern processor means having an output for outputting a test pattern for each one of a plurality of test cycles, each of the test patterns being comprised of M bits;
first decoding means, having an input coupled to the output of the pattern processor means, for decoding one of the M-bit test patterns into one of the 2^M control words, said first decoding means having an output for outputting said control word as a first plurality of bits;
timing generator means having an output for providing, during a test cycle, a plurality of timing signals;
waveform generator means having an output coupled to a test pin, a first input coupled to said output of said first decoding means and a second input coupled to said output of said timing generator means, said waveform generator means being responsive to said first plurality of bits and to said plurality of timing signals for selecting, in accordance with information specified by said first plurality of bits, specified ones of said timing signals for generating a stimulus signal at the test pin;
second decoding means, having an input coupled to said

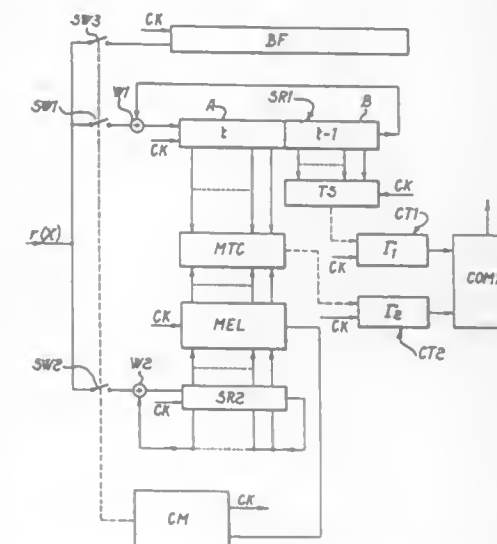
output of the pattern processor means, for decoding each of the M-bit test patterns into one of 2^M control words, said second decoding means having an output for outputting said control word as a second plurality of bits; and
comparator means including signal latching means having an input coupled to the test pin, said comparator means having a first input coupled to said output of said second decoding means and a second input coupled to said output of said timing generator means, said comparator means being responsive to said second plurality of bits and to said plurality of timing signals for selecting, in accordance with information specified by said second plurality of bits, a specified one or ones of said timing signals for causing said signal latching means to latch a signal received from the test pin, said comparator means further including means for comparing the latched signal to an expected signal, the expected signal being expressed as one or more of said plurality of bits.

5,381,422
DEVICE FOR CORRECTING CODE ERROR
Tetsuya Shimizu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 576,777, Sep. 4, 1990, abandoned. This application Jun. 21, 1993, Ser. No. 78,851
Claims priority, application Japan, Sep. 5, 1989, 1-230710 Int. Cl.⁶ G06F 11/10; H03M 13/00
U.S. Cl. 371—37.4 10 Claims



1. A device for receiving a code train including information codes and first and second error correction check codes which were provided by using the information codes and for correcting code errors of the information codes, comprising:
(a) first correcting means for correcting code errors of the information codes in accordance with the first error correction check code;
(b) second correcting means for correcting code errors of the information codes in accordance with the second error correction check code, said second correcting means deciding whether uncorrectable code errors are present or not in each predetermined number of information codes and generating flag information;
(c) amending means for amending the flag information generated by said second correcting means, according to the first error correction check code used by said first correcting means and for generating amended flag information; and
(d) concealing means for concealing code errors of the information codes in the code train on the basis of the amended flag information.

5,381,423
PROCESS AND DEVICE FOR THE DECODING OF A SHORTENED, CYCLIC BINARY CODE USING ERROR CORRECTION
Ermanno Turco, Milan, Italy, assignor to Italtel Societa Italiana Telecomunicazioni S.P.A., Milan, Italy
Continuation of Ser. No. 778,919, Feb. 24, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,680
Claims priority, application Italy, Jul. 25, 1989, 21288 A/89 Int. Cl.⁶ G06F 11/10; H03M 13/00
U.S. Cl. 371—39.1 16 Claims

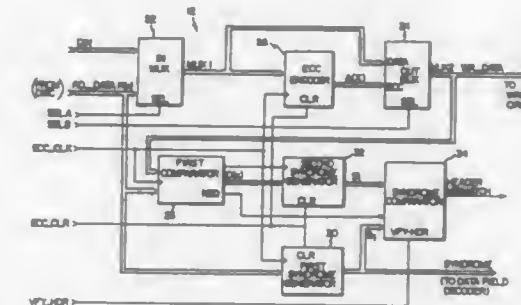


11. A decoding device for a shortened cyclic binary code having a generator polynomial of type

$$g(x) = (x^{2t-1} + 1) \cdot p(x)$$

where $p(x)$ is a prime polynomial over $GF(2)$ with period r_0 , satisfying $r_0 > (n-b)$ where n equals a length of a binary code and b equals a number of shortened bits for correcting single error bursts of a given length t and comprising:
input means for receiving a code word $r(X)$;
a first unidirectional shift register, with $(2t-1)$ stages, serially connected to said input means;
a second unidirectional shift register, with m stages, serially connected to said input means, said first and second unidirectional shift registers receiving as input the code word $r(X)$;
a test for zero circuit, parallelly connected to $(t-1)$ highest order stages of said first unidirectional shift register;
first modulo $(2t-1)$ counting means, for computing a number of shifting operations performed by said first unidirectional shift register;
a third unidirectional shift register with m stages, parallelly connected with said second unidirectional shift register for shifting data in a direction opposite to said first and second unidirectional shift registers;
a comparing device, parallelly connected between the t lowest order stages of said first unidirectional shift register and said third unidirectional shift register, wherein an output of said comparing device is provided to second modulo r_0 counting means for computing a number of shifting operations performed by said second unidirectional shift register; and
a computing circuit connected to outputs of said first modulo $(2t-1)$ and second modulo r_0 counting means for correcting the single error burst in the code word $r(X)$.

5,381,424
METHOD AND APPARATUS FOR FAULT-TOLERANT IDENTIFICATION OF THE HEADER FIELD OF A RECORDING DEVICE
Kinshing P. Tsang, Plymouth, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Mar. 25, 1993, Ser. No. 36,989 Int. Cl.⁶ G11B 20/18
U.S. Cl. 371—40.1 9 Claims

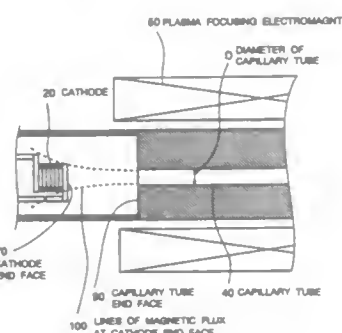


9. A header identification apparatus for identifying one of a plurality of headers each comprising a different value encoded into a codeword according to a predetermined generator polynomial having roots, the header identification apparatus comprising:
encoder means for generating a target codeword identical to a target header's codeword;
reading means for reading the target header's codeword to obtain a readback codeword;
comparison means operably connected to the encoder means and to the reading means for comparing the target codeword to the readback codeword and generating a difference codeword;
syndrome generator means for obtaining respective syndromes of the readback codeword and the difference codeword; and
means for generating a non-target-header signal in response to a difference between the respective syndromes of the difference codeword and the readback codeword.

5,381,425
SYSTEM FOR ENCODING AND DECODING OF CONVOLUTIONALLY ENCODED DATA
Donald L. Blitzer, Urbana, Ill.; Mladen A. Vouk; Vijay Srinivasan, both of Cary, N.C.; Sunny K. Lo, Raleigh, N.C.; Ajay Dholakia, Raleigh, N.C.; Elena M. Gonzalez, Raleigh, N.C.; Tina M. Lee, Raleigh, N.C.; LiFeng Wang, Raleigh, N.C., and Havish Koorapaty, Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.
Filed Mar. 27, 1992, Ser. No. 858,713 Int. Cl.⁶ H03M 13/00
U.S. Cl. 371—43 19 Claims

1. A system for convolutionally encoding and decoding a bit stream, n code words employed to encode said bit stream to produce n parity bits for each k data bits, where n is an integer greater than two, each code word having a bit length equal to L , said system comprising:
convolutional encoding means for sequencing data bit sets into a window w bits in length, each data bit set k bits long, and for converting bits in said window to an integral number of n bit parity bit sets of w bits in length, and repeating said process when a new data bit set replaces an old data bit set in said window, each said w -length set of parity bit sets being shifted from a previous w -length set of parity bit sets by n bits, where $w = n(L-k)/(n-k)$, w being a length of data bits, which when encoded using code words of length L , exhibit a unique relationship to w parity bits, each and every combination of said w data bits giving rise to a unique w parity bits;

5,381,432
GAS LASER OSCILLATOR
 Shinji Kasahara, Tokyo, Japan, assignor to NEC Corporation, Japan
 Continuation of Ser. No. 941,387, Sep. 8, 1992, abandoned. This application Jan. 10, 1994, Ser. No. 257,944
 Claims priority, application Japan, Sep. 10, 1991, 3-229302
 Int. Cl.⁶ H01S 3/00
 U.S. Cl. 372—37 16 Claims

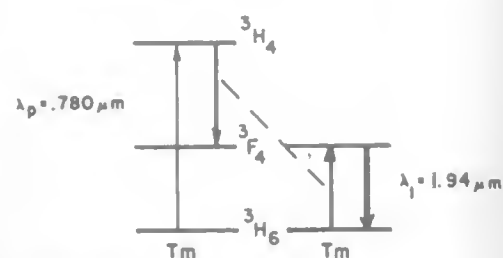


1. A gas laser oscillator comprising:
 an ion laser tube having an active gas medium, a capillary tube, and having an anode and a cathode as discharging electrodes disposed at its both ends,
 plasma focusing electromagnets disposed around said ion laser tube in order to generate a magnetic field for focusing plasma, and
 a pair of optical resonance mirrors disposed at both ends of said ion laser tube,
 a radius of said capillary tube being smaller than a radius of the lines of the magnetic flux at said cathode end face which is expressed by

$$r = rc \sqrt{Bc/B}$$

where: a radius of the lines of the magnetic flux at said cathode end face is "r", a radius of said cathode is "rc", a magnetic field strength of the cathode is Bc, and the magnetic field strength is taken at the end face of the capillary tube.

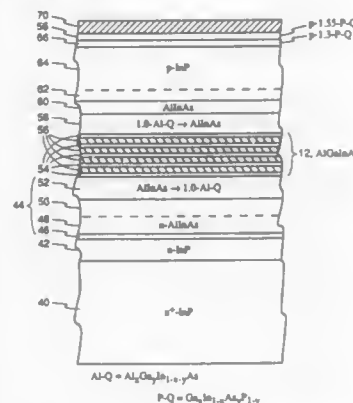
5,381,433
1.94 μM LASER APPARATUS, SYSTEM AND METHOD USING A THULIUM-DOPED YTTRIUM-LITHIUM-FLUORIDE LASER CRYSTAL PUMPED WITH A DIODE LASER
 Leon Esterowitz, Springfield, and Robert C. Stoneman, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
 Filed Jan. 28, 1993, Ser. No. 10,253
 Int. Cl.⁶ H01S 3/16
 U.S. Cl. 372—41 22 Claims



1. An apparatus comprising:
 a laser diode for emitting a first laser light at a preselected wavelength; and
 a laser cavity containing a laser crystal formed of thulium-doped yttrium-lithium-fluoride containing thulium activa-

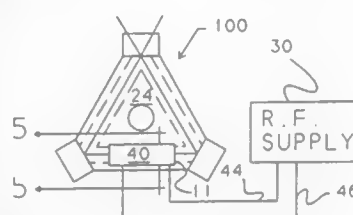
tor ions, said laser crystal being responsive to the first laser light from said laser diode for emitting a second laser light on the ³F₄ to ³H₆ transition of the thulium activator ions and at a wavelength of approximately 1.94 micrometers.

5,381,434
HIGH-TEMPERATURE, UNCOOLED DIODE LASER
 Rajaram Bhat, Red Bank, and Chung-en Zah, Holmdel, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.
 Filed Mar. 30, 1993, Ser. No. 39,771
 Int. Cl.⁶ H01S 3/19
 U.S. Cl. 372—45 15 Claims



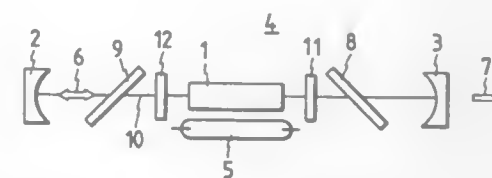
1. A semiconductor optical device comprising:
 upper and lower cladding layers comprising respective III-V semiconductors of opposite doping types; and
 an active layer between said cladding layers comprising at least one compressively strained quantum-well layer comprising AlGaInAs surrounded by barrier layers of AlGaInAs.

5,381,435
RING LASER GYRO EMPLOYING RADIO FREQUENCY FOR PUMPING OF GAIN MEDIUM
 Joel D. Nelson, and Rodney H. Thorland, both of Shoreview, Minn., assignors to Honeywell, Inc., Minneapolis, Minn.
 Filed May 28, 1993, Ser. No. 69,232
 Int. Cl.⁶ H01S 3/083
 U.S. Cl. 372—94 12 Claims



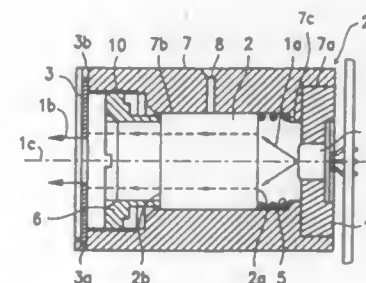
1. A ring laser gyro comprising:
 (a) a ring laser gyro block comprising a gain bore filled with a gain medium;
 (b) means for transmitting RF energy embedded within the ring laser gyro block in proximity to the gain bore and located so as to encompass the gain bore wherein the means for transmitting RF energy comprises capacitive plates embedded within the RLG block such that a portion of the gain bore is juxtaposed between the plates; and
 (c) means for providing RF energy connected to the RF energy transmitting means.

5,381,437
HIGH-POWER SOLID-STATE LASER RESONATOR
 Kouji Kuwabara, Hitachi; Makoto Yano, Mito, and Kiwamu Takehisa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Jul. 19, 1993, Ser. No. 92,914
 Claims priority, application Japan, Jul. 20, 1992, 4-191875
 Int. Cl.⁶ H01S 3/10
 U.S. Cl. 372—98 16 Claims



1. A solid-state laser apparatus comprising:
 a laser resonator comprised of a solid-state laser medium, a total reflection mirror disposed on a first of two, opposing sides of said laser medium and an output mirror disposed oppositely said total reflection mirror, on the second side of said laser medium, wherein said laser medium is disposed to generate a laser beam with a particular direction of polarization; and
 at least one quarter-wave plate located in an optical path of said laser beam, wherein said quarter-wave plate is disposed to have an optical axis substantially parallel with the particular direction of polarization of said laser beam.

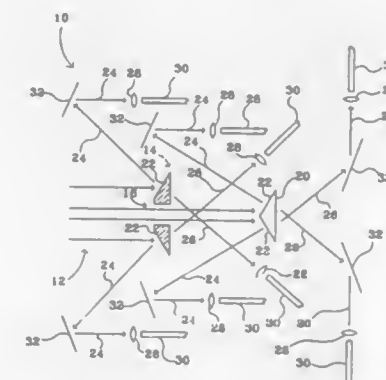
5,381,438
LASER DIODE UNIT INCLUDING AN ADJUSTING MEMBER PROVIDED WITH A THROUGH HOLE
 Shi-Pung Guo, and Chuan-Yuan Chung, both of Hsinchu, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Taiwan, Prov. of China
 Filed Aug. 26, 1993, Ser. No. 111,917
 Int. Cl.⁶ H01S 3/04
 U.S. Cl. 372—107 6 Claims



1. A laser diode unit, comprising:
 (a) a laser diode element for emitting laser light beams;
 (b) a metal inserted casing for accommodating said laser diode element therewithin, wherein said laser diode element is accommodated within said metal inserted casing with a substantial contact area between a surface of said laser diode element and said metal inserted casing to enhance heat dissipation from said laser diode element;
 (c) a mold housing provided with a first end having a first end surface, a second end having a second end surface, and a through bore passing through said mold housing, said metal inserted casing being secured on the first end surface, laser light beams emitting from said laser diode element being capable of penetrating the second end surface via the through bore, the inner wall of the second end being provided with first screw threads;
 (d) a collimating lens set disposed within the through bore of

said mold housing, for collimating the laser light beams emitting from said laser diode element;
 (e) a spring member restrained between said laser diode element and said collimating lens set, for urging said collimating lens set away from said laser diode element, said spring member allowing the laser light beams emitting from said laser diode element to pass therethrough; and
 (f) an adjusting member provided with a through hole, second screw threads formed in the outer peripheral wall of said adjusting member, said adjusting member having a first end portion, and a second end portion whose end surface is contacted with said collimating lens set, the first screw threads being meshed with the second screw threads so as to thrust said collimating lens set to move to and fro within the through bore by screwing said adjusting member in and out;
 wherein said mold housing is provided with a glue injection hole communicating with the through bore, for the injection of glue into the through bore to stick said collimating lens set firmly to the inner wall of the through bore on a proper position.

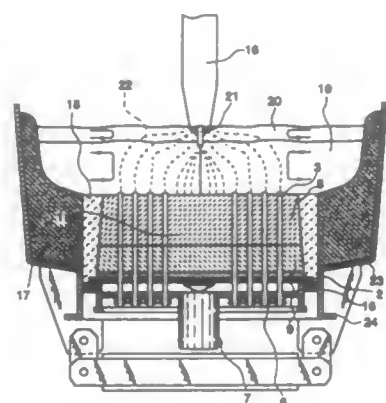
5,381,439
LASER DIVIDING APPARATUS
 R. Edward English, Jr., and Steve A. Johnson, both of Tracy, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
 Filed Jun. 14, 1993, Ser. No. 76,222
 Int. Cl.⁶ H01S 3/10; G02B 5/136
 U.S. Cl. 372—108 20 Claims



1. A laser beam dividing apparatus for dividing a laser beam into a number of component parts, comprising:
 a first beam splitter, having an aperture formed there-through, disposed in the path of a laser beam such that a first portion of said laser beam impinges upon said first beam splitter and a second portion of said laser beam passes through said aperture in said first beam splitter said first beam splitter having a plurality of first facets disposed thereon; and
 a second beam splitter disposed such that the entirety of said second portion of said laser beam which passes through said aperture of said first beam splitter impinges upon said second beam splitter.

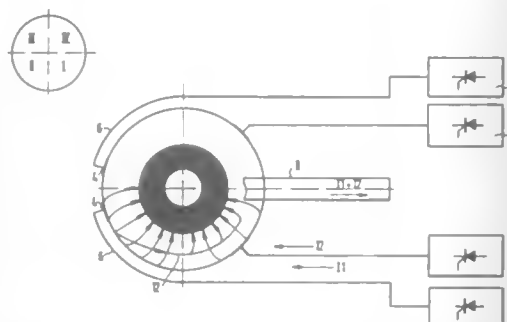
5,381,440
BOTTOM ELECTRODE FOR DIRECT CURRENT ARC FURNACES
 Manfred Schubert, Oberhausen, Germany, assignor to Man Gutehoffnungshutte Aktiengesellschaft, Oberhausen, Germany

Filed Jul. 9, 1993, Ser. No. 89,785
 Claims priority, application Germany, Jul. 11, 1992, 4222854
 Int. Cl.⁶ F27D 1/00
 U.S. Cl. 373—72 15 Claims



1. A bottom electrode for a direct current arc furnace, comprising:
 a metallic part including a base plate and one of a plurality of metal rods or plates arranged in a hearth bottom of the furnace, lower ends of said one of said plurality of metal rods or plates are detachably fastened in said base plate; and
 layers of refractory material surrounding said one of said metal rods or plates, said one of said metal rods or plates being embedded in an upper layer formed of electrical conductive brick materials, a middle layer formed of electrical conductive, monolithic lining material and a lower layer formed of a non-conductive insulating mass located on the base plate, the bottom electrode being limited to an area above a circumference of said base plate.

5,381,441
DIRECT CURRENT ARC FURNACE AND METHOD FOR ITS OPERATION
 Edgar Nix, Ratingen, Germany, assignor to Deutsche Voest-Alpine Industrieanlagenbau GmbH, Dusseldorf, Germany
 Filed Dec. 1, 1993, Ser. No. 160,694
 Claims priority, application Germany, Dec. 4, 1992, 4240891
 Int. Cl.⁶ F27D 1/00
 U.S. Cl. 373—72 11 Claims



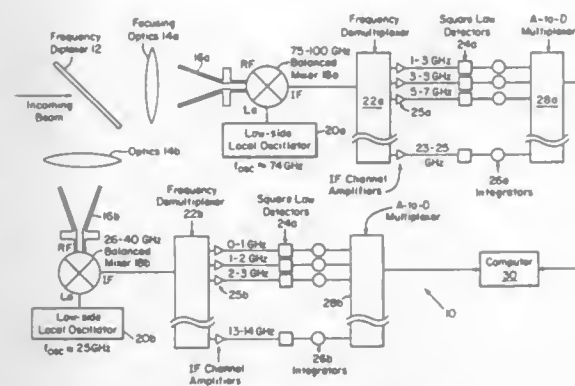
1. A direct current arc furnace for melting a raw material by production of electric arcs, said arc furnace provided with a melting vessel having an electrically conductive lower vessel, an upper vessel, and a vessel cover; a refractory lining secured in said melting vessel; a vertically displaceable cathodic elec-

trode positioned in the center of the vessel cover and secured by an electrode support arm, said cathodic electrode extending above the vessel cover and passing through the vessel cover in order to enter the melting vessel; an anodic electrode arrangement formed by anode plates in a bottom of said lower vessel; and a direct current source connected to a plurality of leads to said cathodic electrode and said anodic electrode arrangement to form a current loop for producing a desired arc through said raw material, said arc furnace characterized by the following features:

- a plurality of connecting plates adjustably secured to the bottom of said lower vessel, each connecting plate defining a conducting area of the anodic electrode arrangement;
- a plurality of current-regulated power supplies included in said direct current source, each power supply transmitting a current through a lead to a corresponding connecting plate;
- a positioning means for securing the plurality of leads in a horizontal plane, said positioning means secured to an outer perimeter of said lower vessel; and
- a current regulating means for independently controlling the current transmitted by each of said power supplies to said corresponding connecting plate, whereby the position and deflection of the arc are controlled by controlling the current transmitted by each power supply and by adjusting the position of the connecting plates.

5,381,442
COHERENT FOURIER TRANSFORM RADIOMETER FOR DETERMINING THE THICKNESS DISTRIBUTION OF AN OIL FILM ON A BODY OF WATER BASED ON THE BRIGHTNESS TEMPERATURE OF THE OIL FILM AND WATER OVER A RANGE OF RADIATION FREQUENCIES

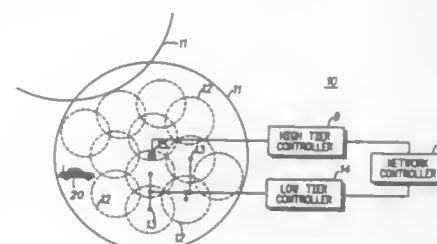
Elliott R. Brown, Billerica; Gregory G. Hogan, Stowe, and Gerald M. Daniels, Norwood, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
 Filed Apr. 1, 1993, Ser. No. 41,728
 Int. Cl.⁶ G01N 25/00; G01B 11/06
 U.S. Cl. 374—7 20 Claims



1. A radiometer for determining the thickness distribution of an oil film on a body of water comprising:
 - a receiver for detecting the electromagnetic power radiated by the body of water and oil film by sampling the radiated power over a range of frequencies, and for generating therefrom a first electrical signal proportional to a brightness temperature of the water and film versus radiation frequency; and
 - a signal processing means for processing the first electrical signal by a Fourier transform process to obtain a second electrical signal, which second electrical signal is proportional to radiative power versus film thickness.
11. A method for determining the thickness distribution of oil film on a body of water comprising the steps of:

- a) detecting the electromagnetic power radiated by the body of water and oil film over a range of frequencies, and generating a first electrical signal therefrom which is proportional to a brightness temperature of the water and film versus radiation frequency; and
- b) processing the first electrical signal to obtain a second electrical signal which is proportional to the radiative power versus film thickness by performing a Fourier transform process on the first electrical signal.

5,381,443
METHOD AND APPARATUS FOR FREQUENCY HOPPING A SIGNALLING CHANNEL IN A COMMUNICATION SYSTEM
 David E. Borth, Palatine; John R. Haug, Arlington Heights, and Phillip D. Rasky, Buffalo Grove, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.
 Filed Oct. 2, 1992, Ser. No. 955,793
 Int. Cl.⁶ H04L 27/30
 U.S. Cl. 375—1 22 Claims



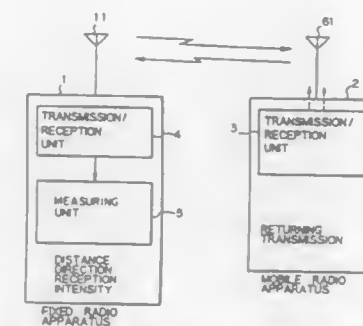
21. A slow frequency hopping time division multiple access communication system, the communication system employing a base-station for communicating to a plurality of subscriber units, the subscriber units requiring access to the base-station to establish communication, the communication system comprising:

means, at the base-station, for producing a hopping sequence for frequency hopping from a TDMA frame to a TDMA frame;
 means, coupled to said means for producing a hopping sequence, for transmitting both the signalling channel and the plurality of traffic channels over a plurality of carriers in a frequency hopping manner utilizing said determined hopping sequence;
 means, at a subscriber unit, for accessing a carrier out of said plurality of carriers having said both the signalling channel and the traffic channels frequency hopped thereon;
 means, coupled to said means for accessing, for synchronizing to the signalling channel when a carrier having the signalling channel hopped thereon is said first carrier and means, after synchronization has been acquired, for obtaining information related to said hopping sequence.

5,381,444
RADIO ENVIRONMENT MEASURING SYSTEM
 Masami Tajima, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
 Filed Oct. 30, 1992, Ser. No. 969,460
 Claims priority, application Japan, Oct. 31, 1991, 3-286213; Jun. 30, 1992, 4-172993
 Int. Cl.⁶ H04L 27/30; G01S 13/46
 U.S. Cl. 375—1 12 Claims

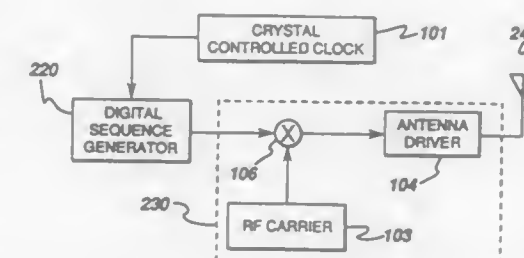
1. A radio wave environment measuring system for measuring propagation state of radio waves, comprising:
 a fixed radio apparatus provided in a base station; and
 a mobile radio apparatus in communication with the fixed radio apparatus through the radio waves,
 the mobile radio apparatus having a transmission/reception means for receiving a transmission signal from the fixed

radio apparatus and for sending a return signal to the fixed radio apparatus, and
 the fixed radio apparatus having a transmission/reception means for sending the transmission signal to the mobile radio apparatus and for receiving the returned signal from the mobile radio apparatus, and a measuring means for



determining the propagation state of radio wave, wherein the propagation state of the radio waves includes at least one of a propagation distance, direction and reception intensity of the radio waves between the fixed radio apparatus and the mobile radio apparatus based on the transmission signal and the returned signal.

5,381,445
MUNITIONS CARTRIDGE TRANSMITTER
 John E. Hershey, Ballston Lake, N.Y.; Menahem Lowy, Arlington, Tex.; Lionel M. Levinson, Schenectady, N.Y.; Amer A. Hassan, Clifton Park, N.Y.; Richard L. Frey, Delanson, N.Y.; Kenneth B. Welles, II, Scotia, N.Y.; Michael Gdula, Knox, N.Y., and Robert J. Wojnarowski, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.
 Filed May 3, 1993, Ser. No. 55,473
 Int. Cl.⁶ F42B 12/36; H04L 27/30
 U.S. Cl. 375—1 25 Claims



1. A munitions cartridge transmitter for emitting an electromagnetic signal after discharge from a hand-held cartridge propelling device at a location to be substantially determined, said munitions cartridge transmitter comprising:

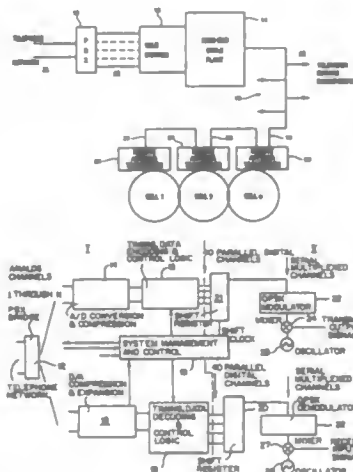
a power supply for providing electrical energy after discharge of said cartridge from the cartridge propelling device;
 a signal generator coupled to said power supply for generating a signal from which said location can be substantially determined;
 an electromagnetic signal transmitter, coupled to said generator and said power supply, for emitting said signal provided by said signal generator;
 an antenna coupled to said transmitter; and
 a hollow cartridge housing for containing said generator, said transmitter, said power supply and said antenna, said cartridge housing having sufficiently miniaturized dimensions to fit in a barrel of said cartridge propelling device.

diffracting portions of the x-ray radiation that are symmetrically disposed relative to an axis with a body of a single crystal material having a surface symmetrically curved relative to the axis to produce two spectra of the x-ray radiation, each spectrum including continuous x-ray radiation having an end point energy at the maximum energy of the x-ray radiation;

UM I

of the spectra of the image and, thereby, determining the accelerating voltage applied to the x-ray source.

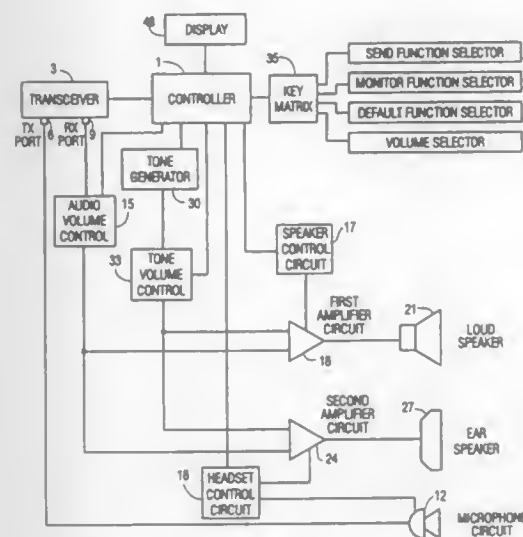
5,381,459
SYSTEM FOR DISTRIBUTING RADIO TELEPHONE SIGNALS OVER A CABLE TELEVISION NETWORK
 John Lappington, Lawrenceville, Ga., assignor to Cable Television Laboratories, Inc., Boulder, Colo.
 Continuation of Ser. No. 736,317, Jul. 29, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 145,300
 Int. Cl.⁶ H04M 1/64; H04N 7/14, 7/04; H04J 3/17
 U.S. Cl. 379—56 14 Claims



14. A system for distributing telephone calls between a telephone network and a plurality of remote telephones via a cable television network distributing television signals over at least one channel, said system comprising:

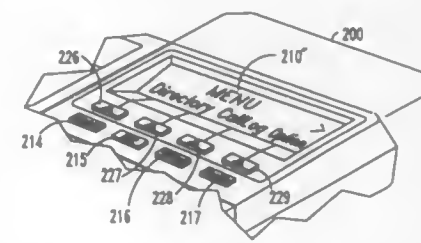
- a base station connected to said telephone network, wherein said base station includes:
 - means for receiving a plurality of outgoing telephone calls from telephone lines comprising said telephone network;
 - means for inserting data indicative of said outgoing telephone calls received by said receiving means into a first data frame;
 - means for applying said first data frame to a first channel of said cable television network; and,
- a plurality of remote sites, each of which is serially interconnected by said cable television network, wherein each of said remote sites includes:
 - a radio frequency transceiver for transmitting data in said first data frame applied to said first channel of said cable television network to said remote telephones via a plurality of outgoing telephone channels, and for receiving incoming telephone calls from said remote telephones via a plurality of incoming telephone channels;
 - insertion means for adding data contained in said incoming telephone calls received from said remote telephones to a second data frame; and,
 - means for applying said second data frame to said cable television network via a second channel for transmission to said base station.

5,381,460
MONITOR MODE IN A PORTABLE TELEPHONE
 Susumu Ohashi, Coppell, Tex.; Hideo Tateishi, and Toshiaki Fujikura, both of Chiba, Japan, assignors to Uniden America Corp., Ft. Worth, Tex. and Uniden Corporation, Tokyo, Japan
 Filed Dec. 30, 1993, Ser. No. 175,753
 Int. Cl.⁶ H04M 11/00
 U.S. Cl. 379—58 7 Claims



- A portable telephone, comprising:
 - a transceiver for transmitting and receiving radio signals, said transceiver having a transmit port for inputting signals to be transmitted and a receive port for outputting received signals,
 - a controller for controlling the portable telephone, said controller being coupled to said transceiver,
 - a first amplifier having an output port and having an input port coupled to said receive port of said transceiver, said first amplifier being coupled to said controller such that said controller can enable and disable said output port of said first amplifier,
 - a loud speaker coupled to said output port of said first amplifier,
 - a microphone circuit coupled to said transmit port of said transceiver, said microphone circuit being coupled to said controller such that said controller can enable and disable said microphone circuit,
 - a second amplifier having an output port and having an input port coupled to said receive port of said transceiver, said second amplifier being coupled to said controller such that said controller can enable and disable said output port of said second amplifier,
 - an ear speaker coupled to said output port of said second amplifier, and
 - a monitor function selector for selecting a monitor function, said monitor function selector having an activated and deactivated state, said monitor function selector being coupled to said controller wherein activation of said monitor function selector causes said controller to enable said output port of said first amplifier, disable said output port of said second amplifier, and disable said microphone circuit, and wherein deactivation of said monitor function selector causes each of said output ports of said first and second amplifiers and said microphone circuit to assume the opposite of said enabled and disabled states, respectively.

5,381,461
INTERACTIVE DISPLAY FOR USE IN A TELEPHONE TERMINAL
 Kimberly A. Baals, Matawan; Kathleen J. Chylinski, Bridgewater; Darren A. Kall, Highland Park; Gary C. Smith, Freehold, and Susan L. Tuttle, East Windsor, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
 Filed Apr. 13, 1993, Ser. No. 47,584
 Int. Cl.⁶ H04M 11/00, 1/00
 U.S. Cl. 379—96 21 Claims

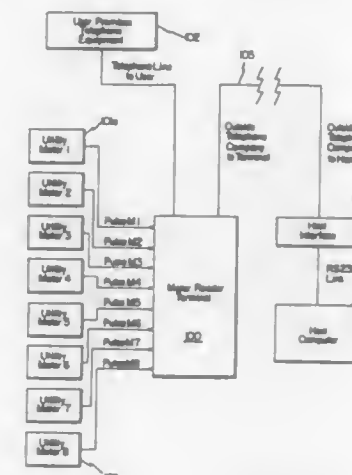


- An arrangement for displaying information messages in a display device at a telephone terminal, the arrangement comprising:
 - means for generating a set of information messages, the information messages varying in size of textual contents;
 - means for partitioning character spaces in the display device into adjacent character sets, each character set including an allocated number of character spaces for displaying an information message;
 - means for allocating available character spaces from adjacent character sets to a first character set having a specific information message for display when the textual contents of said specific information message exceeds the allocated number of character spaces in said first character set by a first predetermined number, said available character spaces being taken from information messages in said adjacent character sets that use less than the allocated number of character spaces in these character sets; and
 - means for accessing a feature associated with the specific information message, said feature being accessed from a softkey button visually aligned on the telephone terminal and associated with said first character set.

5,381,462
UTILITY MONITOR COMMUNICATIONS SYSTEMS
 Rodney L. Larson, Minnetonka, and Donald L. Meyer, Long Lake, both of Minn., assignors to Datran Systems Corporation, Minnetonka, Minn.
 Filed May 29, 1992, Ser. No. 891,298
 Int. Cl.⁶ H04M 11/00
 U.S. Cl. 379—107 6 Claims

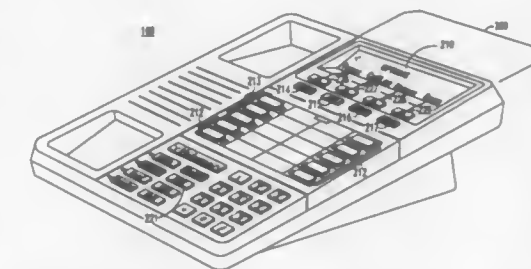
- A utility meter usage reporting apparatus for reliable communication over a standard telephone line to record utility usage at a host site, comprising:
 - control means including a microprocessor and memory;
 - means connected to said control means for receiving signals indicative of utility usage to be reported;
 - communication means connected to said control means for initiating a telephone connection over the telephone line at a predetermined time and date directly to said host site and for bidirectional communication of control information and utility usage data thereover using handshaking protocol which does not allow recording of a communication transaction with the host site until both the host site and said control means verify an uninterrupted and accurate receipt of said control information and said utility usage data;

said control information and said utility usage data being encoded using DTMF tones into data packets; and



said data packets being constructed to include checksum calculations to ensure accuracy in the receipt of said data packets.

5,381,463
ARRANGEMENT FOR SECURING MENU SCREENS ON A TELEPHONE TERMINAL
 Kimberly A. Baals, Matawan; Edward W. Boakes, Middletown; Kathleen J. Chylinski, Bridgewater; Darren A. Kall, Highland Park; Gary C. Smith, Freehold, and Susan L. Tuttle, East Windsor, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.
 Filed Apr. 13, 1993, Ser. No. 47,585
 Int. Cl.⁶ H04M 11/00
 U.S. Cl. 379—96 11 Claims



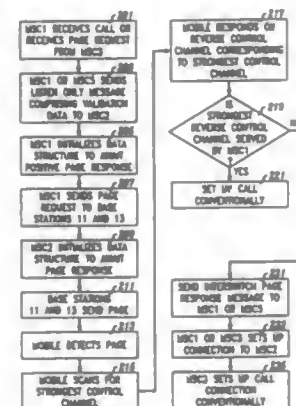
- An arrangement for displaying menu screens of information messages in a display device at a telephone terminal, the arrangement comprising:
 - means for generating a plurality of sets of information messages in the telephone terminal, each one of the sets of information messages being accessible within a menu hierarchy for displaying in an associated menu screen;
 - means for selecting by a user of the telephone terminal selected sets of information messages from the plurality of sets of information messages;
 - locking means for limiting access to said selected sets of information messages, said selected sets of information messages being located in different sections of the menu hierarchy; and
 - password means generated by the user of the telephone terminal for providing access to each of the selected sets of information messages in the menu hierarchy, the password means being accessible in each section of the menu hierarchy having at least one of said selected sets of information messages, said password means being accessed

prior to accessing said selected set of information messages.

5,381,464
SERVING CELLULAR CALLS TO STATIONS AT THE
BOUNDARY BETWEEN SWITCH SERVING AREAS
Julia A. O'Keefe, Douglas H. Riley, and Kenneth W. Shelhamer,
all of Naperville, Ill., assignors to AT&T Corp., Murray Hill,
N.J.

Filed Jun. 24, 1993, Ser. No. 82,138
Int. Cl.⁶ H04M 11/00
U.S. Cl. 379—59

8 Claims



1. A method of establishing an incoming cellular wireless telecommunications call to a mobile station, said method comprising the steps of:

- receiving a request, to page said mobile station, in a first mobile switching center (MSC);
responsive to receiving said request, determining in said first MSC that said call can be served by one of a plurality of base stations controlled by said first MSC or by a base station controlled by a second MSC;
responsive to said determination, sending a request from said first MSC to said second MSC to listen for a page response from said mobile station, but without transmitting a paging order from any base station controlled by said second MSC;
transmitting a paging order to said mobile station from at least one base station controlled by said first MSC;
responsive to receiving said paging order in said mobile station, transmitting a page response from said mobile station over a reverse control channel to a base station selected by said mobile station, the selected base station controlled by said first MSC or controlled by said second MSC, the selected base station transmitting a strongest signal to said mobile station;
if said selected base station receiving said page response is controlled by said first MSC, establishing a connection of said incoming call from said first MSC via a base station controlled by said first MSC;
if said selected base station receiving said page response is controlled by said second MSC, transmitting a request from said second MSC to said first MSC for establishing a connection of said incoming call via said second MSC and a base station controlled by said second MSC to said mobile station.

5,381,465

**SYSTEM FOR PROVIDING AUTOMATIC VOICE
MESSAGING IN A DIGITAL NETWORK ENVIRONMENT**

Howard E. Carter, Denton; Byron C. Pierce, Garland, and Joel
A. Pugh, Dallas, all of Tex., assignors to Messenger Partners,
Dallas, Tex.

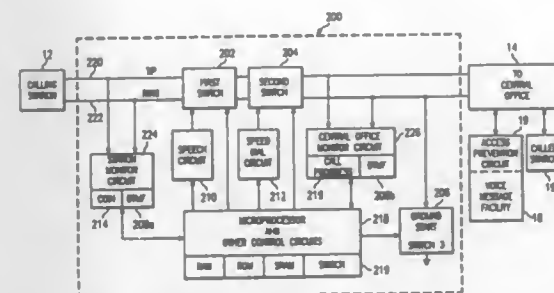
Continuation of Ser. No. 702,057, May 17, 1991, abandoned,
which is a continuation of Ser. No. 478,674, Feb. 12, 1990, Pat.
No. 5,036,533, which is a continuation-in-part of Ser. No.
342,480, Apr. 24, 1989, Pat. No. 4,901,341, which is a
continuation-in-part of Ser. No. 209,891, Jun. 22, 1988, Pat. No.
4,825,640. This application Apr. 28, 1993, Ser. No. 54,853

The portion of the term of this patent subsequent to Apr. 25,
2006, has been disclaimed.

Int. Cl.⁶ H04M 3/50, 15/16

U.S. Cl. 379-67

44 Claims



1. A method for storing and delivering voice messages in a telecommunication circuit including at least one central office, a calling station and a called station associated so that a call initiated at said calling station causes a ringing or busy tone to be generated by said central office indicating a noncompleted call at said called station, said method comprising the steps of monitoring said circuit to obtain billing data from said calling station upon initiation of said call, storing said billing data, detecting receipt of a predetermined code from said calling station, issuing a prerecorded prompt to said calling station before said step of detecting, wherein during the issuance of said prompt the progress of said call can be monitored by a caller at said calling station, connecting said calling station to a voice message system in response to said step of detecting to enable a message to be transferred from said calling station to said called station, and transferring said stored data to said voice message system.

5,381,466
NETWORK SYSTEMS

Shigeki Shibayama, Yokohama, and Kazumasa Hamaguchi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

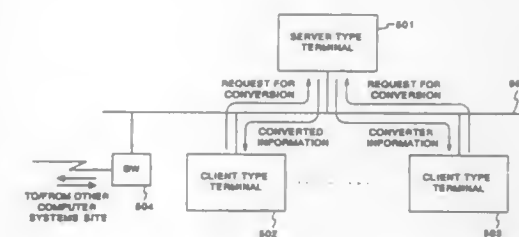
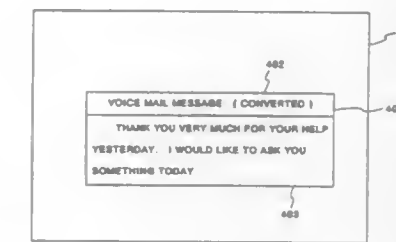
Continuation of Ser. No. 654,003, Feb. 12, 1991, abandoned.
This application Mar. 29, 1994, Ser. No. 219,750
Claims priority, application Japan, Feb. 15, 1990, 2-35241
Int. Cl.⁶ H04M 1/00, 3/50

U.S. Cl. 379-88

38 Claims

1. A network system for transmitting and receiving voice information, comprising:
- a plurality of terminal units connected to said network system for converting the received voice information into character codes and for outputting the results of the conversion,
 - wherein each of said plurality of terminal units comprises:
 - reception means for receiving voice information;
 - conversion means for converting the voice information into character codes;
 - output means for outputting the information converted by said conversion means;
 - checking means for checking whether voice information reproduction means for reproducing and outputting the voice information is provided in that terminal unit; and

conversion control means for controlling said conversion means in a manner such that said conversion means is



activated when said checking means confirms that voice information reproduction means is not provided in the terminal unit.

5,381,467
TELEPHONE CALL BILLING SYSTEM

Richard R. Rosinski, Middletown, and **Steven C. Salimando**, Little Silver, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 30, 1992, Ser. No. 968,701
Int. Cl.⁶ H04M 15/00

U.S. Cl. 379—121

34 Claims

401	403	407	PORTION
TERMINATING A/E	ORIGINATING A/E	PPH	
(201) 123-4567	(712) 456-7891		80
(201) 123-4567	(906) 234-5678		45
(201) 123-4567	(300) 765-4321		75
(201) 123-4567	(308) 543-2198		80
(201) 123-4567		6789	55
(201) 123-4567		1234	20
(406) 456-7891	(912) 234-5678		50
(500) 123-4567	(212) ???-????		20
(500) 123-4567	(718) ???-????		20
(500) 123-4567	(201) ???-????		20
(500) 123-4567	(908) ???-????		50
(500) 123-4567	(609) ???-????		50
(500) 123-4567	(404) ???-????		30
(500) 123-9876	(777) ???-????		35
(908) 572-4321	(908) 572-7777		50
(908) 572-4321	(908) 819-7777		50

1. A method for use in billing a telephone toll call between at least an originating subscriber and a terminating subscriber, said telephone toll call having a length that is a sum of the predetermined lengths of indivisible time periods that pass during said telephone toll call, the method comprising the steps of:

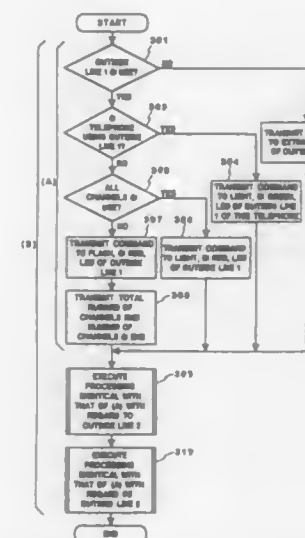
- detecting an authorization signal indicating that said terminating subscriber and said originating subscriber agree to share the period cost incurred for at least one of said indivisible time periods of said telephone toll call; and marking at least one billing record associated with said telephone toll call, in response to said detected authorization signal, to indicate that the period cost incurred for said at least one indivisible time period is to be divided into at least two portions.

5,381,468
TELEPHONE EXCHANGE INCLUDING LESS DISPLAY
ELEMENTS THAN CHANNELS

Isamu Ozawa, Hachioji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1992, Ser. No. 881,095
Claims priority, application Japan, May 14, 1991, 3-138393
Int. Cl.⁶ H04M 15/00, 1/00, 9/00
U.S. Cl. 379—136 22 Claims

22 Claims



1. A telephone exchange which accommodates a line having a plurality of channels as well as a plurality of terminals, comprising:

- monitoring means for monitoring states of the channels of the line;
- informing means for individually informing each of the terminals of the states of the channels; and
- display means for displaying the state of the channels informed by said informing means so as to distinguish between idle channels and channels in use by the number of display elements less than the number of the channels, wherein said display means displays the states of the channels in a first mode or in a second mode depending upon whether the number of idle channels and channels in use is within a predetermined range.

5,381,469
TELEPHONE ANTI-THEFT DEVICE

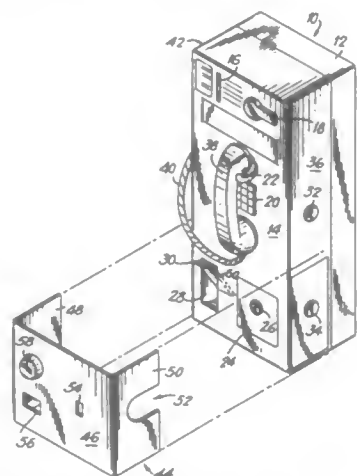
Fredrick Zausner, Port Washington, N.Y., assignor to Resco Metal Products Corp., Brooklyn and Renault Metal Products, Ltd., Middle Village, both of N.Y.

Continuation of Ser. No. 526,514, May 21, 1990, Pat. No. 5,148,476. This application Mar. 17, 1992, Ser. No. 852,527. The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.⁶ H04M 17/00; H04R 9/00; G07F 3/00
U.S. Cl. 379-143 8 Claims

1. A protective cover for a coin-operated telephone having a coin-return opening and a pivotally mounted protective cover in the region of said coin-return opening, comprising a protective plate dimensioned and configured to be attached to the telephone in the coin box and coin-return opening regions of the telephone; means to provide user access to the telephone

coin-return opening and means to protect the upper portion of the coin-return protective pivotal door while permitting piv-



otal movement of said door to facilitate removal of coins from the coin-return opening of the telephone.

5,381,470

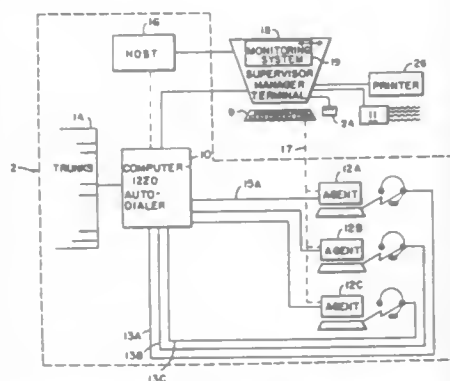
SUPERVISORY MANAGEMENT CENTER WITH PARAMETER TESTING AND ALERTS

John E. Cambray, Pelham, N.H., and Andrew J. Scharmer, Tewksbury, Mass., assignors to Davox Corporation, Westford, Mass.

Filed May 28, 1991, Ser. No. 706,251
Int. Cl.⁶ H04M 1/26, 3/46

U.S. Cl. 379-216

41 Claims



1. A telecommunications system comprising:
 - a computerized telephony system incorporating at least an automated out-dialing function and generating a plurality of parameter event signals indicative of various parameters of said at least an automated out-dialing function as said various parameters occur;
 - at least one agent terminal coupled to said computerized telephony system, and responsive to said automated out-dialing function, for causing said telephony system to generate said plurality of parameter event signals indicative of various parameters of said telephony system and calls processed in accordance with said automated out-dialing function as said various parameters occur; and
 - at least one supervisory terminal responsive to at least said computerized telephony system, said at least one supervisory terminal comprising:
 - a processor having multi-tasking capability and running an operating system;
 - a mass storage device responsive to said processor, said mass storage device receiving and storing at least some of said plurality of parameter event signals; an input

device, for inputting a plurality of data signals including at least one parameter event alert signal identifying an action to be initiated by said at least one supervisory terminal upon the comparison of a selectable telecommunication system parameter event with an established parameter event alert condition and, at least one selectable parameter event alert relationship signal and at least one parameter event alert value signal, said at least one parameter event alert relationship signal and at least one parameter event alert value establishing at least one parameter event alert condition to which at least one corresponding parameter vent is to be compared;

a parameter event and parameter event alert associator, for associating at least one parameter event alert with a selectable telecommunication parameter event signal; and

a parameter event alert monitor, for performing a comparison of said plurality of parameter event signals with said established at least one parameter event alert condition, and for generating a signal indicative of a result of said comparison, said signal for initiating said action identified by said at least one parameter event alert signal.

5,381,471

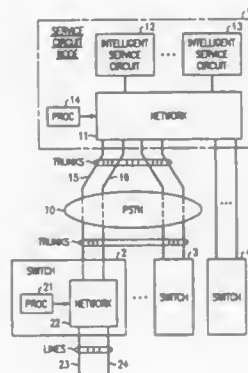
CENTRALIZED SERVICE CIRCUIT DEPLOYMENT

Annapurna Balakrishnan, Winfield; Stuart J. Lark, Wheaton, and Paul R. Sand, Bollingbrook, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jan. 29, 1993, Ser. No. 10,962
Int. Cl.⁶ H04M 7/00

U.S. Cl. 379-269

12 Claims



1. A method of seizing one of a plurality of service circuits connectable to customer lines, said service circuits housed in a service circuit node (SCN), from one of a plurality of switching systems, said SCN for serving said plurality of switching systems, comprising the steps of:
 - pre-allocating a plurality of semi-permanent communication paths between said one switching system and said SCN;
 - establishing semi-permanent communication paths between said one switching system and said SCN for each of said pre-allocated paths;
 - establishing semi-permanent connections in a switching network of said SCN between the pre-allocated service circuits, each connectable to customer lines, and the established communication paths; and
 - seizing one of said pre-allocated paths from said one switching system.

5,381,472

POWER SOURCE CONTROL APPARATUS FOR TELEPHONE SET

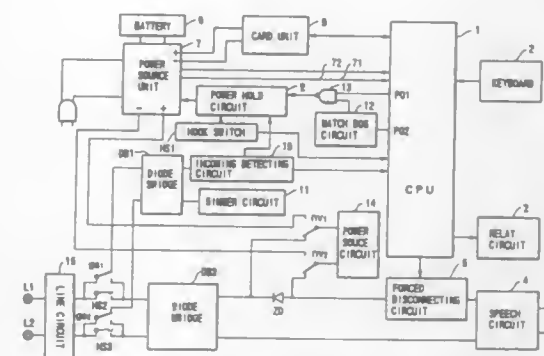
Kazuhide Kobayashi; Takehiko Ishii, and Osamu Kai, all of Tokyo, Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Aug. 9, 1991, Ser. No. 743,150

Claims priority, application Japan, Aug. 10, 1990, 2-210432
Int. Cl.⁶ H04M 19/00

U.S. Cl. 379-387

9 Claims



1. A power source control apparatus for a telephone set, comprising:
 - a telephone set that performs speech processing in accordance with an off-hook operation thereof and finishes the speech processing in accordance with an on-hook operation thereof;
 - a first power source means for supplying power to said telephone set;
 - a power source switching means for selecting ON and OFF states to switch on and off operations of said first power source means;
 - a detecting means or detecting at least one of an off-hook operation of said telephone set for an outgoing call and an incoming call signal arriving at a line;
 - a power hold means for holding said power source switching means in the ON state for a predetermined time period on the basis of an output from said detecting means, said predetermined time period being set to be time enough for starting operations of said telephone set; and
 - a control means activated by power from said first power source means, for outputting an extension signal to said power hold means so that said power hold means continuously holds said power source means in the ON state and stopping output of said extension signal at the end of the speech processing of the telephone set in order to switch said power source switching means to the OFF state.

5,381,473

NOISE CANCELLATION APPARATUS

Douglas Andrea, Old Brookville, and Martin Topf, Brooklyn, both of N.Y., assignors to Andrea Electronics Corporation, Long Island, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,180

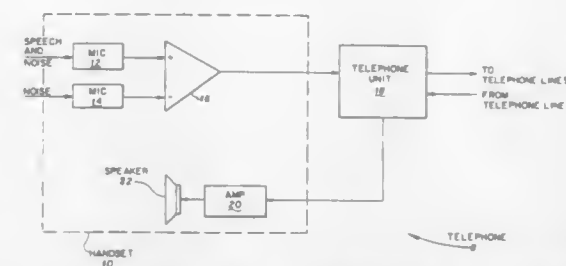
Int. Cl.⁶ H04M 1/00

U.S. Cl. 379-387

28 Claims

1. A telephone handset apparatus having a speaker portion and a receiver portion for use with a telephone unit operable by standard power supplied from said telephone unit for transmitting and receiving signals representing speech between two or more operators, said apparatus comprising:
 - a housing in the receiver portion having first microphone means for receiving a first acoustic sound composed of speech from the operator using said apparatus and background noise in the vicinity of said speech and for converting said first acoustic sound to a first signal, and second microphone means arranged at a predetermined angle ϕ with respect to said first microphone means, and adja-

cent thereto, for receiving a second acoustic sound composed of substantially said background noise and for converting said second acoustic sound to a second signal; and



means for subtracting said second signal from said first signal so as to obtain a signal representing substantially said speech.

5,381,474

METHOD OF CONVERGING AN ECHO CANCELLER

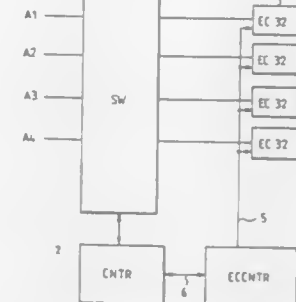
Heimo L  hdem  ki, Pirkkala, and Jaakko Sippola, Tampere, both of Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

Filed Jun. 23, 1993, Ser. No. 81,323

Claims priority, application Finland, Nov. 4, 1991, 915196
Int. Cl.⁶ H04M 9/08

U.S. Cl. 379-410

8 Claims



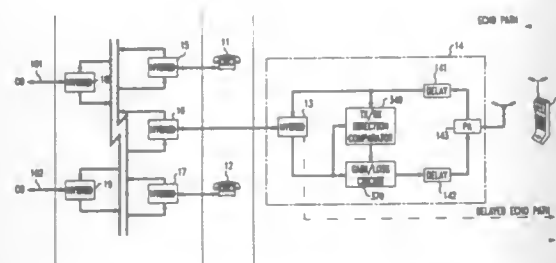
4. A method for converging an adaptive echo canceller at the beginning of a telephone call between a calling subscriber and a called subscriber during which the called subscriber will transmit a speech signal to the calling subscriber, said method comprising:
 - (a) establishing a transmission connection through a telephone exchange between a calling subscriber and a called subscriber over a telephone system which includes said telephone exchange, which telephone exchange has an adaptive echo canceller integrated thereto;
 - (b) transmitting a series of ring-back tones along said transmission connection to said calling subscriber, indicating that an off-hook state does not yet exist in regard to said called subscriber;
 - (c) at said telephone exchange using a call control to cause said echo canceller to transmit a test signal interspersed with said ring-back tones, towards the calling subscriber, for initiating convergence of said echo canceller;
 - (d) using a return of said test signal along an echo path of said transmission connection to said echo canceller to converge said echo canceller before said called subscriber creates an off-hook state; and
 - (e) utilizing said echo canceller, as thereby converged, to suppress echo in transmission of said speech signal on said transmission connection.

5,381,475
ARRANGEMENT FOR SUPPRESSING ECHOES IN A
DIGITAL PORTABLE TELEPHONE
Mark C. Cavallo, Eatontown, N.J., assignor to AT&T Corp.,
Murray Hill, N.J.

Filed Dec. 2, 1993, Ser. No. 160,140
Int. Cl.⁶ H04M 9/08

U.S. Cl. 379-410

23 Claims



1. An arrangement for suppressing echoes in a digital portable telephone including a base unit and a handset unit, the base unit and the handset unit communicating over a plurality of wireless communication channels and the base unit being connectable to a telephone line for receiving signals from this line and coupling signals onto this line, the arrangement comprising:

communication means in the base unit and the handset unit for communicating in a frequency hopping system, said base unit and said handset unit alternately transmitting and receiving signals on each of the plurality of wireless communication channels in said frequency hopping system; means for coupling signals present in a signal receive path in the base unit to the handset unit over the plurality of wireless communication channels;

means for detecting the direction of dominant speech signals appearing in the signal receive path in the base unit, the dominant speech signals either originating at the handset unit or at a remote telephone station and received by the base unit from the telephone line; and

means responsive to the detecting means for inserting loss into the signal receive path in the base unit when the dominant speech signals appearing in the base unit originate at the handset unit, said loss inserting means preventing said dominant speech signals originating at the handset unit from being transmitted over said wireless communication channels to the handset unit.

5,381,476
VIDEO THEATER SYSTEM AND REPRODUCING
APPARATUS THEREFOR
Takayuki Kimoto, Hirakata, and Tatsuhiko Hosokawa, Ibaraki,
both of Japan, assignors to Matsushita Electric Industrial Co.,
Ltd., Kadoma, Japan

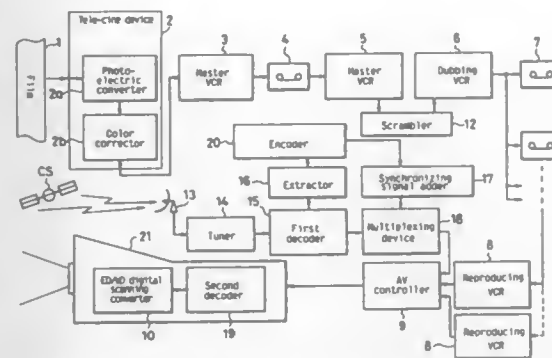
Filed Jan. 22, 1993, Ser. No. 6,304
Claims priority, application Japan, Jan. 24, 1992, 4-010615
Int. Cl.⁶ H04N 7/167, 5/76

U.S. Cl. 380-5

7 Claims

1. A video theater system comprising:
reproducing means for reproducing a first scrambled signal recorded on a video tape;
receiving means for receiving a second scrambled signal transmitted from a communication satellite;
signal converting means for removing a copy-protection process from said second scrambled signal to thereby convert said second scrambled signal into a third scrambled signal which is of the same form as said first scrambled signal;
selection means for selecting one of said first scrambled signal and said third scrambled signal;

descrambling means for descrambling a signal selected by said selection means into a picture signal; and



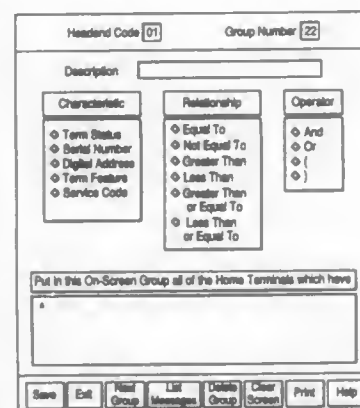
display means for displaying a picture based on said picture signal.

5,381,477
METHOD OF SELECTING CABLE TELEVISION
CONVERTER GROUPS
Robert J. Beyers, II, Snellville; Gregory S. Durden, Jonesboro;
M. Kent Ivey, Chamblee, and Curt M. Kuban, Snellville, all of
Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Feb. 16, 1993, Ser. No. 18,932
Int. Cl.⁶ H04N 7/167

U.S. Cl. 380-20

51 Claims



1. A method of selecting individual subscribers for inclusion in groups of subscribers of a subscription television system having a plurality of terminals, the method comprising the steps of:

storing terminal characteristics for each of said terminals, defining criteria for characterizing a group of said terminals by specifying desired values for two or more of said terminal characteristics, logically linking the defined criteria to form a selection criteria statement comprising said defined criteria and a logical operator selected from the set consisting of logical AND and logical OR, and

assigning one or more of said terminals to the group when the stored terminal characteristics satisfy the selection criteria statement.

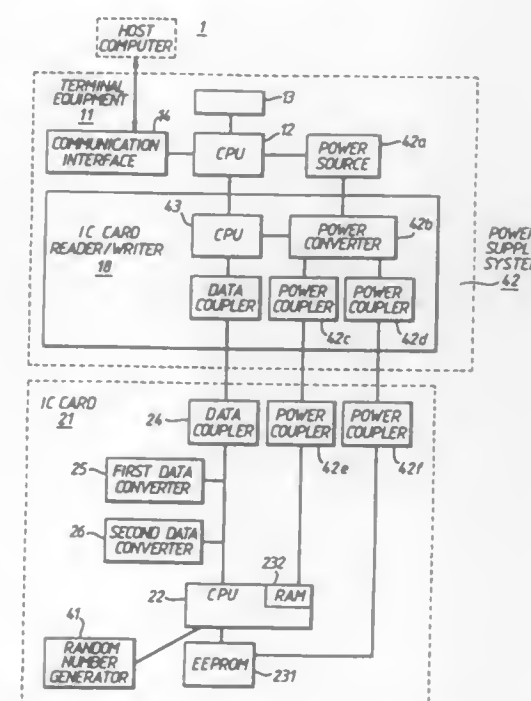
5,381,478
CIPHER COMMUNICATION SYSTEM FOR
TRANSACTION DATA
Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha
Tohoku, Kawasaki, Japan

Filed Feb. 6, 1992, Ser. No. 832,042
Claims priority, application Japan, Feb. 8, 1991, 3-017592
Int. Cl.⁶ H04L 9/06

U.S. Cl. 380-44

3 Claims U.S. Cl. 380-21

13 Claims



1. A cipher communication system comprising:
a first electronic device, the first electronic device comprising:
first memory means for storing a master key data,
means for generating a transaction key data which is used for enciphering the transaction data,
means for enciphering the transaction key data according to the master key data, and
means for transferring the transaction key data enciphered by the enciphering means;

a second electronic device communicating with the first electronic device, the second electronic device comprising:
means for receiving the enciphered transaction key data transferred from the first electronic device,
second memory means for storing the master key data,
means for deciphering the enciphered transaction key data received by the receiving means according to the master key data, and
third memory means for temporarily storing the transaction key data deciphered by the deciphering means, in a manner causing the stored transaction key to be eliminated at a completion of the communication; and
a terminal device, interposed between the first electronic device and the second electronic device, including means for providing power to and activating the second electronic device,

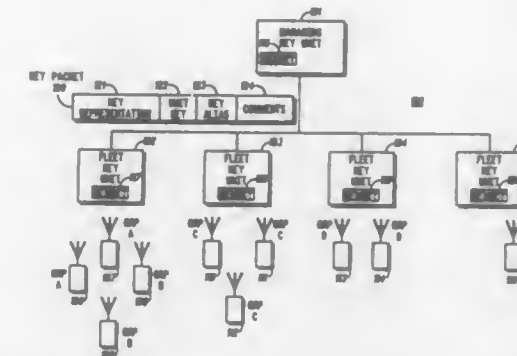
the third memory means including RAM which holds its memory while power is supplied from the terminal device, the memory held within the RAM being automatically eliminated when there is an interruption of the power supply.

5,381,479
METHOD FOR OVER THE AIR REKEYING OF
MULTIPLE COMMUNICATION GROUPS
Kevin Gardeck, Algonquin; David A. Green, Bartlett, and Kevin
Cutts, Schaumburg, all of Ill., assignors to Motorola, Inc.,
Schaumburg, Ill.

Filed Feb. 28, 1994, Ser. No. 203,468
Int. Cl.⁶ H04L 9/00

3 Claims U.S. Cl. 380-21

13 Claims



1. A method for over the air rekeying of multiple communication groups, the method comprising the steps of:

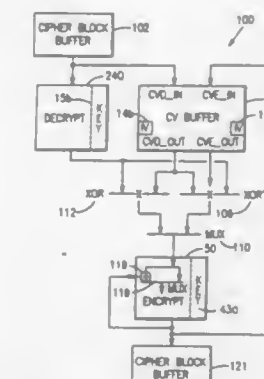
a) generating, by a managing key unit, a key packet that includes a key representation and keying information;
b) transporting, by the managing key unit, the key packet to at least one fleet key unit;
c) upon receipt of the key packet, determining, by the at least one fleet key unit based on the keying information, members of multiple communication groups to receive the key representation; and
d) transmitting, by the at least one fleet key unit, the key representation to the members of multiple communication groups.

5,381,480
SYSTEM FOR TRANSLATING ENCRYPTED DATA
Adrian S. Butter, Binghamton, N.Y.; Brian S. Finkel, Chapel
Hill, N.C.; Chang-Yung Kao, Boulder, Colo.; Sivarama K.
Kodukula, Austin, Tex., and James P. Kurutz, Forest City,
Pa., assignors to International Business Machines Corporation,
Armonk, N.Y.

Filed Sep. 20, 1993, Ser. No. 124,151
Int. Cl.⁶ H04L 9/16

U.S. Cl. 380-37

21 Claims



1. A system for translating a first group of cipher blocks based on a first encryption key to a second group of respective cipher blocks based on a second encryption key, said system comprising:
decryption means for sequentially decrypting said cipher blocks of said first group;

encryption means, coupled to receive decrypted blocks output from said decryption means, for sequentially encrypting said decrypted blocks into respective cipher blocks of said second group based on said second encryption key; and
control means for controlling said encryption means to encrypt each of a multiplicity of successive blocks substantially in parallel with said decryption means decrypting a next block.

5,381,481

METHOD AND APPARATUS FOR UNIQUELY ENCRYPTING A PLURALITY OF SERVICES AT A TRANSMISSION SITE

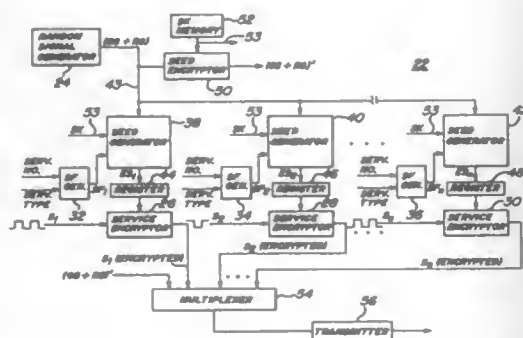
Keith Gammie, Markham; Wayne S. Sheldrick; Arthur S. Woo, both of Scarborough, all of Canada, and Anthony J. Wasilewski, Alpharetta, Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Aug. 4, 1993, Ser. No. 101,974

Int. Cl.⁶ H04L 9/00, 27/30

U.S. Cl. 380—49

17 Claims



9. An encryption apparatus for uniquely encrypting a plurality of services at a transmission site and for transmitting the encrypted services to a remote reception site comprising:

spreading function generator means for generating a spreading function for each of said services to be transmitted, each spreading function comprising a unique N-bit quantity and being associated with a respective one of said services;

a random signal generator for generating a random quantity; seed generator means electrically coupled to the random signal generator and to the spreading function generator means for independently convolving the random quantity with each of the spreading functions generated by the spreading function generator means to produce a unique encryption seed for each respective service;

a plurality of service encryptors each electrically coupled to the seed generator means and each electrically coupled to receive a respective one of said services for encrypting the respective service in accordance with an encryption algorithm upon said encryption algorithm being keyed by the unique encryption seed produced for that respective service; and

a transmitter electrically coupled to the service encryptors and to the random signal generator for transmitting the random quantity and each of the encrypted services to a remote reception site, but not transmitting the unique encryption seeds produced by the seed generator means.

5,381,482

SOUND FIELD CONTROLLER

Masaharu Matsumoto, Katano; Mitsuhiko Serikawa, Nishino-miya; Akihisa Kawamura, Hirakata; Hiroko Numazu; Takeshi Norimatsu, both of Kadoma; Ryo Tagami, Hirakata, and Mikio Oda, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

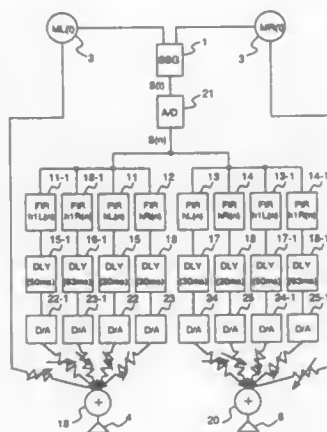
Filed Feb. 1, 1993, Ser. No. 12,265

Claims priority, application Japan, Jan. 30, 1992, 4-014619; Feb. 27, 1992, 4-040893; Feb. 27, 1992, 4-040894; Feb. 28, 1992, 4-042875; Mar. 9, 1992, 4-050619

Int. Cl.⁶ H04S 5/02

U.S. Cl. 381—18

8 Claims



1. A sound field controller for controlling a sound field by left and right speakers provided in front of one or more listeners, comprising:

input means for providing first and second sound signals; left sound pattern generating means for generating a left sound pattern signal;

right sound pattern generating means for generating a right sound pattern signal;

first adding means for adding said first sound signal, said left sound pattern signal and said right sound pattern signal and applying the added signal to said left speaker;

second adding means for adding said second sound signal, said right sound pattern signal and said left sound pattern signal and applying the added signal to said right speaker; and

weight control means for controlling a weight for adding said first and second sound signals by calculating a degree of difference between said first and second sound signals, and using the calculated degree of difference in said first and second adding means to decrease the weight of adding said first and second sound signals as the degree of difference becomes great.

5,381,483

MINIMAL INDUCTANCE ELECTRODYNAMIC TRANSDUCER

Noel J. Grau, Rio Piedras, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.

Filed Apr. 5, 1993, Ser. No. 42,714

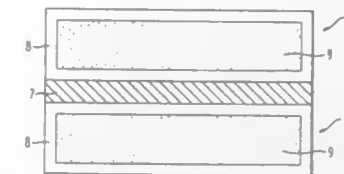
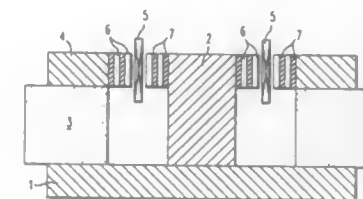
Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—192

17 Claims

1. An electrodynamic transducer, comprising:
a center pole;
a voice coil surrounding said center pole;
a magnet surrounding said voice coil;
a front pole piece plate connected to the magnet for defining

an air gap between the center pole and the front pole piece plate with the voice coil disposed therein; and
at least one ferromagnetic ring, coated with a material hav-



ing a higher conductivity than iron, and having two sides, one of said two sides nonconductively attached to at least one of the center pole and the front pole piece plate, and the other of said two sides facing the voice coil.

5,381,484

HEARING AID WITH PULL-OUT-STRING, PULL-OUT STRING, AND METHOD OF MAKING A HEARING AID

Rudi A. M. Claes, and Petrus A. W. H. Van Vroenhoven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

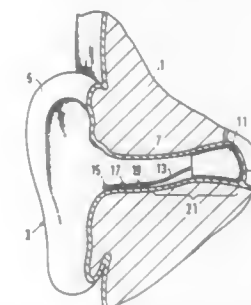
Filed Oct. 13, 1992, Ser. No. 959,894

Claims priority, application European Pat. Off., Oct. 16, 1991, 91202691.1

Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—68.6

19 Claims



1. A pull-out string for connection to a hearing aid constructed for use in an ear canal near a tympanic membrane, said pull-out string comprising: a first end and a second end wherein both ends are provided with fixing means for connection to the hearing aid and the pull-out string comprises a plurality of beads, the distance from each bead to an end of the pull-out string being different.

5,381,485

ACTIVE SOUND CONTROL SYSTEMS AND SOUND REPRODUCTION SYSTEMS

Stephen J. Elliott, Winchester, England, assignor to Adaptive Control Limited, England

Filed Aug. 27, 1993, Ser. No. 113,150

Claims priority, application United Kingdom, Aug. 29, 1992, 9218465; Oct. 5, 1992, 9220879

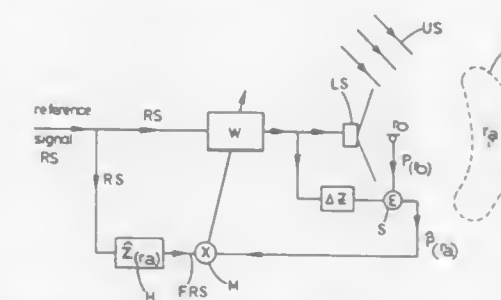
Int. Cl.⁶ G10K 11/16

U.S. Cl. 381—71

7 Claims

1. An active sound control system comprising a loudspeaker having an input and operable to generate sound waves for interference with unwanted sound to produce a region close to

the user of the system in which the sound perceived by the user is substantially reduced, a microphone positioned at a position r_0 closer to the loudspeaker than to said region of sound reduction, loudspeaker control means for controlling said input to the loudspeaker and operable to energize the loudspeaker such that the sound waves emitted by the loudspeaker substantially cancel the unwanted sound waves in said region, the loudspeaker control means including signal processing means arranged to simulate a microphone output that would be obtainable if the microphone, instead of being positioned closer to the loudspeaker, as aforesaid, were to be positioned in a notional position r_a relatively closer to the user, the simulated micro-



phone output being used to control said loudspeaker input, the complex response of the notional position microphone, $\hat{p}(ra)$, at the frequency of interest, being obtained from the responses of the microphone at said position r_0 having an output $p(r_0)$ using an implementation of the equation:

$$\hat{p}(ra) = p(r_0) + [Z(ra) - Z(r_0)]q_s$$

where $Z(r_0)$ is the electrical transfer response at the frequency of interest between the loudspeaker and the microphone at the position r_0 , $Z(ra)$ is the electrical transfer response between the loudspeaker and the notional position microphone, at the position ra , and q_s is the signal driving the loudspeaker.

5,381,486

COMMUNICATIONS HEADSET HAVING A UNIVERSAL JOINT-MOUNTED MICROPHONE BOOM

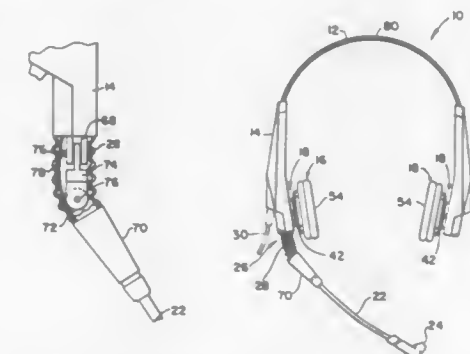
Christine E. Ludeke, Zurich, Switzerland, and Larry M. Mitchell, Cupertino, Calif., assignors to ACS Communications, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 910,419, Jul. 8, 1992, abandoned. This application Feb. 10, 1994, Ser. No. 196,770

Int. Cl.⁶ H04R 25/00

U.S. Cl. 381—187

5 Claims



1. A voice communication headset comprising:
a housing;
a receiver assembly attached to said housing;
a microphone boom;
hinge means for connecting said boom to said housing, said means including a hinge member, each of the opposed

ends thereof having a planar configuration, with the planar ends being orthogonally disposed, with respect to each other and wherein one end of said hinge member is connected to said housing and with the other end of the hinge member being connected to said boom, with each said connection being rotatable about an axis perpendicular to the associated planar end to provide full range of motion about two orthogonal axes.

5,381,487

PATIENT IDENTIFICATION SYSTEM

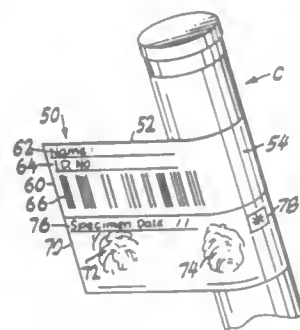
Morris H. Shamos, 3515 Henry Hudson Pkwy., Bronx, N.Y. 10463

Division of Ser. No. 485,828, Feb. 27, 1990, Pat. No. 5,071,168, which is a continuation of Ser. No. 302,023, Jan. 25, 1989, abandoned. This application Sep. 18, 1991, Ser. No. 761,571. The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.⁶ G06K 9/00

U.S. Cl. 382—2

19 Claims



1. A patient identification method for confirming the identity of an individual to receive a treatment with the patient for whom said treatment is intended, which method comprises the following sequence of steps:

- obtaining a live print identification characteristic of the patient;
- storing data representative of said characteristic in an electronic data storage device;
- after said data is stored, obtaining at a treatment location a live print identification characteristic directly from said individual to receive a treatment;
- comparing said data representative of the print identification characteristic obtained from the patient with data representative of the live print identification characteristic obtained at said treatment location from the individual to receive a treatment; and

if identity is confirmed by said comparing of data, producing at said treatment location a patient identification device comprising a dimensionally stable base member having affixed thereto identification information of the patient for whom said treatment is intended.

5,381,488

CHARACTER READING APPARATUS

Masato Suda; Yoshikata Nakamura, and Nobuaki Takagi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Oct. 31, 1991, Ser. No. 786,046

Claims priority, application Japan, Oct. 31, 1990, 2-291733; Mar. 22, 1991, 3-059087

Int. Cl.⁶ G06K 9/38

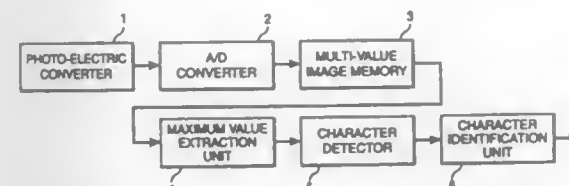
U.S. Cl. 382—9

3 Claims

2. A character reading apparatus for reading character images from a recording medium comprising a character image portion having said character images thereon and a non-character image portion, where each said character image has

a specific identity, said character reading apparatus comprising:

- means for reading said character images from said recording medium, comprising:
- means for receiving light waves from said character and non-character image portions of said recording medium, and
- means for converting said received light waves into character image data and non-character image data for respectively representing said character and non-character character image portions with a plurality of pixels arranged to form a plurality of lines and columns, said character and non-character image data defining each of said pixels as having one of a predetermined range of values, said values of said pixels defined by said character image data being larger than said values of said pixels defined by said non-character image data; first means for identifying a largest of said values of said pixels in each of said lines, said first identifying means including:
- means for storing said data defining said value of one of said pixels of one of said lines, and
- means for successively comparing each of said data defin-



ing said values of successive said pixels of said one of said lines with said data stored in said storing means and for replacing said data in said storing means with said data defining said value of said one of said successive pixels when said value of said one of said successive pixels is determined to be larger than said value defined by said data in said storing means;

first means for determining, in accordance with said largest values, which of said lines include pixels represented by said character image data and for identifying those said lines as character image lines;

second means for identifying, in accordance with said character and non-character image data, a largest of said values of said pixels in each of said columns;

second means for determining, in accordance with said largest values, which of said columns include pixels represented by said character image data and for identifying those said columns as character image columns; and

means for identifying said specific identity of each of said character images based on said character image data representing said pixels in said character image lines and said character image data representing said pixels in said character image columns.

5,381,489

OPTICAL CHARACTER RECOGNITION METHOD AND APPARATUS

Phillip Bernzott; John Dilworth; David George, all of Oakland; Bryan Higgins, and Jeremy Knight, both of Berkeley, all of Calif., assignors to Caere Corporation, Los Gatos, Calif. Division of Ser. No. 799,549, Dec. 27, 1991, Pat. No. 5,278,918, which is a continuation of Ser. No. 230,847, Aug. 10, 1988, Pat. No. 5,131,053. This application Jul. 15, 1992, Ser. No. 914,442. The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

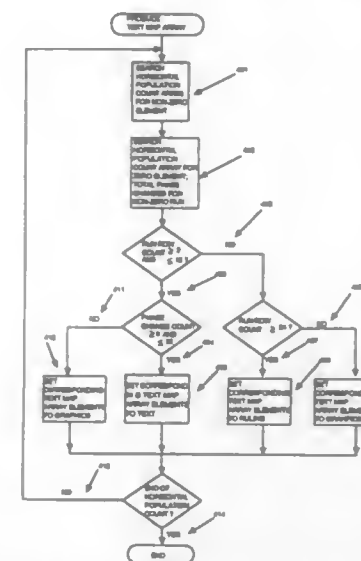
Int. Cl.⁶ G06K 9/72, 9/34, 9/68

U.S. Cl. 382—40

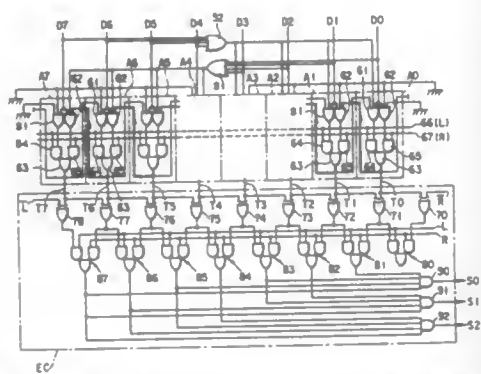
7 Claims

1. A system for optically scanning a medium, said medium having thereon an unknown character, said system comprising:

scanning means for scanning said medium, said scanning means providing as output a bit-mapped image of said medium; memory means coupled with said scanning means for storing said bit-mapped image; processing means coupled with said memory means including means for parsing said bit-mapped image of said medium and providing as output a bit-mapped representation of said unknown character, means for identifying said unknown character and means for analyzing said un-



OR'ing means for generating a first output signal which is a logical OR of the input bits;
a plurality of judging means, corresponding in number to the bits of input data, each of said plurality of judging means being connected to said input means to receive respective bits of the input data in parallel and a signal specifying the sequence in which the respective bits of the input data are to be judged, for performing a judgment on the basis of the result of a judgment from an adjacent judging means



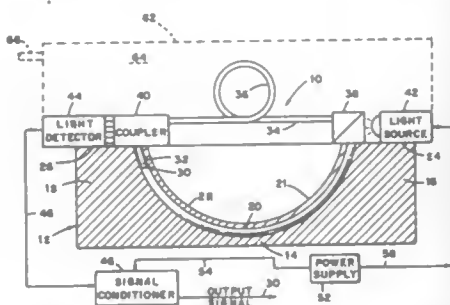
that has made a judgment of whether a corresponding input bit input thereto has a predetermined value, each of said plurality of judging means including supplying means for supplying a second output signal corresponding to the result of the judgment to an adjacent judging means that has not performed judgment processing yet; means, responsive to the second output signal from the plurality of judging means, for designating the bit position in the predetermined value that appears first in a direction of judgment processing sequence in a binary code.

5,381,492

FIBER OPTIC VIBRATION SENSOR

Joseph B. Dooley, Harriman; Jeffrey D. Muhs, Lenoir City, and Kenneth W. Tobin, Harriman, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Feb. 15, 1994, Ser. No. 196,963

Int. Cl.⁶ G02B 6/02; H01J 5/16; G01B 9/02; G01L 1/24
U.S. Cl. 385—12 14 Claims



1. A fiber optic vibration sensor comprising a housing, first elongated optical fiber means having first and second oppositely disposed end regions and fixedly supported over substantially the full length thereof to said housing, second elongated optical fiber means having first and second oppositely disposed end regions fixedly supported by said housing and a central region spatially separated from said housing for relative movement thereof with respect to both the housing and the first optical fiber means, light source means for providing a beam of light at a selected frequency, light beam splitting means coupled the first end region of the first and second optical fiber means and adapted to receive the beam of light for splitting the beam of light into first and second light beams for the respective transmission thereof along optical paths through the first and second optical fiber means, light beam coupling means

connected to the second end region of the first and second optical fiber means for receiving and combining the total amount of light transmitted through the first and second optical fiber means, light detecting means connected to the light beam coupling means for receiving the light therefrom and providing signals indicative of any changes in the frequency of light transmitted through the first and second fiber means as caused by a change in the optical path of light transmitted through the second optical fiber means upon said relative movement of the second optical fiber means, and fringe counting means connected to the light detecting means for receiving the signals therefrom and for providing a signal indicative of any change in the frequency of light transmitted through the first and second optical fiber means.

5,381,493

OPTICAL FIBER STRAIN SENSOR WITH IMPROVED LINEARITY RANGE

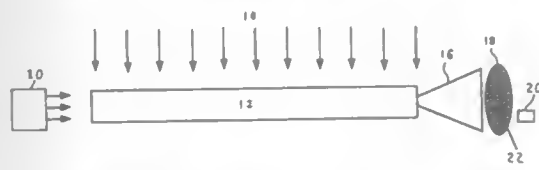
Claudio O. Egalon, and Robert S. Rogowski, both of Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1992, Ser. No. 223,931

Int. Cl.⁶ G02B 6/16

U.S. Cl. 385—13

4 Claims



1. A strain sensor, comprising:
a two-mode optical fiber constructed of materials producing an intermodal phase difference $\delta\phi_{01}-\delta\phi_{11}$ of less than 0.17 radians when subjected to stress within a measurable range of the strain sensor;
light supply means for supplying light to a first end of said optical fiber; and
light intensity detection means for detecting light intensity of the point at a second end of said optical fiber.

5,381,494

PACKAGED OPTICAL DEVICES

Adrian C. O'Donnell, and Jake D. Dodson, both of Chelmsford, England, assignors to Integrated Optical Components Ltd., Essex, England

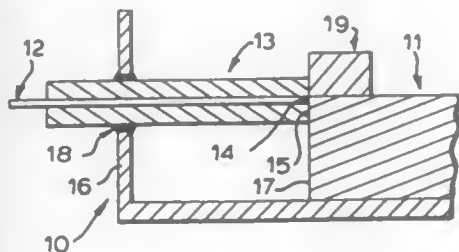
Filed Jul. 2, 1993, Ser. No. 95,812

Claims priority, application United Kingdom, Jul. 13, 1992, 9214813

Int. Cl.⁶ E02B 6/30

U.S. Cl. 385—49

18 Claims



1. A connection between an optical component and an optical fiber, the connection comprising:
a housing mounting said optical component, said housing including a side wall facing a cheek of the optical component, the optical component having an internal light-trans-

fer structure terminating at the cheek, said side wall defining an aperture facing the cheek;
a ferrule positioned around an end of the optical fiber, said ferrule having an end face positioned substantially co-planar with an end face of the optical fiber, said end faces of said ferrule and the optical fiber abutting the cheek of the optical component, said ferrule also having a portion positioned in said aperture of said side wall;
fastening means for mounting said ferrule in said aperture and holding said end faces of said ferrule and the optical fiber in abutment with the cheek of the optical component to cause the optical fiber to be in optical communication with the internal light transfer structure.

5,381,496

OPTICAL OR ELECTRICAL CONNECTOR ASSEMBLY INCLUDING GUIDING ALIGNMENT PLATES

Danny L. Morlion, St. Amansberg, and Luc O. Joackheere, Dilbeek, both of Belgium, assignors to Framatome Connectors International, Paris, France

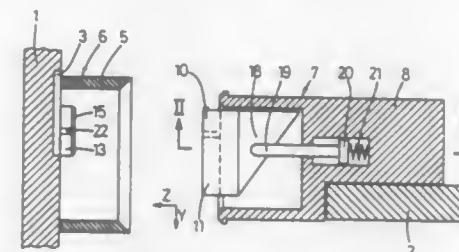
Filed Dec. 7, 1993, Ser. No. 163,991

Claims priority, application Netherlands, Dec. 16, 1992, 9202172

Int. Cl.⁶ G02B 6/38; H01R 13/62

U.S. Cl. 385—75

5 Claims



1. Connector assembly for interconnecting optical and/or electrical conductors, comprising a first connector part with a first guiding plate with one or more guiding channels for first conductors and a second connector part to be coupled with the first connector part and having a second guiding plate with one or more guiding channels provided in a corresponding manner for second conductors to be connected with the first conductors, wherein the guiding plates comprise positioning means for mutually positioning the guiding plates in the coupled position of the connector parts, said positioning means comprising a first lug and a first slot with cooperating straight reference surfaces extending in x-direction and a second lug and second slot with cooperating straight reference surfaces extending in y-direction, all said reference surfaces being located at a predetermined location with respect to the guiding channels, wherein the second guiding plate is mounted in a housing moveable in x-, y- and z-directions and wherein means are provided for exerting forces for pressing the cooperating reference surfaces and the guiding plates towards each other in the x-, y- and z-directions during coupling the connector parts, wherein said means include a surface formed at the second guiding plate, said surface enclosing an angle with the x-, y- and z-directions, wherein a spring means is provided exerting a force on the surface in one of these directions.

5,381,497

FIBER OPTIC CONNECTOR WITH VENTED FERRULE HOLDER

David S. Toland, Minnetonka; Michael F. McGuire, Eden Prairie; Gary S. Farrell, Shoreview; Kevin J. Pitkin, Eagan; Michael S. Beard, Eden Prairie; David Emmons, Plymouth; James W. Conroy, Prior Lake, and Robert J. Ziebol, Blaine, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Jul. 27, 1993, Ser. No. 94,451

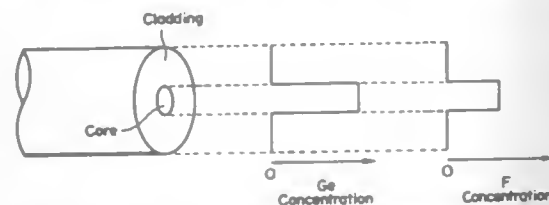
Int. Cl.⁶ G02B 6/26

U.S. Cl. 385—80

6 Claims

1. A fiber optic connector comprising:
a ferrule for receiving an optical fiber, said ferrule having an exterior surface extending from a first ferrule end to a second ferrule end, a fiber receiving bore formed through said ferrule and extending through said first and second ferrule ends;
a ferrule holder extending from a first holder end and a second holder end, said ferrule holder having a first internal wall at said first holder end and with said first internal wall defining a first chamber exposed through said first holder end;
said ferrule holder including a second internal wall at said second holder end with said second internal wall defining

of said light propagating material and having a first thermal diffusion coefficient to said light propagating material at a predetermined temperature, said second dopant adapted so as to increase the refractive index of said light propagating material and having a second thermal diffusion coefficient to said light propagat-



ing material, said second thermal diffusion coefficient being larger than said first thermal diffusion coefficient at the predetermined temperature, wherein a core size of said optical waveguide at a predetermined portion thereof is smaller than that of said optical waveguide where a spot size of a propagating mode is minimized.

5,381,504

OPTICAL FIBER ELEMENT HAVING A PERMANENT PROTECTIVE COATING WITH A SHORE D HARDNESS VALUE OF 65 OR MORE

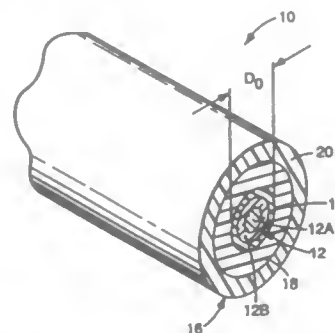
James C. Novack, St. Paul, Minn.; Bryon J. Cronk, Hudson, Wis.; James W. Laumer, White Bear Lake; Tracy R. Woodward, Cottage Grove, both of Minn., and David A. Krohn, Hamden, Conn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1993, Ser. No. 152,206

Int. Cl.⁶ G02B 6/16

U.S. Cl. 385—128

38 Claims



1. An optical fiber element, comprising: an optical fiber having a numerical aperture ranging from 0.08 to 0.34; and a protective coating affixed to the outer surface of said optical fiber, said protective coating having a Shore D hardness value of 65 or more.

5,381,505

OPTICAL FIBERS WITH A LIGHT ABSORBING COATING

Frederick J. Fischietto, Folsom; Ralph E. Jones, Sacramento; Steven W. Wilcox, and Mark S. Zetter, both of El Dorado Hills, all of Calif., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 104,515, Aug. 9, 1993. This application Dec. 28, 1993, Ser. No. 174,094

Int. Cl.⁶ G02B 6/22

U.S. Cl. 385—128

8 Claims

1. In an optical fiber transmitting radiation along the core of said fiber, at least a portion of said transmitted radiation being in the wavelength range between about 200 and about 30,000 nanometers, the improvement comprising providing said optical fiber with a first coating of organic polymers containing a

particulate amorphous carbon in an amount effective to absorb at least 99% of the radiation within said wavelength range entering said first coating.

5,381,506

FLAT TO SPIRAL POLYMER LIGHT WAVEGUIDE

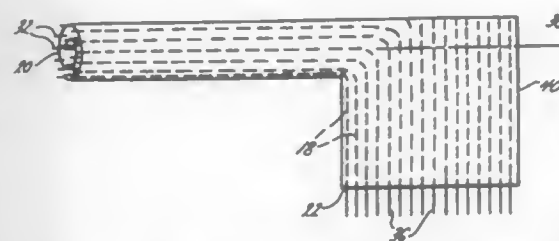
Patricia J. Amick, Bridgeton; Loyd Perrymore, St. Louis, and Michael D. Auld, Ballwin, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 18, 1993, Ser. No. 136,920

Int. Cl.⁶ G02B 6/00, 6/16

U.S. Cl. 385—129

20 Claims



1. An optical connection for connecting a generally spiral array of optical connector pins to an array of optical means of another configuration including:

at least three stacked polymer layers having:

first and second ends; and

at least one bulk predetermined optical index of refraction, at least one inner layer thereof having:

a plurality of lines of a different index of refraction forming optical waveguides formed in said at least one inner layer, each of said lines having:

at least one bend therein in the plane of said stacked layers, said first end of said stacked layers being rolled into a spiral for connection to a spiral array of optical connector pins.

5,381,507

OPTICAL ARTICLE CONTAINING A POLYMER THAT EXHIBITS NONLINEAR SECOND ORDER POLARIZATION SUSCEPTIBILITY

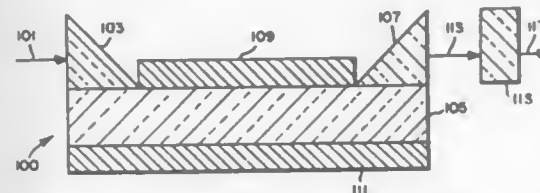
Douglas R. Robello, Webster; Edward J. Urankar, Ithaca, and Craig S. Willand, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 18, 1993, Ser. No. 154,804

Int. Cl.⁶ G02B 6/16

U.S. Cl. 385—141

27 Claims



1. An optical article containing for the transmission of electromagnetic radiation a medium that exhibits a second order polarization susceptibility greater than 10^{-9} electrostatic units and comprises a polymer containing within its repeating units polar aligned noncentrosymmetric molecular dipoles having an electron donor moiety linked through a conjugated π bonding system to an electron acceptor moiety to permit oscillation of the molecular dipoles between a ground state exhibiting a first dipole moment and an excited state exhibiting a different dipole moment, characterized in that the molecular dipoles include as an electron acceptor moiety a vinyl group geminally substi-

tuted by two strong electron withdrawing groups, at least one of which is a perfluoroalkylsulfonfyl moiety.

5,381,508

SUCTION AND LIGHT GUIDE ASSEMBLY

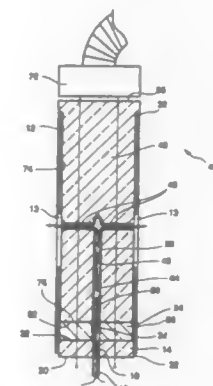
Paul F. Krumenacher, 25124 W. Lakeshore Dr., Ingleside, Ill. 60041

Filed Aug. 25, 1993, Ser. No. 111,842

Int. Cl.⁶ G02B 6/00

U.S. Cl. 385—147

9 Claims



1. A suction and light guide assembly positionable within a vertical tube of a suction head in an electronic component holding apparatus having a transparent lower plate attached to a lower end of the vertical tube, said assembly comprising:

a solid optical element extending substantially the length of the vertical tube and having a top surface, a bottom surface and an outer peripheral surface;

said optical element having a body and an axial passage within said body extending upwardly from said bottom surface part way through said optical element and at least one generally radially extending passage communicating with said axial passage and extending to said outer peripheral surface;

and said optical element being received within said tubular member in an air-tight manner.

5,381,509

RADIANT ELECTRIC SPACE HEATER

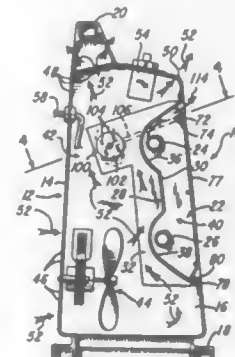
Thomas H. Mills, Urbana, Ohio, assignor to The W. B. Marvin Manufacturing Company, Urbana, Ohio

Filed Apr. 28, 1993, Ser. No. 55,712

Int. Cl.⁶ F24H 3/04

U.S. Cl. 392—376

7 Claims



1. An electric space heater comprising: a housing having a front wall and a heat-transmitting window in said front wall; a grill covering said window; a reflector assembly mounted within said housing and form-

ing with said housing a heating chamber open to said window;

said reflector assembly having heat reflective surface portions facing said window;

a source of electrical power;

an electrically operated radiant heating assembly connected to said power source, said heating assembly including a heating element located in said housing between said reflective surface portions and said window, operation of said radiant heating assembly creating in said heating chamber a naturally occurring stream of convectively-heated air; and

a capillary tube thermostat having terminals electrically connected between said source and said heating element, said thermostat having a capillary tube sensor within said housing extending across said heating chamber window in a position in which it will cause deenergization of said heating assembly in the event an outside influence causes said stream of air to impinge upon said sensor.

5,381,510

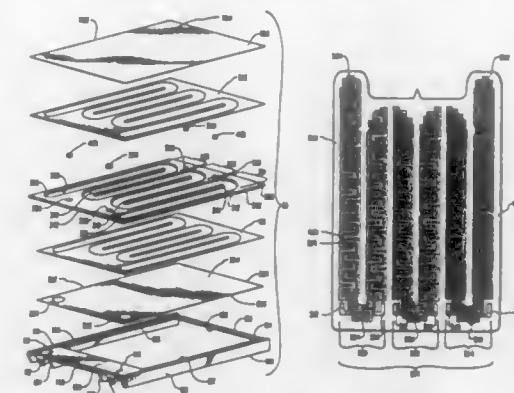
IN-LINE FLUID HEATING APPARATUS WITH GRADATION OF HEAT ENERGY FROM INLET TO OUTLET

Dixon Ford, and Steven Ford, both of Farmington, Utah, assignors to In-Touch Products Co., Woods Cross, Utah
Continuation-in-part of Ser. No. 669,825, Mar. 15, 1991, Pat. No. 5,245,693. This application Jul. 21, 1993, Ser. No. 95,272
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.⁶ H05B 1/02; F24H 1/12; A61B 19/00

U.S. Cl. 392—470

61 Claims

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 80 Pages)

1. An apparatus for heating fluids comprising: a cassette means for transferring heat to fluids flowing there-through, the cassette means comprising: passageway means for defining a thin, planar, elongated, sinuous flow path having first and second sides and an inlet end and an outlet end, such that a thin sheet of fluid enters the inlet end, travels through the flow path, and exits the outlet end; a first flexible, heat conductive membrane means supported by the passageway means on one of the first or second sides of the flow path, for providing heat transfer to one of the top and bottom sides of the flow path; and a second flexible, heat conductive membrane means supported by the passageway means on the other of the first or second sides of the flow path for providing heat transfer to the other of the first and second sides of the flow path; and heating means in contact with at least one of said first and second heat conductive membrane means for generating heat energy, said heating means comprising a heating

element means for generating a gradation of heat energy such that more heat energy is available for transfer to the parenteral fluid at the inlet end of the sinuous flow path than is available for transfer to the parenteral fluid at the outlet end of the sinuous flow path, having a shape that is essentially a mirror image of the elongated sinuous flow path, and the heating element means being spaced from and in alignment with at least one of the first or second sides of the elongated flow path.

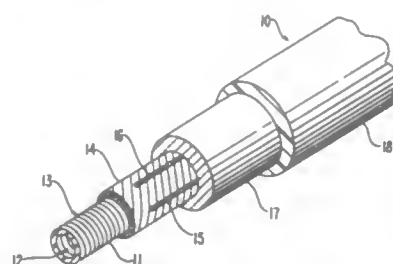
5,381,511

FLEXIBLE ELECTRICALLY HEATABLE HOSE

Bamsdad Bahar, and Edward L. Kozlowski, Jr., both of Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Jun. 2, 1993, Ser. No. 71,717
Int. Cl.⁶ F16L 53/00, 55/00

U.S. Cl. 392—472

6 Claims



6. A heatable hose comprising in order:

- a central helically corrugated polymer tube comprising polyether ether ketone;
- a layer of polymer tape comprising expanded porous polytetrafluoroethylene wrapped upon the outside surface of said central polymer tube;
- a means for heating said central polymer tube and a means for monitoring and controlling the means for heating the central polymer tube arranged on the layer of polymer tape;
- a layer of thermal insulation surrounding the means recited in element (c); and
- a protective jacket surrounding said thermal insulation layer.

5,381,512

METHOD AND APPARATUS FOR SPEECH FEATURE RECOGNITION BASED ON MODELS OF AUDITORY SIGNAL PROCESSING

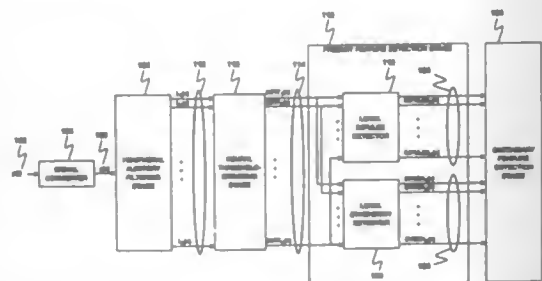
Thomas Holton, San Francisco; Steven D. Love, Castro Valley, and Stephen P. Gill, Atherton, all of Calif., assignors to Moscom Corporation, Pittsford, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,729

Int. Cl.⁶ G10L 5/00, 7/06, 9/10

U.S. Cl. 395—241

28 Claims



1. A method for analyzing a stimulus waveform comprising:
- providing a signal processing means which simulates the response properties of the human cochlea by supplying a plurality of output waveforms each of which corresponds

to the response of said simulated cochlea at a selected location along its length;

- applying said stimulus waveform to the input of said simulated cochlea;
- processing said stimulus waveform by said signal processing means to produce a plurality of output waveforms at selected locations along the length of said simulated cochlea;
- detecting primary features of said stimulus waveform by comparing the spatial and time relationships of said output waveforms including their spatial and time derivatives with stereotypical output waveforms and their spatial and time derivatives;
- producing a plurality of sequences of said primary features at selected locations along said simulated cochlea;
- detecting secondary features of said stimulus waveform by comparing said sequences of primary features with stereotypical patterns of said primary features;
- producing a plurality of sequences of said secondary features; and
- producing an output representation comprising one or more sequences each of which results from detecting combined spatial and temporal relationships of said primary and secondary feature sequences.

5,381,513

TIME SERIES SIGNAL ANALYZER INCLUDING NEURAL NETWORK HAVING PATH GROUPS CORRESPONDING TO STATES OF MARKOV CHAINS

Eiichi Tsuboka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 901,580, Jun. 19, 1992, abandoned.

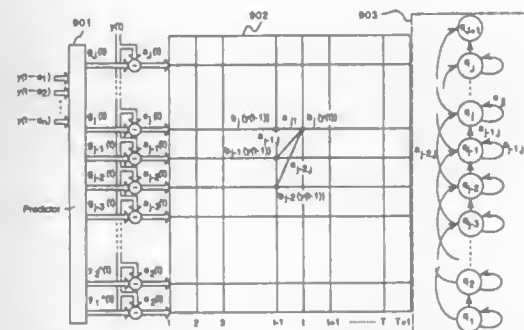
This application Mar. 16, 1994, Ser. No. 213,480

Claims priority, application Japan, Jun. 19, 1991, 3-147440

Int. Cl.⁶ G10L 9/00

U.S. Cl. 395—241

7 Claims



1. A signal analyzer comprising a neural network of plural interconnected units with one or more inputs and outputs, and a unique weighting coefficient assigned to each connection to weight the signals flowing through, and comprising
- an input unit group to which are input the components of plural vectors included in the input feature vector series $\{y(t)\}$,
 - an output unit group which outputs the converted vectors, which are converted by passing the components of input vectors to the input unit through each unit and associated connections,
 - and the connections from the input unit group to the output unit group are grouped into a specific number of overlapping path groups, and each path group corresponds to the states or state transitions of a Markov chain.

5,381,514

SPEECH SYNTHESIZER AND METHOD FOR SYNTHESIZING SPEECH FOR SUPERPOSING AND ADDING A WAVEFORM ONTO A WAVEFORM OBTAINED BY DELAYING A PREVIOUSLY OBTAINED WAVEFORM

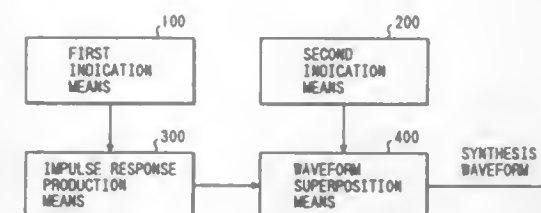
Takashi Aso, Yokohama, and Yasunori Ohora, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 101,621

Claims priority, application Japan, Mar. 13, 1989, 1-60339

Int. Cl.⁶ G10L 9/00

U.S. Cl. 395—273

12 Claims



1. A speech synthesizer comprising:
- first indication means for indicating the amplitude of a waveform by using a random number;
 - second indication means for indicating the superposition period for waveforms by using a random number;
 - waveform generating means for generating a waveform having an amplitude indicated by said first indication means;
 - waveform superposition means for superposing and adding the waveform generated by said waveform generating means onto a waveform obtained by delaying the waveform, which is previously generated by said waveform generating means, by a superposition period indicated by said second indication means; and
 - output means for outputting the waveform added by said waveform superposition means as unvoiced speech.

5,381,515

TWO LAYER NEURAL NETWORK COMPRISED OF NEURONS WITH IMPROVED INPUT RANGE AND INPUT OFFSET

John C. Platt, Mountain View, and Janeen D. W. Anderson, Fremont, both of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 922,535, Jul. 30, 1992, Pat. No. 5,331,215, which is a continuation-in-part of Ser. No. 913,691, Jul. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,503, Oct. 22, 1991, Pat. No. 5,160,899, which is a continuation of Ser. No. 525,764, May 18, 1990, Pat. No. 5,059,920, which is a continuation-in-part of Ser. No. 486,336, Feb. 28, 1990, Pat. No. 5,068,622, which is a continuation-in-part of Ser. No. 282,176, Dec. 9, 1988, Pat. No. 4,935,702. This

application Nov. 5, 1992, Ser. No. 972,024

The portion of the term of this patent subsequent to Oct. 9, 2007, has been disclaimed.

Int. Cl.⁶ G06F 7/00; H03K 19/0944

U.S. Cl. 395—24

22 Claims

1. A two-layer synaptic array fabricated on a semiconductor substrate comprising:

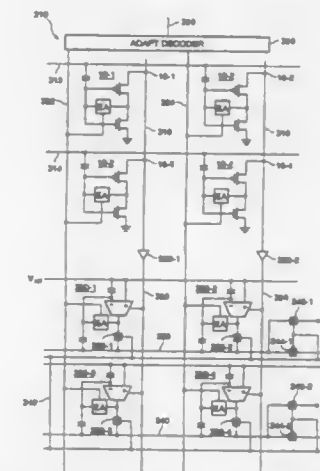
- a first layer comprising:
- a plurality of first electrically-adaptable synaptic elements disposed in at least one row and at least one column, each of said first electrically-adaptable synaptic elements in said first layer of said array comprising an input node, an adapt-control signal node, a floating node, electron injecting means coupled to said floating node for injecting electrons on to said floating node while the voltage on said floating node is within the normal operating range of said synaptic element, negative feedback means, coupled between said floating

node and said electron injecting means, and responsive to a first adapt signal on said adapt control signal node, for controlling said electron injecting means to vary the rate of injection of electrons on to said floating node in response to the magnitude of the voltage on said floating node, and an output node for supplying a current required by said synaptic element in response to a signal on said input node and said voltage on said floating node;

- a row input line associated with each row of said first layer of said array, each said row input line connected to the input nodes of all of said first electrically-adaptable synaptic elements associated with its row; and
- a column sense line associated with each column of said first layer of said array, each column sense line connected to the output nodes of all of said first electrically-adaptable synaptic elements associated with its column;
- a plurality of interlayer processing elements, each of said interlayer processing elements having an input connected to one of said column-sense lines, each of said interlayer processing elements further having an output node;

a second layer comprising:

- a plurality of second electrically-adaptable synaptic elements disposed in at least one row and at least one column, each of said second electrically-adaptable syn-

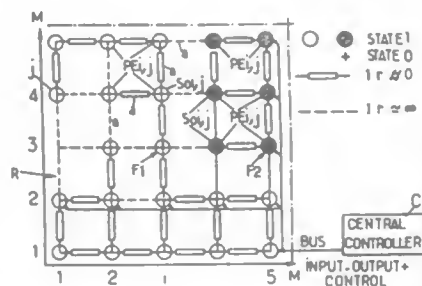


aptic elements in said second layer of said array comprising an input node, an adapt-control signal node connected to, a floating node, electron injecting means coupled to said floating node for injecting electrons on to said floating node while the voltage on said floating node is within the normal operating range of said synaptic element, negative feedback means, coupled between said floating node and said electron injecting means, and responsive to a second adapt signal on said adapt-control signal node, for controlling said electron injecting means to vary the rate of injection of electrons on to said floating node in response to the magnitude of the voltage on said floating node, and an output node for supplying a current required by said synaptic element in response to a signal on said input node and said voltage on said floating node;

- a second layer column input line associated with each column of said second layer of said array, each second layer column input line connected to the output node of the one of said interlayer processing elements associated with its column and to the input nodes of each of said second electrically-adaptable synaptic elements in said second layer of said array associated with its column;
- a second layer row output line associated with each row in said second layer of said array, each said second layer row output line connected to the output nodes of all of

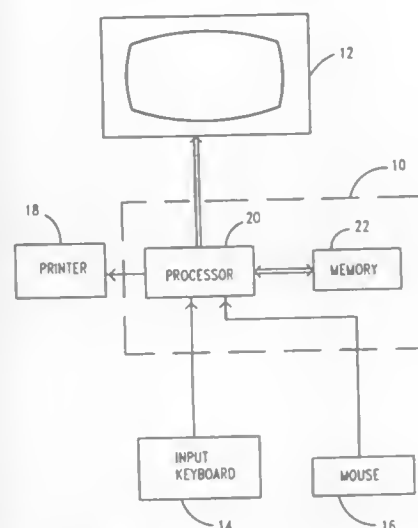
said second electrically-adaptable synaptic elements in said second layer associated with its row; a column adapt control line associated with each column of said first and second layer of said array, each said column adapt control line connected to the adapt control signal nodes of all of said first and second electrically adaptable synaptic elements associated with its column; and means for placing adapt control signals on selected ones of said column adapt control lines to activate an adapt mode of operation of said array.

5,381,516
BINARY RESISTOR NETWORK AND ITS USE FOR LABELLING RELATED COMPONENTS OF DIGITISED IMAGES IN ARTIFICIAL VISION
 Francis Devos, Orsay, and Yang Ni, Les Ulis, both of France, assignors to France Telecom and Centre National de la Recherche Scientifique, Paris, France
 Filed Oct. 30, 1992, Ser. No. 968,072
 Claims priority, application France, Oct. 31, 1991, 91 13466
 Int. Cl.⁶ G06F 15/18
 U.S. Cl. 395—27 8 Claims



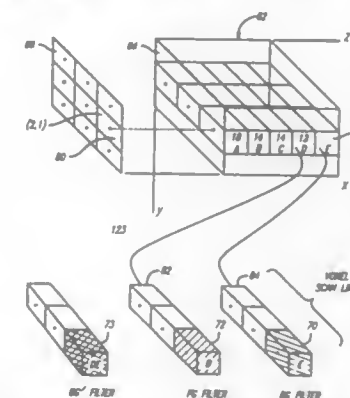
1. A binary resistor network comprising a plurality of peaks linked together by arches, each of said arches forming a binary resistor and each of said peaks comprising an elementary processor for processing stored local data, said binary resistor network further comprising a central controller for associating at least one associative function with each of said arches and a binary constraint with at least one of said peaks so as to perform selective processing of said stored local data whereby said binary resistor network is thus subjected to an establishment time after application of a said binary constraint, the elementary processor of each arch of said network providing an associative OR function and each arch of said network forming an accelerated Manchester chain, so that the establishment time of said binary resistor network is linear with the number of peaks, wherein each peak has a local site and each elementary processor comprises means for configuring said binary resistor network by choosing and controlling a value for the binary resistor of each arch joining two consecutive peaks, injecting said binary constraint at the site of each peak and reading of a resultant local state for a peak then being processed by the processor, storing a conditional state as a function of the binary constraint injected and of the local state of said peak being processed, and producing successive iterations of the injecting of the binary constraint and the storing of the conditional state for a plurality of values of successive binary constraints corresponding to digitized data comprising bit maps.

5,381,517
FUZZY SPREADSHEET DATA PROCESSING SYSTEM
 Karl E. Thorndike, Knoxville, and Joseph A. Vrba, Clinton, both of Tenn., assignors to FuziWare, Inc., Knoxville, Tenn.
 Filed Sep. 21, 1992, Ser. No. 949,268
 Int. Cl.⁶ G06F 9/44
 U.S. Cl. 395—61 12 Claims
MICROFICHE APPENDIX INCLUDED
 (4 Microfiche, 374 Pages)



1. A data processing system for inputting, processing and outputting data in a spreadsheet having rows and columns of cells for containing numbers, text or formulas and wherein the contents of each cell are selectively definable as the result of operations on one or more of the other cells such that changing the contents of one cell selectively impacts other cells, comprising:
 a memory;
 said memory for holding stored instructions and stored data, said stored instructions and stored data including a data processing representation of said fuzzy spreadsheet including a plurality of cells for holding data;
 a processor for processing data;
 input means for producing input data and input instructions in response to a user including means for allowing a user to define and input a fuzzy number as an element of said fuzzy spreadsheet;
 said processor and memory further comprising:
 a controller for receiving input data and input instructions and in response thereto for producing and storing data in said cells, said input data and stored data selectively including fuzzy numbers, a fuzzy number being defined by an upper limit, a lower limit, said upper and lower limits defining a range, and at least one crisp number pair where one number of said pair is a crisp number in the range and the other crisp number of said pair being a non-zero degree of believe; and
 means for performing fuzzy mathematical operations on the data stored in said cells in response to input instructions and stored instructions to produce derived numbers, said fuzzy mathematical operations including fuzzy mathematical operations on said fuzzy numbers that were selectively stored in said cells of said fuzzy spreadsheet for producing at least a fuzzy number that bears a relationship to at least one of said fuzzy numbers that were stored in said cells on which fuzzy mathematical operations were performed;
 wherein said controller stores said fuzzy number in one of said cells of said fuzzy spreadsheet.

5,381,518
METHOD AND APPARATUS FOR IMAGING VOLUME DATA USING VOXEL VALUES
 Robert A. Drebin, Corte Madera, and Loren C. Carpenter, Novato, both of Calif., assignors to Pixar, Richmond, Calif.
 Continuation of Ser. No. 717,182, Jun. 18, 1991, abandoned, which is a continuation of Ser. No. 282,204, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 851,776, Apr. 14, 1986, abandoned. This application Dec. 18, 1992, Ser. No. 993,830
 Int. Cl.⁶ G06F 15/62, 15/42
 U.S. Cl. 395—124 21 Claims



16. A method of generating a volume element (voxel) representative of a combination of voxels in an image volume along a selected orientation of view, each voxel having a color and opacity value, comprising the steps of:
 providing a background voxel along a selected orientation of view;
 providing a foreground voxel adjacent to said background voxel along said selected orientation of view;
 storing said background voxel and said foreground voxel in a storage means;
 generating a new background voxel by combining in a host computer said background voxel and said foreground voxel such that said new background voxel has a color value and an opacity value given by:

$$BG' = FG + (1 - (FG)(A))(BG)$$

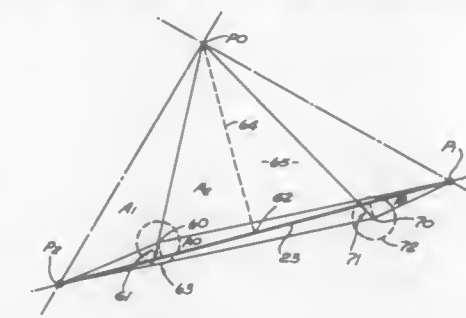
where;

BG'=the color and opacity components of said new background voxel;
 FG=the color and opacity components of a selected voxel;
 A=the opacity of said selected voxel; and
 BG=the color and opacity components of previously combined voxels.

5,381,519
SYSTEM FOR LINE INTERPOLATION FOR COMPUTER GRAPHICS DISPLAYS
 Russell A. Brown, and Gary S. Watkins, both of Salt Lake City, Utah, assignors to Evans & Sutherland Computer Corp., Salt Lake City, Utah
 Continuation-in-part of Ser. No. 758,992, Sep. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 506,749, Apr. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 129,036, Dec. 4, 1987, abandoned. This application Jun. 9, 1992, Ser. No. 895,613
 Int. Cl.⁶ G06F 15/00
 U.S. Cl. 395—132 14 Claims

1. A system for interpolating primitive data defining lines to provide pixel data for a computer graphics display, as for shading such lines, said system comprising:
 means for selecting a select offset point displaced perpendicular from a selected line defined by primitive data, said offset point being specified by offset point representations;
 means for storing said primitive data defining said lines and said offset point representations to define triangles; and

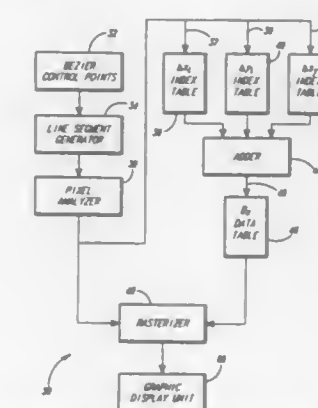
interpolation means for interpolating sample points along said selected line including an interpolation means for



interpolating said triangles defined by said selected line and said offset point to provide pixel values for a display.

5,381,520
 Patent Not Issued For This Number

5,381,521
SYSTEM AND METHOD OF RENDERING CURVES
 Dean D. Ballard, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.
 Filed May 14, 1993, Ser. No. 62,383
 Int. Cl.⁶ G06F 15/62
 U.S. Cl. 395—142 30 Claims



9. A computer system for rendering an Nth order curve defined by N+1 control points for display on a graphic display unit using a plurality of first series of pixels arranged in a first dimension and a second series of pixels arranged in a second dimension to define a two dimensional array of pixels, the graphic display scanning the pixel array in the first dimension to display the curve, each pixel being defined by first and second opposite binary logic states, the computer system using a coordinate system in the first and second dimensions having a selected unit of measurement with a resolution greater than one pixel, the computer system comprising:
 a line segment generator using the control points to subdivide the curve into a plurality of line segments with each line segment having a length no greater than a predetermined number of pixels and first and second end points, each of said end points having first and second coordinates indicating the location of said end points in the first and second dimensions, said coordinates being expressed in the selected units;
 a pixel analyzer to determine if one of said line segments crosses a first center axis of a first one of the first pixel series, and if said one line segment does cross said first center axis, said pixel analyzer also generating first, sec-

ond, and third index pointers corresponding to the distance from the first end point to the second end point of said one line segment in the first dimension, the distance from the first end point to the second end point of said one line segment in the second dimension, and the distance from the first end point of said one line segment to said first center axis in the second dimension, said pointers being expressed in the selected units, said pixel analyzer also determining if any of said line segments crosses said first center axis of an adjacent second one of the first pixel series, said pixel analyzer subdividing said line segment that crosses both said first center axis of said first one of the first pixel series being analyzed and said first center axis of said adjacent second one of the first pixel series to generate subdivided line segments that do not cross said first center axis of more than one of the first pixel series, each of said subdivided line segments being treated in the same manner as said line segments and having first and second end points, each of said end points having first and second coordinates indicating the location of said end points in the first and second dimensions, said coordinates being expressed in the selected units;

a data look-up table containing a plurality of distance values expressed in the selected units and corresponding to the range of possible distances in the first dimension from a second center axis of one of the second pixel series in which said one line segment crosses said first center axis to the point at which said line segments cross said first center axis, said data look-up table having a final address pointer indicating a particular location in said data look-up table containing a distance value for said one line segment; first, second and third index tables used to generate said final address pointer, each of said index tables containing a number of index table locations selected to correspond to the range of possible values of said first, second, and third index pointers, respectively, said first, second, and third index pointers indicating first, second, and third particular index table locations within said first, second, and third index tables, respectively;

address means for generating said final address pointer from said index data values from said first, second, and third particular locations; and

a rasterizer to add said distance value for said one line segment to said coordinate of said first end point in the first dimension to determine the point at which said one line segment crosses said first center axis and, if said one line segment crosses said first center axis at a predetermined position relative to said second center axis, changing the binary logic state of the pixel in which said one line segment crosses said first center axis to the opposite binary logic state.

5,381,522

IMAGE PROCESSING APPARATUS AND METHOD
Kaoru Seto, Chigasaki, and Atsushi Kashiwara, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 20, 1992, Ser. No. 855,104

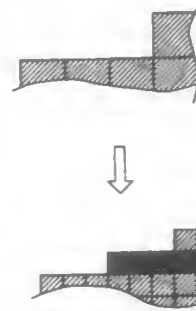
Claims priority, application Japan, Mar. 28, 1991, 3-064268
Int. Cl.⁶ G06F 15/62

U.S. Cl. 395—143

15 Claims

1. An image processing apparatus comprising:
memory means for storing plural lines of first image information corresponding to a first recording density;
pixel interpolation means for, when said first image information is converted to second image information corresponding to a second recording density higher than said first recording density, in accordance with said first image information for plural lines stored by said memory means, determining a pixel data to be interpolated corresponding to the pixel position of said second image information; and
predetermined pattern diffusion means for, when said pixel interpolation means determines said pixel data to be interpolated, detecting predetermined pattern data in accordance with said first image information for plural lines

stored by said memory means and, when said predetermined pattern is detected, for determining a value of said



pixel data to be interpolated so that the predetermined pattern data is diffused in said second image information.

5,381,523

DOCUMENT PROCESSING DEVICE USING PARTIAL LAYOUT TEMPLATES

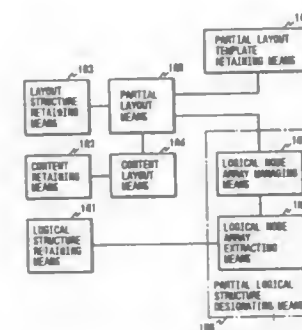
Koichi Hayashi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1993, Ser. No. 43,202

Claims priority, application Japan, Apr. 6, 1992, 4-084225
Int. Cl.⁶ G06F 15/20, 15/04

U.S. Cl. 395—145

11 Claims



1. A document processing device comprising:
means for retaining a plurality of partial layout templates each expressing rules for producing a layout of a partial logical structure;
means for extracting, from a logical structure of a document to be processed, a logical node array including first logical nodes corresponding to respective basic logical objects having respective content portions and second logical nodes representing respective partial logical structures and designating respective partial layout templates selected from the partial layout templates retained by the partial layout templates retaining means;
means for managing the extracted logical node array; and
partial layout means for performing a partial layout operation to generate a partial layout structure by applying, to one of the partial logical structures, one of the selected partial layout templates corresponding thereto, and sequentially performing the partial layout operation in accordance with the extracted logical node array to produce a layout of the entire document logical structure.

5,381,524

AUTOMATED DEVELOPMENT OF TIMING DIAGRAMS FOR ELECTRICAL CIRCUITS

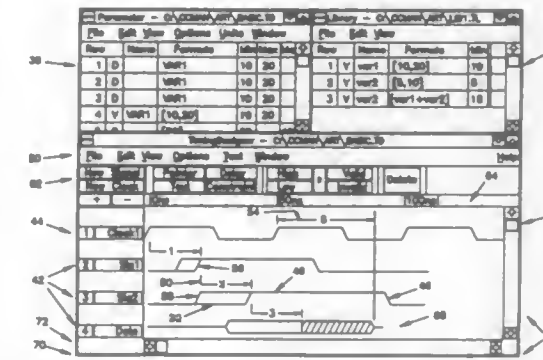
Lawrence E. Lewis, Kirkland, and Michael S. Meredith, Redmond, both of Wash., assignors to Chronology Corp., Redmond, Wash.

Filed Nov. 12, 1991, Ser. No. 791,794

Int. Cl.⁶ G06F 15/62

U.S. Cl. 395—161

42 Claims



22. A method of constructing timing diagrams on a computer having a monitor to model electrical circuits, comprising the steps of:

accepting one or more parameters defining a timing diagram into a spreadsheet displayed on the monitor coupled to the computer, wherein the spreadsheet comprises one or more intersecting rows and columns, each of the rows comprising one of the parameters, and the columns identify a minimum value for the parameter and a maximum value for the parameter; and

displaying the timing diagram on the monitor of the computer in response to the parameters accepted into the spreadsheet displayed on the monitor, wherein the spreadsheet and the timing diagram are linked so that changes in the spreadsheet are reflected in the timing diagram.

5,381,525

GRAPHIC MOVEMENT CONTROL SYSTEM ON DISPLAY SCREEN

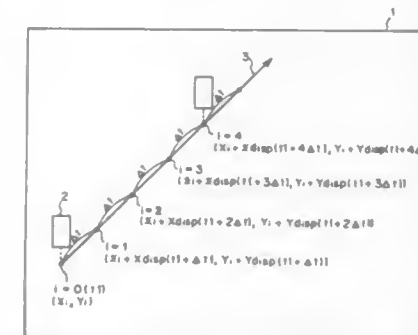
Katsumi Iguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 19, 1993, Ser. No. 5,565

Claims priority, application Japan, Jan. 16, 1992, 4-006002
Int. Cl.⁶ G06F 15/60

U.S. Cl. 395—162

5 Claims



1. A graphic movement control system comprising:
means for moving graphics displayed on a display screen to a target position on said display screen according to a movement of a pointing device;
memory means for storing memory information including at least one of a number of picture elements of said graphics to be moved, a maximum value for a predetermined number of picture elements, and a predetermined coefficient

determined based on a computer system to be used in a current graphic movement operation; and
means for determining an amount of time intervals between drawings of said graphics on said display screen being moved to said target position by said moving means, based on a complexity level of said graphics to be moved determined according to said memory information.

5,381,526

METHOD AND APPARATUS FOR STORING AND RETRIEVING GENERALIZED IMAGE DATA

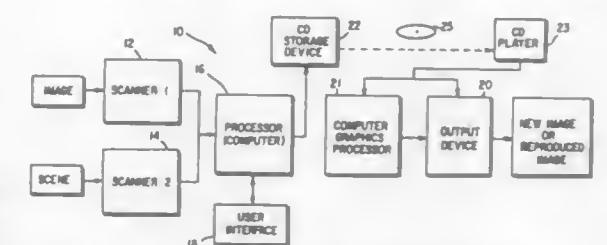
Richard N. Ellison, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 11, 1992, Ser. No. 943,630

Int. Cl.⁶ G06F 15/62

U.S. Cl. 395—164

22 Claims



1. An arrangement for generating images comprising:
a processor that receives digital information representing an image or scene, wherein the digital information includes at least two different image units of the image or scene, each image unit containing different information regarding the image or scene, and links the different image units of the image or scene for storage in a database such that the different image units of the image or scene are automatically accessed when the image or scene is accessed;
a storage device that stores the different image units of the image in a database; and
an output device for producing an output image from the different image units of the image or scene stored in the database; and wherein
one of the image units includes luminance add chrominance information and one of the image units includes range information.

5,381,527

SYSTEM FOR EFFICIENT MESSAGE DISTRIBUTION BY SUCCESSIVELY SELECTING AND CONVERTING TO AN ALTERNATE DISTRIBUTION MEDIA INDICATED IN A PRIORITY TABLE UPON PREFERRED MEDIA FAILURE

Hadyn A. Inniss, Farmington Hills, Mich.; Robert S. Keller, Grapevine, Tex.; William J. Johnson, Flower Mound, Tex., and Marvin L. Williams, Lewisville, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1991, Ser. No. 791,818

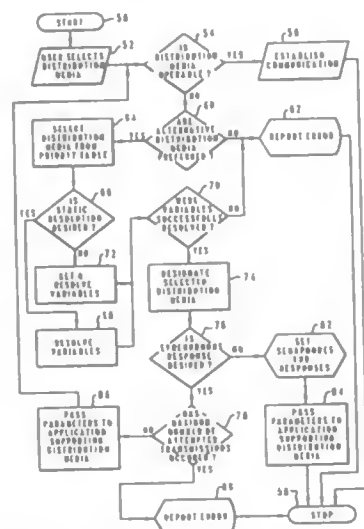
Int. Cl.⁶ G06F 13/14

U.S. Cl. 395—200

4 Claims

1. A method for the efficient distribution of messages within a system having a plurality of distribution channels, each of said distribution channels being characterized by at least one distribution media, said method comprising the steps of:
selecting a particular one of said plurality of distribution channels in response to a user selection of a particular distribution media for a selected message;
attempting transmission of said selected message via said particular one of said distribution channels utilizing said particular distribution media;
in response to a failure of transmission of said selected message via said particular one of said distribution channels, determining if said user has designated at least one alter-

nate distribution medium among said plurality of distribution media for said selected message in a priority table; in response to a determination that said user has designated said at least one alternate distribution medium for said selected message, automatically successively attempting conversion of said selected message to one of said alternate distribution media designated in the priority table and having a next highest priority;



thereafter, attempting transmission of said selected message via a second one of said distribution channels characterized by said one of said alternate distribution media in response to a successful conversion of said selected message; and

in response to said failure of transmission and a determination that said user has not designated an alternate distribution medium for said selected message; not attempting conversion of said selected message to an alternate one of said distribution media.

5,381,528
DEMAND ALLOCATION OF READ/WRITE BUFFER
PARTITIONS FAVORING SEQUENTIAL READ CACHE
Philip E. Brunelle, Longmont, Colo., assignor to Maxtor Corporation,
San Jose, Calif.

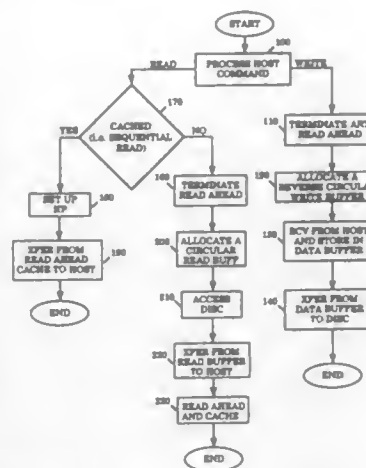
Filed Oct. 15, 1992, Ser. No. 961,464
Int. Cl.⁶ G06F 13/00, 9/38

U.S. Cl. 395-250

14 Claims

1. A method for transferring data between a host computer and storage media of a storage device, comprising the steps of:
- (a) receiving a command from the host computer, the command comprising a read or write transaction and a data length;
 - (b) if the command is a read transaction, then allocating a read buffer in a forward direction in a circular data buffer starting at a read location in the circular data buffer determined by a host pointer into the circular data buffer, and transferring a read data block from the storage media through the read buffer to the host computer, the read buffer having a length equal to the data length;
- allocating read ahead cache in the circular data buffer in the forward direction;
- initiating a read ahead operation to transfer a plurality of sequential read data blocks from the storage media to the read ahead cache;
- (c) if the command is a write transaction, then allocating a write buffer in a reverse circular direction in the circular data buffer starting at a write location in the circular data buffer determined by subtracting the data length from the host pointer into the circular data buffer, and transferring a write data block from the host computer through the

- (d) receiving a next command from the host computer, the next command comprising the read or the write transaction and a next data length;



terminating the read ahead operation if the next command is not the read transaction targeted for a read data block stored in the read ahead cache.

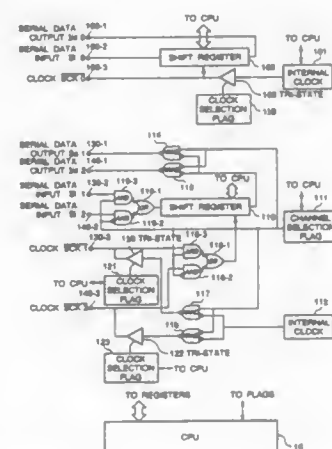
5,381,529
SHIFT REGISTER WITH DUAL CLOCK INPUTS FOR
RECEIVING AND SENDING INFORMATION BETWEEN
I/O CHANNELS AND HOST BASED ON EXTERNAL
AND INTERNAL CLOCK INPUTS RESPECTIVELY
Osamu Matsushima, Tokyo, Japan, assignor to NEC Corpora-
tion, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,652

Claims priority, application Japan, Aug. 30, 1991, 3-219719
Int. Cl.⁶ G06F 13/20

U.S. Cl. 395—275

4 Claims



1. A serial interface circuit internally provided in a microcomputer, the serial interface circuit comprising:
- at least two serial data input terminals
 - at least two serial data output terminals and a clock terminal,
 - a shift register having a data input, a data output and a clock input and configured to perform a shift operation in synchronism with a clock signal applied to said clock input so that data inputted to said data input is shifted into said shift register and data stored in the shift register is shifted out from said data output,
 - output selection means having an input connected to said

data output of said shift register and at least two outputs connected to said at least two serial data output terminals, input selection means having at least two inputs connected to said at least two serial data input terminals and an output connected to said data input of said shift register, and

channel selection means coupled to said input and output selection means to control said input and output selection means in such a manner that one of said at least two serial data input terminals is selected by said input selection means and coupled to said data input of said shift register, and a corresponding one of said at least two serial data output terminals is selected by said output selection means and coupled to said data output of said shift register,

at least two clock terminals, first clock selection means having at least two inputs connected to said at least two clock terminals and an output connected to said clock input of said shift register, said channel selection means being coupled to said input, output, and first clock selection means to control said input, output, and first clock selection means in such a manner that one of said at least two serial data input terminals is selected by said input selection means and coupled to said data input of said shift register and a corresponding one of said at least two clock terminals is selected by said first clock selection means and coupled to said clock input of said shift register, and a corresponding one of said at least two serial data output terminals is selected by said output selection means and coupled to said data output of said shift register, and

internal clock generation means having an internal clock output connected to second clock selection means controlled by said channel selection means, wherein each of said at least two clock terminals is connected through switching means to a corresponding output of said second clock selection means, said switching means being controlled by an associated clock selection flag, so that one of an external clock supplied to the clock terminal and an internal clock generated by said internal clock generation means is selected by said associated clock selection flag and supplied to said first clock selection means.

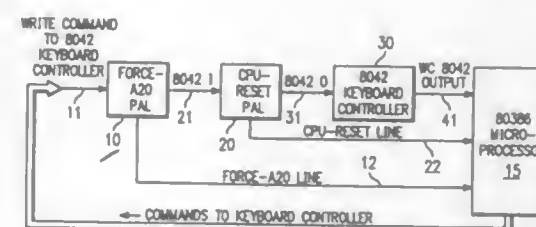
5,381,530
PROGRAMMABLE LOGIC SYSTEM FOR FILTERING
COMMANDS TO A MICROPROCESSOR

John S. Thayer, and Montgomery C. McGraw, both of Spring, Tex., assigns to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 88,093, Aug. 21, 1987, Pat. No. 5,226,122. This application Jun. 30, 1993, Ser. No. 84,632

Int. Cl.⁶ G06F 1/24

29 Claims



1. A method for filtering input commands directed to a controller operating using a series of software commands responsive to input commands, said controller accessed by a microprocessor, said input commands intended to direct said controller to produce system control signals in response to said input commands from said microprocessor, comprising the steps of:
- monitoring signal lines coupled to output terminals of said

microprocessor, said signal lines communicating input commands from the microprocessor;
processing a selected input command using a logic device;
and
producing an output signal from said logic device corresponding to said selected input command, as said system control signal, and in replacement of said system control signal directed to be produced by said controller, after a shorter delay from the time said monitoring step detects said selected input command than the delay if said controller operated using a series of software commands responsive to said selected input command.

5,381,531

DATA PROCESSOR FOR SELECTIVE SIMULTANEOUS
EXECUTION OF A DELAY SLOT INSTRUCTION AND A
SECOND SUBSEQUENT INSTRUCTION THE PAIR
FOLLOWING A CONDITIONAL BRANCH
INSTRUCTION

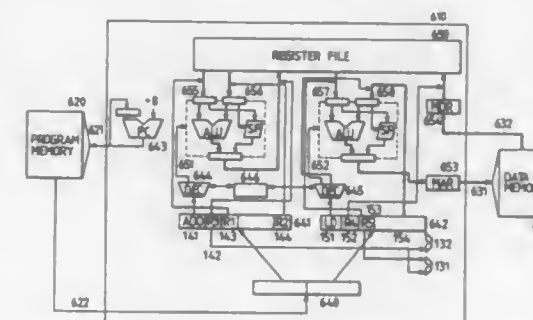
Makoto Hanawa, Kodaira; Tadahiko Nishimukai, Sagami-hara; Makoto Suzuki, Niiza, and Katsuhiro Shimohigashi, Musashimurayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,581

Claims priority, application Japan, Aug. 15, 1990, 2-214260
Int. Cl.⁶ G06F 9/38

U.S. Cl. 395—375

9 Claims



1. A data processor capable of selective simultaneous parallel execution of at least two instructions following a branch instruction, the first instruction being a delay slot instruction, the data processor comprising:

an instructional fetch unit

for fetching from a memory unit a first delay slot instruction including a destination field and a second instruction following the first delay slot instruction including a source field, said first delay slot instruction being fetched from the memory immediately after said branch instruction is fetched into the data processor and for outputting the first delay slot instruction and the second instruction in parallel;

a first instruction decoder having an input supplied with the first delay slot instruction output from the instruction fetch unit, the first instruction decoder decoding the first delay slot instruction and outputting a first result of said decoding;

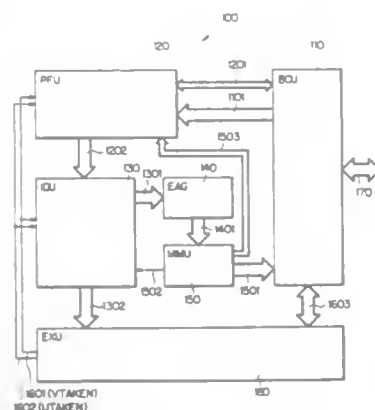
a second instruction decoder having an input supplied with the second instruction output from the instruction fetch unit, the second instruction decoder decoding the second instruction and outputting a second result of said decoding;

a first instruction execution unit controlled according to the first result of said decoding in the first instruction decoder;
a second instruction execution unit controlled according to the second result of said decoding in the second instruction decoder;
a comparator for comparing data on the destination field of the first delay slot instruction output from the instruction fetch unit with data on the source field of the second

instruction output from the instruction fetch unit, the comparator generating an output when the data of the destination field of the first delay slot instruction output from the instruction fetch unit matches the data of the source field of the second instruction output from the instruction fetch unit; and,

- a parallel operation control unit coupled with the first instruction decoder the second instruction decoder, the first instruction execution unit, the second instruction execution unit and the comparator, the parallel operation control unit generating a parallel operation inhibit signal when the branch instruction is taken; and,
- the parallel operation control unit i) nullifying the result of the decoding of the second instruction in the second instruction decoder so as to inhibit the execution of the second instruction in the second instruction execution unit when the preceding branch instruction is taken axed ii) activating the result of the decoding of the first delay slot instruction in tile first instruction decoder together with the results of the decoding of the second instruction in the second instruction decoder so as to carry out the parallel execution of the first delay slot instruction in the first instruction execution unit and the second instruction in the second instruction execution unit according to an absence of said parallel operation inhibits signal when the immediately preceding branch instruction is next taken and in an absence of said output from said comparator.

5,381,532
MICROPROCESSOR HAVING BRANCH ALIGNER BETWEEN BRANCH BUFFER AND INSTRUCTION DECODER UNIT FOR ENHANCING INITIATION OF DATA PROCESSING AFTER EXECUTION OF CONDITIONAL BRANCH INSTRUCTION
 Nariko Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
 Continuation of Ser. No. 573,944, Aug. 28, 1990, abandoned.
 This application Apr. 14, 1994, Ser. No. 227,692
 Claims priority, application Japan, Aug. 28, 1989, 1-222058
 Int. Cl.⁶ G06F 9/30, 9/38
 U.S. Cl. 395—375 4 Claims



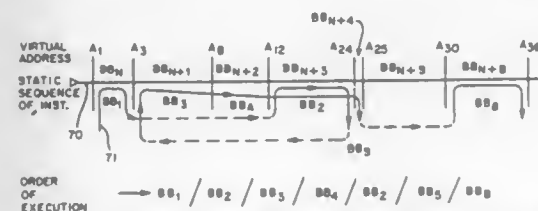
1. A microprocessor comprising:

a memory;
 an instruction bus;
 instruction prefetch means, coupled to said memory, for prefetching instruction codes from said memory and for transferring prefetch instruction codes onto said instruction bus, said prefetch instruction codes including a conditional branch instruction code, said instruction prefetch means further performing, in response to a branch target instruction prefetch request, a branch target instruction prefetch operation for prefetching a branch target instruction code from a branch address of said memory and transferring said branch target instruction code onto said instruction bus, said branch target instruction

code including first instruction data belonging to a branch target instruction and second instruction data belonging to an instruction other than said branch target instruction;

- decoding means, coupled to said instruction prefetch means, for receiving said prefetched instruction codes, for producing decoded instruction information in response to said prefetched instruction codes, for receiving said conditional branch instruction code and for producing address information indicative of said branch address and branch condition information indicative of a branch condition of said conditional branch instruction;
- execution means, coupled to said instruction prefetch means and said decoding means, for executing an instruction in response to said decoded instruction information, for responding to said branch condition information to determine whether said branch condition is satisfied and for producing a branch execution signal when said branch condition is satisfied; and
- generating means, coupled to said decoding means and responsive to said address information, for generating and supplying said branch target instruction prefetch request to said instruction prefetch means, and for generating less significant bit data of said branch address in response to said address information;
- said instruction prefetch means comprising:
 a first buffer coupled to said instruction bus;
 a second buffer coupled to said instruction bus;
 means for controlling said first buffer to temporarily store said prefetched instruction codes;
 means for controlling said second buffer to temporarily store said branch target instruction code;
- aligner means, coupled to said second buffer and said generating means and responsive to said less significant bit data generated by said generating means, for outputting said first instruction data and for preventing said second instruction data from being output when said branch condition is satisfied;
- gate means coupled between said aligner means and said decoding means; and
- means, coupled to said decoding means and said execution means and responsive to said branch execution signal, for altering a state of said gate means from a closed state to an open state for immediately transferring said first instruction data from said aligner means to said decoding means when said branch condition is satisfied, said gate means being maintained in said closed state when said branch execution signal is not generated.

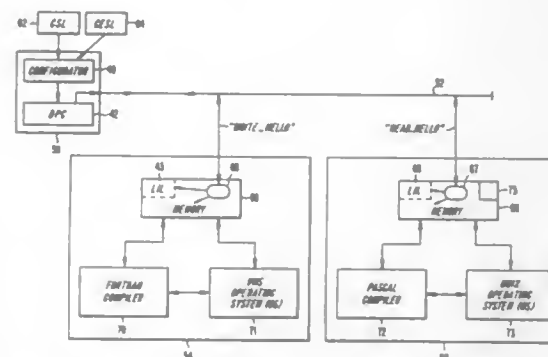
5,381,533
DYNAMIC FLOW INSTRUCTION CACHE MEMORY ORGANIZED AROUND TRACE SEGMENTS INDEPENDENT OF VIRTUAL ADDRESS LINE
 Alexander Peleg, and Uri Weiser, both of Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.
 Continuation of Ser. No. 846,257, Feb. 27, 1992, abandoned.
 This application Mar. 30, 1994, Ser. No. 220,391
 Int. Cl.⁶ G06F 9/38
 U.S. Cl. 395—375 19 Claims



1. A method of loading computer program instructions into a cache memory, said cache memory being organized by addressable lines, comprising the steps of:
 identifying basic blocks of computer program instructions

such that a first instruction in each of said blocks follows a branch instruction and a last instruction in each of said blocks is a branch instruction;
 identifying a trace segment of a running computer program comprising a sequence of said basic blocks that are executed consecutively; and
 organizing storage in said cache memory by loading more than one of said basic blocks in at least one line of said cache memory in the sequence that said basic blocks occurred in said trace segment such that when the first basic block in said one line is addressed, the remaining basic blocks in said line are accessed independent of virtual address line boundaries.

5,381,534
SYSTEM FOR AUTOMATICALLY GENERATING EFFICIENT APPLICATION - CUSTOMIZED CLIENT/SERVER OPERATING ENVIRONMENT FOR HETEROGENEOUS NETWORK COMPUTERS AND OPERATING SYSTEMS
 Yuan Shi, Wayne, Pa., assignor to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.
 Continuation-in-part of Ser. No. 556,920, Jul. 20, 1990, abandoned. This application Feb. 10, 1993, Ser. No. 19,325
 Int. Cl.⁶ G06F 9/00, 13/00
 U.S. Cl. 395—200 25 Claims



1. A computer system, coupled through a communications channel, for executing an application program using a plurality of software chips, comprising:

a plurality of target computers, said plurality of target computers being connected to form at least one network, each of said target computers coupled to the communications channel and including,
 a memory device coupled to the communications channel, said memory device including a first library of language injections, each language injection corresponding to one of a plurality of interprocessor communications (IPC) data objects, each language injection responsive to an IPC pattern derived from a CSL description of an interconnection of the plurality of software chips, for transferring, using a corresponding one of the plurality of IPC data objects, data and instructions through the communications channel; and
 a processor using an operating system and having a compiler with a programming language for compiling and executing each language injection in each of said plurality of target computers; and
 a host computer, operatively coupled to said plurality of target computers through the communications channel, said host computer including,
 a configurator for processing a computer environment specification and a parallel program configuration specification and for generating a plurality of IPC patterns and a plurality of IPC control commands, the IPC patterns for determining communications destinations on the network, the IPC control commands for transferring instructions

among said plurality of target computers during execution of the application program, the computing environment specification for identifying operational attributes of said computer system, including a set of instructions for specifying the capabilities and availability of said plurality of target computers, of said plurality of software chips, of programming languages, of operating systems, and of protocols, and the configuration specification for identifying the configuration of the computer system, including a set of instructions for specifying a plurality of interconnections among said plurality of software chips using the plurality of IPC patterns and for specifying a desired order of execution of said plurality of software chips at particular target computers using the plurality of IPC control commands, said configurator for accepting input from a user and from said plurality of target computers for generating an application precedence matrix, said application precedence matrix for specifying interdependencies between said plurality of software chips for determining functional order of execution of said plurality of software chips;

a distributed process controller for processing said application precedence matrix and said plurality of IPC patterns, for communicating with said plurality of target computers using the plurality of IPC control commands, for controlling a sequence of execution of plurality of software chips, for ranking, according to at least one of processing speed and operational suitability, said plurality of target computers for minimizing time of execution of the application program, for generating and updating a system graph for monitoring execution of processes, for determining, using the generated system graph, an efficient combination of said plurality of target computers for minimizing time of execution of the application program, and for activating the plurality of IPC data objects in said plurality of target computers; and

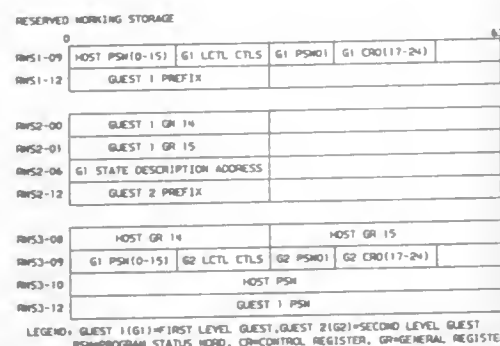
a host memory device having a support daemon library for storing a plurality of permanent daemons and a plurality of dynamic daemons, said host memory device including a second library of language injections, each language injection of said second library of language injection responsive to a respective one of the plurality of IPC control commands for activating and operating mailboxes, tuple spaces, sequential files, and user-defined IPC data objects operations residing in said host computer for executing the application program.

5,381,535
DATA PROCESSING CONTROL OF SECOND-LEVEL QUEST VIRTUAL MACHINES WITHOUT HOST INTERVENTION
 Peter H. Gum, Poughkeepsie; Roger E. Hough, Highland, and Robert E. Murray, Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Continuation of Ser. No. 603,000, Oct. 24, 1990, abandoned.
 This application Nov. 9, 1993, Ser. No. 150,332
 Int. Cl.⁶ G06F 12/00 5 Claims

U.S. Cl. 395—375

1. A computer system having a random access storage containing a host operating system and two levels of virtual machines for executing programs on one or more instruction processors, additional machine facilities for controlling the system comprising:
 means for partitioning the random access storage into multiple dedicated regions, each region being located at a particular partition offset within the storage, and each region being associated with a first level machine;
 means for detecting a request from a guest operating system program executing on a processor under a first level virtual machine to initiate operation of a second level virtual machine;
 means for saving tile machine parameters currently associ-

ated with the first level virtual machine in response to detection of the request by the detecting means;
means for initiating program execution of tile second level virtual machine on the processor in response to the request after saving the machine parameters associated with the first level virtual machine;
address translation means for translating virtual addresses of second level virtual machine programs executing in the processor;



timing facility means for timing second level events relative to a first level timing facility for the first level virtual machine and also for timing second level events relative to a host timing facility for the host operating system while the first level timing facility and the host timing facility remain active; and

means for exiting program execution on the processor for the second level virtual machine and for returning program execution on the processor to the first level virtual machine by restoring machine parameters saved by the saving means for the first level virtual machine.

5,381,536
METHOD AND APPARATUS FOR SEPARATE MARK
AND WAIT INSTRUCTIONS FOR PROCESSORS
HAVING MULTIPLE MEMORY PORTS

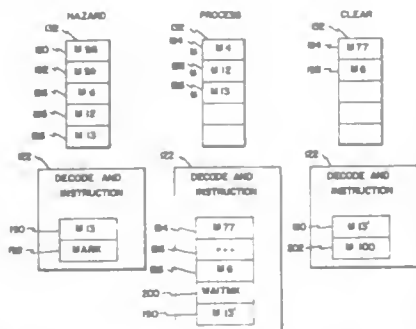
Andrew E. Phelps; Roger E. Eckert, both of Eau Claire, Wis., and Richard E. Hessel, Pleasanton, Calif., assignors to Cray Research, Inc., Eagan, Minn.

Continuation of Ser. No. 165,012, Dec. 10, 1993, abandoned, which is a continuation of Ser. No. 911,649, Jul. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 459,083, Dec. 29, 1989, Pat. No. 5,197,130. This application May 25, 1994. Ser. No. 249,084

Int. Cl.⁶ G06F 12/00, 13/00, 15/16

U.S. Cl. 395—375

8 Claims



1. In a computer system including one or more computer processors and a common memory means for storing instructions and data, each of said computer processors including an instruction decode means for receiving, decoding and executing said instructions and a plurality of memory ports, each of said memory ports including pipeline means for storing a plurality of memory requests each of said memory ports accessing

said memory means in response to the execution of any one of said instructions, a selection apparatus for queuing said memory requests whereby said memory requests execute in the order issued by said instruction decode means said instructions including one or more mark instruction and one or more wait instruction separate from said mark instruction inserted by a compiler in a sequence of instructions upon identification of a memory hazard by said compiler in said sequence of instructions said selection apparatus comprising:

mark means for identifying all memory requests which are stored in said pipeline means as marked memory requests in response to the execution of said mark instruction when issued by said instruction decode means;

means for generating said mark instruction in response to detection of said memory hazard;

wait means for preventing in response to said wait instruction being issued by said instruction decode means the execution of any additional memory requests until all of said marked memory requests are queued by said selection apparatus whereby said marked memory requests are guaranteed to execute in the order issued by said instruction decode means;

means for generating said wait instruction after said mark instruction has been generated in response to detection of said memory hazard.

5,381,537

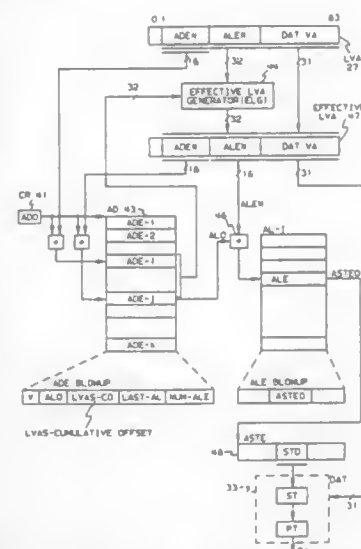
LARGE LOGICAL ADDRESSING METHOD AND MEANS
Richard I. Baum; Kenneth E. Plambeck; Casper A. Scalzi, all of
Poohgkeepsie; Richard J. Schmalz, and Bhaskar Sinha, both
of Wappingers Falls, all of N.Y., assignors to International
Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1991, Ser. No. 803,320

Int. Cl.⁶ G06F 12/10, 12/00

U.S. Cl. 395-400

15 Claims



1. A method of address translating large size virtual addresses (LVAs) for locating data and instructions a computer memory, comprising:

indexing a highest-order part (ADEN) of an LVA into an access directory (AD) for selecting an AD entry (ADE), and accessing a cumulative offset field (LVAS-CO) and an access list origin (ALO) in the selected ADE; accessing an access list (AL) with the ALO, and indexing higher-order part (ALEN) of the LVA into the accessed AL to select an access list entry (ALE), said ALE representing a conventional virtual address sub-space in a large virtual address space; adding a value in the cumulative offset field (LVAS-CO) to

a concatenation of the ADEN and ALEN fields in the LVA to obtain an effective LVA having a highest-order effective ADEN and a higher-order effective ALEN; comparing the highest-order effective ADEN to the ADE in the LVA; using a last selected ADE selected by the last highest-order effective ADEN as a correct ADE if a compare equal condition is found by the comparing step; accessing a next ADE in the AD by incrementing the value of the current highest-order effective ADEN if the comparing step finds an unequal condition, and accessing a next LVAS-CO in the next ADE; and repeating the adding, comparing, using, and accessing a next ADE steps until a compare equal condition is found, said compare equal condition indicating the last effective highest-order ADEN provided by the adding step is to be used for locating a required AL, and a last effective higher-order ALEN provided by the adding step is to be used for locating an ALE in the required AL for accessing a conventional virtual address sub-space for completing the translation of the LVA to a real address.

5,381,538
DMA CONTROLLER INCLUDING A FIFO REGISTER
AND A RESIDUAL REGISTER FOR DATA BUFFERING
AND HAVING DIFFERENT OPERATING MODES

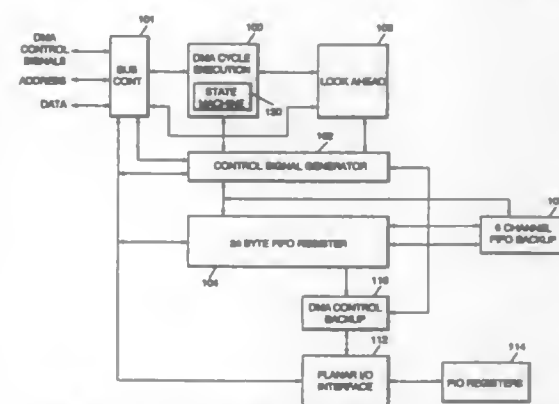
Nader Amini; Bechara F. Boury, and Terence J. Lohman, all of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 15, 1991. Ser. No. 778.042

Int. Cl.⁶ G06F 13/00, 11/16

U.S. Cl. 395-425

14 Claims



1. A direct memory access controller for exchanging data information between an I/O bus system memory in response to control information received from a processor portion, said direct memory controller capable of operating in one of two modes, as indicated by said control information, including an initial data exchange mode when an initial set of data information is exchanged and in an intervening alternate data exchange mode when an alternate set of data information is exchanged; said alternate data exchange mode occurring after commencement but before completion of the initial data exchange mode; said direct memory access controller comprising

a register circuit coupled between the system memory and the I/O bus for the initial data exchange mode and the alternate data exchange mode.

a residual register circuit for storing a residual portion of said initial set of data information, and

a direct memory access control circuit responsive to said control information for transferring said residual portion of said initial set of data information from said register circuit to said residual register circuit when commencement of said alternate data exchange mode is indicated and for transferring said residual portion of said initial set of data information from said residual register circuit to said

register circuit when commencement of said initial data exchange mode is subsequently indicated.

5,381,539

**SYSTEM AND METHOD FOR DYNAMICALLY
CONTROLLING CACHE MANAGEMENT**

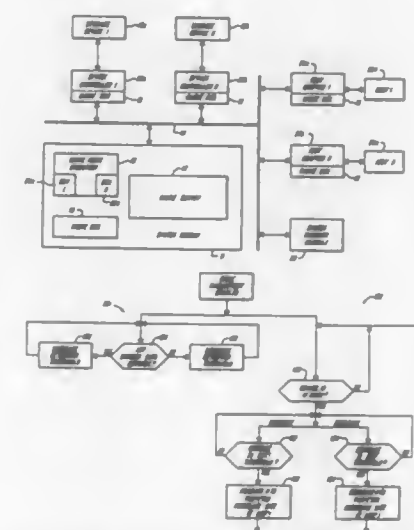
Moshe Yanai, Framingham; Natan Vishitzky, Brookline; Bruno
Alterescu, Newton, and Daniel Castel, Framingham, all of
Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Jun. 4, 1992, Ser. No. 893,509

Int. Cl.⁶ G06F 12/08

U.S. Cl. 395-425

40 Claims



1. A cache management system, for monitoring and controlling contents of cache memory coupled to at least one host and to at least one data storage device, said cache management system comprising:

a cache indexer, for maintaining a cache index of data elements which are retrieved from said at least one data storage device by said at least one host and stored in said cache memory;

a sequential data access indicator, responsive to said cache index, for detecting a plurality of sequential data elements retrieved from said at least one data storage device and stored in said cache memory, and responsive to said detection of a plurality of sequential data elements retrieved from said at least one data storage device and stored in cache memory and to a user selectable sequential data access indicator threshold value, for providing an indication that at least one process executing on said at least one host is effecting a sequential data access;

a data retrieval requestor, responsive to said indication that at least one process executing on said at least one host is effecting a sequential data access and to a user selectable value of a predetermined number of data elements to be prefetched, for requesting retrieval from said at least one data storage device of up to a number of data elements equal to the value of said user selectable predetermined number of data elements to be prefetched;

a cache data replacer, responsive to a user selectable value of a predetermined maximum number of sequential data elements to be stored in said cache memory for use by said at least one process effecting a sequential data access, and to said data retrieval requestor requesting retrieval of a data element, for requesting replacement of a least recently used sequential data element stored in said cache memory in excess of the value of said predetermined maximum number to be stored for use by said at least one process upon each retrieval of a data element in excess of said predetermined maximum number previously stored in

said cache memory for use by said at least one process; and
a dynamic cache management system adjuster, responsive to said indication that at least one process executing on said at least one host is effecting a sequential data access, for dynamically adjusting at least the values of said user selectable sequential data access indicator threshold and said user selectable predetermined number of data elements to be prefetched.

5,381,540

INTERFACE: INTERRUPT MASKING WITH LOGICAL SUM AND PRODUCT OPTIONS

Matthew K. Adams, Dallas; Wendell L. Little, Denton, and Stephen N. Grider, Farmers Branch, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

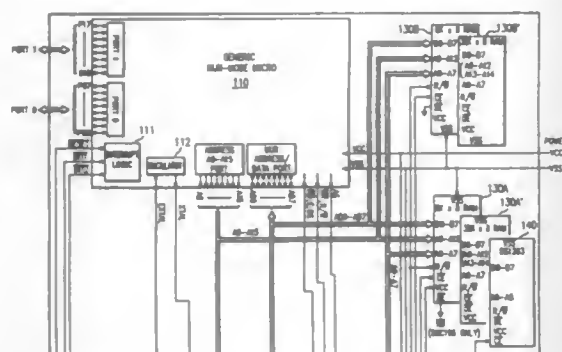
Continuation of Ser. No. 567,365, Aug. 13, 1990, abandoned.

This application Dec. 2, 1992, Ser. No. 985,513

Int. Cl.⁶ G06F 13/14

U.S. Cl. 395—425

20 Claims



5. An interface between two processors, comprising:

- (a) N input buffer registers;
- (b) N output buffer registers;
- (c) an N-bit input buffer flag register, wherein a write to one of said input buffer registers sets a corresponding flag bit in said input buffer flag register, and a read of one of said input buffer registers clears a corresponding flag bit in said input buffer flag register;
- (d) an N-bit output buffer flag register, wherein a write to one of said output buffer registers sets a corresponding flag bit in said output buffer flag register, and a read of one of said output buffer registers clears a corresponding flag bit in said output buffer flag register;
- (e) an N-bit first input buffer mask register (first IBMR), wherein a bit equal to logical 1 in said first IBMR masks a corresponding bit in said input buffer flag register;
- (f) an N-bit second input buffer mask register (second IBMR), wherein a bit equal to logical 1 in said second IBMR masks a corresponding bit in said input buffer flag register;
- (g) an N-bit first output buffer mask register (first OBM), wherein a bit equal to logical 1 in said first OBM masks a corresponding bit in said output buffer flag register;
- (h) an N-bit second output buffer mask register (second OBM), wherein a bit equal to logical 1 in said second OBM masks a corresponding bit in said output buffer flag register;
- (i) first and second input control bits;
- (j) first and second output control bits;
- (k) combinatorial logic coupled to both of said flag registers, all of said mask registers, said control bits, and first and second interrupt output nodes, wherein
 - (i) when said first input control bit equals a logical 1 and all of said input buffer registers corresponding to logical 0 in said first IBMR are written to, said logic outputs an interrupt signal at said first interrupt node, but when said first input control bit equals a logical 0 and one of

said input buffer registers corresponding to logical 0 in said first IBMR is written to, said logic outputs an interrupt signal at said first interrupt node;

- (ii) when said second input control bit equals a logical 1 and all of said input buffer registers corresponding to logical 0 in said first IBMR are read, said logic outputs an interrupt signal at said second interrupt node, but when said second input control bit equals a logical 0 and one of said input buffer registers corresponding to logical 0 in said first IBMR is read, said logic outputs an interrupt signal at said second interrupt node;

- (iii) when said first output control bit equals a logical 1 and all of said output buffer registers corresponding to logical 0 in said first OBM are read, said logic outputs an interrupt signal at said first interrupt node, but when said first output control bit equals a logical 0 and one of said output buffer registers corresponding to logical 0 in said first OBM is read, said logic outputs an interrupt signal at said first interrupt node; and

- (iv) when said second output control bit equals a logical 1 and all of said output buffer registers corresponding to logical 0 in said second OBM are written to, said logic outputs an interrupt signal at said second interrupt node, but when said second output control bit equals a logical 0 and one of said output buffer registers corresponding to logical 0 in said second OBM is written to, said logic outputs an interrupt signal at said second interrupt node.

5,381,541

COMPUTER SYSTEM HAVING PLANAR BOARD WITH SINGLE INTERRUPT CONTROLLER AND PROCESSOR CARD WITH PLURAL PROCESSORS AND INTERRUPT DIRECTOR

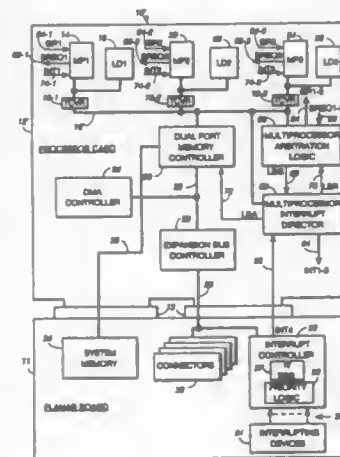
Ralph M. Begun, and Michael R. Turner, both of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 26, 1993, Ser. No. 67,361

Int. Cl.⁶ G06F 13/14

U.S. Cl. 395—500

6 Claims



1. A personal computer comprising:

- a planar board;
- a single interrupt controller means mounted on said planar board, said interrupt controller means having a plurality of input lines for exclusively receiving all interrupts from a plurality of interrupting devices, an output line, means for transmitting a first interrupt request on said output line in response to receiving a first interrupt on one of said input lines, and
- a first interrupt vector register for storing an interrupt vector identifying said first interrupt;

a multiprocessor upgrade card mounted on said planar board and comprising a plurality of processors and an interrupt director for upgrading said personal computer to operate as a multiprocessor system;

said plurality of processors being mounted on said multiprocessor upgrade card, each of said processors having an interrupt request input pin for selectively receiving a second interrupt request; and

said interrupt director being mounted on said multiprocessor upgrade card, said interrupt director comprising an input line connected to said output line from said interrupt controller means for receiving said first interrupt request,

a plurality of director output lines corresponding in number to the number of said processors and being respectively connected to different interrupt request input pins of said processors,

lookup means for storing a plurality of processor identifiers that indicate which processor is assigned to handle each interrupt,

a second interrupt vector register, interrupt vector transfer means, and interrupt routing means;

said interrupt vector transfer means being operative, in response to said director receiving said first interrupt request, to generate a first interrupt acknowledge cycle during which said interrupt vector is transmitted from said first interrupt vector register to said second interrupt vector register;

said interrupt routing means being operative, in response, to receiving said first interrupt request from said interrupt controller means, to first look up in said lookup means the identifier of which processor is assigned to handle said first interrupt and to then generate and transmit said second interrupt request, on only one of said director output lines, to the processor assigned to handle said first interrupt; and

said processor assigned to handle said first interrupt being operative, in response to receiving said second interrupt request, to generate a second interrupt acknowledge cycle during which said interrupt vector in said second interrupt vector register is read by such processor to handle said first interrupt.

5,381,542

SYSTEM FOR SWITCHING BETWEEN A PLURALITY OF CLOCK SOURCES UPON DETECTION OF PHASE ALIGNMENT THEREOF AND DISABLING ALL OTHER CLOCK SOURCES

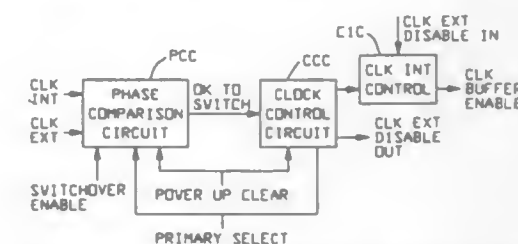
Robert H. Carlson, Laguna Niguel, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 29, 1991, Ser. No. 737,303

Int. Cl.⁶ G06F 1/04

U.S. Cl. 395—550

12 Claims



12. An arrangement for automatically, bilaterally switching between a first clock generating unit and a second independent auxiliary clock generating unit, said arrangement comprising: first and second dynamic switchover means, each said dynamic switchover means coupled to respective clock generating unit and to receive output from the other one of said dynamic switchover means and for passing an

associated version of a respective output to common utilization means;

each of said dynamic switchover means comprising:

compare means coupled to receive two clock signals from said first and second clock generating units respectively, a switchover-enable signal, a primary select signal, and a power-up clear signal, responsive to said switchover-enable signal, said primary select signal, and said power-up clear signal in a selected state, for generating a switchover signal upon detecting alignment of said two clock signals; and

microprocessor control means coupled to receive said switchover signal, said primary select signal, said power-up clear signal, and a disk, able signal from other one of said dynamic switchover means, for generating switch enable signal to enable output of said respective clock generating unit and for generating a disable signal to inhibit the output of other one of said clock generating units.

5,381,543

PROCESSOR SYSTEM WITH DUAL CLOCK

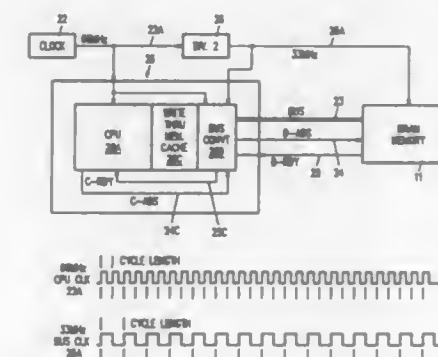
James S. Blomgren, San Jose; Mark Semmelmeier, Sunnyvale; Tuan Luong, and Gary Baum, both of San Jose, all of Calif., assignors to Chips and Technologies Inc., San Jose, Calif.

Continuation of Ser. No. 848,544, Mar. 9, 1992, Pat. No. 5,325,516. This application Mar. 3, 1994, Ser. No. 206,563

Int. Cl.⁶ G06F 1/06

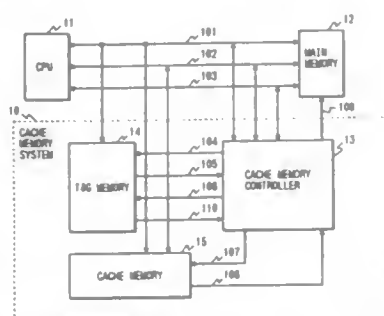
U.S. Cl. 395—550

10 Claims

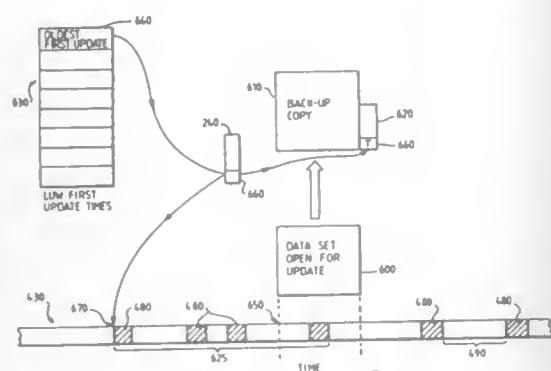


1. A computer system including, a system clock sub-system providing signals at first and second speeds, said second speed being a multiple of said first speed, a memory sub-system operable at said first speed, said memory sub-system including a synchronous memory bus, said memory sub-system have a plurality of control signal lines, an iAPX microprocessor, said iAPX microprocessor having a plurality of memory control signal lines, means responsive to said clock sub-system for driving said memory sub-system at said first speed and said iAPX processor at said second speed, a bus interface unit for connecting said iAPX microprocessor to said memory sub-system and for modifying the control signal from said memory to conform to the control signals for said iAPX microprocessor and for modifying the control signals from said iAPX microprocessor to conform to the control signals of said memory system.

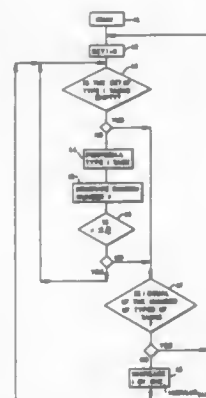
18 Claims



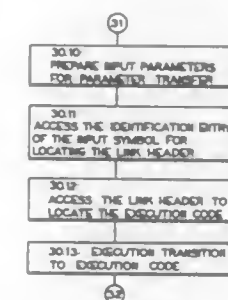
16 Claims



2 Claims



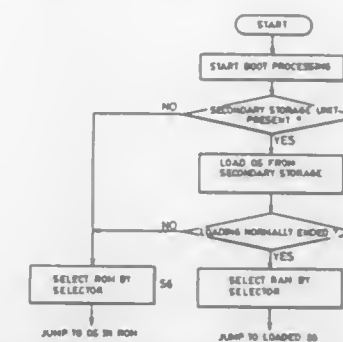
11 Claims



9 Claims

[illegible]

5 Claims



1. A programmed computer apparatus for processing information comprising:
first internal storage means for storing a first operating system in advance;
external storage means external to said apparatus, capable of storing a second operating system;
second internal storage means for storing the second operating system;

processing means, connected to said first and second internal storage means, for performing processing using the first or second operating system;

loading means, connected to said external and second internal storage means, for loading the second operating system from said external storage means to said second internal storage means during initialization according to an instruction from said processing means;

determination means, connected to said loading means, for determining whether or not the loading of the second operating system by said loading means has succeeded after the initialization; and

mapping means, connected to said determination means and said first and second internal storage means, for mapping an address space according to the result of determination by said determination means, wherein said mapping means allocates an address area in the address space corresponding to the first operating system a first storage area in the first internal storage means storing the first operating system if the loading of the second operating system has not succeeded and allocates the address area corresponding to the first operating system to a second storage area in a different storage means other than the first internal storage means if the loading of the second operating system has succeeded.

5,381,550

SYSTEM AND METHOD FOR COMPILING A SOURCE CODE SUPPORTING DATA PARALLEL VARIABLES

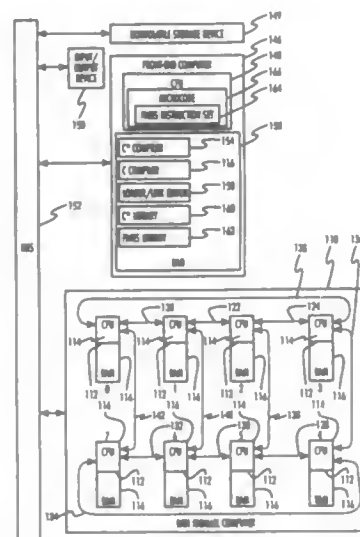
Karen C. Jourdenais, Concord; James L. Frankel, Lexington, both of Mass.; Steven N. Goldhaber, Boulder, Colo., and Linda J. Seamonson, Wellesley, Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Continuation of Ser. No. 805,566, Dec. 13, 1991, Pat. No. 5,278,986. This application Jan. 10, 1994, Ser. No. 179,267

Int. Cl.⁶ G06F 9/44

U.S. Cl. 395—700

19 Claims



1. A method of generating a target code from a source code, the source code written using a high level language supporting data parallel processing, the target code to be executed in a data parallel computer having a plurality of processing nodes for processing data in parallel, the method being executable in a data processing apparatus and comprising the steps of:

(a) maintaining a shapes defined table which includes a list of shapes which are declared and defined in a compilation unit of the source code;

(b) determining whether a source code declaration statement exists in said compilation unit of the source code which declares a shape having P positions organized among R dimensions, said shape being a template for use in declar-

ing parallel variables each having P data instances distributed among P processing nodes logically organized among R dimensions, said statement specifying a symbol that identifies said shape;

(c) emitting to the target code, in response to said determination, at least one target code declaration statement which when executed in the data parallel computer enables the data parallel computer to declare said shape, said target code declaration statement including a definition field, a symbol field, and an initializer field;

(d) setting said symbol field equal to said symbol of said shape;

(e) ascertaining, in response to said determination, whether said source code declaration statement also defines said shape; and

(f) if it is determined that said source code declaration statement also defines said shape, then adding said symbol of said shape to said shapes defined table.

5,381,551

SEMICONDUCTOR INTEGRATED CIRCUIT INCLUDING AN ARBITRATE CIRCUIT FOR GIVING PRIORITY TO A PLURALITY OF REQUEST SIGNALS

Shyunji Maeda, and Masataka Wakamatsu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 912,036, Jul. 9, 1992, abandoned, which is a continuation of Ser. No. 377,894, Jul. 10, 1989, abandoned.

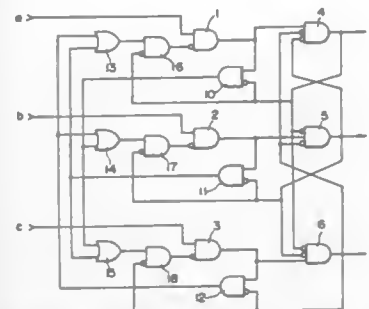
This application Apr. 7, 1993, Ser. No. 45,320

Claims priority, application Japan, Jul. 12, 1988, 63-172889; Jul. 19, 1988, 63-179746

Int. Cl.⁶ G06F 13/18

U.S. Cl. 395—725

5 Claims



1. An arbitrate circuit included in a semiconductor integrated circuit and comprising:

N, (where N is a natural number equal to or greater than 3), input terminals for separately receiving a plurality of contending request signals;

N output terminals, corresponding to the N input terminals, at which the request signals input to the N input terminals are selectively output in accordance with a predetermined priority;

first, second, third, fourth, fifth and sixth AND gates, each having a separate output terminal, a separate non-inverting input terminal, and one or more inverting input terminals;

the first and fourth AND gates being connected in series between a first one of the N input terminals and a first one of the N output terminals;

the second and fifth AND gates being connected in series between a second one of the N input terminals and a second one of the N output terminals;

the third and sixth AND gates being connected in series between a third one of the N input terminals and third one of the N output terminals;

wherein the first through sixth AND gates each have output terminals, inverting input terminals and non-inverting input terminals, the output terminals of the first, second and third AND gates being respectively connected to the

non-inverting input terminals of the fourth, fifth, and sixth AND gates, and the output terminals of the fourth, fifth and sixth AND gates being respectively connected to a different inverting input terminal of each of the other of the fourth, fifth and sixth AND gates;

first, second and third gate opening circuits for the first, second and third AND gates, the first, second and third gate opening circuits being comprised of seventh, eighth and ninth AND gates, each having an inverting input terminal respectively connected to the output terminal of the fourth, fifth and sixth AND gates, each having a non-inverting input terminal respectively connected to the output terminal of the first, second and third AND gates, and each having an output terminal;

first, second and third holding circuits for the first, second and third AND gates, the first, second and third holding circuits being comprised of tenth, eleventh, and twelfth AND gates, respectively, having output terminals which are respectively connected to the inverting input terminals of the first, second and third AND gates, having inverting input terminals which are respectively connected to the output terminals of the fourth, fifth and sixth AND gates, and having non-inverting input terminals;

first, second and third gate closing circuits for the first, second and third AND gates, respectively, the first, second and third gate closing circuits being comprised of first, second and third OR gates, respectively, having output terminals respectively connected to the non-inverting input terminals of the tenth, eleventh and twelfth AND gates, and wherein the first OR gate has an input terminal which is connected to the output terminal of the ninth AND gate and another input terminal which is connected to the output terminal of the eighth AND gate, the second OR gate has an input terminal which is connected to the output terminal of the seventh AND gate and another input terminal which is connected to the output terminal of the sixth AND gate, and the third OR gate has an input terminal which is connected to output terminal of the fifth AND gate and another input terminal which is connected to the output terminal of the fourth AND gate.

5,381,552

PROGRAMMABLE SYSTEM FOR PRIORITIZING AND COLLECTING CENTRAL PROCESSOR UNIT INTERRUPTS

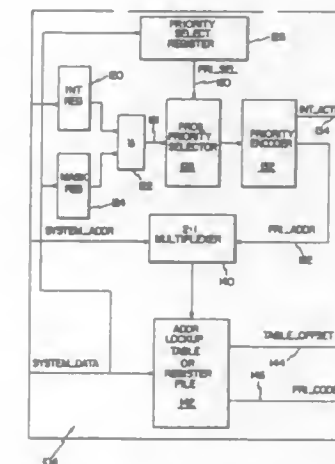
James A. Dahlberg, Eagan; David G. Fangmeier, Apple Valley, and Kermit E. Frye, Bloomington, all of Minn., assignors to Ceridian Corporation, Bloomington, Minn.

Filed Apr. 26, 1993, Ser. No. 54,001

Int. Cl.⁶ G06F 13/26, 9/46

U.S. Cl. 395—725

6 Claims



1. A programmable priority interrupt system for prioritizing

interrupts handled by a plurality of interrupt processing subsystems which provide offset values representative of the interrupts to a central processor unit comprising:

A. a portion from each of said interrupt processing subsystems, each said portion including:

i) an input receiver for receiving interrupts associated with the respective interrupt processing subsystem;

ii) a priority selector responsive to the respective input receiver for prioritizing interrupts associated with the respective interrupt processing subsystem in accordance with a programmed sequence, the priority selector selecting an interrupt address associated with an interrupt having the highest priority of the interrupts associated with the respective interrupt processing subsystem; and

iii) a lookup table memory containing an offset table having programmable offset values representing the interrupts associated with the respective interrupt processing subsystem and a priority code table having programmable priority codes corresponding to the offset values and representing the relative system priority of the offset values, the lookup table memory being responsive to the priority selector for selecting an offset value from the offset table and a corresponding priority code from the priority code table associated with the interrupt address selected by the priority selector;

B. an interrupt collector comprising:

i) a priority comparator responsive to the lookup table memory in all of the interrupt processing subsystems for comparing the priority codes from the interrupt processing subsystems and for selecting a priority code representing the offset value with the highest system priority; and

ii) a multiplexing processor responsive to the priority comparator and to the lookup table memory in all of the interrupt processing subsystems for selecting the offset value from the lookup table memory corresponding to the priority code selected by the priority comparator;

C. an offset value sender responsive to the multiplexing processor for supplying the offset value selected by the multiplexing processor to the central processor unit; and

D. a program selector connected to the priority selector and the lookup table memory in each interrupt processing subsystem for selectively altering the priority sequences in the priority selector, the offset values in the offset tables in the lookup table memory, and the priority codes in the priority code tables in the lookup table memory.

5,381,553

SIGNAL PROCESSING APPARATUS FOR PERFORMING HIGH SPEED ARITHMETIC OPERATIONS AND HAVING A POWER CONSUMPTION REDUCTION FEATURE

Yukinobu Nishimura, Himeji; Syoichi Washino, and Kenji Shima, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,694

Claims priority, application Japan, Mar. 24, 1992, 4-066115

Int. Cl.⁶ G06F 3/05, 15/20, 1/32, 9/00

U.S. Cl. 395—750

6 Claims

1. A signal processing apparatus for generating a variety of output data by performing arithmetic operation on input data supplied in the form of digital signals and analog signals on a real time basis, comprising:

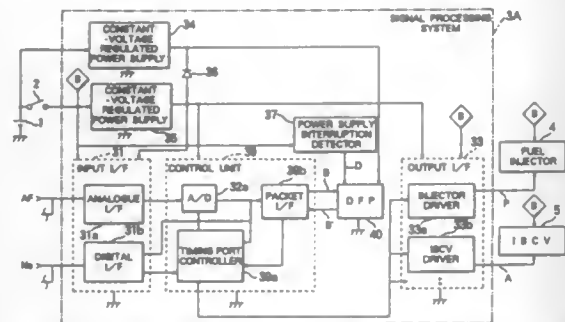
an analog-to-digital converter for converting said analog signal into a corresponding digital signal;

a packet interface for generating a data packet in accordance with said digital signal;

a timing port controller for controlling the timing at which said analog-to-digital converter operates and for generating said output data in accordance with said data packet;

a power supply interruption detecting circuit for generating a power supply interruption detecting signal in response

to detection of a voltage drop of a power supply source; and
a data flow processor including a data storage and a data flow loop for processing said data packet in accordance with tag information contained in said data packet,



wherein said data flow processor, in response to said power supply interruption detecting signal, reduces its consumption of power from said power supply and causes said data storage to continue storing data already stored therein.

5,381,554

UNINTERRUPTED POWER SUPPLY (UPS) SYSTEM INTERFACING WITH COMMUNICATIONS NETWORK
Dale R. Langer, and G. John Messer, both of Raleigh, N.C., assignors to Exide Electronics, Raleigh, N.C.

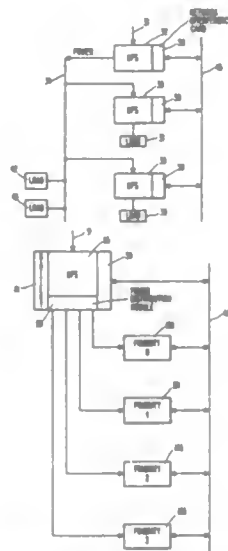
Division of Ser. No. 980,650, Nov. 24, 1992, Pat. No. 5,319,571.

This application Feb. 15, 1994, Ser. No. 196,414

Int. Cl.⁶ G11C 7/00; G06F 11/00, 1/32

U.S. Cl. 395—750

3 Claims



1. A system comprising an uninterrupted power supply (UPS), a plurality of loads having predetermined priorities for maintenance of power thereto, a network for transmitting data to and from each of said loads and said UPS, and bar connection means for connecting power separately from said UPS to each of said loads, said UPS having network interface means for interfacing with said network, said network interface means further comprising processor means for processing data and control signal generating means for generating control signals for controlling connection of power to each of said loads, said processor means comprising first means for generating messages to each of said loads wherein said messages concern time remaining for receipt of power by such load, and second means for generating shutdown signals and connecting

said shutdown signals to said control signal generating means for controlling prioritized shutdown of said loads.

5,381,555

METHOD FOR DESIGNATION OF DATA IN A DATA BANK AND EXTRACTION OF DATA FOR USE IN A COMPUTER PROGRAM

Robert A. W. Brauns, Pepperidge Rd., Tuxedo Park, N.Y.; Kamy Agrawal, Stamford, Conn., and Vincent Aubrun, New York, N.Y., assignors to The Larches Corporation, Boston, Mass.

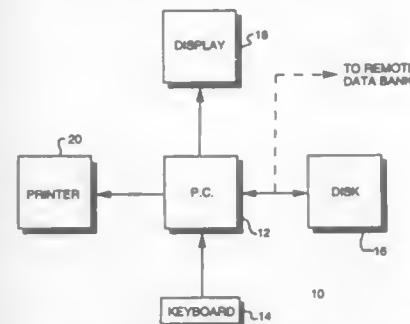
Continuation of Ser. No. 462,907, Jan. 10, 1990, abandoned, which is a continuation of Ser. No. 47,633, May 18, 1987, abandoned. This application Jan. 7, 1993, Ser. No. 2,107

Int. Cl.⁶ G06F 13/00

U.S. Cl. 395—800

13 Claims

MICROFICHE APPENDIX INCLUDED
(5 Microfiche, 336 Pages)



1. A computer system having a data base system which is organized in accordance with data-designating parameters and operable by application thereto of the data-designating parameters to fetch selected data stored therein, the computer system including:

- A. a utility program, said data base system being external to utility program, the utility program—
 - i. presenting to a user an array of data cells, said array being presented to permit a user to enter data into the data cells,
 - ii. manipulating data entered into the data cells by performing data calculations, and
 - iii. displaying the results of the manipulations;
- B. tokens for inclusion in data cells, each token representing data-designating parameters designating selected data in the data base system;
- C. data extraction means for—
 - i. responding to the presence in a cell of a token by automatically (1) applying to the data base the data-designating parameters represented by the token and (2) entering into the data cell the data that the data base system fetches in response to the application of the parameters represented by the token, the data extraction means entering the data in the data cell prior to the utility program's manipulation of the data in a data calculation operation; and
 - ii. further responding to the presence in the cell of the token by automatically upon execution of the calculation operations re-entering the data base and updating the data entered into the data cell.

5,381,556

SEMICONDUCTOR DEVICE HAVING EXTERNALLY PROGRAMMABLE MEMORY

Naoki Mitsubishi, Kodaira, and Atsushi Hirose, Matsudo, both of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer System Ltd., Tokyo, Japan

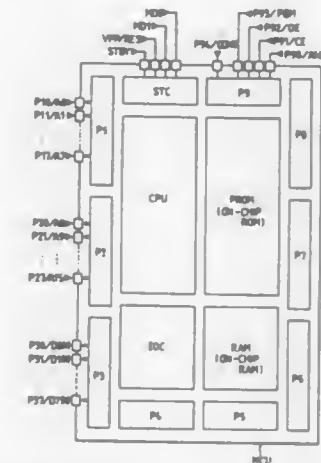
Filed Apr. 15, 1993, Ser. No. 48,410

Claims priority, application Japan, Apr. 30, 1992, 4-137672
Int. Cl.⁶ G06F 9/24

U.S. Cl. 395—800

27 Claims

1. A semiconductor device comprising:
address terminals where address signals are to be supplied;
data terminals where data is to be supplied;
control terminals where control signals are to be supplied, the control signals including a write mode control signal having a first level which specifies a first write mode and a second level which specifies a second write mode;
address buffer circuits coupled to the address terminals, ones of the address buffer circuits being operated in the first and the second write mode while the remaining address buffer circuit is operated in the second write mode;
control buffer circuits coupled to the control terminals, ones of the control buffer circuits being operated in the first and the second write mode while the remaining control buffer circuit is operated in the second write mode;
address decoder coupled to receive output signals supplied from the operated address buffer circuits to decode the output signals;



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DESIGN PATENTS

GRANTED JAN. 10, 1995

ERRATA

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CLASS	PATENT NO.
D34-021	D 354,186
D12-115	D 354,215
D24-130	D 354,283

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DESIGNS

JANUARY 10, 1995

354,159

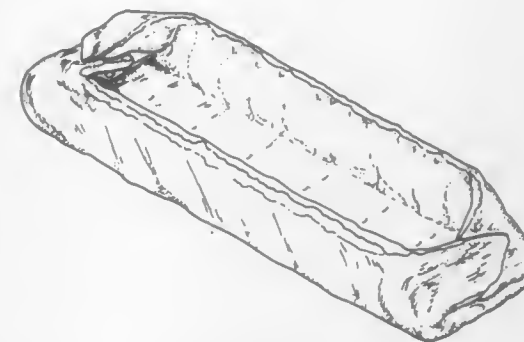
FOOD CRUST

Glenn W. Martin, Redmond, Wash., assignor to Pietro's Corporation, Lynnwood, Wash.

Filed Jun. 17, 1993, Ser. No. 9,700

Term of patent 14 years

U.S. Cl. D1—122



354,162

SHOE SOLE

Nicolas O'Rourke, North Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.

Filed Sep. 17, 1993, Ser. No. 13,059

Term of patent 14 years

U.S. Cl. D2—954



354,160

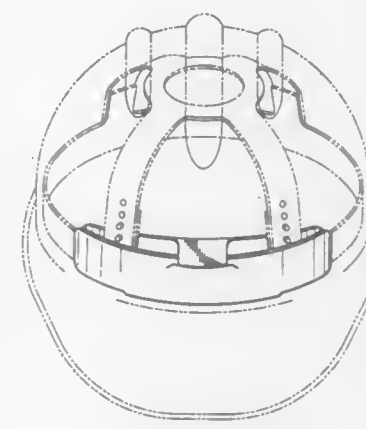
DISPOSABLE SWEAT BAND FOR A SAFETY HARD HAT LINER

Steven L. Shaffer, Box 228, Rte. 40, Carneys Point, N.J. 08069

Filed Jan. 25, 1993, Ser. No. 4,019

Term of patent 14 years

U.S. Cl. D2—894



354,163

SHOE UPPER

Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Feb. 2, 1994, Ser. No. 18,237

Term of patent 14 years

U.S. Cl. D2—970



354,161

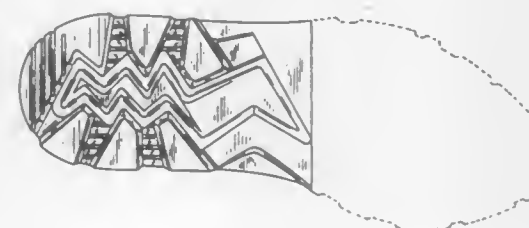
HEEL PORTION OF A SHOE SOLE

Robert M. Dyer, St. Louis County; Zenon O. Smotrycz, and Edward J. Norton, both of Middlesex County, all of Mo., assignors to Brown Group, Inc., St. Louis, Mo.

Filed Oct. 19, 1992, Ser. No. 549

Term of patent 14 years

U.S. Cl. D2—953



354,164

SHOE UPPER

Jonathan H. Werman, 5111 NE. 30th Ave., Lighthouse Point, Fla. 33064

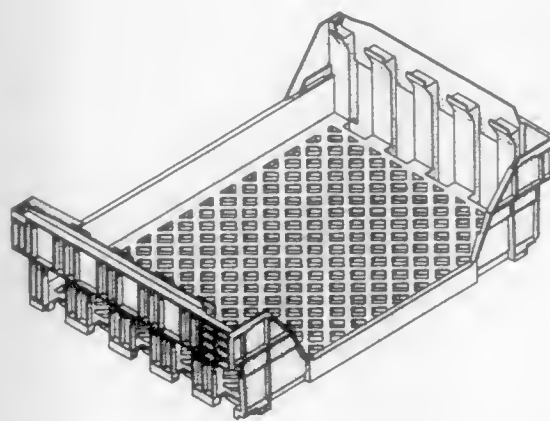
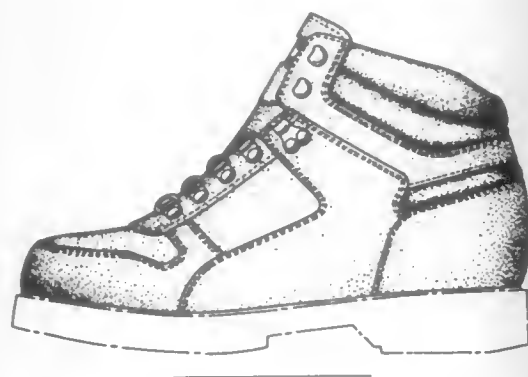
Filed Mar. 9, 1994, Ser. No. 19,742

Term of patent 14 years

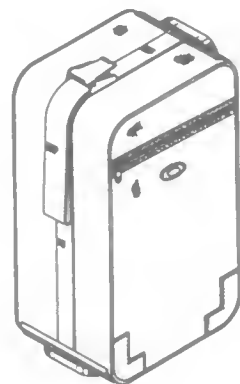
U.S. Cl. D2—970



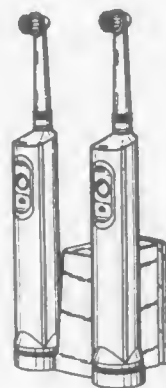
- 354,165
SHOE UPPER
Jonathan H. Werman, 5111 NE. 30th Ave., Lighthouse Point, Fla. 33064
Filed Mar. 9, 1994, Ser. No. 19,745
Term of patent 14 years
U.S. Cl. D2—970
- 354,167
BREAD TRAY
Edward L. Stahl, Plano, Tex., assignor to Piper Industries of Texas, Inc., Garland, Tex.
Filed Oct. 20, 1993, Ser. No. 14,372
Term of patent 14 years
U.S. Cl. D3—304



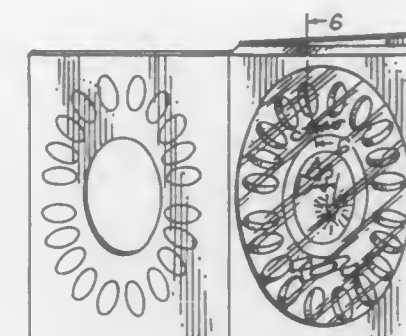
- 354,166
SUITCASE
Yi-Cheng Lin, No. 7, Lane 37, Wen-Hua St., Fengyuan City, Taiwan, Prov. of China
Filed Jul. 2, 1993, Ser. No. 10,254
Term of patent 14 years
U.S. Cl. D3—276



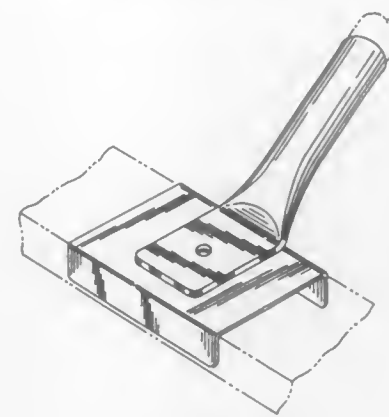
- 354,168
COMBINED CHARGING UNIT AND SET OF ELECTRIC TOOTHBRUSHES
Peter Hartwein, Königstein, Germany, assignor to Brann Aktiengesellschaft, Frankfurt, Germany
Filed Oct. 14, 1993, Ser. No. 14,183
Claims priority, application Germany, Apr. 16, 1993, DMA/002121
Term of patent 14 years
U.S. Cl. D4—108



- 354,169
CONVEX BRUSH
Arthur W. Roberts, R.R. #4, London, ON, Canada N6A 4B4
Filed Nov. 5, 1992, Ser. No. 1,132
Term of patent 14 years
U.S. Cl. D4—137
- 354,172
DESIGN FOR A BABYTEETH MEMORABILIA DISPLAY
Karen T. Adams, 9580 Adolphia St., San Diego, Calif. 92129
Filed Dec. 9, 1992, Ser. No. 2,463
Term of patent 14 years
U.S. Cl. D6—301



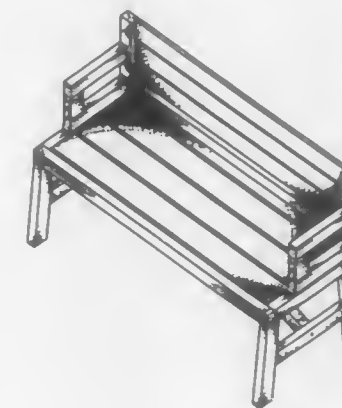
- 354,170
COMBINED BROOM HEAD HOLDER AND HANDLE ATTACHMENT
Robert J. Libman, Champaign, Ill., assignor to The Libman Company, Arcola, Ill.
Filed Sep. 28, 1992, Ser. No. 951,536
Term of patent 14 years
U.S. Cl. D4—199



- 354,171
DISPLAY EASEL
Eugene R. Schmidt, 5111 N. Stonehouse Pl., Tucson, Ariz. 85715-9671
Filed Jul. 30, 1993, Ser. No. 11,230
Term of patent 14 years
U.S. Cl. D6—300



- 354,173
MULTI-PURPOSE BENCH AND TABLE
Raymond J. Escobal, and Melinda J. Escobal, both of 3026 Redstart, San Antonio, Tex. 78224
Filed Nov. 29, 1993, Ser. No. 15,801
Term of patent 14 years
U.S. Cl. D6—335



354,174

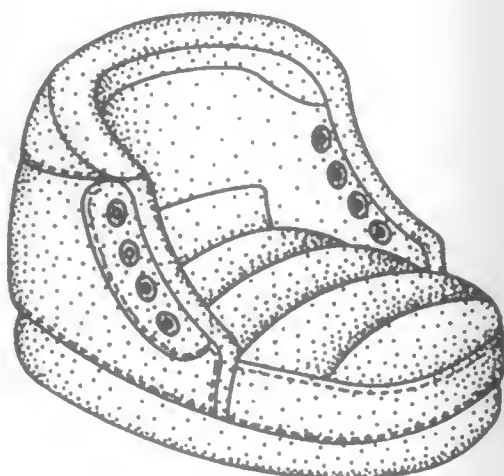
SHOE SHAPED SEATING DEVICE

Kyle R. Collins, 1440 Longfellow, Detroit, Mich. 48206, and
Faliscia Kauckles, Detroit, Mich., assignors to Kyle R. Col-
lins, Detroit, Mich.

Filed Oct. 4, 1991, Ser. No. 771,252

Term of patent 14 years

U.S. Cl. D6—358



354,176

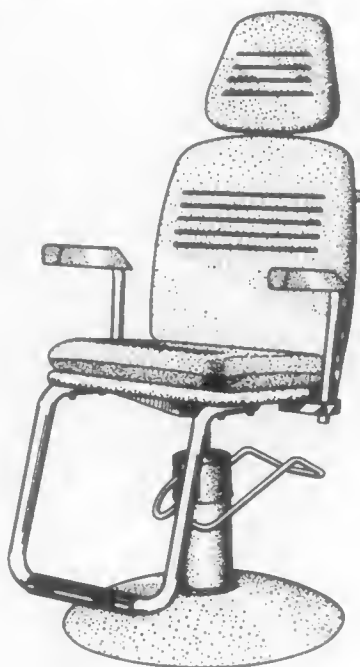
MEDICAL LIFT CHAIR

Gary G. Schwaegerle, Cincinnati, and Gregory M. Crook, Co-
lumbus, both of Ohio, assignors to Reliance Medical Products,
Inc., Mason, Ohio

Filed Sep. 10, 1993, Ser. No. 12,811

Term of patent 14 years

U.S. Cl. D6—360



354,177

MEDICAL LIFT CHAIR

Gary G. Schwaegerle, Cincinnati, and Gregory M. Crook, Co-
lumbus, both of Ohio, assignors to Reliance Medical Products,
Inc., Mason, Ohio

Filed Sep. 10, 1993, Ser. No. 12,786

Term of patent 14 years

U.S. Cl. D6—360



354,175

CHAIR

Peter B. Fein, Waccabuc, N.Y., assignor to Granddaddy Design,
Ltd., Waccabuc, N.Y.

Filed Jun. 21, 1993, Ser. No. 9,788

Term of patent 14 years

U.S. Cl. D6—358



354,178

CHAIR

Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex
Entwicklungs AG, Koblenz, Switzerland

Filed Sep. 22, 1992, Ser. No. 949,084

Claims priority, application WIPO, Mar. 25, 1992, DM/022
385

Term of patent 14 years

U.S. Cl. D6—366



354,180

SOFA

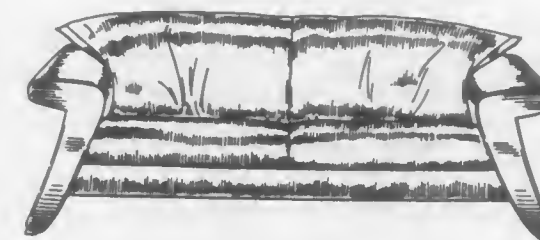
Mauro Lipparini, and Roberto Tapinassi, both of Florence, Italy,
assignors to Rolf Benz AG, Nagold, Germany

Filed Sep. 2, 1993, Ser. No. 12,441

Claims priority, application Switzerland, Mar. 2, 1993,
DM/025 405

Term of patent 14 years

U.S. Cl. D6—381



354,181

GRAVITY FEED RACK FOR BEVERAGE CANS

Douglas W. Smith, and Robert E. Dawson, both of Ridgefield,
Conn., assignors to Cadbury Beverages, Inc., Stamford, Conn.

Filed Jan. 25, 1994, Ser. No. 19,861

Term of patent 14 years

U.S. Cl. D6—408



354,179

CHAIR

Michael W. Greene, Incline Village, Nev., assignor to Resin-
form, Incline Village, Nev.

Filed Nov. 2, 1992, Ser. No. 1,026

Term of patent 14 years

U.S. Cl. D6—379



354,182

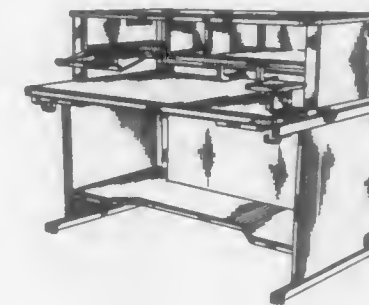
COMPUTER WORKSTATION

Leslie R. Abraham, and John H. Kniefel, both of Owatonna,
Minn., assignors to Wenger Corporation, Owatonna, Minn.

Filed May 13, 1993, Ser. No. 8,277

Term of patent 14 years

U.S. Cl. D6—426



354,183
CHEST

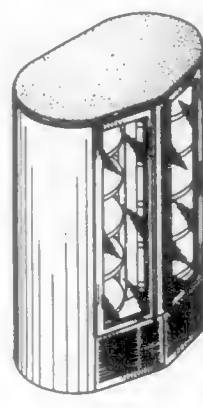
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 19, 1992, Ser. No. 885,216
Term of patent 14 years

U.S. Cl. D6—446

354,185
REFRIGERATED MERCHANDISING DISPLAY
CABINET

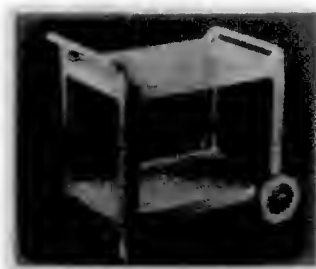
Leslie King, Snellville, Ga., assignor to L&P Property Management Company, Chicago, Ill.
Filed Jun. 2, 1993, Ser. No. 9,091
Term of patent 14 years

U.S. Cl. D6—470

354,186
TEA CART

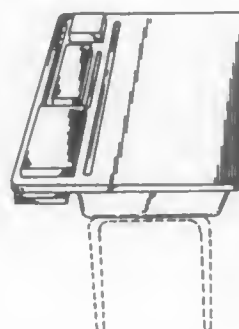
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex SARL, Oyonnax, France
Filed Oct. 22, 1993, Ser. No. 14,461
Claims priority, application Hague Agreement, Apr. 26, 1993, DMA/002129

Term of patent 14 years
U.S. Cl. D34—21

354,187
DESK TOP PANEL

Patricia J. Dankus, 1206 S. Ridge, Arlington Heights, Ill. 60005; Joanne Robinson, 16 Aldine Rd., Lake Zurich, Ill. 60047, and Richard Dankus, 1206 S. Ridge, Arlington Heights, Ill. 60005
Filed Nov. 30, 1992, Ser. No. 2,012
Term of patent 14 years

U.S. Cl. D6—511

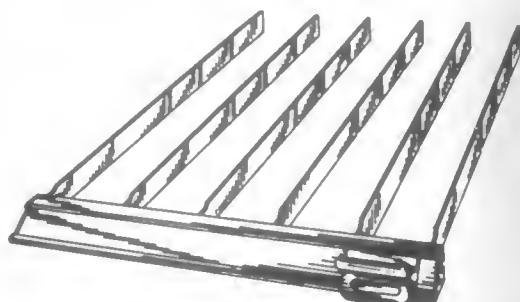


354,184

ADVERTISING DISPLAY FOR SHELVING

Richard Markson, Goshen, N.Y., assignor to Markson Rosenthal & Company, Edgewater, N.J.
Filed Sep. 24, 1992, Ser. No. 951,692
Term of patent 14 years

U.S. Cl. D6—449

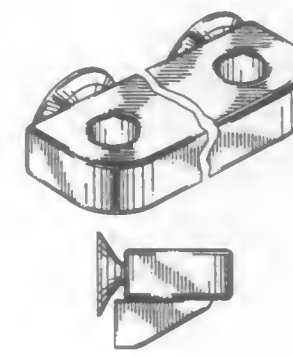


354,188

HOLDER FOR SUPPORTING INVERTED CONTAINERS

Robert R. Koehler, P.O. Box 204, Alto, N. Mex. 88312
Filed Nov. 24, 1993, Ser. No. 15,677
Term of patent 14 years

U.S. Cl. D6—553

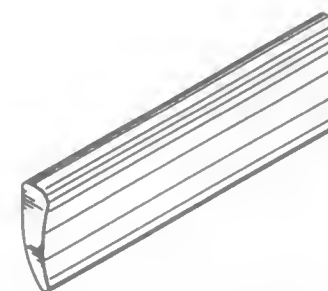


354,189

ORNAMENTAL LOUVER

Russell H. Underdahl, Arden Hills, Minn., assignor to Pinecrest, Inc., Minneapolis, Minn.

Filed Dec. 3, 1992, Ser. No. 2,174
Term of patent 14 years
U.S. Cl. D6—580



354,190

VERTICAL BLIND SLAT

Guy Ross, Blainville, and Claude Gagnon, Lasalle, both of Canada, assignors to Vertico Industries Inc., Lachine, Canada
Filed Mar. 7, 1994, Ser. No. 19,599
Term of patent 14 years

U.S. Cl. D6—580



354,191

VERTICAL BLIND SLAT

Guy Ross, Blainville, and Claude Gagnon, Lasalle, both of Canada, assignors to Vertico Industries, Inc., Lachine, Canada
Filed Mar. 7, 1994, Ser. No. 19,597
Term of patent 14 years

U.S. Cl. D6—580



354,192

VERTICAL BLIND SLAT

Guy Ross, Blainville, and Claude Gagnon, Lasalle, both of Canada, assignors to Vertico Industries Inc., Lachine, Canada
Filed Mar. 7, 1994, Ser. No. 19,598
Term of patent 14 years

U.S. Cl. D6—580

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354,193

ELECTRIC ESPRESSO MAKER

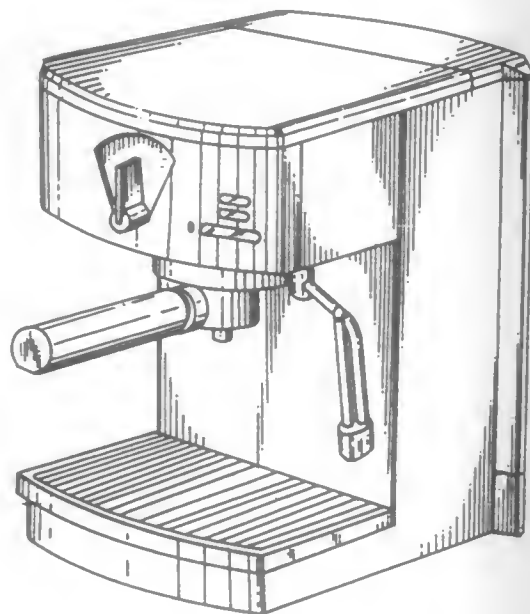
Gunter Storsberg, Solingen, Germany, assignor to Robert Krups GmbH & Co. KG, Solingen, Germany

Filed Jun. 11, 1993, Ser. No. 9,332

Claims priority, application France, Dec. 11, 1992, 927,519

Term of patent 14 years

U.S. Cl. D7—309



354,195

BREADMAKER

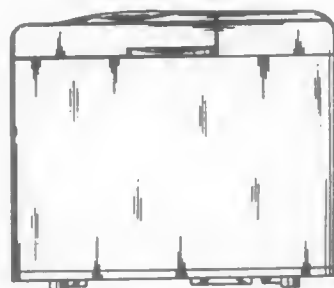
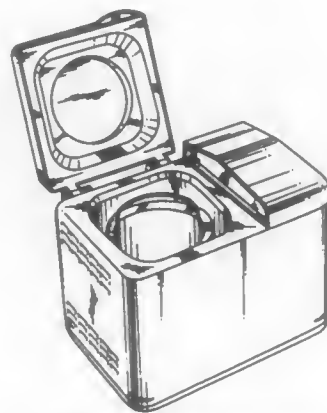
Takuji Kaneko, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan

Filed Jan. 29, 1993, Ser. No. 4,227

Claims priority, application Japan, Jul. 31, 1992, 4-22963

Term of patent 14 years

U.S. Cl. D7—350



354,196

IGNITER

Isao Inoue, Shizuoka, Japan, assignor to Tokai Corporation, Kanagawa, Japan

Filed Jul. 19, 1993, Ser. No. 10,846

Claims priority, application Japan, Feb. 10, 1993, 5-3661

Term of patent 14 years

U.S. Cl. D7—416



354,194

PITCHER

James M. Slattery, 307 Shadow Walk, Falls Church, Va. 22046

Filed Feb. 26, 1993, Ser. No. 5,241

Term of patent 14 years

U.S. Cl. D7—319



354,197

TACO PLATE

Ronald P. Fish, 6400 SE. 57th St., Oklahoma City, Okla. 73135

Continuation-in-part of Ser. No. 10,077, Jun. 29, 1993. This

application Sep. 20, 1993, Ser. No. 13,148

Term of patent 14 years

U.S. Cl. D7—504



354,198

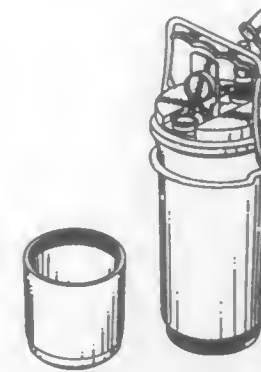
KETTLE

Ming H. Chiang, No.43-2, Jiann Gow St., Bann-Chyau; Te-Cheng Cho, No.20, Alley 1, Lane 60, Sec.2, Jong-Shan Rd Bann-Chau, and Chiang T. Hsu, FL.3, No.26, Alley 3, Lane 289, Juang-Jing Rd, all of Taipei, Taiwan, Prov. of China

Filed Dec. 8, 1993, Ser. No. 16,132

Term of patent 14 years

U.S. Cl. D7—510



354,199

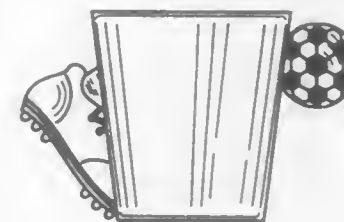
DESIGN FOR DRINKING GLASS

Keeneth D. Rigsby, 7911 Dunbarton Ave., Los Angeles, Calif. 90045

Filed Oct. 9, 1992, Ser. No. 248

Term of patent 14 years

U.S. Cl. D7—515



354,200

POT WITH HINGED LID

Giuseppe Grappolini, 26, Via F. Turati, I-52024 Loro Ciuffenna, Arezzo, Italy

Filed Jul. 21, 1992, Ser. No. 916,266

Claims priority, application Hague Agreement, Feb. 10, 1992, DM/021964

Term of patent 14 years

U.S. Cl. D7—538



354,201

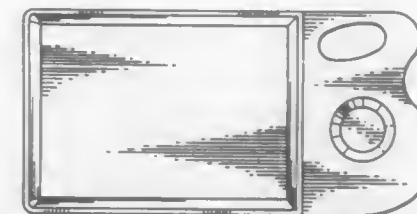
PARTY PLATE

Pieter A. van de Graaf, Jr., 5214 Cobblehill Rd., Portsmouth, Va. 23703

Filed Jul. 27, 1992, Ser. No. 919,128

Term of patent 14 years

U.S. Cl. D7—555



354,202

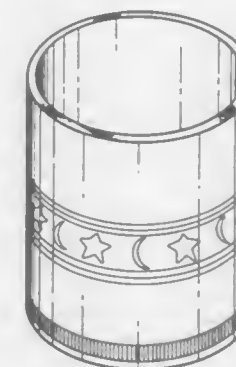
MUSICAL BOTTLE HOLDER

Phyllis L. Smith, and Maria R. Nunez, both of 8601 N. 71st Ave., Glendale, Ariz. 85301

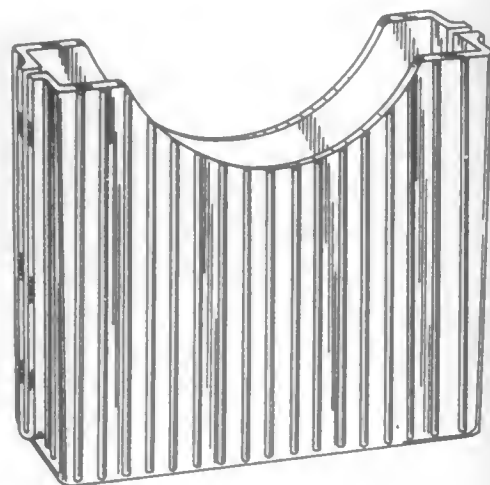
Filed Sep. 23, 1993, Ser. No. 13,376

Term of patent 14 years

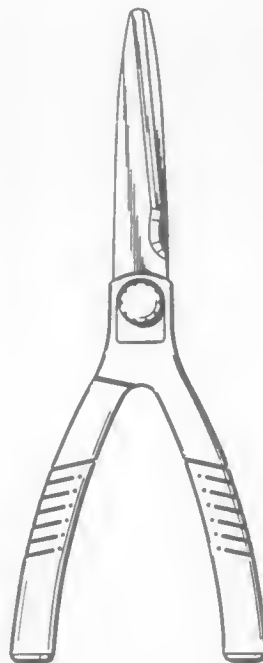
U.S. Cl. D7—619



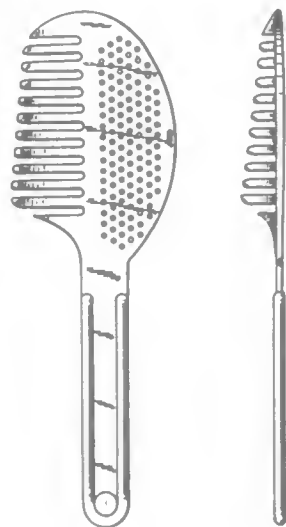
354,203
COMBINED BAGEL HOLDER AND SLICER
 Vincent A. Naccarato, Darien, Ill., assignor to Wilton Industries, Inc., Woodridge, Ill.
 Filed Oct. 25, 1993, Ser. No. 14,564
 Term of patent 14 years
 U.S. Cl. D7—673



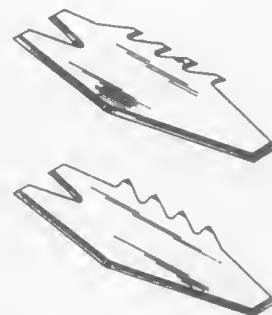
354,205
SHEARS
 Stephen Wensley, Llantwit Major; Alan S. Merrick, Cowbridge, and Andrew P. Brian, Bridgend, all of Wales, assignors to Fiskars Oy Ab, Helsinki, Finland
 Filed Mar. 10, 1993, Ser. No. 5,727
 Claims priority, application United Kingdom, Sep. 11, 1992, 2025662
 Term of patent 14 years
 U.S. Cl. D8—5



354,204
KITCHEN UTENSIL
 Patrick McNaughton, Minneapolis, Minn., assignor to McNaughton Incorporated, Minneapolis, Minn.
 Filed Dec. 30, 1993, Ser. No. 16,960
 Term of patent 14 years
 U.S. Cl. D7—692



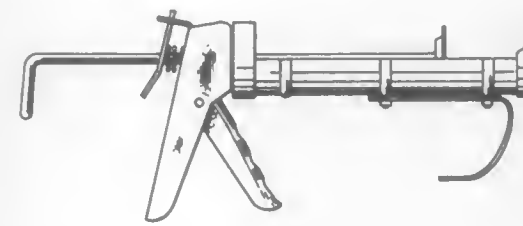
354,206
BLADE FOR A CULTIVATING TOOL
 Albert Künzle, Bischofszell, Switzerland, assignor to Künzle Farma AG, Obersach, Switzerland
 Filed Dec. 1, 1993, Ser. No. 15,855
 Claims priority, application Hague Agreement, Jul. 13, 1993, DM/026680
 Term of patent 14 years
 U.S. Cl. D8—9



354,207
BRAKE ADJUSTER
 Ronald A. Dawson, 20264 DuBols, Clinton Township, Macomb County, Mich. 48035
 Filed Apr. 2, 1993, Ser. No. 6,628
 Term of patent 14 years
 U.S. Cl. D8—14



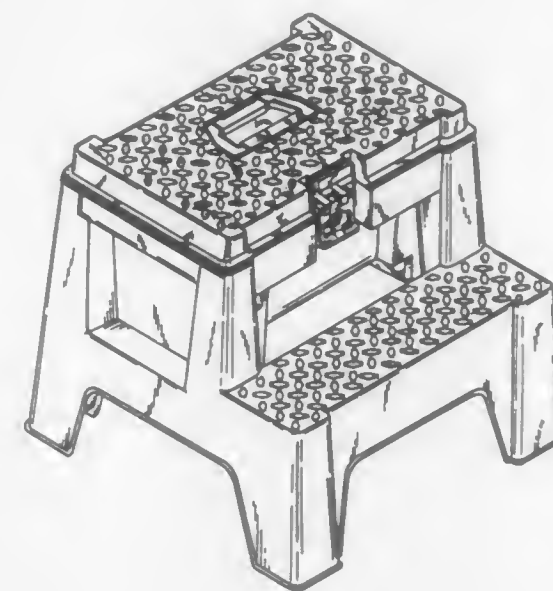
354,208
HOOKEED CAULKING GUN
 Hector C. Vega, 1223 38th Ave., San Francisco, Calif. 94122
 Filed Oct. 19, 1993, Ser. No. 14,401
 Term of patent 14 years
 U.S. Cl. D8—14.1



354,209
STAPLER
 Charles C. Haluska, 19277 E. Tuttle Creek Pl., Walnut, Calif. 91789
 Filed May 3, 1993, Ser. No. 7,778
 Term of patent 14 years
 U.S. Cl. D8—50



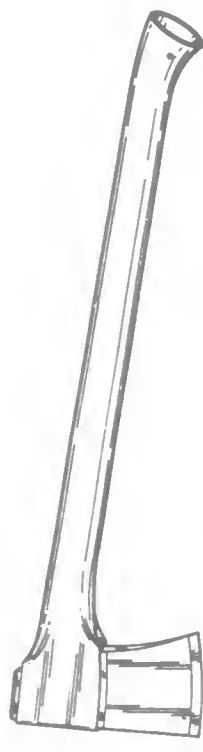
354,210
TWO-STEP TOOL BOX
 Thomas Dickinson, and Bradley D. Gale, both of St. Louis, Mo., assignors to Contico International, Inc., St. Louis, Mo.
 Filed Dec. 9, 1993, Ser. No. 16,194
 Term of patent 14 years
 U.S. Cl. D8—71



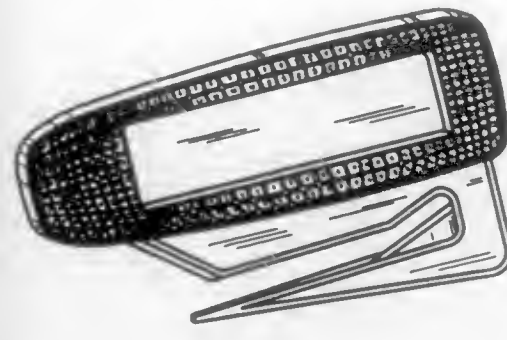
354,211
UNIVERSAL CLAMP
 Emile T. Deaust, 10138 Colwell Dr., Sun Valley, Calif. 91352
 Continuation of Ser. No. 6,137, Mar. 22, 1993, abandoned. This application May 3, 1994, Ser. No. 22,299
 Term of patent 14 years
 U.S. Cl. D8—72



354,212
SPLITTING AXE
Svante Rönholm, Karjaa, and Kenneth Wikström, Helsinki, both of Finland, assignors to Fiskars Oy Ab, Finland
Filed Jan. 15, 1993, Ser. No. 9,544
Term of patent 14 years
U.S. Cl. D8—76



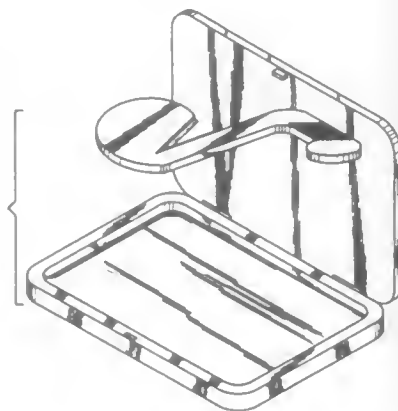
354,214
ENVELOPE OPENER
David P. Lage, Manchester, Mo., assignor to Quick Point, Inc., Fenton, Mo.
Filed Apr. 2, 1993, Ser. No. 6,670
Term of patent 14 years
U.S. Cl. D8—103



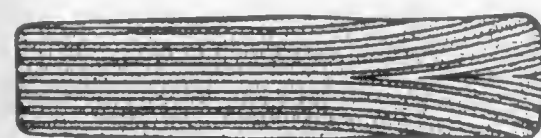
354,215
COMBINATION BICYCLE COMPONENT CLAMP AND MULTI-PURPOSE TOOL
Robert L. Seals, 13524 Autumn Ln., Chico, Calif. 95926
Filed Sep. 21, 1993, Ser. No. 13,224
Term of patent 14 years
U.S. Cl. D12—115



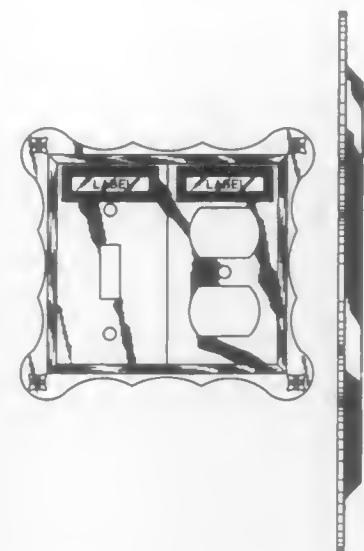
354,213
COMBINED CASE AND SEAT BELT CUTTING TOOL
Larry W. French, Rural Route #2, Tillsonburg, Ontario, Canada N4G 4G7
Filed Sep. 24, 1992, Ser. No. 950,050
Term of patent 14 years
U.S. Cl. D8—98



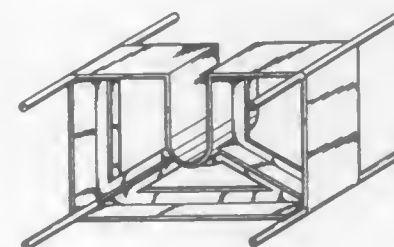
354,216
BICYCLE HANDLEBAR GRIP
Ming-Chang Chen, No. 48, Huan Kung Road, Yung Kang Shih, Tainan Hsien, Taiwan, Prov. of China
Filed Jul. 13, 1993, Ser. No. 10,583
Term of patent 14 years
U.S. Cl. D8—303



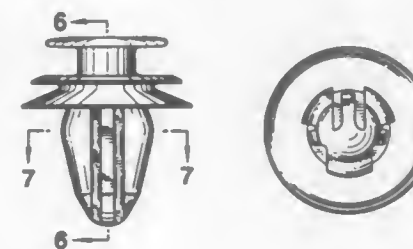
354,217
WALL PLATE
Michael R. Sneary, 357 Grant St., Apartment A, Redlands, Calif. 92373
Filed Feb. 8, 1993, Ser. No. 4,572
Term of patent 14 years
U.S. Cl. D8—350



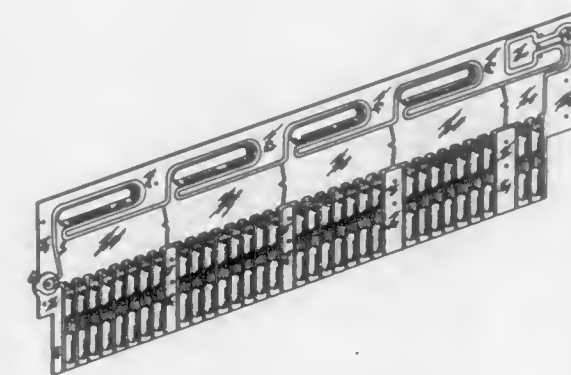
354,218
SPACER FOR USE IN CONCRETE CONSTRUCTION
Christopher Van de Peer, Seven Hills, Australia, assignor to Fiberslab Pty Limited, New South Wales, Australia
Filed Mar. 31, 1993, Ser. No. 6,542
Claims priority, application Australia, Oct. 1, 1992, 2755/92
Term of patent 14 years
U.S. Cl. D8—354



354,219
BOARD CLAMP
Naohiro Shimajiri, Toyota, Japan, assignor to Nifco Inc., Kanagawa, Japan
Filed Dec. 15, 1992, Ser. No. 2,553
Term of patent 14 years
U.S. Cl. D6—382



354,220
CLOSED DISPOSABLE PACKAGE
Donald E. Mahan, Grafton; Kevin R. Kearney, Worcester; Thomas M. Shimei, Franklin, all of Mass.; Ernest Bate, Great Chart, England; Phillip Missing, Egerton, England, and David Robinson, Folkestone, England, assignors to Amoco Corporation, Chicago, Ill.
Filed Sep. 22, 1993, Ser. No. 13,241
Term of patent 14 years
U.S. Cl. D9—341



354,221
DISPENSING PACKAGE WITH TEARDROP FINGER SLOT
Arthur P. Corella, 8166 Vanocoy Ave., North Hollywood, Calif. 91602
Filed Nov. 1, 1993, Ser. No. 14,753
Term of patent 14 years
U.S. Cl. D9—415

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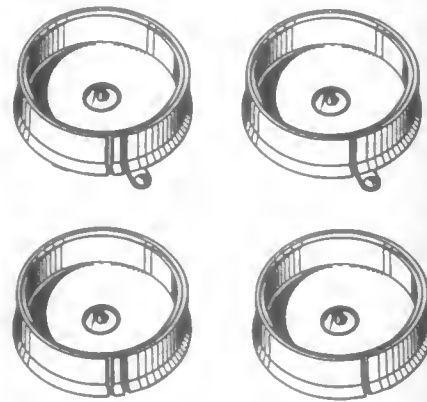
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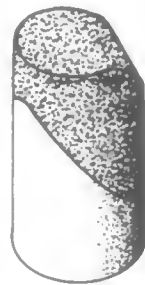
354,222

CAP FOR SEALING OFF AN OPEN END OF A CARTRIDGE

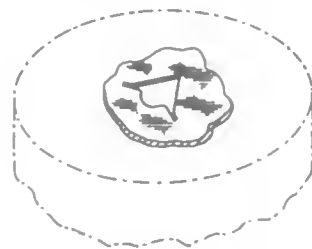
Hugo Nilsson, Gunstorp, Tutaryd, S-341 96 Ljungby, and Karl-Eric Johnsson, Åby, S-340 14 Lagan, both of Sweden
 Filed Aug. 4, 1992, Ser. No. 925,472
 Claims priority, application Sweden, Feb. 14, 1992, 92-0321
 Term of patent 14 years
 U.S. Cl. D9—438

354,223
CAP

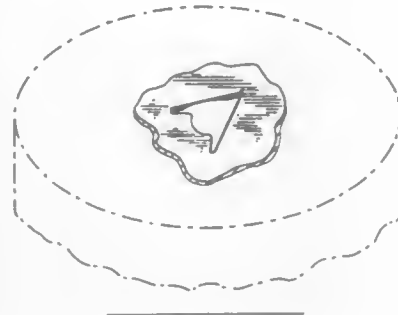
Howard H. McIlvain, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
 Filed Apr. 15, 1993, Ser. No. 7,136
 Term of patent 14 years
 U.S. Cl. D9—444

354,224
WET WIPE DISPENSING PORT FOR POP-UP DISPENSER

Susan M. Norton, Wilmington, Del.; Susan J. Olson-Cummins, Media, Pa., and Cynthia A. Vogt, Wilmington, Del., assignors to Scott Paper Company, Philadelphia, Pa.
 Filed Dec. 28, 1992, Ser. No. 3,100
 Term of patent 14 years
 U.S. Cl. D9—447

354,225
WET WIPE DISPENSING PORT FOR POP-UP DISPENSER

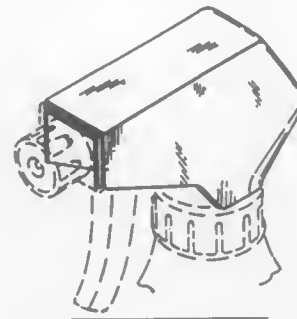
Susan M. Norton, Wilmington, Del.; Susan J. Olson-Cummins, Media, Pa., and Cynthia A. Vogt, Wilmington, Del., assignors to Scott Paper Company, Philadelphia, Pa.
 Filed Dec. 28, 1992, Ser. No. 3,097
 Term of patent 14 years
 U.S. Cl. D9—447



354,226

TRIGGER SPRAYER

Donald D. Foster, and John A. Zurcher, both of St. Charles, Mo., assignors to Contico International, Inc., St. Louis, Mo.
 Filed Nov. 6, 1992, Ser. No. 1,277
 Term of patent 14 years
 U.S. Cl. D9—448



354,227

BEVERAGE CAN-CARRYING DEVICE

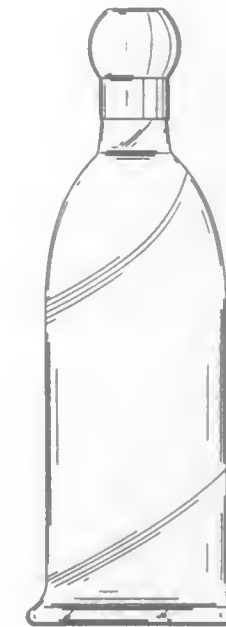
Arthur E. Adami, Andover, Mass.; Christopher P. Amberg, Owings Mills, Md., and William B. Pendergrass, Hanover, Pa., assignors to Sweetheart Cup Company Inc., Owings Mills, Md.
 Continuation-in-part of Ser. No. 882,164, May 12, 1992, which is a continuation-in-part of Ser. No. 741,942, Aug. 8, 1991. This application Aug. 5, 1992, Ser. No. 924,655
 Term of patent 14 years
 U.S. Cl. D9—455



354,228

BOTTLE

Jean-Claude Boisset, Vougeot, France, assignor to Grands Vins Jean Claude Boisset, Nuits Saint Georges, France
 Filed Nov. 2, 1993, Ser. No. 14,768
 Claims priority, application Hague Agreement, May 7, 1993, DM/026 087
 Term of patent 14 years
 U.S. Cl. D9—503



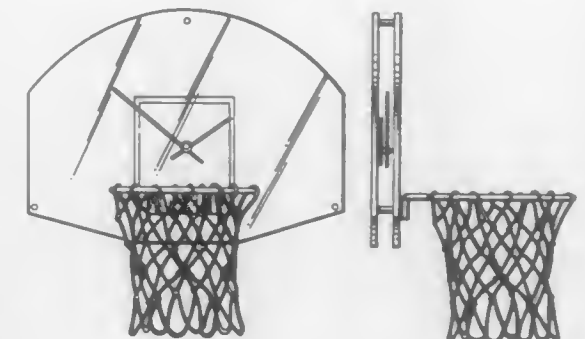
354,230

BOTTLE

Earl Hoyt, Franklin Lakes, N.J., assignor to Benckiser Consumer Products, Inc., Danbury, Conn.
 Filed Feb. 1, 1993, Ser. No. 4,256
 Term of patent 14 years
 U.S. Cl. D9—543

354,231
CLOCK

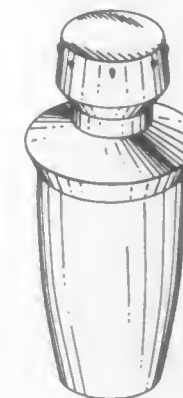
Brendon G. Nunes, 467 Westney Road S., Unit 3, Ajax, Ontario, Canada L1S 6V7
 Filed Aug. 31, 1992, Ser. No. 936,540
 Term of patent 14 years
 U.S. Cl. D10—6



354,229

COMBINED PERFUME BOTTLE AND CLOSURE

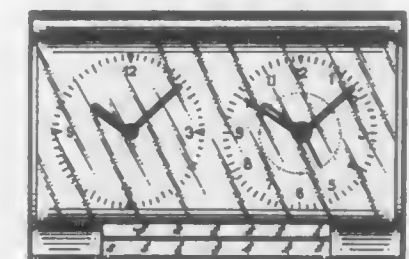
Joel Desgrappes, Paris, France, assignor to Diana De Silva Cosmetics SpA, Italy
 Filed Jun. 9, 1993, Ser. No. 9,274
 Claims priority, application France, Jan. 13, 1993, 930133
 Term of patent 14 years
 U.S. Cl. D9—503



354,232

TRAVEL ALARM CLOCK

Yasuo Inora, Tokyo, Japan, assignor to Seiko Co., Ltd., Japan
 Filed Mar. 1, 1993, Ser. No. 5,302
 Term of patent 14 years
 U.S. Cl. D10—18



VOL

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UMI

354,233
CLOCK

Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Jan. 27, 1993, Ser. No. 4,135
Claims priority, application Japan, Jul. 28, 1992, 4-25538
Term of patent 14 years

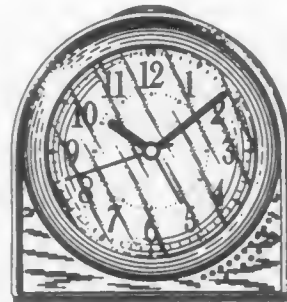
U.S. Cl. D10—23

354,236
CLOCK

Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Jan. 27, 1993, Ser. No. 4,136
Claims priority, application Japan, Jul. 29, 1992, 4-22688
Term of patent 14 years

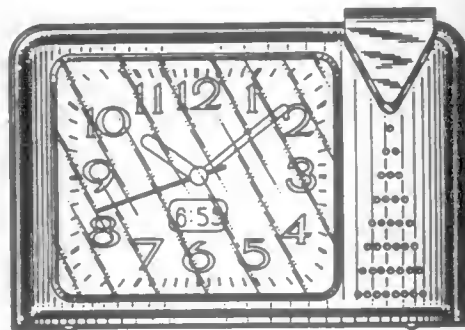
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354,234
CLOCK

Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Jan. 27, 1993, Ser. No. 4,134
Claims priority, application Japan, Jul. 28, 1992, 4-22537
Term of patent 14 years

U.S. Cl. D10—25



354,237

WRIST WATCH WITH ELECTRONIC COMPASS

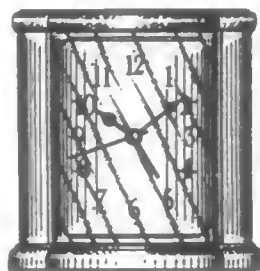
Shingo Ishizaka, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 7,339
Claims priority, application Japan, Nov. 18, 1992, 4-33923;
Dec. 3, 1992, 4-35649Term of patent 14 years
U.S. Cl. D10—31354,235
CLOCK

Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Feb. 16, 1993, Ser. No. 4,927
Term of patent 14 years

U.S. Cl. D10—26



354,238

WRISTWATCH

Paolo Bulgari, Rome, Italy, assignor to Bulgari Time (Switzerland) S.A., Neuchatel, Switzerland

Filed Sep. 24, 1992, Ser. No. 951,412
Claims priority, application Hague Agreement, Mar. 31, 1992, DM/022.466Term of patent 14 years
U.S. Cl. D10—34

354,239

WRIST WATCH

Shingo Ishizaka, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 1,606
Term of patent 14 years

U.S. Cl. D10—38



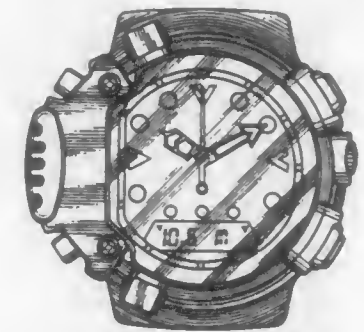
354,242

WRIST WATCH

Shigeru Hanagata, Kawasaki, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 1,604
Term of patent 14 years

U.S. Cl. D10—39



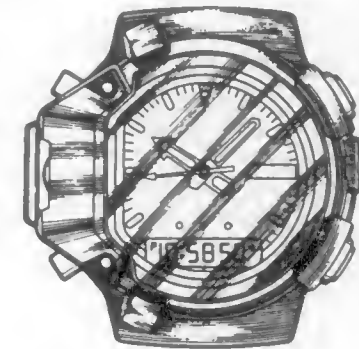
354,240

WRIST WATCH

Shigeru Hanagata, Kawasaki, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

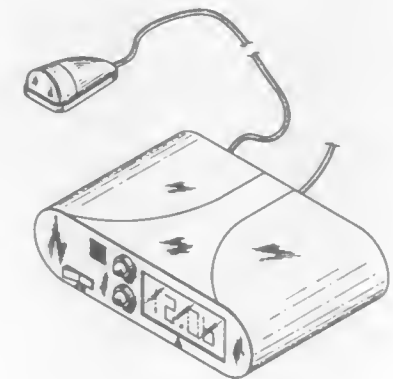
Filed Nov. 17, 1992, Ser. No. 1,605
Term of patent 14 years

U.S. Cl. D10—39



354,243

VEHICLE OBSTACLE DETECTOR

Rogerio Soares, 553 Garfield Ave., Belford, N.J. 07718
Filed Aug. 30, 1993, Ser. No. 12,339Term of patent 14 years
U.S. Cl. D10—70

354,241

COMBINED WRISTWATCH AND BAND PORTIONS THEREFOR

Jean-Pierre Chodat, Auvier, Switzerland, assignor to Ebel S.A., Switzerland

Filed Jun. 24, 1991, Ser. No. 719,569
Claims priority, application Switzerland, Feb. 1, 1991, DMA001425Term of patent 14 years
U.S. Cl. D10—39

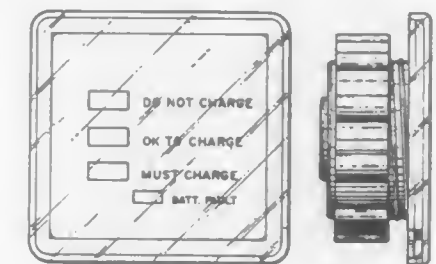
354,244

BATTERY MONITOR

Gerard P. Gibbons, and Vuford L. Lynde, both of Calgary, Canada, assignors to Battery Master Inc., Calgary, Canada

Filed Sep. 3, 1993, Ser. No. 12,528
Term of patent 14 years

U.S. Cl. D10—77



354,245

LETTER WEIGHING DEVICE

Barry S. Walther, 14 Primrose Cottages, Bowdon Vale Altrincham, Cheshire WA14 3EL, United Kingdom

Filed Apr. 20, 1993, Ser. No. 7,371

Claims priority, application United Kingdom, Feb. 11, 1993, 2029037

Term of patent 14 years

U.S. Cl. D10—90



354,246

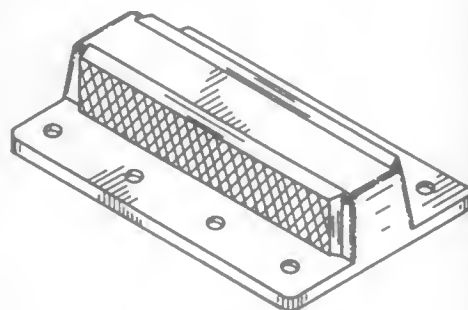
RECTANGULAR HIGHWAY REFLECTOR

Karl Weld, 1276 Robinwood Dr., Elgin, Ill. 60123

Filed May 9, 1994, Ser. No. 22,619

Term of patent 14 years

U.S. Cl. D10—113



354,247

BELL

Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsin Shui Hsiang, Chang Hua Hsien, Taiwan, Prov. of China

Filed Oct. 18, 1993, Ser. No. 14,255

Term of patent 14 years

U.S. Cl. D10—116



354,248

WATCH DIAL

Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Jul. 1, 1992, Ser. No. 907,440

Term of patent 14 years

U.S. Cl. D10—126



354,249

WATCH BAND

Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Jun. 23, 1993, Ser. No. 9,877

Term of patent 14 years

U.S. Cl. D11—3



354,250

WATCH BAND

Ryuhei Ishizaki, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Jun. 23, 1993, Ser. No. 9,852

Term of patent 14 years

U.S. Cl. D11—3



354,252

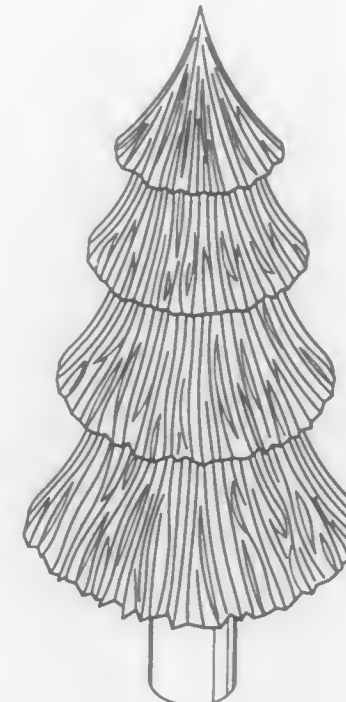
TREE-SHAPED ORNAMENT

Kenneth E. Smith, and Chris L. Smith, both of Tyler, Tex., assignors to Whimsy Pudding, Inc., Tyler, Tex.

Filed Sep. 16, 1993, Ser. No. 13,054

Term of patent 14 years

U.S. Cl. D11—118



354,253

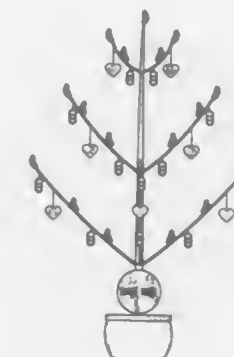
ARTIFICIAL TREE

Teresa D'Abarno, P.O. Box 82621, Pittsburg, Pa. 15218

Filed Dec. 13, 1993, Ser. No. 16,311

Term of patent 14 years

U.S. Cl. D11—118



354,251

BANNER PIN

A. LaMont Fisher, 1509 Clearview Dr., Mesquite, Tex. 75181

Filed May 26, 1993, Ser. No. 8,767

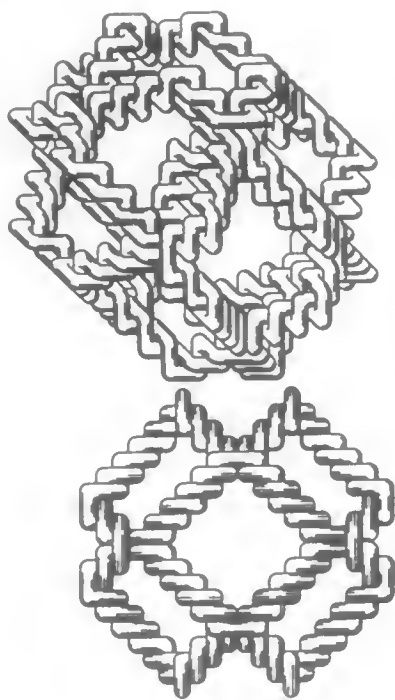
Term of patent 14 years

U.S. Cl. D11—44



354,254
SCULPTURE

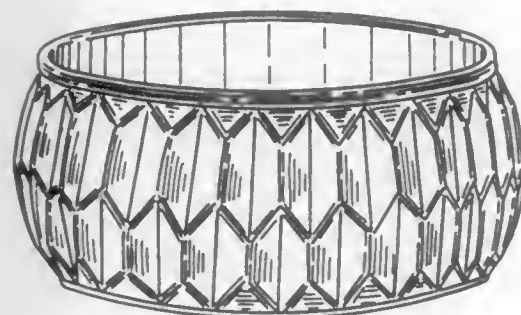
R. Morris Fuller, 400 Park Pl., Newport News, Va. 23601
Filed Jun. 9, 1993, Ser. No. 9,260
Term of patent 14 years
U.S. Cl. D11-131



354,256

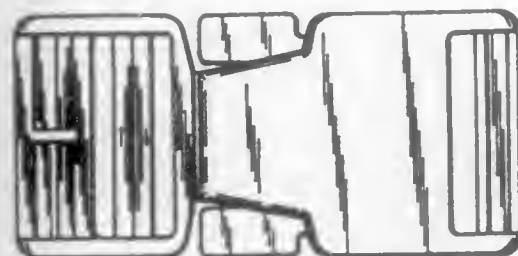
BASE FOR ORNAMENTAL DISPLAY HOUSING

Jack Hou, Taipei, assignor to Giftex Ltd., Chantilly, Va.
Filed Dec. 9, 1993, Ser. No. 16,166
Term of patent 14 years
U.S. Cl. D11-164



354,257
BUCKLE

Richard J. Rekuc, Pattenburg, N.J., assignor to Sudhaus of America, Phillipsburg, N.J.
Filed Oct. 15, 1993, Ser. No. 14,314
The portion of the term of this patent subsequent to Dec. 20, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11-216



354,255

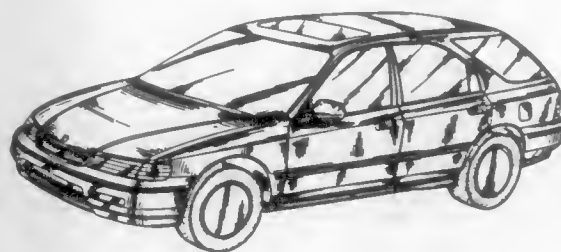
COMBINED MINIATURE HORSE AND STAND

Caroline S. Devillez, 10910 Rustic Manor La., Austin, Tex. 78750
Filed Apr. 14, 1992, Ser. No. 868,550
Term of patent 14 years
U.S. Cl. D11-159



354,258
VEHICLE

Yutaka Ikeda, Rolling Hills Estates; David Marek, Los Angeles; Tsuyoshi Nishimura, Rolling Hills Estates, and Masakazu Udagawa, Rancho Palos Verdes, all of Calif., assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 13, 1993, Ser. No. 7,000
Term of patent 14 years
U.S. Cl. D12-91



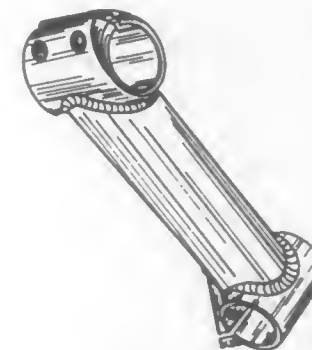
354,259

BICYCLE STEM

Martin I. Kurke, 121 Penn St., El Segundo, Calif. 90245, and Bob Morales, 19962 Lexington Ave., Huntington Beach, Calif. 92646

Filed Jul. 26, 1993, Ser. No. 11,059
Term of patent 14 years

U.S. Cl. D12-118



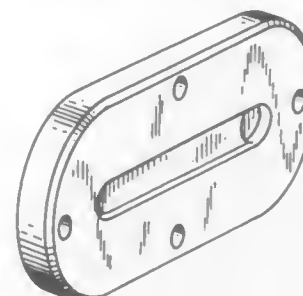
354,260

MOTORCYCLE CHAIN GUARD COVER

William G. Davidson, Delafield, and Louis Netz, Grafton, both of Wis., assignors to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Dec. 9, 1993, Ser. No. 16,152

Term of patent 14 years

U.S. Cl. D12-127



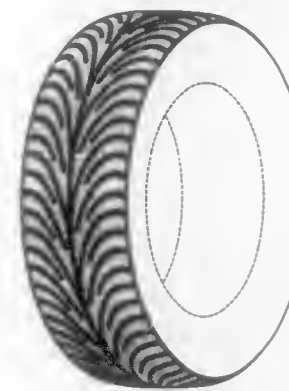
354,261

TREAD FOR A TIRE

Maurice Grass, Reichlange, Luxembourg, assignor to The Good-year Tire & Rubber Company, Akron, Ohio
Filed Sep. 13, 1993, Ser. No. 12,860

Term of patent 14 years

U.S. Cl. D12-147

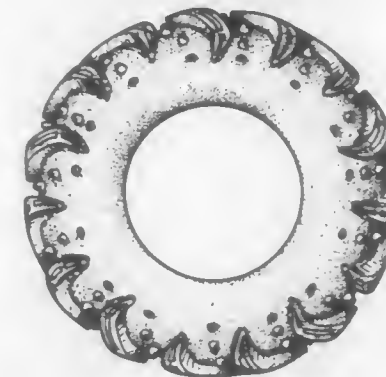


354,262
TIRE

Mark J. Harms, P.O. Box 983, Valley Center, Calif. 92082
Filed Oct. 19, 1992, Ser. No. 551

The portion of the term of this patent subsequent to Dec. 14, 2007, has been disclaimed.
Term of patent 14 years

U.S. Cl. D12-151



354,263

EXTENDABLE TRAILER HITCH

Kelly E. Clark, and Mary Clark, both of 122 Virginia St., Yerington, Nev. 89447

Filed Aug. 18, 1993, Ser. No. 11,904

Term of patent 14 years

U.S. Cl. D12-162



354,264

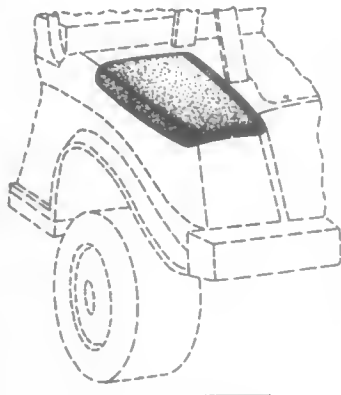
SCUFF GUARD FOR A VEHICLE FENDER

Paul A. McCoy, Augusta, Ga., assignor to Club Car, Inc., Augusta, Ga.

Filed Jul. 26, 1993, Ser. No. 11,096

Term of patent 14 years

U.S. Cl. D12—167



354,265

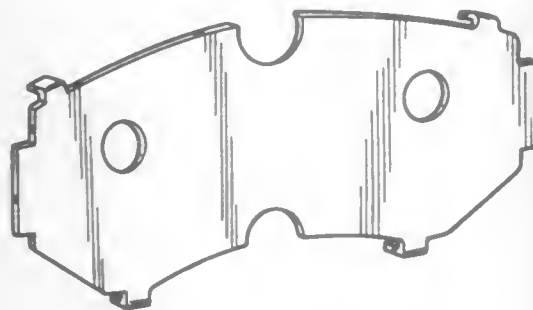
DISC BRAKE SHIM

Gustav J. Steinke, and Staria D. Huffer, both of Lima, Ohio, assignors to International Brake Industries, Inc., Lima, Ohio

Filed Nov. 25, 1991, Ser. No. 797,762

Term of patent 14 years

U.S. Cl. D12—180



354,266

REAR VIEW MIRROR

Neil H. Mingledorff, P.O. Box 14145, Savannah, Ga. 31416-1145

Filed Oct. 25, 1993, Ser. No. 14,513

Term of patent 14 years

U.S. Cl. D12—187



354,267

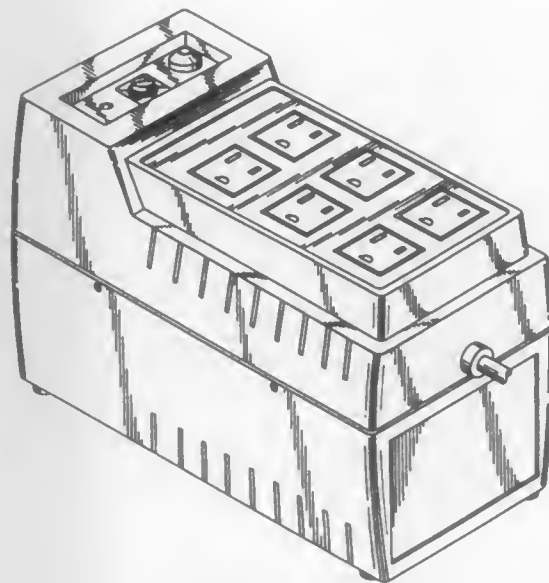
POWER SUPPLY

Alex J. Severinsky, 10904 Pebble Run Dr., Silver Spring, Md. 20902

Filed Apr. 26, 1993, Ser. No. 7,504

Term of patent 14 years

U.S. Cl. D13—110



354,268

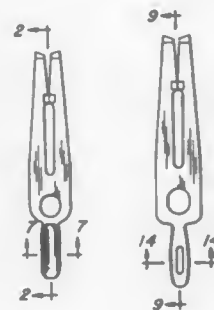
TELECOMMUNICATIONS TERMINAL CLIP

John A. Siemon, Woodbury, and Howard Reynolds, Waterbury, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Continuation of Ser. No. 932,495, Oct. 20, 1992. This application Oct. 19, 1993, Ser. No. 14,351

Term of patent 14 years

U.S. Cl. D13—133



354,269

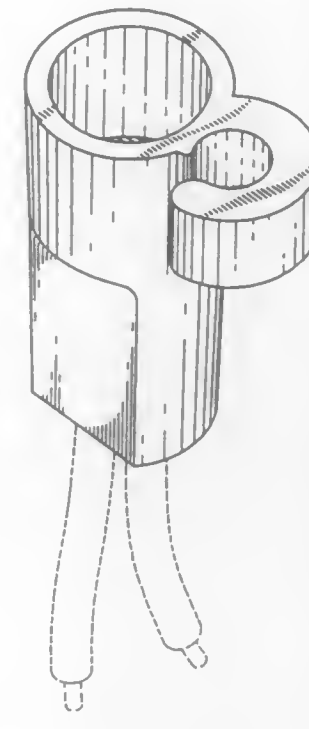
COMBINED MIDGET LAMP SOCKET AND CLIP

Ching C. Liu, No. 4, Lane 16, Kwang Hua South Street, Hsin-Chu, Taiwan, Prov. of China

Filed Nov. 1, 1993, Ser. No. 14,865

Term of patent 14 years

U.S. Cl. D13—134



354,271

FIBER OPTIC INTERCHANGEABLE TRANSCEIVER MODULE

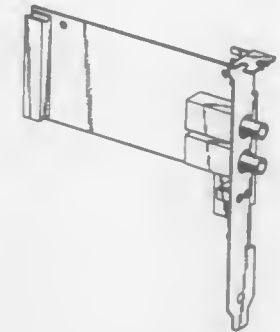
Benjamin T. Speiser, San Francisco, and Lloyd N. Oliver, Milpitas, both of Calif., assignors to 3 Com Corporation, Santa Clara, Calif.

Filed May 17, 1993, Ser. No. 8,376

The portion of the term of this patent subsequent to Dec. 27, 2008, has been disclaimed.

Term of patent 14 years

U.S. Cl. D13—146



354,272

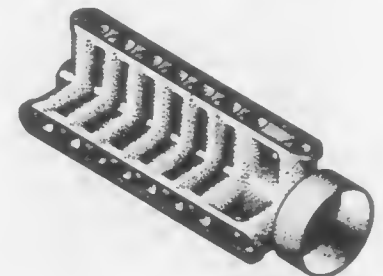
INSULATIVE ELECTRICAL CONNECTOR COVER

Brian Reed, Amelia, Ohio, assignor to Eger Products, Inc., Cincinnati, Ohio

Filed Jun. 21, 1993, Ser. No. 9,757

Term of patent 14 years

U.S. Cl. D13—156



354,270

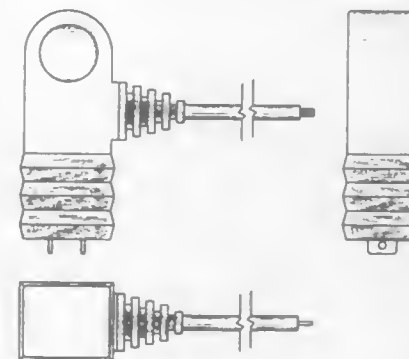
SHOCK PROOF WALL PLUG

Glenn E. Cichoracki, 69289 N. Main St., Richmond, Mich. 48062

Filed Dec. 21, 1993, Ser. No. 16,633

Term of patent 14 years

U.S. Cl. D13—138



354,273

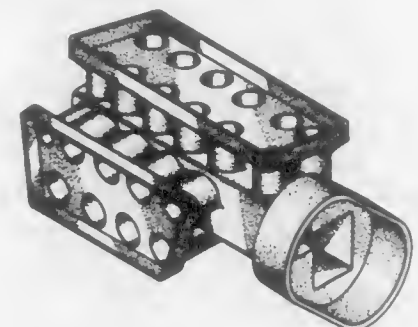
INSULATIVE ELECTRICAL CONNECTOR COVER FOR Z-SHAPED CONNECTOR

Brian Reed, Amelia, Ohio, assignor to Eger Products, Inc., Cincinnati, Ohio

Filed Jun. 21, 1993, Ser. No. 9,789

Term of patent 14 years

U.S. Cl. D13—156

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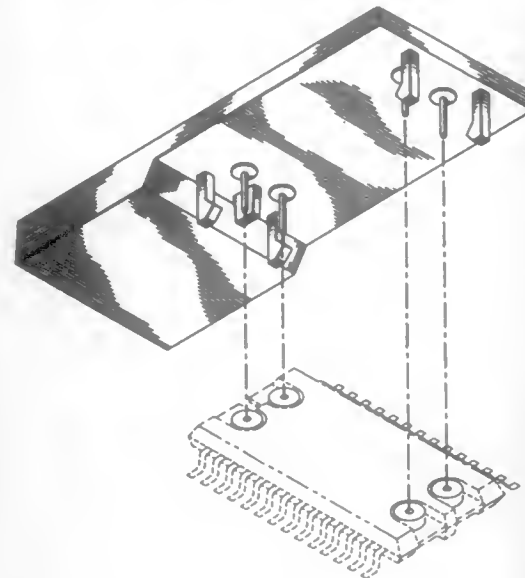
UMI

354,274
LOW-PROFILE DETACHABLE INTEGRATED CIRCUIT MODULE

Harry M. Siegel, Hurst; Tom Q. Lao, Irving; Krishnan Kelappan, Carrollton, and Michael J. Hundt, Double Oak, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 8, 1994, Ser. No. 21,051
Term of patent 14 years

U.S. Cl. D13-182

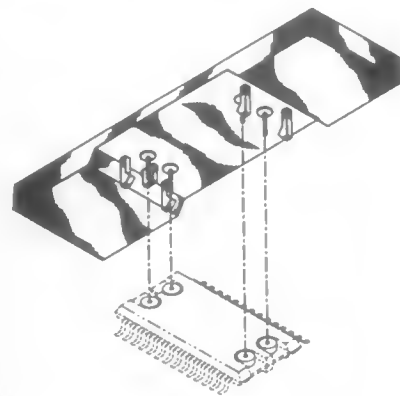


354,275
LOW-PROFILE DETACHABLE INTEGRATED CIRCUIT MODULE

Harry M. Siegel, Hurst; Tom Q. Lao, Irving; Krishnan Kelappan, Carrollton, and Michael J. Hundt, Double Oak, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 8, 1994, Ser. No. 21,052
Term of patent 14 years

U.S. Cl. D13-182

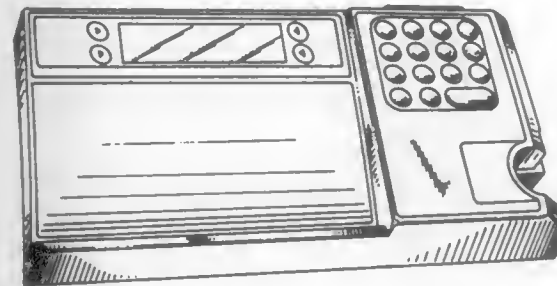


354,276
RETAIL TRANSACTION TERMINAL

Martin B. Wilson, Webster, N.Y., assignor to Netlink Transaction Systems Corp., Victor, N.Y.

Filed Jun. 24, 1992, Ser. No. 904,106
Term of patent 14 years

U.S. Cl. D14-105

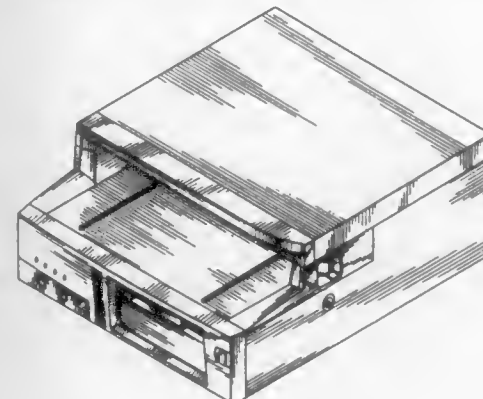


354,277
DOCKING STATION FOR A NOTEBOOK COMPUTER

Hiroyuki Kuzumoto, Tokyo; Masashi Odagiri; Motoharu Yamaguchi, both of Yamagata; Takayuki Yoshimoto, and Kenichi Yamauchi, both of Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 7,377
Claims priority, application Japan, Oct. 27, 1992, 4-31416
Term of patent 14 years

U.S. Cl. D14-107



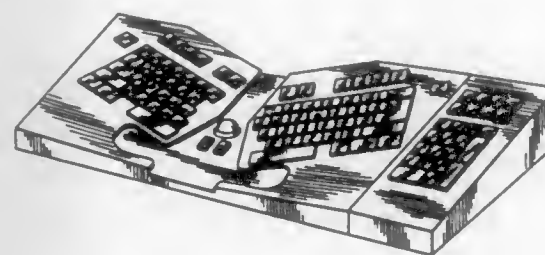
D 354,278

Patent Not Issued For This Number

354,279
KEYBOARD

David C. Ciccone, 2320 Fifth Ave., San Diego, Calif. 92101
Filed Feb. 16, 1993, Ser. No. 4,785
Term of patent 14 years

U.S. Cl. D14-115



354,280
RADIO FREQUENCY PACKET MODEM

William E. Fenton, 16476-84A Avenue, Surrey, British Columbia, Canada V4N 3G8

Filed Sep. 7, 1993, Ser. No. 12,582
Term of patent 14 years

U.S. Cl. D14-107

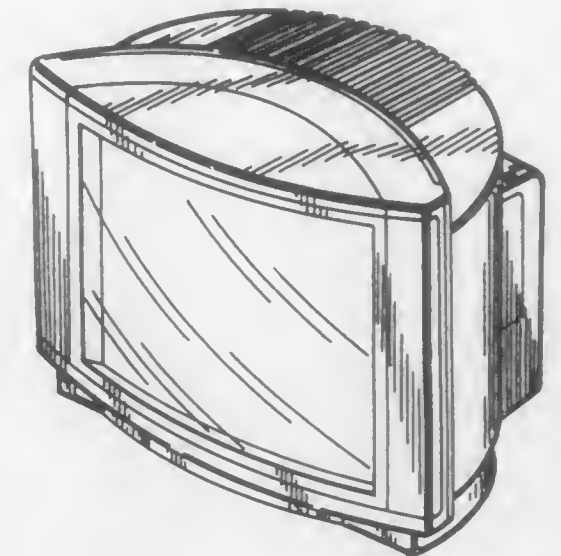


354,282
TELEVISION RECEIVER

Kee S. Koo, and Bong K. Choi, both of Sween City, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Aug. 31, 1992, Ser. No. 938,475
Claims priority, application Rep. of Korea, Mar. 30, 1992, 4686

Term of patent 14 years
U.S. Cl. D14-126

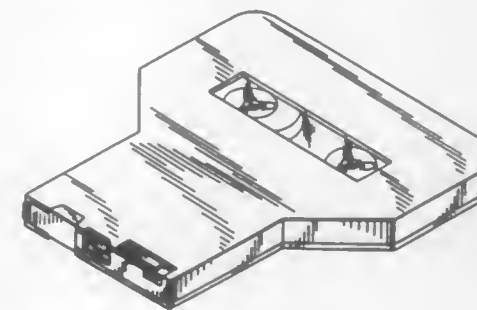


354,281
MAGNETIC TAPE CARTRIDGE

Masayuki Kinoshita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,540
Claims priority, application Japan, Dec. 12, 1991, 3-37538
Term of patent 14 years

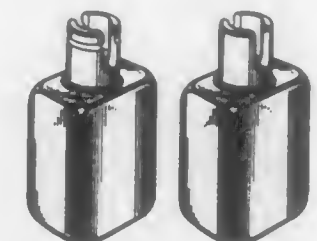
U.S. Cl. D14-121



354,283
SURGICAL HANDPIECE TIP PROTECTOR

George W. Rhen, Jr., Sinking Springs, and Gregory A. Auchter, Mt. Penna, both of Pa., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Apr. 20, 1993, Ser. No. 7,332
Term of patent 14 years
U.S. Cl. D24-130



354,284

PORTABLE TELEPHONE

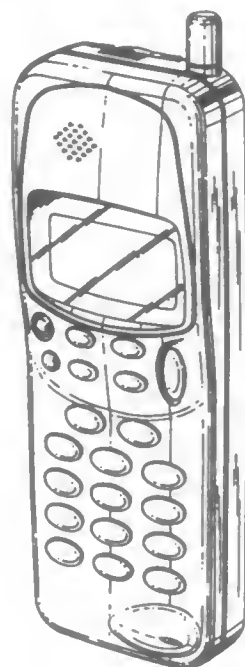
Adam White, London, United Kingdom, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Dec. 7, 1993, Ser. No. 16,105

Claims priority, application United Kingdom, Jun. 10, 1993, 2031659

Term of patent 14 years

U.S. Cl. D14—138



354,286

TELECOMMUNICATION RECEIVER

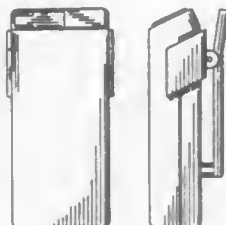
Gert Van Wijnen, Emmercompascuum, Netherlands, assignor to Ericsson Radio Systems, B.V., Va Emmen, Netherlands

Filed Jan. 28, 1993, Ser. No. 4,156

Claims priority, application Hague Agreement, Aug. 10, 1992, DM/023616

Term of patent 14 years

U.S. Cl. D14—191



354,287

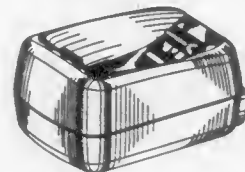
TELEPHONE HANDSET HOLDER

Masaru Tokiyama, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1993, Ser. No. 14,744

Term of patent 14 years

U.S. Cl. D14—253



354,288

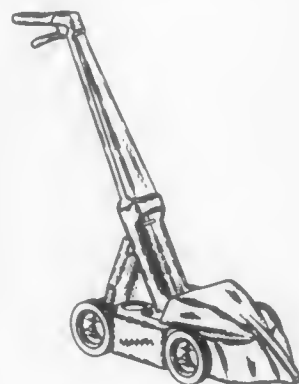
PAINT STRIPER

Jesus J. Peña, Yorba Linda, Calif., assignor to Aervoe-Pacific Company, Inc., Gardnerville, Nev.

Filed Oct. 29, 1993, Ser. No. 14,727

Term of patent 14 years

U.S. Cl. D15—13



354,285

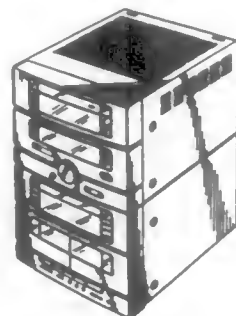
COMBINED STEREO SYSTEM WITH COMPACT DISC PLAYER

Hye C. Lee, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 13, 1992, Ser. No. 1,428

Term of patent 14 years

U.S. Cl. D14—168



354,289

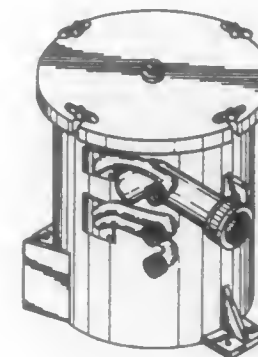
CEMENT MIXER

Charles G. Fortenberry, and C. N. Boykin, both of 71 Old Hwy, Carolyn Monti, 643 Abbey Ct., Rochester Hills, Mich. 48307

Filed Aug. 30, 1993, Ser. No. 12,268

Term of patent 14 years

U.S. Cl. D15—19



354,290

MANURE SPREADER

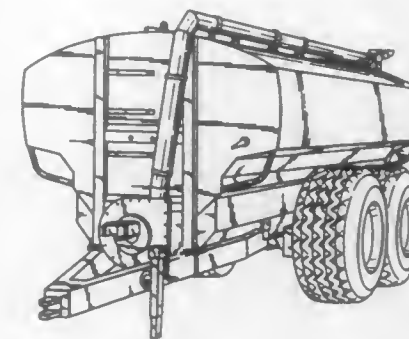
Michel Houle, Wickman, Canada, assignor to J. Houle Et Fils Inc., Drummondville, Canada

Filed Feb. 12, 1993, Ser. No. 4,780

Claims priority, application Canada, Dec. 29, 1992, 29-12-92-3

Term of patent 14 years

U.S. Cl. D15—27



354,291

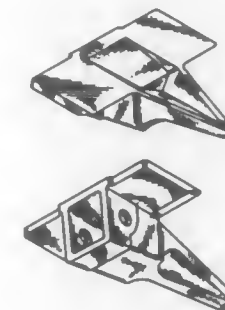
TOOTH FOR A POWER DIGGER

Gerald D. Edwards, Apt. #1301, 8801 Hammerly St., Houston, Tex. 77080

Filed Oct. 12, 1993, Ser. No. 14,054

Term of patent 14 years

U.S. Cl. D15—29



354,292

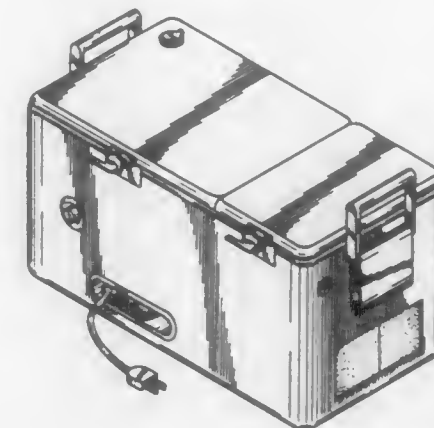
PORTABLE ICE MAKER

Carolyn Monti, 643 Abbey Ct., Rochester Hills, Mich. 48307

Filed Mar. 23, 1993, Ser. No. 6,179

Term of patent 14 years

U.S. Cl. D15—80



354,293

OIL FILTER CRUSHER ASSEMBLY

David B. Brown, Jr., 204 Trinity Way, Greenville, S.C. 29608

Continuation of Ser. No. 979,660, Nov. 20, 1992, Pat. No. 5,331,808. This application Oct. 7, 1993, Ser. No. 13,956

Term of patent 14 years

U.S. Cl. D15—123



354,294

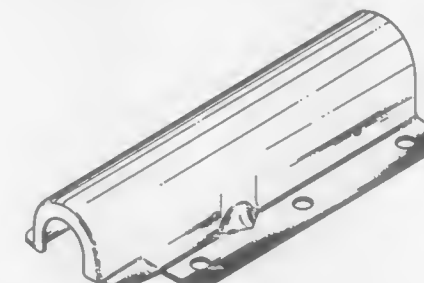
BEARING BRACKET

Sang I. Lee, Seoul, Rep. of Korea, assignor to Bloxwich Korea Co., Ltd., Kyongju City, Rep. of Korea

Filed Aug. 18, 1993, Ser. No. 11,946

Term of patent 14 years

U.S. Cl. D15—143

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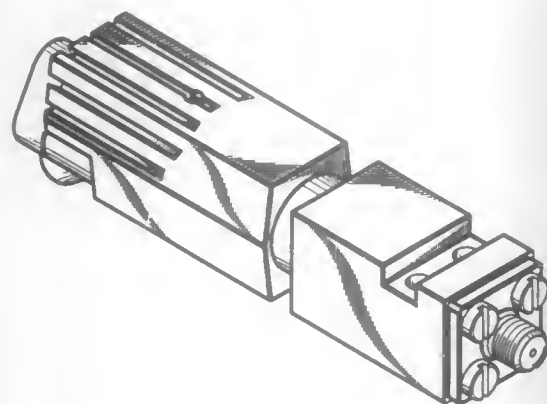
354,295

FLUID DISPENSING MODULE FOR DISPENSING HEATED FLUIDS, SUCH AS HOT MELT ADHESIVE
John T. Walsh, Duluth; Timothy M. Hubbard, Canton, and Taiwo T. Osinaiya, Stone Mountain, all of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Nov. 8, 1993, Ser. No. 15,099

Term of patent 14 years

U.S. Cl. D15—144.2



354,297

WET AND DRY PROCESSOR

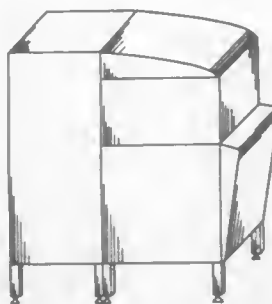
Wolfgang Pokorny, Donaueschingen, Germany, assignor to Pokorny GmbH, Donaueschingen, Germany

Filed Mar. 15, 1993, Ser. No. 6,091

Claims priority, application Hague Agreement, Sep. 15, 1992, DM/023 889

Term of patent 14 years

U.S. Cl. D15—199



354,298

SUNGLASSES WITH HOLOGRAPHIC LENS

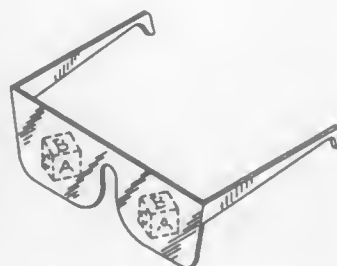
William C. W. Keong, Singapore, Singapore, assignor to Lityan Systems (S) PTE Ltd., Singapore

Filed Apr. 19, 1993, Ser. No. 7,355

Claims priority, application United Kingdom, Oct. 27, 1992, 2026704

Term of patent 14 years

U.S. Cl. D16—306



354,299

REVERSE MICROSCOPE

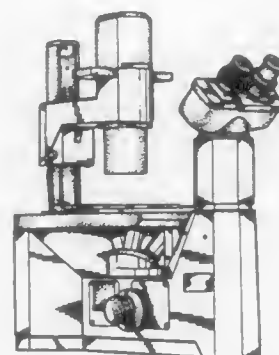
Ernest Hofmann-Igl, Davos-Platz, Switzerland, assignor to Lecia Mikroskope und Systeme GmbH, Wetzlar, Germany

Filed Mar. 1, 1993, Ser. No. 5,286

Claims priority, application Germany, Sep. 1, 1992, 9206486

Term of patent 14 years

U.S. Cl. D16—131



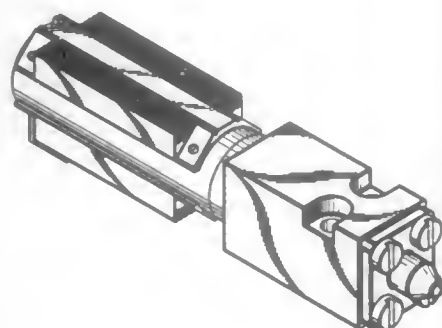
354,296

FLUID DISPENSING MODULE FOR DISPENSING HEATED FLUIDS, SUCH AS HOT MELT ADHESIVE
John T. Walsh, Duluth, Ga., assignor to Nordson Corporation, Westlake, Ohio

Filed Nov. 8, 1993, Ser. No. 15,096

Term of patent 14 years

U.S. Cl. D15—144.2



354,300

COMBINED VIDEO TAPE RECORDER AND CAMERA

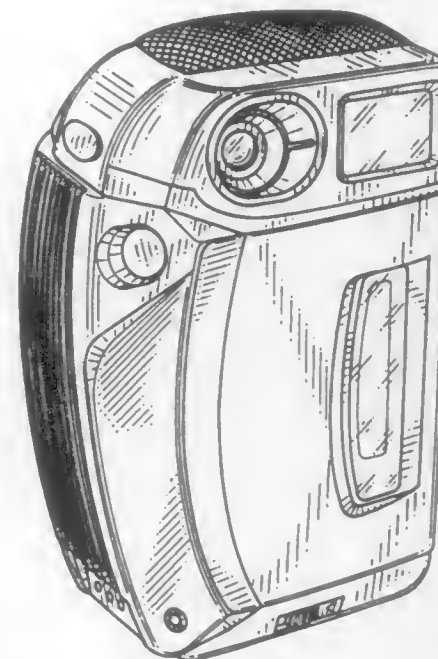
Takao Ina, and Hiroshi Fukuda, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 17, 1993, Ser. No. 11,872

Claims priority, application Japan, Feb. 25, 1993, 5-5396

Term of patent 14 years

U.S. Cl. D16—202



354,302

IMPRINTER FOR DEBIT AND CREDIT CARDS

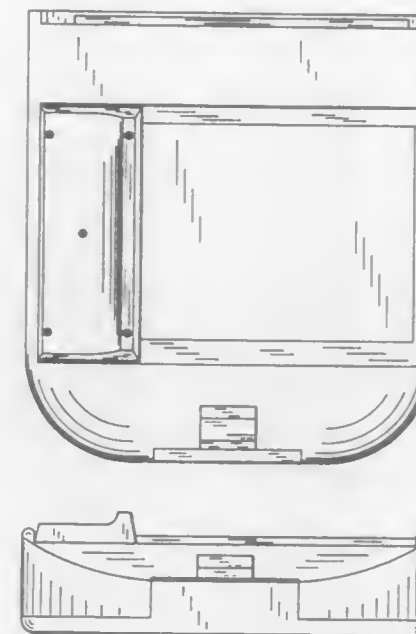
Ståle Lønnum, Kariåsen 25, N-8610 Grubhei, Norway

Filed May 24, 1993, Ser. No. 8,713

Claims priority, application Norway, Nov. 24, 1992, 920951

Term of patent 14 years

U.S. Cl. D18—14



354,301

TAMBOURINE

Efraim Sahlev, Laurel Canyon Annex, North Hollywood, Calif. 91605

Filed Oct. 20, 1993, Ser. No. 14,411

Term of patent 14 years

U.S. Cl. D17—22



354,303

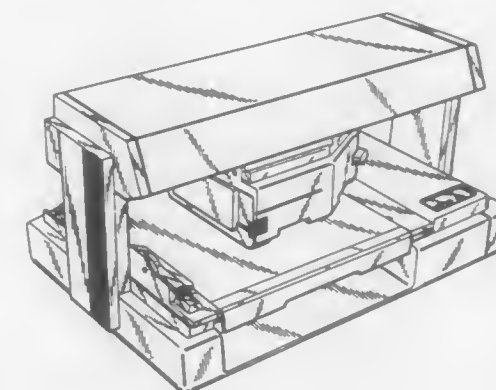
HOT DEBOSSING STAMPER MACHINE

Daniel T. Noonan, Greene, N.Y.; Charles T. Groszwith, III, Los Altos, Calif.; Barry C. Kockler, Lewisville, and Gerald D. Perry, The Colony, both of Tex., assignors to Taurus Impressions, Inc., Mountain View, Calif.

Filed Jun. 17, 1993, Ser. No. 10,716

Term of patent 14 years

U.S. Cl. D18—15



354,304

ELECTRONIC COPIER

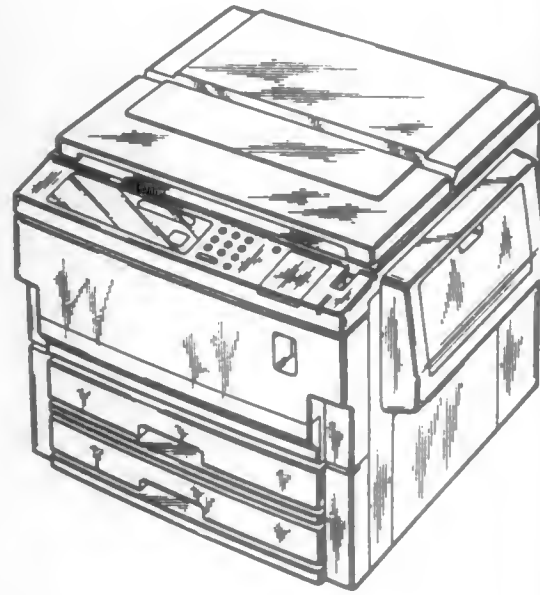
Masaaki Ishibashi, Kunitachi; Takeshi Komada, Yokosuka, and Ryoichi Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 3,608

Claims priority, application Japan, Jul. 14, 1992, 4-21052

Term of patent 14 years

U.S. Cl. D18—36



354,306

SORTER FOR COPYING MACHINE

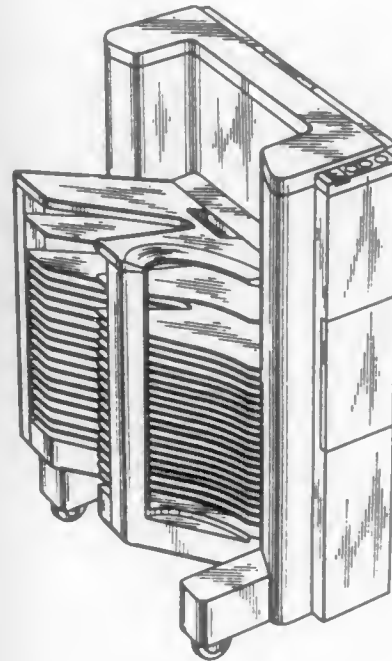
Hisakazu Shimizu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 10,877

Claims priority, application Japan, Jan. 22, 1993, 5-1459

Term of patent 14 years

U.S. Cl. D18—48



354,305

COPYING MACHINE

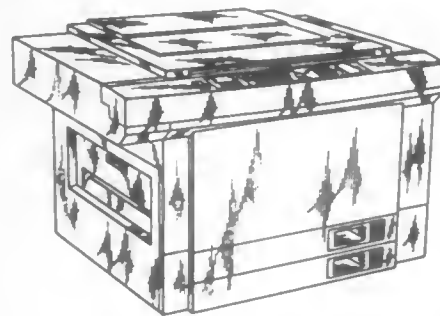
Noriyuki Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 7,706

Claims priority, application Japan, Nov. 13, 1992, 4-33547

Term of patent 14 years

U.S. Cl. D18—39



354,307

AUTOMATIC DOCUMENT FEEDER FOR COPYING MACHINE

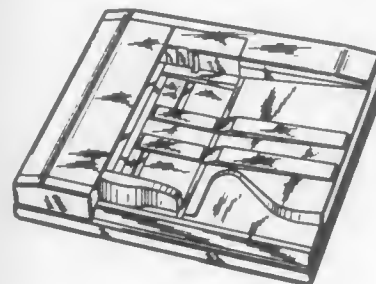
Ei Yamamoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 7,070

Claims priority, application Japan, Oct. 20, 1992, 4-30695

Term of patent 14 years

U.S. Cl. D18—49



354,308

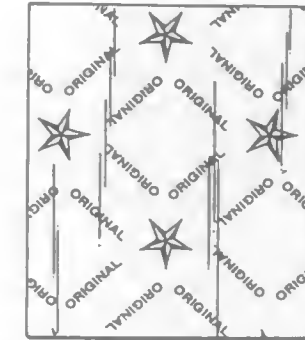
SAFETY PAPER

Douglas L. Cornwell, Upshur, W. Va., and Sue A. DeRose, Lindenhurst, Ill., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 20, 1993, Ser. No. 13,146

Term of patent 14 years

U.S. Cl. D19—5



354,310

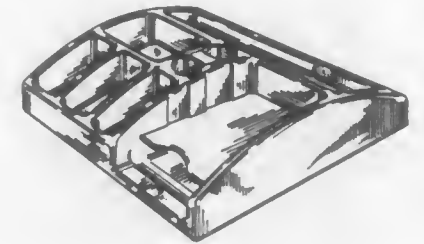
DESK DRAWER ORGANIZER

Craig W. Crist, Muscatine, Iowa, and Robert Russell, Kentwood, Mich., assignors to Ring King Visibles, Inc., Muscatine, Iowa

Filed Nov. 18, 1993, Ser. No. 15,488

Term of patent 14 years

U.S. Cl. D19—75



354,311

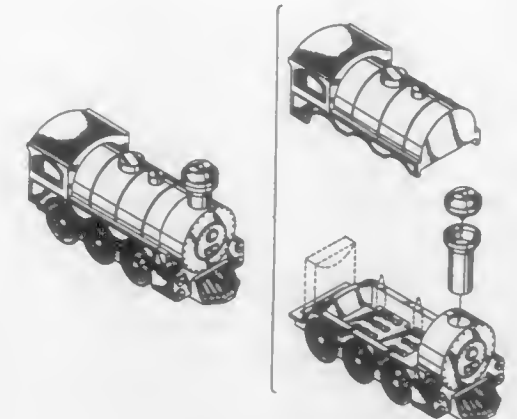
WRITING INSTRUMENT CONTAINER

Richard A. Tarozzi, Gales Ferry, Conn., assignor to Binney & Smith Inc., Easton, Pa.

Continuation of Ser. No. 118,455, Sep. 8, 1993. This application Oct. 5, 1993, Ser. No. 13,881

Term of patent 14 years

U.S. Cl. D19—82



354,309

COMBINED PEN AND WATCH

Chun C. Lin, Kowloon, Hong Kong, assignor to Sutech (Hong Kong) Limited, Hong Kong

Filed Sep. 22, 1993, Ser. No. 13,334

Term of patent 14 years

U.S. Cl. D19—36



354,312

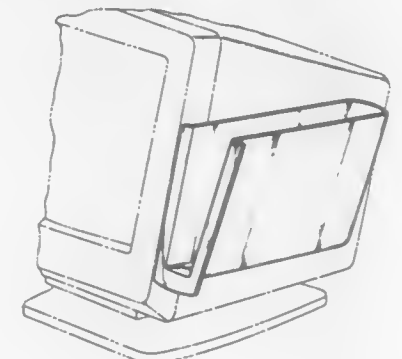
VERTICAL FILE FOR COMPUTER MONITOR

J. Kipton Pohlman, Los Angeles, Calif., assignor to MicroComputer Accessories, Inc., Inglewood, Calif.

Filed Sep. 7, 1993, Ser. No. 12,591

Term of patent 14 years

U.S. Cl. D19—90



354,313

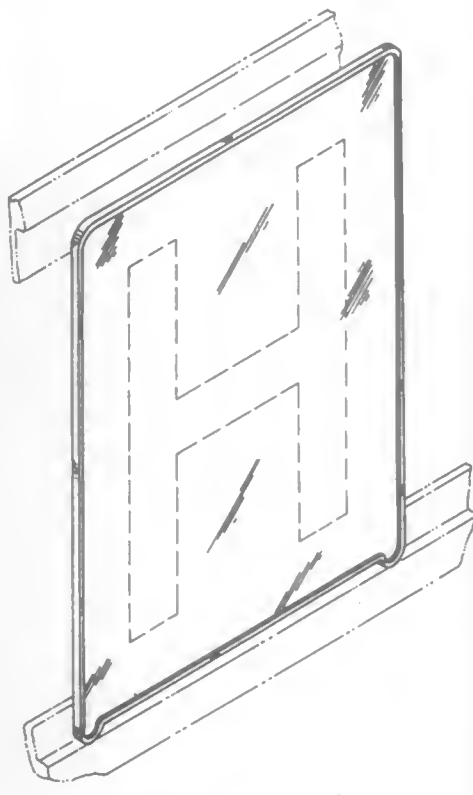
BLANK FOR CHANGEABLE ALPHA NUMERIC CHARACTERS

David A. Schmitt, Hastings, Minn., assignor to Gemini, Inc., Cannon Falls, Minn.

Filed Jan. 15, 1993, Ser. No. 3,535

Term of patent 14 years

U.S. Cl. D20—12



354,315

DISTRIBUTION UNIT FOR MULTIPLE CONTROLLERS FOR VIDEO GAMES

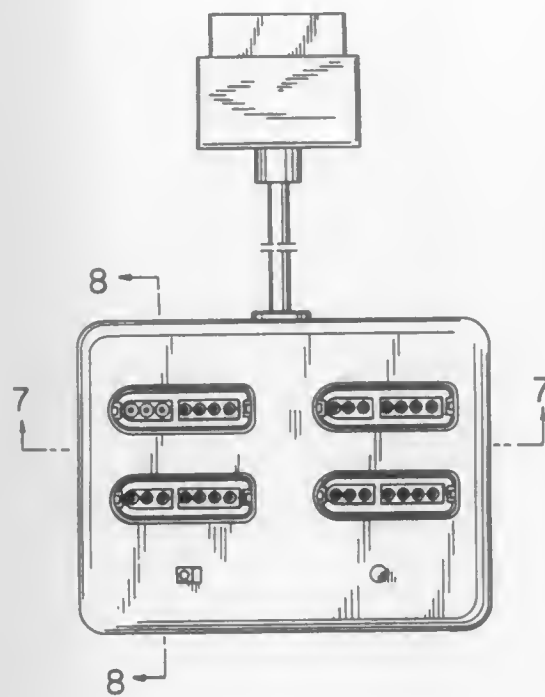
Yutaka Nakanishi, Tokyo, Japan, assignor to Yonezawa Corporation, Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 6,938

Claims priority, application Japan, Nov. 5, 1992, 4-32377
The portion of the term of this patent subsequent to Aug. 9, 2008, has been disclaimed.

Term of patent 14 years

U.S. Cl. D21—48



354,314

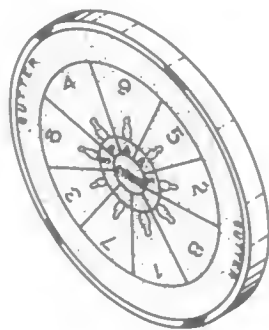
DART BOWLING GAME

George A. Steininger, 474 W. Oakwood Ave., Orange City, Fla. 32763

Filed Jan. 19, 1993, Ser. No. 3,746

Term of patent 14 years

U.S. Cl. D21—6



354,316

CONTROLLER FOR VIDEO GAME MACHINE

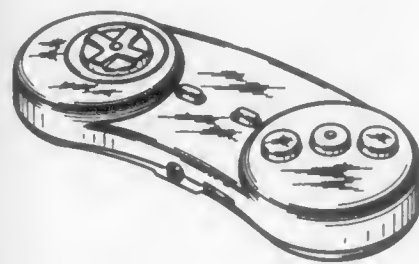
Shigeo Hiraoka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 27, 1993, Ser. No. 14,606

Claims priority, application Japan, May 17, 1993, 5-14335

Term of patent 14 years

U.S. Cl. D21—48



354,317

KALEIDOSCOPE WAND

Brian K. Prothro, 8427 Rock Cliff Dr., Jonestown, Tex. 78645

Filed Jan. 4, 1993, Ser. No. 9,821

Term of patent 14 years

U.S. Cl. D21—59



354,320

DOLL

Deborah Ornelas, 708 Palisades St., Pasadena, Calif. 91103

Filed Nov. 18, 1993, Ser. No. 15,501

Term of patent 14 years

U.S. Cl. D21—171



354,318

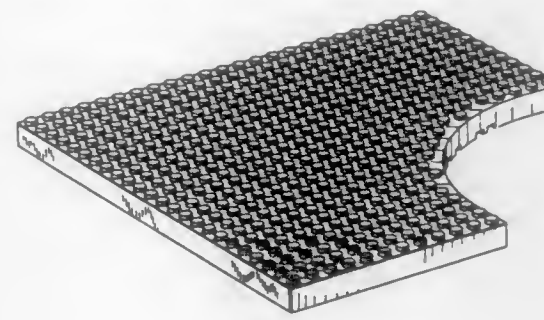
ELEMENT FOR A TOY BUILDING SET

Jan Ryaa, Billund, and Birthe G. Vorre, Vejle, both of Denmark, assignors to Interlego A.G., Baar, Switzerland

Filed Sep. 22, 1993, Ser. No. 13,328

Term of patent 14 years

U.S. Cl. D21—108



354,321

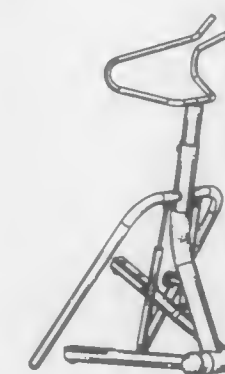
STAIRCLIMBER EXERCISE

William E. Clem, Bothell, Wash., assignor to Tanturi, Inc., Redmond, Wash.

Filed Apr. 19, 1993, Ser. No. 7,302

Term of patent 14 years

U.S. Cl. D21—195



354,319

TOY BUILDING BLOCK

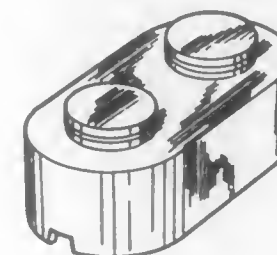
Warren S. Wilson, Marleston, Australia, assignor to Better Blocks International Limited, Auckland, New Zealand

Filed Mar. 18, 1993, Ser. No. 5,957

Claims priority, application Australia, Sep. 28, 1992, 2726/92

Term of patent 14 years

U.S. Cl. D21—108



354,322

BARBELL WEIGHT

Joseph J. Vodhanel, Jr., 10937 S. Groveland Av., Whittier, Calif. 90603

Filed Aug. 30, 1993, Ser. No. 12,291

Term of patent 14 years

U.S. Cl. D21—196

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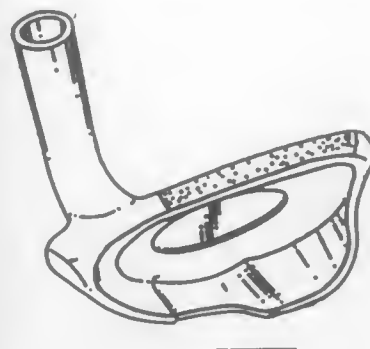
1995

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354,323
COMBINATION TENNIS RACKET AND CHESS BOARD
Chao-Yueh Chuang, No. 106, Lane 61, Da-Fu Rd., Sheng-Gong
Town, Taichuang Hsien, Taiwan, Prov. of China
Filed May 20, 1993, Ser. No. 8,547
Term of patent 14 years
U.S. Cl. D21—212

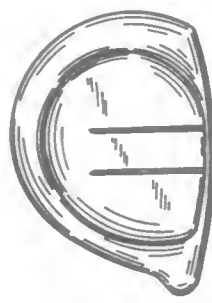


354,326
GOLF CLUB HEAD
Roger Cleveland, Los Angeles, Calif., assignor to Roger Cleve-
land Golf Company, Inc., Cypress, Calif.
Filed Aug. 7, 1992, Ser. No. 926,216
Claims priority, application France, Jun. 11, 1992, 92.07309
Term of patent 14 years
U.S. Cl. D21—220

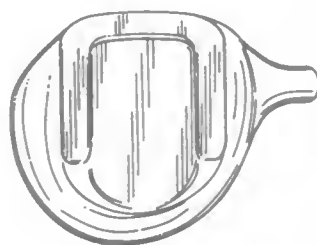


354,327
HAND POSITIONING ATTACHMENT FOR A GOLF
CLUB OR TENNIS RACKET
Leonard Harkins, Jr., 9123 Township Dr., Hiram, Ga. 30141
Filed Sep. 21, 1993, Ser. No. 13,197
Term of patent 14 years
U.S. Cl. D21—234

354,324
GOLF CLUB HEAD
John T. Stites, III, Fort Worth, Tex., assignor to Head Sports,
Inc., Fort Worth, Tex.
Filed Jan. 21, 1992, Ser. No. 823,546
Term of patent 14 years
U.S. Cl. D21—214



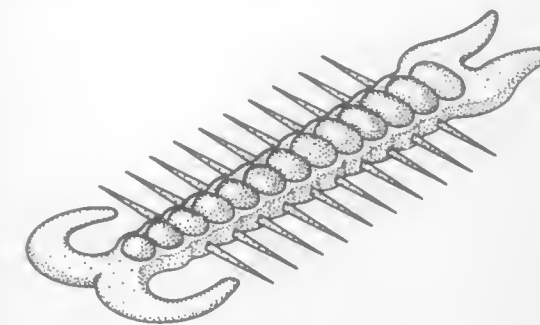
354,325
GOLF CLUB HEAD
William D. Henwood, Norcross, Ga., assignor to Nicklaus Golf
Equipment Company LC, West Palm Beach, Fla.
Filed Oct. 18, 1991, Ser. No. 782,282
Term of patent 14 years
U.S. Cl. D21—214



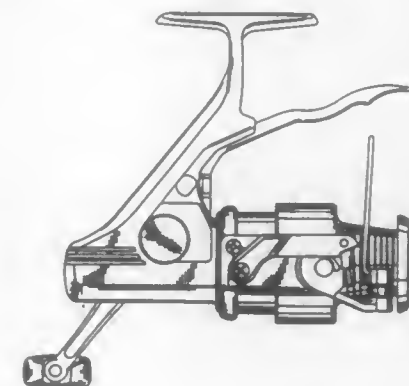
354,328
COMBINED CLUB AND FLASHLIGHT
Kenneth L. McCarty, 1171 S. Lane Ave., Apt. 205, Jacksonville,
Fla. 32205
Filed Jul. 13, 1993, Ser. No. 10,632
Term of patent 14 years
U.S. Cl. D22—117



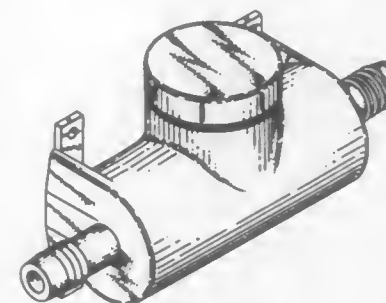
354,329
FISHING LURE
Daniel S. Long, 787 Fourth St., New Martinsville, W. Va. 26155
Filed Nov. 22, 1993, Ser. No. 15,582
Term of patent 14 years
U.S. Cl. D22—132



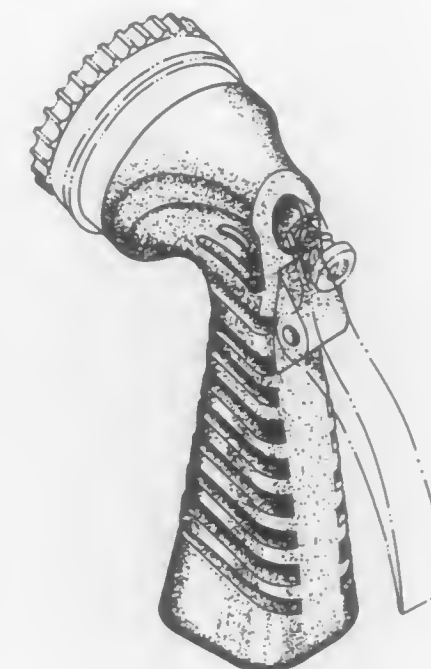
354,330
SPINNING FISHING REEL
Richard J. Robbins, Derby, Kans., assignor to Zebco Corpora-
tion, Tulsa, Okla.
Filed Jul. 15, 1992, Ser. No. 914,946
Term of patent 14 years
U.S. Cl. D22—141



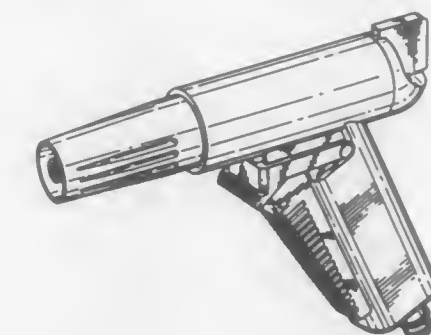
354,331
INFLOW WATER TREATMENT FITTING FOR
CHEMICAL TOILET
Danny D. Bunke, 4158 Marigene Ct., Reno, Nev. 89509
Filed May 27, 1993, Ser. No. 8,864
Term of patent 14 years
U.S. Cl. D23—207



354,332
FLEXIBLE HANDLE FOR A SPRAY GUN
King-Yuan Wang, No. 1, Lane 288, Sec. 1, La Ha Road La Kan
Town, Changhua,
Filed Jun. 3, 1993, Ser. No. 9,016
Term of patent 14 years
U.S. Cl. D23—223



354,333
SPRAYER NOZZLE
Franco Clivio, Erlenbach, Switzerland, assignor to Gardena
Kress + Kastner GmbH, Germany
Filed Jan. 14, 1994, Ser. No. 17,540
Claims priority, application Germany, Jul. 16, 1993, 9305705
Term of patent 14 years
U.S. Cl. D23—223



354,334

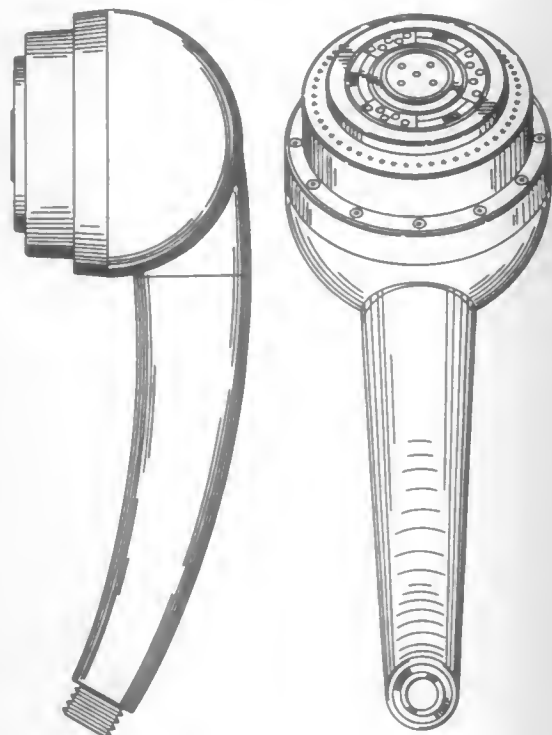
STEAM AND SHOWER HEAD

Jerome Koenig, Craryville, N.Y., assignor to Sisco, Inc., Carson, Calif.

Filed Dec. 14, 1993, Ser. No. 16,353

Term of patent 14 years

U.S. Cl. D23—223



354,336

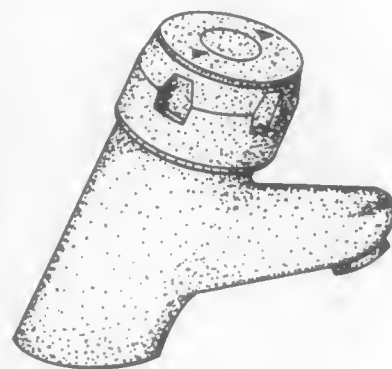
FAUCET

Gerard Delabie, Saint-Blimont, and Marcel Normand, Arrest, both of France, assignors to Delabie (S.A.), France

Filed May 4, 1993, Ser. No. 7,911

Term of patent 14 years

U.S. Cl. D23—238



354,337

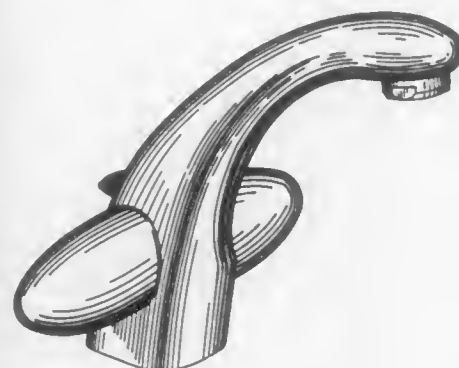
FAUCET

Anna-Pia K. Formgren, Paris, France, assignor to Jacob Delafon, Paris, France

Filed Nov. 5, 1993, Ser. No. 15,063

Term of patent 14 years

U.S. Cl. D23—241



354,335

CHECK VALVE

George G. Siposs, Costa Mesa, Calif., assignor to Quest Medical, Inc., Allen, Tex.

Filed Apr. 5, 1993, Ser. No. 6,659

Term of patent 14 years

U.S. Cl. D23—237



354,338

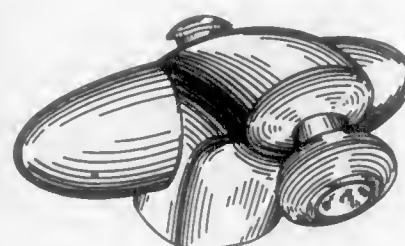
FAUCET

Anna-Pia K. Formgren, Paris, France, assignor to Jacob Delafon, Paris, France

Filed Nov. 5, 1993, Ser. No. 15,077

Term of patent 14 years

U.S. Cl. D23—241



D 354,339

Patent Not Issued For This Number

354,340

COMPOSTING TOILET

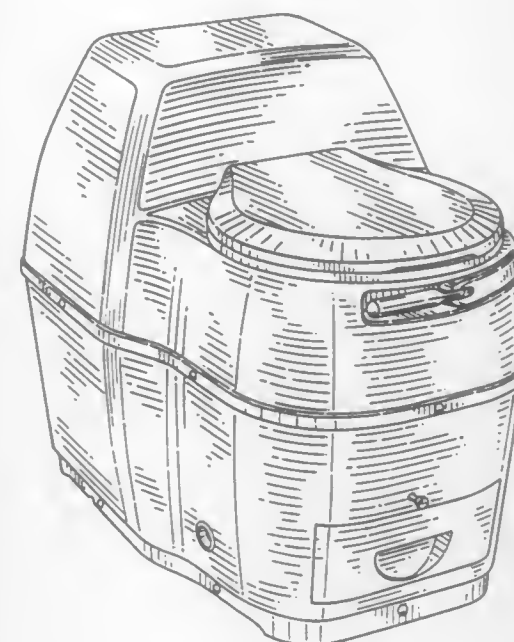
Henric Sundberg, 5035 North Service Road, Unit C9, Burlington, Ontario, Canada L7L 5V2

Filed Aug. 30, 1993, Ser. No. 12,294

Claims priority, application Canada, Mar. 11, 1993, 1103931

Term of patent 14 years

U.S. Cl. D23—299



354,342

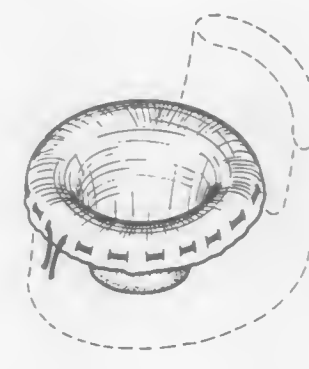
DISPOSABLE POTTY LINER

Carol J. Marshall-Smith, 4775 Apartment Blvd., #G-12, N. Charleston, S.C. 29418

Filed Dec. 29, 1992, Ser. No. 3,139

Term of patent 14 years

U.S. Cl. D23—309



354,343

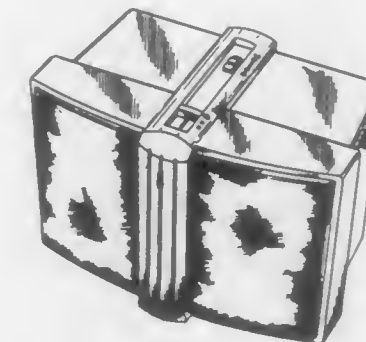
CERAMIC HEATER

Andrew M. Goldstein, Newton, Mass., assignor to Holmes Products Corp., Milford, Mass.

Filed Mar. 4, 1994, Ser. No. 19,565

Term of patent 14 years

U.S. Cl. D23—335



354,341

WATER CLOSET

Herbert V. Kohler, Jr., Kohler, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, and Michel Chalard, Villemomble, France, assignors to Jacob Delafon, Paris, France

Division of Ser. No. 880,475, May 6, 1992, Pat. No. Des. 349,156, which is a continuation-in-part of Ser. No. 792,045, Nov. 8, 1991. This application Jan. 31, 1994, Ser. No. 18,272

Term of patent 14 years

U.S. Cl. D23—300



354,344

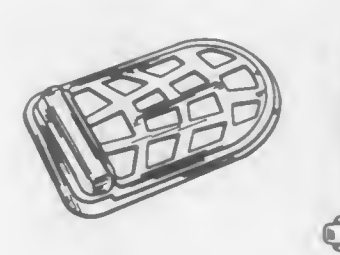
VAPOR DISPENSING DEVICE

John M. Fritz, Oak Cree, and Joseph E. Reimer, Oregon, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

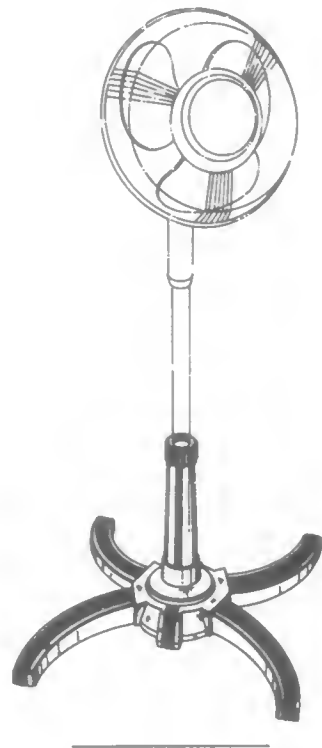
Filed Jan. 10, 1994, Ser. No. 17,317

Term of patent 14 years

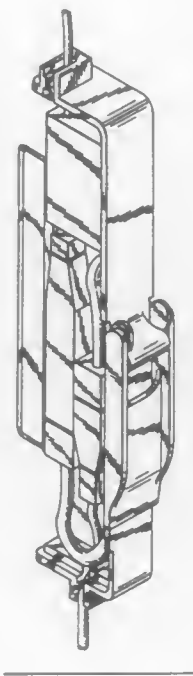
U.S. Cl. D23—366



354,345
FAN STAND
Su-Liang Liu, 6-1F., No. 102, Sec. 5, Nan-King East Road, Taipei, Taiwan, Prov. of China
Filed Oct. 22, 1993, Ser. No. 14,477
Term of patent 14 years
U.S. Cl. D23—411



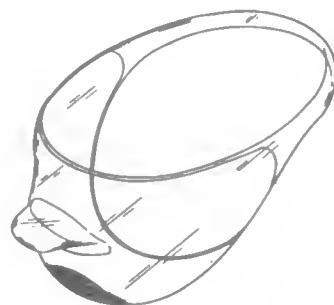
354,347
BLOOD CHEMISTRY SENSOR ASSEMBLY
Wallace L. Knute, Leucadia, and Stephens N. Sato, Del Mar, both of Calif., assignors to Via Medical Corporation, San Diego, Calif.
Filed Dec. 10, 1992, Ser. No. 2,405
Term of patent 14 years
U.S. Cl. D24—108



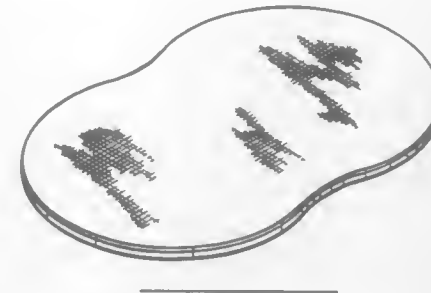
354,348
SMOKE PROTECTIVE HOOD
Marshall Hamilton, 366 Susong St., Newport, Tenn. 37821
Filed Jul. 19, 1993, Ser. No. 8,959
Term of patent 14 years
U.S. Cl. D24—110.3



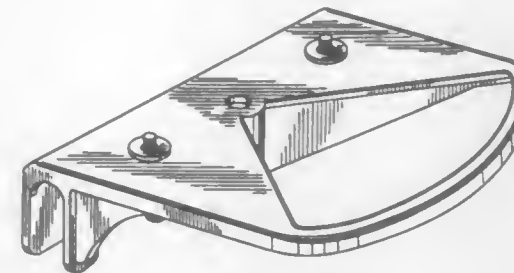
354,346
ORAL CONDOM
Robert Brown, 3737 W. Grand Ave., Detroit, Mich. 48238
Filed Jan. 29, 1993, Ser. No. 4,192
Term of patent 14 years
U.S. Cl. D24—105



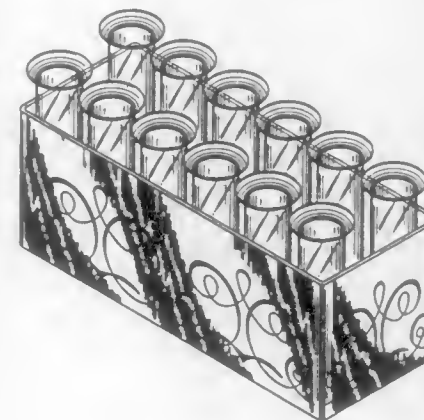
354,349
MEDICAL PAD
Virginia A. Grein, 6313 Old State Rd., Evansville, Ind. 47710
Filed Apr. 6, 1992, Ser. No. 864,084
Term of patent 14 years
U.S. Cl. D24—125



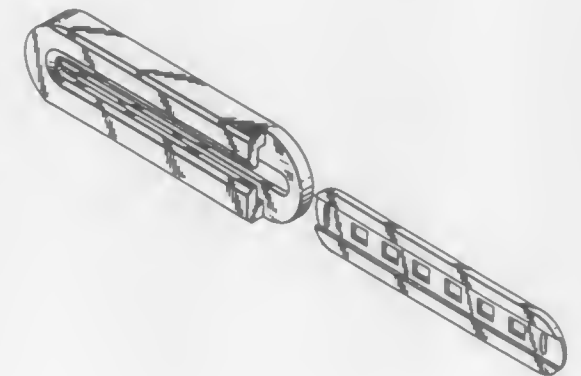
354,350
MEDICAL EQUIPMENT SUPPORT
John W. Pryor, Oceanside, and Jeffery W. Pryor, Vista, both of Calif., assignors to Pryor Products, Oceanside, Calif.
Filed Feb. 8, 1993, Ser. No. 4,543
Term of patent 14 years
U.S. Cl. D24—128



354,351
SYRINGE ORGANIZER TRAY
Samuel W. Kochansky, and Christe Y. Kochansky, both of 14703-E Baltimore Ave., Ste. 256, Laurel, Md. 20707
Filed Feb. 22, 1993, Ser. No. 5,051
Term of patent 14 years
U.S. Cl. D24—130



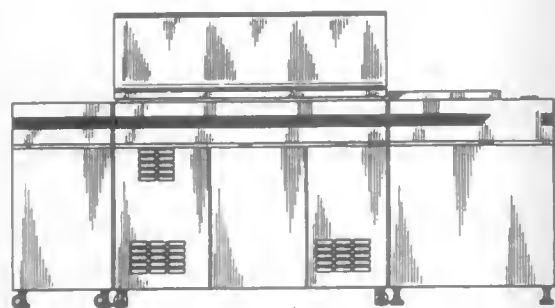
354,352
TORQUE WRENCH FOR SKULL PINS
Corey M. Selman, Long Beach, Calif., assignor to Ace Medical Company, Los Angeles, Calif.
Filed Aug. 3, 1992, Ser. No. 924,225
Term of patent 14 years
U.S. Cl. D24—133



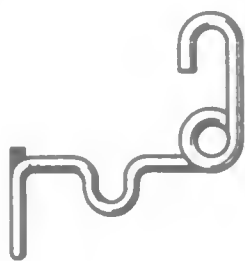
354,353
ULTRASOUND DIAGNOSTIC INSTRUMENT
Akihiko Ishizuka; Hiroyuki Fujita, and Nobushi Iwashita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 13, 1993, Ser. No. 12,902
Claims priority, application Japan, Feb. 15, 1993, 5-4020
Term of patent 14 years
U.S. Cl. D24—160



354,354
AUTOMATIC BLOOD ANALYZER
 Shigeru Yamashita, Ina, and Yasuo Hattori, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
 Filed Mar. 2, 1993, Ser. No. 5,338
 Claims priority, application Japan, Sep. 8, 1992, 4-26489
 The portion of the term of this patent subsequent to Sep. 27, 2008, has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D24—186



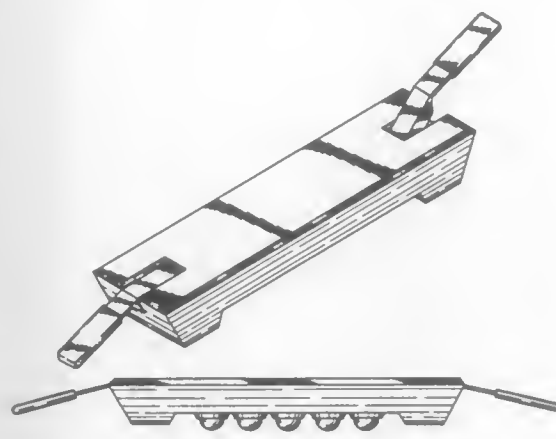
354,355
LINGUAL ORTHODONTIC PENDULUM APPLIANCE
 James J. Hilgers, Escondido, Calif., assignor to Ormco Corporation, Glendora, Calif.
 Filed Jul. 14, 1993, Ser. No. 10,692
 Term of patent 14 years
 U.S. Cl. D24—180



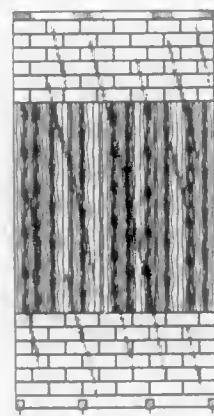
354,356
THERAPEUTIC PILLOW FOR SPACING LEGS
 Diana C. Shiflett, 8522 Tirzah Church Rd., Waxhaw, N.C. 28173
 Filed Dec. 10, 1992, Ser. No. 2,449
 Term of patent 14 years
 U.S. Cl. D24—183



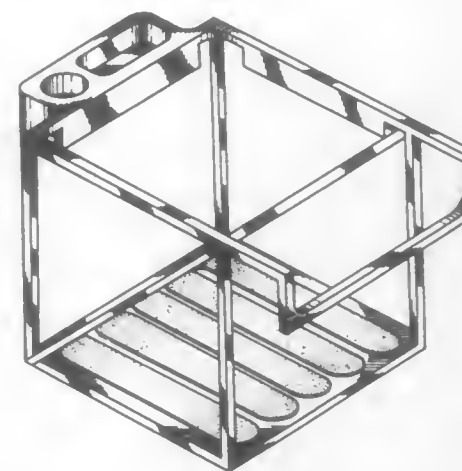
354,357
HAND POWERED MASSAGER
 Zeng Dawei, 2451 Old Concorde Rd. #303A, Smyrna, Ga. 30080
 Filed Mar. 15, 1993, Ser. No. 5,901
 Term of patent 14 years
 U.S. Cl. D24—211



354,358
PRE-FABRICATED WALL PANEL
 Michael W. Wells, 272 Clay La., Richmond, Ky. 40475
 Filed May 3, 1993, Ser. No. 7,772
 Term of patent 14 years
 U.S. Cl. D25—58



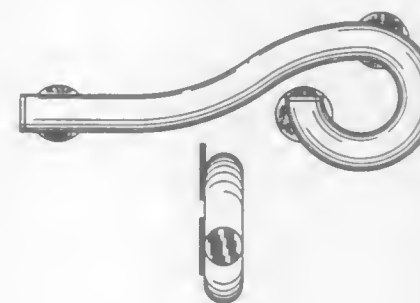
354,359
WINDOW SILL SUPPORTED BASKET
 David E. Hylton, 21915 Providence Rd., Alpharetta, Ga. 30201
 Filed Aug. 20, 1992, Ser. No. 932,049
 Term of patent 14 years
 U.S. Cl. D25—62



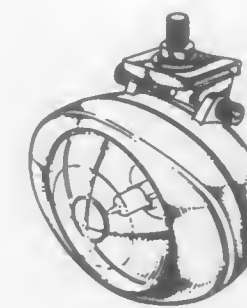
354,360
DECORATIVE LAMP
 Kazuaki Murata, Tokyo, Japan, assignor to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 15, 1994, Ser. No. 19,928
 Term of patent 14 years
 U.S. Cl. D26—3



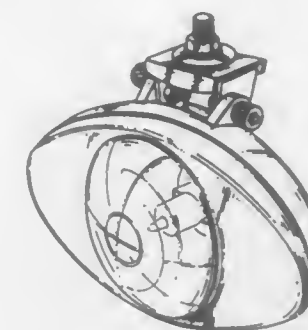
354,361
SAFETY LIGHT FOR INDICATING THE PRESENCE OF A MOTORCYCLIST
 James Nadramia, 36 Greenway Dr., Apt. 2 Ground Floor, Staten Island, N.Y. 10301
 Filed Apr. 5, 1993, Ser. No. 6,727
 Term of patent 14 years
 U.S. Cl. D26—28



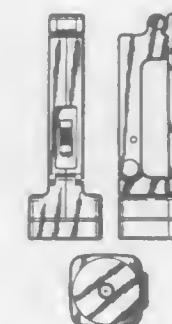
354,362
FOG LIGHT
 Wen-Tsung Tsai, No. 58-3, Lane 410, Wen Hsu Rd., Sec. 2, Pan Chiao, Taipei, Taiwan, Prov. of China
 Filed Dec. 20, 1993, Ser. No. 16,547
 Term of patent 14 years
 U.S. Cl. D26—28



354,363
FOG LIGHT
 Wen-Tsung Tsai, No. 58-3, Lane 410, Wen Hsu Rd., Sec. 2, Pan Chiao, Taipei, Taiwan, Prov. of China
 Filed Dec. 20, 1993, Ser. No. 16,546
 Term of patent 14 years
 U.S. Cl. D26—28



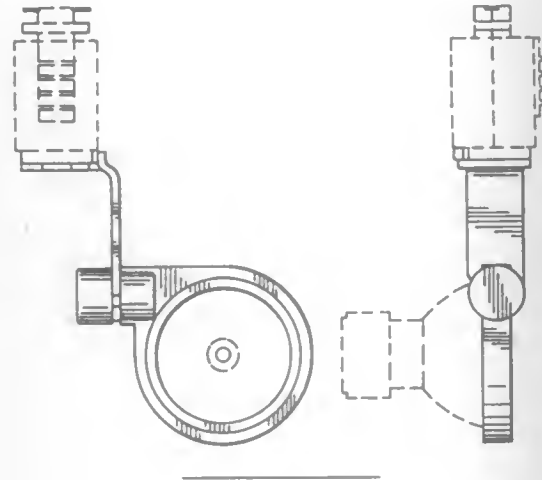
354,364
MULTI-PURPOSE FLUORESCENT LANTERN
 John Se-Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
 Filed Jun. 1, 1993, Ser. No. 8,946
 Claims priority, application United Kingdom, Dec. 1, 1992, 2027514
 Term of patent 14 years
 U.S. Cl. D26—42



354,365

GIMBLE RING LIGHT FIXTURE FOR USE ON TRACK
 Scott L. Roos, Glenview, and John J. O'Rourke, Chicago, both
 of Ill., assignors to Juno Lighting, Inc., Des Plaines, Ill.
 Filed Sep. 2, 1993, Ser. No. 12,519
 Term of patent 14 years

U.S. Cl. D26—63

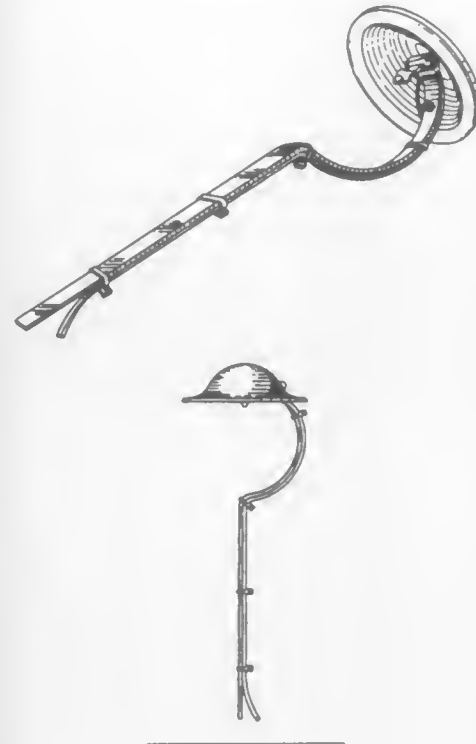


354,367

OUTDOOR LIGHT FIXTURE

Carrell R. Harrington, 1014 Bajada Grande, Santa Barbara,
 Calif. 93109
 Filed Feb. 26, 1993, Ser. No. 5,194
 Term of patent 14 years

U.S. Cl. D26—68

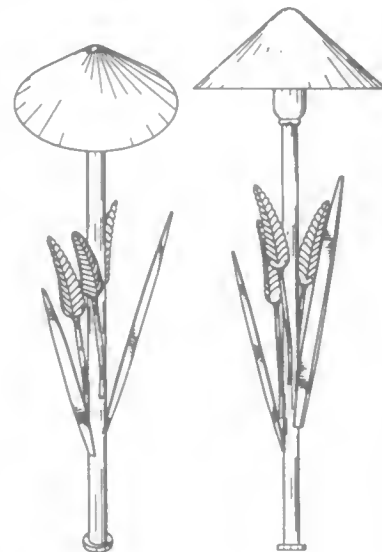


354,366

GARDEN LIGHTING FIXTURE

Melissa S. Kay, Cleveland Heights, Ohio, assignor to The L. D.
 Kichler Co., Cleveland, Ohio
 Filed Mar. 8, 1993, Ser. No. 5,602
 Term of patent 14 years

U.S. Cl. D26—68

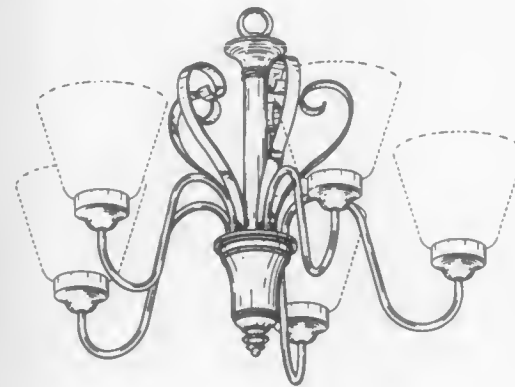


354,368

CHANDELIER

David H. Porter, Chagrin Falls, Ohio, assignor to The L. D.
 Kichler Co., Cleveland, Ohio
 Filed May 16, 1994, Ser. No. 22,894
 Term of patent 14 years

U.S. Cl. D26—81

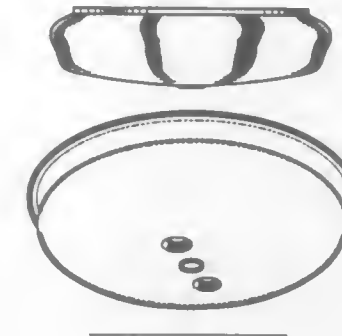


354,369

LIGHT FIXTURE FOR USE WITH A CEILING FAN

Richard A. Pearce, Memphis, Tenn., assignor to Hunter Fan
 Company, Memphis, Tenn.
 Filed Oct. 27, 1993, Ser. No. 14,659
 Term of patent 14 years

U.S. Cl. D26—85

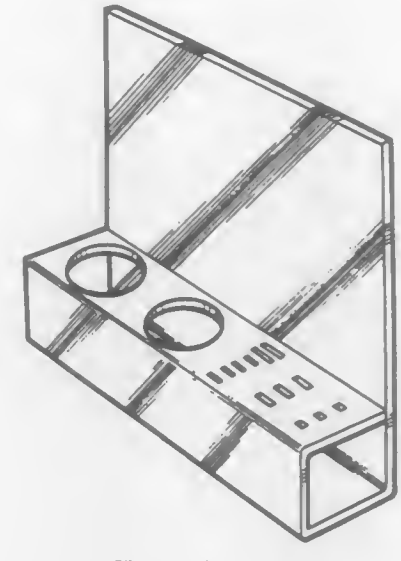


354,372

MANICURIST UTENSIL STAND

Lawrence D. Gaynor, West Bloomfield, Mich., assignor to
 Nailco, Inc., Livonia, Mich.
 Filed Nov. 23, 1992, Ser. No. 1,735
 Term of patent 14 years

U.S. Cl. D28—61

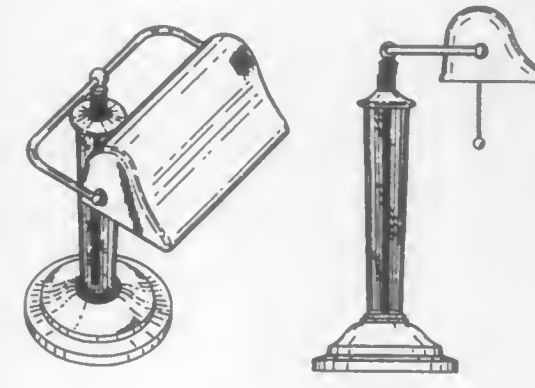


354,370

TABLE LAMP

John Stromberg, Holliston, Mass., assignor to Holmes Products
 Corp., Milford, Mass.
 Filed Nov. 1, 1993, Ser. No. 14,863
 Term of patent 14 years

U.S. Cl. D26—109

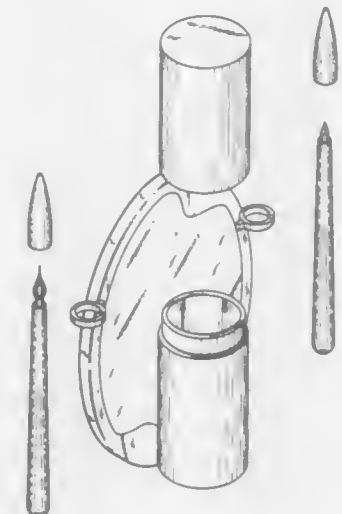


354,373

COMBINED LIPSTICK CASE, MIRROR AND COSMETIC APPLICATORS

Marsha D. Khoury, 851 Manning Ave., Toronto, Ontario, Can-
 ada M6G 2X1
 Filed Jun. 25, 1993, Ser. No. 9,954
 Term of patent 14 years

U.S. Cl. D28—77

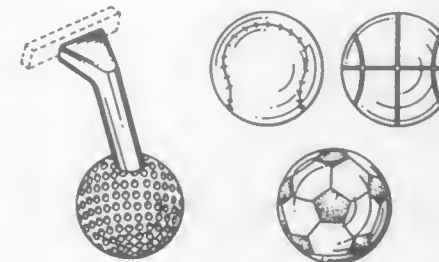


354,371

SHAVER HANDLE

Barry M. Wood, Box 12, River St., Bartlett, N.H. 03812
 Continuation-in-part of Ser. No. 736,225, Jul. 26, 1991, Pat. No.
 5,129,157. This application Dec. 3, 1991, Ser. No. 801,839
 Term of patent 14 years

U.S. Cl. D28—48



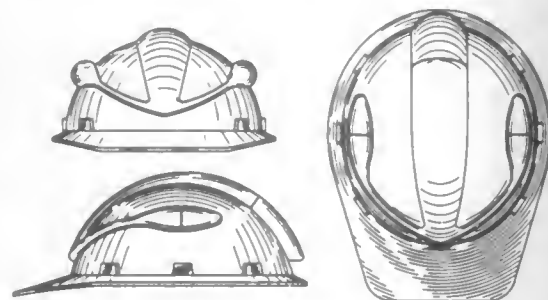
354,374
COMBINED LIPSTICK BLOTTER PAD AND LIPSTICK CONTAINER
 Delores A. Battaglia, 53820 Breatwood, New Baltimore, Mich. 48047
 Filed Jun. 18, 1993, Ser. No. 9,580
 Term of patent 14 years
 U.S. Cl. D28—77



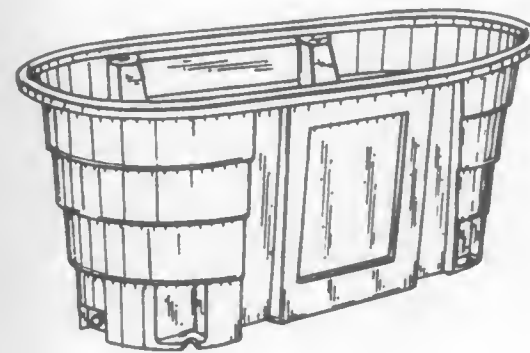
354,375
CERVICALLY NON-INVOLVED FACIAL-CRANIAL PROTECTIVE HELMET
 Robert R. Lechner, 3131 N. Jessica, Sioux Falls, S. Dak. 57104
 Filed Apr. 5, 1993, Ser. No. 6,703
 Term of patent 14 years
 U.S. Cl. D29—107



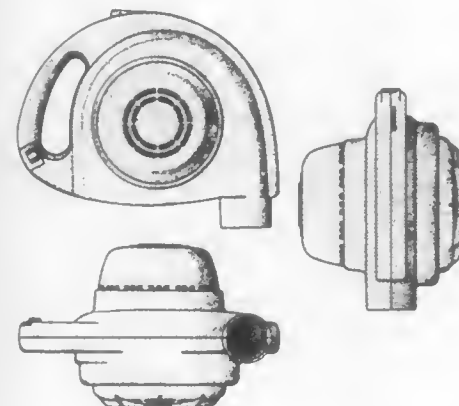
354,376
HEAD COOLING HELMET
 David A. Ken, 2908 W. 29th Ter., Lawrence, Kans. 66046
 Filed Jun. 10, 1993, Ser. No. 9,230
 Term of patent 14 years
 U.S. Cl. D29—104



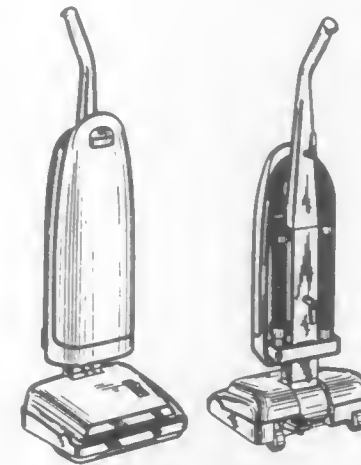
354,377
STOCK WATERING TANK
 Thomas W. Wenstrand, R.R. 4, Mount Pleasant, Henry County, Iowa 52641
 Filed Sep. 29, 1993, Ser. No. 13,634
 Term of patent 14 years
 U.S. Cl. D30—131



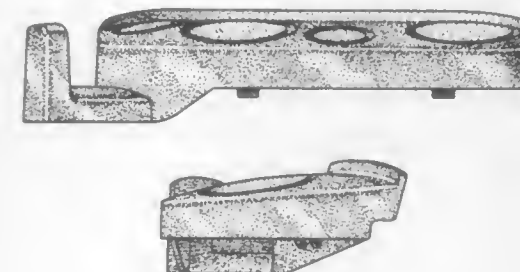
354,378
UTILITY BLOWER
 Darwin T. McKnight, Louisville, and Richard A. Wareham, North Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
 Filed May 19, 1993, Ser. No. 8,515
 Term of patent 14 years
 U.S. Cl. D32—15



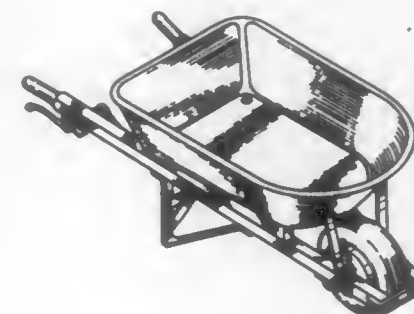
354,379
ELECTRIC VACUUM CLEANER
 Isamu Shinozaki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Oct. 15, 1993, Ser. No. 14,205
 Claims priority, application Japan, Apr. 20, 1993, 5-11758
 Term of patent 14 years
 U.S. Cl. D32—22



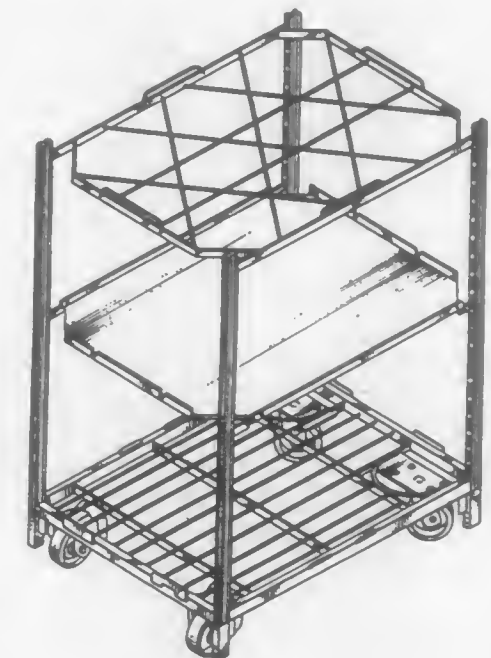
354,380
TANK TYPE VACUUM CLEANER TOOL STORAGE SHELF
 Ronald J. Stephens, Rittman, Ohio, assignor to The Hoover Company, North Canton, Ohio
 Filed May 11, 1993, Ser. No. 8,196
 Term of patent 14 years
 U.S. Cl. D32—31



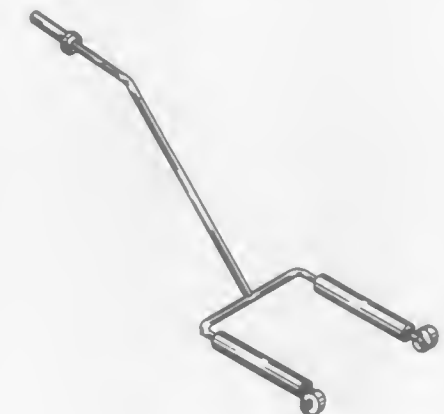
354,381
WHEELBARROW WITH RATCHET MECHANISM
 John C. Hirth, Jr., 4 DeBow Ter., Butler, N.J. 07405
 Filed Jul. 9, 1993, Ser. No. 10,484
 Term of patent 14 years
 U.S. Cl. D34—16



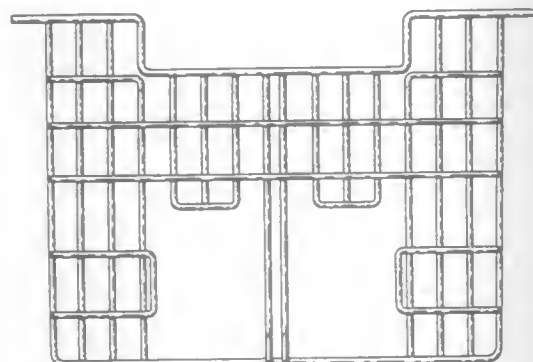
354,382
CART
 Erling K. Mogensen, Middelfart, Denmark, assignor to R.D. Impex ApS, Middelfart, Denmark
 Filed Sep. 30, 1993, Ser. No. 13,701
 Claims priority, application Denmark, Apr. 1, 1993, MA03251993
 Term of patent 14 years
 U.S. Cl. D34—21



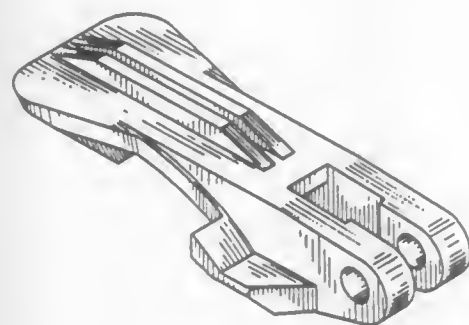
354,383
TIRE MOVING ELEMENT
 Robert D. Smith, 3416 N. Gratton Rd., Denair, Calif. 95316
 Filed Sep. 23, 1993, Ser. No. 13,356
 Term of patent 14 years
 U.S. Cl. D34—23



354,384
SHOPPING CART REAR GATE
 Antoine Trubiano, Montreal, Canada, assignor to Cari-All Inc.,
 Montreal, Canada
 Filed Nov. 2, 1993, Ser. No. 14,765
 Term of patent 14 years
 U.S. Cl. D34—27



354,385
CONVEYOR TROLLEY PUSHER
 Daniel S. Ellens, Brighton; Robert A. Goryca, Farmington Hill,
 and Theodore A. Tylman, Howell, all of Mich., assignors to
 Jervis B. Webb Company, Farmington Hills, Mich.
 Filed Feb. 3, 1993, Ser. No. 4,375
 Term of patent 14 years
 U.S. Cl. D34—29



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1995

NOTE.—Arranged in accordance with the first significant character or word of the name
 (in accordance with city and telephone directory practice).

- A. Ahlstrom Corporation: See—
 Hiltunen, Matti; and Westerlund, Kurt, 5,380,507, Cl. 423-240.00S.
 Kuivalainen, Reijo, 5,380,498, Cl. 422-169.000.
 A&E Manufacturing Co., Inc.: See—
 Bates, James F., Jr., 5,379,627, Cl. 73-3.000.
 A.E. Staley Manufacturing Company: See—
 Beyts, Pamela K.; Lillard, Donald W.; and Batterman, Cynthia K.,
 5,380,541, Cl. 426-548.000.
 A.P.M. Hexseal Corporation: See—
 Morse, Milton, 5,380,968, Cl. 200-302.300.
 A. S. M. Company, Inc.: See—
 Perret, Robert J., Jr., 5,379,938, Cl. 239-119.000.
 Aas, Eric F.: See—
 Kochis, Richard L.; and Aas, Eric F., 5,381,020, Cl. 250-566.000.
 ABB Flakt Aktiebolag: See—
 Josefsson, Leif E. B., 5,380,243, Cl. 454-52.000.
 ABB Gadelius KK: See—
 Hirth, Michael; Jochum, Joachim; Jodeit, Harald; and Wieckert,
 Christian, 5,380,500, Cl. 422-173.000.
 Abbott Laboratories: See—
 Bieniarz, Christopher; and Welch, Christopher, 5,380,873, Cl.
 548-520.000.
 Celebuski, Joseph E.; and Jones, Roger A., 5,380,835, Cl.
 536-18.500.
 Murad, Ferid; Kerwin, James F.; and Gorsky, Lee D., 5,380,945,
 Cl. 564-108.000.
 Abbott, William L.; and Nguyen, Hung C., to Quantum Corporation.
 Adaptation and training of digital finite impulse response filter within
 PR,ML class IV sampling data detection channel. 5,381,359, Cl.
 364-724.190.
 Abboud, Pierre Y.: See—
 Abowd, Michael J.; Abboud, Pierre Y.; and Ray, James R.,
 5,379,637, Cl. 73-290.00R.
 Abe, Koji: See—
 Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko,
 Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki,
 Tokuo; and Abe, Koji, 5,380,906, Cl. 558-210.000.
 Abe, Miki: See—
 Shimoyoshi, Osamu; Akagiri, Kenzo; Abe, Miki; and Watanabe,
 Takahiro, 5,381,143, Cl. 341-51.000.
 Abe, Nobumasa: See—
 Hosono, Satoru; and Abe, Nobumasa, 5,381,171, Cl. 347-72.000.
 Abe, Takashi: See—
 Fukaya, Haruhiko; Abe, Takashi; Hayashi, Eiji; and Hayakawa,
 Yoshio, 5,380,844, Cl. 544-357.000.
 Abou-Gharbia, Magid A.; Yardley, John P.; and Childers, Wayne E.,
 Jr., to American Home Products Corporation. Aryl- and heteroaryl
 piperazinyl carboxamides having central nervous system activity.
 5,380,725, Cl. 514-253.000.
 Abowd, Michael J.; Abboud, Pierre Y.; and Ray, James R., to General
 Motors Corporation. Natural gas vehicle fuel gauge system.
 5,379,637, Cl. 73-290.00R.
 Abraham, Philip: See—
 Kuhar, Michael J.; Boja, John W.; Carroll, Frank I.; Lewin, Anita
 H.; and Abraham, Philip, 5,380,848, Cl. 546-124.000.
 Aburano, Ichiharu: See—
 Okazawa, Koichi; Kobayashi, Kazushi; and Aburano, Ichiharu,
 5,381,544, Cl. 395-575.000.
 Abys, Joseph A.; Maisano, Joseph J., Jr.; and Straschil, Heinrich K., to
 AT&T Corp. Chemical etchant for palladium. 5,380,400, Cl.
 156-656.000.
 Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co.
 KG: See—
 Hampe, Werner; and Scholz, Peter, 5,380,604, Cl. 429-84.000.
 Accurate Tool Company, Inc.: See—
 Bianchi, Robert, 5,380,579, Cl. 428-184.000.
 Achiever Industries Limited: See—
 Chan, Yet, 5,381,201, Cl. 354-275.000.
 Acosta, George M.: See—
 Everett, Royce B.; Acosta, George M.; and Hussein, Hany M. G.,
 5,380,317, Cl. 606-15.000.
 Acquaviva, Thomas; and Edmunds, Cyril G., to Xerox Corporation.
 Sheet handling system for plural cycle printing machines. 5,381,220,
 Cl. 355-308.000.
 ACS Communications, Inc.: See—
 Ludeke, Christine E.; and Mitchell, Larry M., 5,381,486, Cl.
 381-187.000.
 Adachi, Kazuya: See—
 Noguchi, Teruhiko; Kinashi, Hiroshi; Masuda, Jitsuo; Inoue, Kat-
 sushii; Tanaka, Tatsuo; Otsuki, Kunio; and Adachi, Kazuya,
 5,381,212, Cl. 355-211.000.
 Adachi, Takashi: See—
 Nozaki, Nobuharu; and Adachi, Takashi, 5,381,430, Cl. 372-21.000.
 Adachi, Yukishige, to Sumitomo Rubber Industries, Ltd. Pneumatic tire
 with reinforced bead portions. 5,379,819, Cl. 152-542.000.
 Adam, Gerard: See—
 Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean;
 Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice,
 5,380,750, Cl. 514-443.000.
 Adams, Matthew K.; Little, Wendell L.; and Grider, Stephen N., to
 Dallas Semiconductor Corporation. Interface: interrupt masking with
 logical sum and product options. 5,381,540, Cl. 395-425.000.
 Adams, Ronald L.: See—
 Roy, Joy; Stanley, Douglas M.; Buehler, James D.; and Adams,
 Ronald L., 5,381,162, Cl. 347-10.000.
 Adang, Michael J.; Rocheleau, Thomas A.; Merlo, Donald J.; and
 Murray, Elizabeth E., to Mycogen Plant Science, Inc. Synthetic
 insecticidal crystal protein gene. 5,380,831, Cl. 536-23.710.
 Adaptive Control Limited: See—
 Elliott, Stephen J., 5,381,485, Cl. 381-71.000.
 ADC Telecommunications, Inc.: See—
 Toland, David S.; McGuire, Michael F.; Farrell, Gary S.; Pitkin,
 Kevin J.; Beard, Michael S.; Emmons, David; Conroy, James W.;
 and Ziebol, Robert J., 5,381,497, Cl. 385-80.000.
 Addax, Inc.: See—
 Pretto, Alessio G.; Keester, Louis J.; and Hansen, Richard S.,
 5,379,964, Cl. 242-571.200.
 Adir et Compagnie: See—
 Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean;
 Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice,
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 Adlas GmbH & Co. KG: See—
 Wedekind, Doerte; and Lawrenz-Stolz, Joerg, 5,381,427, Cl.
 372-19.000.
 Adler, Jonathan M.; and Fontenot, Kevin J., to NTN Technical Center.
 Hub and bearing assembly with integrated rotation sensor and tem-
 perature measurement feature. 5,381,090, Cl. 324-174.000.
 Adonakis, Nikolaos A.: See—
 Burkett, Michael J.; and Adonakis, Nikolaos A., 5,380,167, Cl.
 417-269.000.
 Advanced Cardiovascular Systems, Inc.: See—
 Aita, Michael; Mirhoseini, Mahmood; Cayton, Mary; Simpson,
 Carl J.; and Guscott, Brian, 5,380,316, Cl. 606-7.000.
 Advanced Micro Devices, Inc.: See—
 Gibson, Glen, 5,381,414, Cl. 370-94.200.
 Olivarez, Jerry, 5,381,037, Cl. 257-666.000.
 Advanced Protective Injection Systems B.V.: See—
 van den Haak, Abraham, 5,380,286, Cl. 604-110.000.
 Advanced Spine Fixation Systems, Inc.: See—
 Howland, Robert S., 5,380,323, Cl. 606-61.000.
 Advanced Surgical Materials, Inc.: See—
 Morris, James R., 5,380,320, Cl. 606-33.000.
 Advantest Corporation: See—
 Hayashi, Mishio, 5,381,100, Cl. 324-601.000.
 Aeroquip Corporation: See—
 Rogers, Russell L.; and Jenski, Gary M., Jr., 5,379,797, Cl.
 137-503.000.
 Aerospaciale Societe Nationale Industrielle: See—
 Hocquellet, Dominique, 5,380,556, Cl. 427-228.000.
 Montagne, Marc H.; and Regipa, Olivier, 5,380,388, Cl.
 156-179.000.
 Aerovox Incorporated: See—
 Hudis, Martin, 5,381,301, Cl. 361-275.200.
 Afshar, David D.: See—
 Bigler, Charles G.; Casto, James J.; McShane, Michael B.; and
 Afshar, David D., 5,381,036, Cl. 257-666.000.
 AGCO Corporation: See—
 Gage, Charles A.; and Sturwold, Theresa, 5,379,706, Cl.
 111-175.000.
 Agence Spatiale Europeenne: See—
 Perryman, Michael A. C.; Peacock, Anthony; and Foden, Clare L.,
 5,381,001, Cl. 250-214.100.
 Agency of Industrial Science and Technology: See—
 Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; Nishimura, Norio;
 Itoh, Junji; and Kanemaru, Seigo, 5,381,069, Cl. 313-310.000.
 Kondou, Isao; Tamari, Nobuyuki; Tanaka, Takahiro; and Sodeoka,
 Satoshi, 5,380,686, Cl. 501-87.000.
 Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu;
 Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito,
 Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki,
 Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mit-
 sunori, 5,380,692, Cl. 502-303.000.

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Suzuki, Ryoichi, 5,381,003, Cl. 250-305.000.
- Agency of Industrial Science & Technology, Ministry of International Trade & Industry: See—
Fukaya, Haruhiko; Abe, Takashi; Hayashi, Eiji; and Hayakawa, Yoshio, 5,380,844, Cl. 544-357.000.
- AGFA-Gevaert, N.V.: See—
Dooms, Philip, 5,381,015, Cl. 290-483.100.
Kiekens, Eric; and Callant, Paul, 5,380,634, Cl. 430-507.000.
Timmerman, Daniel, M.; Claeys, Daniel A.; and Janssens, Wilhelmus, 5,380,619, Cl. 430-213.000.
Van Haute, Robert C.; Leenders, Luc H.; Beels, Roland F.; Uytendaele, Carlo A.; Uytterhoeven, Herman J.; and Podszun, Wolfgang, 5,380,607, Cl. 430-3.000.
- Aghazeynali, Hossein: See—
Morrow, Lawrence R.; Martir, Wilson K.; and Aghazeynali, Hossein, 5,381,002, Cl. 250-301.000.
- Agrawal, Kamy: See—
Brauns, Robert A. W.; Agrawal, Kamy; and Aubrun, Vincent, 5,381,555, Cl. 395-800.000.
- Agri-Technology: See—
Underwood, Mark R., 5,380,247, Cl. 460-114.000.
- Agronomics, Inc.: See—
Landry, Walter J.; and Angers, John W., 5,379,578, Cl. 56-14.500.
- Ahmadzadeh, Massoud, to Willy Rusch AG: Ureteral catheter, 5,380,270, Cl. 604-9.000.
- Aihara, Shin: See—
Itoh, Hisato; Karasawa, Akio; Sugimoto, Kenichi; Oguchi, Takahisa; and Aihara, Shin, 5,380,842, Cl. 540-128.000.
- Ainoya, Masayuki: See—
Kondo, Norimasa; Matsuo, Takao; Ainoya, Masayuki; Torii, Takuji; Hayashi, Kazunobu; Morio, Shuichi; and Tomita, Shinya, 5,381,168, Cl. 347-30.000.
- Ainspan, Herschel A.; and Ewen, John F., to International Business Machines Corporation: Differential current switch to super buffer logic level translator, 5,381,060, Cl. 326-68.000.
- Air Products and Chemicals, Inc.: See—
Howard, Lee J.; and Rowles, Howard C., 5,379,597, Cl. 62-23.000.
Robeson, Lloyd M.; and Pickering, Timothy L., 5,380,403, Cl. 162-147.000.
- Aiso, Nobuyuki: See—
Yoko, Hiroyoshi; Mizutani, Takashi; Aiso, Nobuyuki; Mochizuki, Hiroshi; and Honda, Hirohiko, 5,381,339, Cl. 364-468.000.
- Aita, Michael; Mirhoseini, Mahmood; Cayton, Mary; Simpson, Carl J.; and Guscott, Brian, to Advanced Cardiovascular Systems, Inc.: Method for intra-operative myocardial device revascularization, 5,380,316, Cl. 606-7.000.
- Aitkens, Robert K.; Gloser, Paul F.; and Keelty, George F., to K & A Industries, Inc.: Identification card and method of making same, 5,380,044, Cl. 283-67.000.
- Aittomaki, Samuel S.: Mattress, 5,379,472, Cl. 5-476.000.
- Aizawa, Koichi: See—
McGee, James B.; Petroff, Lenin J.; Aizawa, Koichi; and Shoji, Hiroaki, 5,380,464, Cl. 252-321.000.
- Aizawa, Masahiro: See—
Kumon, Akira; Ogawa, Katsutoshi; Tatekawa, Masaichiro; Hisada, Hitoshi; Nawama, Junichi; Katakabe, Noboru; and Aizawa, Masahiro, 5,381,214, Cl. 355-219.000.
- Ajika, Natsuo; Arima, Hideaki; and Hachisuka, Atsushi, to Mitsubishi Denki Kabushiki Kaisha: Dynamic random access memory having stacked type capacitor and manufacturing method therefor, 5,381,365, Cl. 365-149.000.
- Ajika, Natsuo: See—
Eguchi, Koji; Ajika, Natsuo; and Sugahara, Kazuyuki, 5,381,029, Cl. 257-354.000.
- Akagiri, Kenzo: See—
Shimoyoshi, Osamu; Akagiri, Kenzo; Abe, Miki; and Watanabe, Takahiro, 5,381,143, Cl. 341-51.000.
- Akashi, Akira; and Matsushima, Hiroshi, to Canon Kabushiki Kaisha: Focus detecting device, 5,381,206, Cl. 354-402.000.
- Akiyama, Noboru; and Kameda, Katsumi, to Dai Nippon Insatsu Kabushiki Kaisha: Disk cartridge having slider supported shutter with compressable projections to secure the shutter-slider to the cartridge, 5,381,293, Cl. 360-133.000.
- Aktiebolaget Astra: See—
Elango, Shanmugam; Rajarathnam, Shantha; Ramachandran, Vasanthi; Roy, Raman K.; Sankaran, Krishnan; and Subrahmanyam, Yerramilli V. B., 5,380,648, Cl. 435-7.320.
- Akutu, Yasutomo: See—
Matsumoto, Kensuke; Akutu, Yasutomo; Koseki, Masao; Kurakami, Michio; Kitamura, Yoshiyuki; and Koyama, Kiyoshi, 5,379,609, Cl. 62-262.000.
- Akzo Nobel N.V.: See—
van Wijk, Robert J., 5,381,232, Cl. 356-352.000.
- Al-Khalil, Munther A.: See—
Siclar, Scott R.; and Al-Khalil, Munther A., 5,381,050, Cl. 307-112.000.
- Alain, George: Fluid temperature indicator, 5,380,092, Cl. 374-160.000.
- Alba Tools Limited: See—
Buchanan, Nigel, 5,380,091, Cl. 374-16.000.
- Alban, Noelle C.; and Deckner, George E., to Richardson-Vicks Inc.: Silicone containing skin care compositions having improved oil control, 5,380,528, Cl. 424-401.000.
- Albert Handtmann Maschinenfabrik GmbH & Co. KG: See—
Staudenrausch, Georg, 5,380,240, Cl. 452-41.000.
- Albrecht, James L.; and Volin, Leonard M., to Minnesota Mining and Manufacturing Company: Heated web knife, 5,379,962, Cl. 242-527.700.
- Albrecht, Ralph M.: See—
Goodman, Steven L.; and Albrecht, Ralph M., 5,380,589, Cl. 428-36.920.
- Alcan Deutschland GmbH: See—
Bohm, Gerhard; and Kofahl, Klaus, 5,379,680, Cl. 92-208.000.
- Alcan International Limited: See—
Fortin, Paul E.; and Marois, Pierre-Henri, 5,380,376, Cl. 148-440.000.
- Alcatel Radiotelephone: See—
Hania, Marc; and Ozouf, Rene-Claude, 5,380,997, Cl. 235-485.000.
- Alcatel Telspace: See—
Baclaine, Patrick; and Lambert, Jean-Louis, 5,381,118, Cl. 333-209.000.
- Alcoa Aluminium Do Nordeste S.A.: See—
Maiwald, Klaus P.; Soares, Marcio D.; and Clemente, Aldenir J., 5,380,379, Cl. 148-697.000.
- Aldrich Chemical Company, Inc.: See—
Brown, Herbert C., 5,380,940, Cl. 562-806.000.
- Alexander, R. Wayne: See—
Medford, Russell M.; Offermann, Margaret K.; and Alexander, R. Wayne, 5,380,747, Cl. 514-423.000.
- Alexandrovich, Benjamin M.: See—
Godyak, Valery A.; Piejak, Robert B.; and Alexandrovich, Benjamin M., 5,381,073, Cl. 315-58.000.
- Alfa Wassermann S.p.A.: See—
Egidio, Marchi; Gianfranco, Tamagnone; and Gabriele, Rotini L., 5,380,533, Cl. 424-456.000.
- Allen, James D.; Bolick, Martin; and Schwartz, Edward L., to Ricoh Corporation; and Ricoh Company Ltd.: Method and apparatus for parallel decoding and encoding of data, 5,381,145, Cl. 341-107.000.
- Allergan, Inc.: See—
Chandraratna, Roshantha A. S., 5,380,877, Cl. 549-60.000.
- AlliedSignal Inc.: See—
Hulsing, Rand H., II; Lee, Charles K.; and Foote, Steven A., 5,379,639, Cl. 73-517.0A.V.
Thomas, Raymond H. P.; Chen, Ruth H. H.; and Harris, Kenneth, 5,380,449, Cl. 252-68.000.
Windish, David K.; Harris, James D.; and McDaniel, Darin J., 5,379,584, Cl. 60-204.000.
- Allonen, Harri, to Valmet Paper Machinery Inc.: Method and device for measuring the nip force and/or nip pressure in a nip, 5,379,652, Cl. 73-862.550.
- Almlöf, Goran; and Lilliehook, Folke, to Bal AB: Plant for extracting substances in gas or mist form from a flow of gas, 5,379,988, Cl. 266-206.000.
- Alps Electric Co., Ltd.: See—
Oohori, Toshiki, 5,381,159, Cl. 345-163.000.
- Alrama Enterprises, Inc.: See—
Mora, Raul, 5,380,261, Cl. 482-46.000.
- Alterescu, Bruno: See—
Yanai, Moshe; Vishitzky, Natan; Alterescu, Bruno; and Castel, Daniel, 5,381,539, Cl. 395-425.000.
- ALZA Corporation: See—
Gyory, J. Richard, 5,380,271, Cl. 604-20.000.
- Amacker, Joseph A.: Automatically adjustable tree climbing stand, 5,379,861, Cl. 182-187.000.
- Amano, Junkichi: See—
Yonezawa, Minoru; and Amano, Junkichi, 5,379,729, Cl. 123-41.82R.
- Amano, Yasuyuki: See—
Kotani, Terumitsu; Saitoh, Atsui; Yamada, Tomoya; Tachikawa, Kohei; Amano, Yasuyuki; and Ikeda, Takeshi, 5,380,572, Cl. 428-40.000.
- Amarume, Katsushi, to Fuji Xerox: Fluid feed pump with valved piston device, 5,380,175, Cl. 417-553.000.
- Amato, Joseph S.; and Cvetovich, Raymond, to Merck & Co. Inc.: Stable solvates of avermectin compounds, 5,380,838, Cl. 536-7.100.
- Amatsu, Kazumi: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shimura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.
- American Colloid Company: See—
Teppo, Maynard, 5,379,948, Cl. 241-24.000.
- American Cord & Webbing Co., Inc.: See—
Krauss, Mark J., 5,379,496, Cl. 24-625.000.
- American Cyanamid: See—
McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.
- American Cyanamid Company: See—
Doehner, Robert F., Jr.; Barton, Jerry M.; and Kuhn, David G., 5,380,876, Cl. 548-565.000.
Strong, Henry L., 5,380,911, Cl. 558-434.000.
Sum, Phaik-Eng; Lee, Ving J.; and Testa, Raymond T., 5,380,888, Cl. 552-205.000.
- Wepplö, Peter J.; and Crews, Alvin D., Jr., 5,380,698, Cl. 504-130.000.
- American Home Products Corporation: See—
Abou-Gharbia, Magid A.; Yardley, John P.; and Childers, Wayne E., Jr., 5,380,725, Cl. 514-253.000.

- Fobare, William F.; and Strike, Donald P., 5,380,853, Cl. 546-207.000.
- Hsu, Kuo-Hom L.; Teller, Daniel M.; Davis, Alan R.; Lubeck, Michael D.; Munson, Harry R., Jr.; Jagdmann, Gunnar E.; and Uwaydah, Ibrahim M., 5,380,734, Cl. 514-357.000.
- American Sterilizer Company: See—
Lisak, Stephen P., 5,379,920, Cl. 222-129.000.
- Amerock Corporation: See—
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- Ameron Technologies, Inc.: See—
Tu, Xiang-Zheng, 5,381,231, Cl. 356-352.000.
- Ametek Aerospace Products, Inc.: See—
DiCicco, William M., 5,380,224, Cl. 439-610.000.
- Amick, Patricia J.; Perrymore, Lloyd; and Auld, Michael D., to McDonnell Douglas Corporation: Flat to spiral polymer light waveguide, 5,381,506, Cl. 385-129.000.
- Amini, Nader; Boury, Bechara F.; and Lohman, Terence J., to International Business Machines Corp.: DMA controller including a FIFO register and a residual register for data buffering and having different operating modes, 5,381,538, Cl. 395-425.000.
- Amkor Electronics, Inc.: See—
Lerner, Steve P.; and Razu, David S., 5,381,042, Cl. 257-712.000.
- Amukon Kabushikikaisha: See—
Sasaki, Masayoshi, 5,380,436, Cl. 210-383.000.
- Analog Devices, Inc.: See—
Mueck, Michael; and Ferguson, Paul F., Jr., 5,381,148, Cl. 341-139.000.
- Anami, Takayuki, to Olympus Optical Co., Ltd.: Apparatus for taking liquid content for use in analysis out of container, 5,380,486, Cl. 422-63.000.
- Andermann, Guy: Single irrigating solution used in ocular therapy for the endothelium protection and cornea preservation, 5,380,537, Cl. 424-602.000.
- Anderson, Charles C.; Jennings, David F.; Leszyk, Gerald M.; and Niemeyer, David A., to Eastman Kodak Company: Imaging element for use in electrostatography, 5,380,584, Cl. 428-323.000.
- Anderson, James D., to Burndy Corporation: Electrical terminal block, 5,380,226, Cl. 439-724.000.
- Anderson, Janeen D. W.: See—
Platt, John C.; and Anderson, Janeen D. W., 5,381,515, Cl. 395-24.000.
- Anderson, Stanley R.: Gas compressor/expander, 5,379,736, Cl. 123-204.000.
- Ando Electric Co., Ltd.: See—
Kojima, Eiji, 5,381,045, Cl. 327-141.000.
- Ando, Kazumasa; Nakata, Shigeharu; Kitagawa, Nobutaka; and Hanatani, Shingo, to Kabushiki Kaisha Toshiba: Bit position encoder improved in operating speed, 5,381,491, Cl. 382-56.000.
- Ando, Nobuhiko; and Hishinuma, Takashi, to Sony Corporation: Shock absorber device for a portable electronic apparatus, 5,379,990, Cl. 267-34.000.
- Andrasi, Ferenc: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andrasi, Ferenc; Hodula, Eszter; Toldy, Lajos; Sütka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.
- Andrea, Douglas; and Topf, Martin, to Andrea Electronics Corporation: Noise cancellation apparatus, 5,381,473, Cl. 379-387.000.
- Andrea Electronics Corporation: See—
Andrea, Douglas; and Topf, Martin, 5,381,473, Cl. 379-387.000.
- Andrew, Michael A.; Birdsell, Walter; and Mowers, Stephen D., to Black & Decker Inc.: Hot water generator assembly for coffeemaker, 5,379,682, Cl. 99-281.000.
- Andrews, Angus P., to Rockwell International Corporation: Method of estimating location and orientation of magnetic dipoles using extended Kalman filtering and Schwegge likelihood ratio detection, 5,381,095, Cl. 324-326.000.
- Andrews, Jeffrey F.; and Kure, Jane T., to Minnesota Mining and Manufacturing Company: Disinfecting shampoo composition for animals, 5,380,756, Cl. 514-552.000.
- Andrieux, Jean: See—
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean; Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice, 5,380,750, Cl. 514-443.000.
- Andritz Sprout-Bauer, Inc.: See—
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- Andrzejak, Dennis V.; Hering, William E.; and Viano, David C., to General Motors Corporation: Seatback load applying device, 5,379,646, Cl. 73-804.000.
- Angers, John W.: See—
Landry, Walter J.; and Angers, John W., 5,379,578, Cl. 56-14.500.
- Angiomed AG: See—
Dormia, Guido, 5,380,335, Cl. 606-127.000.
- Anie, Sylvia J.: See—
Waigh, Roger D.; Fell, John T.; Anie, Sylvia J.; and Wood, Brian, 5,380,514, Cl. 424-9.000.
- Anikem Pty. Limited: See—
Chippis, Evan R., 5,380,440, Cl. 210-709.000.
- Anquetin, Robert P., to Black & Decker Inc.: Universal plug, 5,380,135, Cl. 411-38.000.
- Antici, Roger: See—
Rehse, Denis; Rumsey, Frank; Petito, Tim; Garrett, Samuel; Olivares, Giovanna; Welsh, David; Antici, Roger; and Bruno, Josepha, 5,381,190, Cl. 351-57.000.
- Antonucci, Joseph M.; Stansbury, Jeffrey W.; and Cheng, Guo-Wei, to United States of America, Commerce: Multifunctional acrylates and the synthesis thereof, 5,380,901, Cl. 556-440.000.
- Aoki, Akio, to Trion Corporation: An adjustable ball catching apparatus, 5,379,460, Cl. 2-19.000.
- Aoki, Ichiro: See—
Yoshida, Akihiko; Imoto, Kiyoaki; Nonaka, Seiji; and Aoki, Ichiro, 5,381,303, Cl. 361-502.000.
- Aoki, Makoto; and Koike, Shoji, to Canon Kabushiki Kaisha: Ink jet recording method using the same, and ink jet recording apparatus using the same, 5,380,358, Cl. 106-20.00R.
- Aoki, Mitsuo; Suguro, Yoshihiro; Kondo, Tomio; Nakamura, Yasushi; and Miyamoto, Satoru, to Ricoh Company, Ltd.: Toner for developing latent electrostatic images, 5,380,616, Cl. 430-110.000.
- Aoyagi, Shigetake: See—
Saito, Mitsuo; Umebayashi, Yoshihiro; Aoyagi, Shigetake; Isozumi, Shuzo; Tanaka, Noriyuki; and Kasa, Junichi, 5,379,622, Cl. 72-88.000.
- Aphios Corporation: See—
Castor, Trevor P.; and Hong, Glenn T., 5,380,826, Cl. 530-422.000.
- Appel, James J., to Xerox Corporation: Raster output scanner (ROS) using an overfilled polygon design with minimized optical path length, 5,381,259, Cl. 359-216.000.
- Applied Magnetics Corporation, Inc.: See—
Karam, Raymond M., II, 5,381,288, Cl. 360-104.000.
- Applied Materials, Inc.: See—
Robertson, Robert; Kollrack, Marc M.; Lee, Angela T.; Law, Kam; and Maydan, Dan, 5,380,566, Cl. 427-534.000.
- Tepman, Avi, 5,380,414, Cl. 204-192.300.
- Urinsky, Yuri S.; and Lee, Harry Q., 5,381,004, Cl. 250-307.000.
- AptarGroup, Inc.: See—
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- Aqua Systems, Inc.: See—
Dempsey, Jack C., 5,379,832, Cl. 165-110.000.
- Aquila Enterprises: See—
Carcich, John; and Lowry, William J., 5,379,549, Cl. 47-84.000.
- Arabori, Hideo: See—
Kanda, Yoichi; and Arabori, Hideo, 5,380,843, Cl. 544-197.000.
- Arahori, Tadahisa; Hayashi, Shigetoshi; and Minagawa, Kazuhiro, to Sumitomo Metal Industries, Ltd.: Process for producing silicon carbide-base complex, 5,380,511, Cl. 423-345.000.
- Arai, Atsushi; and Kurata, Tetsuji, to Canon Kabushiki Kaisha: Ink jet apparatus with recovery mechanism, 5,381,169, Cl. 347-33.000.
- Arai, Kazutaka: See—
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- Arai, Yoichiro: See—
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- Araki, Kenji: See—
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- Arch Development Corporation: See—
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- Archer Daniels Midland Company: See—
Short, Rodney A.; Dunn, Daniel T.; Cook, John D.; and Boyd, William O., 5,380,058, Cl. 296-98.000.
- Archive Corporation: See—
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- Arco Chemical Technology L.P.: See—
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- Arco Research Co., Inc.: See—
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- Arima, Tadao; and Okamura, Koji, to Fujitsu Limited: Planar wave guide type optical amplifier, 5,381,262, Cl. 359-341.000.
- Arimura, Masayuki: See—
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- Arlington Fabrics Corporation: See—
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- Armini, Anthony J.; and Bunker, Stephen N., to Implant Sciences Corporation: Method of epitaxially growing thin films using ion implantation, 5,379,712, Cl. 117-75.000.
- Arney, Michel D.; Madore, Carl L.; and Malewicz, Andrzej M., to Rollerblade, Inc.: In-line skate, 5,380,020, Cl. 280-11.220.

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Poole, Donald R.; and Kwong, Patrick C., 5,380,380, Cl. 149-22.000.

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Schneider, Werner; Muller, Bernd-Henrik; and Rudolph, Gert, 5,379,789, Cl. 131-360.000.

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Kling, Sean; Bunton, Mark A.; and Moskal, Thomas E., 5,379,727, Cl. 122-392.000.

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Dee, Alejandro; and Gradle, Charles, 5,379,724, Cl. 119-158.000.

Larson, Larry G., 5,379,722, Cl. 119-14.100.

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Theroux, Gil; Baca, Allen G.; and Hamp, Charles H., III, 5,381,304, Cl. 361-706.000.

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Bae, Sang-Chul, to Samsung Electronics Co., Ltd. Power transfer apparatus of fully-automated washing machine. 5,379,616, Cl. 68-23.700.

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Martinson, Lee S.; Schweitzer, John W.; and Baenziger, Norman C., 5,380,377, Cl. 148-557.000.

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Shen, Xiao An; Bai, Yu Sheng; and Pearson, Eric M., 5,381,362, Cl. 364-825.000.

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Elia, James P.; and Bains, Jerry W., 5,380,329, Cl. 606-72.000.

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Leung, Woon F.; and Shapiro, Ascher H., 5,380,266, Cl. 494-53.000.

Baker, Stephen M.; and Lupton, Peter J., to International Business Machines Corporation. Data backup and recovery in a data processing system. 5,381,545, Cl. 395-575.000.

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Bates, Jerry L.; and Garza, Everardo, 5,380,148, Cl. 414-798.200.

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Balousek, Andrew J., to Unisys Corporation. Streak detection for ink-jet printer with obliquely connected segment pairs. 5,381,099, Cl. 324-555.000.

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Neunhoeffer, Hans; Gerstung, Stefan; Clausen, Thomas; and Balzer, Wolfgang R., 5,380,340, Cl. 8-409.000.

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Kraft, Terry, 5,380,895, Cl. 556-1.000.

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Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Matsuyama, Kenji; Noguchi, Kazuhito; and Yano, Mitsuo, 5,380,921, Cl. 562-16.000.

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Barber, Frank E.: See—
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Kirk, David B.; and Barr, Alan H., 5,381,361, Cl. 364-807.000.

Barr, Morton L.; Vincenti, Paul J.; and Burke, Robert V., to Mennen Company, The. Enhanced efficacy, long-lasting fragrance composition, and deodorant composition, for masking malodor, containing the fragrance composition. 5,380,707, Cl. 512-17.000.

Barrett, Alan J.; Buttle, David J.; and Rich, Daniel H., to Boots Company, The. Chymopapain and method of purifying it on an inhibitory dipeptide affinity column. 5,380,656, Cl. 435-219.000.

Barth, Hubert; Hartenstein, Johannes; Rudolph, Claus; Schachtele, Christoph; Betche, Hans-Jurgen; Peck, Reinhard; and Osswald, Hartmut, to Goedecke Aktiengesellschaft. Bis-(1H-indol-3-yl)-maleinimide derivatives, processes for the preparation thereof and pharmaceutical compositions containing them. 5,380,746, Cl. 514-414.000.

Barton, Jerry M.: See—
Doehner, Robert F., Jr.; Barton, Jerry M.; and Kuhn, David G., 5,380,876, Cl. 548-565.000.

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Barzideh, Bijan; Lewis, Timothy; and Smith, Dean, to Eastman Kodak Company. Sheet media handling apparatus. 5,379,999, Cl. 271-264.000.

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Brudermueller, Martin; and Merger, Franz, 5,380,918, Cl. 560-130.000.

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Lamm, Gunther; Beichelt, Helmut; and Schaffer, Ortwin, 5,380,859, Cl. 546-296.000.

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Roser, Joachim, 5,380,622, Cl. 430-325.000.

Siegel, Bernd; and Patsch, Manfred, 5,380,941, Cl. 564-48.000.

BASF Corporation: See—
Fersch, Ken, 5,380,350, Cl. 71-64.030.

Kent, George M.; Iig, Otto M.; and Hoyt, Matthew B., 5,380,477, Cl. 264-103.000.

Williams, Charles F.; and Gessner, Michael A., 5,379,947, Cl. 241-21.000.

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Ott, Gunther; Reiter, Udo; Jock, Walter; Santure, David J.; and Ruhl, Dieter, 5,380,412, Cl. 204-181.700.

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Gross, Lutz-Werner; Poth, Ulrich; Hille, Dieter; and Weidemeier, Klaus, 5,380,565, Cl. 427-475.000.

Basix Technologies Ltd.: See—
Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., 5,380,973, Cl. 219-69.120.

Bassin, David: See—
Murphy, Anthony J.; Bassin, David; and Mason, David, 5,379,776, Cl. 128-705.000.

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- Bates, Jerry L.; and Garza, Everardo, to Baldwin Technology Corporation. Stacking machine with quick release mounts. 5,380,148, Cl. 414-798.200.
- Battaglia, Joseph M.: See—
Bustos, Rafael T.; King, Leslie; and Battaglia, Joseph M., 5,379,905, Cl. 211-59.200.
- Batterman, Cynthia K.: See—
Beyts, Pamela K.; Lillard, Donald W.; and Batterman, Cynthia K., 5,380,541, Cl. 426-548.000.
- Bauer, Klaus: See—
Schutze, Rainer; Lohrer, Heinz-Josef; Ziemer, Frank; Bauer, Klaus; and Bieringer, Hermann, 5,380,852, Cl. 546-174.000.
- Baum, Elliott W.: See—
Berkowitz, Alan J.; Baum, Elliott W.; and Chirea, Lucian N., 5,379,975, Cl. 248-188.800.
- Baum, Gary: See—
Blomgren, James S.; Semmelmeier, Mark; Luong, Tuan; and Baum, Gary, 5,381,543, Cl. 395-550.000.
- Baum, Richard I.; Plambeck, Kenneth E.; Scalzi, Casper A.; Schmalz, Richard J.; and Sinha, Bhaskar, to International Business Machines Corporation. Large logical addressing method and means. 5,381,537, Cl. 395-400.000.
- Baumgartner, Rainer: See—
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Hutter, Joachim; and Rounding, Howard-Paul, 5,380,851, Cl. 546-167.000.

Bossen, Douglas C.; Chen, Chin-Long; Hsiao, Mu-Yue; and Mulligan, James M., to International Business Machines Corporation. Single width bar code with end code providing bidirectionality. 5,380,998, Cl. 235-494.000.

Bosso, Sergio: See—
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Rowland, Christopher A.; Bardsley, Earl; and DeMello, Richard, 5,379,779, Cl. 128-772.000.

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Amini, Nader; Boury, Bechara F.; and Lohman, Terence J., 5,381,538, Cl. 395-425.000.

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Bowen, Larry; Brackmann, Warren A.; Cohen, Norman; Fazekas, George; Heffernan, Joseph; Kaczmarek, Peter P.; and Snaird, Stanislav M., to Rothmans, Benson & Hedges Inc. Multiple-smoking cigarette system. 5,379,788, Cl. 131-331.000.

Bowen, Michael L.: See—
Delk, Robert E.; and Bowen, Michael L., 5,379,489, Cl. 24-30.50R.

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Bowes, Stephen M., Jr., to Mobile Pulley & Machine Works, Inc. Replaceable excavating tooth assembly. 5,379,535, Cl. 37-452.000.

Bowman, Robert G. Protective boot for heel ends of skis. 5,380,041, Cl. 280-815.000.

Bowman, Wayne A.: See—
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Boyd, William O.: See—
Short, Rodney A.; Dunn, Daniel T.; Cook, John D.; and Boyd, William O., 5,380,058, Cl. 296-98.000.

BP Chemicals Limited: See—
Van Ooijen, Johannes A. C., 5,380,939, Cl. 562-607.000.

Bracco International B.V.: See—
Schneider, Michel; Bichon, Daniel; Bussat, Philippe; Puginier, Jerome; and Hybl-Sutherland, Eva, 5,380,519, Cl. 424-9.000.

BRACCO, S.p.A.: See—
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Bracken, Kenneth L., to Wespatt, Inc. Tensioning apparatus for a web threading endless rope. 5,379,932, Cl. 226-92.000.

Brackmann, Warren A.: See—
Bowen, Larry; Brackmann, Warren A.; Cohen, Norman; Fazekas, George; Heffernan, Joseph; Kaczmarek, Peter P.; and Snaird, Stanislav M., 5,379,788, Cl. 131-331.000.

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Roberts, David A.; Bradbury, Robert H.; Edwards, Martin P.; and Ratcliffe, Arnold H., 5,380,730, Cl. 514-333.000.

Bradley, Joe A.; and Spector, George. Emergency toy. 5,380,205, Cl. 434-236.000.

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Conrad, H. Edward; Fugedi, Peter; Brandley, Brian K.; Lam, Lun H.; and Laine, Roger A., 5,380,716, Cl. 514-56.000.

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Vienne, Fabien, 5,379,565, Cl. 52-606.000.

Brandt, Timothy B., to Parr Manufacturing, Inc. Fuel filter with electrostatic charge preventing media. 5,380,432, Cl. 210-243.000.

Branley, Christine. Animal grooming system and method. 5,379,723, Cl. 119-94.000.

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Barnes, Russell H.; Brasch, Jimmie W., Sr.; Purdy, David L.; and Lougheed, William D., 5,379,764, Cl. 128-633.000.

Bratten, Jack R. Method for filtration of machine tool coolant. 5,380,446, Cl. 210-805.000.

Brauchli, Mary C.: See—
Blanvalet, Claude; Brauchli, Mary C.; Dautas, Jolanta; and Marchese, Constance A., 5,380,452, Cl. 252-117.000.

Braun AG: See—
Rebordosa, Antonio; and Golob, Jürgen, 5,379,953, Cl. 241-101.200.

Braun Aktiengesellschaft: See—
Mothrath, Georg; and Peter, Andreas, 5,379,925, Cl. 222-475.100.

Braun, Franz-Josef: See—
Wendel, Hanns; and Braun, Franz-Josef, 5,380,760, Cl. 514-573.000.

Brauner, Arne H.; Bernard, Stuart N.; and Snee, Francis M., to General Mills, Inc. Package including a separately formed premium tray. 5,379,886, Cl. 206-216.000.

Brauns, Robert A. W.; Agrawal, Kamy; and Aubrun, Vincent, to Larches Corporation. The Method for designation of data in a data bank and extraction of data for use in a computer program. 5,381,555, Cl. 395-800.000.

Brayer, Jean-Louis: See—
Benoit, Marc; Laugraud, Sylvain; and Brayer, Jean-Louis, 5,380,883, Cl. 549-438.000.

Brazell, Kenneth M.; Everts, Robert G.; and Chiang, Chi-Kin. Foldable extension table for a circular table saw. 5,379,815, Cl. 144-287.000.

Breen, Michael T., to Eaton Corporation. Trailer stability system and method. 5,380,072, Cl. 303-7.000.

Breland, Bobby L.: See—
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Breland, Bura B.; and Breland, Bobby L. Vaporized fuel injection system. 5,379,742, Cl. 123-549.000.

Bremmer, Jeffrey N.: See—
Schrenk, Walter J.; Roehrs, Herbert C.; Shastri, Ranganath K.; Ayres, Ralph E.; Barger, Mark A.; and Bremmer, Jeffrey N., 5,380,479, Cl. 264-241.000.

Brenco Incorporated: See—
Sink, Danny R., 5,380,102, Cl. 384-484.000.

Brent, Jason B.; and Hatala, Edward, to Cray Communications Limited. Packet transmission system. 5,381,408, Cl. 370-60.000.

Breuhan, Ronald G., to Ford Motor Company. Force assisted tube connector. 5,380,051, Cl. 285-307.000.

Bricmanage, Inc.: See—
Bricmont, Francis H., 5,379,829, Cl. 164-476.000.

Bricmont, Francis H., to Bricmanage, Inc. Process of continuous casting and rolling metal strip. 5,379,829, Cl. 164-476.000.

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Tokunaga, Toshio; Soga, Naomichi; and Kawashima, Haruo, 5,380,384, Cl. 156-111.000.

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Iwasaki, Yoshihisa; Takeda, Tohru; and Ohta, Masao, 5,380,252, Cl. 474-77.000.

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Stamler, Jonathan; Loscalzo, Joseph; Slivka, Adam; Simon, Daniel; Brown, Robert; and Drazen, Jeffrey, 5,380,758, Cl. 514-562.000.

Brinkley, Gerald E.: See—
Wandt, Henry; and Brinkley, Gerald E., 5,379,490, Cl. 24-3.00J.

Brinon, Thierry, to Vygon. Unitary composite connector for a liquid circuit, in particular for medical applications. 5,380,306, Cl. 604-244.000.

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Balasubramanian, Neelakantan; and St. Laurent, Denis R., 5,380,713, Cl. 514-18.000.

Chen, Shu-Hui; Farina, Vittorio; Roth, Gregory; and Kadow, John, 5,380,751, Cl. 514-449.000.

Romine, Jeffrey L.; Meanwell, Nicholas A.; and Martin, Scott W., 5,380,854, Cl. 548-235.000.

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Elgar, Anthony D.; Sales, Brian T.; and Parkes, Adrian S., 5,379,803, Cl. 138-89.000.

British Technology Group Ltd.: See—
Barnard, Geoffrey J. R.; Goodwin, Dean; and Davidson, Robert S., 5,380,650, Cl. 435-28.000.

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Brixner, Lothar H.; and Ferretti, August, to Du Pont de Nemours, E. I., and Company. Photosensitive europium-doped barium fluorobromide phosphors. 5,380,599, Cl. 428-691.000.

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Brodin, Roger: See—
Boigegrain, Robert; Brodin, Roger; Gully, Danielle; Molimard, Jean-Charles; and Olliero, Dominique, 5,380,736, Cl. 544-369.000.

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Brooks, Todd L.: See—
Rybicki, Mathew A.; and Brooks, Todd L., 5,381,112, Cl. 330-253.000.

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Asano, Fumiaki, 5,379,707, Cl. 112-121.120.
Kushida, Tsuyoshi, 5,379,994, Cl. 271-9.000.
Nakagawa, Shin, 5,379,998, Cl. 271-248.000.
Sasaki, Ryoichi; and Furukawa, Akihiro, 5,381,161, Cl. 345-212.000.

Brothers, Larry P., to Lebone Corporation. Airstream decontamination unit. 5,380,355, Cl. 96-64.000.

Brotz, Gregory R. Sheet-illuminating system. 5,381,310, Cl. 362-32.000.

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Falter, Ronald C.; and Broucksou, Robert, 5,379,679, Cl. 91-424.000.

Brovelli, Virginio, to Lanard Toys Limited. Toy that disassembles upon an impact. 5,380,231, Cl. 446-6.000.

Brown, Bernard T., to Emerson Electric Co. Gas control valve having polymeric material body combined with thermally responsive gas shutoff valve having metallic body. 5,379,794, Cl. 137-75.000.

Brown, Douglas P.: See—
McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.

Brown, Douglas S.; Scherger, David F.; Heilman, George C.; and Brown, Robert B., to Fresh Products, Inc. Dual soap and fragrance dispenser. 5,379,917, Cl. 222-4.000.

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Brown, G. Ronald: See—
Malek, Abdul; Monasterios, Clevis J.; Brown, G. Ronald; and Gupta, Ved P., 5,380,928, Cl. 562-512.400.

Brown, Geoffrey D.: See—
Keogh, Michael J.; and Brown, Geoffrey D., 5,380,591, Cl. 428-379.000.

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Brown, Russell A.; and Watkins, Gary S., to Evans & Sutherland Computer Corp. System for line interpolation for computer graphics displays. 5,381,519, Cl. 395-132.000.

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Brownell, Greg A., to SEG Corporation. Motion sensor assembly. 5,381,009, Cl. 250-342.000.

Bruce, Mark L.; and Keebler, Douglas J., to Suprex Corporation. Variable restriction. 5,379,790, Cl. 137-1.000.

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Brudermueller, Martin; and Merger, Franz, to BASF Aktiengesellschaft. Preparation of 4-acetoxystyrene. 5,380,918, Cl. 560-130.000.

Brunell, Robert A.; and Smith, John M., to Schott Fiber Optics. Flexible guide tube assembly. 5,381,226, Cl. 356-241.000.

Brunelle, Philip E., to Maxtor Corporation. Demand allocation of read/write buffer partitions favoring sequential read cache. 5,381,528, Cl. 395-250.000.

Bruno, Josepha: See—
Rehse, Denis; Rumsey, Frank; Petito, Tim; Garrett, Samuel; Olivares, Giovanna; Welsh, David; Antici, Roger; and Bruno, Josepha, 5,381,190, Cl. 351-57.000.

Bruno, Raymond J.: See—
Dunn, Victor S.; and Bruno, Raymond J., 5,379,804, Cl. 138-104.000.

Bruno, Vittorio: See—
Kostka, Richard A.; and Bruno, Vittorio, 5,380,151, Cl. 415-145.000.

BST Servo-Technik GmbH: See—
Schrauwen, Hans J.; Nacke, Theodor; and Bettfuhr, Jürgen, 5,379,656, Cl. 73-865.900.
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BTG Kalle Inventing AB: See—
Jacobsson, Sven-Ake, 5,380,470, Cl. 261-16.000.

Buchanan, Nigel, to Alba Tools Limited. Indicating device. 5,380,091, Cl. 374-16.000.

Buckanin, Richard S., to Minnesota Mining and Manufacturing Company. Fluorochemical aminoalcohols. 5,380,778, Cl. 524-247.000.

Buckland, Dennis J.: See—
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Buckman Laboratories International, Inc.: See—
Morgan, Frederic L., 5,380,762, Cl. 514-673.000.

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Roy, Joy; Stanley, Douglas M.; Buehler, James D.; and Adams, Ronald L., 5,381,162, Cl. 347-10.000.

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Kuster, Werner, 5,379,950, Cl. 241-30.000.

Massen, Robert; Hegelbach, Hugo; Zuber, Jurg; Tobler, Hans; Schoenenberger, Niklaus; Zapf, Helmut; and Gensjager, Helmut, 5,379,949, Cl. 241-30.000.

Bui, Loc V.: See—
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Bullard, Allen: See—
Essop, Saleem; and Bullard, Allen, 5,380,417, Cl. 204-269.000.

Bullis, Robert H.: See—
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- Bunker, Stephen N.: See—
Armini, Anthony J.; and Bunker, Stephen N., 5,379,712, Cl. 117-75.000.
- Bunton, Mark A.: See—
Kling, Sean; Bunton, Mark A.; and Moskal, Thomas E., 5,379,727, Cl. 122-392.000.
- Burchart, Joachim: See—
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- Burfeindt, Karl L., to Unisys Corporation. Sonar transducer calibration apparatus and method. 5,381,383, Cl. 367-13.000.
- Burg, Douglas A.; Kleiman, Robert; and Erhan, Selim M., to United States of America, Agriculture. Production of hydroxy fatty acids and estolide intermediates. 5,380,894, Cl. 554-219.000.
- Burge, Melvin L.: See—
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- Burgess, James O., to Systems Research Laboratories, Inc. No skid brake control. 5,381,337, Cl. 364-426.020.
- Burke, Robert V.: See—
Barr, Morton L.; Vincenti, Paul J.; and Burke, Robert V., 5,380,707, Cl. 512-17.000.
- Burkert, Michael J.; and Adonakis, Nikolaos A., to General Motors Corporation. Swash plate compressor with unitary bearing mechanism. 5,380,167, Cl. 417-269.000.
- Burndy Corporation: See—
Anderson, James D., 5,380,226, Cl. 439-724.000.
- Piorunneck, Heinz; and Noschese, Rocco J., 5,380,213, Cl. 439-160.000.
- Burney, Michael. Holographic display transmitting device. 5,381,249, Cl. 359-32.000.
- Burns, Carole L. Programmable dental x-ray inscription system and method of processing dental insurance claims using same. 5,381,457, Cl. 378-166.000.
- Burns, Matthew M., to SciMed Life Systems, Inc. Balloon catheter assembly. 5,380,282, Cl. 604-96.000.
- Burr Oak Tool & Gauge Company: See—
Harman, Galen B.; and Milliman, James G., 5,379,624, Cl. 72-149.000.
- Burroughs Wellcome Co.: See—
Hodgson, Simon T., 5,380,759, Cl. 514-248.000.
- Busch, Frank R.; Lehner, Richard S.; and O'Neill, Brian T., to Pfizer Inc. Preparation of beta-ketoesters useful in preparing quinolone antibiotics. 5,380,860, Cl. 546-315.000.
- Buschulte, Joachim. Apparatus for the detachable coupling of gripping devices or corresponding tools on robot arms. 5,380,117, Cl. 403-323.000.
- Bushman Limited: See—
Ealovega, George D.; and West, Richard P., 5,379,677, Cl. 89-130.000.
- Bussat, Philippe: See—
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- Bustos, Rafael T.; King, Leslie; and Battaglia, Joseph M., to L&P Property Management Company. Merchandising display system including gravity feed tray. 5,379,905, Cl. 211-59.200.
- Butter, Adrian S.; Finkel, Brian S.; Kao, Chang-Yung; Kodukula, Sivarama K.; and Kuruts, James P., to International Business Machines Corporation. System for translating encrypted data. 5,381,480, Cl. 380-37.000.
- Butterworth, Stephen J.: See—
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- Buttle, David J.: See—
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- Buxco Electronics, Inc.: See—
Lomask, Morton, 5,379,777, Cl. 128-716.000.
- BWG Bergwerk- und Walzwerk- Maschinenbau GmbH: See—
Noe, Oskar, 5,381,342, Cl. 364-474.340.
- Bylander, James R., to Minnesota Mining and Manufacturing Company. Modular multifiber connector with phone-like plug and socket. 5,381,498, Cl. 385-83.000.
- Bymes, Larry E.: See—
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- Cable Television Laboratories, Inc.: See—
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- Cacossa, Frank G.; and Cacossa, Kenneth F., to Sand & Sea Corporation. Beach stabilizer having pile guides. 5,380,124, Cl. 405-16.000.
- Cacossa, Kenneth F.: See—
Cacossa, Frank G.; and Cacossa, Kenneth F., 5,380,124, Cl. 405-16.000.
- Cadence Design Systems, Inc.: See—
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- Caere Corporation: See—
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- Caignard, Daniel H.: See—
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean; Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice, 5,380,750, Cl. 514-443.000.
- Caillouet, Kenneth G., to LaCane Manufacturing, Inc. Cane harvester and method. 5,379,577, Cl. 56-14.300.
- CalComp Inc.: See—
Landmeier, Waldo L., 5,381,160, Cl. 345-174.000.
- Caleix, Clovis; and Narcy, Jean-Luc, to Cigar Lake Mining Corporation; and Cogema. Non-entry method of underground excavation in weak or water bearing grounds. 5,380,127, Cl. 405-130.000.
- Calgene Chemical, Inc.: See—
Flider, Frank J., 5,380,469, Cl. 252-565.000.
- California Institute of Technology: See—
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- California State University, Fresno Foundation: See—
Clary, Carter D.; and Petrucci, Vincent E., 5,380,189, Cl. 426-438.000.
- Callant, Paul: See—
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- Calspan Corporation: See—
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- Cambray, John E.; and Scharmer, Andrew J., to Davox Corporation. Supervisory management center with parameter testing and alerts. 5,381,470, Cl. 379-216.000.
- Campbell, James R. Method and apparatus for installation of honeycomb core seals. 5,380,153, Cl. 415-170.100.
- Campbell, John R.; and Presley, James R., to General Electric Company. Functionalized olefin polymers and polyphenylene ether compositions containing them. 5,380,796, Cl. 525-68.000.
- Campe, Hilmar V.; Ebinger, Horst; Nikl, Dieter; and Warzawa, Wolfgang, to Nukem GmbH. Solar cell and method for manufacture thereof. 5,380,372, Cl. 136-258.000.
- Canavan, Richard W.; and Mathews, John G., to Uvex Safety, LLC. Protective eyeglasses construction with adjustable temples. 5,381,192, Cl. 351-118.000.
- Cannarsa, Michael J.: See—
Klang, Jeffrey A.; Cannarsa, Michael J.; Liotta, Frank J., Jr.; and Smyth, Scott E., 5,380,597, Cl. 428-441.000.
- Cannondale Corporation: See—
Pong, Alex; and Pong, Skooks, 5,380,027, Cl. 280-279.000.
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- Aoki, Makoto; and Koike, Shoji, 5,380,358, Cl. 106-20.00R.
- Arai, Atsushi; and Kurata, Tetsuji, 5,381,169, Cl. 347-33.000.
- Aso, Takashi; and Ohara, Yasunori, 5,381,514, Cl. 395-2.730.
- Fukuda, Tsuyoshi, 5,381,199, Cl. 354-226.000.
- Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asoka, Masanobu; Mihara, Tadashi; Kodera, Yasuto; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.
- Hoshi, Hiroaki; Nishimura, Matsuomi; Tanaka, Kazumi; Miyazaki, Takeshi; Ohnishi, Toshiyuki; and Takayama, Hidehito, 5,380,490, Cl. 422-73.000.
- Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,381,248, Cl. 358-538.000.
- Kanbe, Junichiro; and Katagiri, Kazuharu, 5,381,254, Cl. 359-54.000.
- Kasai, Shozo; Tanita, Takeo; Yasuhara, Masateru; Azuma, Yusaku; Yamamoto, Toshihiro; Nikaide, Norio; Inaba, Ryohei; and Arai, Mitsuo, 5,380,138, Cl. 414-277.000.
- Kashimura, Kazunori, 5,381,179, Cl. 348-376.000.
- Kawagishi, Hideyuki; Miyazaki, Toshihiko; Kawade, Hisaaki; Kishi, Etsuro; Takimoto, Kiyoshi; and Takeda, Toshihiko, 5,381,400, Cl. 369-272.000.
- Kazumi, Jiro, 5,381,207, Cl. 354-412.000.
- Kobayashi, Shigeyuki, 5,380,222, Cl. 439-590.000.
- Kohno, Michio, 5,381,225, Cl. 356-237.000.
- Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yui-chi, 5,379,515, Cl. 29-852.000.
- Miyamoto, Ryosuke; and Sakai, Shinji, 5,381,178, Cl. 348-333.000.
- Murakami, Tsutomu, 5,380,371, Cl. 136-256.000.
- Murayama, Masahiro, 5,381,240, Cl. 358-436.000.
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Dautas, Jolanta: See—
Blanvalet, Claude; Brauchli, Mary C.; Dautas, Jolanta; and Marchese, Constance A., 5,380,452, Cl. 252-117.000.
Daute, Peter; Gruetzmacher, Roland; and Mertscheit, Nicole, to Henkel Kommanditgesellschaft Auf Aktien. Process for the production of epoxide ring opening products having a defined residual epoxide oxygen content. 5,380,886, Cl. 549-539.000.
Davidson, Lawrence P. Weedless lure. 5,379,544, Cl. 43-42.240.
Davidson, Robert S.: See—
Barnard, Geoffrey J. R.; Goodwin, Dean; and Davidson, Robert S., 5,380,650, Cl. 435-28.000.
Davidson Teatron, Inc.: See—
Piazza, Charles L.; and Therrien, Edward E., 5,380,183, Cl. 425-434.000.
Davies, Benjamin P. Portable privacy closet. 5,379,466, Cl. 4-449.000.
Davis, Alan R.: See—
Hsu, Kuo-Hom L.; Teller, Daniel M.; Davis, Alan R.; Lubeck, Michael D.; Munson, Harry R., Jr.; Jagdmann, Gunnar E.; and Uwaydah, Ibrahim M., 5,380,734, Cl. 514-357.000.
Davis, Harry G.: See—
McDonough, Leslie M.; and Davis, Harry G., 5,380,524, Cl. 424-84.000.
Davis, Jeffrey B., to National Semiconductor Corporation. Overvoltage tolerant output buffer circuit. 5,381,061, Cl. 326-57.000.
Davis, Mark W.: See—
Stein, Judith; and Davis, Mark W., 5,380,788, Cl. 524-730.000.
Davox Corporation: See—
Cambray, John E.; and Scharmer, Andrew J., 5,381,470, Cl. 379-216.000.
Dawson, Melvin. Versatile tape measure tool. 5,379,524, Cl. 33-768.000.
Day, Charles E. Method for treatment of irritable bowel syndrome. 5,380,522, Cl. 424-78.080.
Day, James R.: See—
Schumacher, Richard A.; and Day, James R., 5,381,306, Cl. 361-792.000.
Day, Robert S.: See—
Willer, Rodney; Stern, Alfred G.; and Day, Robert S., 5,380,777, Cl. 524-186.000.
Dayco Products, Inc.: See—
Sanders, John D.; Holden, Homer N.; and Foster, Randy C., 5,380,050, Cl. 285-258.000.
DBM Industries Limited: See—
Perrella, Guido; and Bigler, Nicolas, 5,379,827, Cl. 164-343.000.
DeBruler, Dennis L.: See—
Daugherty, Thomas H.; DeBruler, Dennis L.; Greenberg, Daniel S.; Hodgdon, David J.; and Murphy, Douglas J., 5,381,405, Cl. 370-54.000.

DeCava, David C.: See—
Carver, Edward L., Jr.; and DeCava, David C., 5,380,491, Cl. 422-73.000.

Decker, William M., to United States of America, Army. Night vision goggle aided flight simulation system and method. 5,380,204, Cl. 434-36.000.

Deckers, Gregor; and Frohning, Dieter, to Hoechst Aktiengesellschaft. Process for separating aliphatic straight-chain compounds having terminal functional groups from alpha-isomers thereof. 5,380,892, Cl. 554-186.000.

Deckner, George E.: See—
Alban, Noelle C.; and Deckner, George E., 5,380,528, Cl. 424-401.000.

Decore, Bertrand; and Perrignon de Troyes, Francois, to Legrand. Equipment support adapted to be attached to the body of trunking with inwardly facing lips. 5,379,972, Cl. 248-27.100.

Dee, Alejandro; and Gradle, Charles, to Babson Bros. Co. Ultrasound test dip. 5,379,724, Cl. 119-158.000.

Deere & Company: See—
Easton, David J.; Thompson, Carl R.; and Klages, Corwin L., 5,380,964, Cl. 200-43.010.

Haddick, Brian J.; and Peterson, Rudolph A., Jr., 5,379,733, Cl. 123-179.170.

McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.

Snyder, Michael D., 5,379,847, Cl. 172-128.000.

Degen, Bruno; Licht, Elke; Schulze, Manfred; Wagner, Gebhard; and Minuth, Klaus-Peter, to Bayer Aktiengesellschaft. Process for the preparation of organochlorosilanes. 5,380,903, Cl. 556-472.000.

DeGirolamo, Nicola, to Nicola DeGirolamo. Wall mounting system. 5,379,976, Cl. 248-221.200.

Deglave, Marcel: See—
Wirth, Didier G.; Deglave, Marcel; and Mouton, Marc-Henri, 5,380,856, Cl. 546-248.000.

de Groot, Gert J.; and Hamering, Hans, to U.S. Philips Corporation. Method of and arrangement for correcting vignetting. 5,381,174, Cl. 348-207.000.

de Gruijl, Johannes A.: See—
van den Brink, Breunis; Termaten, Gerrit J.; and de Gruijl, Johannes A., 5,380,322, Cl. 606-57.000.

Degussa Aktiengesellschaft: See—
Mangold, Helmut; Hartmann, Werner; Kleinschmit, Peter; Kerner, Dieter; and Rudolph, Thomas, 5,380,687, Cl. 501-128.000.

Panster, Peter; Jaenes, Arno; and Goebel, Thomas, 5,380,791, Cl. 524-837.000.

Schaefer, Andreas; Seep-Feldhaus, Anna-Hildegard; Jaeger, Wolfgang; Kalinowski, Joern; Wohlleben, Wolfgang; and Puchler, Alfred, 5,380,657, Cl. 435-172.300.

DeHaven-Hudkins, Diane L.; Earley, William G.; Kumar, Virendra; Mallamo, John P.; and Miller, Matthew S., to Sterling Winthrop Inc. 12-hetero substituted 6,11-ethano-6,11-dihydrobenzo (b) quinoxalinium salts and compositions and method of use thereof. 5,380,729, Cl. 514-284.000.

Dehne, Heinz-Wilhelm: See—
Kramer, Wolfgang; Berg, Dieter; Dehne, Heinz-Wilhelm; and Dutzmann, Stefan, 5,380,914, Cl. 560-35.000.

Deiminger, James P.; and Chatfield, Linda K., to University of California, The Regents of the. Method of treating waste water. 5,380,443, Cl. 210-724.000.

Deiss, Michael S., to Thomson Consumer Electronics, Inc. Clock recovery apparatus as for a compressed video signal. 5,381,181, Cl. 348-423.000.

DeJesus, Rafael: See—
Niedospial, John J.; Vacek, Ronald B.; and DeJesus, Rafael, 5,379,907, Cl. 215-247.000.

Dekatel Technology Corporation, Inc.: See—
Olson, James R., 5,380,780, Cl. 524-311.000.

Delam, Heinz; and Weber, Frank-Michael, to Gerb Schwingungs-solierungen GmbH & Co. KG. Horizontally and vertically acting viscous vibration damper. 5,379,991, Cl. 267-136.000.

Delco Electronics Corp.: See—
Shorkey, Michael J., 5,381,336, Cl. 364-424.050.

Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statotis, Eracilis, to Rhone-Poulenc Rorer, S.A. Process for the preparation of medication in the form of pearls. 5,380,532, Cl. 424-451.000.

Delk, Robert E.; and Bowen, Michael L., to Struckmeyer Corporation. Bag closure clamp with hinge-supplementing complementary cam surfaces. 5,379,489, Cl. 24-30.50R.

Del Sol Moreno, Gregorio: See—
Sevrin, Mireille; Menin, Jacques; Maloizel, Christian; Diaz Martin, Juan A.; Martin Escudero Perez, Ulpiano; Bedoya Zurita, Manuel; Del Sol Moreno, Gregorio; Jimenez Barguena, Maria D.; and Romanach Ferrer, Magali, 5,380,742, Cl. 514-397.000.

Delta Biotechnology Limited: See—
Ballance, David J.; Hinchliffe, Edward; Geisow, Michael J.; and Senior, Peter J., 5,380,712, Cl. 514-12.000.

DeLuca, Hector F.; and Scinski, Rafal R., to Wisconsin Alumni Research Foundation. Iodo vitamin D compounds and method for preparing same. 5,380,720, Cl. 514-167.000.

DeMaio, James B.: See—
Stout, James T.; and DeMaio, James B., 5,379,944, Cl. 229-117.130.

DeMarco, JoAnn: See—
Salamon, Peter A.; and DeMarco, JoAnn, 5,380,387, Cl. 156-154.000.

DeMars, Robert A. Combined dustpan and broom. 5,379,481, Cl. 15-257.400.

DeMello, Richard: See—
Rowland, Christopher A.; Bardsley, Earl; and DeMello, Richard, 5,379,779, Cl. 128-772.000.

Dempsey, Daniel J.: See—
Virgil, Hall, Jr.; Zia, Ninev K.; and Dempsey, Daniel J., 5,379,752, Cl. 126-116.00A.

Dempsey, Jack C., to Aqua Systems, Inc. Shell and coil heat exchanger. 5,379,832, Cl. 165-110.000.

Denis, Philippe; Metz, Francois; Patois, Carl; and Perron, Robert, to Rhone-Poulenc Chimie. Preparation of unsaturated carboxylic acids by carbonylation of allylic butenols and/or esters thereof. 5,380,938, Cl. 562-598.000.

Dennis, Macy S. Utility cart. 5,380,022, Cl. 280-47.350.

Dennis, Thomas M., to Dennis Tool Company. Cutting element for drill bits. 5,379,854, Cl. 175-434.000.

Dennis Tool Company: See—
Dennis, Thomas M., 5,379,854, Cl. 175-434.000.

Dental Marketing Specialists, Inc.: See—
Elia, James P.; and Bains, Jerry W., 5,380,329, Cl. 606-72.000.

Denz, Helmut; and Blumenstock, Andreas, to Robert Bosch GmbH. Method and device for detecting the fluid level in a tank. 5,379,638, Cl. 73-291.000.

DePauw, Richard A.: See—
McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.

Depreux, Patrick: See—
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean; Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice, 5,380,750, Cl. 514-443.000.

Derafe, Ltd.: See—
Feldstein, Robert S., 5,379,502, Cl. 29-2.000.

Derby, Kevin A.; and Kaufman, Leon, to University of California, The Regents of the. MRI RF coil using zero-pitch solenoidal winding. 5,379,767, Cl. 128-653.500.

Dermablast Research, Inc.: See—
Mikkelsen, John P., 5,379,928, Cl. 224-257.000.

DeRoss, Robert: See—
Comerci, Joseph D.; Data, Mark M.; and DeRoss, Robert, 5,380,951, Cl. 174-48.000.

Derroire, Georges; and Ragout, Bernard, to Caoutchouc manufacture et plastiques. Process for the manufacture of a flexible polymeric structure by extrusion and the flexible structure manufactured therefrom. 5,380,385, Cl. 156-149.000.

De Ruiter, Ernest: See—
Von Blucher, Hubert; Von Blucher, Hasso; and De Ruiter, Ernest, 5,380,594, Cl. 428-403.000.

Derwin, William S.: See—
Fertel, Lawrence B.; and Derwin, William S., 5,380,926, Cl. 562-474.000.

Desai, Ranjit C.: See—
Dunlap, Richard P.; Mura, Albert A.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; and Subramanyam, Chakrapani, 5,380,737, Cl. 514-373.000.

Desarmaux, Pierre: See—
Challande, Christian; and Desarmaux, Pierre, 5,380,032, Cl. 280-634.000.

Deslattes, Richard D., to United States of America, Commerce. Method and apparatus for precisely measuring accelerating voltages applied to x-ray sources. 5,381,458, Cl. 378-207.000.

Desprez-Le Goarant, Yann: See—
Jaffard, Jean-Luc; and Desprez-Le Goarant, Yann, 5,381,277, Cl. 360-62.000.

Dessing, Jacobus P. M.; Roodenburg, Pieter J.; Aurik, Erik A.; and Borgman, Fokko P., to Prolion B.V. Automatic milking apparatus. 5,379,721, Cl. 119-14.080.

Deutsche Aerospace: See—
Goedke, Peter; Blenninger, Ernst; Lechner, Manfred; Papenburg, Ulrich; Sindhauser, Peter; and Goetz, Ulrich, 5,380,475, Cl. 264-29.500.

Deutsche Aerospace AG: See—
Birkmayer, Wolfram, 5,381,147, Cl. 341-137.000.

Klausing, Helmut, 5,381,152, Cl. 342-25.000.

Deutsche Perrot-Bremse GmbH: See—
Macke, Wlodzimierz; Jager, Hellmut; and Baumgartner, Rainer, 5,379,867, Cl. 188-71.900.

Deutsche Thomson-Brandt GmbH: See—
Koblitz, Rudolf; Lehr, Steffen; and Dieterle, Franz, 5,381,329, Cl. 363-49.000.

Deutsche Voest-Alpine Industrieanlagenbau GmbH: See—
Nix, Edgar, 5,381,441, Cl. 373-72.000.

DeVoe, Robert J.: See—
Wright, Bradford B.; Farooq, Omar; and DeVoe, Robert J., 5,380,923, Cl. 562-113.000.

Devos, Francis; and Ni, Yang, to France Telecom; and Centre National de la Recherche Scientifique. Binary resistor network and its use for labelling related components of digitised images in artificial vision. 5,381,516, Cl. 395-27.000.

Deziel, Robert; and Guindon, Yvan, to Bio-Mega, Inc. Synergistic combination for treating herpes infections. 5,380,727, Cl. 514-261.000.

Dezube, Milana: See—
Sugg, Elizabeth E.; Dezube, Milana; and Hirst, Gavin C., 5,380,872, Cl. 548-495.000.

D'Haese, Francois C., to Minnesota Mining and Manufacturing Company. Pressure sensitive adhesive composition which is repulpable under acidic pH conditions. 5,380,779, Cl. 524-272.000.

Dholakia, Ajay: See—
Bitzer, Donald L.; Vouk, Mladen A.; Srinivasan, Vijay; Lo, Sunny K.; Dholakia, Ajay; Gonzalez, Elena M.; Lee, Tina M.; Wang, LiFeng; and Koorapaty, Havish, 5,381,425, Cl. 371-43.000.

Diasense, Inc.: See—
Barnes, Russell H.; Brasch, Jimmie W., Sr.; Purdy, David L.; and Loughheed, William D., 5,379,764, Cl. 128-633.000.

Diasonics Ultrasound, Inc.: See—
Reckwerdt, Wilbur A.; Ishrak, Sved O.; and Bao, Wanqun, 5,379,642, Cl. 73-625.000.

Diatex Co., Ltd.: See—
Katoh, Naoyuki; Fukushima, Takashi; and Ichihashi, Kenzou, 5,380,574, Cl. 428-92.000.

Diaz Martin, Juan A.: See—
Sevrin, Mireille; Menin, Jacques; Maloizel, Christian; Diaz Martin, Juan A.; Martin Escudero Perez, Ulpiano; Bedoya Zurita, Manuel; Del Sol Moreno, Gregorio; Jimenez Barguena, Maria D.; and Romanach Ferrer, Magali, 5,380,742, Cl. 514-397.000.

Dichiera, Robert R.; Lyons, Christopher F.; Sooriyakumaran, Ratnasabapathy; Spinillo, Gary T.; Welsh, Kevin M.; and Wood, Robert L., to International Business Machines Corporation. Mid and deep-UV antireflection coatings and methods for use thereof. 5,380,621, Cl. 430-272.000.

DiCico, William M., to Ametek Aerospace Products, Inc. Repairable cable assembly. 5,380,224, Cl. 439-610.000.

Dickey, Alan M.: See—
Reinsma, Harold L.; and Dickey, Alan M., 5,380,016, Cl. 277-152.000.

Dickmeyer, David A.; Maurer, Kenneth G., III; and Redmon, Larry L., to Component Sales & Consultants, Inc. High output and environmentally impervious variable reluctance sensor. 5,381,089, Cl. 324-174.000.

Dickol, John E.; Gruodis, Algirdas J.; and Hoffman, Dale E., to International Business Machines Corporation. Per pin circuit test system having N-bit pin interface providing speed improvement with frequency multiplexing. 5,381,421, Cl. 371-27.000.

Dickson, Thomas D., to K-Tec, Inc. Multipurpose food mixing appliance specially adapted for kneading dough. 5,380,086, Cl. 366-97.000.

Dieterle, Franz: See—
Koblitz, Rudolf; Lehr, Steffen; and Dieterle, Franz, 5,381,329, Cl. 363-49.000.

Digenis, Alexander G.: See—
Digenis, George A.; and Digenis, Alexander G., 5,380,523, Cl. 424-78.250.

Digenis, George A.; and Digenis, Alexander G., to University of Kentucky Research Foundation. High energy coprecipitate of nonoxynol oligomer, PVP and iodine having contraceptive and potent anti-HIV properties. 5,380,523, Cl. 424-78.250.

Digital Equipment Corporation: See—
Kolte, Ravindra N., 5,381,052, Cl. 327-60.000.

Kolte, Ravindra N., 5,381,146, Cl. 341-132.000.

Lee, Neville K.; Jain, Amit; and Katao, Hisashi, 5,381,402, Cl. 369-291.000.

Digital Wireless Corp.: See—
McIntosh, P. Stuckey, 5,381,446, Cl. 375-1.000.

Dillinger, Robert B.: See—
Johnsen, Paul T.; Smith, Alfred O.; and Dillinger, Robert B., 5,379,699, Cl. 102-290.000.

Dilworth, John: See—
Bernzott, Philip; Dilworth, John; George, David; Higgins, Bryan; and Knight, Jeremy, 5,381,489, Cl. 382-40.000.

Dion, Jean-Paul. Frangible joints for frangible band of wires or strip of fasteners. 5,380,250, Cl. 470-40.000.

Displaytech, Inc.: See—
Meadows, Michael R., 5,381,250, Cl. 359-39.000.

Wand, Michael D.; Thurmes, William N.; and Walba, David M., 5,380,460, Cl. 252-299.600.

Divall, John E., to Odin Developments Limited. Nozzle and valve assembly. 5,379,921, Cl. 222-148.000.

Dixon, A. E.: See—
Dixon, Arthur E.; and Damaskinos, Savvas, 5,381,224, Cl. 356-72.000.

Dixon, Arthur E.; and Damaskinos, Savvas, to Dixon, A. E. Scanning laser imaging system. 5,381,224, Cl. 356-72.000.

Dixon, Richard H.: See—
Lockwood, Michael C.; Dixon, Richard H.; Reed, Christopher A.; Crockett, Ronald B.; and Jones, Kenneth W., 5,379,853, Cl. 175-428.000.

Dixon, Eddie W., Jr.: See—
Becker, Kevin C.; O'Keefe, Patrick J., Jr.; and Dixon, Eddie W., Jr., 5,380,366, Cl. 118-712.000.

Djaja, Gregory: See—
Lai, Stephen W.; Djaja, Gregory; and Meskel, Solomon G., 5,381,055, Cl. 326-27.000.

Djuric, Stevan W.; Fretland, Donald J.; and Yu, Stella S., to G. D. Searle & Co. Anti-inflammatory compounds, compositions and method of use thereof. 5,380,740, Cl. 514-382.000.

Doan, Trung T.: See—
Yu, Chang; and Doan, Trung T., 5,380,678, Cl. 437-190.000.

Dobbs, Suzanne W., to Eastman Chemical Company. Cosmetic film forming compositions which are freeze-thaw stable. 5,380,520, Cl. 424-61.000.

Dobler, Walter: See—
Paust, Joachim; Eckes, Peter; Siegel, Wolfgang; Balkenbühl, Friedrich; Dobler, Walter; and Hullmann, Michael, 5,380,920, Cl. 560-263.000.

Dockendorff, James B.: See—
Nemeth, Frank A.; and Dockendorff, James B., 5,381,022, Cl. 250-577.000.

Dr. Ing. h.c.F. Porsche AG: See—
Dorr, Konrad; Reustle, Albrecht; and Jozefiak, Alfred, 5,379,872, Cl. 192-4.00A.

Wolf, Thomas, 5,379,912, Cl. 220-481.000.

Dodson, Jake D.: See—
O'Donnell, Adrian C.; and Dodson, Jake D., 5,381,494, Cl. 385-49.000.

Doehner, Robert F., Jr.; Barton, Jerry M.; and Kuhn, David G., to American Cyanamid Company. 2-aryl-5-(trifluoromethyl)-2-pyrroline compounds useful in the manufacture of insecticidal, nematocidal and acaricidal arylpyrroles. 5,380,876, Cl. 548-565.000.

Doherty, David B. Mobile knee support apparatus. 5,380,021, Cl. 280-32.500.

Doi, Koichi: See—
Inoue, Yoshihisa; Doi, Koichi; Maruki, Hiroshige; and Nakayama, Teruo, 5,379,582, Cl. 57-333.000.

Doi, Shigeo: See—
Shishido, Hideomi; Doi, Shigeo; Hirakiuchi, Masanori; and Okimoto, Hajime, 5,380,185, Cl. 425-556.000.

Doin, James E.; and Evans, Edwin R., to General Electric Company. Heat cured silicone rubber compositions containing a potassium aluminosilicate filler which provides resistance to hydrocarbon oils and adjustable shrinkage. 5,380,770, Cl. 523-212.000.

Dolan, Robert B.: See—
Tuttle, Billy W.; Zhu, Huiling; and Dolan, Robert B., 5,381,070, Cl. 313-318.000.

Dolgas, Patrick A.: See—
Corey, Nathan A.; Clark, Carl L.; and Dolgas, Patrick A., 5,379,511, Cl. 29-597.000.

Dombrowski, Augustin. Carburetor. 5,379,739, Cl. 123-438.000.

Domino Printing Sciences PLC: See—
Fry, Andrew R.; and Turner, Jeremy J., 5,380,164, Cl. 417-250.000.

Don Michael, T. Anthony. Obstruction dissolution catheter with variably expanding blocking balloons and method of use. 5,380,284, Cl. 601-101.000.

Don Wynne Inc.: See—
Wynne, Douglas, 5,379,564, Cl. 52-458.000.

Dona, Marinus J. J., to U.S. Philips Corporation. Bearing arrangement, device with rotatable disc, and magnetic-tape apparatus. 5,381,285, Cl. 360-98.070.

Donegan, Michael W.: See—
Hawthorn, Laura A.; and Donegan, Michael W., 5,380,038, Cl. 280-730.00R.

Donish, William H.: See—
Sutton, Richard C.; Ponticello, Ignazio S.; Cummins, Thomas J.; Zander, Dennis R.; and Donish, William H., 5,380,489, Cl. 422-68.100.

Dooley, Joseph B.; Muhs, Jeffrey D.; and Tobin, Kenneth W., to Martin Marietta Energy Systems, Inc. Fiber optic vibration sensor. 5,381,492, Cl. 385-12.000.

Doolittle, James, to Semitool, Inc. Point optical beam electronic rotometer. 5,379,651, Cl. 73-861.560.

Dooms, Philip, to AGFA-Gevaert, N.V. X-ray intensifying screens with an improved speed/image quality relationship. 5,381,015, Cl. 290-483.100.

Dormia, Guido, to Angiomed AG. Apparatus for expelling foreign bodies in an elongated organ of a living organism. 5,380,335, Cl. 606-127.000.

Dorn, Michael, to Textilma AG. Method and apparatus for coating flat textile bodies, especially carpet panels. 5,380,561, Cl. 427-430.100.

Dorr, Konrad; Reustle, Albrecht; and Jozefiak, Alfred, to Dr. Ing. h.c.F. Porsche AG. Locking arrangement for a selector lever of an automatic motor vehicle transmission. 5,379,872, Cl. 192-4.00A.

Dorricott, James D.: See—
Heastlip, Lawrence J.; and Dorricott, James D., 5,379,989, Cl. 266-229.000.

Dotson, Kenneth W.; Mac Harmon, Stewart; Weeks, Francis B.; Shih, Chih-Kun J.; and Johnson, John L., to Emco Wheaton, Inc. Fuel dispensing nozzle. 5,379,811, Cl. 141-206.000.

Dougherty, Thomas K.; Harris, Norman H.; Chow, James R.; and Pierce, Brian M., to Hughes Aircraft Company. Broadband absorbers of electromagnetic radiation based on aerogel materials, and method of making the same. 5,381,149, Cl. 342-1.000.

Douglas, Donald J.: See—
Tanner, Scott D.; Douglas, Donald J.; and Cousins, Lisa, 5,381,008, Cl. 250-288.000.

Douglas, Kenneth R., to Intel Corporation. CMOS tristateable buffer. 5,381,059, Cl. 326-58.000.

Douglass, Miriam L., to Colgate-Palmolive Co. Stabilized hypohalite compositions. 5,380,458, Cl. 252-186.360.

Doumel, Pierre; Van Hoyweghen, Danny; and Momtaz, Ardechir, to Solvay (Societe Anonyme). Process for the manufacture of poly(arylene sulphide). 5,380,821, Cl. 528-388.000.

Dow Chemical Company, The: See—
Cowley, Terry W.; and White, Mary L. N., 5,380,775, Cl. 524-109.000.

Dunmead, Stephen D.; Moore, William G.; Weimer, Alan W.; Eisman, Glenn A.; and Henley, John P., 5,380,688, Cl. 501-87.000.

- Harley, A. Dale; Murchison, Craig B.; and Puga, Jose, 5,380,909, Cl. 558-274.000.
- Lai, Shih-Yaw; Wilson, John R.; Knight, George W.; Stevens, James C.; and Chum, Pak-Wing S., 5,380,810, Cl. 526-352.000.
- Schrenk, Walter J.; Roehrs, Herbert C.; Shastri, Ranganath K.; Ayres, Ralph E.; Barger, Mark A.; and Bremmer, Jeffrey N., 5,380,479, Cl. 264-241.000.
- Suh, Kyung W.; and Paquet, Andrew N., 5,380,767, Cl. 521-79.000.
- Dow Corning Corporation: See—
Conway, Lori J.; Kadlec, Donald A.; and Sudbury-Holtschlag, Joan, 5,380,450, Cl. 252-75.000.
- Haluska, Loren A., 5,380,567, Cl. 427-578.000.
- Legrow, Gary E.; and Malczewski, Regina M., 5,380,527, Cl. 424-401.000.
- Loboda, Mark J., 5,380,553, Cl. 427-226.000.
- Lutz, Michael A.; Nguyen, Binh T.; and King, Russell K., 5,380,812, Cl. 528-15.000.
- McGee, James B.; Petroff, Lenia J.; Aizawa, Koichi; and Shoji, Hiroaki, 5,380,464, Cl. 252-321.000.
- Dow Corning Toray Silicone Co., Ltd.: See—
Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, 5,380,555, Cl. 427-226.000.
- Doyle, Barry N.: See—
Chalkley, Michael E.; Masters, Ian M.; and Doyle, Barry N., 5,380,354, Cl. 75-743.000.
- Dozier, Charles L.: See—
Osteen, Mitchell M.; Sumer, Suleyman O.; Dozier, Charles L.; and Singaray, Santiago, 5,381,323, Cl. 362-276.000.
- Drabarek, Peter; and Figiel, Janusz, to Signode Corporation. Hand strapping tool, 5,380,393, Cl. 156-358.000.
- Drake, Peter R.: See—
O'Leary, Thomas M.; Drake, Peter R.; and Merrill, Philip R., deceased, 5,381,110, Cl. 330-149.000.
- Draper, Peter: See—
Berdich, Edward; Draper, Peter; and Shea, Timothy, 5,379,865, Cl. 187-398.000.
- Dravo Lime Company: See—
College, John W., 5,380,505, Cl. 423-175.000.
- Drazen, Jeffrey: See—
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Copple, Charles M.; and Reid, Leonard F., 5,380,136, Cl. 411-183.000.

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Termine, Enrico J.; Atwell, Ray W.; Hodgen, Harry A.; and Favstritsky, Nicolai A., 5,380,802, Cl. 525-72.000.

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Jones, Trent T.; and Fuller, Marc T., 5,380,083, Cl. 312-265.300.

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Miller, Gary R.; West, Paul R.; and Felker, Melanie A., 5,380,623, Cl. 430-331.000.

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Stauber, Hans-Ulrich, 5,379,963, Cl. 242-533.800.

Ferguson, Paul F., Jr.: See—
Mueck, Michael; and Ferguson, Paul F., Jr., 5,381,148, Cl. 341-139.000.

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Ferrari, Adriano: See—
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Brixner, Lothar H.; and Ferretti, August, 5,380,599, Cl. 428-691.000.

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Fersch, Ken, to BASF Corporation. Methods of making granular water soluble or hygroscopic agricultural formulations. 5,380,350, Cl. 71-64.030.

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Festa, Joseph F. Packet containing treatment liquid with applicator and method. 5,380,110, Cl. 401-132.000.

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Murphy, Kent; Vengsarkar, Ashish; Feth, Shari; Claus, Richard; Gollapudi, Sridhar; and Wang, Anbo, 5,381,229, Cl. 356-345.000.

Fetzer, Gerhard: See—
Stahlecker, Hans; and Fetzer, Gerhard, 5,380,118, Cl. 403-343.000.

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Kraus, Georg; and Schierling, Bernhard, 5,380,248, Cl. 464-66.000.

Wolf, Fritz, 5,381,335, Cl. 364-424.050.

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Bellio, Emanuele; Ficili, Michele; and Patti, Nicola, 5,380,773, Cl. 524-68.000.

Fiedler, Richard G., to Hutchinson Technology Incorporated. Suspension for in-line offset head mounting. 5,381,289, Cl. 360-104.000.

Field, Brian T.: See—
Lindquist, William E.; Field, Brian T.; and McCormick, Bernard T., 5,380,504, Cl. 423-23.000.

Fields, Larry R.: See—
Smith, Jerry W.; and Fields, Larry R., 5,380,230, Cl. 445-32.000.

Figiel, Janusz: See—
Drabarek, Peter; and Figiel, Janusz, 5,380,393, Cl. 156-358.000.

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Fillet, Frederic: See—
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Butter, Adrian S.; Finkel, Brian S.; Kao, Chang-Yung; Kodukula, Sivarama K.; and Kuruts, James P., 5,381,480, Cl. 380-37.000.

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Palva, Ilkka, 5,380,653, Cl. 435-69.700.

Fiorina, Jean-Noel; and Lailier, Patrick, to Merlin Gerin. Process for determining the backup time of a battery. 5,381,350, Cl. 364-550.000.

Fischer, Eugene C.; and Crane, Roger M., to United States of America, Navy. Retrofittable monolithic box beam composite hull system. 5,379,711, Cl. 114-74.00A.

Fischer, Georg; and Glatzer, Edgar, to Benz & Hilgers GmbH. Apparatus for packaging individual objects, especially packages, e.g. of prepacked foodstuffs. 5,379,574, Cl. 53-535.000.

Fischer, Jens-Dieter; and Siol, Werner, to Rohm GmbH Chemische Fabrik. Miscible blends of polyphenylene ether and polyaryl (meth)acrylate copolymers. 5,380,801, Cl. 525-132.000.

Fischer, Jens-Dieter: See—
Siol, Werner; Fischer, Jens-Dieter; Terbrack, Ulrich; and Koralewski, Klaus, 5,380,797, Cl. 525-71.000.

Fischer, Lynn R., to Motorola, Inc. Phase lock loop with self test circuitry and method for using the same. 5,381,085, Cl. 324-76.480.

Fischer, Stefan: See—
McKinnon, Graeme; Fischer, Stefan; and Boesiger, Peter, 5,379,766, Cl. 128-653.200.

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Fisher, Bryan C., to ReUse Technology, Inc. Method for agglomeration of flue gas desulfurization dust. 5,380,351, Cl. 75-313.000.

Fisher, Lawrence E.: See—
Clark, Robin D.; Clarke, David E.; Fisher, Lawrence E.; and Jahangir, Alam, 5,380,739, Cl. 514-381.000.

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Fisk, Brian; and Winter, Joseph, 5,380,953, Cl. 174-94.00R.

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Fittler, Zauzanna: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eazter; Toldy, Lajos; Sutka, Klara; Fittler, Zauzanna; Sebesteny, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.

FitzGerald, David J., to Wheel Masters, Inc. Lug nut covers. 5,380,070, Cl. 301-37.370.

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Flaishans, Gary B.: See—
Rudzewicz, Robert G.; Flaishans, Gary B.; and Dahl, Michael A., 5,381,074, Cl. 315-77.000.

Flamme, Jean Marie: See—
Leroy, Andre; and Flamme, Jean Marie, 5,380,177, Cl. 418-61.200.

Fleischli, Markus; and Streiff, Felix, to Sulzer Brothers Limited. Mixing device for small fluid quantities. 5,380,088, Cl. 366-174.000.

Flider, Frank J., to Calgene Chemical, Inc. Polyglycerol esters as functional fluids and functional fluid modifiers. 5,380,469, Cl. 252-565.000.

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Berry, Michael N.; Town, Michael-Harold; Kresse, Georg-Burkhard; and Herrmann, Uwe, 5,380,649, Cl. 435-22.000.

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Worrell, Barry C.; Landis, Paul M.; Morgan, Harold W.; and Flora, Larry E., 5,380,037, Cl. 280-728.00A.

Flow International Corporation: See—
Olsen, John H.; Tremoulet, Olivier L., Jr.; and Raghavan, Chidambaram, 5,380,159, Cl. 417-53.000.

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Flowers, Gary, to Custom Products of Litchfield. Platform and method for lifting and transporting vehicles. 5,380,141, Cl. 414-462.000.

Flug, Christian; and Kolb, Dieter, to Siemens Aktiengesellschaft. Method for dynamically linking definable program elements of an interactive data processing system. 5,381,547, Cl. 395-700.000.

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Ernst, Steve; and Jensen, Gordon A., 5,381,348, Cl. 364-514.000.

Fobare, William F.; and Strike, Donald P., to American Home Products Corporation. N,N',N'-trisubstituted-5-bisaminomethylene-1,3-dioxane-4,6-dione inhibitors of acyl-coa:cholesterol-acyl transferase. 5,380,853, Cl. 546-207.000.

Focke & Co. (GmbH & Co.): See—
Focke, Heinz; and Hafker, Thomas, 5,379,575, Cl. 53-543.000.

Focke, Heinz; and Hafker, Thomas, to Focke & Co. (GmbH & Co.). Apparatus for introducing (small) packs, especially cigarette packs, into a box. 5,379,575, Cl. 53-543.000.

Foden, Clare L.: See—
Perryman, Michael A. C.; Peacock, Anthony; and Foden, Clare L., 5,381,001, Cl. 250-214.100.

Foley, Peter M.: See—
Smith, Steven F.; and Foley, Peter M., 5,379,529, Cl. 36-54.000.

Folkert de Vries, Rein J., to Koninklijke PTT Nederland N.V. Method and installation for switching packets. 5,381,409, Cl. 370-60.000.

Fontaine, Pierre, to Audax Industries. Process for the preparation of films or diaphragms for acoustic applications. 5,380,960, Cl. 181-167.000.

Fontana, Flavio; and Bosso, Sergio, to Pirelli Cavi S.p.A. Active-mode-locking optical-fiber laser generator. 5,381,426, Cl. 372-18.000.

Fontenot, Kevin J.: See—
Adler, Jonathan M.; and Fontenot, Kevin J., 5,381,090, Cl. 324-174.000.

Foot, Steven A.: See—
Hulsing, Rand H., II; Lee, Charles K.; and Foot, Steven A., 5,379,639, Cl. 73-517.0AV.

Forbes, Carman S.: See—
Forbes, David R.; Forbes, Carman S.; and Bean, Ron M., 5,380,235, Cl. 446-397.000.

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Boaz, Premakaran T., 5,380,348, Cl. 65-25.200.

Breuhan, Ronald G., 5,380,051, Cl. 285-307.000.

Gee, Thomas S.; and Smith, Paul F., 5,379,635, Cl. 73-118.100.

Hamburg, Douglas R.; Logothetis, Eleftherios M.; Cook, Jeffrey A.; and Rimai, Lajos, 5,379,590, Cl. 60-276.000.

Ma, Thomas T., 5,379,735, Cl. 123-184.420.

Matysiewicz, Edwin J.; Rackmil, Charles I.; and Smith, James C., 5,379,741, Cl. 123-497.000.

Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., 5,379,509, Cl. 29-558.000.

Smowton, Mark, 5,380,049, Cl. 285-169.000.

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Forma Scientific, Inc.: See—
Tipton, Russell C., 5,380,244, Cl. 454-57.000.
Fortifiber Corporation: See—
Lamb, Vernon L., Sr., 5,380,180, Cl. 425-111.000.
Fortin, Paul E.; and Marois, Pierre-Henri, to Alcan International Limited. Aluminum alloy for armoured cable wrap. 5,380,376, Cl. 148-440.000.
Fortin, Rejean: See—
Prasit, Petpiboon; Fortin, Rejean; Hutchinson, John H.; Belley, Michel L.; Leger, Serge; Frenette, Richard; and Gillard, John, 5,380,850, Cl. 546-155.000.
Fortune, William S. Metallic conduction - hot gas soldering-desoldering system. 5,380,982, Cl. 219-230.000.
Foslien, Floyd L., to Minnesota Mining and Manufacturing Company. Package for surgical device. 5,379,895, Cl. 206-363.000.
Foss, Milton K. Small batch waste material treatment apparatus and system. 5,380,427, Cl. 210-95.000.
Foster, Clark B.: See—
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,380,087, Cl. 366-130.000.
Smedley, William H.; Haber, Terry M.; and Foster, Clark B., 5,380,296, Cl. 604-193.000.
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Fox, Michael, to Sab Wabco Holdings BV. Braking discs. 5,379,869, Cl. 188-218.0XL.
Frama AG: See—
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Framatome Connectors International: See—
Morlion, Danny L.; and Jonckheere, Luc O., 5,381,496, Cl. 385-75.000.
France Telecom: See—
Devos, Francis; and Ni, Yang, 5,381,516, Cl. 395-27.000.
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Coispeau, Gerard; and Schofield, John D., 5,380,363, Cl. 106-496.000.
Frankel, James L.: See—
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Franklin, Donald K.: See—
Kim, Sun G.; Franklin, Donald K.; and Conner, Michael P., 5,379,971, Cl. 244-129.500.
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Theurer, Josef, 5,379,700, Cl. 104-7.200.
Fraunhofer Gesellschaft Zur Forderung Der Angewandten Forschung e.v.: See—
Hess, Frank-Jurgen; Schreiber, Torsten; and Wollboldt, Frank, 5,380,147, Cl. 414-796.000.
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Stone, James W.; Kish, Frederick A.; Wojcik, John; Van Erden, Donald L.; Fredericksen, David E.; and Vadhar, Parimal M., 5,379,880, Cl. 198-396.000.
Fredette, Kevin T.: See—
Kao, Yi-Han; Song, Liwei; Chung, Deborah D. L.; and Fredette, Kevin T., 5,380,703, Cl. 505-460.000.
Freedman, Robert, to Schlumberger Technology Corporation. Method and apparatus for compressing data produced from a well tool in a wellbore prior to transmitting the compressed data uphole to a surface apparatus. 5,381,092, Cl. 324-303.000.
Freeman, Mark O.: See—
Sharp, Gary D.; Johnson, Kristina M.; and Freeman, Mark O., 5,381,253, Cl. 359-53.000.
Freimuth, Arthur; and Freimuth, Stanley. Musical stringed instrument capable of being played with one hand. 5,380,948, Cl. 84-8.000.
Freimuth, Stanley: See—
Freimuth, Arthur; and Freimuth, Stanley, 5,380,948, Cl. 84-8.000.
French, Jule L.: See—
Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., 5,380,973, Cl. 219-69.120.
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Rief, Dieter J.; and Frentzel, Herman E., 5,379,473, Cl. 15-1.700.
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Brown, Douglas S.; Scherger, David F.; Heilman, George C.; and Brown, Robert B., 5,379,917, Cl. 222-4.000.
Fretland, Donald J.: See—
Djuric, Stevan W.; Fretland, Donald J.; and Yu, Stella S., 5,380,740, Cl. 514-382.000.
Frey, Richard L.: See—
Hershey, John E.; Lowy, Menahem; Levinson, Lionel M.; Hassan, Amer A.; Frey, Richard L.; Welles, Kenneth B., II; Gdula, Michael; and Wojnarowski, Robert J., 5,381,445, Cl. 375-1.000.
Friday, Ronald S.; Nover, Brian N.; and Eaton, Eric T., to Motorola, Inc. Static discharge protection for programming ports associated with an electronic device. 5,381,134, Cl. 340-825.440.
Fried, Herbert E., to Shell Oil Company. Process for the preparation of alkoxyalkanoic acids. 5,380,930, Cl. 562-537.000.
Friedrich, Hans-Helmut: See—
Wirth, Hermann O.; and Friedrich, Hans-Helmut, 5,380,344, Cl. 44-367.000.

Friedrich Wilh. Schwing GmbH: See—
Schwing, Friedrich, 5,380,174, Cl. 417-519.000.
Frieze, Karl-Hermann; and Wiedenmann, Hans-Martin, to Robert Bosch GmbH. Sensor with a catalytically active protective layer for determining the oxygen content in gases, and process for manufacturing such a sensor. 5,380,424, Cl. 204-429.000.
Fritch, John R.: See—
Bhattacharya, Apurba; Fritch, John R.; Murphy, Carl D.; Zeagler, Larry D.; and McAdams, Carina A., 5,380,867, Cl. 548-344.100.
Fritz, James E. Fortified hydrocarbon and process for making and using the same. 5,380,346, Cl. 44-401.000.
Frohnig, Dieter: See—
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Fry, Andrew R.; and Turner, Jeremy J., to Domino Printing Sciences PLC. Two-stage pump for a continuous ink jet printer. 5,380,164, Cl. 417-250.000.
Frye, Kermit E.: See—
Dahlberg, James A.; Fangmeier, David G.; and Frye, Kermit E., 5,381,552, Cl. 395-725.000.
Fuchs, Rainer: See—
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Fuchs, Reiner; Kaufhold, Johannes; and Malzacher, Kornelia, to Ciba-Geigy Corporation. Process for the preparation of diorganotin mercaptocarboxylates. 5,380,896, Cl. 556-91.000.
Fugatt, John L.: See—
Oldham, Susan L.; Harvey, Martha J.; Panaretos, Steve K.; Fugatt, John L.; Ducharme, Richard L.; Bille, Jeffrey M.; and Klebe, Douglas O., 5,380,386, Cl. 156-150.000.
Fugedi, Peter: See—
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Fuisz Technologies Ltd.: See—
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Fuji-Davison Chemical Ltd.: See—
Matsui, Takashi; Watanabe, Nobuki; Arimura, Masayuki; Kanemaru, Eiji; Horinouchi, Yuzo; and Ito, Mutsuhiro, 5,380,510, Cl. 423-338.000.
Fuji Electric Co., Ltd.: See—
Ishimaru, Keiichi; Itoh, Osamu; Nakatani, Tomoyoshi; Sudo, Haruhiko; and Kurita, Masaya, 5,379,608, Cl. 62-155.000.
Matsuzaki, Kazuo, 5,381,033, Cl. 257-499.000.
Noguchi, Teruhiko; Kinashi, Hiroshi; Masuda, Jitsuo; Inoue, Katsushii; Tanaka, Tatsuo; Otsuki, Kunio; and Adachi, Kazuya, 5,381,212, Cl. 355-211.000.
Ogimura, Yoshitomo; and Motai, Kenzi, 5,381,038, Cl. 257-689.000.
Ohkubo, Atushi, 5,380,989, Cl. 219-667.000.
Umezawa, Kazuyoshi; and Sato, Osamu, 5,381,328, Cl. 363-41.000.
Fuji Ooz, Inc.: See—
Hara, Nobuo; and Nagaya, Makoto, 5,379,626, Cl. 72-356.000.
Fuji Photo Film Co., Ltd.: See—
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Kokubo, Tadayoshi; Uenishi, Kazuya; Tan, Shiro; and Ishii, Wataru, 5,380,618, Cl. 430-190.000.
Mihayashi, Keiji; Taniguchi, Masato; and Saito, Naoki, 5,380,625, Cl. 430-388.000.
Mizuno, Kazunori; and Arai, Takuya, 5,381,202, Cl. 354-275.000.
Nakamura, Koichi; and Yabuki, Yoshiharu, 5,380,626, Cl. 430-393.000.
Namiki, Tomizo; Suzuki, Tamotsu; and Shinozaki, Fumiaki, 5,380,620, Cl. 430-257.000.
Nozaki, Nobuharu; and Adachi, Takashi, 5,381,430, Cl. 372-21.000.
Nozawa, Yasushi; Seto, Nobuo; Ohki, Nobutaka; and Toyoda, Masayoshi, 5,380,631, Cl. 430-504.000.
Ohta, Yasunori, 5,379,997, Cl. 271-145.000.
Ohta, Yasunori, 5,381,017, Cl. 250-484.400.
Takagai, Junichi, 5,381,200, Cl. 354-250.000.
Takizawa, Hiroo; Kobayashi, Hideotoshi; and Naito, Hideki, 5,380,638, Cl. 430-552.000.
Urabe, Shigeharu; Nakatsugawa, Haruyasu; and Ishiyama, Mario, 5,380,641, Cl. 430-569.000.
Yamashita, Seiji; Kawagoe, Jun; and Toya, Ichizo, 5,380,637, Cl. 430-537.000.
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Amarume, Katsushi, 5,380,175, Cl. 417-553.000.
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Obata, Tokio; Ooka, Akira; Fujii, Katsutoshi; and Suizu, Shin, 5,380,744, Cl. 514-403.000.
Fujii, Toshiaki; and Suzuki, Hidetomo, to Ebara Research Co., Ltd. Stocker. 5,380,503, Cl. 422-243.000.
Fujii, Toshiro; Kitayama, Hiromi; Inukai, Hitoshi; and Ito, Koichi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Gas guiding mechanism in a piston type compressor. 5,380,163, Cl. 417-242.000.
Fujii, Yoshiharu, to Sharp Kabushiki Kaisha. Facsimile apparatus and its maintenance charge control apparatus. 5,381,242, Cl. 358-468.000.

Fujii, Yozo; Miwa, Tadashi; Satoh, Hisao; Ogane, Atsushi; Matsuoka, Isao; and Ikeda, Tadayoshi, to Konica Corporation. Color image forming apparatus. 5,381,167, Cl. 346-157.000.
Fujikawa, Misao, to Sodick Co., Ltd. Pre-plasticization type injection molding machine. 5,380,187, Cl. 425-561.000.
Fujiki, Hirokazu: See—
Takegami, Hiroshi; Morikawa, Makoto; and Fujiki, Hirokazu, 5,381,345, Cl. 364-491.000.
Fujikiko Kabushiki Kaisha: See—
Asano, Yasushi; Togano, Norio; and Ikushima, Shunsuke, 5,379,871, Cl. 192-4.00A.
Fujikin Incorporated: See—
Koyomogi, Mutsunori; Minami, Yukio; Nakazawa, Masahiko; Yoshikawa, Kazuhiro; and Kojima, Tetsuya, 5,379,982, Cl. 251-77.000.
Fujikura, oshiaki: See—
Ohashi, Susumu; Tateishi, Hideo; and Fujikura, oshiaki, 5,381,460, Cl. 379-58.000.
Fujimori, Naoji: See—
Tanabe, Keiichi; Imai, Takahiro; and Fujimori, Naoji, 5,380,516, Cl. 423-446.000.
Fujimoto, Takahiro: See—
Hosokawa, Hideo; Shikatsu, Misao; and Fujimoto, Takahiro, 5,380,884, Cl. 549-515.000.
Fujimura, Noriaki. Stabilizer. 5,379,713, Cl. 114-122.000.
Fujino, Takuo, to Hoya Corporation. Method of manufacturing shaped body having straight stripes. 5,380,558, Cl. 427-255.500.
Fujirebio Inc.: See—
Sekine, Akihiro; Kikuta, Yoshinori; Tezuka, Shinkichi; Okada, Kazuo; and Nakajima, Hiroshi, 5,380,715, Cl. 514-47.000.
Fujisawa, Yoshihiro: See—
Kimura, Kazuya; Hidaka, Shigeyuki; Kawamura, Chuichi; Kayukawa, Hiroaki; Ito, Masafumi; and Fujisawa, Yoshihiro, 5,380,165, Cl. 417-269.000.
Fujishita, Masakatsu: See—
Honji, Akio; Ogawa, Toshio; Kuroda, Osamu; Yamashita, Hisao; Tachi, Takahiro; Miyadera, Hiroshi; and Fujishita, Masakatsu, 5,379,586, Cl. 60-276.000.
Fujita, Hiroshi; and Kurihara, Masaaki, to Dai Nippon Printing Co., Ltd. Method for fabricating photomasks having a phase shift layer comprising the use of a positive to negative resist, substrate imaging and heating. 5,380,609, Cl. 430-5.000.
Fujita, Kenjiro; Kondo, Akihiro; Ohnishi, Toyoyuki; Hasegawa, Yoshio; and Yuge, Mitsuru, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Fluid pressure control device for an automatic transmission in a vehicle. 5,379,874, Cl. 192-85.00R.
Fujita, Masahiko, to Nihon Kagaku Hakkou K.K. Chemiluminescence device. 5,381,311, Cl. 362-34.000.
Fujita, Yoshihiro: See—
Yoshida, Kazuaki; Ishikawa, Takatoshi; Fujita, Yoshihiro; and Furusawa, Genichi, 5,380,624, Cl. 430-372.000.
Fujita, Yoshiyuki: See—
Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshiharu; Mikata, Yuuichi; Miyazaki, Shinji; Mori, Takahiko; and Okumura, Katsuya, 5,380,370, Cl. 134-22.110.
Fujitsu Limited: See—
Arima, Tadao; and Okamura, Koji, 5,381,262, Cl. 359-341.000.
Hamaguchi, Akihiro; Osone, Hisao; Takada, Hirotoshi; and Ohta, Jun, 5,381,315, Cl. 361-727.000.
Iguchi, Katsumi, 5,381,525, Cl. 395-162.000.
Kamiyama, Akira, 5,381,244, Cl. 358-486.000.
Kuramata, Akito, 5,379,720, Cl. 117-104.000.
Matsuo, Akihiko, 5,381,548, Cl. 395-700.000.
Mizutani, Yasunao, 5,381,415, Cl. 370-110.100.
Ohno, Koichi; and Tachibana, Tetsuo, 5,381,411, Cl. 370-60.000.
Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, 5,381,153, Cl. 342-70.000.
Sawaki, Ippei; Kurimura, Sunao; and Miura, Michio, 5,380,410, Cl. 204-130.000.
Tajima, Masami, 5,381,444, Cl. 375-1.000.
Tanaka, Tsutomu; Shono, Keiji; Namba, Yoshiyuki; Matsumoto, Koji; and Maeda, Miyozo, 5,381,396, Cl. 369-116.000.
Fujitsu Ten Limited: See—
Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, 5,381,153, Cl. 342-70.000.
Fujiwara, Hiroko: See—
Ishige, Osamu; Katoh, Eisaku; Fujiwara, Hiroko; Hirabayashi, Shigeto; and Sugita, Shuichi, 5,380,639, Cl. 430-544.000.
Fukahori, Kenichi; Sato, Shuji; Shimohara, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, to Sony Corporation. Multi-pass thermal printer. 5,380,108, Cl. 400-247.000.
Fukami, Takehiro: See—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Matsuyama, Kenji; Noguchi, Kazuhito; and Yano, Mitsuo, 5,380,921, Cl. 562-16.000.
Fukaya, Haruhiko; Abe, Takashi; Hayashi, Eiji; and Hayakawa, Yoshio, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Nitrogen-containing perfluoroalkanoil peroxide and method for production thereof. 5,380,844, Cl. 544-357.000.

Fukazawa, Tokumi: See—
Tarutani, Yoshinobu; Fukazawa, Tokumi; Kabasawa, Uki; Takagi, Kazumasa; Tsukamoto, Akira; Hiratani, Masahiko; and Nishino, Toshikazu, 5,380,704, Cl. 505-193.000.
Fukuchi, Masakazu: See—
Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, 5,380,610, Cl. 430-31.000.
Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,381,215, Cl. 355-219.000.
Mizoguchi, Yoshimi; Ishii, Hiroshi; Kimura, Kiyoshi; Fukuchi, Masakazu; and Takeda, Makoto, 5,381,221, Cl. 355-326.00R.
Fukuda, Masayuki: See—
Nakamura, Tomoki; Ichihashi, Tetsuo; and Fukuda, Masayuki, 5,380,590, Cl. 428-375.000.
Fukuda, Tsuyoshi, to Canon Kabushiki Kaisha. Shutter for camera. 5,381,199, Cl. 354-226.000.
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ohta, Masumi; Ono, Masumi; and Yasuda, Kouichi, to Sony Corporation. Optical recording medium. 5,380,573, Cl. 428-64.000.
Fukumoto, Katsumi, to Sharp Kabushiki Kaisha. Non-volatile dynamic random access memory device; a page store device and a page recall device used in the same; and a page store method and a page recall method. 5,381,379, Cl. 365-238.500.
Fukumoto, Takaaki: See—
Ban, Cozy; Yanagi, Motonori; Fukumoto, Takaaki; Manabe, Toshiaki; and Yanome, Hiroshi, 5,380,471, Cl. 261-122.100.
Fukushima, Hiroshi, to NSK Ltd. Toroidal type continuously variable transmission. 5,380,256, Cl. 476-40.000.
Fukushima, Hiroshi: See—
Nakano, Masaki; Fukushima, Hiroshi; and Machida, Hisashi, 5,379,661, Cl. 74-99.00A.
Fukushima, Shigemitsu: See—
Goto, Moto; Kikumoto, Nobuo; Iida, Osamu; Ikoma, Hiroaki; and Fukushima, Shigemitsu, 5,380,353, Cl. 75-640.000.
Fukushima, Takashi: See—
Katoh, Naoyuki; Fukushima, Takashi; and Ichihashi, Kenzou, 5,380,574, Cl. 428-92.000.
Fukuyama, Ryooji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Torii, Yoshimi; Kawaraya, Akira; and Sato, Yoshie, to Hitachi, Ltd. Method of treating samples. 5,380,397, Cl. 156-643.000.
Fuller Company: See—
Lindquist, William E.; Field, Brian T.; and McCormick, Bernard T., 5,380,504, Cl. 423-23.000.
Fuller, Marc T.: See—
Jones, Trent T.; and Fuller, Marc T., 5,380,083, Cl. 312-265.300.
Funada, Fumiaki: See—
Takamatsu, Toshiaki; Ogawa, Shinichi; Yoshikawa, Masao; Hamada, Hiroshi; Watanabe, Noriko; and Funada, Fumiaki, 5,381,187, Cl. 348-759.000.
Funke, Peter, to Gebrüder Funke KG. Grater with cleaning brush. 5,379,954, Cl. 241-101.200.
Furomoto, Yoshiyuki; Noda, Hideo; Sakaguchi, Noboru; and Yoshikawa, Osamu, to Shimano Inc. Spinning reel having balancer. 5,379,957, Cl. 242-230.000.
Furon Company: See—
Hillery, Frank E.; and Goy, Christel C., 5,380,019, Cl. 277-236.000.
Furr, Patrick L., to Houston Industries Incorporated. Emergency refrigerant recovery activation system. 5,379,604, Cl. 62-77.000.
Fursch, Alexander F. W.: See—
Laimbock, Franz; and Fursch, Alexander F. W., 5,379,738, Cl. 123-337.000.
Furuhashi, Keizo; and Takagi, Motoyoshi, to Japan Energy Corporation. Process for the preparation of epoxides of means of microorganisms. 5,380,654, Cl. 435-117.000.
Furui, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Fault diagnosis apparatus for crew protecting apparatus in vehicle. 5,381,334, Cl. 364-424.030.
Furukawa, Akihiro: See—
Sasaki, Ryoichi; and Furukawa, Akihiro, 5,381,161, Cl. 345-212.000.
Furukawa Electric Co., Ltd., The: See—
Yoshida, Seikoh; Ozawa, Shoichi; and Kikuta, Toshio, 5,379,717, Cl. 117-14.000.
Furusawa, Genichi: See—
Yoshida, Kazuaki; Ishikawa, Takatoshi; Fujita, Yoshihiro; and Furusawa, Genichi, 5,380,624, Cl. 430-372.000.
Futaba Denshi Kogyo K.K.: See—
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; Nishimura, Norio; Itoh, Junji; and Kanemaru, Seigo, 5,381,069, Cl. 313-310.000.
Futagawa, Hitoshi: See—
Kikuchi, Toshihiro; and Futagawa, Hitoshi, 5,380,287, Cl. 604-135.000.
FujiWare, Inc.: See—
Thorndike, Karl E.; and Vrba, Joseph A., 5,381,517, Cl. 395-61.000.
G-C Toshi Kogyo Corporation: See—
Hasegawa, Akira; and Kawasaki, Tsugumichi, 5,380,772, Cl. 522-14.000.
G. D. Searle & Co.: See—
Djuric, Stevan W.; Fretland, Donald J.; and Yu, Stella S., 5,380,740, Cl. 514-382.000.
Gabriele, Rotini L.: See—
Egidio, Marchi; Gianfranco, Tamagnone; and Gabriele, Rotini L., 5,380,533, Cl. 424-456.000.

Gaevoy, Victor P.: See—
Ivanov, Alexy A.; Mescheryakov, Vitaly D.; Stepanov, Sergey P.; Chaykovsky, Sergey P.; Yabrov, Alexandr A.; Gaevoy, Victor P.; Pokrovskaya, Svetlana A.; Sadovskaya, Ecaterina M.; Sheplev, Valentin S.; and Ermakov, Youry P., 5,380,497, Cl. 422-142.000.

Gage, Charles A.; and Sturwold, Theresa, to AGCO Corporation. Seed distribution system for planters and drills. 5,379,706, Cl. 111-175.000.

Gall, Bela; and Gall, John. Animal repellent device. 5,379,545, Cl. 43-131.000.

Gall, John: See—
Gall, Bela; and Gall, John, 5,379,545, Cl. 43-131.000.

Gallagher, Dennis M.: See—
Eckert, Alton B., Jr.; Gallagher, Dennis M.; Pfeifer, Thomas M.; and Schoonmaker, Richard P., 5,380,109, Cl. 400-708.000.

Gallenkamp, Bernd; and Fuchs, Rainer, to Bayer Aktiengesellschaft. Process for the preparation of substituted pyrazolines. 5,380,868, Cl. 548-365.400.

Galvis, Misael. Handheld device for picking up objects. 5,380,054, Cl. 294-1.400.

Gamble, Victor: See—
Miller, John; Gamble, Victor; and Beattie, David, 5,380,276, Cl. 604-28.000.

Gamboa, Ricardo R.: See—
Matthews, Kent R.; Schakel, Eric G.; and Gamboa, Ricardo R., 5,379,806, Cl. 138-149.000.

Gammie, Keith; Sheldrick, Wayne S.; Woo, Arthur S.; and Wasilewski, Anthony J., to Scientific-Atlanta, Inc. Method and apparatus for uniquely encrypting a plurality of services at a transmission site. 5,381,481, Cl. 380-49.000.

Gangnath, Robert: See—
Sander, Thomas W.; Lee, Daniel R.; and Gangnath, Robert, 5,380,330, Cl. 606-72.000.

Garbassi, Fabio: See—
Occhiello, Ernesto; Ferrari, Adriano; Garbassi, Fabio; and Cutolo, Domingo, 5,380,583, Cl. 428-283.000.

Gardeck, Kevin; Green, David A.; and Cutts, Kevin, to Motorola, Inc. Method for over the air rekeying of multiple communication groups. 5,381,479, Cl. 380-21.000.

Garnett, David M., to BNL Limited. Bearings for rollers. 5,380,104, Cl. 384-546.000.

Garrett, Samuel: See—
Rehse, Denis; Rumsey, Frank; Petito, Tim; Garrett, Samuel; Olivares, Giovanna; Welsh, David; Antici, Roger; and Bruno, Josepha, 5,381,190, Cl. 351-57.000.

Gartner, Arno: See—
Boehme, Andreas; Mayer, Peter; Gartner, Arno; Heinen, Jurgen; and Straub, Manfred, 5,379,696, Cl. 101-424.000.

Garza, Everardo: See—
Bates, Jerry L.; and Garza, Everardo, 5,380,148, Cl. 414-798.200.

Gas Research Institute: See—
Hemsath, Klaus H., 5,380,378, Cl. 148-601.000.

Gaudiana, Russell A.: See—
Chiang, Yunn H.; and Gaudiana, Russell A., 5,380,695, Cl. 503-227.000.

Gdula, Michael: See—
Hershey, John E.; Lowy, Menahem; Levinson, Lionel M.; Hassan, Amer A.; Frey, Richard L.; Welles, Kenneth B., II; Gdula, Michael; and Wojnarowski, Robert J., 5,381,445, Cl. 375-1.000.

Gebruder Funke KG: See—
Funke, Peter, 5,379,954, Cl. 241-101.200.

Gee, Thomas S.; and Smith, Paul F., to Ford Motor Company. Method and apparatus for identifying characteristic shift downward. 5,379,635, Cl. 73-118.100.

Gehrmann, Klaus: See—
Erpenbach, Heinz; Gehrmann, Klaus; Jagers, Erhard; and Kohl, Georg, 5,380,929, Cl. 562-519.000.

Gehrmann, Rainer, to U.S. Philips Corporation. Method of and arrangement for inserting a background signal into parts of a foreground signal fixed by a predetermined key color. 5,381,184, Cl. 348-586.000.

Geiger, Armin, to Buhler AG. Agitator mill. 5,379,952, Cl. 241-65.000.

Geiser, Friedrich, to VAT Holding AG. Shut-off valves for pipelines. 5,379,983, Cl. 251-167.000.

Geisow, Michael J.: See—
Ballance, David J.; Hinchliffe, Edward; Geisow, Michael J.; and Senior, Peter J., 5,380,712, Cl. 514-12.000.

Geiste, Robert J.: See—
Green, David T.; Bolanos, Henry; Geiste, Robert J.; Young, Wayne P.; Gerry, Stephen W.; and Rende, Frank M., III, 5,379,933, Cl. 227-176.000.

Gemplus Card International: See—
Kowalski, Jacek, 5,381,452, Cl. 377-26.000.

Gemsjager, Helmut: See—
Massen, Robert; Hegelbach, Hugo; Zuber, Jurg; Tobler, Hans; Schoenenberger, Niklaus; Zapf, Helmut; and Gemsjager, Helmut, 5,379,949, Cl. 241-30.000.

General Electric Company: See—
Arnold, David; and Castonguay, Roger N., 5,381,120, Cl. 335-35.000.

Campbell, John R.; and Presley, James R., 5,380,796, Cl. 525-68.000.

Doin, James E.; and Evans, Edwin R., 5,380,770, Cl. 523-212.000.

Gosens, Johannes C.; Leonardus, Adelbert H.; and Eugene, Hendrikus J., 5,380,795, Cl. 525-67.000.

Hershey, John E.; Lowy, Menahem; Levinson, Lionel M.; Hassan, Amer A.; Frey, Richard L.; Welles, Kenneth B., II; Gdula, Michael; and Wojnarowski, Robert J., 5,381,445, Cl. 375-1.000.

Laskaris, Evangelos T.; and Minas, Constantinos, 5,381,122, Cl. 335-216.000.

Linthicum, Steven E.; and Guy, Wilson T., 5,379,970, Cl. 244-54.000.

Lorraine, Peter W., 5,381,068, Cl. 310-358.000.

Nerone, Louis R., 5,381,076, Cl. 315-209.000.

Radun, Arthur V., 5,381,081, Cl. 322-94.000.

Roshen, Waseem A., 5,381,124, Cl. 336-200.000.

Snow, Barton H.; Leighton, David M.; and Steckler, Michael J., 5,379,585, Cl. 60-204.000.

Spiro, Clifford L., 5,380,557, Cl. 427-249.000.

Stein, Judith; and Davis, Mark W., 5,380,788, Cl. 524-730.000.

Stein, Judith, 5,380,846, Cl. 546-14.000.

Thornton, Roy F., 5,380,441, Cl. 210-720.000.

Timmons, James V.; Jones, Bert C., III; and Manicke, Paul S., 5,379,689, Cl. 100-43.000.

Tomlinson, Leroy O.; and Smith, Raub W., 5,379,588, Cl. 60-39.182.

General Imaging Corporation: See—
Cox, John D.; and Langford, D. Scott, 5,381,013, Cl. 250-370.090.

General Mills, Inc.: See—
Brauner, Arne H.; Bernard, Stuart N.; and Snee, Francis M., 5,379,886, Cl. 206-216.000.

General Motors: See—
VanKuiken, Lewis L., Jr.; Byrnes, Larry E.; and Kramer, Martin S., 5,380,564, Cl. 427-456.000.

General Motors Corporation: See—
Abowd, Michael J.; Abboud, Pierre Y.; and Ray, James R., 5,379,637, Cl. 73-290.000.

Andrzejak, Dennis V.; Hering, William E.; and Viano, David C., 5,379,646, Cl. 73-804.000.

Burkett, Michael J.; and Adonakis, Nikolaos A., 5,380,167, Cl. 417-269.000.

Cardinal, James M.; Gladd, Joseph H.; Jennings, Kurt L.; and Tackett, Timothy N., 5,381,501, Cl. 385-54.000.

Hawthorn, Laura A.; and Donegan, Michael W., 5,380,038, Cl. 280-730.000.

Lederman, Frederick E., 5,380,103, Cl. 384-489.000.

Worrell, Barry C.; Landis, Paul M.; Morgan, Harold W.; and Flora, Larry E., 5,380,037, Cl. 280-728.000.

General Scientific Corporation: See—
Nowak, David; and Kim, Richard, 5,381,263, Cl. 359-411.000.

General Tire: See—
Lauber, Michael L., 5,379,667, Cl. 83-16.000.

Genesis Composites, Inc.: See—
Pearce, Tony M.; Pearce, Terry V.; Rasmussen, Robert K.; and Mudrow, Herbert, 5,379,866, Cl. 188-2.00F.

Gennari, Nedo: See—
Holmes, Lawrence B.; Facciolo, Roberto; Faure, Andrea; Gennari, Nedo; and Priolo, Vincenzo, 5,379,992, Cl. 271-2.000.

Geon Company, The: See—
Greenlee, William S.; Vyvoda, Josef C.; and Wypart, Roman W., 5,380,786, Cl. 524-560.000.

George, Billy L.; Babirad, Stefan A.; Laraia, Vincent J., Jr.; and Bigham, Wilson S., to Minnesota Mining and Manufacturing Company. Method of improving adhesion between roofing granules and asphalt-based roofing materials. 5,380,552, Cl. 427-186.000.

George, David: See—
Bernzott, Philip; Dilworth, John; George, David; Higgins, Bryan; and Knight, Jeremy, 5,381,489, Cl. 382-40.000.

Gerardot, Patrick G.: See—
Hively, Brad A.; Gerardot, Patrick G.; and Wegscheid, Michele M., 5,380,042, Cl. 280-834.000.

Gerb Schwingungsisolierungen GmbH & Co. KG.: See—
Delam, Heinz; and Weber, Frank-Michael, 5,379,991, Cl. 267-136.000.

Gerber, Eliot S. Vehicle speeding detection and identification. 5,381,155, Cl. 342-104.000.

Gerber Garment Technology, Inc.: See—
Kuchta, Richard; Szweczyk, Richard S.; Vivirito, Joseph R.; King, Thomas; and Markowitz, Ivan, 5,379,882, Cl. 198-689.100.

Gerbitz, Daniel R. Apparatus and method for holding a sump pump. 5,380,158, Cl. 417-40.000.

Gerry, Stephen W.: See—
Green, David T.; Bolanos, Henry; Geiste, Robert J.; Young, Wayne P.; Gerry, Stephen W.; and Rende, Frank M., III, 5,379,933, Cl. 227-176.000.

Gerstung, Stefan: See—
Neunhoeffer, Hans; Gerstung, Stefan; Clausen, Thomas; and Balzer, Wolfgang R., 5,380,340, Cl. 8-409.000.

Gerula, Theodore J.: See—
Carver, Franklin J.; and Gerula, Theodore J., 5,380,664, Cl. 436-10.000.

Gery, Ron O., to Microsoft Corporation. Method and system for displaying images on a display device using an offscreen video memory. 5,381,347, Cl. 364-514.000.

Gesertek Oy: See—
Ryynanen, Seppo, 5,380,123, Cl. 404-82.000.

Gessner, Michael A.: See—
Williams, Charles F.; and Gessner, Michael A., 5,379,947, Cl. 241-21.000.

Getzendaner, Michael L.: See—
Snow, Gary L.; and Getzendaner, Michael L., 5,379,896, Cl. 206-470.000.

Geyer, Robert P.; and Tuliani, Vinod V. Chewable drug-delivery compositions and methods for preparing the same. 5,380,535, Cl. 424-484.000.

Ghaem, Sanjar; Istvan, Rudyard L.; and Lauro, George L., to Motorola, Inc. RF tagging system and RF tags and method. 5,381,137, Cl. 340-572.000.

Ghouri, Ahmed F., to Rockhold, Jerry D., Jr. Hemostatic safety catheter-cannula assembly. 5,380,305, Cl. 604-263.000.

Gianfranco, Tamagnone: See—
Egidio, Marchi; Gianfranco, Tamagnone; and Gabriele, Rotini L., 5,380,533, Cl. 424-456.000.

Gibb, Ian: See—
Bennet, Richard I.; and Gibb, Ian, 5,381,064, Cl. 310-49.000.

Gibson, David E., to NCR Corporation. Hot air circulation apparatus and method for wave soldering machines. 5,379,943, Cl. 228-20.100.

Gibson, Glen, to Advanced Micro Devices, Inc. Method and apparatus for determining if a data packet is addressed to a computer within a network. 5,381,414, Cl. 370-94.200.

Gil, Mercedes P.: See—
Rohrbaugh, John G.; Baker, Thomas H.; Bennett, Michael J.; Gil, Mercedes P.; and Proulx, Robert W., 5,381,344, Cl. 364-490.000.

Gilchrist, Robin L.: See—
Jones, Curtis S.; Crane, William J.; Gilchrist, Robin L.; and Langley, Rod C., 5,380,401, Cl. 156-665.000.

Giles, Alan F. Particle weighing apparatus and method. 5,380,957, Cl. 177-16.000.

Gilham, Michael L.: See—
Thurman, Dan L.; Gilham, Michael L.; and Lee, John C., 5,379,554, Cl. 451-177.000.

Gill, Robert A., to Minerals Technologies, Inc. Modified filler material for alkaline paper and method of use thereof in alkaline paper making. 5,380,361, Cl. 106-465.000.

Gill, Stephen P.: See—
Holton, Thomas; Love, Steven D.; and Gill, Stephen P., 5,381,512, Cl. 395-2.410.

Gillard, John: See—
Prasit, Petpiboon; Fortin, Rejean; Hutchinson, John H.; Belley, Michel L.; Leger, Serge; Frenette, Richard; and Gillard, John, 5,380,850, Cl. 546-155.000.

Gillet, John B., to International Business Machines Corporation. Temperature actuated switch for cryo-coolers. 5,379,601, Cl. 62-51.100.

Gilson, Robert, to Cofido S.A. Submersible biological filter for the purification of waste water. 5,380,439, Cl. 210-615.000.

Giovannone, Anthony, to Sencorp Systems, Inc. Blister packaging system and method. 5,379,572, Cl. 53-478.000.

Giovinazzo, Anthony J.: See—
Giovinazzo, Guido J.; and Giovinazzo, Anthony J., 5,380,265, Cl. 493-405.000.

Giovinazzo, Guido J.; and Giovinazzo, Anthony J. Apparatus for manually folding sheets of paper. 5,380,265, Cl. 493-405.000.

Gisser, David G.: See—
Isaacson, David; Newell, Jonathan C.; and Gisser, David G., 5,381,333, Cl. 364-413.130.

Giter, Gershon: See—
Choperena, Alfredo; Krogh, Ross; Prasad, Venkatesh; and Giter, Gershon, 5,380,487, Cl. 422-63.000.

Givler, Gregory C.; Clark, Gregory L.; Woods, Edward J.; Hansen, Karl A.; and Hare, John R., to Boeing Company, The. Method of riveting. 5,379,508, Cl. 29-525.200.

GKN Automotive AG: See—
Krude, Werner, 5,380,249, Cl. 464-111.000.

Gladd, Joseph H.: See—
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Glasscock, M. Sidney; and Monopolis, Gerasime M., to Exxon Production Research Company. Offshore platform well system. 5,379,844, Cl. 166-358.000.

Glatt, Herbert: See—
Mattesky, Henry, 5,380,581, Cl. 428-195.000.

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Fischer, Georg; and Glatzer, Edgar, 5,379,574, Cl. 53-535.000.

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Beach, Steven F.; Latham, David W. S.; Roberts, Tony G.; and Sidgwick, Colin B., 5,380,922, Cl. 562-467.000.

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Sugg, Elizabeth E.; Dezube, Milana; and Hirst, Gavin C., 5,380,872, Cl. 548-495.000.

Glesser, Louis S. Spring clip. 5,379,492, Cl. 24-3.00L.

Globe Products, Inc.: See—
Corey, Nathan A.; Clark, Carl L.; and Dolgas, Patrick A., 5,379,511, Cl. 29-597.000.

Gloser, Paul F.: See—
Aitkens, Robert K.; Gloser, Paul F.; and Keelty, George F., 5,380,044, Cl. 283-67.000.

Glotzbach, Warren P.: See—
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Glycomed, Inc.: See—
Conrad, H. Edward; Fugedi, Peter; Brandley, Brian K.; Lam, Lun H.; and Laine, Roger A., 5,380,716, Cl. 514-56.000.

Gober, Victor A.; and Raney, David A., to Man-Gill Chemical Company. Aqueous alkaline composition for cleaning aluminum and tin surfaces. 5,380,468, Cl. 252-547.000.

Gobetz, Frank W.: See—
Provenzano, Paul L.; Swindal, James L.; Kuhlberg, Robert J.; Brahm, Charles B.; Meyer, Harold D.; Gobetz, Frank W.; Wiegand, Walter J.; and Bullis, Robert H., 5,381,299, Cl. 361-283.400.

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Godlove, Ronald E., to Xerox Corporation. Texturing of overcoated imaging member for cleaning. 5,381,211, Cl. 355-211.000.

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Goebel, Thomas: See—
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Goedecke Aktiengesellschaft: See—
Barth, Hubert; Hartenstein, Johannes; Rudolph, Claus; Schachtele, Christoph; Betche, Hans-Jurgen; Peck, Reinhard; and Osswald, Hartmut, 5,380,746, Cl. 514-414.000.

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Goetze AG: See—
Mader, Heinrich-Christian; Mierbach, Albin; and Schmelter, Wolfgang, 5,380,018, Cl. 277-216.000.

Goineau, Andre M., to Milliken Research Corporation. Method of produce loop pile yarn. 5,379,501, Cl. 28-281.000.

Goldenrod, Inc.: See—
Pretto, Alessio G.; Keester, Louis J.; and Hansen, Richard S., 5,379,964, Cl. 242-571.200.

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Jourdenais, Karen C.; Frankel, James L.; Goldhaber, Steven N.; and Seamonson, Linda J., 5,381,550, Cl. 395-700.000.

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Goldmann, Siegfried: See—
Stoltefuss, Jurgen; Goldmann, Siegfried; Straub, Alexander; Boshagen, Horst; Bechem, Martin; Gross, Rainer; Heibisch, Siegfried; Hutter, Joachim; and Rounding, Howard-Paul, 5,380,851, Cl. 546-167.000.

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Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eszter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.

Goldwater, Margaret A.: See—
Baczowski, Carole A.; Goldwater, Margaret A.; Ingram, Celia R.; McKenna, Douglas B.; and Yurcovic, Evelyn C., 5,380,078, Cl. 312-1.000.

Gollapudi, Sridhar: See—
Murphy, Kent; Vengsarkar, Ashish; Feth, Shari; Claus, Richard; Gollapudi, Sridhar; and Wang, Anbo, 5,381,229, Cl. 356-345.000.

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Rebordosa, Antonio; and Golob, Jurgen, 5,379,953, Cl. 241-101.200.

Gomez, Charles W.; Harring, Lori S.; Helland, Randall H.; Ramsden, William D.; and Van Thien, Tran, to Minnesota Mining and Manufacturing Company. Dihydroperimidene squarylium dyes as antihalation and acetate materials for photographic and photothermographic articles. 5,380,635, Cl. 430-517.000.

Gonda, Matthew A., to United States of America, Health and Human Services. Molecular clones of bovine immunodeficiency-like virus. 5,380,830, Cl. 536-23.100.

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Carvajal, Nelson; Silva, Beatriz; and Gonzalez, Alejandro, 5,379,654, Cl. 73-863.840.

Gonzalez, Elena M.: See—
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Goodman, Steven L.; and Albrecht, Ralph M., to Wisconsin Alumni Research Foundation. Biotextured surfaces. 5,380,589, Cl. 428-36.920.

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Bernard, Geoffrey J. R.; Goodwin, Dean; and Davidson, Robert S., 5,380,650, Cl. 435-28.000.

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Chlebina, Lawrence E.; Head, William J.; and Kubinski, Donald C., 5,380,383, Cl. 156-96.000.

Ngoc, Hung D.; and Salazar, Mariano, 5,380,785, Cl. 524-504.000.

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- Gorman, William J.: See—
Makower, Joshua; Slee, Earl H.; Chesler, Naomi C.; Gorman, William J.; and Barber, Frank E., 5,380,290, Cl. 604-164.000.
- Gorny, Douglas J.: See—
Shridhar, Avadhani; and Gorny, Douglas J., 5,381,360, Cl. 364-746.000.
- Gorokhovskiy, Vladimir I. Vacuum-arc plasma source, 5,380,421, Cl. 204-298.410.
- Gorsky, Lee D.: See—
Murad, Ferid; Kerwin, James F.; and Gorsky, Lee D., 5,380,945, Cl. 564-108.000.
- Gosens, Johannes C.; Leonardus, Adelbert H.; and Eugene, Hendrikus J., to General Electric Company. Polymer mixture comprising an aromatic polycarbonate, a styrene-containing copolymer and/or graft polymer, and a polysiloxane-polycarbonate block copolymer, and articles formed therefrom, 5,380,795, Cl. 525-67.000.
- Goto, Fumio; and Kasahara, Yasumasa. Molded bag for children, 5,379,911, Cl. 220-339.000.
- Goto, Hiroshi, to Ricoh Company, Ltd. Transparent thermosensitive recording medium, 5,380,693, Cl. 503-200.000.
- Goto, Kiyoshi: See—
Kojima, Yasuo; Hirai, Katsura; and Goto, Kiyoshi, 5,380,612, Cl. 430-49.000.
- Goto, Kunihiko, to Nitto Kohki Co., Ltd. Coupling with a valve for dispensing liquids, 5,379,918, Cl. 222-82.000.
- Goto, Moto; Kikumoto, Nobuo; Iida, Osamu; Ikoma, Hiroaki; and Fukushima, Shigemitsu, to Mitsubishi Materials Corporation. Copper smelting apparatus, 5,380,353, Cl. 75-640.000.
- Goto, Shigeo: See—
Usagawa, Toshiyuki; Hiruma, Kenji; Kawata, Masahiko; Goto, Shigeo; Mitani, Katsuhiko; Yamane, Masao; Takahashi, Susumu; Tanoue, Tomonori; and Imamura, Yoshinori, 5,381,027, Cl. 257-192.000.
- Goto, Yoshihiro: See—
Ito, Yukio; and Goto, Yoshihiro, 5,379,769, Cl. 128-660.070.
- Gottfreid, Thomas M., to Moore Business Forms, Inc. Method and apparatus for packaging a stack of paper in a cardboard carton, 5,379,571, Cl. 53-471.000.
- Goulait, David J. K.; and Carstens, Jerry E., to Proctor & Gamble Company, The. Loop fastening material for fastening device and method of making same, 5,380,313, Cl. 604-391.000.
- Goulds Pumps, Incorporated: See—
Paddock, Douglas; Ruzicka, Peter J.; and Wilson, George, 5,379,519, Cl. 29-898.080.
- Goulter, Victor H. One-piece male urinary incontinence condom, with a skin shield, non-return valve, urine collecting compartment, and drain valve, 5,380,312, Cl. 604-352.000.
- Goy, Christel C.: See—
Hillery, Frank E.; and Goy, Christel C., 5,380,019, Cl. 277-236.000.
- Grabbe, Dmitry; Korsunsky, Iosif; and Laub, Michael F., to Whitaker Corporation, The. High density area array modular connector, 5,380,210, Cl. 439-66.000.
- Grabbe, Dmitry G., to Whitaker Corporation, The. Anchor pin, 5,380,221, Cl. 439-573.000.
- Gradle, Charles: See—
Dee, Alejandro; and Gradle, Charles, 5,379,724, Cl. 119-158.000.
- Graham, Larry J. Presence detector for controlling an electric range, 5,380,985, Cl. 219-452.000.
- Grand Bleu International, Inc.: See—
Kobayashi, Kazunori, 5,379,762, Cl. 128-201.280.
- Grant, Graham C. Intravenous infusion set, 5,380,293, Cl. 604-177.000.
- Grau, Noel J., to Commonwealth of Puerto Rico. Minimal inductance electrodynamic transducer, 5,381,483, Cl. 381-192.000.
- Gray, David A.: See—
Kuroda, Tadahiyo; and Gray, David A., 5,381,057, Cl. 326-126.000.
- Gray, Mary A.; Axworthy, Don; and Wilkening, David, to NeoRx Corporation. Methods for reducing non-target retention of immunoconjugates and metabolites thereof, 5,380,513, Cl. 424-1.490.
- Gray, McMahon L.: See—
Wen, Wu-Wey; Gray, McMahon L.; and Champagne, Kenneth J., 5,379,902, Cl. 209-166.000.
- Grayson, Tom. Self-contained hand-held solar chest, 5,379,596, Cl. 62-362.000.
- Great Lakes Chemical Corporation: See—
Termine, Enrico J.; Atwell, Ray W.; Hodgen, Harry A.; and Favstritsky, Nicolai A., 5,380,802, Cl. 525-72.000.
- Green, David A.: See—
Gardeck, Kevin; Green, David A.; and Cutts, Kevin, 5,381,479, Cl. 380-21.000.
- Green, David T.; Bolanos, Henry; Geiste, Robert J.; Young, Wayne P.; Gerry, Stephen W.; and Rende, Frank M., III, to United States Surgical Corporation. Arcuate apparatus for applying two-part surgical fasteners, 5,379,933, Cl. 227-176.000.
- Green, Martin J.: See—
Reiterman, Donald R.; Green, Martin J.; Nicolas, Ed F.; Greff, Richard J.; and Thomas, Ronald E., 5,380,245, Cl. 454-63.000.
- Green, Peter J.: See—
Fearing, Oliver H., Jr.; Green, Peter J.; and Kirby, Richard E., 5,381,321, Cl. 362-217.000.
- Greenberg, Daniel S.: See—
Daugherty, Thomas H.; DeBruler, Dennis L.; Greenberg, Daniel S.; Hodgdon, David J.; and Murphy, Douglas J., 5,381,405, Cl. 370-54.000.
- Greene, George H.; Miller, Robert; Williams, James L.; Phillips, James C.; Stults, Jerry F.; and Tellings, Jan P. E. Antioxidant glyceride derivatives, 5,380,890, Cl. 554-2.000.
- Greening, Richard C.: See—
Leedle, Jane A. Z.; Greening, Richard C.; and Smolenski, Walter J., 5,380,525, Cl. 424-93.400.
- Greenlee, William S.; Vyvoda, Josef C.; and Wypart, Roman W., to Geon Company, The. Polyvinyl chloride blends having improved physical properties including low temperature brittleness, 5,380,786, Cl. 524-560.000.
- Greenstein, Michael; and Melton, Hewlett E., Jr., to Hewlett-Packard Company. Electrical impedance normalization for an ultrasonic transducer array, 5,381,067, Cl. 310-334.000.
- Greenstein, Michael, to Hewlett-Packard Company. Electrical interconnect for multilayer transducer elements of a two-dimensional transducer array, 5,381,385, Cl. 367-140.000.
- Greenstein, Michael: See—
Lum, Paul; and Greenstein, Michael, 5,381,386, Cl. 367-163.000.
- Greenwalt, Richard B., to Bechtel Group, Inc. Method of using rubber tires in an iron making process, 5,380,352, Cl. 75-445.000.
- Greenway, Hubert: See—
Schleger, Linda; and Wittman, Mary, 5,379,463, Cl. 2-431.000.
- Greenwell, Joseph D., to R. A. Jones & Co. Inc. Carton flap closing apparatus, 5,379,573, Cl. 53-491.000.
- Greenwood, Brian F.: See—
Ryham, Rolf; Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Soderman, Jarmo; and Wiklund, Karl G., 5,380,402, Cl. 162-30.100.
- Greff, Richard J.: See—
Reiterman, Donald R.; Green, Martin J.; Nicolas, Ed F.; Greff, Richard J.; and Thomas, Ronald E., 5,380,245, Cl. 454-63.000.
- Gregg, Joseph J.; and Griffith, Richard L., III, to Becton, Dickinson and Company. Needle shielding cushion kit, 5,379,900, Cl. 206-571.000.
- Gregory, Thomas A.; and Keller, Christopher G., to International Business Machines Corporation. Spacer ring reservoir for magnetic recording disk lubricant, 5,381,284, Cl. 360-97.020.
- Greig, Richard C.: See—
Werner, Frank D.; and Greig, Richard C., 5,380,010, Cl. 273-167.00H.
- Greiner, Alfred: See—
Hutt, Jean; Mugnier, Jacques; Greiner, Alfred; and Pepin, Regis, 5,380,743, Cl. 514-399.000.
- Greis, Howard A., to Kinefac Corporation. Apparatus and method for forming precision surfaces on shaft-like components, 5,379,620, Cl. 72-19.000.
- Grenot, Thierry, to Thomson-CSF. Transit switch for an asynchronous network, notably an ATM network, 5,381,410, Cl. 370-60.100.
- Gresham, Jack W.: See—
Thompson, Terrence L.; and Gresham, Jack W., 5,379,513, Cl. 29-772.000.
- Gretag Imaging AG: See—
Binder, Erich; and Kunz, Jurg, 5,381,209, Cl. 355-27.000.
- Grider, Stephen N.: See—
Adams, Matthew K.; Little, Wendell L.; and Grider, Stephen N., 5,381,540, Cl. 395-425.000.
- Gripenburg, Ronald G.; Feuer, William; and Feng, James, to Reckitt & Colman Inc. Low temperature non-caustic oven cleaning composition, 5,380,454, Cl. 252-174.140.
- Griffin, Kathy R.: See—
Morgan, Rodney A.; and Griffin, Kathy R., 5,379,462, Cl. 2-403.000.
- Griffin, Paul G.: See—
Kadkhodayan, Abbas; Pillsbury, Dale G.; and Griffin, Paul G., 5,380,448, Cl. 252-32.70E.
- Griffith, Richard L., III: See—
Gregg, Joseph J.; and Griffith, Richard L., III, 5,379,900, Cl. 206-571.000.
- Grimsey, Andrew D., to Eastman Kodak Company. Method of processing a photographic silver halide color material utilizing a processing tank having a barrier, 5,380,627, Cl. 430-399.000.
- Grolman, Bernard: See—
Luce, David A.; and Grolman, Bernard, 5,381,196, Cl. 351-232.000.
- Gropp, Heiko; Leppat, Frank; and Hafele, Martin, to Klockner-Humboldt-Deutz AG. Crop conditioner with forage mat separating device, 5,379,580, Cl. 56-192.000.
- Gross, Joseph, to Scientific Innovations Ltd. Transcutaneous drug delivery applicator, 5,380,272, Cl. 604-20.000.
- Gross, Lutz-Werner; Poth, Ulrich; Dieter, and Weidemeier, Klaus, to BASF L+F Aktiengesellschaft. Spray coating with carbonyl polyol-derived polyester and epoxy resin, 5,380,565, Cl. 427-475.000.
- Gross, Rainer: See—
Stoltzfuss, Jurg; Goldmann, Siegfried; Straub, Alexander; Boshagen, Horst; Bechem, Martin; Gross, Rainer; Heibisch, Siegfried; Hutter, Joachim; and Rounding, Howard-Paul, 5,380,851, Cl. 546-167.000.
- Grosso, Vincent A., to Raytheon Company. Modular aerodynamic gyrodynamic intelligent controlled projectile and method of operating same, 5,379,968, Cl. 244-3.210.
- Gruber, Wilhelm: See—
Bielmeier, Ernst; Haeberle, Thomas; Siebert, Hermann-Josef; and Gruber, Wilhelm, 5,380,932, Cl. 562-543.000.

- Gruetzmacher, Roland: See—
Daute, Peter; Gruetzmacher, Roland; and Mertscheit, Nicole, 5,380,886, Cl. 549-539.000.
- Grumman Aerospace Corporation: See—
Aronne, Armand J., 5,379,675, Cl. 89-1.100.
- Boles, Sol; and Buckland, Dennis J., 5,381,151, Cl. 342-21.000.
- Grumman Corporation: See—
Wedgwood, Janet E.; and Petrusic, John F., 5,381,357, Cl. 364-724.160.
- Grundl, Andreas; and Hoffmann, Bernhard, to Grundl & Hoffmann. Half-bridge arrangement for switching electrical power, 5,381,330, Cl. 363-132.000.
- Grundl & Hoffmann: See—
Grundl, Andreas; and Hoffmann, Bernhard, 5,381,330, Cl. 363-132.000.
- Grudis, Algirdas J.: See—
Diekol, John E.; Grudis, Algirdas J.; and Hoffman, Dale E., 5,381,421, Cl. 371-27.000.
- Grusetski, Rodney J.; and Blackman, Robert J., to Eastman Kodak Company. Leader card attachable to a photographic filmstrip having a lead end with at least one aperture, 5,381,204, Cl. 354-345.000.
- GS Food Corporation: See—
Nakamura, Masahiko, 5,379,474, Cl. 15-21.100.
- GTE Laboratories Incorporated: See—
Servi, Leslie D.; and Keelson, Julian, 5,381,546, Cl. 395-650.000.
- GTE Products Corporation: See—
Godyak, Valery A.; Piejak, Robert B.; and Alexandrovich, Benjamin M., 5,381,073, Cl. 315-58.000.
- Guardiola, Beatrice: See—
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean; Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice, 5,380,750, Cl. 514-443.000.
- Guerci, Joseph R. Optimum matched illumination-reception radar for target classification, 5,381,154, Cl. 342-90.000.
- Gueret, Jean-Louis, to L'Oreal. Unit for dispensing at least one fluid product, in particular, a cosmetic or pharmaceutical product, having a pressure actuated, self-sealing closure outlet, 5,379,919, Cl. 222-105.000.
- Guiles, Joseph W.: See—
Miller, Theodore C.; Collins, Joseph C.; Mattes, Kenneth C.; Wentland, Mark P.; Perni, Robert B.; Corbett, Thomas H.; and Guiles, Joseph W., 5,380,749, Cl. 514-437.000.
- Guilford Mills, Inc.: See—
Nielsen, Arne; McCartney, Phillip D.; and Moghaddassi, Majid, 5,379,497, Cl. 26-15.00R.
- Nielsen, Arne; and Moghaddassi, Majid, 5,379,498, Cl. 26-15.00R.
- Guillaume, Jacques: See—
Clemence, Francois; Guillaume, Jacques; and Hamon, Gilles, 5,380,722, Cl. 514-235.200.
- Guindon, Yvan: See—
Deziel, Robert; and Guindon, Yvan, 5,380,727, Cl. 514-261.000.
- Gullichsen, Johan: See—
Ryham, Rolf; Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Soderman, Jarmo; and Wiklund, Karl G., 5,380,402, Cl. 162-30.100.
- Gullickson, Russell C. Energy dampening drawbar, 5,380,030, Cl. 280-486.000.
- Gully, Danielle: See—
Boiegrain, Robert; Brodin, Roger; Gully, Danielle; Molimard, Jean-Charles; and Olliero, Dominique, 5,380,736, Cl. 544-369.000.
- Gum, Peter H.; Hough, Roger E.; and Murray, Robert E., to International Business Machines Corporation. Data processing control of second-level quest virtual machines without host intervention, 5,381,535, Cl. 395-375.000.
- Gunderson, Inc.: See—
Saxton, Gregory J.; Thomas, Gareth R.; Hill, Charles C.; and Weselake, Kenneth L., 5,379,702, Cl. 105-355.000.
- Gundlach, Hans-Werner; and Stroncik, Peter, to BEGO Bremer Goldschlagererei Wilh. Herbst GmbH & Co. Quartz-free powdered magmatic nepheline rock material for the surface treatment of dental parts, especially grinding, polishing and/or blasting material, 5,380,356, Cl. 106-3.000.
- Gunya, Diane M.: See—
Gunya, Robert E.; Jackson, Otto V.; and Gunya, Diane M., 5,380,308, Cl. 604-323.000.
- Gunya, Robert E.; Jackson, Otto V.; and Gunya, Diane M., to Milieu Systems Corp. Containment vessels for liquid waste, 5,380,308, Cl. 604-323.000.
- Guo, Shi-Pung; and Chung, Chuan-Yuan, to Industrial Technology Research Institute. Laser diode unit including an adjusting member provided with a through hole, 5,381,438, Cl. 372-107.000.
- Gupta, Ved P.: See—
Malek, Abdul; Monasterios, Clevys J.; Brown, G. Ronald; and Gupta, Ved P., 5,380,928, Cl. 562-512.400.
- Gurtzen, Stefan; Schneider, Jurg; and Schrader, Rolf, to Hoechst Aktiengesellschaft. Process for preparing trimethylaluminum by reacting methylaluminum chlorides with sodium in solids reactors, 5,380,898, Cl. 556-187.000.
- Guscott, Brian: See—
Aita, Michael; Mirhoseini, Mahmood; Cayton, Mary; Simpson, Carl J.; and Guscott, Brian, 5,380,316, Cl. 606-7.000.
- Guterman, Daniel C.: See—
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,380,672, Cl. 437-43.000.
- Gutierrez, Jose R.: See—
Casillas, Abel R.; Gutierrez, Jose R.; and Schneider, Frederick C., III, 5,380,239, Cl. 451-496.000.
- Guy, Wilson T.: See—
Linthicum, Steven E.; and Guy, Wilson T., 5,379,970, Cl. 244-54.000.
- Guzman, Arsenio F. Handgun cleaning tool kit, 5,379,542, Cl. 42-95.000.
- Gyimesi, Jozsef: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eszter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.
- Gyogyszerkutato Intezet KFT: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eszter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.
- Gyory, J. Richard, to ALZA Corporation. Electrotransport agent delivery device and method, 5,380,271, Cl. 604-20.000.
- H. Stoll GmbH & Co.: See—
Stoll, Thomas; Rempp, Wolfgang; and Schmid, Franz, 5,379,612, Cl. 66-64.000.
- Haas, Janice; O'Brien, Patrick J.; and Durham, Larry D., to Ivy Hill Corporation. Paperboard package, 5,379,894, Cl. 206-333.000.
- Haas, Lothar: See—
Kohlhaupt, Reinhold; Bergmann, Udo; and Haas, Lothar, 5,380,871, Cl. 548-459.000.
- Habazaki, Hiroki: See—
Hashimoto, Koji; Habazaki, Hiroki; Mrowec, Stanislaw; and Danielewski, Marek, 5,380,375, Cl. 148-403.000.
- Haber, Terry M.; Foster, Clark B.; and Smedley, William H., to Habley Medical Technology Corporation. Pharmaceutical mixing container with rotationally mounted housing, 5,380,087, Cl. 366-130.000.
- Haber, Terry M.: See—
Smedley, William H.; Haber, Terry M.; and Foster, Clark B., 5,380,296, Cl. 604-193.000.
- Habley Medical Technology Corporation: See—
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,380,087, Cl. 366-130.000.
- Hachisuka, Atsushi: See—
Ajika, Natsuo; Arima, Hideaki; and Hachisuka, Atsushi, 5,381,365, Cl. 365-149.000.
- Hachiya, Satoshi: See—
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- Hadden, David M. Resiliently yieldable picture frame corner insert, 5,380,119, Cl. 403-402.000.
- Haddick, Brian J.; and Peterson, Rudolph A., Jr., to Deere & Company. Fuel shut-off solenoid pull-in coil relay, 5,379,733, Cl. 123-179.170.
- Haeberle, Thomas: See—
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- Haek, Robert S.: See—
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- Hafele, Martin: See—
Gropp, Heiko; Leppat, Frank; and Hafele, Martin, 5,379,580, Cl. 56-192.000.
- Hafker, Thomas: See—
Focke, Heinz; and Hafker, Thomas, 5,379,575, Cl. 53-543.000.
- Hager, Rudolf; Schneider, Otto; and Schuster, Johann, to Wacker-Chemie GmbH. Process for the condensation and/or equilibration of organosilicon compounds, 5,380,902, Cl. 556-462.000.
- Hagino, Hiroyasu, to Mitsubishi Denki Kabushiki Kaisha. Method of fabricating a semiconductor device, 5,380,670, Cl. 437-31.000.
- Hagiwara, Shigeru, to Nikon Corporation. Exposing apparatus, 5,381,210, Cl. 355-53.000.
- Hahlganss, Gunther: See—
Schnell, Klaus; and Hahlganss, Gunther, 5,381,080, Cl. 318-566.000.
- Haidos, John C.; Arudi, Ravindra L.; and Rotto, Nelson T., to Minnesota Mining and Manufacturing Company. Magnetic recording medium having radiation curable binder with α -methylstyrene unsaturation, 5,380,905, Cl. 558-172.000.
- Hailey, Charles D.: See—
Blount, Curtis G.; Hailey, Charles D.; and Hightower, Charles M., 5,379,845, Cl. 166-382.000.
- Haines, Richard K., to Elkhart Door, Inc. Pop-up ashtray, 5,379,787, Cl. 131-242.000.
- Hains, Charles M., to Xerox Corporation. Method for reducing 2-color moire in 4-color printing, 5,381,247, Cl. 358-533.000.
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- Hale, John. Method and apparatus for upsetting the ends of steel pipe, 5,379,625, Cl. 72-318.000.
- Halliburton Company: See—
Himes, Ronald E.; Totten, Patty L.; and Vinson, Edward E., 5,380,706, Cl. 507-129.000.
- Streich, Steven G., 5,379,835, Cl. 166-181.000.

- Halopoff, William E.: See—
Sagastegui, Javier; Puricelli, George A.; and Halopoff, William E., 5,379,923, Cl. 222-181.000.
- Haluska, Loren A., to Dow Corning Corporation. Hermetic coatings by heating hydrogen silsesquioxane resin in an inert atmosphere. 5,380,567, Cl. 427-578.000.
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- Hamada, Hideaki: See—
Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.
- Hamada, Hiroshi: See—
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- Hamamoto, Yasuo, to Matsushita Electric Industrial Co., Ltd. Time-base inversion type linear phase filter of the infinite impulse response type having linear phase characteristics. 5,381,107, Cl. 327-306.000.
- Hamano, Hisashi; Hosoi, Masahiro; Kobayashi, Ieyasu; and Saeki, Yasuhiro, to Teijin Limited. Biaxially oriented polyethylene-2,6-naphthalene-dicarboxylate film and process for the production thereof. 5,380,577, Cl. 428-143.000.
- Hamburg, Douglas R.; Logothetis, Eleftherios M.; Cook, Jeffrey A.; and Rimai, Lajos, to Ford Motor Company. Air/fuel control system with hego current pumping. 5,379,590, Cl. 60-276.000.
- Hamerling, Hans: See—
de Groot, Gert J.; and Hamerling, Hans, 5,381,174, Cl. 348-207.000.
- Hamilton, C. E. Storing device having upper and lower rod separators. 5,380,079, Cl. 312-9.550.
- Hamon, Gilles: See—
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- Hamos, Robert E., to Teledyne Industries, Inc. High-reflectivity porous blue-flame gas burner. 5,380,192, Cl. 431-7.000.
- Hamp, Charles H., III: See—
Theroux, Gil; Baca, Allen G.; and Hamp, Charles H., III, 5,381,304, Cl. 361-706.000.
- Hampden-Smith, M. J.: See—
Rye, Robert R.; Riccio, Antonio J.; Hampden-Smith, M. J.; and Kodas, T. T., 5,380,474, Cl. 264-25.000.
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- Hamu, Alan J.; and Hamu, Kaino J. Screen printing frame assembly with screen anchors. 5,379,691, Cl. 101-127.100.
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Ando, Kazumasa; Nakata, Shigeharu; Kitagawa, Nobutaka; and Hanatani, Shingo, 5,381,491, Cl. 382-56.000.
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- Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, to Konica Corporation. Image forming apparatus. 5,380,610, Cl. 430-31.000.
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- Hania, Marc; and Ozouf, Rene-Claude, to Alcatel Radiotelephone. Smart card reader. 5,380,997, Cl. 235-485.000.
- Hanna, Samir B.: See—
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- Hannula, Paul, to Lakeside Ltd. Illuminated sign with ice-like characters. 5,379,539, Cl. 40-552.000.
- Hans, Stahlecker: See—
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- Hansen, James D.: See—
Kelly, John S.; Hansen, James D.; and Caruso, Joseph M., 5,380,196, Cl. 433-8.000.
- Hansen, Karl A.: See—
Givler, Gregory C.; Clark, Gregory L.; Woods, Edward J.; Hansen, Karl A.; and Hare, John R., 5,379,508, Cl. 29-525.200.
- Hansen, Richard S.: See—
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- Hansen, Tommy; and Jorn, Ernst, to Haldor Topsoe A/S. Fuel cell system. 5,380,600, Cl. 429-17.000.
- Hanson, G. Herbert. Orthodontic arch wire sleeves for use with orthodontic arch wires and brackets. 5,380,197, Cl. 433-22.000.
- Hansson, Leif: See—
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- Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaoka, Masanobu; Mihara, Tadashi; Koda, Yasuto; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, to Canon Kabushiki Kaisha. Ferroelectric liquid crystal device with fine particles on insulator, having diameter less than substrate gap. 5,381,256, Cl. 359-75.000.
- Hara, James H.: See—
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- Hara, Kenji, to Mitsui Engineering & Shipbuilding Co., Ltd. Multi-axial joy stick device. 5,379,663, Cl. 74-471.0XY.
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- Harada, Yasuhiro: See—
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- Haraguchi, Yoshinori, to NEC Corporation. Semiconductor memory device incorporating redundancy memory cells capable of accessing defective memory cells. 5,381,371, Cl. 365-200.000.
- Harari, Eliyahu: See—
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- Hare, John R.: See—
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- Hargreaves, Rodney B.: See—
Jones, Geraint; James, Roger; and Hargreaves, Rodney B., 5,380,714, Cl. 514-25.000.
- Hari, Stefan; Wallquist, Olof; Herren, Fritz; and Eichenberger, Thomas, to Ciba-Geigy Corporation. Mixed crystals of sulfonated diketopyrrolopyrroles. 5,380,870, Cl. 548-453.000.
- Harley, A. Dale; Murchison, Craig B.; and Puga, Jose, to Dow Chemical Company. The Captive carbonyl halide process for production of diaryl carbonates. 5,380,909, Cl. 558-274.000.
- Harling, Richard L. Folding utility cart apparatus. 5,380,033, Cl. 280-654.000.
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- Harmon, Ronald A., to Wakefield Engineering, Inc. Self clamping heat sink. 5,381,041, Cl. 257-718.000.
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Gomez, Charles W.; Harring, Lori S.; Helland, Randall H.; Ramsden, William D.; and Van Thien, Tran, 5,380,635, Cl. 430-517.000.
- Harris Corporation: See—
Cripe, David W.; and Schlegel, William S., 5,381,109, Cl. 330-10.000.
- Harris, James D.: See—
Windish, David K.; Harris, James D.; and McDaniel, Darin J., 5,379,584, Cl. 60-204.000.
- Harris, Kenneth: See—
Thomas, Raymond H. P.; Chen, Ruth H. H.; and Harris, Kenneth, 5,380,449, Cl. 252-68.000.
- Harris, Norman H.: See—
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- Harris, Willard S.: See—
Argyris, Straty N.; Harris, Willard S.; Oldrey, Richard W.; and Ossolinski, Edward J., 5,380,955, Cl. 174-151.000.
- Harrison, Charles R.; Lahm, George P.; and Stevenson, Thomas M., to Du Pont de Nemours & Co., Inc. and Company. Antipropagational fused tetrahydropyridazines. 5,380,718, Cl. 514-80.000.
- Hart, Rickey D.; and Rice, John T., to Innovative Devices, Inc. Surgical cannula and trocar system and method of using the same. 5,380,288, Cl. 604-167.000.
- Hartenstein, Johannes: See—
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- Hartmann, Werner: See—
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- Harushima, Yoshiaki: See—
Yamamoto, Yasuo; Harushima, Yoshiaki; and Nagai, Akira, 5,380,875, Cl. 548-533.000.
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- Harvey, Martha J.: See—
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- Harvison, Eric J. Method for forming traffic surfaces having double-coated bonding of anti-slip particles and containing retro-reflective beads. 5,380,549, Cl. 427-137.000.
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- Hasegawa, Yoshio: See—
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- Hashiguchi, Yoshiyuki; Kishi, Masakiti; and Yagyu, Takehiko, to Kanegafuchi Chemical Industry Co., Ltd. Process and apparatus for suspension polymerization. 5,380,496, Cl. 422-131.000.
- Hashimoto, Koji; Habazaki, Hiroki; Mrowec, Stanislaw; and Danielewski, Marek, to Hashimoto, Koji; and Yoshida Kogyo K.K. Amorphous alloys resistant against hot corrosion. 5,380,375, Cl. 148-403.000.
- Hashizume, Kenji: See—
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- Hassan, Amer A.: See—
Hershey, John E.; Lowy, Menahem; Levinson, Lionel M.; Hassan, Amer A.; Frey, Richard L.; Welles, Kenneth B., II; Gdula, Michael; and Wojnarowski, Robert J., 5,381,445, Cl. 375-1.000.
- Hasselman, Timothy K.; and Quartararo, Richard, to Hasselman, Timothy K. Microgravity suspension system for simulating a weightless environment. 5,379,657, Cl. 73-866.400.
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- Hatala, Edward: See—
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- Hatton, Leslie R.: See—
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- Hattori, Keiji: See—
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- Hattori, Noriko; Torikai, Eiichi; Kawagishi, Shigemitsu; Tadokoshi, Mitsuaki; and Okuno, Kazuyoshi, to Okuno Chemical Industries Co., Ltd. Process for electroless gold plating. 5,380,562, Cl. 427-437.000.
- Hattori, Shinichi: See—
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- Hattori, Yasuji: See—
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- Haug, John R.: See—
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- Haug, Werner, to Frama AG. Apparatus for label transport. 5,379,692, Cl. 101-227.000.
- Haverinen, Timo, to Valmet Paper Machinery Inc. Apparatus for eliminating the flutter of a paper web in the dryer section of a paper-making machine. 5,379,526, Cl. 34-114.000.
- Havinga, Edsko E.; Ten Hoeve, Wolter; and Wijnberg, Hans, to U.S. Philips Corporation. Electrically conductive alternating copolymer and method of preparing such a copolymer. 5,380,807, Cl. 526-257.000.
- Hawker Energy Products, Inc.: See—
Hooke, John W., 5,380,603, Cl. 429-180.000.
- Hawkins, Christopher A.; and Tse, Fred M., to TRW Inc. Partial intercept LPI (low probability of intercept) reconnaissance system. 5,381,150, Cl. 342-13.000.
- Hawley, Frank W.: See—
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- Hawley, Peter J., Jr., to Stairmaster Sports/Medical Products, Inc. Exercise apparatus. 5,380,258, Cl. 482-37.000.
- Haws, Spencer K. Footed wheel for irrigation apparatus. 5,380,075, Cl. 305-5.000.
- Hawthorn, Laura A.; and Donegan, Michael W., to General Motors Corporation. Offset inflatable restraint system. 5,380,038, Cl. 280-730.00R.
- Hayakawa, Isao; and Atarashi, Shohgo, to Daiichi Seiyaku Co., Ltd. Intermediates for pyridinecarboxylic acid derivatives. 5,380,874, Cl. 548-531.000.
- Hayakawa, Yoshio: See—
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- Hayama, Takashi: See—
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- Hayami, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Double wish-bone type suspension having A-type arm combined with pivoted expandable/contractible connection link and lateral link. 5,380,024, Cl. 280-96.100.
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- Hayashi, Koichi, to Fuji Xerox Co., Ltd. Document processing device using partial layout templates. 5,381,523, Cl. 395-145.000.
- Hayashi, Mishio, to Advantest Corporation. Pulse signal measuring instrument. 5,381,100, Cl. 324-601.000.
- Hayashi, Shigetoshi: See—
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- Hayden, H. Wayne: See—
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- Hayes, David J.: See—
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- Head, William J.: See—
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- Healzer, Gaylen D.: See—
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- Healzer, Janelle L.; and Healzer, Gaylen D., to Healzer, Janelle L. Garland accessory. 5,379,783, Cl. 132-279.000.
- Heard, Stan: See—
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- Heath, Derek E.; and Berendt, Carl J., to Quality Dental Products, Inc. Endodontic instrument of predetermined flexibility. 5,380,200, Cl. 433-102.000.
- Hebisch, Siegfert: See—
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- Heckele, Helmut, to Richard Wolf GmbH. Device for attaching and securing an auxiliary instrument to a surgical instrument. 5,379,755, Cl. 128-4.000.
- Heddon, Will. Bowling alley bumper system and method. 5,380,251, Cl. 473-109.000.
- Heffernan, Joseph: See—
Bowen, Larry; Brackmann, Warren A.; Cohen, Norman; Fazekas, George; Heffernan, Joseph; Kaczmarek, Peter P.; and Snaird, Stanislaw M., 5,379,788, Cl. 131-331.000.
- Hegelbach, Hugo: See—
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- Hegwer Industries, Inc.: See—
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- Hegner, Reinhard: See—
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- Heijl, Anders: See—
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- Heiliger, Ludwig; Schmidt, Adolf; and Probst, Joachim, to Bayer Aktiengesellschaft. Polymerizable emulsifiers and reactive groups and polymers of emulsifiers and other monomers. 5,380,924, Cl. 562-439.000.
- Heilman, George C.: See—
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- Heinen, Jürgen: See—
Boehme, Andreas; Mayer, Peter; Gartner, Arno; Heinen, Jürgen; and Straub, Manfred, 5,379,696, Cl. 101-424.000.

- Heinz, Tony F.: See—
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- Held, James H.: Replacement apparatus for fluorescent bulbs. 5,379,666, Cl. 81-53.100.
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- Helland, Randall H.: See—
Gomez, Charles W.; Harring, Lori S.; Helland, Randall H.; Ramsden, William D.; and Van Thien, Tran, 5,380,635, Cl. 430-517.000.
- Hellstrom, Steven P., to Cole-Parmer Instrument Company.: Peristaltic pump. 5,380,173, Cl. 417-477.300.
- Helmick, Bob.: See—
Ovens, Kevin; Bittlestone, Clive; and Helmick, Bob, 5,381,455, Cl. 377-67.000.
- Hemsath, Klaus H., to Gas Research Institute.: Method and apparatus for batch coil annealing metal strip. 5,380,378, Cl. 148-601.000.
- Hemstreet, George P.; Bergey, Karl H.; Hurst, Robert E.; and Bonner, Rebecca B., to University of Oklahoma, The Board of Regents of the.: Fluid collection device. 5,380,289, Cl. 604-317.000.
- Hendler, Sheldon S.: See—
Sanchez, Robert A.; and Hendler, Sheldon S., 5,380,711, Cl. 514-58.000.
- Hendrickson, Thomas R., to Quikcoup, Inc.: Releasable handle-type fastener for pipe couplings. 5,380,052, Cl. 285-364.000.
- Henkel Kommanditgesellschaft Auf Aktien: See—
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- Kottwitz, Beatrix; Kuester, Harald; and Berger, Andrea, 5,380,917, Cl. 560-109.000.
- Henley, John P.: See—
Dunmead, Stephen D.; Moore, William G.; Weimer, Alan W.; Eisman, Glenn A.; and Henley, John P., 5,380,688, Cl. 501-87.000.
- Henry-Griffitts, Inc.: See—
Henry, Randy D.; and Henry, Ross D., 5,380,009, Cl. 273-167.00A.
- Henry, Matthew R., to Honeywell Inc.: Decoupled scan path interface. 5,381,420, Cl. 371-22.300.
- Henry, Randy D.; and Henry, Ross D., to Henry-Griffitts, Inc.: Notched golf club face. 5,380,009, Cl. 273-167.00A.
- Henry, Ross D.: See—
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- Henty, David L.: Method for texturing high temperature superconductors. 5,380,702, Cl. 505-480.000.
- Herden, Werner: See—
Vogel, Manfred; and Herden, Werner, 5,379,745, Cl. 123-655.000.
- Hering, William E.: See—
Andrzejak, Dennis V.; Hering, William E.; and Viano, David C., 5,379,646, Cl. 73-804.000.
- Heriot-Watt University: See—
Smart, Brian G. D., 5,379,645, Cl. 73-794.000.
- Hermecz, Istvan; Kereszturi, Geza; Vasvari, Lelle; Horvath, Agnes; Balogh, Maria; Rittl, Peter; Sipos, Judit; and Pajor, Aniko, to Chinoín Gyógyszer-ES Vegyeszeti Termékek Gyara RT.: Process for the preparation of quinoline carboxylic acid derivatives. 5,380,845, Cl. 544-363.000.
- Herrala, Juha; Hytonen, Jouko; Jarvinen, Jarmo; Salmela, Markku; and Vahatalo, Harri, to Valmet Paper Machinery Incorporated.: Control system for a paper or board machine. 5,381,341, Cl. 364-471.000.
- Herren, Fritz: See—
Hari, Stefan; Wallquist, Olof; Herren, Fritz; and Eichenberger, Thomas, 5,380,870, Cl. 548-453.000.
- Herrmann, Uwe: See—
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- Herron, James N., to University of Utah Research Foundation.: Compounds having the antigenicity of hCG. 5,380,668, Cl. 436-510.000.
- Hershey, John E.; Lowy, Menahem; Levinson, Lionel M.; Hassan, Amer A.; Frey, Richard L.; Welles, Kenneth B., II; Gdula, Michael; and Wojnarowski, Robert J., to General Electric Company.: Munitions cartridge transmitter. 5,381,445, Cl. 375-1.000.
- Hertz, Allen D.; Tribbey, David A.; and Thompson, Kenneth R., to Motorola, Inc.: Self-aligning electrical contact array. 5,381,307, Cl. 361-767.000.
- Herweck, Steve A.; and Karwowski, Theodore, to Atrium Medical Corporation.: In-line fluid recovery system. 5,380,314, Cl. 604-403.000.
- Herzog, Paul.: Composition of vitamin A, glucose and hydrogen peroxide for cosmetic or pharmaceutical use. 5,380,764, Cl. 514-725.000.
- Hes, Lloyd: See—
Johnston, Gregory E.; Wagner, Byron D.; and Hes, Lloyd, 5,381,245, Cl. 358-487.000.
- Hess, Frank-Jurgen; Schreiber, Torsten; and Wollboldt, Frank, to Fraunhofer Gesellschaft Zur Förderung Der Angewandten Forschung e.V.: Device for picking up bendable flat parts. 5,380,147, Cl. 414-796.000.
- Hess, Kurt: See—
Thuillard, Marc; Scheidweiler, Andreas; and Hess, Kurt, 5,381,130, Cl. 340-630.000.
- Hessel, Richard E.: See—
Phelps, Andrew E.; Eckert, Roger E.; and Hessel, Richard E., 5,381,536, Cl. 395-375.000.
- Hester, Lynda: See—
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- Hettinga, Siebolt; and Ober, James K.: Flow regulating assembly for a plastic injection machine. 5,380,186, Cl. 425-557.000.
- Hetzl, Alan D.: See—
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- Heusser, Jean; and Martin, Michel, to Laboratoire Lucchini S.A.: Pharmaceutical, vaginal applicable preparation and a process for its preparation. 5,380,529, Cl. 424-430.000.
- Hevligenstaedt GmbH & Co. KG: See—
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- Hewitt, Richard P.: See—
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- Hewlett-Packard Company: See—
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- Greenstein, Michael, 5,381,385, Cl. 367-140.000.
- Kochis, Richard L.; and Aas, Eric F., 5,381,020, Cl. 230-566.000.
- Lacey, Richard F., 5,379,630, Cl. 73-25.030.
- Lam, Si-Ty; Lin, An-Chung R.; and You, Young-Soo, 5,381,166, Cl. 346-140.100.
- Loopik, Alex; and Crook, David T., 5,381,417, Cl. 371-15.100.
- Lum, Paul; and Greenstein, Michael, 5,381,386, Cl. 367-163.000.
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- Smeenge, James G., Jr.; and Rogers, Paul L., 5,380,212, Cl. 439-86.000.
- West, William J., 5,380,106, Cl. 400-185.000.
- Winter, Kirt A.; and Bockman, Francis E., 5,381,349, Cl. 364-526.000.
- Hewlett-Packard Corporation: See—
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- Hexcel Corporation: See—
Christensen, Don C.; and Custer, Milton F., 5,380,576, Cl. 428-109.000.
- Hibbert, Peter G., to ICI Americas Inc.: Moldable filled polyester resin composition. 5,380,776, Cl. 524-145.000.
- Hidaka, Shigeyuki: See—
Kimura, Kazuya; Hidaka, Shigeyuki; Kawamura, Chuichi; Kayukawa, Hiroaki; Ito, Masafumi; and Fujisawa, Yoshihiro, 5,380,165, Cl. 417-269.000.
- Kimura, Kazuya; Mizutani, Hideki; Hidaka, Shigeyuki; and Takeichi, Toru, 5,380,168, Cl. 417-269.000.
- Takenaka, Kenji; Mizutani, Hideki; Hidaka, Shigeyuki; Hiramatsu, Osamu; Takeichi, Toru; and Kayukawa, Hiroaki, 5,380,161, Cl. 417-222.200.
- Higgins, Bryan: See—
Bernzott, Philip; Dilworth, John; George, David; Higgins, Bryan; and Knight, Jeremy, 5,381,489, Cl. 382-40.000.
- Higgins, Joel C.: Method for manufacturing titanium-containing orthopedic implant devices. 5,380,547, Cl. 427-2.260.
- Hightower, Charles M.: See—
Blount, Curtis G.; Hailey, Charles D.; and Hightower, Charles M., 5,379,845, Cl. 166-382.000.
- Higuchi, Jiro: See—
Kawasaki, Shuichi; Yano, Masahiko; and Higuchi, Jiro, 5,379,771, Cl. 128-661.100.
- Hihara, Toshio: See—
Takahashi, Yousuke; Shimizu, Yukihiro; Hihara, Toshio; and Himeno, Kiyoshi, 5,380,827, Cl. 534-638.000.
- Hill, Charles C.: See—
Saxton, Gregory J.; Thomas, Gareth R.; Hill, Charles C.; and Weslake, Kenneth L., 5,379,702, Cl. 105-355.000.
- Hill, Dwight D.: See—
Britton, Barry K.; and Hill, Dwight D., 5,381,058, Cl. 326-41.000.
- Hill, Ira D., to WhiteHill Oral Technologies.: Oral care composition coated gum. 5,380,530, Cl. 424-440.000.
- Hille, Dieter: See—
Gross, Lutz-Werner; Poth, Ulrich; Hille, Dieter; and Weidemeier, Klaus, 5,380,565, Cl. 427-475.000.
- Hillery, Frank E.; and Goy, Christel C., to Furon Company.: Spring seal. 5,380,019, Cl. 277-236.000.
- Hillstrom, Brian J.: See—
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- Hillstrom, David U.; and Hillstrom, Brian J., to Marketing Displays, Inc.: Illuminated canopy system. 5,381,324, Cl. 362-362.000.
- Hiltunen, Matti; and Westerlund, Kurt, to A. Ahlstrom Corporation.: Method of treating process or flue gases containing halogenous compounds. 5,380,507, Cl. 423-240.005.
- Himeno, Kiyoshi: See—
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- Himes, Ronald E.; Totten, Patty L.; and Vinson, Edward E., to Halliburton Company.: Well drilling fluids and methods. 5,380,706, Cl. 507-129.000.
- Hinchliffe, Edward: See—
Ballance, David J.; Hinchliffe, Edward; Geisow, Michael J.; and Senior, Peter J., 5,380,712, Cl. 514-12.000.
- Hira, Osamu, to Pioneer Electronic Corporation.: Optical disk reproducing apparatus for identifying whether the disk is a blank disc, partial disc, or a finalized disk. 5,381,392, Cl. 369-54.000.

- Hirabayashi, Keiji: See—
Taniguchi, Yasushi; Hirabayashi, Keiji; Ikoma, Keiko; Kurihara, Noriko; Matsushima, Masaaki; and Yamamoto, Kiyoshi, 5,380,349, Cl. 65-286.000.
- Hirabayashi, Shigeto: See—
Ishige, Osamu; Katoh, Eisaku; Fujiwara, Hiroko; Hirabayashi, Shigeto; and Sugita, Shuichi, 5,380,639, Cl. 430-544.000.
- Hirai, Katsura: See—
Kojima, Yasuo; Hirai, Katsura; and Goto, Kiyoshi, 5,380,612, Cl. 430-49.000.
- Hirai, Minoru, to Rohm Co., Ltd.: Electronic part assembly using a shape memory alloy element. 5,381,316, Cl. 361-760.000.
- Hirai, Nobuyuki: See—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,380,887, Cl. 549-556.000.
- Hirai, Shigeru; Ishiguro, Youichi; Hattori, Yasuji; Nishimura, Masayuki; Shigematsu, Masayuki; Watanabe, Minoru; and Nakazato, Kouji, to Sumitomo Electric Industries, Ltd.: Optical isolator. 5,381,261, Cl. 359-282.000.
- Hirai, Wataru: See—
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- Hirakiuchi, Masanori: See—
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- Hiramatsu, Osamu: See—
Takenaka, Kenji; Mizutani, Hideki; Hidaka, Shigeyuki; Hiramatsu, Osamu; Takeichi, Toru; and Kayukawa, Hiroaki, 5,380,161, Cl. 417-222.200.
- Hirano, Masashi, to Kabushiki Kaisha Toshiba.: LSI with built-in test circuit and testing method thereof. 5,381,087, Cl. 324-158.100.
- Hirano, Tadayoshi: See—
Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Ikeda, Atsuhiko; Minoguchi, Naokazu; Izawa, Norihiko; and Hirano, Tadayoshi, 5,380,944, Cl. 564-81.000.
- Hirao, Motokazu: See—
Totani, Yoshiyuki; Hirao, Motokazu; Ito, Tomonori; Nakatsuka, Masakatsu; and Yamaguchi, Akihiro, 5,380,814, Cl. 528-199.000.
- Hiraoka, Hajime: See—
Ejiri, Susumu; Kimura, Makoto; and Hiraoka, Hajime, 5,379,683, Cl. 99-331.000.
- Hiraoka, Kazuo; and Taniguchi, Katsuhiko, to Sumitomo Heavy Industries, Ltd.: Control device for an electric injection molding machine. 5,380,181, Cl. 425-145.000.
- Hirata, Michiya: See—
Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, 5,380,700, Cl. 504-239.000.
- Hiratani, Masahiko: See—
Tarutani, Yoshinobu; Fukazawa, Tokumitsu; Kabasawa, Uki; Takagi, Kazumasa; Tsukamoto, Akira; Hiratani, Masahiko; and Nishino, Toshikazu, 5,380,704, Cl. 505-193.000.
- Hiroaki Yanagida: See—
Yanagida, Hiroaki; Miyayama, Masaru; Muto, Norio; Sugita, Minoru; Nakatsuji, Teruyuki; and Otsuka, Yasushi, 5,379,644, Cl. 73-787.000.
- Hiroe, Nobutake; and Kato, Tetsuya, to Toray Industries, Inc.: Base fabric for ink ribbon. 5,380,107, Cl. 400-241.000.
- Hiroki, Masashi: See—
Shibuya, Kunihiko; Hiroki, Masashi; Hatakeyama, Takashi; and Ohno, Tadayoshi, 5,380,394, Cl. 156-540.000.
- Hirose, Atsushi: See—
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- Hirsch, Alan R.: Chemosensory olfactory assay for psychiatric disorders. 5,380,765, Cl. 514-731.000.
- Hirschy, Linda M.: See—
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- Hirshburg, Robert L., to Du Pont de Nemours, E. I., and Company.: Lip surface geometry for slide bead coating. 5,380,365, Cl. 118-410.000.
- Hirst, Gavin C.: See—
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- Hirth, Michael; Jochum, Joachim; Jodeit, Harald; and Wiekert, Christian, to ABB Gadelius KK.: Process for separating vaporous heavy metal compounds from a carrier gas and apparatus for carrying out the process. 5,380,500, Cl. 422-173.000.
- Hiruma, Kenji: See—
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- Hirzel, Edgar A.: Method and apparatus for measuring the state-of-charge of a battery system. 5,381,096, Cl. 324-427.000.
- Hisada, Hitoshi: See—
Kumon, Akira; Ogawa, Katsutoshi; Tatekawa, Masachiro; Hisada, Hitoshi; Nawana, Junichi; Katakabe, Noboru; and Aizawa, Masahiro, 5,381,214, Cl. 355-219.000.
- Hisaw, Jack, to Specialty Machine & Supply, Inc.: Well testing valve. 5,379,839, Cl. 166-250.000.
- Hiscocks, Peter G.: See—
Bogue, B. Arlie; Fuisz, Richard C.; and Hiscocks, Peter G., 5,380,473, Cl. 264-11.000.
- Hishinuma, Takashi: See—
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- Hitachi America, Ltd.: See—
Lane, Frank A., 5,381,450, Cl. 375-94.000.
- Shridhar, Avadhani; and Gorny, Douglas J., 5,381,360, Cl. 364-746.000.
- Hitachi Chemical Company, Ltd.: See—
Nanaumi, Ken; Horiuchi, Takeshi; Nomoto, Masahiro; and Inoue, Mitsuhiro, 5,380,789, Cl. 524-745.000.
- Yamamoto, Yasuo; Harushima, Yoshiaki; and Nagai, Akira, 5,380,875, Cl. 548-533.000.
- Hitachi Denshi Kabushiki Kaisha: See—
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- Hitachi Koki Co., Ltd.: See—
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- Hitachi, Ltd.: See—
Fukuyama, Ryooji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Torii, Yoshimi; Kawaraya, Akira; and Sato, Yoshie, 5,380,397, Cl. 156-643.000.
- Hanawa, Makoto; Nishimukai, Tadahiko; Suzuki, Makoto; and Shimohigashi, Katsuhiko, 5,381,531, Cl. 395-375.000.
- Honji, Akio; Ogawa, Toshiro; Kuroda, Osamu; Yamashita, Hisao; Tachi, Takahiro; Miyadera, Hiroshi; and Fujishita, Masakatsu, 5,379,586, Cl. 60-276.000.
- Kimura, Shin'ichiro; Sakata, Takeshi; and Itoh, Kiyoo, 5,380,674, Cl. 437-52.000.
- Kohiyama, Tomohisa; and Kitahara, Jun, 5,381,043, Cl. 307-116.000.
- Kuwabara, Kouji; Yano, Makoto; and Takehisa, Kiwamu, 5,381,437, Cl. 372-98.000.
- Mitsubishi, Naoki; and Hirose, Atsushi, 5,381,556, Cl. 395-800.000.
- Nagaoka, Takashi; Ueda, Shinjiro; Sakagami, Seiji; Nishiuchi, Akira; and Sakurai, Hirofumi, 5,380,171, Cl. 417-423.400.
- Ohki, Hideaki; and Kamiya, Masanori, 5,381,185, Cl. 348-652.000.
- Okazawa, Koichi; Kobayashi, Kazushi; and Aburano, Ichiharu, 5,381,544, Cl. 395-575.000.
- Ookouchi, Takahiko; Kagohara, Hiromi; Hama, Hiromu; Nakagawa, Mitsuo; Okoshi, Hitoshi; and Nakayama, Yoshitaka, 5,380,264, Cl. 492-3.000.
- Shikida, Mitsuhiro; Sato, Kazuo; Kawamura, Yoshio; Tanaka, Shinji; Horiuchi, Yasuaki; Koide, Akira; and Miyada, Toshimitsu, 5,380,396, Cl. 156-630.000.
- Tarutani, Yoshinobu; Fukazawa, Tokumitsu; Kabasawa, Uki; Takagi, Kazumasa; Tsukamoto, Akira; Hiratani, Masahiko; and Nishino, Toshikazu, 5,380,704, Cl. 505-193.000.
- Usagawa, Toshiyuki; Hiruma, Kenji; Kawata, Masahiko; Goto, Shigeo; Mitani, Katsuhiko; Yamane, Masao; Takahashi, Susumu; Tanoue, Tomonori; and Imamura, Yoshinori, 5,381,027, Cl. 257-192.000.
- Hitachi Medical Corporation: See—
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- Hitachi Microcomputer System Ltd.: See—
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- Hitachi Video and Information: See—
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- Hitachi, Yuzo; and Serizawa, Haruo, to Usui Kokusai Sangyo Kabushiki Kaisha.: Exhaust gas cleaning device. 5,380,501, Cl. 422-180.000.
- Hively, Brad A.; Gerardot, Patrick G.; and Wegscheid, Michele M., to Navistar International Transportation Corp.: Protective cage for fuel tank installed between vehicle side members. 5,380,042, Cl. 280-834.000.
- Hiyama, Keichi; Tsuruoka, Takao; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, to Olympus Optical Co. Ltd.: Method of compressing endoscope image data based on image characteristics. 5,379,757, Cl. 128-6.000.
- Hjek, Josef; and Neumeir, Anton, to MAN Roland Druckmaschinen AG.: Lateral register system for printing forms. 5,379,694, Cl. 101-415.100.
- Hlasta, Dennis J.: See—
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- Ho, Francis: See—
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- Hobrecht, Stephen W., to National Semiconductor Corporation.: Variable resistance termination circuit. 5,381,111, Cl. 330-252.000.
- Hocquellet, Dominique, to Aerospatiale Societe Nationale Industrielle.: Part made of a carbon-carbon composite with an SIC surface-treated matrix resistant to oxidation and a process for producing it. 5,380,556, Cl. 427-228.000.
- Hodgdon, David J.: See—
Daugherty, Thomas H.; DeBruler, Dennis L.; Greenberg, Daniel S.; Hodgdon, David J.; and Murphy, Douglas J., 5,381,405, Cl. 370-54.000.
- Hodgen, Harry A.: See—
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- Hodgson, Simon T., to Burroughs Wellcome Co.: Methyl N-[6-(3,4,5-trimethoxybenzoyloxy)imidazo[1,2-b]pyridazin-2-yl]carbamate used to treat leukemia. 5,380,759, Cl. 514-248.000.
- Hodula, Ezter: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Ezter; Toldy, Lajos; Surka, Klara; Fittler, Zsuzsanna; Sebastyen, Laszlo; Gorgenyi, Katalin; Sziraki,

- Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.
- Hoechst Aktiengesellschaft: See—
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Gurtzen, Stefan; Schneider, Jürgen; and Schrader, Rolf, 5,380,898, Cl. 556-187.000.
Holla, Wolfgang; and Keller, Reinhold, 5,380,659, Cl. 435-196.000.
Pusch, Günter; and Ranjbar, Mohammad, 5,379,841, Cl. 166-295.000.
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- Hoechst Celanese Corporation: See—
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- Hoechst-Roussel Pharmaceuticals, Inc.: See—
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- Hoefling, Peter, to O&K Orenstein & Koppel AG. Handrail drive for escalators, moving sidewalks or the like, 5,379,877, Cl. 198-330.000.
- Hoeschele, James D.; Qu, Yun; and Farrell, Nicholas. Tri(platinum) complexes, 5,380,897, Cl. 556-137.000.
- Hoesht Mitsubishi Kasei Co., Ltd.: See—
Takahashi, Yousuke; Shimizu, Yukiharu; Hihara, Toshio; and Himeno, Kiyoshi, 5,380,827, Cl. 534-638.000.
- Hoff, Frederick G.: See—
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- Hoffman, Dale E.: See—
Dickol, John E.; Gruodis, Algirdas J.; and Hoffman, Dale E., 5,381,421, Cl. 371-27.000.
- Hoffman, Jeffrey A.: See—
McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.
- Hoffmann, Bernhard: See—
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- Hoffmann, Eduard; Winterholler, Johann; Prem, Wolfgang; and Stockl, Herbert, to MAN Roland Druckmaschinen AG. Welded tubular printing plate, and the method of making, 5,379,693, Cl. 101-375.000.
- Hoffmann-La Roche Inc.: See—
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- Hogan, Gregory G.: See—
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- Hohlfeld, Peter R.: See—
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- Hohmann, Ronald P. Flow-through cap and stirrup for reinforcement bars and method of use thereof, 5,379,562, Cl. 52-295.000.
- Hoke, Randal A.: See—
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- Holden, Homer N.: See—
Sanders, John D.; Holden, Homer N.; and Foster, Randy C., 5,380,050, Cl. 285-258.000.
- Holdredge, Terry K. Pneumatic wheel chair cushion for reducing ischemic injury, 5,379,471, Cl. 5-456.000.
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- Holverson, Patrick D.: See—
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- Honda Giken Kogyo Kabushiki Kaisha: See—
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- Kuroda, Shigetaka; Sawamura, Kazutomo; Shimasaki, Yuuichi; Kanehiro, Masaki; Ishioka, Takuji; Maruyama, Shigeru; Nishimura, Yoichi; and Katoh, Akira, 5,379,634, Cl. 73-116.000.
- Honda, Hirohiko: See—
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- Honeywell Inc.: See—
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Borchardt, Jerry L., 5,381,309, Cl. 362-31.000.
Henry, Matthew R., 5,381,420, Cl. 371-22.300.
Miller, David W.; Nelson, Larry A.; and Robinder, Ronald C., 5,381,182, Cl. 348-448.000.
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- Hong, Glenn T.: See—
Castor, Trevor P.; and Hong, Glenn T., 5,380,826, Cl. 530-422.000.
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- Honma, Kouichi: See—
Tsubaki, Kazuhisa; Uesugi, Mitsuru; and Honma, Kouichi, 5,381,448, Cl. 375-14.000.
- Hooke, John W., to Hawker Energy Products, Inc. Battery terminal seal, 5,380,603, Cl. 429-180.000.
- Hooper, Paul S.: See—
Wysocinski, David A.; and Hooper, Paul S., 5,381,338, Cl. 364-449.000.
- Hoover Universal, Inc.: See—
Brace, John G., 5,381,228, Cl. 356-300.000.
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- Horiguchi, Toshio, to Olympus Optical Co., Ltd. Optical card recording/regenerating method and apparatus for driving optical card with respect to optical head so as to increase or decrease relative speed in at least one of ID divisions of optical card, 5,380,996, Cl. 235-475.000.
- Horikawa, Mitsuo: See—
Moritsu, Kazuki; Matsumoto, Takahiro; Horikawa, Mitsuo; Nakagawa, Shuichi; Yoshimura, Hideto; Nagao, Masashi; and Inaguchi, Takashi, 5,379,600, Cl. 62-47.100.
- Horiuchi, Yuzo: See—
Matsui, Takashi; Watanabe, Nobuki; Arimura, Masayuki; Kanemaru, Eiji; Horiuchi, Yuzo; and Ito, Mutsuhiro, 5,380,510, Cl. 423-338.000.
- Horiuchi, Takeshi: See—
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- Horiuchi, Yasuaki: See—
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- Hornung, Donald F.; Klenke, Thomas A.; and Burge, Melvin L., to CrustBuster/Speed King, Inc. Drop chute extension for a shuttle dumping transport vehicle for harvested cotton, 5,380,142, Cl. 414-491.000.
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- Horvath, Agnes: See—
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- Hoshi, Hiroaki; Nishimura, Matsumi; Tanaka, Kazumi; Miyazaki, Takeshi; Ohnishi, Toshikazu; and Takayama, Hidehito, to Canon Kabushiki Kaisha. Apparatus for measuring a test specimen, 5,380,490, Cl. 422-73.000.
- Hoshino Gakki Co., Ltd.: See—
Hoshino, Yoshiki, 5,379,674, Cl. 84-422.100.
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- Hosoi, Masahiro: See—
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- Hosokawa, Tatsuhiro: See—
Kimoto, Takayuki; and Hosokawa, Tatsuhiro, 5,381,476, Cl. 380-5.000.
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- Hosono, Satoru; and Abe, Nobumasa, to Seiko Epson Corporation. Ink-jet recording head, 5,381,171, Cl. 347-72.000.
- Hosoya, Masakazu: See—
Katsuki, Hikaru; Shimizu, Masayuki; Kato, Minoru; Inoue, Tetsuo; and Hosoya, Masakazu, 5,379,606, Cl. 62-126.000.
- Hotta, Yoshio: See—
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- Hou, Alfred S.: See—
Bloom, David M.; Ho, Francis; and Hou, Alfred S., 5,381,101, Cl. 324-676.000.
- Hough, Roger E.: See—
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- Houghton, Worthington B., Jr.; Eddy, Richard P.; and McCoy, Jay R., to Newport Corporation. Stabilization systems for vibration isolators, 5,379,980, Cl. 248-550.000.
- Houpis, Ioannis N.; Lynch, Joseph E.; Molina, Audrey; and Volante, Ralph P., to Merck & Co., Inc. Process for optically pure decahydroquinolines, 5,380,849, Cl. 546-146.000.
- Houston Industries Incorporated: See—
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- Howard Company, The: See—
Howard, Kent D., 5,379,540, Cl. 40-558.000.
- Howard, James K.: See—
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- Howard, Kent D., to Howard Company, The. Modular sign system, 5,379,540, Cl. 40-558.000.
- Howard, Lee J.; and Rowles, Howard C., to Air Products and Chemicals, Inc. Mixed refrigerant cycle for ethylene recovery, 5,379,597, Cl. 62-23.000.
- Howe, John: See—
Valencia, Luis; and Howe, John, 5,380,991, Cl. 235-383.000.
- Howland, Robert S., to Advanced Spine Fixation Systems, Inc. Clamps for spinal fixation systems, 5,380,323, Cl. 606-61.000.
- Hoya Corporation: See—
Fujino, Takuo, 5,380,558, Cl. 427-255.500.
- Hoyt, Matthew B.: See—
Kent, George M.; Ilg, Otto M.; and Hoyt, Matthew B., 5,380,477, Cl. 264-103.000.
- Hsiao, Mu-Yue: See—
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- Hsiao, Tsai-Chu: See—
Chao, Shih; Chen, Jyh-Shin; and Hsiao, Tsai-Chu, 5,381,233, Cl. 356-369.000.
- Hsu, Chen-Chung, to United Microelectronics Corporation. Three-dimensional multichip package and methods of fabricating, 5,380,681, Cl. 437-209.000.
- Hsu, Henry Y. C. Iron golf club heads, 5,380,005, Cl. 273-80.800.
- Hsu, Kuo-Hom L.; Teller, Daniel M.; Davis, Alan R.; Lubeck, Michael D.; Munson, Harry R., Jr.; Jagdmann, Gunnar E.; and Uwaydah, Ibrahim M., to American Home Products Corporation. N-cyanoamide derivatives as anti-influenza agents, 5,380,734, Cl. 514-357.000.
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- Hu, Andog, to Tacan Corporation. Optical fiber coupler or attenuator and method of use thereof, 5,381,493, Cl. 385-51.000.
- Hu, Haoran, to Jacobs Brake Technology Corporation. Electrically controlled timing adjustment for compression release engine brakes, 5,379,737, Cl. 123-322.000.
- Huang, Chen S. Power screwdriver, 5,379,851, Cl. 173-179.000.
- Huang, Ming H. Secure lamp base, 5,380,215, Cl. 439-340.000.
- Huang, Rong-Hong; Tsai, Kun-Lung; Chen, Hsi-Yen; Chen, Chuck; and Chang, Tju-Yin, to Industrial Technology Research Institute. Sliding unit, 5,380,098, Cl. 384-25.000.
- Hubbell, Jeffrey A.; and Sawhney, Amarpreet S., to Board of Regents, The University of Texas System, The. Biocompatible microcapsules, 5,380,536, Cl. 424-497.000.
- Hudis, Martin, to Aerovox Incorporated. Leak-tight and rupture proof, ultrasonically-welded, polymer-encased electrical capacitor with pressure sensitive circuit interrupter, 5,381,301, Cl. 361-275.200.
- Hudson Products Corporation: See—
Carpenter, Neil N., 5,379,831, Cl. 165-104.270.
- Hudspeth, Brett A.; and Hudspeth, Earl L. Apparatus for storing and dispensing chalk, 5,379,915, Cl. 221-172.000.
- Hudspeth, Earl L.: See—
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- Huels Aktiengesellschaft: See—
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- Hughes Aircraft Company: See—
Dougherty, Thomas K.; Harris, Norman H.; Chow, James R.; and Pierce, Brian M., 5,381,149, Cl. 342-1.000.
Oldham, Susan L.; Harvey, Martha J.; Panaretos, Steve K.; Fugatt, John L.; Ducharme, Richard L.; Bille, Jeffrey M.; and Klebe, Douglas O., 5,380,386, Cl. 156-150.000.
Timmons, Richard P.; and Trinh, Lanh T., 5,381,115, Cl. 330-279.000.
Wickholm, David R.; Tingstad, James S.; Haek, Robert S.; and Perez, Rene D., 5,381,264, Cl. 359-419.000.
Woody, George R., 5,381,267, Cl. 359-632.000.
- Hughes, John H., to ComCorp, Inc. Communiting apparatus, 5,379,951, Cl. 241-60.000.
- Hullmann, Michael: See—
Paust, Joachim; Eckes, Peter; Siegel, Wolfgang; Balkenhohl, Friedrich; Dobler, Walter; and Hullmann, Michael, 5,380,920, Cl. 560-263.000.
- Hulsing, Rand H., II; Lee, Charles K.; and Foote, Steven A., to Allied-Signal Inc. Combined force transducer and temperature sensor, 5,379,639, Cl. 73-517.0AV.
- Humphreys Injection Molds, Inc.: See—
Humphreys, Michael P. D., 5,381,322, Cl. 362-220.000.
Humphreys, Michael P. D., to Humphreys Injection Molds, Inc. Light knuckle with ballast, 5,381,322, Cl. 362-220.000.
- Hunter Engineering Company: See—
Colarelli, Nicholas J., III, 5,379,636, Cl. 73-122.000.
- Hunter, Herbert F. Method for preparing an alcohol modified vegetable oil diesel fuel, 5,380,343, Cl. 44-302.000.
- Hurran, David K.: See—
Tueker, Ernest L.; Dunderdale, Kevin; Hurran, David K.; and Everitt, Robert G., 5,380,563, Cl. 427-452.000.
- Hurst, Robert E.: See—
Hemstreet, George P.; Bergey, Karl H.; Hurst, Robert E.; and Bonner, Rebecca B., 5,380,289, Cl. 604-317.000.
- Husain, Syeda; Piechowski, Allan P.; and Pilot, John F., to Sun Chemical Corporation. Bis ureido compositions, 5,380,942, Cl. 564-59.000.
- Hussein, Hany M. G.: See—
Everett, Royce B.; Acosta, George M.; and Hussein, Hany M. G., 5,380,317, Cl. 606-15.000.
- Hutchinson, John H.: See—
Prasit, Petpiboon; Fortin, Rejean; Hutchinson, John H.; Belley, Michel L.; Leger, Serge; Fremette, Richard; and Gillard, John, 5,380,950, Cl. 546-155.000.
- Hutchinson Technology Incorporated: See—
Fiedler, Richard G., 5,381,289, Cl. 360-104.000.
- Hutt, Jean; Latorse, Marie-Pascale; and Veyrat, Christine, to Rhone-Poulenc Agrochimie. Fungicidal triazole and imidazole derivatives, 5,380,741, Cl. 514-383.000.
- Hutt, Jean; Mugnier, Jacques; Greiner, Alfred; and Pepin, Regis, to Rhone-Poulenc Agrochimie. Fungicidal compositions containing (benzylidene)-azolydimethylcycloalkane, 5,380,743, Cl. 514-399.000.
- Hutter, Joachim: See—
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- Hutton, Les, to Coin Controls Limited. Coin discrimination apparatus, 5,379,876, Cl. 194-319.000.
- Hwang, Cherngye: See—
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- Hybl-Sutherland, Eva: See—
Schneider, Michel; Bichon, Daniel; Bussat, Philippe; Puginier, Jerome; and Hybl-Sutherland, Eva, 5,380,519, Cl. 424-9.000.
- Hydro-Quebec: See—
Brochu, Fernand; and Duval, Michel, 5,380,605, Cl. 429-188.000.
- Hypertherm, Inc.: See—
Couch, Richard W., Jr.; Sanders, Nicholas A.; Lu, Zhipeng; Luo, Lifeng; and Stenfelt, Staffan C. O., 5,380,976, Cl. 219-121.440.
- Hytonen, Jouko: See—
Herrala, Juha; Hytonen, Jouko; Jarvinen, Jarmo; Salmela, Markku; and Vahatalo, Harri, 5,381,341, Cl. 364-471.000.
- Hyundai Electronics Industries Co., Ltd.: See—
Choi, Kyeong K., 5,380,035, Cl. 437-195.000.
- Hyundai Motor Company: See—
Lee, Un-Koo, 5,380,035, Cl. 280-691.000.
- Iacovino, Robert. Ceiling fan balance apparatus, 5,380,156, Cl. 416-5.000.
- Ichihashi, Kenzou: See—
Katoh, Naoyuki; Fukushima, Takashi; and Ichihashi, Kenzou, 5,380,574, Cl. 428-92.000.
- Ichihashi, Tetsuo: See—
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- Ichikawa, Hiromi: See—
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- Ichikawa, Hiroyuki: See—
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,381,248, Cl. 358-538.000.
- Ichikawa, Yukio: See—
Nishihata, Naomitsu; Ichikawa, Yukio; and Katto, Takayuki, 5,380,819, Cl. 528-336.000.
- Satake, Yoshikatsu; Ono, Toshihiko; Itoh, Yoshinobu; and Ichikawa, Yukio, 5,380,783, Cl. 524-406.000.
- ICI Americas Inc.: See—
Hibbert, Peter G., 5,380,776, Cl. 524-145.000.
- Ida, Shiro: See—
Kawanaka, Seido; Ida, Shiro; Takemura, Hideo; and Kumetani, Kouji, 5,381,241, Cl. 358-462.000.
- Idemitsu Kosan Co., Ltd.: See—
Morita, Kazuharu; Hachiya, Satoshi; Moriaki, Fumio; and Endo, Hiroyuki, 5,380,915, Cl. 560-59.000.
- Iden, Toshio: See—
Uematsu, Hiromi; Wakui, Masanori; Iden, Toshio; Takahashi, Toshio; and Uchiyama, Kensuke, 5,379,780, Cl. 131-291.000.
- IEG Industrie-Engineering GmbH: See—
Bernhardt, Bruno, 5,380,126, Cl. 405-128.000.
- Igarashi, Yoshiaki, to Precision Fukuhara Works, Ltd. Dust and waste removal and collection system for double knitting machine. 5,379,614, Cl. 66-168.000.
- Iguchi, Katsumi, to Fujitsu Limited. Graphic movement control system on display screen. 5,381,525, Cl. 395-162.000.
- Ihara Chemical Industries Co., Ltd.: See—
Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, 5,380,700, Cl. 504-239.000.
- Ihara Chemical Industry Co., Ltd.: See—
Kageyama, Hiroyuki, 5,380,910, Cl. 558-359.000.
- Ozaki, Masami; Honami, Reiji; Yumita, Takashi; Ikeda, Atsuhiko; Minoguchi, Naokazu; Izawa, Norihiko; and Hirano, Tadayoshi, 5,380,944, Cl. 564-81.000.
- Iida, Naoki: See—
Iwata, Yoichi; Iida, Naoki; Takizawa, Tsuyoshi; Seki, Yasunari; Sato, Toshihiko; and Nakayama, Takayoshi, 5,379,591, Cl. 60-276.000.
- Iida, Osamu: See—
Goto, Moto; Kikumoto, Nobuo; Iida, Osamu; Ikoma, Hiroaki; and Fukushima, Shigemitsu, 5,380,353, Cl. 75-640.000.
- Iida, Yoshikazu: See—
Tsunoda, Shuhei; and Iida, Yoshikazu, 5,379,734, Cl. 123-182.100.
- Iijima, Yasuo, to Kabushiki Kaisha Toshiba. Cipher communication system for transaction data. 5,381,478, Cl. 380-44.000.
- Iima, Shin: See—
Fukahori, Kenichi; Sato, Shuji; Shimohara, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, 5,380,108, Cl. 400-247.000.
- Iimura, Haruo: See—
Kanemoto, Akihiko; Iimura, Haruo; and Takiguchi, Yasuyuki, 5,380,459, Cl. 252-299.010.
- Iiyama, Katsuaki: See—
Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsuaki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.
- Ikariya, Toshiyuki: See—
Mochizuki, Yoshihiro; Ueda, Eiichi; and Ikariya, Toshiyuki, 5,380,630, Cl. 430-501.000.
- Ikeda, Atsuhiko: See—
Ozaki, Masami; Honami, Reiji; Yumita, Takashi; Ikeda, Atsuhiko; Minoguchi, Naokazu; Izawa, Norihiko; and Hirano, Tadayoshi, 5,380,944, Cl. 564-81.000.
- Ikeda Bussan Co., Ltd.: See—
Yamano, Eiichi; Kondo, Toru; and Yonekura, Masami, 5,380,064, Cl. 297-344.220.
- Ikeda, Naomi: See—
Tamai, Shigeru; Ikeda, Naomi; and Koyama, Kakuhei, 5,379,477, Cl. 15-104.940.
- Ikeda, Tadayoshi: See—
Fujii, Yojo; Miwa, Tadashi; Satoh, Hisao; Ogane, Atsushi; Matsuo, Isao; and Ikeda, Tadayoshi, 5,381,167, Cl. 346-157.000.
- Ikeda, Takeshi: See—
Kotani, Terumitsu; Saitoh, Atsui; Yamada, Tomoya; Tachikawa, Kohei; Amano, Yasuyuki; and Ikeda, Takeshi, 5,380,572, Cl. 428-40.000.
- Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, to Canon Kabushiki Kaisha. Image processing apparatus. 5,381,248, Cl. 358-538.000.
- Ikegami, Yuichi: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yuichi, 5,379,515, Cl. 29-852.000.
- Ikoma, Hiroaki: See—
Goto, Moto; Kikumoto, Nobuo; Iida, Osamu; Ikoma, Hiroaki; and Fukushima, Shigemitsu, 5,380,353, Cl. 75-640.000.
- Ikoma, Keiko: See—
Taniguchi, Yasushi; Hirabayashi, Keiji; Ikoma, Keiko; Kurihara, Noriko; Matsushima, Masaaki; and Yamamoto, Kiyoshi, 5,380,349, Cl. 65-286.000.
- Ikusawa, Katsumi: See—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,379,621, Cl. 72-56.000.
- Ikushima, Shunsuke: See—
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- Ilg, Otto M.: See—
Kent, George M.; Ilg, Otto M.; and Hoyt, Matthew B., 5,380,477, Cl. 264-103.000.
- Illinois Tool Works Inc.: See—
Stone, James W.; Kish, Frederick A.; Wojcik, John; Van Erden, Donald L.; Fredericksen, David E.; and Vadhar, Parimal M., 5,379,880, Cl. 198-396.000.
- Imai, Takahiro: See—
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- Imai, Yoshihito: See—
Sato, Tatsushi; and Imai, Yoshihito, 5,380,975, Cl. 219-69.180.
- Imamura, Masaya, to Rohm Co., Ltd. Arrangement and method for attaching image sensor to electronic machine. 5,381,243, Cl. 358-471.000.
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Nemeth, Frank A.; and Dockendorff, James B., 5,381,022, Cl. 250-577.000.
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- Impagliazzo, Michael R. Jewelry converter apparatus. 5,379,611, Cl. 63-14.100.
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Oshins, Ellen; and Impellizzeri, Mary L., 5,379,485, Cl. 16-24.000.
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- Jones, Geraint; James, Roger; and Hargreaves, Rodney B., 5,380,714, Cl. 514-25.000.
- Roberts, David A.; Bradbury, Robert H.; Edwards, Martin P.; and Ratcliffe, Arnold H., 5,380,730, Cl. 514-333.000.
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- Imran, Mir A., to Intellwire, Inc. Flexible elongate device having forward looking ultrasonic imaging. 5,379,772, Cl. 128-662.060.
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- Ina Walzinger Schaeffler KG: See—
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- Inaba, Makoto: See—
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- Inaba, Ryohei: See—
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- Inagaki, Keiichi: See—
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- Inject Development Limited: See—
Wadman, Alexis A. F.; and Meyden, Hendrikus J. V. D., 5,380,297, Cl. 604-195.000.
- Inland Steel Company: See—
Blazek, Kenneth E.; Saucedo, Ismael G.; and Kelly, James E., 5,379,828, Cl. 164-459.000.
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- Innovative Devices, Inc.: See—
Hart, Rickey D.; and Rice, John T., 5,380,288, Cl. 604-167.000.
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Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.
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- Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shimura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, to Kyowa Hakkō Kogyo Co., Ltd. Process for producing alanylglutamine. 5,380,934, Cl. 562-561.000.
- Inoue, Mitsuhiro: See—
Nanami, Ken; Horiuchi, Takeshi; Nomoto, Masahiro; and Inoue, Mitsuhiro, 5,380,789, Cl. 524-745.000.
- Inoue, Seiichi: See—
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- Inoue, Tetsuo: See—
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O'Donnell, Adrian C.; and Dodson, Jake D., 5,381,494, Cl. 385-49.000.
- Intel Corporation: See—
Bazes, Mel, 5,381,363, Cl. 365-51.000.
- Douglas, Kenneth R., 5,381,059, Cl. 326-58.000.
- Keith, Michael, 5,381,180, Cl. 348-396.000.
- Khieu, Cong Q., 5,381,127, Cl. 340-146.200.
- Peleg, Alexander; and Weiser, Uri, 5,381,533, Cl. 395-375.000.
- Intellectron Products Company: See—
Sandell, Donald R.; and Lee, Wade P., 5,381,011, Cl. 250-353.000.
- Intelliwire, Inc.: See—
Imran, Mir A., 5,379,772, Cl. 128-662.060.
- Interlogo A.G.: See—
Berggreen, Ib H.; and Ryaa, Jan, 5,380,232, Cl. 446-75.000.
- International Business Machines Corporation: See—
Ainspan, Herschel A.; and Ewen, John F., 5,381,060, Cl. 326-68.000.
- Amini, Nader; Boury, Bechara F.; and Lohman, Terence J., 5,381,538, Cl. 395-425.000.
- Arai, Koichi; Ottesen, Hal H.; Sharma, Arun; Sri-Jayantha, Muthu-thamby; and Stich, Michael C., 5,381,282, Cl. 360-78.090.
- Argyris, Straty N.; Harris, Willard S.; Oldrey, Richard W.; and Ossolinski, Edward J., 5,380,955, Cl. 174-151.000.
- Baker, Stephen M.; and Lupton, Peter J., 5,381,545, Cl. 395-575.000.
- Barbee, Steven G.; Heinz, Tony F.; Lebel, Richard J.; Li, Leping; and Silvestri, Victor J., 5,381,234, Cl. 356-369.000.
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- Begun, Ralph M.; and Turner, Michael R., 5,381,541, Cl. 395-500.000.
- Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,381,401, Cl. 369-275.100.
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- Butter, Adrian S.; Finkel, Brian S.; Kao, Chang-Yung; Kodukula, Sivarama K.; and Kuruts, James P., 5,381,480, Cl. 380-37.000.
- Cederbaum, Carl; Chancelou, Roland; Combes, Myriam; and Mone, Patrick, 5,381,046, Cl. 257-760.000.
- Dichiera, Robert R.; Lyons, Christopher F.; Sooriyakumaran, Ratnasabapathy; Spinillo, Gary T.; Welsh, Kevin M.; and Wood, Robert L., 5,380,621, Cl. 430-272.000.
- Dickol, John E.; Gruodis, Algirdas J.; and Hoffman, Dale E., 5,381,421, Cl. 371-27.000.
- Gillett, John B., 5,379,601, Cl. 62-51.100.
- Gregory, Thomas A.; and Keller, Christopher G., 5,381,284, Cl. 360-97.020.
- Gum, Peter H.; Hough, Roger E.; and Murray, Robert E., 5,381,535, Cl. 395-375.000.
- Inniss, Hady A.; Keller, Robert S.; Johnson, William J.; and Williams, Marvin L., 5,381,527, Cl. 395-200.000.
- Kaja, Suryanarayana; Mukherjee, Shyama P.; O'Sullivan, Eugene J.; and Paunovic, Milan, 5,380,560, Cl. 427-306.000.
- Lin, Tsann; Howard, James K.; Hwang, Cherngye; Mauri, Daniele; and Staud, Norbert, 5,380,548, Cl. 427-130.000.
- Montoye, Robert K., 5,381,418, Cl. 371-21.200.
- Prakash, Ravinder; and Rohrer, Gene D., 5,380,999, Cl. 250-216.000.
- International Lighting Manufacturing Company: See—
Jordan, Randy L., 5,381,320, Cl. 362-147.000.
- International Paper Company: See—
Krebs, Robert R., 5,380,694, Cl. 503-214.000.
- International Technidyne Corporation: See—
Cusack, Robert F.; and Mintz, Michael D., 5,380,665, Cl. 436-53.000.
- Intevac, Inc.: See—
Coad, George L.; and Matthias, George, 5,379,984, Cl. 251-298.000.
- Intevac, S.A.: See—
Carvajal, Nelson; Silva, Beatriz; and Gonzalez, Alejandro, 5,379,654, Cl. 73-863.840.
- Inukai, Hitoshi: See—
Fujii, Toshiro; Kitayama, Hiromi; Inukai, Hiroshi; and Ito, Koichi, 5,380,163, Cl. 417-242.000.
- Invento AG: See—
Berdich, Edward; Draper, Peter; and Shea, Timothy, 5,379,865, Cl. 187-398.000.
- Ipposhi, Takashi: See—
Inoue, Yasuo; Nishimura, Tadashi; Ipposhi, Takashi; and Iwamatsu, Toshiaki, 5,381,235, Cl. 356-376.000.
- IRD Mechanalysis, Inc.: See—
Taylor, James K., 5,379,643, Cl. 73-654.000.
- Isaacson, David; Newell, Jonathan C.; and Gisser, David G., to Rensselaer Polytechnic Institute. Current patterns for electrical impedance tomography. 5,381,333, Cl. 364-413.130.
- Isaji, Osamu: See—
Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, 5,381,153, Cl. 342-70.000.
- Ise, Michihiro, to Kureha Chemical Industry Co., Ltd. Antidiabetic agent and method of treating diabetes. 5,380,526, Cl. 424-125.000.
- Ishida, Hitoshi: See—
Kawai, Takaji; and Ishida, Hitoshi, 5,380,228, Cl. 440-88.000.
- Miwa, Tomoyoshi; Ishida, Hitoshi; and Yamauchi, Noriyoshi, 5,379,826, Cl. 164-4.100.
- Ishida, Kenya: See—
Sato, Toshiya, deceased; and Ishida, Kenya, 5,380,763, Cl. 514-724.000.
- Ishida, Takao, to Kabushiki Kaisha Toshiba. Detachably mounted toner unit having a toner supply unit and a toner recovery housing unit. 5,381,217, Cl. 355-260.000.
- Ishige, Osamu; Katoh, Eisaku; Fujiwara, Hiroko; Hirabayashi, Shigeto; and Sugita, Shuichi, to Konica Corporation. Silver halide color photographic material. 5,380,639, Cl. 430-544.000.
- Ishiguro, Youichi: See—
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- Ishihara, Akihiro: See—
Takatori, Taizo; Ishihara, Akihiro; Masui, Tadaaki; Kawakami, Yoshinori; Okumura, Takahisa; and Ishizaka, Masuo, 5,381,097, Cl. 324-512.000.
- Ishihara, Jun: See—
Sato, Kikumasa; Inoue, Seiichi; Ishihara, Jun; and Machida, Katsutoshi, 5,380,461, Cl. 252-299.610.
- Ishihara Sangyo Kaisha Ltd.: See—
Mizukoshi, Sadanori; Kato, Fuminori; Tsukamoto, Masamitsu; and Kon, Kenji, 5,380,834, Cl. 536-4.100.
- Ishii, Hiroshi: See—
Mizoguchi, Yoshimi; Ishii, Hiroshi; Kimura, Kiyoshi; Fukuchi, Masakazu; and Takeda, Makoto, 5,381,221, Cl. 355-326.00R.
- Ishii, Mitshio. Method of and apparatus for automatically controlling pressing force of press machine. 5,379,688, Cl. 100-35.000.
- Ishii, Takehiko: See—
Kobayashi, Kazuhide; Ishii, Takehiko; and Kai, Osamu, 5,381,472, Cl. 379-387.000.
- Ishii, Wataru: See—
Kokubo, Tadayoshi; Uenishi, Kazuya; Tan, Shiro; and Ishii, Wataru, 5,380,618, Cl. 430-190.000.
- Ishikawa, Akihiko, to NSK Ltd. Feed screw mechanism provided with vibration damping means. 5,379,660, Cl. 74-89.150.
- Ishikawa, Hiroichi: See—
Edwards, Richard C.; Kolesa, Michael S.; and Ishikawa, Hiroichi, 5,380,682, Cl. 437-225.000.

Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Matsuyama, Kenji; Noguchi, Kazuhito; and Yano, Mitsuo, to Banyu Pharmaceutical Co., Ltd. Aminophosphonic acid derivative. 5,380,921, Cl. 562-16.000.

Ishikawa, Sadayasu: See—
Kondo, Toshiya; and Ishikawa, Sadayasu, 5,380,640, Cl. 430-567.000.

Ishikawa, Takatoshi: See—
Yoshida, Kazuaki; Ishikawa, Takatoshi; Fujita, Yoshihiro; and Furusawa, Genichi, 5,380,624, Cl. 430-372.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: See—
Kira, Yoichi; and Misumi, Kenji, 5,379,631, Cl. 73-37.500.

Sakurai, Akira; Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao; and Sugawara, Toshihiro, 5,379,610, Cl. 62-316.000.

Ishimaru, Keiichi; Itoh, Osamu; Nakatani, Tomoyoshi; Sudo, Haruhiko; and Kurita, Masaya, to Fuji Electric Co., Ltd. Defrosting control unit for showcases. 5,379,608, Cl. 62-155.000.

Ishioka, Takuji: See—
Kuroda, Shigetaka; Sawamura, Kazutomo; Shimasaki, Yuichi; Kanehiro, Masaki; Ishioka, Takuji; Maruyama, Shigeru; Nishimura, Yoichi; and Katoh, Akira, 5,379,634, Cl. 73-116.000.

Ishiwata, Ichiro, to Nabco Limited. Liquid pressure source unit for liquid-operated booster. 5,379,593, Cl. 60-413.000.

Ishiyama, Mario: See—
Urabe, Shigeharu; Nakatsugawa, Haruyasu; and Ishiyama, Mario, 5,380,641, Cl. 430-569.000.

Ishizaka, Masuo: See—
Takatori, Taizo; Ishihara, Akihiro; Masui, Tadaaki; Kawakami, Yoshinori; Okumura, Takahisa; and Ishizaka, Masuo, 5,381,097, Cl. 324-512.000.

Ishizuka, Mitsuru; Yamaguchi, Noriyuki; Hasegawa, Hitoshi; Yao, Masaharu; Ohnishi, Hiroshi; Yamamoto, Yuuzi; and Tuzi, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Motion-adaptive scanning-line conversion circuit. 5,381,183, Cl. 348-458.000.

Ishrak, Sved O.: See—
Reckwerdt, Wilbur A.; Ishrak, Sved O.; and Bao, Wanqun, 5,379,642, Cl. 73-625.000.

ISK Biotech Corporation: See—
Woods, Thomas L.; and Cookson, Lawrence J., 5,380,484, Cl. 422-6.000.

Isler, Herbert; and Schmidt, Karl-Gunter, to Swil-Technik AG. Plastic reel for material winding. 5,379,965, Cl. 242-586.600.

Isochem: See—
Wirth, Didier G.; Deglave, Marcel; and Mouton, Marc-Henri, 5,380,856, Cl. 546-248.000.

Isono, Keinosuke; and Suzuki, Tatsuo, to Material Engineering Technology Laboratory Incorporated. Mixing apparatus. 5,380,315, Cl. 604-416.000.

Isozumi, Shuzo: See—
Saito, Mitsuo; Umebayashi, Yoshihiro; Aoyagi, Shigetake; Isozumi, Shuzo; Tanaka, Noriyuki; and Kasa, Junichi, 5,379,622, Cl. 72-88.000.

Istvan, Rudyard L.: See—
Ghaem, Sanjar; Istvan, Rudyard L.; and Lauro, George L., 5,381,137, Cl. 340-572.000.

Itakura, Tadashi; and Ejiri, Susumu, to Paloma Kogyo Kabushiki Kaisha. Pulse combustor. 5,380,191, Cl. 431-1.000.

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Turco, Ermanno, 5,381,423, Cl. 371-39.100.

Item Development AB: See—
Thurell, Peter, 5,379,899, Cl. 206-538.000.

Ito, Hideki: See—
Fukahori, Kenichi; Sato, Shuji; Shimohara, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, 5,380,108, Cl. 400-247.000.

Ito, Hideo: See—
Mochizuki, Mikio; Ito, Hideo; and Kobayashi, Ryouzaku, 5,381,131, Cl. 340-630.000.

Ito, Koichi: See—
Fujii, Toshiro; Kitayama, Hiromi; Inukai, Hitoshi; and Ito, Koichi, 5,380,163, Cl. 417-242.000.

Ito, Masafumi: See—
Kimura, Kazuya; Hidaka, Shigeyuki; Kawamura, Chuichi; Kayakawa, Hiroaki; Ito, Masafumi; and Fujisawa, Yoshihiro, 5,380,165, Cl. 417-269.000.

Ito, Mutsuhiro: See—
Matsui, Takashi; Watanabe, Nobuki; Arimura, Masayuki; Kanemaru, Eiji; Horinouchi, Yuzo; and Ito, Mutsuhiro, 5,380,510, Cl. 423-338.000.

Ito, Takehiko: See—
Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.

Ito, Tomonori: See—
Totani, Yoshiyuki; Hirao, Motokazu; Ito, Tomonori; Nakatsuka, Masakatsu; and Yamaguchi, Akihiro, 5,380,814, Cl. 528-199.000.

Ito, Yoichi; and Shinomiya, Kazufusa, to United States of America, Health and Human Services. Variable-position cross-axis synchronous coil planar centrifuge for countercurrent chromatography. 5,380,429, Cl. 210-198.200.

Ito, Yukio; and Goto, Yoshihiro, to Hitachi Medical Corporation. Ultrasonic diagnostic apparatus for displaying an image in a three-dimensional image and in a real time image and a display method thereof. 5,379,769, Cl. 128-660.070.

Itoh, Akira, to Itoh Research & Development Laboratory Co., Ltd. Heat pipe and radiating device. 5,379,830, Cl. 165-104.270.

Itoh, Hisato; Karasawa, Akio; Sugimoto, Kenichi; Oguchi, Takahisa; and Aihara, Shin, to Mitsui Toatsu Chemicals, Incorporated; and Yamamoto Chemicals, Incorporated. Phthalocyanine compounds and usage thereof. 5,380,842, Cl. 540-128.000.

Itoh, Junji: See—
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; Nishimura, Norio; Itoh, Junji; and Kanemaru, Seigo, 5,381,069, Cl. 313-310.000.

Itoh, Kiyoo: See—
Kimura, Shin'ichi; Sakata, Takeshi; and Itoh, Kiyoo, 5,380,674, Cl. 437-52.000.

Itoh, Osamu: See—
Ishimaru, Keiichi; Itoh, Osamu; Nakatani, Tomoyoshi; Sudo, Haruhiko; and Kurita, Masaya, 5,379,608, Cl. 62-155.000.

Itoh Research & Development Laboratory Co., Ltd.: See—
Itoh, Akira, 5,379,830, Cl. 165-104.270.

Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; Nishimura, Norio; Itoh, Junji; and Kanemaru, Seigo, to Futaba Denshi Kogyo K.K.; and Agency of Industrial Science and Technology. Field emission element and process for manufacturing same. 5,381,069, Cl. 313-310.000.

Itoh, Yoshinobu: See—
Satake, Yoshikatsu; Ono, Toshihiko; Itoh, Yoshinobu; and Ichikawa, Yukio, 5,380,783, Cl. 524-406.000.

Itou, Tsukasa; Teraji, Kazuo; Yoshinaga, Noriyuki; Harada, Sunao; Negoro, Kouji; and Mori, Kazunari, to Sanyo Electric Co., Ltd. Secondary battery utilizing a mixed binder. 5,380,606, Cl. 429-194.000.

Iura, Katsuhiko: See—
Mizukami, Masamichi; Hayashi, Katsushige; Iura, Katsuhiko; and Kawaki, Takao, 5,380,907, Cl. 558-270.000.

Ivanov, Alexy A.; Mescheryakov, Vitaly D.; Stepanov, Sergey P.; Chaykovsky, Sergey P.; Yabrov, Alexandr A.; Gaevoy, Victor P.; Pokrovskaya, Svetlana A.; Sadovskaya, Ecaterina M.; Sheplev, Valentin S.; and Ermakov, Youry P., to Institute of Catalysis. Oxidation process and apparatus. 5,380,497, Cl. 422-142.000.

Ivey, M. Kent: See—
Beyers, Robert J., II; Durden, Gregory S.; Ivey, M. Kent; and Kuban, Curt M., 5,381,477, Cl. 380-20.000.

Ivy Hill Corporation: See—
Haas, Janice; O'Brien, Patrick J.; and Durham, Larry D., 5,379,894, Cl. 206-333.000.

Iwama, Shinichi, to Daiwa Seiko, Inc. Ski boot. 5,379,531, Cl. 36-119.000.

Iwamatsu, Toshiaki: See—
Inoue, Yasuo; Nishimura, Tadashi; Ipposhi, Takashi; and Iwamatsu, Toshiaki, 5,381,235, Cl. 356-376.000.

Iwasa, Shoichi, to Nippon Steel Corporation. Nonvolatile semiconductor memory with raised source and drain. 5,381,028, Cl. 257-316.000.

Iwasaki, Yoshihisa; Takeda, Tohru; and Ohta, Masao, to Maeda Industries, Ltd.; and Bridgestone Cycle Co., Ltd. Bicycle speed change assembly. 5,380,252, Cl. 474-77.000.

Iwasaki, Yoshihisa, to Maeda Industries, Ltd. Bicycle rear derailleur. 5,380,253, Cl. 474-80.000.

Iwata, Yoichi; Iida, Naoki; Takizawa, Tsuyoshi; Seki, Yasunari; Sato, Toshihiko; and Nakayama, Takayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for internal combustion engines. 5,379,591, Cl. 60-276.000.

Ixys Corporation: See—
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Kaneko, Takayoshi: See—
Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko, Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki, Tokuo; and Abe, Koji, 5,380,906, Cl. 558-210.000.

Kaneko, Yuji, to Sodick Co., Ltd. Wire-cut electroerosion apparatus. 5,380,974, Cl. 219-69.120.

Kanemaru, Eiji: See—
Matsui, Takashi; Watanabe, Nobuki; Arimura, Masayuki; Kanemaru, Eiji; Horinouchi, Yuzo; and Ito, Mutsuhiro, 5,380,510, Cl. 423-338.000.

Kanemaru, Seigo: See—
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; Nishimura, Norio; Itoh, Junji; and Kanemaru, Seigo, 5,381,069, Cl. 313-310.000.

Kanemoto, Akihiko; Iimura, Haruo; and Takiguchi, Yasuyuki, to Ricoh Company, Ltd. Liquid crystal display device with improved viewing angle dependence of color. 5,380,459, Cl. 252-299.010.

Kaneshige, Yuji: See—
Kawai, Katsunori; Kato, Ryo; Saiki, Akio; and Kaneshige, Yuji, 5,379,799, Cl. 137-856.000.

Kang, Pierson S., to Xynatech, Inc. Magnetic saddle for non-magnetic die-cutting cylinders. 5,379,671, Cl. 83-698.110.

Kanno, Kazumasa. Semiconductor integrated circuit having multiple silicon chips. 5,381,047, Cl. 257-777.000.

Kanno, Masahide: See—
Hiyama, Keiichi; Tsuruoka, Takao; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, 5,379,757, Cl. 128-6.000.

Kano, Isao, to NEC Corporation. Process for forming a multilayer wiring conductor structure in semiconductor device. 5,380,679, Cl. 437-192.000.

Kansai Paint Co., Ltd.: See—
Kato, Kiyoshi; Yoneyama, Kenichi; Nagaoka, Haruo; Yamamoto, Kenji; Morimoto, Kazuyuki; and Kume, Masafumi, 5,380,781, Cl. 523-404.000.

Kao, Chang-Yung: See—
Butter, Adrian S.; Finkel, Brian S.; Kao, Chang-Yung; Kodukula, Sivarama K.; and Kuruts, James P., 5,381,480, Cl. 380-37.000.

Kao Corporation: See—
Tsuda, Hiroko; Shigeta, Akira; and Koyanagi, Hidenobu, 5,380,455, Cl. 252-174.230.

Kao, Ju-Nan: See—
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,380,891, Cl. 554-69.000.

Kao, Yi-Han; Song, Liwei; Chung, Deborah D. L.; and Fredette, Kevin T., to Research Foundation of State University of New York at Buffalo, The. Halogen-doped superconductive fullerenes. 5,380,703, Cl. 505-460.000.

Kaplan, Neil B. Vehicle security system with emergency override. 5,381,128, Cl. 340-426.000.

Kapples, Kevin J.: See—
Shutske, Gregory M.; Kapples, Kevin J.; and Tomer, John D., IV, 5,380,847, Cl. 546-119.000.

Karam, Raymond M., II, to Applied Magnetics Corporation, Inc. Center moment suspension assembly. 5,381,288, Cl. 360-104.000.

Karasawa, Akio: See—
Itoh, Hisato; Karasawa, Akio; Sugimoto, Kenichi; Oguchi, Takahisa; and Aihara, Shin, 5,380,842, Cl. 540-128.000.

Karasawa, Yukihiro. Emulsifying apparatus for solid-liquid multiphase flow and nozzle for solid-liquid multiphase flow. 5,380,089, Cl. 366-176.000.

Karl Mayer Textilmaschinenfabrik GmbH: See—
Schmuck, Peter, 5,379,956, Cl. 242-130.000.

Karnes, Harold A.: See—
McCall, John M.; Ayer, Donald E.; Jacobsen, E. Jon; VanDoornik, Frederick J.; Palmer, John R.; and Karnes, Harold A., 5,380,841, Cl. 540-111.000.

Karwoski, Theodore: See—
Herweck, Steve A.; and Karwoski, Theodore, 5,380,314, Cl. 604-403.000.

Kasa, Junichi: See—
Saito, Mitsuo; Umebayashi, Yoshihiro; Aoyagi, Shigetake; Isozumi, Shuzo; Tanaka, Noriyuki; and Kasa, Junichi, 5,379,622, Cl. 72-88.000.

Kasahara, Masahiro: See—
Okamura, Hisatake; Kasahara, Masahiro; and Taniguchi, Tetsuo, 5,381,117, Cl. 333-175.000.

Kasahara, Shinji, to NEC Corporation. Gas laser oscillator. 5,381,432, Cl. 372-37.000.

Kasahara, Yasumasa: See—
Goto, Fumio; and Kasahara, Yasumasa, 5,379,911, Cl. 220-339.000.

Kasai, Masaji: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.

Kasai, Naoki, to NEC Corporation. Semiconductor memory device with improved step protection and manufacturing method thereof. 5,381,030, Cl. 257-390.000.

Kasai, Shozo; Tanita, Takeo; Yasuhara, Masateru; Azuma, Yusaku; Yamamoto, Toshihiro; Nikaido, Norio; Inaba, Ryohei; and Arai, Mitsuo, to Canon Kabushiki Kaisha. Automatic article feeding system. 5,380,138, Cl. 414-277.000.

Kashihara, Atsushi: See—
Seto, Kaoru; and Kashihara, Atsushi, 5,381,522, Cl. 395-143.000.

Kashimura, Kazunori, to Canon Kabushiki Kaisha. Camera-integrated video recorder apparatus. 5,381,179, Cl. 348-376.000.

Kashiwagi, Masanori: See—
Yoshida, Hiroshi; Kakeya, Noboru; and Kashiwagi, Masanori, 5,380,912, Cl. 558-440.000.

Kassouf, Thomas L.: See—
Vaccaro, Joseph P.; and Kassouf, Thomas L., 5,379,516, Cl. 29-888.022.

Katagiri, Kazuharu: See—
Kanbe, Junichiro; and Katagiri, Kazuharu, 5,381,254, Cl. 359-54.000.

Katahata, Tadashi: See—
Takada, Tomoaki; Tsutsumi, Kazuo; Katahata, Tadashi; and Muraoka, Toshinori, 5,379,705, Cl. 110-245.000.

Katahira, Masayuki, to NSK Ltd. Dust suction apparatus. 5,380,246, Cl. 454-64.000.

Katakabe, Noboru: See—
Kumon, Akira; Ogawa, Katsutoshi; Tatakawa, Masaichiro; Hisada, Hitoshi; Nawama, Junichi; Katakabe, Noboru; and Aizawa, Masahiro, 5,381,214, Cl. 355-219.000.

Katano, Kiyoshi: See—
Shimada, Naoki; Katano, Kiyoshi; and Ueda, Hiroyuki, 5,380,105, Cl. 400-63.000.

Katao, Hisashi: See—
Lee, Neville K.; Jain, Amit; and Katao, Hisashi, 5,381,402, Cl. 369-291.000.

Kataoka, Hachiro, to Chuoh Pack Industry Co., Ltd. Sheets of corrugated paper for producing packages. 5,379,945, Cl. 229-120.260.

Kato, Fuminori: See—
Mizukoshi, Sadanori; Kato, Fuminori; Tsukamoto, Masamitsu; and Kon, Kenji, 5,380,834, Cl. 536-4.100.

Kato, Hideo: See—
Kikuchi, Shinichi; Uchigane, Kiyotaka; and Kato, Hideo, 5,381,369, Cl. 365-189.010.

Kato, Hirokazu; Tanimizu, Makoto; and Kita, Masakazu, to Matsushita Electric Works, Ltd. Electrical appliance powered by an incorporated rechargeable battery. 5,380,602, Cl. 429-123.000.

Kato, Ichie: See—
Ueno, Ryuzo; Ueno, Ryuji; Kato, Ichie; and Oda, Tomio, 5,380,709, Cl. 514-530.000.

Kato, Kiyoshi; Yoneyama, Kenichi; Nagaoka, Haruo; Yamamoto, Kenji; Morimoto, Kazuyuki; and Kume, Masafumi, to Kansai Paint Co., Ltd. Cationically electrodepositable fine particles derived from alkoxysilane-modified epoxy resins and cationic electrodeposition paint composition comprising the same. 5,380,781, Cl. 523-404.000.

Kato, Minoru; Terunuma, Hiroshi; and Takeuchi, Yoshihiro, to Nikon Corporation. Lens barrel with improved drum arrangement. 5,381,272, Cl. 359-823.000.

Kato, Minoru: See—
Katsuki, Hikaru; Shimizu, Masayuki; Kato, Minoru; Inoue, Tetsuo; and Hosoya, Masakazu, 5,379,606, Cl. 62-126.000.

Kato, Ryo: See—
Kawai, Katsunori; Kato, Ryo; Saiki, Akio; and Kaneshige, Yuji, 5,379,799, Cl. 137-856.000.

Kato, Tetsuya: See—
Hiroo, Nobutake; and Kato, Tetsuya, 5,380,107, Cl. 400-241.000.

Katoh, Akira: See—

Kuroda, Shigetaka; Sawamura, Kazutomo; Shimasaki, Yuuichi; Kanehiro, Masaki; Ishioka, Takuji; Maruyama, Shigeru; Nishimura, Yoichi; and Katoh, Akira, 5,379,634, Cl. 73-116.000.

Katoh, Eisaku: See—

Ishige, Osamu; Katoh, Eisaku; Fujiwara, Hiroko; Hirabayashi, Shigeto; and Sugita, Shuichi, 5,380,639, Cl. 430-544.000.

Katoh, Naoyuki; Fukushima, Takashi; and Ichihashi, Kenzo, to Mitsubishi Yuka Badische Co., Ltd.; and Diatex Co., Ltd. Mats and rugs and process for producing the same. 5,380,574, Cl. 428-92.000.

Katsuki, Hikaru; Shimizu, Masayuki; Kato, Minoru; Inoue, Tetsuo; and Hosoya, Masakazu, to Sanyo Electric Co., Ltd. Control device for an air conditioner. 5,379,606, Cl. 62-126.000.

Katsuyama, Kouichi: See—

Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.

Katto, Takayuki: See—

Nishihata, Naomitsu; Ichikawa, Yukio; and Katto, Takayuki, 5,380,819, Cl. 528-336.000.

Kaufhold, Johannes: See—

Fuchs, Reiner; Kaufhold, Johannes; and Malzacher, Kornelia, 5,380,896, Cl. 556-91.000.

Kaufman, Leon: See—

Derby, Kevin A.; and Kaufman, Leon, 5,379,767, Cl. 128-653.500.

Kaufmann, Joseph: See—

Kensley, Kenneth; and Kaufmann, Joseph, 5,380,275, Cl. 604-27.000.

Kavarnos, Manos: See—

Moore, Christopher P.; and Kavarnos, Manos, 5,379,740, Cl. 123-478.000.

Kawaai, Toshimasa: See—

Shiraishi, Mikio; and Kawaai, Toshimasa, 5,381,374, Cl. 365-203.000.

Kawade, Hisaaki: See—

Kawagishi, Hideyuki; Miyazaki, Toshihiko; Kawade, Hisaaki; Kishi, Etsuro; Takimoto, Kiyoshi; and Takeda, Toshihiko, 5,381,400, Cl. 369-272.000.

Kawagishi, Hideyuki: See—

Kawagishi, Hideyuki; Miyazaki, Toshihiko; Kawade, Hisaaki; Kishi, Etsuro; Takimoto, Kiyoshi; and Takeda, Toshihiko, to Canon Kabushiki Kaisha. Information carrier, information recording and/or reproducing apparatus, and information detecting apparatus. 5,381,400, Cl. 369-272.000.

Kawagishi, Shigemitsu: See—

Hattori, Noriko; Torikai, Eiichi; Kawagishi, Shigemitsu; Tadokoshi, Mitsuaki; and Okuno, Kazuyoshi, 5,380,562, Cl. 427-437.000.

Kawagoe, Jun: See—

Yamashita, Seiji; Kawagoe, Jun; and Toya, Ichizo, 5,380,637, Cl. 430-537.000.

Kawaguchi, Akira: See—

Ohtsu, Akihiko, to Whitaker Corporation, The. Coaxial connector for connecting two circuit boards. 5,380,211, Cl. 439-74.000.

Kawahara, Hironobu: See—

Fukuyama, Ryooji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Torii, Yoshimi; Kawaraya, Akira; and Sato, Yoshie, 5,380,397, Cl. 156-643.000.

Kawahashi, Kozo: See—

Murata, Kiyokazu; Kawahashi, Kozo; and Watabiki, Mamoru, 5,380,908, Cl. 558-270.000.

Kawahira, Osamu: See—

Yoshida, Shoji; Ogata, Kazumi; and Kawahira, Osamu, 5,380,753, Cl. 514-474.000.

Kawai, Katsunori: See—

Kato, Ryo; Saiki, Akio; and Kaneshige, Yuji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Discharge valve apparatus for compressor. 5,379,799, Cl. 137-856.000.

Kawai, Takaji: See—

Ishida, Hitoshi, to Sanshin Kogyo Kabushiki Kaisha. Abnormal condition displaying system of an engine cooling system for outboard motor. 5,380,228, Cl. 440-88.000.

Kawakami, Yoshinori: See—

Takatori, Taizo; Ishihara, Akihiro; Masui, Tadaaki; Kawakami, Yoshinori; Okumura, Takahisa; and Ishizaka, Masuo, 5,381,097, Cl. 324-512.000.

Kawaki, Takao: See—

Mizukami, Masamichi; Hayashi, Katsushige; Iura, Katsuhiro; and Kawaki, Takao, 5,380,907, Cl. 558-270.000.

Kawakubo, Takamasa: See—

Negishi, Akira; Kaneko, Hiroko; Kawakubo, Takamasa; and Suda, Yoshihisa, 5,380,422, Cl. 204-403.000.

Kawamoto, Atsuko: See—

Takahara, Kenichi; Kawamoto, Atsuko; and Suzuki, Takao, 5,381,158, Cl. 345-156.000.

Kawamoto, Hiromi: See—

Kabushiki Kaisha Toshiba. Magnetic resonance imaging apparatus. 5,381,093, Cl. 324-318.000.

Kawamura, Akihisa: See—

Matsumoto, Masaharu; Serikawa, Mitsuhiro; Kawamura, Akihisa; Numazu, Hiroko; Norimatsu, Takeshi; Tagami, Ryo; and Oda, Mikio, 5,381,482, Cl. 381-18.000.

Kawamura, Chuichi: See—

Kimura, Kazuya; Hidaka, Shigeyuki; Kawamura, Chuichi; Kayukawa, Hiroaki; Ito, Masafumi; and Fujisawa, Yoshihiro, 5,380,165, Cl. 417-269.000.

Kawamura, Yoshio: See—

Shikida, Mitsuhiro; Sato, Kazuo; Kawamura, Yoshio; Tanaka, Shinji; Horiuchi, Yasuaki; Koide, Akira; and Miyada, Toshimitsu, 5,380,396, Cl. 156-630.000.

Kawanaka, Seido; Ida, Shiro; Takemura, Hideo; and Kumetani, Kouji, to Sharp Corporation; and Ezel Inc. Method for discriminating between figure and text areas of an image. 5,381,241, Cl. 358-462.000.

Kawaraya, Akira: See—

Fukuyama, Ryooji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Torii, Yoshimi; Kawaraya, Akira; and Sato, Yoshie, 5,380,397, Cl. 156-643.000.

Kawasaki Jukogyo Kabushiki Kaisha: See—

Takada, Tomoaki; Tsutsumi, Kazuo; Katahata, Tadashi; and Muraoka, Toshinori, 5,379,705, Cl. 110-245.000.

Kawasaki, Shuichi: See—

Yano, Masahiko; and Higuchi, Jiro, to Kabushiki Kaisha Toshiba. Ultrasonic imaging apparatus. 5,379,771, Cl. 128-661.000.

Kawasaki Steel Corporation: See—

Matsushita, Masakazu; Kiyota, Yoshisato; Ohtsubo, Hiroshi; and Ohta, Junichi, 5,380,476, Cl. 264-63.000.

Nishimura, Kimihiro: See—

Yoshino, Kenji, 5,380,179, Cl. 419-36.000.

Kawasaki, Tsugumichi: See—

Hasegawa, Akira; and Kawasaki, Tsugumichi, 5,380,772, Cl. 522-14.000.

Kawasaki, Yoshihiro: See—

Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, 5,381,153, Cl. 342-70.000.

Kawashima, Haruo: See—

Tokunaga, Toshio; Soga, Naomichi; and Kawashima, Haruo, 5,380,384, Cl. 156-111.000.

Kawashima, Saburo: See—

Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsuki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.

Kawashita, Tetsuro: See—

Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko, Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki, Tokuo; and Abe, Koji, 5,380,906, Cl. 558-210.000.

Kawata, Masahiko: See—

Usagawa, Toshiyuki; Hiruma, Kenji; Kawata, Masahiko; Goto, Shigeo; Mitani, Katsuhiko; Yamane, Masao; Takahashi, Susumu; Tanoue, Tomonori; and Imamura, Yoshinori, 5,381,027, Cl. 257-192.000.

Kawata, Soaku: See—

Nakanishi Dental Mfg. Co., Ltd. Dental handpiece having cleaning unit. 5,380,201, Cl. 433-132.000.

Kawatsuki, Masaaki: See—

Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.

Kawauchi, Koichi: See—

Asari, Seiichi, to Mitsubishi Denki Kabushiki Kaisha. Non-volatile semiconductor memory device with timer controlled re-write inhibit means. 5,381,366, Cl. 365-185.000.

Kawazoe, Kazushige: See—

Morita, Osamu, to Sony Corporation. Hard disc drive. 5,381,287, Cl. 360-103.000.

Kaysersberg, S.A.: See—

Mitrani, Sem, 5,380,310, Cl. 604-385.100.

Kayukawa, Hiroaki: See—

Kimura, Kazuya; Hidaka, Shigeyuki; Kawamura, Chuichi; Kayukawa, Hiroaki; Ito, Masafumi; and Fujisawa, Yoshihiro, 5,380,165, Cl. 417-269.000.

Takenaka, Kenji: See—

Mizutani, Hideki; Hidaka, Shigeyuki; Hiramatsu, Osamu; Takeichi, Toru; and Kayukawa, Hiroaki, 5,380,161, Cl. 417-222.200.

Kazumi, Jirou: See—

Canon Kabushiki Kaisha. Optical apparatus responsive to an external information output device. 5,381,207, Cl. 354-412.000.

Keebler, Douglas J.: See—

Bruce, Mark L.; and Keebler, Douglas J., 5,379,790, Cl. 137-1.000.

Keelty, George F.: See—

Aitkens, Robert K.; Gloser, Paul F.; and Keelty, George F., 5,380,044, Cl. 283-67.000.

Keester, Louis J.: See—

Pretto, Alessio G.; Keester, Louis J.; and Hansen, Richard S., 5,379,964, Cl. 242-571.200.

Keevert, John E., Jr.: See—

Roberts, Michael R.; Lam, Wai K.; Bowman, Wayne A.; Keevert, John E., Jr.; and Rubin, Byron H., 5,380,642, Cl. 430-569.000.

Keilson, Julian: See—

Servi, Leslie D.; and Keilson, Julian, 5,381,546, Cl. 395-650.000.

Keith, Michael: See—

Intel Corporation. Method and apparatus for generating CLUT-format video images. 5,381,180, Cl. 348-396.000.

Keller, Arnold: See—

Eggers, Christoph; and Keller, Arnold, 5,380,327, Cl. 606-69.000.

Keller, Christopher G.: See—

Gregory, Thomas A.; and Keller, Christopher G., 5,381,284, Cl. 360-97.020.

Keller, Reinhold: See—

Holla, Wolfgang; and Keller, Reinhold, 5,380,659, Cl. 435-196.000.

Keller, Robert S.: See—

Inniss, Hadyn A.; Keller, Robert S.; Johnson, William J.; and Williams, Marvin L., 5,381,527, Cl. 395-200.000.

Kelley, Derold L.: See—

Smith, Bert R.; and Kelley, Derold L., 5,380,144, Cl. 414-537.000.

Kelley, Jerry: See—

Shuttle weft yarn control. 5,379,807, Cl. 139-203.000.

Kelley, Mike: See—

Kelley, Jerry; and Kelley, Mike, 5,379,807, Cl. 139-203.000.

Kelly, James E.: See—

Blazek, Kenneth E.; Saucedo, Ismael G.; and Kelly, James E., 5,379,828, Cl. 164-459.000.

Kelly, John S.: See—

Hansen, James D.; and Caruso, Joseph M., to Minnesota Mining and Manufacturing Company. Orthodontic bracket with archwire slot liner. 5,380,196, Cl. 433-8.000.

Kelly, Stephen: See—

Schadt, Martin; and Hoffmann-La Roche Inc. Cyclohexyl alkenoate compounds. 5,380,462, Cl. 252-299.630.

Kemp, Richard A.: See—

Shell Oil Company. Process for preparing ethylene oxide. 5,380,885, Cl. 549-536.000.

Kempster, John K. C.: See—

Marsden, Peter D.; Kempster, John K. C.; and Bee, John A., 5,380,632, Cl. 430-505.000.

Kendall Company, The: See—

Miller, John; Gamble, Victor; and Beattie, David, 5,380,276, Cl. 604-28.000.

Kensley, Kenneth: See—

Kaufmann, Joseph, to Kensley Nash Corporation. Device for irrigating a natural body orifice of a person seated on a toilet. 5,380,275, Cl. 604-27.000.

Kensley Nash Corporation: See—

Kensley, Kenneth; and Kaufmann, Joseph, 5,380,275, Cl. 604-27.000.

Kent, George M.: See—

Ilg, Otto M.; and Hoyt, Matthew B., to BASF Corporation. Process of making fiber reinforced laminates. 5,380,477, Cl. 264-103.000.

Kenyon, Robert: See—

Snowman accessory kit. 5,380,237, Cl. 446-491.000.

Keogh, Michael J.: See—

Brown, Geoffrey D., to Union Carbide Chemicals & Plastics Technology Corporation. Telephone cables. 5,380,591, Cl. 428-379.000.

Kereszturi, Geza: See—

Hermecz, Istvan; Kereszturi, Geza; Vasvari, Lelle; Horvath, Agnes; Balogh, Maria; Ritli, Peter; Sipos, Judit; and Pajor, Aniko, 5,380,845, Cl. 544-363.000.

Kerner, Dieter: See—

Mangold, Helmut; Hartmann, Werner; Kleinschmit, Peter; Kerner, Dieter; and Rudolph, Thomas, 5,380,687, Cl. 501-128.000.

Kerr-McGee Corp.: See—

Kessler, Kerry J.; and Smith, Roger G., 5,380,130, Cl. 405-195.100.

Kershaw, Keith: See—

Asquith, John D.; and Shilton, Peter, deceased (by Shilton, Molly Patricia, administratrix), to United Kingdom Atomic Energy Authority. Hydraulic manipulator. 5,379,664, Cl. 74-490.050.

Kerwin, James F.: See—

Murad, Ferid; Kerwin, James F.; and Gorsky, Lee D., 5,380,945, Cl. 564-108.000.

Kessler, Kerry J.: See—

Smith, Roger G., to Kerr-McGee Corp.; and McDermott International, Inc. Preinstalled adjustable conductor guide. 5,380,130, Cl. 405-195.100.

Keyes, Denis E.: See—

Johnsen, Kenneth, to E. R. Squibb & Sons, Inc. Flushable ostomy pouch with mechanical coupling. 5,380,309, Cl. 604-338.000.

Kgaphola, Mashupye M.: See—

Srivastava, Devendra K.; and Kgaphola, Mashupye M., 5,380,931, Cl. 562-542.000.

Khalife, Sami: See—

Lahille, Michel; Lemaire, Jean-Philippe; and Khalife, Sami, 5,380,325, Cl. 606-61.000.

Khan, Amin M.: See—

Durant, Graham J.; and Khan, Amin M., 5,380,858, Cl. 546-278.000.

Khieu, Cong Q.: See—

Intel Corporation. Fast static cross-unit comparator. 5,381,127, Cl. 340-146.200.

Kiefer, Frederick W.: See—

Bock, Ditmar H.; Rude, Marjorie A.; and Kiefer, Frederick W., 5,381,156, Cl. 342-126.000.

Kiekens, Eric: See—

Callant, Paul, to Agfa-Gevaert, N.V. Filter dyes for rapid processing applications. 5,380,634, Cl. 430-507.000.

Kier, Charles E., Jr.: See—

Motor Wheel Corporation. Vehicle wheel and method of manufacture of the same. 5,380,071, Cl. 301-63.100.

Kihara, Taku: See—

Sudo, Fumihiko; and Kihara, Taku, 5,381,175, Cl. 348-246.000.

Kiiskila, Erkki: See—

Ryham, Rolf; Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Soderman, Jarmo; and Wiklund, Karl G., 5,380,402, Cl. 162-30.100.

Kikuchi, Shinichi: See—

Uchigane, Kiyotaka; and Kato, Hideo, to Kabushiki Kaisha Toshiba. Nonvolatile semiconductor memory device using a command control system. 5,381,369, Cl. 365-189.010.

Kikuchi, Toshihiro: See—

Futagawa, Hitoshi, to Nissho Corporation. Medical solution delivery system. 5,380,287, Cl. 604-135.000.

Kikuchi, Yasuo: See—

Mabe, Atsushi; and Terauchi, Kiyoshi, to Sanden Corporation. Valved discharge mechanism in a refrigerant compressor. 5,380,176, Cl. 418-55.100.

Kikumoto, Nobuo: See—

Goto, Moto; Kikumoto, Nobuo; Iida, Osamu; Ikoma, Hiroaki; and Fukushima, Shigemitsu, 5,380,353, Cl. 75-640.000.

Kikuta, Toshio: See—

Yoshida, Seikoh; Ozawa, Shoichi; and Kikuta, Toshio, 5,379,717, Cl. 117-14.000.

Kikuta, Yoshinori: See—

Sekine, Akihiro; Kikuta, Yoshinori; Tezuka, Shinkichi; Okada, Kazuo; and Nakajima, Hiroshi, 5,380,715, Cl. 514-47.000.

Kish, Frederick A.: See—
Stone, James W.; Kish, Frederick A.; Wojcik, John; Van Erden, Donald L.; Fredericksen, David E.; and Vadhar, Parimal M., 5,379,880, Cl. 198-396.000.

Kishi, Etsuro: See—
Kawagishi, Hideyuki; Miyazaki, Toshihiko; Kawade, Hisaaki; Kishi, Etsuro; Takimoto, Kiyoshi; and Takeda, Toshihiko, 5,381,400, Cl. 369-272.000.

Kishi, Masakiti: See—
Hashiguchi, Yoshiyuki; Kishi, Masakiti; and Yagyu, Takehiko, 5,380,496, Cl. 422-131.000.

Kishita, Hirofumi; Sato, Shinichi; Koike, Noriyuki; and Matsuda, Takashi, to Shin-Etsu Chemical Co., Ltd. Fluorine-containing organopolysiloxane composition, 5,380,811, Cl. 528-15.000.

Kiso, Makoto: See—
Hasegawa, Akira; and Kiso, Makoto, 5,380,829, Cl. 536-4.100.
Hasegawa, Akira; and Kiso, Makoto, 5,380,832, Cl. 536-17.900.

Kita, Masakazu: See—
Kato, Hirokazu; Tanimizu, Makoto; and Kita, Masakazu, 5,380,602, Cl. 429-123.000.

Kitagawa, Mitsuhiro: See—
Shinohe, Takashi; Nakayama, Kazuya; Takeuchi, Minami; Yamaguchi, Masakazu; Kitagawa, Mitsuhiro; Omura, Ichiro; and Nakagawa, Akio, 5,381,026, Cl. 257-147.000.

Kitagawa, Nobutaka: See—
Ando, Kazumasa; Nakata, Shigeharu; Kitagawa, Nobutaka; and Hanatani, Shingo, 5,381,491, Cl. 382-56.000.

Kitahara, Jun: See—
Kohiyama, Tomohisa; and Kitahara, Jun, 5,381,043, Cl. 307-116.000.

Kitami, Tetsu: See—
Ozawa, Osamu; Miyade, Hiroyuki; and Kitami, Tetsu, 5,380,571, Cl. 428-36.900.

Kitamura, Toshiyuki: See—
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,381,248, Cl. 358-538.000.

Kitamura, Yoshiyuki: See—
Matsumoto, Kensuke; Akutu, Yasutomo; Koseki, Masao; Kurakami, Michio; Kitamura, Yoshiyuki; and Koyama, Kiyoshi, 5,379,609, Cl. 62-262.000.

Kitayama, Hiromi: See—
Fujii, Toshiro; Kitayama, Hiromi; Inukai, Hitoshi; and Ito, Koichi, 5,380,163, Cl. 417-242.000.

Kitazume, Akihiro: See—
Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.

Kiyota, Yoshisato: See—
Matsumita, Masakazu; Kiyota, Yoshisato; Ohtsubo, Hiroshi; and Ohta, Junichi, 5,380,476, Cl. 264-63.000.

Klages, Corwin L.: See—
Easton, David J.; Thompson, Carl R.; and Klages, Corwin L., 5,380,964, Cl. 200-43.010.

Klang, Jeffrey A.; Cannarsa, Michael J.; Liotta, Frank J., Jr.; and Smyth, Scott E., to Arco Chemical Technology L.P. Polyvinyl acetal resins based on hydroxyaldehydes and use of the resins in laminar structures, 5,380,597, Cl. 428-441.000.

Klausinger, Helmut; to Deutsche Aerospace AG. Unfocused signal processing apparatus for a synthetic aperture radar having a rotating antenna, 5,381,152, Cl. 342-25.000.

Klebe, Douglas O.: See—
Oldham, Susan L.; Harvey, Martha J.; Panaretos, Steve K.; Fugatt, John L.; Ducharme, Richard L.; Bille, Jeffrey M.; and Klebe, Douglas O., 5,380,386, Cl. 156-150.000.

Kleffner, Hans W.: See—
Sendelbach, Stefan; Weiss, Wolfgang; Orth, Winfried; Kleffner, Hans W.; and Laufer, Albrecht, 5,380,862, Cl. 546-345.000.

Kleiman, Robert: See—
Burg, Douglas A.; Kleiman, Robert; and Erhan, Selim M., 5,380,894, Cl. 554-219.000.

Klein, Joseph Y.: See—
Winchell, Harry S.; Klein, Joseph Y.; Simhon, Elliot D.; Cyjon, Rosa L.; Klein, Ofer; and Zaklad, Haim, 5,380,515, Cl. 424-9.000.

Klein, Ofer: See—
Winchell, Harry S.; Klein, Joseph Y.; Simhon, Elliot D.; Cyjon, Rosa L.; Klein, Ofer; and Zaklad, Haim, 5,380,515, Cl. 424-9.000.

Kleinschmit, Peter: See—
Mangold, Helmut; Hartmann, Werner; Kleinschmit, Peter; Kerner, Dieter; and Rudolph, Thomas, 5,380,687, Cl. 501-128.000.

Klemann, Lawrence P.; Roden, Allan D.; Peloso, Turiddu A.; and Boldt, Orlbert L., to Nabisco, Inc. Production of fat mixtures enriched with triglycerides bearing short, medium and long residues, 5,380,544, Cl. 426-607.000.

Klement, Scott M.: See—
Protheroe, Robert L.; Wills, David C.; and Klement, Scott M., 5,380,958, Cl. 178-18.000.

Klemm, Robert E.; and Lehnhardt, Gary D., to Construction Forms. Single solid thin wall pipe for abrasive material having a gradual transition in hardness, 5,379,805, Cl. 138-109.000.

Klenke, Thomas A.: See—
Hornung, Donald F.; Klenke, Thomas A.; and Burge, Melvin L., 5,380,142, Cl. 414-491.000.

Klier, Jurgen. Cable plug connector and cable bushing, 5,380,219, Cl. 439-446.000.

Kline, Kevin B., to Lawler Manufacturing Co., Inc. Flow control valve assembly, 5,379,936, Cl. 236-12.200.

Kling, Sean; Bunton, Mark A.; and Moskal, Thomas E., to Babcock and Wilcox Company, The. Low profile sootblower nozzle, 5,379,727, Cl. 122-392.000.

Klinkhammer, Ronald W. Pleated panel strip brush construction, 5,380,069, Cl. 300-21.000.

Klockner-Humboldt-Deutz AG: See—
Gropp, Heiko; Leppat, Frank; and Hafele, Martin, 5,379,580, Cl. 56-192.000.

Knight, George W.: See—
Lai, Shih-Yaw; Wilson, John R.; Knight, George W.; Stevens, James C.; and Chum, Pak-Wing S., 5,380,810, Cl. 526-352.000.

Knight, Jeremy: See—
Bernzott, Philip; Dilworth, John; George, David; Higgins, Bryan; and Knight, Jeremy, 5,381,489, Cl. 382-40.000.

Knight, Linda C.; and Maurer, Alan H., to Temple University of the Commonwealth System of Higher Education. Thrombus detection using radiolabelled disintegrins, 5,380,646, Cl. 424-1.690.

Knight Manufacturing Corp.: See—
Knight, Stanley W.; Saunders, William M.; and Joranlien, Ric, 5,379,940, Cl. 239-675.000.

Knight, Stanley W.; Saunders, William M.; and Joranlien, Ric, to Knight Manufacturing Corp. Spreader apparatus for spreading manure, 5,379,940, Cl. 239-675.000.

Knoedl, George, Jr.: See—
Blonder, Greg E.; Johnson, Bertrand H.; and Knoedl, George, Jr., 5,381,387, Cl. 368-10.000.

Knoerzer, Anthony R.; and Touhsaent, Robert E., to Mobil Oil Corp. Low oxygen transmissive film, 5,380,586, Cl. 428-349.000.

Knowles, Terence J., to Carroll Touch, Inc. Controller for an acoustic touch panel, 5,380,959, Cl. 178-18.000.

Kobayashi, Hideotoshi: See—
Takizawa, Hiroo; Kobayashi, Hideotoshi; and Naito, Hideki, 5,380,638, Cl. 430-552.000.

Kobayashi, Ieyasu: See—
Hamano, Hisashi; Hosoi, Masahiro; Kobayashi, Ieyasu; and Saeki, Yasuhiro, 5,380,577, Cl. 428-143.000.

Kobayashi, Kazuhide; Ishii, Takehiko; and Kai, Osamu, to Tamura Electric Works, Ltd. Power source control apparatus for telephone set, 5,381,472, Cl. 379-387.000.

Kobayashi, Kazunori, to Grand Bleu International, Inc. Mouthpiece unit of diving respirator, 5,379,762, Cl. 128-201.280.

Kobayashi, Kazushi: See—
Okazawa, Koichi; Kobayashi, Kazushi; and Aburano, Ichiharu, 5,381,544, Cl. 395-575.000.

Kobayashi, Osamu: See—
Imamura, Nobuhiro; Kobayashi, Osamu; and Kimura, Yoshihiro, 5,380,392, Cl. 156-257.000.

Kobayashi, Ryouaku: See—
Mochizuki, Mikio; Ito, Hideo; and Kobayashi, Ryouaku, 5,381,131, Cl. 340-630.000.

Kobayashi, Shigeyuki, to Canon Kabushiki Kaisha. Connector for circuit boards, and device using same, 5,380,222, Cl. 439-590.000.

Kobayashi, Takanori; Nagano, Yoshifumi; and Yamasawa, Kiyohito, to Techno Excel Kabushiki Kaisha. Sensor having mutually perpendicular sections using zigzag coils for detecting displacement, 5,381,091, Cl. 324-207.170.

Kobayashi, Takao: See—
Takahashi, Shizuo; and Kobayashi, Takao, 5,380,485, Cl. 422-62.000.

Koblitz, Rudolf; Lehr, Steffen; and Dieterle, Franz, to Deutsche Thomson-Brandt GmbH. Switch mode power supply for a television receiver and method of controlling therefor, 5,381,329, Cl. 363-49.000.

Kobori, Hideyuki: See—
Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kawagawa, Tsutomu, 5,380,550, Cl. 427-146.000.

Kochis, Richard L.; and Aas, Eric F., to Hewlett-Packard Company. Hand-held optical scanner with onboard battery recharging assembly, 5,381,020, Cl. 250-566.000.

Kodama, Kunioki: See—
Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko, Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki, Tokuo; and Abe, Koji, 5,380,906, Cl. 558-210.000.

Kodama, Masaru: See—
Yamaoka, Yukio; Hattori, Keiji; Kodama, Masaru; and Ueki, Hirofumi, 5,380,407, Cl. 205-122.000.

Kodas, T. T.: See—
Rye, Robert R.; Ricco, Antonio J.; Hampden-Smith, M. J.; and Kodas, T. T., 5,380,474, Cl. 264-25.000.

Kodera, Yasuto: See—
Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaoka, Masanobu; Mihara, Tadashi; Kodera, Yasuto; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.

Kodukula, Sivarama K.: See—
Butter, Adrian S.; Finkel, Brian S.; Kao, Chang-Yung; Kodukula, Sivarama K.; and Kuruts, James P., 5,381,480, Cl. 380-37.000.

Koehler, Anita: See—
Koehler, Gernot; and Koehler, Anita, 5,380,937, Cl. 562-579.000.

Koehler, Gernot; and Koehler, Anita. Derivatives of 4-hydroxybutyric acid, 5,380,937, Cl. 562-579.000.

Kofahl, Klaus: See—
Bohm, Gerhard; and Kofahl, Klaus, 5,379,680, Cl. 92-208.000.

Kofoed, Scott A.; and Orr, Joseph A., to Korr Medical Technologies Inc. Differential pressure sensor for respiratory monitoring, 5,379,650, Cl. 73-861.520.

Kohiyama, Tomohisa; and Kitahara, Jun, to Hitachi, Ltd. Power supply arrangement and connector, 5,381,043, Cl. 307-116.000.

Kohl, Georg: See—
Erpenbach, Heinz; Gehrmann, Klaus; Jagers, Erhard; and Kohl, Georg, 5,380,929, Cl. 562-519.000.

Kohler, Gregory R., to Andritz Sprout-Bauer, Inc. Stream splitting apparatus, 5,379,881, Cl. 198-601.000.

Kohlhaupt, Reinhold; Bergmann, Udo; and Haas, Lothar, to BASF Aktiengesellschaft. Preparation of halogenated indigo, 5,380,871, Cl. 548-459.000.

Kohno, Michio, to Canon Kabushiki Kaisha. Surface-condition inspection apparatus, 5,381,225, Cl. 356-237.000.

Koide, Akira: See—
Shikida, Mitsuhiro; Sato, Kazuo; Kawamura, Yoshio; Tanaka, Shinji; Horiuchi, Yasuaki; Koide, Akira; and Miyada, Toshimitsu, 5,380,396, Cl. 156-630.000.

Koike, Noriyuki: See—
Kishita, Hirofumi; Sato, Shinichi; Koike, Noriyuki; and Matsuda, Takashi, 5,380,811, Cl. 528-15.000.

Koike, Shoji: See—
Aoki, Makoto; and Koike, Shoji, 5,380,358, Cl. 106-20.00R.

Koito Manufacturing Co., Ltd.: See—
Choji, Masataka, 5,381,313, Cl. 362-66.000.

Kojima, Eiji, to Ando Electric Co., Ltd. Circuit for AC voltage application in synchronism with pattern signal generator, 5,381,045, Cl. 327-141.000.

Kojima, Makoto: See—
Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaoka, Masanobu; Mihara, Tadashi; Kodera, Yasuto; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.

Kojima, Tetsuya: See—
Koyomogi, Mutsunori; Minami, Yukio; Nakazawa, Masahiko; Yoshikawa, Kazuhiro; and Kojima, Tetsuya, 5,379,982, Cl. 251-77.000.

Kojima, Yasuo; Hirai, Katsura; and Goto, Kiyoshi, to Konica Corporation. Process for manufacturing planographic printing plate, 5,380,612, Cl. 430-49.000.

Kokawa, Yoshiko; Koyama, Tohru; Kusakabe, Kenji; Tamura, Katsuhiko; and Nakamura, Yasuna, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having a gate electrode of polycrystal layer and a method of manufacturing thereof, 5,381,032, Cl. 257-412.000.

Kokubo, Tadayoshi; Uenishi, Kazuya; Tan, Shiro; and Ishii, Wataru, to Fuji Photo Film Co., Ltd. Micropattern-forming material having a low molecular weight novolak resin, a quinone diazide sulfonyl ester and a solvent, 5,380,618, Cl. 430-190.000.

Kolb, Dieter: See—
Flug, Christian; and Kolb, Dieter, 5,381,547, Cl. 395-700.000.

Kolesa, Michael S.: See—
Edwards, Richard C.; Kolesa, Michael S.; and Ishikawa, Hiroichi, 5,380,682, Cl. 437-225.000.

Kollrack, Marc M.: See—
Robertson, Robert; Kollrack, Marc M.; Lee, Angela T.; Law, Kam; and Maydan, Dan, 5,380,566, Cl. 427-534.000.

Kolon Industries, Inc.: See—
Oh, Tae-jin; and Kim, Jin-sa, 5,380,818, Cl. 528-331.000.

Kolte, Ravindra N., to Digital Equipment Corporation. Peak detector circuit and application in a fiber optic receiver, 5,381,052, Cl. 327-60.000.

Kolte, Ravindra N., to Digital Equipment Corporation. Voltage-tracking circuit and application in a track-and-hold amplifier, 5,381,146, Cl. 341-132.000.

Komai, Toshiyuki, to Neorex Co., Ltd. Processing system for compressing data to reduce the number of digits expressed by a micro-bar code, 5,380,993, Cl. 235-462.000.

Komatsu, Keiro, to NEC Corporation. Semiconductor device for control of a signal light, 5,381,023, Cl. 257-85.000.

Kon, Kenji: See—
Mizukoshi, Sadanori; Kato, Fuminori; Tsukamoto, Masamitsu; and Kon, Kenji, 5,380,834, Cl. 536-4.100.

Kondo, Akihiro: See—
Fujita, Kenjiro; Kondo, Akihiro; Ohnishi, Toyohide; Hasegawa, Yoshio; and Yuge, Mitsuru, 5,379,874, Cl. 192-85.00R.

Kondo Cotton Spinning Co., Ltd.: See—
Ueda, Yutaka; Ohori, Keizo; Shimizu, Tsuneo; and Mizutani, Shoji, 5,381,340, Cl. 364-470.000.

Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yuichi, to Canon Kabushiki Kaisha; and Sumitomo Metal Industries. Process for preparing electrical connecting member, 5,379,515, Cl. 29-852.000.

Kondo, Kazuo: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yuichi, 5,379,515, Cl. 29-852.000.

Kondo, Norimasa; Matsuo, Takao; Ainoya, Masayuki; Torii, Takuji; Hayashi, Kazunobu; Morio, Shuichi; and Tomita, Shinya, to Hitachi Koki Co., Ltd. Suction-purging unit and suction purging method for an ink jet printer, 5,381,168, Cl. 347-30.000.

Kondo, Tetsuya: See—
Noguchi, Katsunori; and Kondo, Tetsuya, 5,381,177, Cl. 348-313.000.

Kondo, Tomio: See—
Aoki, Mitsuo; Suguro, Yoshihiro; Kondo, Tomio; Nakamura, Yasushi; and Miyamoto, Satoru, 5,380,616, Cl. 430-110.000.

Kondo, Toru: See—
Yamano, Eiichi; Kondo, Toru; and Yonekura, Masami, 5,380,064, Cl. 297-344.220.

Kondo, Toshiya; and Ishikawa, Sadayasu, to Konica Corporation. Silver halide photographic emulsion and silver halide photographic light-sensitive material using the same, 5,380,640, Cl. 430-567.000.

Kondoh, Toyohito, to Tatsumi Corporation. Change-over type of testing equipment for non-utility power generators or the like, 5,381,088, Cl. 324-158.100.

Kondou, Isao; Tamari, Nobuyuki; Tanaka, Takahiro; and Sodeoka, Satoshi, to Agency of Industrial Science & Technology. Process for producing composite raw material for ceramics and composite raw material for ceramics produced by said process, 5,380,686, Cl. 501-87.000.

Kone Oy: See—
Pohjonen, Jukka; Heikkila, Pekka; and Tolonen, Jouko, 5,380,139, Cl. 414-280.000.

Konica Corporation: See—
Fujii, Yozo; Miwa, Tadashi; Sato, Hisao; Ogane, Atsushi; Matsuo, Isao; and Ikeda, Tadayoshi, 5,381,167, Cl. 346-157.000.

Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, 5,380,610, Cl. 430-31.000.

Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,381,215, Cl. 355-219.000.

Ishige, Osamu; Katoh, Eisaku; Fujiwara, Hiroko; Hirabayashi, Shigeto; and Sugita, Shuichi, 5,380,639, Cl. 430-544.000.

Kojima, Yasuo; Hirai, Katsura; and Goto, Kiyoshi, 5,380,612, Cl. 430-49.000.

Kondo, Toshiya; and Ishikawa, Sadayasu, 5,380,640, Cl. 430-567.000.

Mizoguchi, Yoshimi; Ishii, Hiroshi; Kimura, Kiyoshi; Fukuchi, Masakazu; and Takeda, Makoto, 5,381,221, Cl. 355-326.00R.

Mochizuki, Yoshihiro; Ueda, Eiichi; and Ikariya, Toshiyuki, 5,380,630, Cl. 430-501.000.

Sasaki, Takayuki, 5,380,643, Cl. 430-575.000.

Koninklijke PTT Nederland B.V.: See—
Damen, Jozef T. W.; and Tan, Hong S., 5,380,992, Cl. 235-462.000.

Koninklijke PTT Nederland N.V.: See—
Folkert de Vries, Rein J., 5,381,409, Cl. 370-60.000.

Konishi, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Device for protecting power supply circuit, 5,381,294, Cl. 361-18.000.

Konno, Toshio; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; and Maeno, Keichi, to Victor Company of Japan, Ltd. Light to light modulator with reading light of specified wavelength, 5,381,188, Cl. 348-766.000.

Konomura, Yutaka: See—
Hiyama, Keiichi; Tsuruoka, Takao; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, 5,379,757, Cl. 128-6.000.

Koolant Coolers, Inc.: See—
Mathews, Douglas H., 5,379,833, Cl. 165-113.000.

Koorapaty, Havish: See—
Bitzer, Donald L.; Vouk, Mladen A.; Srinivasan, Vijay; Lo, Sunny K.; Dholakia, Ajay; Gonzalez, Elena M.; Lee, Tina M.; Wang, LiFeng; and Koorapaty, Havish, 5,381,425, Cl. 371-43.000.

Koralewski, Klaus: See—
Siol, Werner; Fischer, Jens-Dieter; Terbrack, Ulrich; and Koralewski, Klaus, 5,380,797, Cl. 525-71.000.

Korr Medical Technologies Inc.: See—
Kofoed, Scott A.; and Orr, Joseph A., 5,379,650, Cl. 73-861.520.

Korsgaard, Jens. Vessel mooring system and vessel equipped for the system, 5,380,229, Cl. 441-3.000.

Korsunsky, Iosif: See—
Grabbe, Dimitry; Korsunsky, Iosif; and Laub, Michael F., 5,380,210, Cl. 439-66.000.

Koseki, Masao: See—
Matsumoto, Kensuke; Akutu, Yasutomo; Koseki, Masao; Kurakami, Michio; Kitamura, Yoshiyuki; and Koyama, Kiyoshi, 5,379,609, Cl. 62-262.000.

Kosinski, John A.: See—
Ballato, Arthur; Kosinski, John A.; Dutta, Mitra; Shen, Hongen; Lu, Yicheng; and Pamulapati, Jagadeesh, 5,381,260, Cl. 359-248.000.

Kostka, Richard A.; and Bruno, Vittorio, to Pratt & Whitney Canada, Inc. Axially opening cylindrical bleed valve, 5,380,151, Cl. 415-145.000.

Kotani, Noriyasu; and Wakabayashi, Hiroshi, to Nikon Corporation. Parallax correcting apparatus in a camera, 5,381,205, Cl. 354-400.000.

Kotani, Terumitsu; Saitoh, Atsui; Yamada, Tomoya; Tachikawa, Kohei; Amano, Yasuyuki; and Ikeda, Takeshi, to Lintec Corporation. Pressure sensitive adhesive label sheet, 5,380,572, Cl. 428-40.000.

Kotoh, Satoru: See—
Ohmori, Masashi; Kotoh, Satoru; and Nakajima, Shinji, 5,379,785, Cl. 134-184.000.

Kotter, Rodman W., to Kotter, Rodman W. Architectural panel system for geodesic-like structures, 5,379,557, Cl. 52-81.100.

Kottwitz, Beatrix; Kuester, Harald; and Berger, Andrea, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of benzoyloxybenzene sulfonates, 5,380,917, Cl. 560-109.000.

Koutavas, Ioannis. Dental articulator. 5,380,199, Cl. 435-65.000.
 Kowalski, Jack. To Gemplus Card International. Secure counting method for a binary electronic counter. 5,381,452, Cl. 377-26.000.
 Koyama, Kakuhei: See—
 Tamai, Shigeru; Ikeda, Naomi; and Koyama, Kakuhei, 5,379,477, Cl. 15-104.940.
 Koyama, Kiyoshi: See—
 Matsumoto, Kensuke; Akutu, Yasutomo; Koseki, Masao; Kurakami, Michio; Kitamura, Yoshiyuki; and Koyama, Kiyoshi, 5,379,609, Cl. 62-262.000.
 Koyama, Mitsutoshi: See—
 Miyashita, Naoto; Takahashi, Koichi; and Koyama, Mitsutoshi, 5,380,399, Cl. 156-646.000.
 Koyama, Seichiro, to Strapack Corporation. Band feeding and tightening apparatus for packing machine. 5,379,576, Cl. 53-589.000.
 Koyama, Tohru: See—
 Kokawa, Yoshiko; Koyama, Tohru; Kusakabe, Kenji; Tamura, Katsuhiko; and Nakamura, Yasuna, 5,381,032, Cl. 257-412.000.
 Koyanagi, Hidenobu: See—
 Tsuda, Hiroko; Shigeta, Akira; and Koyanagi, Hidenobu, 5,380,455, Cl. 252-174.230.
 Koyasu, Yukio: See—
 Ushikubo, Takashi; Nakamura, Hiroya; Koyasu, Yukio; and Wajiki, Shin, 5,380,933, Cl. 562-549.000.
 Koyomogi, Mutsunori; Minami, Yukio; Nakazawa, Masahiko; Yoshikawa, Kazuhiro; and Kojima, Tetsuya, to Fujikin Incorporated. Control valve. 5,379,982, Cl. 251-77.000.
 Kozawa, Hirotsuka: See—
 Ujita, Toshihiko; and Kozawa, Hirotsuka, 5,381,172, Cl. 347-86.000.
 Kozlowski, Edward L., Jr.: See—
 Bahar, Bamdad; and Kozlowski, Edward L., Jr., 5,381,511, Cl. 392-472.000.
 Kozuka, Eiji; and Miyawaki, Naokazu, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,381,372, Cl. 365-201.000.
 Kraeutler, Bernard, to Nergeco. Raisable-curtain door providing low heat loss. 5,379,823, Cl. 160-271.000.
 Kraft, Terry, to Bandgap Technology Corporation. Method for the synthesis of metal alkyls and metal aryls. 5,380,895, Cl. 556-1.000.
 Kraft General Foods, Inc.: See—
 Mason, Charles R.; Coleman, Edward C.; Nayyar, Dalip K.; and Birney, Sharon R., 5,380,545, Cl. 426-646.000.
 Kramer, Martin S.: See—
 VanKuiken, Lewis L., Jr.; Byrnes, Larry E.; and Kramer, Martin S., 5,380,564, Cl. 427-456.000.
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Lees, Robert G.; and Zezza, Charles A., to Cytec Technology Corp. 1,3,5-tris-(2-carboxyethyl) isocyanurate crosslinking agent for polyepoxide coatings. 5,380,804, Cl. 525-327.300.

Leeuwenburg, Ewout; and Van Kooij, Robert J., to Nyloplast Europe B.V. Sealing ring for sealing against fluid flow in either direction between inner and outer pipes. 5,380,017, Cl. 277-207.00A.

Lefevre, Alain; and Saintier, Jack, to Etablissements Bardin. Transformer, especially a measurement transformer, for detecting faults on electrical cables. 5,381,123, Cl. 336-90.000.

LeFort, Pierre O.: See—
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Legoux, Christophe: See—
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Legrand: See—
Decore, Bertrand; and Perrignon de Troyes, Francois, 5,379,972, Cl. 248-27.100.

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Lehner, Richard S.: See—
Busch, Frank R.; Lehner, Richard S.; and O'Neill, Brian T., 5,380,860, Cl. 546-315.000.

Lehnhardt, Gary D.: See—
Klemm, Robert E.; and Lehnhardt, Gary D., 5,379,805, Cl. 138-109.000.

Lehr, Steffen: See—
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Snow, Barton H.; Leighton, David M.; and Steckler, Michael J., 5,379,585, Cl. 60-204.000.

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Bloom, David M.; Ho, Francis; and Hou, Alfred S., 5,381,101, Cl. 324-676.000.

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Lahille, Michel; Lemaire, Jean-Philippe; and Khalife, Sami, 5,380,325, Cl. 606-61.000.

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Gosens, Johannes C.; Leonardus, Adelbert H.; and Eugene, Hendrikus J., 5,380,795, Cl. 525-67.000.

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Robbins, W. Dale; Ayers, Curtis J.; and Leone, David A., 5,381,119, Cl. 335-132.000.

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Barz, Richard L.; and Durkin, Ann V., 5,380,543, Cl. 426-582.000.

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Leung, Woon F.; and Shapiro, Ascher H., to Baker Hughes Incorporated. Feed accelerator system including accelerator cone. 5,380,266, Cl. 494-53.000.

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Lewis, James E.; and Johnson, Jon R., to Under Sea Travel, Inc. Underwater vehicle. 5,379,714, Cl. 114-315.000.

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Nowak, Michael T.; and Lewis, Thomas E., 5,379,698, Cl. 101-454.000.

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Liang, Guangqi. Torch specially adapted to gasoline-oxygen cutting machine and cutting machine provided with said torch. 5,379,930, Cl. 266-74.000.

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Degen, Bruno; Licht, Elke; Schulze, Manfred; Wagner, Gebhard; and Minuth, Klaus-Peter, 5,380,903, Cl. 556-472.000.

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Wilson, William B.; and Lim, Sau-Tsien, 5,381,144, Cl. 341-63.000.

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Lin, Chih-I. Clamping device for vertebral locking rod. 5,380,326, Cl. 606-61.000.

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Method for fabricating a magnetoresistive sensor having antiferromagnetic layer. 5,380,548, Cl. 427-130.000.

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Leiderer, Hermann, 5,379,981, Cl. 248-550.000.

Lindem, Thomas J.: See—
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., 5,379,509, Cl. 29-558.000.

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Lindsay Wire, Inc.: See—
Chiu, Kai F., 5,379,808, Cl. 139-383.00A.

Linear Modulation Technology Limited: See—
Whitmarsh, William J.; Whittle, Simon M.; and Parry, Ian S., 5,381,108, Cl. 330-2.000.

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Kotani, Terumitsu; Saitoh, Atsui; Yamada, Tomoya; Tachikawa, Kohei; Amano, Yasuyuki; and Ikeda, Takeshi, 5,380,572, Cl. 428-40.000.

Linthicum, Steven E.; and Guy, Wilson T., to General Electric Company. Mounting bracket arrangement. 5,379,970, Cl. 244-54.000.

Lion Akzo Co., Ltd.: See—
Noda, Seiji; and Tsuji, Takeshi, 5,380,899, Cl. 556-407.000.

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Klang, Jeffrey A.; Cannarsa, Michael J.; Liotta, Frank J., Jr.; and Smyth, Scott E., 5,380,597, Cl. 428-441.000.

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Chakrabarti, Ajay; Clark-Lewis, Ian; and Cullis, Pieter R., 5,380,531, Cl. 424-450.000.

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Adams, Matthew K.; Little, Wendell L.; and Grider, Stephen N., 5,381,540, Cl. 395-425.000.

Liu, Hung-Chang. Housing for accommodating an alarm conducting clipper. 5,380,966, Cl. 200-283.000.

Livio, Andriolo, to Black & Decker Inc. Gear lubrication. 5,379,662, Cl. 74-468.000.

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Meloul, Raphael F.; and Lizardi, Jose E., 5,380,333, Cl. 606-80.000.

Lo, Kun-Nan. Method for manufacturing the shaft unit of a golf club. 5,380,389, Cl. 156-188.000.

Lo, Neng S. Device for clearing iron chips produced during a mechanical working process. 5,379,480, Cl. 15-246.000.

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Bitzer, Donald L.; Vouk, Mladen A.; Srinivasan, Vijay; Lo, Sunny K.; Dholakia, Ajay; Gonzalez, Elena M.; Lee, Tina M.; Wang, LiFeng; and Koorapaty, Havish, 5,381,425, Cl. 371-43.000.

Loboda, Mark J., to Dow Corning Corporation. Reverse direction pyrolysis processing. 5,380,553, Cl. 427-226.000.

Lochbaum, Kenneth. Deep water exercise and therapy pool. 5,379,467, Cl. 4-489.000.

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Reed, Gary J., 5,379,505, Cl. 29-402.170.

Lockwood, Michael C.; Dixon, Richard H.; Reed, Christopher A.; Crockett, Ronald B.; and Jones, Kenneth W., to Smith International, Inc. Diamond drag bit cutting elements. 5,379,853, Cl. 175-428.000.

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Montenieri, Robert E.; O'Connell, Maurice T.; Crampton, Alan T.; Seymour, Geoffrey F.; Edstrom, Richard C.; and Bourgeois, Bryon J., 5,379,927, Cl. 222-546.000.

Salamon, Peter A.; and DeMarco, JoAnn, 5,380,387, Cl. 156-154.000.

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Loftness, Marvin O. Transmission line sparking locator. 5,381,098, Cl. 324-536.000.

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Hamburg, Douglas R.; Logothetis, Eleftherios M.; Cook, Jeffrey A.; and Rimai, Lajos, 5,379,590, Cl. 60-276.000.

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Amini, Nader; Boury, Bechara F.; and Lohman, Terence J., 5,381,538, Cl. 395-425.000.

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Lonza Ltd.: See—
Roduit, Jean-Paul; and Wellig, Alain, 5,380,857, Cl. 546-273.000.

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Loopik, Alex; and Crook, David T., to Hewlett Packard Company. Circuit testing system. 5,381,417, Cl. 371-15.100.

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Simeone, Robert A.; and Bean, Marvin C., 5,379,966, Cl. 244-3.110.

L'Oreal: See—
Gueret, Jean-Louis, 5,379,919, Cl. 222-105.000.

Joulia, Gerard, 5,379,898, Cl. 206-528.000.

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Lorenzana, Moises B. Ironing board attachment including basket. 5,379,536, Cl. 38-106.000.

Lorraine, Peter W., to General Electric Company. Ultrasonic transducer with selectable center frequency. 5,381,068, Cl. 310-358.000.

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Wiseman, Michael A.; Lortz, Allan R.; and Merrick, David, 5,380,066, Cl. 297-476.000.

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Puschner, Georg; and Lott, Herbert, 5,380,077, Cl. 312-1.000.

Steinhauser, Pius; Bodenmiller, Anton; and Lott, Herbert, 5,380,369, Cl. 134-1.000.

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Barnes, Russell H.; Brach, Jimmie W., Sr.; Purdy, David L.; and Loughheed, William D., 5,379,764, Cl. 128-633.000.

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Love Lift, L.P.: See—
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Lu, Zhipeng: See—
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Hsu, Kuo-Hom L.; Teller, Daniel M.; Davis, Alan R.; Lubeck, Michael D.; Munson, Harry R., Jr.; Jagdmann, Gunnar E.; and Uwaydah, Ibrahim M., 5,380,734, Cl. 514-357.000.

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Ludeke, Christine E.; and Mitchell, Larry M., to ACS Communications, Inc. Communications headset having a universal joint-mounted microphone boom. 5,381,486, Cl. 381-187.000.

Lum, Paul; and Greenstein, Michael, to Hewlett-Packard Company. Membrane hydrophone. 5,381,386, Cl. 367-163.000.

Lunak, Donald A.; and Killamey, Declan E., to Motorola, Inc. Rocker switch. 5,380,972, Cl. 200-562.000.

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Nuckolls, Charles E.; and Lundberg, James R., 5,381,116, Cl. 331-1.00A.

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McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.

Lundy, Douglas A., to Xerox Corporation. Conductive cleaning brush belt and detoning thereof. 5,381,218, Cl. 355-298.000.

Luo, Lifeng: See—
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Luong, Tuan: See—
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Lupton, Peter J.: See—
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Lutz, Michael A.; Nguyen, Binh T.; and King, Russell K., to Dow Corning Corporation. One part curable compositions containing deactivated hydrosilation catalyst and method for preparing same. 5,380,812, Cl. 528-15.000.

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Lynders, Michael J., to Ed Kaplan Associates. Safety scissors. 5,379,521, Cl. 30-233.000.

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Ma, Thomas T., to Ford Motor Company. Tuned intake system. 5,379,735, Cl. 123-184.420.

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Macon Management & Design Limited: See—
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Mader, Heinrich-Christian; Mierbach, Albin; and Schmelter, Wolfgang, to Goetze AG. Piston ring having a non-uniform radial pressure distribution. 5,380,018, Cl. 277-216.000.

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Magyar, Kalman: See—
Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamas; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmarosi nee Kellner, Katalin, 5,380,761, Cl. 514-655.000.

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Malczewski, Regina M.: See—
Legrow, Gary E.; and Malczewski, Regina M., 5,380,527, Cl. 424-401.000.

Malek, Abdul; Monasterios, Clevys J.; Brown, G. Ronald; and Gupta, Ved P., to Synergistics Industries, Inc. Two step oxidation process for the production of carboxylic acids such as azelaic acid from unsaturated substrates. 5,380,928, Cl. 562-512.400.

Malewicz, Andrzej M.: See—
Arney, Michel D.; Madore, Carl L.; and Malewicz, Andrzej M., 5,380,020, Cl. 280-11.220.

Malfatto, Pierfiore; Pesce, Sergio; and Cavallo, Elio, to Minnesota Mining & Manufacturing Company. Multicontrast radiographic film-screen assembly. 5,380,636, Cl. 430-503.000.

Mallamo, John P.: See—
DeHaven-Hudkins, Diane L.; Earley, William G.; Kumar, Virendra; Mallamo, John P.; and Miller, Matthew S., 5,380,729, Cl. 514-284.000.

Mallinckrodt Medical, Inc.: See—
Vacca, Rita D., 5,380,295, Cl. 604-187.000.

Maloberti, Rene; Coutarel, Alain; and Espinasse, Philippe, to Coflexip. Method for laying tubular conduits. 5,380,129, Cl. 405-166.000.

Maloizel, Christian: See—
Sevrin, Mireille; Menin, Jacques; Maloizel, Christian; Diaz Martin, Juan A.; Martin Escudero Perez, Ulpiano; Bedoya Zurita, Manuel; Del Sol Moreno, Gregorio; Jimenez Bargueno, Maria D.; and Romanach Ferrer, Magali, 5,380,742, Cl. 514-397.000.

Maloney, Kurt: See—
Mock, Gerald L.; Maloney, Kurt; and Benmergui, Alberto D., 5,381,331, Cl. 364-145.000.

Malzacher, Kornelia: See—
Fuchs, Reiner; Kaufhold, Johannes; and Malzacher, Kornelia, 5,380,896, Cl. 556-91.000.

Man-Gill Chemical Company: See—
Gober, Victor A.; and Rancey, David A., 5,380,468, Cl. 252-547.000.

Man Gutehoffnungshutte Aktiengesellschaft: See—
Schubert, Manfred, 5,381,440, Cl. 373-72.000.

MAN Roland Druckmaschinen AG: See—
Hjek, Josef; and Neumeier, Anton, 5,379,694, Cl. 101-415.100.

MAN Roland Druckmaschinen AG: See—
Boehme, Andreas; Mayer, Peter; Gartner, Arno; Heinen, Jurgen; and Straub, Manfred, 5,379,696, Cl. 101-424.000.

Hoffmann, Eduard; Winterholler, Johann; Prem, Wolfgang; and Stockl, Herbert, 5,379,693, Cl. 101-375.000.

Manabe, Toshiki: See—
Ban, Cozy; Yanagi, Motonori; Fukumoto, Takaaki; Manabe, Toshiki; and Yanome, Hiroshi, 5,380,471, Cl. 261-122.100.

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Patel, Dennis; and Chang, Felix, 5,379,978, Cl. 248-311.200.

Manduley, Flavio M. Single value postage dispensing apparatus. 5,379,690, Cl. 101-91.000.

Mangold, Helmut; Hartmann, Werner; Kleinschmit, Peter; Kerner, Dieter; and Rudolph, Thomas, to Degussa Aktiengesellschaft. Silicon-aluminum mixed oxide. 5,380,687, Cl. 501-128.000.

Manicke, Paul S.: See—
Timmons, James V.; Jones, Bert C., III; and Manicke, Paul S., 5,379,689, Cl. 100-43.000.

Manico, Joseph A.: See—
Piccinino, Jr. Ralph L.; Rosenburgh, John H.; Patton, David L.; and Manico, Joseph A., 5,381,203, Cl. 354-324.000.

Mann, Matthew J. Handled dog collar. 5,379,726, Cl. 119-793.000.

Mannen, Hiroaki: See—
Matsumoto, Sadao; and Mannen, Hiroaki, 5,380,242, Cl. 453-3.000.

Mansfield, Philip A., to Rolls-Royce plc. Cam operated valve. 5,379,800, Cl. 137-875.000.

Mantovani, Gianni; and Seefeldt, Joachim, to bielomatik Leuze GmbH & Co. Positioning device for a piece good. 5,379,879, Cl. 198-382.000.

Marchese, Constance A.: See—
Blanvalet, Claude; Brauchli, Mary C.; Dautas, Jolanta; and Marchese, Constance A., 5,380,452, Cl. 252-117.000.

Marino, Thomas F. Spill containment transfer bag. 5,379,810, Cl. 141-10.000.

Marketing Displays, Inc.: See—
Hillstrom, David U.; and Hillstrom, Brian J., 5,381,324, Cl. 362-362.000.

Markowitz, Ivan: See—
Kuchta, Richard; Szweczyk, Richard S.; Vivirito, Joseph R.; King, Thomas; and Markowitz, Ivan, 5,379,882, Cl. 198-689.100.

Marlatt, Mark E.: See—
Beylin, Vladimir; Chen, Huai G.; Goel, Om P.; Marlatt, Mark E.; and Topliss, John G., 5,380,925, Cl. 562-443.000.

Marmarosi nee Kellner, Katalin: See—
Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamas; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmarosi nee Kellner, Katalin, 5,380,761, Cl. 514-655.000.

Marois, Pierre-Henri: See—
Fortin, Paul E.; and Marois, Pierre-Henri, 5,380,376, Cl. 148-440.000.

Mars Incorporated: See—
Polidoro, Roberto, 5,381,021, Cl. 250-561.000.

Marshall, Richard A. Noise shielded hydrophone. 5,381,382, Cl. 367-20.000.

Marshall, Robert; and Eketorp, Rainer, to Pharmacia Aktiebolag. One-step, one-container method for the preparation of pyridoxylated hemoglobin. 5,380,824, Cl. 530-385.000.

Marsden, Peter D.; Kempster, John K. C.; and Bee, John A., to Eastman Kodak Company. Photosensitive photographic silver halide color materials. 5,380,632, Cl. 430-505.000.

Marsh, Edward K.; Pitts, Terry L.; and Simmons, Randy G., to Whittaker Corporation. The High density electrical connector. 5,380,223, Cl. 439-610.000.

Marshall, Lyman R., to Scherer Healthcare Ltd. Mayo stand cover facilitating sterile draping. 5,379,703, Cl. 108-90.000.

Martin Escudero Perez, Ulpiano: See—
Sevrin, Mireille; Menin, Jacques; Maloizel, Christian; Diaz Martin, Juan A.; Martin Escudero Perez, Ulpiano; Bedoya Zurita, Manuel; Del Sol Moreno, Gregorio; Jimenez Bargueno, Maria D.; and Romanach Ferrer, Magali, 5,380,742, Cl. 514-397.000.

Martin, Joel L.: See—
Coutant, William R.; and Martin, Joel L., 5,380,803, Cl. 525-240.000.

Martin Marietta Corporation: See—
Cranston, John A.; and MacArthur, Doug E., 5,380,768, Cl. 521-167.000.

Martin Marietta Energy Systems, Inc.: See—
Dooley, Joseph B.; Muhs, Jeffrey D.; and Tobin, Kenneth W., 5,381,492, Cl. 385-12.000.

Martin, Michel: See—
Heusser, Jean; and Martin, Michel, 5,380,529, Cl. 424-430.000.

Martin, Richard L., to Petrolite Corporation. Reaction product of nitrogen bases and phosphate esters as corrosion inhibitors. 5,380,466, Cl. 252-389.220.

Martin, Scott W.: See—
Romine, Jeffrey L.; Meanwell, Nicholas A.; and Martin, Scott W., 5,380,854, Cl. 548-235.000.

Martin, Trevor N., to Bepak Plc. Dispensing apparatus for powdered medicaments. 5,379,763, Cl. 128-203.150.

Martindale, Richard A.; Martindale, William A.; Straddeck, Matthew; and Osborne, Gregory J., to Automatic Bar Controls. Method and system for control and monitoring of beverage dispensing. 5,379,916, Cl. 222-1.000.

Martindale, William A.: See—
Martindale, Richard A.; Martindale, William A.; Straddeck, Matthew; and Osborne, Gregory J., 5,379,916, Cl. 222-1.000.

Martini, Gerhard: See—
Bartscher, Peter; Martini, Gerhard; Pohl, Wolfgang; and Sandmann, Jurgen, 5,380,073, Cl. 303-9.720.

Martins, Alvaro F. Filter for drinking container. 5,379,914, Cl. 220-719.000.

Martinson, Lee S.; Schweitzer, John W.; and Baenziger, Norman C., to University of Iowa Research Foundation. The Method of making sulfide alloys exhibiting thermal bistability. 5,380,377, Cl. 148-557.000.

Martir, Wilson K.: See—
Morrow, Lawrence R.; Martir, Wilson K.; and Aghazeynali, Hossein, 5,381,002, Cl. 250-301.000.

Maruki, Hiroshige: See—
Inoue, Yoshihisa; Doi, Koichi; Maruki, Hiroshige; and Nakayama, Teruo, 5,379,582, Cl. 7-333.000.

Maruyama, Shigeru: See—
Kuroda, Shigetaka; Sawamura, Kazutomo; Shimazaki, Yuuichi; Kanehiro, Masaki; Ishioka, Takuji; Maruyama, Shigeru; Nishimura, Yoichi; and Katoh, Akira, 5,379,634, Cl. 73-116.000.

Marx, Alan D.; Renzelmann, Michael E.; and Smith, Mark H., to Boeing Company. The Hydraulic actuator with mechanical lock and installation. 5,379,969, Cl. 244-49.000.

Masarati, Enrico: See—
Cipolli, Roberto; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, 5,380,815, Cl. 528-254.000.

Masferrer, Jaime L.: See—
Norman, Bryan H.; Lee, Len F.; Masferrer, Jaime L.; and Talley, John J., 5,380,738, Cl. 514-374.000.

Maskinfabrikken Baeltix A/S: See—
Damkjor, Poul E., 5,379,883, Cl. 198-853.000.

Mason, Charles R.; Coleman, Edward C.; Nayyar, Dalip K.; and Birney, Sharon R., to Kraft General Foods, Inc. Coating mix and process for retaining moisture in comminuted meat products. 5,380,545, Cl. 426-646.000.

Mason, David: See—
Murphy, Anthony J.; Bassin, David; and Mason, David, 5,379,776, Cl. 128-705.000.

Mason, Russell E., III, to R. E. Mason Enterprises. Ground covering mat for ground anchored structure. 5,379,558, Cl. 52-105.000.

Massachusetts Institute of Technology: See—
Brown, Elliott R.; Hogan, Gregory G.; and Daniels, Gerald M., 5,381,442, Cl. 374-7.000.

Zayhowski, John J., 5,381,431, Cl. 372-25.000.

Massen, Robert; Hegelbach, Hugo; Zuber, Jurg; Tobler, Hans; Schoenenberger, Niklaus; Zapf, Helmut; and Gensjager, Helmut, to Buhler AG. Method for treating particles of a bulk material and method for controlling a roll mill. 5,379,949, Cl. 241-30.000.

Massy, Antoine: See—
Cesar, Jean-Pierre; and Massy, Antoine, 5,379,820, Cl. 152-546.000.

Masters, Ian M.: See—
Chalkley, Michael E.; Masters, Ian M.; and Doyle, Barry N., 5,380,354, Cl. 75-743.000.

Masuda, Jitsuo: See—
Noguchi, Teruhiko; Kinashi, Hiroshi; Masuda, Jitsuo; Inoue, Katsushi; Tanaka, Tatsuo; Otsuki, Kunio; and Adachi, Kazuya, 5,381,212, Cl. 355-211.000.

Masui, Tadaaki: See—
Takatori, Taizo; Ishihara, Akihiro; Masui, Tadaaki; Kawakami, Yoshinori; Okumura, Takahisa; and Ishizaka, Masuo, 5,381,097, Cl. 324-512.000.

Material Engineering Technology Laboratory Incorporated: See—
Isono, Keinosuke; and Suzuki, Tatsuo, 5,380,315, Cl. 604-416.000.

Materials Research Corporation: See—
Edwards, Richard C.; Kolesa, Michael S.; and Ishikawa, Hiroichi, 5,380,682, Cl. 437-225.000.

Mathews, Douglas H., to Koolant Coolers, Inc. Heat exchanger with integral subcooler, 5,379,833, Cl. 165-113.000.

Mathews, John G.: See—
Canavan, Richard W.; and Mathews, John G., 5,381,192, Cl. 351-118.000.

Mathis, Ricard M.; and Michaelson, Richard E., to Spintek International. Electronic gaming apparatus, 5,380,008, Cl. 273-143.00R.

Matsuda, Eiji, to Kabushiki Kaisha Kawai Gakki Seisakusho. Key assigner for an electronic musical instrument having multiple tone channels and priority level value data, 5,380,949, Cl. 84-618.000.

Matsuda, Takashi: See—
Kishita, Hirofumi; Sato, Shinichi; Koike, Noriyuki; and Matsuda, Takashi, 5,380,811, Cl. 528-15.000.

Matsui, Takashi; Watanabe, Nobuki; Arimura, Masayuki; Kanemaru, Eiji; Horinouchi, Yuzo; and Ito, Mutsuhiro, to Fuji-Davison Chemical Ltd. Silica gel manufactured by a hydrothermal polymerization following gelatization of silica hydrogels, 5,380,510, Cl. 423-338.000.

Matsui, Yasushi: See—
Takenaka, Naoki; and Matsui, Yasushi, 5,381,499, Cl. 385-93.000.

Matsukawa, Takanari, to NEC Corporation. Trigger signal generating circuit with extraneous pulse prevention during accelerated pulse counting, 5,381,451, Cl. 377-20.000.

Matsuki, Toshitsugu; Saiki, Noritsugu; and Emi, Shingo, to Teijin Limited. Immobilization of biologically active substances with a polyphosphazene carrier, 5,380,658, Cl. 435-181.000.

Matsumoto, Hiroshi: See—
Miyaji, Itsuo; and Matsumoto, Hiroshi, 5,381,066, Cl. 310-90.000.

Matsumoto, Kensuke; Akutu, Yasutomo; Koseki, Masao; Kurakami, Michio; Kitamura, Yoshiyuki; and Koyama, Kiyoshi, to Sanyo Electric Co., Ltd. Air conditioner having air filter, 5,379,609, Cl. 62-262.000.

Matsumoto, Koji: See—
Tanaka, Tsutomu; Shono, Keiji; Namba, Yoshiyuki; Matsumoto, Koji; and Maeda, Miyozo, 5,381,396, Cl. 369-116.000.

Matsumoto, Masaharu; Serikawa, Mitsuhiro; Kawamura, Akihisa; Numazu, Hiroko; Norimatsu, Takeshi; Tagami, Ryo; and Oda, Mikio, to Matsushita Electric Industrial Co., Ltd. Sound field controller, 5,381,482, Cl. 381-18.000.

Matsumoto, Mitsuyo: See—
Uomoto, Katsuhito; Shomura, Tomoko; Matsumoto, Mitsuyo; Takagi, Masayuki; Shimizu, Takao; and Kiriya, Susumu, 5,380,745, Cl. 514-410.000.

Matsumoto, Sadao; and Mannen, Hiroaki, to SANYO Electric Co., Ltd. Coin processor for use with automatic vending machines, 5,380,242, Cl. 453-3.000.

Matsumoto, Takahiro: See—
Moritsu, Kazuki; Matsumoto, Takahiro; Horikawa, Mitsuo; Nakagawa, Shuichi; Yoshimura, Hideto; Nagao, Masashi; and Inaguchi, Takashi, 5,379,600, Cl. 62-47.100.

Matsuo, Akihiko, to Fujitsu Limited. Apparatus for automatically generating programs, 5,381,348, Cl. 395-700.000.

Matsuo, Hirokazu: See—
Takemura, Kazutaka; Johdai, Akiyoshi; and Matsuo, Hirokazu, 5,379,993, Cl. 271-3.000.

Matsuoka, Isao: See—
Fuji, Yozo; Miwa, Tadashi; Satoh, Hisao; Ogane, Atsushi; Matsuoka, Isao; and Ikeda, Tadayoshi, 5,381,167, Cl. 346-157.000.

Matsuoka, Takao: See—
Kondo, Norimasa; Matsuoka, Takao; Ainoya, Masayuki; Torii, Takuji; Hayashi, Kazunobu; Morio, Shaichi; and Tomita, Shinya, 5,381,168, Cl. 347-30.000.

Matsushima, Hiroshi: See—
Akashi, Akira; and Matsushima, Hiroshi, 5,381,206, Cl. 354-402.000.

Matsushima, Masaaki: See—
Taniguchi, Yasushi; Hirabayashi, Keiji; Ikoma, Keiko; Kurihara, Noriko; Matsushima, Masaaki; and Yamamoto, Kiyoshi, 5,380,349, Cl. 65-286.000.

Matsushima, Osamu, to NEC Corporation. Shift register with dual clock inputs for receiving and sending information between I/O channels and host based on external and internal clock inputs respectively, 5,381,529, Cl. 395-275.000.

Matsushita Electric Industrial Co., Ltd.: See—
Hamamoto, Yasuo, 5,381,107, Cl. 327-306.000.

Kimoto, Takayuki; and Hosokawa, Tatsuhiro, 5,381,476, Cl. 380-5.000.

Konishi, Hirofumi, 5,381,294, Cl. 361-18.000.

Kumon, Akira; Ogawa, Katsutoshi; Tatekawa, Masaichiro; Hisada, Hitoshi; Nawama, Junichi; Katakabe, Noboru; and Aizawa, Masahiro, 5,381,214, Cl. 355-219.000.

Matsumoto, Masaharu; Serikawa, Mitsuhiro; Kawamura, Akihisa; Numazu, Hiroko; Norimatsu, Takeshi; Tagami, Ryo; and Oda, Mikio, 5,381,482, Cl. 381-18.000.

Minemoto, Hisashi; Ozaki, Yusuke; and Sonoda, Nobuo, 5,381,429, Cl. 372-21.000.

Ogawa, Kazufumi; Mino, Norihisa; and Soga, Manoru, 5,380,585, Cl. 428-333.000.

Okuda, Osamu; Yamamoto, Minoru; Nakano, Tomoyuki; and Hirai, Wataru, 5,379,514, Cl. 29-833.000.

Takenaka, Naoki; and Matsui, Yasushi, 5,381,499, Cl. 385-93.000.

Tsubaki, Kazuhisa; Uesugi, Mitsuru; and Honma, Kouichi, 5,381,448, Cl. 375-14.000.

Tsuboka, Eiichi, 5,381,513, Cl. 395-2.410.

Wilson, William B.; and Lim, Sau-Tsien, 5,381,144, Cl. 341-63.000.

Yoshida, Akihiko; Imoto, Kiyooki; Nonaka, Seiji; and Aoki, Ichiro, 5,381,303, Cl. 361-502.000.

Matsushita Electric Works, Ltd.: See—
Kato, Hirokazu; Tanimizu, Makoto; and Kita, Masakazu, 5,380,602, Cl. 429-123.000.

Saijara, Yasuhiro; Date, Haruyuki; Yamauchi, Toshiyuki; and Mizobuchi, Manabu, 5,380,521, Cl. 424-76.100.

Matsushita, Masakazu; Kiyota, Yoshisato; Ohtsubo, Hiroshi; and Ohta, Junichi, to Kawasaki Steel Corporation. Method of debinding for injection molded objects, 5,380,476, Cl. 264-63.000.

Matsutani Chemical Industries Co., Ltd.: See—
Ohkuma, Kazuhiro; Wakabayashi, Shigeru; and Satouchi, Mitsuko, 5,380,717, Cl. 514-58.000.

Matsuyama, Kenji: See—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Matsuyama, Kenji; Noguchi, Kazuhito; and Yano, Mitsuo, 5,380,921, Cl. 562-16.000.

Matsuzaki, Kazuo, to Fuji Electric Company, Ltd. Dielectrics dividing wafer, 5,381,033, Cl. 257-499.000.

Matsuzaki, Kiyoto: See—
Kimura, Koichi; and Matsuzaki, Kiyoto, 5,379,553, Cl. 49-502.000.

Matsuzaki, Tokuo: See—
Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko, Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki, Tokuo; and Abe, Koji, 5,380,906, Cl. 558-210.000.

Matsuzawa, Masafumi: See—
Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, 5,380,700, Cl. 504-239.000.

Mattelmaki, Esko: See—
Ryham, Rolf; Nykanen, Tuomo S.; Greenwood, Brian F.; Gulichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Soderman, Jarmo; and Wiklund, Karl G., 5,380,402, Cl. 162-30.100.

Mattes, Kenneth C.: See—
Miller, Theodore C.; Collins, Joseph C.; Mattes, Kenneth C.; Wentland, Mark P.; Perni, Robert B.; Corbett, Thomas H.; and Guiles, Joseph W., 5,380,749, Cl. 514-437.000.

Mattesky, Henry, to Glat, Herbert. Patterned non-woven fabrics of improved tensile strength, 5,380,581, Cl. 428-195.000.

Matthews, Kent R.; Schakel, Eric G.; and Gamboa, Ricardo R., to Schuller International, Inc. Fiber glass air duct with coated interior surface containing an organic biocide, 5,379,806, Cl. 138-149.000.

Matthews, M. Dean; and Medrano, Pedro G., to Ventritex, Inc. Solid state electrochemical capacitors and their preparation, 5,380,341, Cl. 29-25.030.

Matthias, George: See—
Coad, George L.; and Matthias, George, 5,379,984, Cl. 251-298.000.

Matuda, Hiroaki: See—
Onishi, Hidenori; and Matuda, Hiroaki, 5,380,798, Cl. 525-89.000.

Matusz, Marek; Mesters, Carolus M. A. M.; and Buffum, John E., to Shell Oil Company. Ethylene oxide catalyst and process, 5,380,697, Cl. 502-348.000.

Matsiewicz, Edwin J.; Rackmil, Charles I.; and Smith, James C., to Ford Motor Company. Internal combustion engine fuel system with inverse model control of fuel supply pump, 5,379,741, Cl. 123-497.000.

Mauchan, Donald E., to Polaroid Corporation. Adaptor for instant camera, 5,381,198, Cl. 354-108.000.

Maurer, Alan H.: See—
Knight, Linda C.; and Maurer, Alan H., 5,380,646, Cl. 424-1.690.

Maurer, Kenneth G., III: See—
Dickmeyer, David A.; Maurer, Kenneth G., III; and Redmon, Larry L., 5,381,089, Cl. 324-174.000.

Mauri, Daniele: See—
Lin, Tsann; Howard, James K.; Hwang, Cherngye; Mauri, Daniele; and Staud, Norbert, 5,380,548, Cl. 427-130.000.

Mavinahally, Nagesh S.; and Mavinahally, Pushpalatha S. Continuously variable volume scavenging passage for two-stroke engines, 5,379,732, Cl. 123-73.0AA.

Mavinahally, Pushpalatha S.: See—
Mavinahally, Nagesh S.; and Mavinahally, Pushpalatha S., 5,379,732, Cl. 123-73.0AA.

Maxtor Corporation: See—
Brunelle, Philip E., 5,381,528, Cl. 395-250.000.

Dunn, Paul F., 5,381,279, Cl. 360-70.000.

May & Baker Limited: See—
Cramp, Susan M.; and Hatton, Leslie R., 5,380,865, Cl. 548-329.500.

Maydan, Dan: See—
Robertson, Robert; Kollrack, Marc M.; Lee, Angela T.; Law, Kam; and Maydan, Dan, 5,380,566, Cl. 427-534.000.

Mayer, Peter: See—
Boehme, Andreas; Mayer, Peter; Gartner, Arno; Heinen, Jurgen; and Straub, Manfred, 5,379,696, Cl. 101-424.000.

McAdams, Carina A.: See—
Bhattacharya, Apurba; Fritch, John R.; Murphy, Carl D.; Zeagler, Larry D.; and McAdams, Carina A., 5,380,867, Cl. 548-344.100.

McBee, Beverlee. Child's vehicle for increased visual interaction, 5,380,023, Cl. 280-87.010.

McCall, Gerald W.: See—
Strieb, Stephen F.; and McCall, Gerald W., 5,379,555, Cl. 52-3.000.

McCall, John M.; Jacobsen, E. Jon; and VanDoornik, Frederick J., to Upjohn Company, The. Phenylpiperaziny steroids, 5,380,839, Cl. 540-111.000.

McCall, John M.; Ayer, Donald E.; Jacobsen, E. Jon; VanDoornik, Frederick J.; Palmer, John R.; and Karnes, Harold A., to Upjohn Company, The. Pyridinylpiperaziny steroids, 5,380,841, Cl. 540-111.000.

McCartney, Phillip D.: See—
Nielsen, Arne; McCartney, Phillip D.; and Moghaddassi, Majid, 5,379,497, Cl. 26-15.00R.

McClure, David C., to SGS-Thompson Microelectronics, Inc. Programmable difference flag logic, 5,381,126, Cl. 340-146.200.

McCormick, Bernard T.: See—
Lindquist, William E.; Field, Brian T.; and McCormick, Bernard T., 5,380,504, Cl. 423-23.000.

McCoy, Jay R.: See—
Houghton, Worthington B., Jr.; Eddy, Richard P.; and McCoy, Jay R., 5,379,980, Cl. 248-550.000.

McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, to Deere & Company; and American Cyanamid. Closed granular chemical handling system, 5,379,812, Cl. 141-346.000.

McDaniel, Darin J.: See—
Windish, David K.; Harris, James D.; and McDaniel, Darin J., 5,379,584, Cl. 60-204.000.

McDermott International, Inc.: See—
Kessler, Kerry J.; and Smith, Roger G., 5,380,130, Cl. 405-195.100.

McDonnell Douglas Corporation: See—
Amick, Patricia J.; Perrymore, Loyd; and Auld, Michael D., 5,381,506, Cl. 385-129.000.

Udd, Eric; and Clark, Timothy E., 5,380,995, Cl. 250-227.180.

McDonough, Leslie M.; and Davis, Harry G., to United States of America, Agriculture. Sex attractant for the apple ermine moth, 5,380,524, Cl. 424-84.000.

McFalls, Bob L.: See—
Turvill, William W.; and McFalls, Bob L., 5,380,067, Cl. 297-484.000.

McGee, James B.; Petroff, Lenin J.; Aizawa, Koichi; and Shoji, Hiroaki, to Dow Corning Corporation. Silicone foam control composition, 5,380,464, Cl. 252-321.000.

McGhee, William D.; and Talley, John J., to Monsanto Company. Process for preparing N,N-substituted carbamoyl halides, 5,380,855, Cl. 546-245.000.

McGraw, Montgomery C.: See—
Thayer, John S.; and McGraw, Montgomery C., 5,381,530, Cl. 395-275.000.

McGraw, Peter S., to United States of America, Navy. Infeed hopper with pivotable throat for shredder or granulator, 5,379,955, Cl. 241-186.200.

McGuire, Michael F.: See—
Toland, David S.; McGuire, Michael F.; Farrell, Gary S.; Pitkin, Kevin J.; Beard, Michael S.; Emmons, David; Conroy, James W.; and Ziebol, Robert J., 5,381,497, Cl. 385-80.000.

McGuire, Thomas B. Power control circuit for high intensity discharge lamps, 5,381,077, Cl. 315-247.000.

McIntosh, P. Stuckey, to Digital Wireless Corp. Digital implementation of spread spectrum communications system, 5,381,446, Cl. 375-1.000.

McKee, Joseph L.: See—
Edwards, Bryan T.; Erdman, David D.; McKee, Joseph L.; and Monroe, Kevin T., 5,381,500, Cl. 385-78.000.

McKee, William J., Jr., to Picker International, Inc. Image intensifier with modified aspect ratio, 5,381,000, Cl. 250-214.0VT.

McKenna, Douglas B.: See—
Baczowski, Carole A.; Goldwater, Margaret A.; Ingram, Celia R.; McKenna, Douglas B.; and Yurcovic, Evelyn C., 5,380,078, Cl. 312-1.000.

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Tanner, Scott D.; Douglas, Donald J.; and Cousins, Lisa, 5,381,008, Cl. 250-288.000.

Mead Corporation, The: See—
Stout, James T.; and DeMaio, James B., 5,379,944, Cl. 229-117.130.

Meadows, Brett: See—
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Romine, Jeffrey L.; Meanwell, Nicholas A.; and Martin, Scott W., 5,380,854, Cl. 548-235.000.

Meckler, Peter: See—
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Fearnot, Neal E.; Ragheb, Anthony O.; and Voorhees, William D., III, 5,380,299, Cl. 604-265.000.

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Paradies, Henrich H.; Hanna, Samir B.; and Schneider, Bernd, 5,380,927, Cl. 562-493.000.

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Robertson, David L.; and Raynie, Arthur D., 5,380,259, Cl. 482-44.000.

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Riceman, Robert G.; and Medina, Mitchell A., 5,379,495, Cl. 24-305.000.

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Megapulse, Inc.: See—
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Uomoto, Katsuhito; Shomura, Tomoko; Matsumoto, Mitsuyo; Takagi, Masayuki; Shimizu, Takao; and Kiriya, Susumu, 5,380,745, Cl. 514-410.000.

Meloul, Raphael F.; and Lizardi, Jose E., to Codman & Shurtleff, Inc. Surgical drill, 5,380,333, Cl. 606-80.000.

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Greenstein, Michael; and Melton, Hewlett E., Jr., 5,381,067, Cl. 310-334.000.

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Menin, Jacques: See—
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Barr, Morton L.; Vincenti, Paul J.; and Burke, Robert V., 5,380,707, Cl. 512-17.000.

Mercer, Joseph B.: See—
Schmidt, Edward H.; and Mercer, Joseph B., 5,380,094, Cl. 383-209.000.

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Amato, Joseph S.; and Cvetovich, Raymond, 5,380,838, Cl. 536-7.100.

Houpis, Ioannis N.; Lynch, Joseph E.; Molina, Audrey; and Volante, Ralph P., 5,380,849, Cl. 546-146.000.

Rasmussen, Gary H., 5,380,728, Cl. 514-284.000.

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Noguchi, Tamio; and Waragai, Yumiko, 5,380,360, Cl. 106-415.000.

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Lewis, Lawrence E.; and Meredith, Michael S., 5,381,524, Cl. 395-161.000.

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Merger, Franz: See—
Brudermueller, Martin; and Merger, Franz, 5,380,918, Cl. 560-130.000.

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Florina, Jean-Noel; and Lailier, Patrick, 5,381,350, Cl. 364-550.000.

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Adang, Michael J.; Rocheleau, Thomas A.; Merlo, Donald J.; and Murray, Elizabeth E., 5,380,831, Cl. 536-23.710.

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Carr, Albert A.; Kane, John M.; and Cheng, Hsien C., 5,380,731, Cl. 514-322.000.

Casara, Patrick, 5,380,936, Cl. 562-574.000.

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Wiseman, Michael A.; Lortz, Allan R.; and Merrick, David, 5,380,066, Cl. 297-476.000.

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O'Leary, Thomas M.; Drake, Peter R.; and Merrill, Philip R., deceased, 5,381,110, Cl. 330-149.000.

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Daute, Peter; Gruetzmacher, Roland; and Mertscheit, Nicole, 5,380,886, Cl. 549-539.000.

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Ivanov, Alexey A.; Mescheryakov, Vitaly D.; Stepanov, Sergey P.; Chaykovsky, Sergey P.; Yabrov, Alexandr A.; Gaevo, Victor P.; Pokrovskaya, Svetlana A.; Sadovskaya, Ecaterina M.; Sheplev, Valentin S.; and Ermakov, Youry P., 5,380,497, Cl. 422-142.000.

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Lai, Stephen W.; Djaja, Gregory; and Meskel, Solomon G., 5,381,055, Cl. 326-27.000.

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Carter, Howard E.; Pierce, Byron C.; and Pugh, Joel A., 5,381,465, Cl. 379-67.000.

Messana, Joseph: Self-positioning lamp fixture with stabilizing base, 5,381,325, Cl. 362-410.000.

Messer, G. John: See—
Langer, Dale R.; and Messer, G. John, 5,381,554, Cl. 395-750.000.

Mesters, Carolus M. A. M.: See—
Matusz, Marek; Masters, Carolus M. A. M.; and Buffum, John E., 5,380,697, Cl. 502-348.000.

Metz, Francois: See—
Denis, Philippe; Metz, Francois; Patois, Carl; and Perron, Robert, 5,380,938, Cl. 562-598.000.

Metzler, Larry: See—
Schmidt, Barry; and Metzler, Larry, 5,379,862, Cl. 184-106.000.

Meyden, Hendrikus J. V. D.: See—
Wadman, Alexis A. F.; and Meyden, Hendrikus J. V. D., 5,380,297, Cl. 604-195.000.

Meyer, David J.: See—
Cassidy, Joseph P.; Meyer, James L.; and Meyer, David J., 5,379,468, Cl. 5-86.100.

Meyer, Donald L.: See—
Larson, Rodney L.; and Meyer, Donald L., 5,381,462, Cl. 379-107.000.

Meyer, Harold D.: See—
Provenzano, Paul L.; Swindal, James L.; Kuhlberg, Robert J.; Brahm, Charles B.; Meyer, Harold D.; Gobetz, Frank W.; Wiegand, Walter J.; and Bullis, Robert H., 5,381,299, Cl. 361-283.400.

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Mathis, Ricard M.; and Michaelson, Richard E., 5,380,008, Cl. 273-143.000.

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Kalotay, Paul Z., 5,379,649, Cl. 73-861.380.

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Krishnan, Ajay; and Kumar, Nalin, 5,380,546, Cl. 427-126.100.

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Morgan, Donald M.; and Shore, Michael A., 5,381,368, Cl. 365-189.010.

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Ballard, Dean D., 5,381,521, Cl. 395-142.000.

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Moller, Niels T., 5,380,965, Cl. 200-111.000.

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Rivard, Christopher J.; and Nagle, Nicholas J., 5,380,445, Cl. 210-748.000.

Mierbach, Albin: See—
Mader, Heinrich-Christian; Mierbach, Albin; and Schmelter, Wolfgang, 5,380,018, Cl. 277-216.000.

Mihara, Tadashi: See—
Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaoka, Masanobu; Mihara, Tadashi; Kodera, Yasuo; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.

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Mikata, Yuuichi: See—
Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshioharu; Mikata, Yuuichi; Miyazaki, Shinji; Moriya, Takahiko; and Okumura, Katsuya, 5,380,370, Cl. 134-22.110.

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Mikkelsen, John P., to Dermalabs Research, Inc. Adjustable breakaway neck leash, 5,379,928, Cl. 224-257.000.

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Renk, Christine A., 5,380,792, Cl. 524-840.000.

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Gunya, Robert E.; Jackson, Otto V.; and Gunya, Diane M., 5,380,308, Cl. 604-323.000.

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Miller, David W.; Nelson, Larry A.; and Robinder, Ronald C., to Honeywell Inc. Flat panel image reconstruction interface for producing a non-interlaced video signal, 5,381,182, Cl. 348-448.000.

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Collins, Ronald W., 5,380,980, Cl. 219-137.310.

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Miller, John; Gamble, Victor; and Beattie, David, to Kendall Company, The. Dual lumen catheter and method of use, 5,380,276, Cl. 604-28.000.

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DeHaven-Hudkins, Diane L.; Earley, William G.; Kumar, Virendra; Mallamo, John P.; and Miller, Matthew S., 5,380,729, Cl. 514-284.000.

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Greene, George H.; Miller, Robert; Williams, James L.; Phillips, James C.; Stults, Jerry F.; and Tellings, Jan P. E., 5,380,890, Cl. 554-2.000.

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Misko, John; Miller, Robert J.; and Heard, Stan, 5,380,336, Cl. 606-130.000.

Miller, Theodore C.; Collins, Joseph C.; Mattes, Kenneth C.; Wentland, Mark P.; Perni, Robert B.; Corbett, Thomas H.; and Guiles, Joseph W., to Sterling Winthrop Inc. Thioxanthone antitumor agents, 5,380,749, Cl. 514-437.000.

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Goineau, Andre M., 5,379,501, Cl. 28-281.000.

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Harman, Galen B.; and Milliman, James G., 5,379,624, Cl. 72-149.000.

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Millis, Sandra S.; and Millis, J. Michael, 5,379,469, Cl. 5-95.000.

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Mills, Wayne L.: See—
Etienne, Billy J.; Mills, Wayne L.; LePrince-Ringuet, Bruno; and Fillet, Frederic, 5,380,433, Cl. 210-321.790.

Milstead, John, to Astec Industries, Inc. Asphalt drum mixer with curved scoop-like mixing tips, 5,380,082, Cl. 366-25.000.

Milstead, John, to Astec Industries, Inc. Asphalt drum mixer with self-scouring drum, 5,380,084, Cl. 366-25.000.

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Conley, Ralph F., Jr., 5,379,887, Cl. 206-232.000.

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Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shimura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.

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Arahori, Tadahisa; Hayashi, Shigetoshi; and Minagawa, Kazuhiro, 5,380,511, Cl. 423-345.000.

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Laskaris, Evangelos T.; and Minas, Constantinos, 5,381,122, Cl. 335-216.000.

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Cohn, Arthur; and Minderman, David J., 5,379,589, Cl. 260-39.590.

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Gill, Robert A., 5,380,361, Cl. 106-465.000.

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Zhicheng, Shi; Wenyuan, Shi; Yifang, Ye; Xingpin, Ge; Ping, Cao; Shunhua, Liu; Chaogang, Xie; Zaiting, Li; Xingtian, Shu; Xiaoming, Yang; Wei, Fu; Meng, Zhou; and Mingyuan, He, 5,380,690, Cl. 502-65.000.

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Cipolli, Roberto; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, 5,380,815, Cl. 528-254.000.

Ministor Peripherals International Limited: See—
Cheng, Chunjer C., 5,381,290, Cl. 360-105.000.

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Albrecht, James L.; and Volin, Leonard M., 5,379,962, Cl. 242-527.700.

Andrews, Jeffrey F.; and Kure, Jane T., 5,380,756, Cl. 514-552.000.

Buckanin, Richard S., 5,380,778, Cl. 524-247.000.

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D'Haese, Francois C., 5,380,779, Cl. 524-272.000.

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Inaoka, Seiji, 5,380,225, Cl. 439-660.000.

Kelly, John S.; Hansen, James D.; and Caruso, Joseph M., 5,380,196, Cl. 433-8.000.

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Rogers, John J.; Erickson, John L.; and Sanocki, Stephen M., 5,380,580, Cl. 428-219.000.

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Yonkoski, Roger K.; and Savu, Patricia M., 5,380,644, Cl. 430-617.000.

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Christian, Steven C., 5,380,338, Cl. 606-130.000.

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Ogawa, Kazufumi; Mino, Norihisa; and Soga, Manoru, 5,380,585, Cl. 428-333.000.

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Ozaki, Masami; Honami, Reiji; Yumita, Takashi; Ikeda, Atsuhiko; Minoguchi, Naokazu; Izawa, Norihiko; and Hirano, Tadayoshi, 5,380,944, Cl. 564-81.000.

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Takemura, Kazutaka; Johdai, Akiyoshi; and Matsuo, Hirokazu, 5,379,993, Cl. 271-3.000.

Ueda, Hideaki; Tokutake, Shigeaki; Inagaki, Keichi; and Shimada, Yuki, 5,380,613, Cl. 430-58.000.

Mintz, Michael D.: See—
Cusack, Robert F.; and Mintz, Michael D., 5,380,665, Cl. 436-53.000.

Minuth, Klaus-Peter: See—
Degen, Bruno; Licht, Elke; Schulze, Manfred; Wagner, Gebhard; and Minuth, Klaus-Peter, 5,380,903, Cl. 556-472.000.

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Mita Industrial Co., Ltd.: See—
Egi, Makoto; Otsuka, Masao; Morishita, Hiroki; Maeshima, Masanobu; Sasabe, Junya; and Taguchi, Kazuhiro, 5,379,996, Cl. 271-122.000.

Osaka, Haruya; and Tabata, Yoshiaki, 5,381,216, Cl. 355-221.000.

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Tokuno, Toshiro, 5,380,615, Cl. 430-109.000.

Mitani, Katsuhiko: See—
Usagawa, Toshiyuki; Hiruma, Kenji; Kawata, Masahiko; Goto, Shigeo; Mitani, Katsuhiko; Yamane, Masao; Takahashi, Susumu; Tanoue, Tomonori; and Imamura, Yoshinori, 5,381,027, Cl. 257-192.000.

Mitchell, Larry M.: See—
Ludeke, Christine E.; and Mitchell, Larry M., 5,381,486, Cl. 381-187.000.

Mitrani, Sem, to Kayserberg, S.A. Disposable sanitary article for incontinent persons, 5,380,310, Cl. 604-385.100.

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Ajika, Natsuo; Arima, Hideaki; and Hachisuka, Atsushi, 5,381,365, Cl. 365-149.000.

Asayama, Yoshiaki, 5,381,173, Cl. 348-170.000.

Ban, Cozy; Yanagi, Motonori; Fukumoto, Takaaki; Manabe, Toshiki; and Yanome, Hiroshi, 5,380,471, Cl. 261-122.100.

Eguchi, Koji; Ajika, Natsuo; and Sugahara, Kazuyuki, 5,381,029, Cl. 257-354.000.

Furui, Takashi, 5,381,334, Cl. 364-424.030.

Hagino, Hiroyasu, 5,380,670, Cl. 437-31.000.

Hanawa, Tetsuro; and Op de Beeck, Maria, 5,380,889, Cl. 556-410.000.

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Kajimoto, Takeshi, 5,381,367, Cl. 365-189.010.

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Moritsu, Kazuki; Matsumoto, Takahiro; Nagao, Masashi; and Inaguchi, Takashi, 5,379,600, Cl. 62-47.100.

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Yamamoto, Masahiro, 5,379,640, Cl. 73-517.0AV.

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Mizukami, Masamichi; Hayashi, Katsuhige; Iura, Katsuhiko; and Kawaki, Takao, 5,380,907, Cl. 558-270.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: See—
Fujita, Kenjiro; Kondo, Akihiro; Ohnishi, Toyoji; Hasegawa, Yoshio; and Yuge, Mitsuru, 5,379,874, Cl. 192-85.00R.

Mitsubishi Kasei Corporation: See—
Ushikubo, Takashi; Nakamura, Hiroya; Koyasu, Yukio; and Wajiki, Shin, 5,380,933, Cl. 562-549.000.

Mitsubishi Materials Corporation: See—
Goto, Moto; Kikumoto, Nobuo; Iida, Osamu; Ikoma, Hiroaki; and Fukushima, Shigemitsu, 5,380,353, Cl. 75-640.000.

Mitsubishi Pencil Kabushiki Kaisha: See—
Negishi, Akira; Kaneko, Hiroko; Kawakubo, Takamasa; and Suda, Yoshihisa, 5,380,422, Cl. 204-403.000.

Mitsubishi Yuka Badische Co., Ltd.: See—
Katoh, Naoyuki; Fukushima, Takashi; and Ichihashi, Kenzou, 5,380,574, Cl. 428-92.000.

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Hara, Kenji, 5,379,663, Cl. 74-71.0XY.

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Moriya, Kazuo, 5,381,016, Cl. 250-458.100.

Mitsui Toatsu Chemicals, Incorporated: See—
Itoh, Hisato; Karasawa, Akio; Sugimoto, Kenichi; Oguchi, Takahisa; and Aihara, Shin, 5,380,842, Cl. 540-128.000.

Ohta, Masahiro; and Yoshikawa, Masao, 5,380,820, Cl. 528-353.000.

Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsuki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.

Totani, Yoshiyuki; Hirao, Motokazu; Ito, Tomonori; Nakatsuka, Masakatsu; and Yamaguchi, Akihiro, 5,380,814, Cl. 528-199.000.

Mitsubishi, Naoki; and Hirose, Atsushi, to Hitachi, Ltd.; and Hitachi Microcomputer System Ltd. Semiconductor device having externally programmable memory, 5,381,556, Cl. 395-800.000.

Mitsutake, Hideaki: See—
Shingaki, Junko; Mitsutake, Hideaki; and Kimura, Kazumi, 5,381,278, Cl. 359-256.000.

Miura, Kenzo: See—
Watanabe, Satoshi; Miura, Kenzo; Okaku, Toshinobu; Okamoto, Hitoshi; and Sugiyama, Youichi, 5,380,483, Cl. 420-73.000.

Miura, Michio: See—
Sawaki, Ippci; Kurimura, Sunao; and Miura, Michio, 5,380,410, Cl. 204-130.000.

Miwa, Tadashi: See—
Fujii, Yojo; Miwa, Tadashi; Satoh, Hisao; Ogane, Atsushi; Matsuo, Isao; and Ikeda, Tadayoshi, 5,381,167, Cl. 346-157.000.

Haneda, Satoshi; Fukuchi, Masakazu; and Miwa, Tadashi, 5,380,610, Cl. 430-31.000.

Miwa, Tomoyoshi; Ishida, Hitoshi; and Yamauchi, Noriyoshi, to Ryobi Ltd. Apparatus for detecting defects at gas exhaust line in casting machine and method therefor, 5,379,826, Cl. 164-4.100.

Miyada, Toshimitsu: See—
Shikida, Mitsuhiro; Sato, Kazuo; Kawamura, Yoshio; Tanaka, Shinji; Horiuchi, Yasuaki; Koide, Akira; and Miyada, Toshimitsu, 5,380,396, Cl. 156-630.000.

Miyade, Hiroyuki: See—
Ozawa, Osamu; Miyade, Hiroyuki; and Kitami, Tetsu, 5,380,571, Cl. 428-36.900.

Miyadera, Hiroshi: See—
Honji, Akio; Ogawa, Toshio; Kuroda, Osamu; Yamashita, Hisao; Tachi, Takahiro; Miyadera, Hiroshi; and Fujishita, Masakatsu, 5,379,586, Cl. 60-276.000.

Miyahara, Hideo: See—
Sugano, Masashi; Miyahara, Hideo; and Murata, Masayuki, 5,381,404, Cl. 370-13.000.

Miyaji, Itsuo; and Matsumoto, Hiroshi, to Nippon Densan Corporation. Spindle motor with a sealing member, 5,381,066, Cl. 310-90.000.

Miyaji, Katsuaki: See—
Sato, Fumie; Arai, Kazutaka; and Miyaji, Katsuaki, 5,380,900, Cl. 556-436.000.

Miyake, Toshihide: See—
Inamori, Masanori; and Miyake, Toshihide, 5,381,083, Cl. 323-313.000.

- Miyamoto, Katsumi: See—
Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.
- Miyamoto, Ryosuke; and Sakai, Shinji, to Canon Kabushiki Kaisha. Recording apparatus with overriding display conditions. 5,381,178, Cl. 348-333.000.
- Miyamoto, Satoru: See—
Aoki, Mitsuo; Suguro, Yoshihiro; Kondo, Tomio; Nakamura, Yasushi; and Miyamoto, Satoru, 5,380,616, Cl. 430-110.000.
- Miyashita, Hiroyuki; Takahashi, Masahiro; and Mohri, Hiroshi, to Nippon Printing Co., Ltd. Phase shift photomask comprising a layer of aluminum oxide with magnesium oxide. 5,380,608, Cl. 430-5.000.
- Miyashita, Naoto; Takahashi, Koichi; and Koyama, Mitsutoshi, to Kabushiki Kaisha Toshiba. Method of treating semiconductor substrates. 5,380,399, Cl. 156-646.000.
- Miyawaki, Naokazu: See—
Kozuka, Eiji; and Miyawaki, Naokazu, 5,381,372, Cl. 365-201.000.
- Miyayama, Masaru: See—
Yanagida, Hiroaki; Miyayama, Masaru; Muto, Norio; Sugita, Minoru; Nakatsuji, Teruyuki; and Otsuka, Yasushi, 5,379,644, Cl. 73-787.000.
- Miyazaki, Masahiro; Matsuzawa, Masafumi; Toriyabe, Keiji; and Hirata, Michiya, to Kumiai Chemical Industries Co., Ltd.; and Ihara Chemical Industries Co., Ltd. Pyridine derivatives, herbicidal composition containing the same, and method for killing weeds. 5,380,700, Cl. 504-239.000.
- Miyazaki, Shinji: See—
Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshiharu; Mikata, Yuuichi; Miyazaki, Shinji; Moriya, Takahiko; and Okumura, Katsuya, 5,380,370, Cl. 134-22.110.
- Miyazaki, Takeshi: See—
Hoshi, Hiroaki; Nishimura, Matsuomi; Tanaka, Kazumi; Miyazaki, Takeshi; Ohnishi, Toshikazu; and Takayama, Hidehito, 5,380,490, Cl. 422-73.000.
- Miyazaki, Toshihiko: See—
Kawagishi, Hideyuki; Miyazaki, Toshihiko; Kawade, Hisaaki; Kishi, Etsuro; Takimoto, Kiyoshi; and Takeda, Toshihiko, 5,381,400, Cl. 369-272.000.
- Miyazaki, Toyohide: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yuichi, 5,379,515, Cl. 29-852.000.
- Mizobe, Akio: See—
Nishiyama, Masakazu; Harada, Yasuhiro; and Mizobe, Akio, 5,380,588, Cl. 428-364.000.
- Mizobuchi, Manabu: See—
Saijara, Yasuhiro; Date, Haruyuki; Yamauchi, Toshiyuki; and Mizobuchi, Manabu, 5,380,521, Cl. 424-76.100.
- Mizoguchi, Yoshimi; Ishii, Hiroshi; Kimura, Kiyoshi; Fukuchi, Masakazu; and Takeda, Makoto, to Konica Corporation. Dot image forming apparatus having controlled dot adhesion. 5,381,221, Cl. 355-326.00R.
- Mizukami, Masamichi; Hayashi, Katsushige; Iura, Katsuhiro; and Kawai, Takao, to Mitsubishi Gas Chemical Company, Inc. Method for preparing aromatic carbonate. 5,380,907, Cl. 558-270.000.
- Mizukawa, Shigeo; and Yokoyama, Tsuneo, to Fuji Photo Optical Co., Ltd. Stereoviewer including lenses of varying focal distance. 5,381,266, Cl. 359-466.000.
- Mizukoshi, Sadanori; Kato, Fuminori; Tsukamoto, Masamitsu; and Kon, Kenji, to Ishihara Sangyo Kaisha Ltd. Immuno-suppressive agent. 5,380,834, Cl. 536-4.100.
- Mizuna, Yoshikatsu: See—
Kuroda, Yuichi; and Mizuna, Yoshikatsu, 5,381,140, Cl. 340-961.000.
- Mizuno, Kazunori; and Arai, Takuya, to Fuji Photo Film Co., Ltd. Photographic film cassette, method of manufacturing the same, and package for the same. 5,381,202, Cl. 354-275.000.
- Mizuno, Yoshiyuki; and Ogawa, Kikuo, to Yazaki Corporation. Push button switch. 5,380,970, Cl. 200-523.000.
- Mizutaki, Shoichi: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.
- Mizutani, Hideki: See—
Kimura, Kazuya; Mizutani, Hideki; Hidaka, Shigeyuki; and Takeichi, Toru, 5,380,168, Cl. 417-269.000.
- Mizutani, Kenji; Mizutani, Hideki; Hidaka, Shigeyuki; Hiramatsu, Osamu; Takeichi, Toru; and Kayukawa, Hiroaki, 5,380,161, Cl. 417-222.200.
- Mizutani, Shoji: See—
Ueda, Yutaka; Ohori, Keizo; Shimizu, Tsuneo; and Mizutani, Shoji, 5,381,340, Cl. 364-470.000.
- Mizutani, Takashi: See—
Yoko, Hiroyoshi; Mizutani, Takashi; Aiso, Nobuyuki; Mochizuki, Hiroto; and Honda, Hirohiko, 5,381,339, Cl. 364-468.000.
- Mizutani, Yasunao, to Fujitsu Limited. Call collision sidestep system for two-way simultaneous calls in an ISDN network. 5,381,415, Cl. 370-110.100.
- Mobil Oil Corporation: See—
Chen, Catherine S. H.; Shen, Dong-Ming; and Wentzek, Steven E., 5,380,947, Cl. 564-281.000.
- Child, Jonathan E.; and Wolfenbarger, James K., 5,380,425, Cl. 208-62.000.
- Johnson, David L.; Parsons, David H.; and Teitman, Gerald J., 5,380,426, Cl. 208-113.000.
- Knoerzer, Anthony R.; and Touhsant, Robert E., 5,380,586, Cl. 428-349.000.
- Muslow, Gordon L.; Poirier, Robert V.; and Weber, Ralph J., 5,380,587, Cl. 428-353.000.
- Yan, Tsoung Y., 5,380,442, Cl. 210-721.000.
- Mobile Pulley & Machine Works, Inc.: See—
Bowes, Stephen M., Jr., 5,379,535, Cl. 37-452.000.
- Mochizuki, Hirotoshi: See—
Yoko, Hiroyoshi; Mizutani, Takashi; Aiso, Nobuyuki; Mochizuki, Hirotoshi; and Honda, Hirohiko, 5,381,339, Cl. 364-468.000.
- Mochizuki, Mikio; Ito, Hideo; and Kobayashi, Ryosaku, to Nohmi Bosai Ltd. Smoke detecting apparatus for fire alarm. 5,381,131, Cl. 340-630.000.
- Mochizuki, Yoshihiro; Ueda, Eiichi; and Ikariya, Toshiyuki, to Konica Corporation. Silver halide photographic product. 5,380,630, Cl. 430-501.000.
- Mock, Gerald L.; Maloney, Kurt; and Benmergui, Alberto D., to Toro Company, The. Irrigation controller. 5,381,331, Cl. 364-145.000.
- Moghaddassi, Majid: See—
Nielsen, Arne; McCartney, Phillip D.; and Moghaddassi, Majid, 5,379,497, Cl. 26-15.00R.
- Nielsen, Arne; and Moghaddassi, Majid, 5,379,498, Cl. 26-15.00R.
- Mohan, Philip. Lightweight combination boat trailer and lift. 5,380,143, Cl. 414-495.000.
- Mohri, Hiroshi: See—
Miyashita, Hiroyuki; Takahashi, Masahiro; and Mohri, Hiroshi, 5,380,608, Cl. 430-5.000.
- Mojaradi, Mohammad M.; and Vo, Tuan A., to Xerox Corporation. Electronic circuit to replace a light emitting diode and a light dependent resistor. 5,381,018, Cl. 250-551.000.
- Molee, Warren F.; and Ellis, Stuart M., to Upper Deck Company, The. Authentication system. 5,380,047, Cl. 283-86.000.
- Molex Incorporated: See—
Comerci, Joseph D.; Data, Mark M.; and DeRoss, Robert, 5,380,951, Cl. 174-48.000.
- Molimard, Jean-Charles: See—
Bojegrain, Robert; Brodin, Roger; Gully, Danielle; Molimard, Jean-Charles; and Olliero, Dominique, 5,380,736, Cl. 544-369.000.
- Molina, Audrey: See—
Houpis, Ioannis N.; Lynch, Joseph E.; Molina, Audrey; and Volante, Ralph P., 5,380,849, Cl. 546-146.000.
- Moll Automatische Nachsysteme GmbH, i.g.: See—
Moll, Philipp; and Behrens, Hans, 5,379,708, Cl. 112-262.300.
- Moll, Philipp; and Behrens, Hans, to Moll Automatische Nachsysteme GmbH, i.g. Method and device for forming three-dimensional envelopes. 5,379,708, Cl. 112-262.300.
- Moller, Niels T., to Microtronic A/S. Electromechanical pulse generator. 5,380,965, Cl. 200-11.00R.
- Molten Corporation: See—
Shishido, Hideomi; Doi, Shigeo; Hirakiuchi, Masanori; and Okimoto, Hajime, 5,380,185, Cl. 425-556.000.
- Mombrinie, Pierre. Liquid cleansing and evacuation method and apparatus for use in surgical procedures. 5,380,278, Cl. 604-35.000.
- Momonoi, Kaishu: See—
Nakano, Joji; Taya, Nobuhisa; Chaki, Hisaaki; Yamafuji, Tetsuo; and Momonoi, Kaishu, 5,380,878, Cl. 549-60.000.
- Momose, Kenichi: See—
Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.
- Momtaz, Ardechir: See—
Dournel, Pierre; Van Hoyweghen, Danny; and Momtaz, Ardechir, 5,380,821, Cl. 528-388.000.
- Monahan-Mitchell, Timothy A.; and Weiss, Karl R., to Motorola, Inc. Virtual data source for a radio transceiver. 5,381,346, Cl. 364-514.000.
- Monahan, Thomas F., Jr., to Thomas Monahan Company, The. Method for harvesting broom corn and apparatus therefor. 5,379,579, Cl. 56-54.000.
- Monasterios, Clevys J.: See—
Malek, Abdul; Monasterios, Clevys J.; Brown, G. Ronald; and Gupta, Ved P., 5,380,928, Cl. 562-512.400.
- Mone, Patrick: See—
Cederbaum, Carl; Chancelou, Roland; Combes, Myriam; and Mone, Patrick, 5,381,046, Cl. 257-760.000.
- Monopolis, Gerasime M.: See—
Glasscock, M. Sidney; and Monopolis, Gerasime M., 5,379,844, Cl. 166-358.000.
- Monroe, Kevin T.: See—
Edwards, Bryan T.; Erdman, David D.; McKee, Joseph L.; and Monroe, Kevin T., 5,381,500, Cl. 385-78.000.
- Monsanto Company: See—
McGhee, William D.; and Talley, John J., 5,380,855, Cl. 546-245.000.
- Norman, Bryan H.; Lee, Len F.; Masferrer, Jaime L.; and Talley, John J., 5,380,738, Cl. 514-374.000.
- Schaefer, Richard E.; Renshaw, James T.; and Maino, Peter M., 5,380,794, Cl. 525-57.000.

- Stern, Michael K.; and Cheng, Brian K. M., 5,380,946, Cl. 564-124.000.
- Montagne, Marc H.; and Regipa, Olivier, to Aerospatiale Societe Nationale Industrielle. Process for the production of a tight complex sheet having a random shape and incorporating an internal reinforcement. 5,380,388, Cl. 156-179.000.
- Monte, Woodrow C. Method for preventing oxidation of crystalline steroid alcohols in cells, lipoproteins, and chylomicrons. 5,380,752, Cl. 514-474.000.
- Montenieri, Robert E.; O'Connell, Maurice T.; Crampton, Alan T.; Seymour, Geoffrey F.; Edstrom, Richard C.; and Bourgeois, Bryon J., to Locite Corporation. New Package for instant adhesives. 5,379,927, Cl. 222-546.000.
- Montgomery, Gary V., to Sunbeam Plastics Corporation. Apparatus for sealing a container and closure. 5,379,910, Cl. 215-346.000.
- Montoye, Robert K., to International Business Machines Corporation. Testable latch self checker. 5,381,418, Cl. 371-21.200.
- Moodley, Sundru M. Dentures and method of manufacturing same. 5,380,203, Cl. 433-198.000.
- Moore Business Forms, Inc.: See—
Gottfreid, Thomas M., 5,379,571, Cl. 53-471.000.
- Moore, Christopher P.; and Kavarnos, Manos, to Biocom Pty, Ltd. Dual fuel injection system and a method of controlling such a system. 5,379,740, Cl. 123-478.000.
- Moore, William G.: See—
Dunnead, Stephen D.; Moore, William G.; Weimer, Alan W.; Eisman, Glenn A.; and Henley, John P., 5,380,688, Cl. 501-87.000.
- Mora, Raul, to Alrama Enterprises, Inc. Exercise device adjustable resistance cord-winding. 5,380,261, Cl. 482-46.000.
- Moran, Larry K.: See—
Wilson, Dennis R.; Moyer, Wilber R.; and Moran, Larry K., 5,379,838, Cl. 166-242.000.
- Morgan, Colin G., to Oxford Sensor Technology Limited. Optical sensor for imaging an object. 5,381,236, Cl. 356-376.000.
- Morgan, Donald M.; and Shore, Michael A., to Micron Semiconductor, Inc. Hardware implemented row copy enable mode for DRAMS to create repetitive backgrounds for video images or DRAM testing. 5,381,368, Cl. 365-189.010.
- Morgan, Frank H., to TiMesh, Inc. Composite perforated implant structures. 5,380,328, Cl. 606-70.000.
- Morgan, Frederic L., to Buckman Laboratories International, Inc. Method for controlling macroinvertebrates. 5,380,762, Cl. 514-673.000.
- Morgan, Harold W.: See—
Worrell, Barry C.; Landis, Paul M.; Morgan, Harold W.; and Flora, Larry E., 5,380,037, Cl. 606-70.000.
- Morgan, Kenneth E. Divan for use with fitted sheet. 5,379,470, Cl. 5-475.000.
- Morgan, Rodney A.; and Griffin, Kathy R., to Robinson Manufacturing Co., Inc. Male pant-type garments with internal suspensory support structure. 5,379,462, Cl. 2-403.000.
- Mori, Kazunari: See—
Itou, Tsukasa; Teraji, Kazuo; Yoshinaga, Noriyuki; Harada, Sunao; Negoro, Kouji; and Mori, Kazunari, 5,380,606, Cl. 429-194.000.
- Morici, John A., to UOP. Electric heater cold pin insulation. 5,380,987, Cl. 219-544.000.
- Morikawa, Makoto: See—
Takegami, Hiroshi; Morikawa, Makoto; and Fujiki, Hirokazu, 5,381,345, Cl. 364-491.000.
- Morimoto, Akio: See—
Nishio, Kouji; and Morimoto, Akio, 5,381,194, Cl. 351-208.000.
- Morimoto, Kazuyuki: See—
Kato, Kiyoshi; Yoneyama, Kenichi; Nagaoaka, Haruo; Yamamoto, Kenji; Morimoto, Kazuyuki; and Kume, Masafumi, 5,380,781, Cl. 523-404.000.
- Morimoto, Shigeki; and Noguchi, Tadashi, to Central Glass Company, Ltd. Bronze-colored infrared and ultraviolet radiation absorbing glass. 5,380,685, Cl. 501-71.000.
- Morio, Shuichi: See—
Kondo, Norimasa; Matsuo, Takao; Ainoya, Masayuki; Torii, Takuji; Hayashi, Kazunobu; Morio, Shuichi; and Tomita, Shinya, 5,381,168, Cl. 347-30.000.
- Morioka, Masanobu: See—
Tanabe, Ikuo; Yoshida, Yoshinori; Seitoh, Kiyoshi; and Morioka, Masanobu, 5,381,176, Cl. 348-273.000.
- Morishita, Hiroki: See—
Egi, Makoto; Otsuka, Masao; Morishita, Hiroki; Maeshima, Masanobu; Sasabe, Junya; and Taguchi, Kazuhiro, 5,379,996, Cl. 271-122.000.
- Morita, Kazuharu; Hachiya, Satoshi; Moriwaki, Fumio; and Endo, Hiroyuki, to Idemitsu Kosan Co., Ltd. Liquid-crystalline copolymer, process for the preparation of the same, diene compound used for the preparation of the same and process for the preparation of the diene compound. 5,380,915, Cl. 560-59.000.
- Morita, Kousaku: See—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,380,887, Cl. 349-556.000.
- Morita, Osamu: See—
Kawazoe, Kazushige; and Morita, Osamu, 5,381,287, Cl. 360-103.000.
- Morita, Shizuo: See—
Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,381,215, Cl. 355-219.000.
- Moritsu, Kazuki; Matsumoto, Takahiro; Horikawa, Mitsuo; Nakagawa, Shuichi; Yoshimura, Hideto; Nagao, Masashi; and Inaguchi, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Superconducting magnet and method for assembling the same. 5,379,600, Cl. 62-47.100.
- Moriwaki, Fumio: See—
Morita, Kazuharu; Hachiya, Satoshi; Moriwaki, Fumio; and Endo, Hiroyuki, 5,380,915, Cl. 560-59.000.
- Moriya, Kazuo, to Mitsui Minings & Melting Co., Ltd. Method and apparatus for measuring photoluminescence in crystal. 5,381,016, Cl. 250-458.100.
- Moriya, Takahiko: See—
Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshiharu; Mikata, Yuuichi; Miyazaki, Shinji; Moriya, Takahiko; and Okumura, Katsuya, 5,380,370, Cl. 134-22.110.
- Morlion, Danny L.; and Jonckheere, Luc O., to Framatome Connectors International. Optical or electrical connector assembly including guiding alignment plates. 5,381,496, Cl. 385-75.000.
- Morris, Bernard L., to AT&T Corp. Multi-voltage compatible bidirectional buffer. 5,381,062, Cl. 326-68.000.
- Morris, Eddy D.; and Coker, Robert L. Archery bow sight. 5,379,747, Cl. 124-87.000.
- Morris, James R., to Advanced Surgical Materials, Inc. Electrosurgical instrument having a parylene coating. 5,380,320, Cl. 606-33.000.
- Morrison, Paul-David, to Motorola, Inc. Hermetic semiconductor device having jumper leads. 5,381,039, Cl. 257-701.000.
- Morrow, Lawrence R.; Martir, Wilson K.; and Aghazeynali, Hossein, to Texaco Inc. Fluorescence method of quantifying hydrocarbons, including crude oil, dispersed in water. 5,381,002, Cl. 250-301.000.
- Morse, Milton, to A.P.M. Hexseal Corporation. Protective cover for switches. 5,380,968, Cl. 200-302.300.
- Morton, Bruce L., to Motorola Inc. High voltage charge pump. 5,381,051, Cl. 327-390.000.
- Morton, Frank S. S.: See—
Schurig, Gregory A.; Morton, Frank S. S.; and Stroud, Norman S., 5,380,534, Cl. 424-456.000.
- Moscom Corporation: See—
Holton, Thomas; Love, Steven D.; and Gill, Stephen P., 5,381,512, Cl. 395-24.10.
- Moseley, James D., to Continental Eagle Corporation. Bale wire tie apparatus and method. 5,379,687, Cl. 100-3.000.
- Moskal, Thomas E.: See—
Kling, Sean; Bunton, Mark A.; and Moskal, Thomas E., 5,379,727, Cl. 122-392.000.
- Mostello, Robert A., to BOC Group, Inc., The. Cryogenic rectification process and apparatus for vaporizing a pumped liquid product. 5,379,598, Cl. 62-24.000.
- Mostello, Robert A., to BOC Group, Inc., The. Pumped liquid oxygen method and apparatus. 5,379,599, Cl. 62-25.000.
- Motai, Kenzi: See—
Ogimura, Yoshitomo; and Motai, Kenzi, 5,381,038, Cl. 257-689.000.
- Mothrath, Georg; and Peter, Andreas, to Braun Aktiengesellschaft. Glass carafe for storing a brewed beverage. 5,379,925, Cl. 222-475.100.
- Motor Wheel Corporation: See—
Kier, Charles E., Jr., 5,380,071, Cl. 301-63.100.
- Motorola: See—
Wandt, Henry; and Brinkley, Gerald E., 5,379,490, Cl. 24-3.003.
- Motorola, Inc.: See—
Ayerst, Douglas I.; Carsello, Stephen R.; and Glotzbach, Warren P., 5,381,447, Cl. 375-1.000.
- Bigler, Charles G.; Casto, James J.; McShane, Michael B.; and Afshar, David D., 5,381,036, Cl. 257-666.000.
- Borth, David E.; Haug, John R.; and Rasky, Phillip D., 5,381,443, Cl. 375-1.000.
- Erhart, Richard A.; Zuleta, Renee; and Hayes, David J., 5,381,133, Cl. 340-825.440.
- Fischer, Lynn R., 5,381,085, Cl. 324-76.480.
- Friday, Ronald S.; Nover, Brian N.; and Eaton, Eric T., 5,381,134, Cl. 340-825.440.
- Gardeck, Kevin; Green, David A.; and Cutts, Kevin, 5,381,479, Cl. 380-21.000.
- Ghaem, Sanjar; Istvan, Rudyard L.; and Lauro, George L., 5,381,137, Cl. 340-572.000.
- Hertz, Allen D.; Tribbey, David A.; and Thompson, Kenneth R., 5,381,307, Cl. 361-767.000.
- Jasper, Steven C.; and Birchler, Mark A., 5,381,449, Cl. 375-59.000.
- Lai, Stephen W.; Djaja, Gregory; and Meskel, Solomon G., 5,381,055, Cl. 326-27.000.
- Lunak, Donald A.; and Killarney, Declan E., 5,380,972, Cl. 200-562.000.
- Maher, John W.; and Yongyuth, Arms, 5,381,403, Cl. 370-13.000.
- Monahan-Mitchell, Timothy A.; and Weiss, Karl R., 5,381,346, Cl. 364-514.000.
- Morrison, Paul-David, 5,381,039, Cl. 257-701.000.
- Morton, Bruce L., 5,381,051, Cl. 327-390.000.
- Nuckolls, Charles E.; and Lundberg, James R., 5,381,116, Cl. 331-1.00A.
- Nusinov, Eugene B.; and Pasco-Anderson, James A., 5,381,454, Cl. 377-39.000.
- Pena-Finol, Jesus S.; Chambers, Mark J.; and Phillips, James B., 5,381,114, Cl. 330-258.000.
- Phipps, John P., 5,381,105, Cl. 324-765.000.
- Rybicki, Mathew A.; and Brooks, Todd L., 5,381,112, Cl. 330-253.000.
- Stair, Mark T.; and Ehmke, Edward L., 5,381,138, Cl. 340-825.440.
- Sun, Shih W.; and Woo, Michael P., 5,381,040, Cl. 257-774.000.
- Wood, Mark A., 5,381,332, Cl. 364-401.000.

Moulinex Swan Holding Limited: See—
Eitridge, Ian G., 5,379,684, Cl. 99-336.000.

Mouton, Marc-Henri: See—
Wirth, Didier G.; Deglave, Marcel; and Mouton, Marc-Henri, 5,380,856, Cl. 546-248.000.

Mowers, Stephen D.: See—
Andrew, Michael A.; Birdsell, Walter; and Mowers, Stephen D., 5,379,682, Cl. 99-281.000.

Moyer, Wilber R.: See—
Wilson, Dennis R.; Moyer, Wilber R.; and Moran, Larry K., 5,379,838, Cl. 166-242.000.

MPT Services, Inc.: See—
Crawford, David W., 5,380,131, Cl. 405-216.000.

Mrowec, Stanislaw: See—
Hashimoto, Koji; Habazaki, Hiroki; Mrowec, Stanislaw; and Danielewski, Marek, 5,380,375, Cl. 148-403.000.

MTU Motoren-und Turbinen-Union Muenchen GmbH: See—
Sikorski, Siegfried; Schober, Michael; and Schoenacher, Reinhold, 5,380,152, Cl. 415-160.000.

Muckenfuhs, Delmar R.; Berg, Charles J., Jr.; and Young, Mark D., to Procter & Gamble Company, The. Disposable, compactable, shape-restorable packages for storing and dispensing dry or premoistened sheets, 5,379,897, Cl. 206-494.000.

Mudrow, Herbert: See—
Pearce, Tony M.; Pearce, Terry V.; Rasmussen, Robert K.; and Mudrow, Herbert, 5,379,866, Cl. 188-2.00F.

Mueck, Michael; and Ferguson, Paul F., Jr., to Analog Devices, Inc. Method and apparatus for calibrating a gain control circuit, 5,381,148, Cl. 341-139.000.

Mueller, Bruce M.; Daniels, Richard J.; and Elliott, John, to Aptar-Group, Inc. Dispensing closure with a twist sleeve and two internal passageways, 5,379,926, Cl. 222-507.000.

Mueller, Martin. Method and apparatus for protecting a food, 5,379,569, Cl. 53-397.000.

Mugnier, Jacques: See—
Hutt, Jean; Mugnier, Jacques; Greiner, Alfred; and Pepin, Regis, 5,380,743, Cl. 514-399.000.

Muhs, Jeffrey D.: See—
Dooley, Joseph B.; Muhs, Jeffrey D.; and Tobin, Kenneth W., 5,381,492, Cl. 385-12.000.

Mukherjee, Shyama P.: See—
Kaja, Suryanarayana; Mukherjee, Shyama P.; O'Sullivan, Eugene J.; and Paunovic, Milan, 5,380,560, Cl. 427-306.000.

Mulholland, Bruce M., to Hoechst Celanese Corporation. Nylon molding compositions exhibiting improved protection against UV-light degradation, 5,380,774, Cl. 524-102.000.

Mullen, Charles F. Multi-purpose electric fast cooking apparatus, 5,380,986, Cl. 219-472.000.

Muller, Bernd-Henrik: See—
Schneider, Werner; Muller, Bernd-Henrik; and Rudolph, Gert, 5,379,789, Cl. 131-360.000.

Muller, Friedhelm, to Siemens Aktiengesellschaft. Method and apparatus for regulating the carrier gas pressure for separation column arrangements in gas chromatography, 5,379,629, Cl. 73-23.270.

Muller, Klaus-Helmut; Babczinski, Peter; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal sulphonylaminocarbonyltriazolinones having substituents which are bonded via sulphur, 5,380,863, Cl. 548-263.600.

Muller, Klaus-Helmut; Babczinski, Peter; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal halogenated sulphonylaminocarbonyltriazolinones, 5,380,864, Cl. 548-263.800.

Muller, Walter; and Piotrowski, Georg, to Pina Vertriebs AG. Implantable device for straightening and fixing vertebrae, 5,380,324, Cl. 606-61.000.

Mulligan, James M.: See—
Bosen, Douglas C.; Chen, Chin-Long; Hsiao, Mu-Yue; and Mulligan, James M., 5,380,998, Cl. 235-494.000.

Munir, Zuhair A. R.; Lai, Weinong; and Ewald, Karl H., to University of California, The Regents of the. Field-assisted combustion synthesis, 5,380,409, Cl. 204-130.000.

Munson, Harry R., Jr.: See—
Hsu, Kuo-Hom L.; Teller, Daniel M.; Davis, Alan R.; Lubeck, Michael D.; Munson, Harry R., Jr.; Jagdmann, Gunnar E.; and Uwaydah, Ibrahim M., 5,380,734, Cl. 514-357.000.

Mura, Albert A.: See—
Dunlap, Richard P.; Mura, Albert A.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; and Subramanyam, Chakrapani, 5,380,737, Cl. 514-373.000.

Murad, Ferid; Kerwin, James F.; and Gorsky, Lee D., to Abbott Laboratories. Guanidino compounds as regulators of nitric oxide synthase, 5,380,945, Cl. 564-108.000.

Murai, Makoto: See—
Yoshida, Akihiko; Takahashi, Tomonori; and Murai, Makoto, 5,380,596, Cl. 428-432.000.

Murakami, Seiichi: See—
Yamamura, Tetsuo; Murakami, Seiichi; and Sato, Manabu, 5,380,984, Cl. 219-270.000.

Murakami, Tsutomu, to Canon Kabushiki Kaisha. Photoelectric conversion element and fabrication method thereof, 5,380,371, Cl. 136-256.000.

Muraoka, Toshinori: See—
Takada, Tomoki; Tsutsumi, Kazuo; Katahata, Tadashi; and Muraoka, Toshinori, 5,379,705, Cl. 110-245.000.

Murata Kikai Kabushiki Kaisha: See—

Inoue, Yoshihisa; Doi, Koichi; Maruki, Hiroshige; and Nakayama, Tetsuo, 5,379,582, Cl. 57-333.000.

Ueda, Yutaka; Ohori, Keizo; Shimizu, Tsuneo; and Mizutani, Shoji, 5,381,340, Cl. 364-470.000.

Murata, Kiyokazu; Kawahashi, Kozo; and Watabiki, Mamoru, to Dai-Cell Chemical Industries, Ltd. Continuous production of aromatic carbonates, 5,380,908, Cl. 558-270.000.

Murata Manufacturing Co., Ltd.: See—
Okamura, Hisatake; Kasahara, Masahiro; and Taniguchi, Tetsuo, 5,381,117, Cl. 333-175.000.

Murata, Masayuki: See—
Sugano, Masashi; Miyahara, Hideo; and Murata, Masayuki, 5,381,404, Cl. 370-13.000.

Murayama, Masahiro, to Canon Kabushiki Kaisha. Communication apparatus, 5,381,240, Cl. 358-436.000.

Murayama, Yoshio: See—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,379,621, Cl. 72-56.000.

Murchison, Craig B.: See—
Harley, A. Dale; Murchison, Craig B.; and Puga, Jose, 5,380,909, Cl. 558-274.000.

Murphy, Anthony J.; Bassin, David; and Mason, David, to Teletronics Pacing Systems, Inc. Heart rhythm classification method, and implantable dual chamber cardioverter/defibrillator employing the same, 5,379,776, Cl. 128-705.000.

Murphy, Brian, to Siemens Aktiengesellschaft. CMOS buffer having output terminal overvoltage-caused latch-up protection, 5,381,056, Cl. 326-21.000.

Murphy, Carl D.: See—
Bhattacharya, Apurba; Fritch, John R.; Murphy, Carl D.; Zeagler, Larry D.; and McAdams, Carina A., 5,380,867, Cl. 548-344.100.

Murphy, Douglas J.: See—
Daugherty, Thomas H.; DeBruler, Dennis L.; Greenberg, Daniel S.; Hodgdon, David J.; and Murphy, Douglas J., 5,381,405, Cl. 370-54.000.

Murphy, Kent; Vengsarkar, Ashish; Feth, Shari; Claus, Richard; Golapudi, Sridhar; and Wang, Anbo, to Center for Innovative Technology. Sapphire optical fiber interferometer, 5,381,229, Cl. 356-345.000.

Murphy, Timothy J.; and Maakad, Guy A., Jr., to Atlantic Richfield Company. System for suspending reactor tubes in a reactor, 5,380,502, Cl. 422-197.000.

Murray, Dennis M.: See—
Stenglein, Kenneth J.; and Murray, Dennis M., 5,380,825, Cl. 530-403.000.

Murray, Earl W. Method and apparatus for providing cellulose-filled insulation batts, 5,379,568, Cl. 52-743.000.

Murray, Elizabeth E.: See—
Adang, Michael J.; Rocheleau, Thomas A.; Merlo, Donald J.; and Murray, Elizabeth E., 5,380,831, Cl. 536-23.710.

Murray, Robert E.: See—
Gum, Peter H.; Hough, Roger E.; and Murray, Robert E., 5,381,535, Cl. 395-375.000.

Murray, William V., to Ortho Pharmaceutical Corporation. Regioselective synthesis of 1,5-diaryl pyrazole anti-inflammatory agents, 5,380,869, Cl. 548-375.100.

Musclow, Gordon L.; Poirier, Robert V.; and Weber, Ralph J., to Mobil Oil Corporation. Multilayer film structure, 5,380,587, Cl. 428-353.000.

Muto, Norio: See—
Yanagida, Hiroaki; Miyayama, Masaru; Muto, Norio; Sugita, Minoru; Nakatsuji, Teruyuki; and Otsuka, Yasushi, 5,379,644, Cl. 73-787.000.

Muto, Yoshiaki; Ichikawa, Hiromi; Ogura, Kuniyoshi; Chaki, Kyoji; Seiki, Masao; and Takemasa, Toshihiko, to Zeria Pharmaceutical Co., Ltd. Trialkylamine derivative and ameliorant for digestive tract movement containing the same, 5,380,748, Cl. 514-434.000.

Mutoh Industries, Ltd.: See—
Suzuki, Manabu; and Tatsuzawa, Hajime, 5,381,246, Cl. 358-500.000.

Mutoh, Masayuki, to SR Technos Ltd. Ink jet recording apparatus of the continuous jet type, 5,381,170, Cl. 347-74.000.

Mycogen Plant Science, Inc.: See—
Adang, Michael J.; Rocheleau, Thomas A.; Merlo, Donald J.; and Murray, Elizabeth E., 5,380,831, Cl. 536-23.710.

Nabco Limited: See—
Ishiwata, Ichiro, 5,379,593, Cl. 60-413.000.

Nabisco, Inc.: See—
Klemann, Lawrence P.; Roden, Allan D.; Pelloso, Turiddu A.; and Boldt, Gilbert L., 5,380,544, Cl. 426-607.000.

Wheeler, Edward L.; and Otterburn, Michael S., 5,380,538, Cl. 426-99.000.

NACAM: See—
Perichon, Olivier; and Ponchet, Patrick, 5,380,040, Cl. 280-777.000.

Nacht, David. Apparatus for board games, 5,380,013, Cl. 273-287.000.

Nacke, Theodor: See—
Schrauwen, Hans J.; Nacke, Theodor; and Bettfuhr, Jurgen, 5,379,656, Cl. 73-865.900.

Schrauwen, Hans J.; Nacke, Theodor; and Bettfuhr, Jurgen, 5,379,659, Cl. 73-866.500.

Nacman, Aron: See—
Lofthus, Robert M.; Nacman, Aron; and Schweid, Stuart A., 5,381,165, Cl. 346-108.000.

Nagai, Akira: See—
Yamamoto, Yasuo; Harushima, Yoshiaki; and Nagai, Akira, 5,380,875, Cl. 548-533.000.

Nagai, Masahiko: See—

Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,380,913, Cl. 560-35.000.

Nagai, Shinji: See—
Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.

Nagano, Masashi, to Shimano Inc. Bicycle pedal, 5,379,665, Cl. 74-594.400.

Nagano, Yoshifumi: See—
Kobayashi, Takanori; Nagano, Yoshifumi; and Yamasawa, Kiyohito, 5,381,091, Cl. 324-207.170.

Nagao, Masashi: See—
Moritsu, Kazuki; Matsumoto, Takahiro; Horikawa, Mitsuo; Nakagawa, Shuichi; Yoshimura, Hideto; Nagao, Masashi; and Inaguchi, Takashi, 5,379,600, Cl. 62-47.100.

Nagaoka, Haruo: See—
Kato, Kiyoshi; Yoneyama, Kenichi; Nagaoka, Haruo; Yamamoto, Kenji; Morimoto, Kazuyuki; and Kume, Masafumi, 5,380,781, Cl. 523-404.000.

Nagaoka, Takashi; Ueda, Shinjiro; Sakagami, Seiji; Nishiuchi, Akira; and Sakurai, Hirofumi, to Hitachi, Ltd. Turbo vacuum pump, 5,380,171, Cl. 417-423.400.

Nagase, Masao: See—
Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.

Nagase, Toru: See—
Saito, Hidetoshi; Inaba, Makoto; Tagawa, Motoyuki; and Nagase, Toru, 5,380,319, Cl. 606-28.000.

Nagaya, Makoto: See—
Hara, Nobuo; and Nagaya, Makoto, 5,379,626, Cl. 72-356.000.

Nagle, Nicholas J.: See—
Rivard, Christopher J.; and Nagle, Nicholas J., 5,380,445, Cl. 210-748.000.

Naito, Hideki: See—
Takizawa, Hiroo; Kobayashi, Hideotoshi; and Naito, Hideki, 5,380,638, Cl. 430-552.000.

Naito, Sadaaki: See—
Suzuki, Shigehiko; Yasui, Itsuo; and Naito, Sadaaki, 5,379,818, Cl. 152-531.000.

Nakada, Tetsuya; and Kubota, Michio, to Kabushiki Kaisha Haya-shibara Seibutsu. α -glycosyl derivative of catecholamine or its salt, and its preparation and uses, 5,380,837, Cl. 536-17.900.

Nakagaki, Shintaro: See—
Konno, Toshio; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; and Maeno, Keiichi, 5,381,188, Cl. 348-766.000.

Nakagawa, Akio: See—
Shinohe, Takashi; Nakayama, Kazuya; Takeuchi, Minami; Yamaguchi, Masakazu; Kitagawa, Mitsuhiko; Omura, Ichiro; and Nakagawa, Akio, 5,381,026, Cl. 257-147.000.

Nakagawa, Mitsuo: See—
Ookouchi, Takahiko; Kagohara, Hiromi; Hama, Hiromu; Nakagawa, Mitsuo; Okoshi, Hitoshi; and Nakayama, Yoshitaka, 5,380,264, Cl. 492-3.000.

Nakagawa, Shin, to Brother Kogyo Kabushiki Kaisha. Manual sheet feeding apparatus having manual sheet feeding switch near sheet guide, 5,379,998, Cl. 271-248.000.

Nakagawa, Shuichi: See—
Moritsu, Kazuki; Matsumoto, Takahiro; Horikawa, Mitsuo; Nakagawa, Shuichi; Yoshimura, Hideto; Nagao, Masashi; and Inaguchi, Takashi, 5,379,600, Cl. 62-47.100.

Nakagawa, Tomihiro: See—
Niita, Hajime; Takashima, Masatoshi; Saito, Takehiko; Nakagawa, Tomihiro; and Yamashita, Keitaro, 5,381,275, Cl. 360-48.000.

Nakaguchi, Yasunori: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shochi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.

Nakajima, Hiroshi: See—
Sekine, Akihiro; Kikuta, Yoshinori; Tezuka, Shinkichi; Okada, Kazuo; and Nakajima, Hiroshi, 5,380,715, Cl. 514-47.000.

Nakajima, Shinji: See—
Ohmori, Masashi; Kotoh, Satoru; and Nakajima, Shinji, 5,379,785, Cl. 134-184.000.

Nakamaru, Koichi: See—
Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.

Nakamura, Hiroya: See—
Ushikubo, Takashi; Nakamura, Hiroya; Koyasu, Yukio; and Wajiki, Shin, 5,380,933, Cl. 562-549.000.

Nakamura, Katsutoshi: See—
Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaka, Masanobu; Mihara, Tadashi; Kodera, Yasuto; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.

Nakamura, Kazunari: See—
Hiyama, Keiichi; Tsuruoka, Takao; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichiro, 5,379,757, Cl. 128-6.000.

Nakamura, Koichi; and Yabuki, Yoshiharu, to Fuji Photo Film Co., Ltd. Method for processing a silver halide photographic material using a processing solution having a bleaching ability containing one of an amidine or a biguanidine compound, 5,380,626, Cl. 430-393.000.

Nakamura, Masahiko, to GS Food Corporation. Fingertip washer, 5,379,474, Cl. 15-21.100.

Nakamura, Takashi: See—
Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, 5,380,555, Cl. 427-226.000.

Nakamura, Tomoki; Ichihashi, Tetsuo; and Fukuda, Masayuki, to Teijin Limited. Water-dispersible aromatic polyester, aqueous dispersion thereof and polyester film coated therewith which permits fast adhesion, 5,380,590, Cl. 428-375.000.

Nakamura, Yasuna: See—
Kokawa, Yoshiko; Koyama, Tooru; Kusakabe, Kenji; Tamura, Katsuhiko; and Nakamura, Yasuna, 5,381,032, Cl. 257-412.000.

Nakamura, Yasushi: See—
Aoki, Mitsuo; Suguro, Yoshihiro; Kondo, Tomio; Nakamura, Yasushi; and Miyamoto, Satoru, 5,380,616, Cl. 430-110.000.

Nakamura, Yoshikatsu: See—
Suda, Masato; Nakamura, Yoshikatsu; and Takagi, Nobuaki, 5,381,488, Cl. 382-9.000.

Nakane Kogyo Yugenkaisha: See—
Sumi, Minoru; Uchida, Minoru; Nozue, Kyozi; and Nakane, Masakatsu, 5,379,701, Cl. 104-89.000.

Nakane, Masakatsu: See—
Sumi, Minoru; Uchida, Minoru; Nozue, Kyozi; and Nakane, Masakatsu, 5,379,701, Cl. 104-89.000.

Nakanishi Dental Mfg. Co., Ltd.: See—
Kawata, Sosaku, 5,380,201, Cl. 433-132.000.

Nakano, Joji; Taya, Nobuhisa; Chaki, Hisaaki; Yamafuji, Tetsuo; and Momono, Kaishu, to Toyama Chemical Co., Ltd. Benzo[b]thiophen-5-yl derivative and process for producing the same, 5,380,878, Cl. 549-60.000.

Nakano, Masaki; Fukushima, Hiroshi; and Machida, Hisashi, to NSK Ltd.; and Nissan Motor Co., Ltd. Loading cam device, 5,379,661, Cl. 74-99.00A.

Nakano, Tomoyuki: See—
Okuda, Osamu; Yamamoto, Minoru; Nakano, Tomoyuki; and Hirai, Wataru, 5,379,514, Cl. 29-833.000.

Nakata, Hisashi: See—
Itoh, Shigeo; Watanabe, Tetsuo; Nakata, Hisashi; Nishimura, Norio; Itoh, Junji; and Kanemaru, Seigo, 5,381,069, Cl. 313-310.000.

Nakata, Shigeharu: See—
Ando, Kazumasa; Nakata, Shigeharu; Kitagawa, Nobutaka; and Hanatani, Shingo, 5,381,491, Cl. 382-56.000.

Nakatani, Tomoyoshi: See—
Ishimaru, Keiichi; Itoh, Osamu; Nakatani, Tomoyoshi; Sudo, Haruhiko; and Kurita, Masaya, 5,379,608, Cl. 62-155.000.

Nakatsugawa, Haruyasu: See—
Urabe, Shigeharu; Nakatsugawa, Haruyasu; and Ishiyama, Mario, 5,380,641, Cl. 430-569.000.

Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Moto; and Tabata, Mitsunori, to Sakai Chemical Industry Co., Ltd.; Agency of Industrial Science and Technology; Petroleum Energy Center; and Cosmo Oil Co., Ltd. Catalyst for catalytic reduction of nitrogen oxide, 5,380,692, Cl. 502-303.000.

Nakatsuji, Teruyuki: See—
Yanagida, Hiroaki; Miyayama, Masaru; Muto, Norio; Sugita, Minoru; Nakatsuji, Teruyuki; and Otsuka, Yasushi, 5,379,644, Cl. 73-787.000.

Nakatsuka, Masakatsu: See—
Totani, Yoshiyuki; Hirao, Motokazu; Ito, Tomonori; Nakatsuka, Masakatsu; and Yamaguchi, Akihiro, 5,380,814, Cl. 528-199.000.

Nakatsuka, Yasuo: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yuichi, 5,379,515, Cl. 29-852.000.

Nakayama, Kazuya: See—
Shinohe, Takashi; Nakayama, Kazuya; Takeuchi, Minami; Yamaguchi, Masakazu; Kitagawa, Mitsuhiko; Omura, Ichiro; and Nakagawa, Akio, 5,381,026, Cl. 257-147.000.

Nakayama, Takayoshi: See—
Iwata, Yoichi; Iida, Naoki; Takizawa, Tsuyoshi; Seki, Yasunari; Sato, Toshihiko; and Nakayama, Takayoshi, 5,379,591, Cl. 60-276.000.

Nakayama, Tetsuo: See—
Inoue, Yoshihisa; Doi, Koichi; Maruki, Hiroshige; and Nakayama, Tetsuo, 5,379,582, Cl. 57-333.000.

Nakayama, Yoshitaka: See—
Ookouchi, Takahiko; Kagohara, Hiromi; Hama, Hiromu; Nakagawa, Mitsuo; Okoshi, Hitoshi; and Nakayama, Yoshitaka, 5,380,264, Cl. 492-3.000.

Nakazato, Koji: See—
Kanamori,

Nakazawa, Masahiko: See—
Koyomogi, Mutsunori; Minami, Yukio; Nakazawa, Masahiko; Yoshikawa, Kazuhiro; and Kojima, Tetsuya, 5,379,982, Cl. 251-77.000.

Namba, Yoshiyuki: See—
Tanaka, Tsutomu; Shono, Keiji; Namba, Yoshiyuki; Matsumoto, Koji; and Maeda, Miyozo, 5,381,396, Cl. 369-116.000.

Namiki, Tomizo; Suzuki, Tamotsu; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Image-forming process. 5,380,620, Cl. 430-257.000.

Namiki, Yasuomi; Tanaka, Masaru; and Tokuyama, Yoshio, to Victor Company of Japan, Ltd. Helical scan type playback apparatus for video data recorded on magnetic tape. 5,381,238, Cl. 358-320.000.

Nanaumi, Ken; Horiuchi, Takeshi; Nomoto, Masahiro; and Inoue, Mitsuhiro, to Hitachi Chemical Company, Ltd. Method of preparing vegetable oil-modified phenolic resin and laminate produced by using the same. 5,380,789, Cl. 524-745.000.

Nania, Yves, to Renolux. Child's tiltable car seat. 5,380,062, Cl. 297-256.130.

Narcy, Jean-Luc: See—
Caleix, Clovis; and Narcy, Jean-Luc, 5,380,127, Cl. 405-130.000.

Narda Microwave Corp., The: See—
Aslan, Edward E., 5,381,086, Cl. 324-95.000.

Narita, Mutsuko: See—
Fukahori, Kenichi; Sato, Shuji; Shimohs, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, 5,380,108, Cl. 400-247.000.

National Semiconductor Corporation: See—
Davis, Jeffrey B., 5,381,061, Cl. 326-57.000.

Hobrecht, Stephen W., 5,381,111, Cl. 330-252.000.

Schlicht, Michael, 5,381,082, Cl. 323-280.000.

National Tsing Hua University: See—
Chao, Shuh; Chen, Jyh-Shin; and Hsiao, Tsai-Chu, 5,381,233, Cl. 356-369.000.

Natraflex Systems, Inc.: See—
Williams, Charlton H., Jr., 5,379,459, Cl. 2-19.000.

Navistar International Transportation Corp.: See—
Hively, Brad A.; Gerardot, Patrick G.; and Wegscheid, Michele M., 5,380,042, Cl. 280-834.000.

Nawama, Junichi: See—
Kumon, Akira; Ogawa, Katsutoshi; Tatekawa, Masaichiro; Hisada, Hitoshi; Nawama, Junichi; Katakabe, Noboru; and Aizawa, Masahiro, 5,381,214, Cl. 355-219.000.

Nawata, Makoto: See—
Fukuyama, Ryooji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Torii, Yoshimi; Kawaraya, Akira; and Sato, Yoshie, 5,380,397, Cl. 156-643.000.

Nayyar, Dalip K.: See—
Mason, Charles R.; Coleman, Edward C.; Nayyar, Dalip K.; and Birney, Sharon R., 5,380,545, Cl. 426-646.000.

NCR Corporation: See—
Gibson, David E., 5,379,943, Cl. 228-20.100.

Protheroe, Robert L.; Wills, David C.; and Klement, Scott M., 5,380,958, Cl. 178-18.000.

NDSU Research Foundation: See—
Srivastava, Devendra K.; and Kgapola, Mashupye M., 5,380,931, Cl. 562-342.000.

NEC Corporation: See—
Haraguchi, Yoshinori, 5,381,371, Cl. 365-200.000.

Kano, Isao, 5,380,679, Cl. 437-192.000.

Kasahara, Shinji, 5,381,432, Cl. 372-37.000.

Kasai, Naoki, 5,381,030, Cl. 332-370.000.

Kimura, Katsuji, 5,381,113, Cl. 330-253.000.

Komatsu, Keiro, 5,381,023, Cl. 257-85.000.

Matsukawa, Takamari, 5,381,451, Cl. 377-20.000.

Matsushima, Osamu, 5,381,529, Cl. 395-275.000.

Okada, Mitsuya, 5,381,395, Cl. 369-112.000.

Okimura, Yasunori, 5,381,378, Cl. 365-233.000.

Suzuki, Nariko, 5,381,532, Cl. 395-375.000.

Takahashi, Yutaka, 5,381,356, Cl. 364-724.170.

Yamashita, Hiroshi, 5,381,406, Cl. 370-58.200.

Yasuda, Susumu, 5,381,053, Cl. 327-65.000.

Neely, William G., Jr.; and Oran, Gordon, to Hoechst Celanese Corporation. Recyclable bale wrap made from a thermally bonded, needle-punched, polyester nonwoven. 5,380,582, Cl. 428-220.000.

Negishi, Akira; Kaneko, Hiroko; Kawakubo, Takamasa; and Suda, Yoshihisa, to Agency of Industrial Science and Technology; and Mitsubishi Pencil Kabushiki Kaisha. Micro-electrode and method for preparing it. 5,380,422, Cl. 204-403.000.

Negishi, Ichiro: See—
Konno, Toshio; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; and Maeno, Keiichi, 5,381,188, Cl. 348-766.000.

Negishi, Jinichiro. Bucket equipped with mixing device, excavation machine having the bucket, and soil improvement method using the excavation machine. 5,379,534, Cl. 37-379.000.

Negoro, Kouji: See—
Itou, Tsukasa; Teraji, Kazuo; Yoshinaga, Noriyuki; Harada, Sunao; Negoro, Kouji; and Mori, Kazunari, 5,380,606, Cl. 429-194.000.

Nelson, Jim L. Adhesive spreader. 5,379,479, Cl. 15-245.100.

Nelson, Joel D.; and Thorland, Rodney H., to Honeywell, Inc. Ring laser gyro employing radio frequency for pumping of gain medium. 5,381,436, Cl. 372-94.000.

Nelson, Larry A.: See—
Miller, David W.; Nelson, Larry A.; and Robinder, Ronald C., 5,381,182, Cl. 348-448.000.

Nemer, Joseph C.: See—
Birangi, Tourang; and Nemer, Joseph C., 5,381,355, Cl. 364-724.010.

Nemeth, Frank A.; and Dockendorff, James B., to IMO Industries, Inc. Combined optical waveguide and prismatic liquid-level sensor. 5,381,022, Cl. 250-577.000.

Neorex Co., Ltd.: See—
Komai, Toshiyuki, 5,380,993, Cl. 235-462.000.

NeoRx Corporation: See—
Gray, Mary A.; Asworthy, Don; and Wilkening, David, 5,380,513, Cl. 424-1490.

Nergeco: See—
Kraeutler, Bernard, 5,379,823, Cl. 160-271.000.

Nerone, Louis R., to General Electric Company. Metal halide electronic ballast. 5,381,076, Cl. 315-209.00R.

Neste OY: See—
Seppala, Jukka; Selin, Johan-Fredrik; and Su, Tao, 5,380,813, Cl. 528-58.000.

Neumeir, Anton: See—
Hjek, Josef; and Neumeir, Anton, 5,379,694, Cl. 101-415.100.

Neunhoeffer, Hans; Gerstung, Stefan; Clausen, Thomas; and Balzer, Wolfgang R., to Wella Aktiengesellschaft. Hair dye containing aminopyrazole derivatives as well as pyrazole derivatives. 5,380,340, Cl. 8-409.000.

New England Medical Center Hospitals, Inc.: See—
Jefferson, Douglas M.; and Johnston, David E., 5,380,660, Cl. 435-240.300.

New Venture Gear, Inc.: See—
Brisenden, James S.; and Bakowski, Richard A., 5,380,255, Cl. 475-204.000.

Newell, Jonathan C.: See—
Isaacson, David; Newell, Jonathan C.; and Gisser, David G., 5,381,333, Cl. 364-413.130.

Newell, Kevin M.: See—
Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., 5,380,973, Cl. 219-69.120.

Newport Corporation: See—
Houghton, Worthington B., Jr.; Eddy, Richard P.; and McCoy, Jay R., 5,379,980, Cl. 248-550.000.

Newsom, Cosby M. Oil recovery system. 5,380,431, Cl. 210-242.300.

Neysinck, Richard M.: See—
McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.

NGK Insulators, Ltd.: See—
Yoshida, Akihiko; Takahashi, Tomonori; and Murai, Makoto, 5,380,596, Cl. 428-432.000.

Ngoc, Hung D.; and Salazar, Mariano, to Goodyear Tire & Rubber Company. The Rubbery polymer. 5,380,785, Cl. 524-504.000.

Nguyen, Binh T.: See—
Lutz, Michael A.; Nguyen, Binh T.; and King, Russell K., 5,380,812, Cl. 528-15.000.

Nguyen, Hung C.: See—
Abbott, William L.; and Nguyen, Hung C., 5,381,359, Cl. 364-724.190.

Ni, Yang: See—
Devos, Francis; and Ni, Yang, 5,381,516, Cl. 395-27.000.

Nicola DeGirolamo: See—
DeGirolamo, Nicola, 5,379,976, Cl. 248-221.200.

Nicolas, Ed F.: See—
Reiterman, Donald R.; Green, Martin J.; Nicolas, Ed F.; Greff, Richard J.; and Thomas, Ronald E., 5,380,245, Cl. 454-63.000.

Nicolet Biomedical, Inc.: See—
Van Veen, Barry D., 5,379,770, Cl. 128-661.090.

Niederhofer, Kent J., to Caterpillar Inc. Drive configuration for a wheeled machine. 5,379,857, Cl. 180-248.000.

Niedospial, John J.; Vacek, Ronald B.; and DeJesus, Rafael, to Sterling Winthrop Inc. Stopper for medication container. 5,379,907, Cl. 215-247.000.

Nielsen, Arne; McCartney, Phillip D.; and Moghaddassi, Majid, to Guilford Mills, Inc. Apparatus for inspecting settings on a textile fabric shearing machine. 5,379,497, Cl. 26-15.00R.

Nielsen, Arne; and Moghaddassi, Majid, to Guilford Mills, Inc. Method and apparatus for controlling shearing of pile fabric. 5,379,498, Cl. 26-15.00R.

Niemeyer, David A.: See—
Anderson, Charles C.; Jennings, David F.; Leszyk, Gerald M.; and Niemeyer, David A., 5,380,584, Cl. 428-323.000.

Nihon Kagaku Hakko K.K.: See—
Fujita, Masahiko, 5,381,311, Cl. 362-34.000.

Niimura, Masateru. Semisubmersible building. 5,379,559, Cl. 52-169.700.

Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshiharu; Mikata, Yuuichi; Miyazaki, Shinji; Mori, Takahiko; and Okumura, Katsuya, to Tokyo Electron Limited. Method of cleaning reaction tube. 5,380,370, Cl. 134-22.110.

Niita, Hajime; Takashima, Masatoshi; Saito, Takehiko; Nakagawa, Tomihiro; and Yamashita, Keitaro, to Sony Corporation. Apparatus and method for recording digital data with a controlled data compression ratio. 5,381,275, Cl. 360-48.000.

Niizawa, Akihiko; and Yamaguchi, Masahiro, to Nippon Petroleum Refining Co., Ltd.; and Japan Petroleum Institute. The. Standard materials and methods for instrumental measurement for ASTM color of petroleum products using said standard materials. 5,381,227, Cl. 356-243.000.

Nikaido, Norio: See—
Kasai, Shozo; Tanita, Takeo; Yasuhara, Masateru; Azuma, Yasuaki; Yamamoto, Toshihiro; Nikaido, Norio; Inaba, Ryohei; and Arai, Mitsuo, 5,380,138, Cl. 414-277.000.

Niki, Dieter: See—
Campe, Hilmar V.; Ebinger, Horst; Niki, Dieter; and Warzawa, Wolfgang, 5,380,372, Cl. 136-258.000.

Nikon Corporation: See—
Hagiwara, Shigeru, 5,381,210, Cl. 355-53.000.

Kato, Minoru; Terunuma, Hiroshi; and Takeuchi, Yoshihiro, 5,381,272, Cl. 359-823.000.

Kotani, Noriyasu; and Wakabayashi, Hiroshi, 5,381,205, Cl. 354-400.000.

Ohshita, Koichi, 5,381,265, Cl. 359-422.000.

Sato, Haruo, 5,381,268, Cl. 359-691.000.

Takagi, Tadao, 5,381,208, Cl. 354-415.000.

Ninomiya, Teruhisa: See—
Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, 5,381,153, Cl. 342-70.000.

Nippon Densan Corporation: See—
Miyaji, Itsuo; and Matsumoto, Hiroshi, 5,381,066, Cl. 310-90.000.

Nippon Oil Co., Ltd.: See—
Inoue, Kiyoshi, 5,380,508, Cl. 423-286.000.

Nippon Paint Co., Ltd.: See—
Usuki, Kazuhiko; Nishimoto, Kazuhiko; Tokuyama, Akio; Saito, Koichi; and Yoshioka, Manabu, 5,380,784, Cl. 524-407.000.

Nippon Petroleum Refining Co., Ltd.: See—
Niizawa, Akihiko; and Yamaguchi, Masahiro, 5,381,227, Cl. 356-243.000.

Nippon Printing Co., Ltd.: See—
Miyashita, Hiroyuki; Takahashi, Masahiro; and Mohri, Hiroshi, 5,380,608, Cl. 430-5.000.

Nippon Soda Co., Ltd.: See—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,380,887, Cl. 549-556.000.

Nippon Steel Corporation: See—
Iwasa, Shoichi, 5,381,028, Cl. 257-316.000.

Nippon Telegraph and Telephone Corporation: See—
Kanamori, Hiro; Nakazato, Koji; Nishimura, Masayuki; and Tomita, Shigeru, 5,381,503, Cl. 385-123.000.

Nippon Thompson Co., Ltd.: See—
Tanaka, Kazuhiko, 5,380,096, Cl. 384-13.000.

Tanaka, Kazuhiko, 5,380,097, Cl. 384-13.000.

Nippon Zeon Co., Ltd.: See—
Onishi, Hidenori; and Matuda, Hiroaki, 5,380,798, Cl. 525-89.000.

Nirei Industry Co., Ltd.: See—
Shirakawa, Yuji, 5,379,494, Cl. 24-168.0PB.

Nishi, Mituo; Shindou, Naoki; and Yamaguchi, Kazuya, to Tokyo Electron Limited; and Tokyo Electron Kyushu Limited. Apparatus for cleaning conveyor chuck. 5,379,784, Cl. 134-102.300.

Nishida, Kuniyoshi: See—
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,380,913, Cl. 560-35.000.

Nishida, Yuki: See—
Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko, Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki, Tokuo; and Abe, Koji, 5,380,906, Cl. 558-210.000.

Nishihata, Naomitsu; Ichikawa, Yukio; and Katto, Takayuki, to Kureha Kagaku Kogyo K.K. Resin composition including poly(arylene thioether) and polyamide. 5,380,819, Cl. 528-336.000.

Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko, Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki, Tokuo; and Abe, Koji, to UBE Industries, Ltd. Process for preparing carbonic diester. 5,380,906, Cl. 558-210.000.

Nishimoto, Kazuhiko: See—
Usuki, Kazuhiko; Nishimoto, Kazuhiko; Tokuyama, Akio; Saito, Koichi; and Yoshioka, Manabu, 5,380,784, Cl. 524-407.000.

Nishimukai, Tadahiko: See—
Hanawa, Makoto; Nishimukai, Tadahiko; Suzuki, Makoto; and Shimohigashi, Katsuhiro, 5,381,531, Cl. 395-375.000.

Nishimura, Kimhiro; and Yoshino, Kenji, to Kawasaki Steel Corporation. Binder system for use in the injection molding of sinterable powders and molding compound containing the binder system. 5,380,179, Cl. 419-36.000.

Nishimura, Masatoshi; Takahashi, Masaaki; and Orihashi, Yasushi, to Sankyo Company Limited. Measurement of arterial elasticity and the frequency characteristic of the compliance of an artery. 5,379,774, Cl. 128-666.000.

Nishimura, Masayuki: See—
Hirai, Shigeru; Ishiguro, Yuichi; Hattori, Yasuji; Nishimura, Masayuki; Shigematsu, Masayuki; Watanabe, Minoru; and Nakazato, Koji, 5,381,261, Cl. 359-282.000.

Kanamori, Hiro; Nakazato, Koji; Nishimura, Masayuki; and Tomita, Shigeru, 5,381,503, Cl. 385-123.000.

Nishimura, Matsuomi: See—
Hoshi, Hiroaki; Nishimura, Matsuomi; Tanaka, Kazumi; Miyazaki, Takeshi; Ohnishi, Toshikazu; and Takayama, Hidehito, 5,380,490, Cl. 422-73.000.

Nishimura, Norio: See—
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; Nishimura, Norio; Itoh, Junji; and Kanamaru, Seigo, 5,381,069, Cl. 313-310.000.

Nishimura, Tadashi: See—
Inoue, Yasuo; Nishimura, Tadashi; Ipposhi, Takashi; and Iwamatsu, Toshiaki, 5,381,235, Cl. 356-376.000.

Nishimura, Toshiharu: See—
Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshiharu; Mikata, Yuuichi; Miyazaki, Shinji; Mori, Takahiko; and Okumura, Katsuya, 5,380,370, Cl. 134-22.110.

Nishimura, Yoichi: See—
Kuroda, Shigetaka; Sawamura, Kazutomo; Shimasaki, Yuuichi; Kanehiro, Masaki; Ishioka, Takuji; Maruyama, Shigeru; Nishimura, Yoichi; and Katoh, Akira, 5,379,634, Cl. 73-116.000.

Nishimura, Yukinobu; Washino, Syoichi; and Shima, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Signal processing apparatus for performing high speed arithmetic operations and having a power consumption reduction feature. 5,381,553, Cl. 395-750.000.

Nishino, Toshikazu: See—
Tarutani, Yoshinobu; Fukazawa, Tokuumi; Kabesawa, Uki; Takagi, Kazumasa; Tsukamoto, Akira; Hiratani, Masahiko; and Nishino, Toshikazu, 5,380,704, Cl. 505-193.000.

Nishio, Kouji; and Morimoto, Akio, to Kabushiki Kaisha. Apparatus for photographing a corneal endothelium. 5,381,194, Cl. 351-208.000.

Nishiuchi, Akira: See—
Nagaoka, Takashi; Ueda, Shinjiro; Sakagami, Seiji; Nishiuchi, Akira; and Sakurai, Hirofumi, 5,380,171, Cl. 417-423.400.

Nishiyama, Masakazu; Harada, Yasuhiro; and Mizobe, Akio, to Kuraray Company Limited. Polyvinyl alcohol-based synthetic fiber. 5,380,588, Cl. 428-364.000.

Nissan Chemical Industries, Limited: See—
Sato, Fumie; Arai, Kazutaka; and Miyaji, Katsuki, 5,380,900, Cl. 556-436.000.

Nissan Motor Co., Ltd.: See—
Asano, Yasushi; Togano, Norio; and Ikushima, Shunsuke, 5,379,871, Cl. 192-4.00A.

Kimura, Koichi; and Matsuzaki, Kiyoto, 5,379,553, Cl. 49-502.000.

Nakano, Masaki; Fukushima, Hiroshi; and Machida, Hisashi, 5,379,661, Cl. 74-99.00A.

Nissin Flour Milling Co., Ltd.: See—
Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.

Nissin Oil Mills, Ltd.: See—
Hasegawa, Akira; and Kiso, Makoto, 5,380,829, Cl. 536-4.100.

Hasegawa, Akira; and Kiso, Makoto, 5,380,832, Cl. 536-17.900.

Nisso Corporation: See—
Kikuchi, Toshihiro; and Futagawa, Hitoshi, 5,380,287, Cl. 604-135.000.

Nita, Henry, to Baxter International Inc. Ultrasound transmission member having improved longitudinal transmission properties. 5,380,274, Cl. 604-22.000.

Nitto Kohki Co., Ltd.: See—
Goto, Kunihiko, 5,379,918, Cl. 222-82.000.

Nix, Edgar, to Deutsche Voest-Alpine Industrieanlagenbau GmbH. Direct current arc furnace and method for its operation. 5,381,441, Cl. 373-72.000.

NKK Corporation: See—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,379,621, Cl. 72-56.000.

Yoshie, Yasunori; and Tsukui, Takashi, 5,380,977, Cl. 219-121.630.

Noah, Bruce C., to TRW Inc. Rotary device and method of assembly. 5,380,178, Cl. 418-133.000.

Noda, Hideo: See—
Furomoto, Yoshiyuki; Noda, Hideo; Sakaguchi, Noboru; and Yoshikawa, Osamu, 5,379,957, Cl. 242-230.000.

Noda, Seiji; and Tsuji, Takeshi, to Lion Akzo Co., Ltd. Process for the production of cyclic amide. 5,380,899, Cl. 556-407.000.

Noe, Oskar, to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH. System for trimming a continuously moving metal strip. 5,381,342, Cl. 364-474.340.

Noennich, Cecil C. Solar panel control apparatus. 5,379,753, Cl. 126-608.000.

Noguchi, Katsunori; and Kondo, Tetsuya, to Sony Corporation. CCD delay line capable of automatic adjustment of an input bias voltage to charge transfer regions. 5,381,177, Cl. 348-313.000.

Noguchi, Kazuhito: See—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Matsuyama, Kenji; Noguchi, Kazuhito; and Yano, Mitsuo, 5,380,921, Cl. 562-16.000.

Noguchi, Tadashi: See—
Morimoto, Shigeki; and Noguchi, Tadashi, 5,380,685, Cl. 501-71.000.

Noguchi, Tamio; and Waragai, Yumiko, to Merck Patent Gesellschaft Mit Beschränkter Haftung. Ultra-fine granular barium sulfate-coated flaky pigment and method of preparing the same. 5,380,360, Cl. 106-415.000.

Noguchi, Teruhiko; Kinashi, Hiroshi; Masuda, Jitsuo; Inoue, Katsushi; Tanaka, Tatsuo; Otsuki, Kunio; and Adachi, Kazuya, to Sharp Kabushiki Kaisha; and Fuji Electric Co., Ltd. Photoreceptor for electrophotography. 5,381,212, Cl. 355-211.000.

Nohmi Bosai Ltd.: See—
Mochizuki, Mikio; Ito, Hideo; and Kobayashi, Ryousaku, 5,381,131, Cl. 340-630.000.

Nokia (Deutschland) GmbH: See—
Reime, Gerd, 5,381,239, Cl. 358-329.000.

Nokia Telecommunications Oy: See—
Lahdemaki, Heimo; and Sippola, Jaakko, 5,381,474, Cl. 379-410.000.

Nomori, Hiroyuki: See—
Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,381,215, Cl. 355-219.000.

Nomoto, Masahiro: See—
Nanaumi, Ken; Horiuchi, Takeshi; Nomoto, Masahiro; and Inoue, Mitsuhiro, 5,380,789, Cl. 524-745.000.

Nomura, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens barrel. 5,381,271, Cl. 359-700.000.

Nonaka, Seiji: See—
Yoshida, Akihiko; Imoto, Kiyooki; Nonaka, Seiji; and Aoki, Ichiro, 5,381,303, Cl. 361-502.000.

Nonomura, Keisaku; and Shigeta, Mitsuhiro, to Sharp Kabushiki Kaisha. Optical switch element and a liquid crystal light directional coupler used in the optical switch element. 5,381,251, Cl. 359-39.000.

Nordson Corporation: See—
Becker, Kevin C.; O'Keefe, Patrick J., Jr.; and Dixon, Eddie W., Jr., 5,380,366, Cl. 118-712.000.

Norimatsu, Takeshi: See—
Matsumoto, Masaharu; Serikawa, Mitsuhiro; Kawamura, Akihisa; Numazu, Hiroko; Norimatsu, Takeshi; Tagami, Ryo; and Oda, Mikio, 5,381,482, Cl. 381-18.000.

Norman, Bryan H.; Lee, Len F.; Masferrer, Jaime L.; and Talley, John J., to Monsanto Company. 2-substituted oxazoles further substituted by 4-fluorophenyl and 4-methylsulfonylphenyl as antiinflammatory agents. 5,380,738, Cl. 514-374.000.

Norris, Christopher S.: See—
Lacey, Timothy M.; and Norris, Christopher S., 5,381,370, Cl. 365-200.000.

North American Philips Corporation: See—
Szuba, Stefan, 5,381,078, Cl. 315-316.000.

North Carolina State University: See—
Bitzer, Donald L.; Vouk, Mladen A.; Srinivasan, Vijay; Lo, Sunny K.; Dhokalia, Ajay; Gonzalez, Elena M.; Lee, Tina M.; Wang, LiFeng; and Koorapaty, Havish, 5,381,425, Cl. 371-43.000.

Northern Illinois Gas Company: See—
Powers, Robert D.; and Ryterski, Harold L., 5,381,136, Cl. 340-539.000.

Norton, Paul F.; and Shaffer, James E., to Solar Turbines Incorporated. Turbine nozzle positioning system. 5,380,154, Cl. 415-209.200.

Norton, Paul R., to Santa Barbara Research Center. Method of fabricating a two-color detector using LPE crystal growth. 5,380,669, Cl. 437-5.000.

Noschese, Rocco J.: See—
Piorunneck, Heinz; and Noschese, Rocco J., 5,380,213, Cl. 439-160.000.

Nothnagel, Joseph L., to Cargill Incorporated. Aqueous dispersion of amine salts of an acrylic polymer. 5,380,771, Cl. 523-339.000.

Novack, James C.; Cronk, Bryon J.; Laumer, James W.; Woodward, Tracy R.; and Krohn, David A., to Minnesota Mining and Manufacturing Company. Optical fiber element having a permanent protective coating with a Shore D hardness value of 65 or more. 5,381,504, Cl. 385-128.000.

Novacor Chemicals (International) S.A.: See—
Skilbeck, John P., 5,380,822, Cl. 528-499.000.

Nover, Brian N.: See—
Friday, Ronald S.; Nover, Brian N.; and Eaton, Eric T., 5,381,134, Cl. 340-825.440.

Nowak, David; and Kim, Richard, to General Scientific Corporation. Five-degree-of-freedom ocular mounting assembly. 5,381,263, Cl. 359-411.000.

Nowak, Michael T.; and Lewis, Thomas E., to Presstek, Inc. Lithographic printing members for use with laser-discharge imaging. 5,379,698, Cl. 101-454.000.

Nozaki, Nobuharu; and Adachi, Takashi, to Fuji Photo Film Co., Ltd. Optical wavelength converting apparatus. 5,381,430, Cl. 372-21.000.

Nozawa, Yasushi; Seto, Nobuo; Ohki, Nobutaka; and Toyoda, Masayoshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 5,380,631, Cl. 430-504.000.

Nozue, Kyozi: See—
Sumi, Minoru; Uchida, Minoru; Nozue, Kyozi; and Nakane, Masakatsu, 5,379,701, Cl. 104-89.000.

NSK Ltd.: See—
Fukushima, Hiroshi, 5,380,256, Cl. 476-40.000.

Ishikawa, Akihiko, 5,379,660, Cl. 74-89.150.

Katahira, Masayuki, 5,380,246, Cl. 454-64.000.

Nakano, Masaki; Fukushima, Hiroshi; and Machida, Hisashi, 5,379,661, Cl. 74-99.00A.

NTN Technical Center: See—
Adler, Jonathan M.; and Fontenot, Kevin J., 5,381,090, Cl. 324-174.000.

Nucida, Gilberto: See—
Cipolli, Roberto; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, 5,380,815, Cl. 528-254.000.

Nuckolls, Charles E.; and Lundberg, James R., to Motorola, Inc. Method and apparatus for performing frequency tracking in an all digital phase lock loop. 5,381,116, Cl. 331-1.00A.

Nukem GmbH: See—
Campe, Hilmar V.; Ebinger, Horst; Nikl, Dieter; and Warzawa, Wolfgang, 5,380,372, Cl. 136-258.000.

Numazu, Hiroko: See—
Matsumoto, Masaharu; Serikawa, Mitsuhiro; Kawamura, Akihisa; Numazu, Hiroko; Norimatsu, Takeshi; Tagami, Ryo; and Oda, Mikio, 5,381,482, Cl. 381-18.000.

Numoto, Kiyomi. Articulated limb toy figure. 5,380,233, Cl. 446-92.000.

Nungesser, Philip W., to City of Atlanta. Treatment of wastewater through enhanced biological phosphorus removal. 5,380,438, Cl. 210-605.000.

Nusinov, Eugene B.; and Pasco-Anderson, James A., to Motorola, Inc. Circuit and method of resetting a data compressor/decompressor. 5,381,454, Cl. 377-39.000.

Nykanen, Tuomo S.: See—
Ryham, Rolf; Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Soderman, Jarmo; and Wiklund, Karl G., 5,380,402, Cl. 162-30.100.

Nyloplast Europe B.V.: See—
Leeuwenburg, Ewout; and Van Kooij, Robert J., 5,380,017, Cl. 277-207.00A.

O&K Orenstein & Koppel AG: See—
Hoeffling, Peter, 5,379,877, Cl. 198-330.000.

O S G Corporation: See—
Saito, Mitsuo; Umabayashi, Yoshihiro; Aoyagi, Shigetake; Isozumi, Shuzo; Tanaka, Noriyuki; and Kasa, Junichi, 5,379,622, Cl. 72-88.000.

Oansh Designs, Ltd.: See—
Bell, Anthony H. G.; and Prindle, Carl E., 5,379,530, Cl. 36-89.000.

Oba, Toshiro, to Sharp Kabushiki Kaisha. Scientific electronic calculator for performing mathematical operations with predetermined priority. 5,381,353, Cl. 364-710.080.

Obata, Tokio; Ooka, Akira; Fujii, Katsutoshi; and Suizu, Shin, to Ube Industries, Ltd. Phenoxyalkylamine derivative and agricultural and horticultural chemical for controlling noxious organisms containing the same. 5,380,744, Cl. 514-403.000.

Ober, James K.: See—
Hettinga, Siebolt; and Ober, James K., 5,380,186, Cl. 425-557.000.

Oberle, William A., Jr., to Du Pont de Nemours, E. I., and Company. Process for thermoforming multilayer sheets. 5,380,481, Cl. 264-510.000.

O'Brien, Patrick J.: See—
Haas, Janice; O'Brien, Patrick J.; and Durham, Larry D., 5,379,894, Cl. 206-333.000.

Occhiello, Ernesto; Ferrari, Adriano; Garbassi, Fabio; and Cutolo, Domingo, to Eniricerche, S.p.A.; and Enichem, S.p.A. Mixed-matrix composite thermoplastic and thermosetting material reinforced with continuous fibres. 5,380,583, Cl. 428-283.000.

Occidental Chemical Corporation: See—
Fertel, Lawrence B.; and Derwin, William S., 5,380,926, Cl. 562-474.000.

Ochi, Masao: See—
Sakurai, Akira; Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao; and Sugawara, Toshihiro, 5,379,610, Cl. 62-316.000.

Ochs, Dennis E.: See—
Kwong, Manlik; Feldhausen, Edward L.; and Ochs, Dennis E., 5,381,351, Cl. 364-571.040.

O'Connell, Maurice T.: See—
Montenieri, Robert E.; O'Connell, Maurice T.; Crampton, Alan T.; Seymour, Geoffrey F.; Edstrom, Richard C.; and Bourgeois, Bryon J., 5,379,927, Cl. 222-546.000.

O'Connor, Daniel J.: See—
Madsen, Timothy A.; and O'Connor, Daniel J., 5,381,291, Cl. 360-113.000.

Oda, Mikio: See—
Matsumoto, Masaharu; Serikawa, Mitsuhiro; Kawamura, Akihisa; Numazu, Hiroko; Norimatsu, Takeshi; Tagami, Ryo; and Oda, Mikio, 5,381,482, Cl. 381-18.000.

Oda, Tomio: See—
Ueno, Ryuzo; Ueno, Ryuji; Kato, Ichie; and Oda, Tomio, 5,380,709, Cl. 514-530.000.

Odin Developments Limited: See—
Divall, John E., 5,379,921, Cl. 222-148.000.

O'Donnell, Adrian C.; and Dodson, Jake D., to Integrated Optical Components Ltd. Packaged optical devices. 5,381,494, Cl. 385-49.000.

Oechsle, Markus, to J. M. Voith GmbH. Paper making machine drying section steam pressure profile. 5,379,528, Cl. 34-446.000.

Offermann, Margaret K.: See—
Medford, Russell M.; Offermann, Margaret K.; and Alexander, R. Wayne, 5,380,747, Cl. 514-423.000.

Ogane, Atsushi: See—
Fujii, Yozi; Miwa, Tadashi; Satoh, Hisao; Ogane, Atsushi; Matsuo, Isao; and Ikeda, Tadayoshi, 5,381,167, Cl. 346-157.000.

Ogata, Kazumi: See—
Yoshida, Shoji; Ogata, Kazumi; and Kawahira, Osamu, 5,380,753, Cl. 514-474.000.

Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kuroawa, Jitsuo, to Sumitomo Chemical Company, Limited. Apparatus for gas phase polymerization and method for operating the same. 5,380,494, Cl. 422-131.000.

Ogawa, Katsutoshi: See—
Kumon, Akira; Ogawa, Katsutoshi; Tatekawa, Masaichiro; Hisada, Hitoshi; Nawama, Junichi; Katakabe, Noboru; and Aizawa, Masahiro, 5,381,214, Cl. 355-219.000.

Ogawa, Kazufumi; Mino, Norihisa; and Soga, Manoru, to Matsushita Electric Industrial Co., Ltd. Chemically adsorbed monomolecular lamination film. 5,380,585, Cl. 428-333.000.

Ogawa, Kikuo: See—
Mizuno, Yoshiyuki; and Ogawa, Kikuo, 5,380,970, Cl. 200-523.000.

Ogawa, Ryota: See—
Yoshida, Kazushi; and Ogawa, Ryota, 5,381,197, Cl. 353-98.000.

Ogawa, Shinichi: See—
Takamatsu, Toshiaki; Ogawa, Shinichi; Yoshikawa, Masao; Hamada, Hiroshi; Watanabe, Noriko; and Funada, Fumiaki, 5,381,187, Cl. 348-759.000.

Ogawa, Toshio: See—
Honji, Akio; Ogawa, Toshio; Kuroda, Osamu; Yamashita, Hisao; Tachi, Takahiro; Miyadera, Hiroshi; and Fujishita, Masakatsu, 5,379,586, Cl. 60-276.000.

Ogimura, Yoshitomo; and Motai, Kenzi, to Fuji Electric Co., Ltd. Semiconductor device having passivation protrusions defining electrical bonding area. 5,381,038, Cl. 257-689.000.

Ogiso, Minoru: See—
Sawada, Matsunori; and Ogiso, Minoru, 5,380,696, Cl. 502-313.000.

Ogletree, Richard: See—
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., 5,379,509, Cl. 29-558.000.

Oguchi, Takahisa: See—
Itoh, Hisato; Karasawa, Akio; Sugimoto, Kenichi; Oguchi, Takahisa; and Aihara, Shin, 5,380,842, Cl. 540-128.000.

Ogura, Kuniyoshi: See—
Muto, Yoshiaki; Ichikawa, Hiromi; Ogura, Kuniyoshi; Chaki, Kyoji; Seiki, Masao; and Takemasa, Toshihiko, 5,380,748, Cl. 514-434.000.

Oh, Tae-jin; and Kim, Jin-sa, to Kolon Industries, Inc. High modulus aromatic polyamide film and production thereof. 5,380,818, Cl. 528-331.000.

Ohashi, Susumu; Tateishi, Hideo; and Fujikura, oshiaki, to Uniden America Corp.; and Uniden Corporation. Monitor mode in a portable telephone. 5,381,460, Cl. 379-58.000.

Ohashi, Yoji: See—
Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, 5,381,153, Cl. 342-70.000.

Ohki, Hideaki; and Kamiya, Masanori, to Hitachi, Ltd.; and Hitachi Video and Information. Method and apparatus for correcting flesh color. 5,381,185, Cl. 348-652.000.

Ohki, Nobutaka: See—
Nozawa, Yasushi; Seto, Nobuo; Ohki, Nobutaka; and Toyoda, Masayoshi, 5,380,631, Cl. 430-504.000.

Ohkoshi, Kouji: See—
Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsuki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.

Ohkubo, Atushi, to Fuji Electric Co., Ltd. Inductive heating element with magnetic and thermistor materials. 5,380,989, Cl. 219-667.000.

Ohkuma, Kazuhiro; Wakabayashi, Shigeru; and Satouchi, Mitsuko, to Matsutani Chemical Industries Co., Ltd. Food composite for performing function of large bowel regulation. 5,380,717, Cl. 514-58.000.

Ohkuma, Yuji, to Fujitsu Limited. Method for transferring wafers from one processing station to another sequentially and system therefor. 5,380,684, Cl. 437-250.000.

Ohkura, Kengo: See—
Ueba, Yoshinobu; Okuda, Nobuyuki; Ohkura, Kengo; and Kugai, Hirokazu, 5,380,595, Cl. 428-408.000.

Ohmori, Masashi; Kotoh, Satoru; and Nakajima, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Cleaning apparatus. 5,379,785, Cl. 134-184.000.

Ohnishi, Hiroshi: See—
Ishizuka, Mitsuru; Yamaguchi, Noriyuki; Hasegawa, Hitoshi; Yao, Masaharu; Ohnishi, Hiroshi; Yamamoto, Yuuzi; and Tuzi, Masayuki, 5,381,183, Cl. 348-458.000.

Ohnishi, Toshikazu: See—
Hoshi, Hiroaki; Nishimura, Matsuomi; Tanaka, Kazumi; Miyazaki, Takashi; Ohnishi, Toshikazu; and Takayama, Hidehito, 5,380,490, Cl. 422-73.000.

Ohnishi, Toyoji: See—
Fujita, Kenjiro; Kondo, Akihiro; Ohnishi, Toyoji; Hasegawa, Yoshio; and Yuge, Mitsuru, 5,379,874, Cl. 192-85.00R.

Ohno, Kinitiro, to Tokyo Kikai Seisakusho, Ltd. Delivery machine of folder unit. 5,380,000, Cl. 271-277.000.

Ohno, Koichi; and Tachibana, Tetsuo, to Fujitsu Limited. Apparatus for controlling ATM cell generation rate. 5,381,411, Cl. 370-60.000.

Ohno, Tadayoshi: See—
Shibuya, Kunihiro; Hiroki, Masashi; Hatakeyama, Takashi; and Ohno, Tadayoshi, 5,380,394, Cl. 156-540.000.

Ohnuma, Kenji; Suzuki, Masaaki; and Danjoh, Keishi, to Canon Kabushiki Kaisha. Ferroelectric liquid crystal display with seal larger than cell gap plus half color filter thickness and 1.2-5mm from filter edge. 5,381,255, Cl. 359-68.000.

Ohora, Yasunori: See—
Aso, Takashi; and Ohora, Yasunori, 5,381,514, Cl. 395-2.730.

Ohori, Keizo: See—
Ueda, Yutaka; Ohori, Keizo; Shimizu, Tsuneo; and Mizutani, Shoji, 5,381,340, Cl. 364-470.000.

Ohsawa, Seiichi: See—
Yanagisawa, Takuma; and Ohsawa, Seiichi, 5,381,391, Cl. 369-14.000.

Ohsawa, Takashi, to Kabushiki Kaisha Toshiba. Voltage stress test circuit for a DRAM. 5,381,373, Cl. 365-201.000.

Ohshita, Koichi, to Nikon Corporation. Keplerian zoom finder optical system. 5,381,265, Cl. 359-422.000.

Ohta, Jun: See—
Hamaguchi, Akihiro; Osone, Hisao; Takada, Hiroto; and Ohta, Jun, 5,381,315, Cl. 361-727.000.

Ohta, Junichi: See—
Matsushita, Masakazu; Kiyota, Yoshisato; Ohtsubo, Hiroshi; and Ohta, Junichi, 5,380,476, Cl. 264-63.000.

Ohta, Masahiro; and Yoshikawa, Masao, to Mitsui Toatsu Chemicals, Inc. Polyimides, process for the preparation thereof and polyimide resin compositions. 5,380,820, Cl. 528-353.000.

Ohta, Masahiro: See—
Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsuki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.

Ohta, Masao: See—
Iwasaki, Yoshihisa; Takeda, Tohru; and Ohta, Masao, 5,380,252, Cl. 474-77.000.

Ohta, Masumi: See—
Fukumoto, Atsushi; Udagawa, Toshiaki; Yoshimura, Shunji; Ohta, Masumi; Ono, Masumi; and Yasuda, Kouichi, 5,380,573, Cl. 428-64.000.

Ohta, Yasunori, to Fuji Photo Film Co., Ltd. Cassette. 5,379,997, Cl. 271-145.000.

Ohta, Yasunori, to Fuji Photo Film Co., Ltd. Cassette for radiation image storage panels. 5,381,017, Cl. 250-484.400.

Ohtani, Hisao, to Sony Corporation. Disc loading mechanism for disc driving apparatus. 5,381,393, Cl. 369-77.200.

Ohtsu, Akihiko: See—
Kawaguchi, Akira; and Ohtsu, Akihiko, 5,380,211, Cl. 439-74.000.

Ohtsubo, Hiroshi: See—
Matsushita, Masakazu; Kiyota, Yoshisato; Ohtsubo, Hiroshi; and Ohta, Junichi, 5,380,476, Cl. 264-63.000.

Oikawa, Hideaki: See—
Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsuki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.

Oilfield Production Equipment Co., Ltd.: See—
Jacobs, James L., 5,379,522, Cl. 33-543.000.

Okabayashi, Takahiro: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yui-chi, 5,379,515, Cl. 29-852.000.

Okabe, Toshiaki, to Yazaki Corporation. Connector. 5,380,220, Cl. 439-456.000.

Okada, Kazuo: See—
Sekine, Akihiro; Kikuta, Yoshinori; Tezuka, Shinkichi; Okada, Kazuo; and Nakajima, Hiroshi, 5,380,715, Cl. 514-47.000.

Okada, Mitsuya, to NEC Corporation. Information detection of a phase-change type optical recording medium by shifting the phase of a reference light. 5,381,395, Cl. 369-112.000.

Okada, Shinichi, to Pioneer Electronic Corporation. Data recording medium, method of recording data thereon, and apparatus for and method of reproducing it. 5,381,397, Cl. 369-124.000.

Okaku, Toshinobu: See—
Watanabe, Satoshi; Miura, Kenzo; Okaku, Toshinobu; Okamoto, Hitoshi; and Sugiyama, Youichi, 5,380,483, Cl. 420-73.000.

Okamoto, Hitoshi: See—
Watanabe, Satoshi; Miura, Kenzo; Okaku, Toshinobu; Okamoto, Hitoshi; and Sugiyama, Youichi, 5,380,483, Cl. 420-73.000.

Okamura, Hisatake; Kasahara, Masahiro; and Taniguchi, Tetsuo, to Murata Manufacturing Co., Ltd. Resonator having loop-shaped electrode. 5,381,117, Cl. 333-175.000.

Okamura, Koji: See—
Arima, Tadao; and Okamura, Koji, 5,381,262, Cl. 359-341.000.

Okazawa, Koichi; Kobayashi, Kazushi; and Aburano, Ichiharu, to Hitachi, Ltd. Copyback memory system and cache memory controller which permits access while error recovery operations are performed. 5,381,544, Cl. 395-575.000.

O'Keefe, Julia A.; Riley, Douglas H.; and Shelhamer, Kenneth W., to AT&T Corp. Serving cellular calls to stations at the boundary between switch serving areas. 5,381,464, Cl. 379-59.000.

O'Keefe, Patrick J., Jr.: See—
Becker, Kevin C.; O'Keefe, Patrick J., Jr.; and Dixon, Eddie W., Jr., 5,380,366, Cl. 118-712.000.

Okimoto, Hajime: See—
Shishido, Hideomi; Doi, Shigeo; Hirakiuchi, Masanori; and Okimoto, Hajime, 5,380,185, Cl. 425-556.000.

Okimura, Yasunori, to NEC Corporation. Semiconductor memory device. 5,381,378, Cl. 365-233.000.

Okine, Richard K.; and Tam, Albert S., to E. I. Du Pont de Nemours and Company. Process of making a consolidated part. 5,380,480, Cl. 264-316.000.

Okoshi, Hitoshi: See—
Ookouchi, Takahiko; Kagohara, Hiromi; Hama, Hiromu; Nakagawa, Mitsuo; Okoshi, Hitoshi; and Nakayama, Yoshitaka, 5,380,264, Cl. 492-3.000.

Okubo, Naofumi: See—
Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, 5,381,153, Cl. 342-70.000.

Okuda, Nobuyuki: See—
Ueba, Yoshinobu; Okuda, Nobuyuki; Ohkura, Kengo; and Kugai, Hirokazu, 5,380,595, Cl. 428-408.000.

Okuda, Osamu; Yamamoto, Minoru; Nakano, Tomoyuki; and Hirai, Wataru, to Matsushita Electric Industrial Co., Ltd. Electronic component installing apparatus and method. 5,379,514, Cl. 29-833.000.

Okumoto, Takaharu: See—
Teramoto, Mitsutake; Okumoto, Takaharu; and Asabuki, Hideyo, 5,380,004, Cl. 273-77.00A.

Okumura, Katsuya: See—
Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshiharu; Mikata, Yuichi; Miyazaki, Shinji; Morioka, Takahiko; and Okumura, Katsuya, 5,380,370, Cl. 134-22.110.

Okumura, Takahisa: See—
Takatori, Taizo; Ishihara, Akihiro; Masui, Tadaaki; Kawakami, Yoshinori; Okumura, Takahisa; and Ishizaka, Masuo, 5,381,097, Cl. 324-512.000.

Okuno Chemical Industries Co., Ltd.: See—
Hattori, Noriko; Torikai, Eiichi; Kawagishi, Shigemitsu; Tadako-shi, Mitsuaki; and Okuno, Kazuyoshi, 5,380,562, Cl. 427-437.000.

Okuno, Kazuyoshi: See—
Hattori, Noriko; Torikai, Eiichi; Kawagishi, Shigemitsu; Tadako-shi, Mitsuaki; and Okuno, Kazuyoshi, 5,380,562, Cl. 427-437.000.

Oldham, Susan L.; Harvey, Martha J.; Panaretos, Steve K.; Fugatt, John L.; Ducharme, Richard L.; Bille, Jeffrey M.; and Klebe, Douglas O., to Hughes Aircraft Company. Molded metallized plastic microwave components and processes for manufacture, 5,380,386, Cl. 156-150.000.

Oldrey, Richard W.: See—
Argyris, Straty N.; Harris, Willard S.; Oldrey, Richard W.; and Ossolinski, Edward J., 5,380,955, Cl. 174-151.000.

O'Leary, Thomas M.; Drake, Peter R.; and Merrill, Philip R., deceased (by Merrill, Jerilyn L., administratrix), to Raytheon Company. Spurious frequency suppressor, 5,381,110, Cl. 330-149.000.

Olivares, Giovanna: See—
Rehse, Denis; Rumsey, Frank; Petit, Tim; Garrett, Samuel; Olivares, Giovanna; Welsh, David; Antici, Roger; and Bruno, Josepha, 5,381,190, Cl. 351-57.000.

Olivarez, Jerry, to Advanced Micro Devices, Inc. Lead frame with selected inner leads coupled to an inner frame member for an integrated circuit package assemblies, 5,381,037, Cl. 257-666.000.

Olliero, Dominique: See—
Boisegrain, Robert; Brodin, Roger; Gully, Danielle; Molimard, Jean-Charles; and Olliero, Dominique, 5,380,736, Cl. 544-369.000.

Olsen, John H.; Tremoulet, Olivier L., Jr.; and Raghavan, Chidambaram, to Flow International Corporation. Pressure compensation device for high-pressure liquid pump, 5,380,159, Cl. 417-53.000.

Olson, James R., to Deknatel Technology Corporation, Inc. Absorbable coating and blend, 5,380,780, Cl. 524-311.000.

Olsson, Jonny: See—
Rootzen, Holger; Heijl, Anders; and Olsson, Jonny, 5,381,195, Cl. 351-222.000.

Olympus Optical Co., Ltd.: See—
Anami, Takayuki, 5,380,486, Cl. 422-63.000.

Oyama, Keiichi; Tsuruoka, Takao; Nakamura, Kazunari; Konomura, Yutaka; Kanno, Masahide; and Hattori, Shinichi, 5,379,757, Cl. 128-6.000.

Horiguchi, Toshio, 5,380,996, Cl. 235-475.000.

Kaneko, Nobuyuki; and Chiyomatsu, Nobumitsu, 5,381,398, Cl. 369-124.000.

Saito, Hidetoshi; Inaba, Makoto; Tagawa, Motoyuki; and Nagase, Toru, 5,380,319, Cl. 606-28.000.

Omura, Ichiro: See—
Shinobe, Takashi; Nakayama, Kazuya; Takeuchi, Minami; Yamaguchi, Masakazu; Kitagawa, Mitsuhiro; Omura, Ichiro; and Nakagawa, Akio, 5,381,026, Cl. 257-147.000.

O'Neil, Edmund; and Pace, Vincent. Sharpener for a soft element pencil, 5,379,817, Cl. 144-363.000.

O'Neill, Brian T.: See—
Busch, Frank R.; Lehner, Richard S.; and O'Neill, Brian T., 5,380,860, Cl. 546-315.000.

Onishi, Hidenori; and Matuda, Hiroaki, to Nippon Zeon Co., Ltd. Impact-resistant styrenic polymer resin composition and process for making same, 5,380,798, Cl. 525-89.000.

Onishi, Shigeo, to Sharp Kabushiki Kaisha. Method for forming a titanium thin film, 5,379,718, Cl. 117-88.000.

Ono, Masumi: See—
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ohta, Masumi; Ono, Masumi; and Yasuda, Kouichi, 5,380,573, Cl. 428-64.000.

Ono, Takeshi, to Canon Kabushiki Kaisha. Recording method and apparatus for preheating a thermally activated printing read, 5,381,164, Cl. 346-76.0PH.

Ono, Toshihiko: See—
Satake, Yoshikatsu; Ono, Toshihiko; Itoh, Yoshinobu; and Ichikawa, Yukio, 5,380,783, Cl. 524-406.000.

Ono, Yasuyuki: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.

Onuma, Hideki, to Sony Corporation. Power supply apparatus for a system composed of plural electronic units, 5,381,049, Cl. 307-86.000.

Onuma, Kenji: See—
Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaoka, Masanobu; Mihara, Tadashi; Koda, Yasuo; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.

Oohori, Toshiaki, to Alps Electric Co., Ltd. Coordinate input device, 5,381,159, Cl. 345-163.000.

Ooka, Akira: See—
Obata, Tokio; Ooka, Akira; Fujii, Katsutoshi; and Suizu, Shin, 5,380,744, Cl. 514-403.000.

Ookouchi, Takahiko; Kagohara, Hiromi; Hama, Hiromu; Nakagawa, Mitsuo; Okoshi, Hitoshi; and Nakayama, Yoshitaka, to Hitachi, Ltd. Roller for use in molten metal bath, 5,380,264, Cl. 492-3.000.

Op de Beeck, Maria: See—
Hanawa, Tetsuro; and Op de Beeck, Maria, 5,380,889, Cl. 556-410.000.

Oran, Gordon: See—
Neely, William G., Jr.; and Oran, Gordon, 5,380,582, Cl. 428-220.000.

Orbital Engine Company (Australia) Pty. Limited: See—
Sayer, Christopher N. F., 5,379,731, Cl. 123-65.0PE.

Oriani, Roberto: See—
Cipolli, Roberto; Oriani, Roberto; Masarati, Enrico; and Nucida, Gilberto, 5,380,815, Cl. 528-254.000.

Orihashi, Yasushi: See—
Nishimura, Masatoshi; Takahashi, Masaaki; and Orihashi, Yasushi, 5,379,774, Cl. 128-666.000.

Orr, Joseph A.: See—
Koford, Scott A.; and Orr, Joseph A., 5,379,650, Cl. 73-861.520.

Orr, Lawrence W., Jr., to Woven Electronics Corp. Woven electrical transmission cable with cut line, 5,380,954, Cl. 174-117.00M.

Ortega, Jerry, Jr. Push-in light socket adapter, 5,380,214, Cl. 439-253.000.

Orth, Michael J., to Unisurge, Inc. Cannula fixation device with retaining ring having indentations, 5,380,302, Cl. 604-283.000.

Orth, Winfried: See—
Sendelbach, Stefan; Weiss, Wolfgang; Orth, Winfried; Kleffner, Hans W.; and Laufer, Albrecht, 5,380,862, Cl. 546-345.000.

Ortho Pharmaceutical Corporation: See—
Murray, William V., 5,380,869, Cl. 548-375.100.

Osaka, Haruya; and Tabata, Yoshiaki, to Mita Industrial Co., Ltd. Separating device for image forming apparatus, 5,381,216, Cl. 355-221.000.

Osaka Organic Chemical Ind. Co., Ltd.: See—
Hosokawa, Hideo; Shikatsu, Misao; and Fujimoto, Takahiro, 5,380,884, Cl. 549-515.000.

Osawa, Yutaka: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.

Osborne, Gregory J.: See—
Martindale, Richard A.; Martindale, William A.; Straddeck, Matthew; and Osborne, Gregory J., 5,379,916, Cl. 222-1.000.

Osborne, Thomas E. Dual-function label, 5,379,538, Cl. 40-299.000.

Oscar Mayer Foods Corporation: See—
Flisram, Dennis G.; Rattmann, James A.; Skaar, Gary R.; and Holmes, Terry L., 5,379,633, Cl. 73-104.000.

Osentoski, Thomas: See—
Emery, Jerome W.; Medovsky, Alex G.; Ruhlman, Thomas L.; and Osentoski, Thomas, 5,380,039, Cl. 280-741.000.

Oshins, Ellen; and Impellizeri, Mary L. Flexible sheeting with casters, 5,379,485, Cl. 16-24.000.

Osing, Dirk; Ritter, Gunter; Treutlein, Gunter; and Erken, Manfred, to Reinbraun AG; and Code GmbH. Commercial Developments. Waste treatment process, 5,380,364, Cl. 106-697.000.

Osone, Hisao: See—
Hamaguchi, Akihiro; Osone, Hisao; Takada, Hiroto; and Ohta, Jun, 5,381,315, Cl. 361-727.000.

Osswald, Hartmut: See—
Barth, Hubert; Hartenstein, Johannes; Rudolph, Claus; Schachte, Christoph; Bette, Hans-Jürgen; Peck, Reinhard; and Osswald, Hartmut, 5,380,746, Cl. 514-414.000.

Ossolinski, Edward J.: See—
Argyris, Straty N.; Harris, Willard S.; Oldrey, Richard W.; and Ossolinski, Edward J., 5,380,955, Cl. 174-151.000.

Osswald, Hartmut: See—
Barth, Hubert; Hartenstein, Johannes; Rudolph, Claus; Schachte, Christoph; Bette, Hans-Jürgen; Peck, Reinhard; and Osswald, Hartmut, 5,380,746, Cl. 514-414.000.

Osteen, Mitchell M.; Sumer, Suleyman O.; Dozier, Charles L.; and Singaray, Santiago, to Regent Lighting Corporation. Sensor housing and adjustable mast arm for a swivel lighting fixture, 5,381,323, Cl. 362-276.000.

O'Sullivan, Eugene J.: See—
Kaja, Suryanarayana; Mukherjee, Shyama P.; O'Sullivan, Eugene J.; and Paunovic, Milan, 5,380,560, Cl. 427-306.000.

Otani, Masatoshi, to Canon Kabushiki Kaisha. Multimedia communication apparatus, 5,381,412, Cl. 370-84.000.

Otis Elevator Company: See—
Colby, Roy S., 5,379,864, Cl. 187-393.000.

Otruba, Svatoboj, to B & H Manufacturing Company, Inc. Labeling machine with variable speed cutting head, 5,380,381, Cl. 156-64.000.

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Otsuka, Yasushi: See—
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Otsuki, Kunio: See—
Noguchi, Teruhiko; Kinashi, Hiroshi; Masuda, Jitsuo; Inoue, Katsushi; Tanaka, Tatsuo; Otsuki, Kunio; and Adachi, Kazuya, 5,381,212, Cl. 355-211.000.

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Ottesen, Hal H.: See—
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Sipila, Heikki; and Viitamaki, Sakari, 5,379,602, Cl. 62-51.200.

Ovens, Kevin; Bittlestone, Clive; and Helmick, Bob, to Texas Instruments Incorporated. Interleaved shift register, 5,381,455, Cl. 377-67.000.

Overton, James M.; and Wurzbarger, Stephen R. Magnetizing apparatus for treatment of fluids, 5,380,430, Cl. 210-222.000.

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Morgan, Colin G., 5,381,236, Cl. 356-376.000.

Oy Sekko AB: See—
Ronning, Trond A.; and Skjetne, Terje, 5,380,961, Cl. 191-41.000.

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Minemoto, Hisashi; Ozaki, Yusuke; and Sonoda, Nobuo, 5,381,429, Cl. 372-21.000.

Ozawa, Isamu, to Canon Kabushiki Kaisha. Telephone exchange including less display elements than channels, 5,381,468, Cl. 379-136.000.

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Yoshida, Seikoh; Ozawa, Shoichi; and Kikuta, Toshio, 5,379,717, Cl. 117-14.000.

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Hania, Marc; and Ozouf, Rene-Claude, 5,380,997, Cl. 235-485.000.

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O'Neil, Edmund; and Pace, Vincent, 5,379,817, Cl. 144-363.000.

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Sakuma, Hotoji, 5,380,787, Cl. 524-591.000.

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Pahnke, Michael; and Westermeyer, Walter, 5,379,628, Cl. 72-453.180.

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McCall, John M.; Ayer, Donald E.; Jacobsen, E. Jon; VanDoomik, Frederick J.; Palmer, John R.; and Kames, Harold A., 5,380,841, Cl. 540-111.000.

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Ejiri, Susumu; Kimura, Makoto; and Hiraoka, Hajime, 5,379,683, Cl. 99-331.000.

Itakura, Tadashi; and Ejiri, Susumu, 5,380,191, Cl. 431-1.000.

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Ballato, Arthur; Kosinski, John A.; Dutta, Mitra; Shen, Hongen; Lu, Yicheng; and Pamulapati, Jagadeesh, 5,381,260, Cl. 359-248.000.

Panaretos, Steve K.: See—
Oldham, Susan L.; Harvey, Martha J.; Panaretos, Steve K.; Fugatt, John L.; Ducharme, Richard L.; Bille, Jeffrey M.; and Klebe, Douglas O., 5,380,386, Cl. 156-150.000.

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pounds and corresponding aqueous solutions, 5,380,791, Cl. 524-837.000.

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Zisa, Michele; Belluso, Massimiliano; and Paparo, Mario, 5,381,044, Cl. 327-109.000.

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Goedike, Peter; Blenninger, Ernst; Lechner, Manfred; Papenburg, Ulrich; Sindlhauser, Peter; and Goetz, Ulrich, 5,380,475, Cl. 264-29.500.

Paquet, Andrew N.: See—
Suh, Kyung W.; and Paquet, Andrew N., 5,380,767, Cl. 521-79.000.

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Park, Kyung-Ho, to Samsung Electronics Co., Ltd. Device for removing/inserting an ozone filter from and into an electrophotographic apparatus, 5,379,506, Cl. 29-426.600.

Parker, Fred T., to Cook Incorporated. Flexible, kink-resistant, introducer sheath and method of manufacture, 5,380,304, Cl. 604-282.000.

Parkes, Adrian S.: See—
Elgar, Anthony D.; Sales, Brian T.; and Parkes, Adrian S., 5,379,803, Cl. 138-89.000.

Parks, James R., to Black & Decker Inc. Depth adjusting system for a power tool, 5,380,132, Cl. 408-113.000.

Parnigoni, Johann. Asymmetrical sailing catamaran keels, 5,379,710, Cl. 114-61.000.

Parr Manufacturing, Inc.: See—
Brandt, Timothy B., 5,380,432, Cl. 210-243.000.

Parry, Ian S.: See—
Whitmarsh, William J.; Whittle, Simon M.; and Parry, Ian S., 5,381,108, Cl. 330-2.000.

Parsons, David H.: See—
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Partel, Robert. Electromagnetic feed device for variable forward motion of solder wire or welding wire in a soldering iron or welding gun, 5,379,941, Cl. 228-33.000.

Paschedag, Thomas B., to Tema Systems, Inc. Centrifuge scroll with abrasion resistant inserts, 5,380,434, Cl. 210-360.200.

Pasco-Anderson, James A.: See—
Nusinov, Eugene B.; and Pasco-Anderson, James A., 5,381,454, Cl. 377-39.000.

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Choperena, Alfredo; Krogh, Ross; Prasad, Venkatesh; and Giter, Gershon, 5,380,487, Cl. 422-63.000.

Patel, Ambelal R.: See—
Ravichandran, Ramanathan; and Patel, Ambelal R., 5,380,828, Cl. 534-751.000.

Patel, Bharat B.: See—
Stephens, Michael; Swanson, Billy L.; and Patel, Bharat B., 5,380,705, Cl. 507-121.000.

Patel, Dennis; and Chang, Felix, to Manchester Plastics. Vehicular convertible cupholder, 5,379,978, Cl. 248-311.200.

Patois, Carl: See—
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Patti, Nicola: See—
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Patton, David L.: See—
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Kaja, Suryanarayana; Mukherjee, Shyama P.; O'Sullivan, Eugene J.; and Paunovic, Milan, 5,380,560, Cl. 427-306.000.

Paust, Joachim; Eckes, Peter; Siegel, Wolfgang; Balkenhohl, Friedhelm; Dobler, Walter; and Hüllmann, Michael, to BASF Aktiengesellschaft. Preparation of R/S-γ-lipoic acid or R/S-α-lipoic acid, 5,380,920, Cl. 560-263.000.

Peacock, Anthony: See—
Perryman, Michael A. C.; Peacock, Anthony; and Foden, Clare L., 5,381,001, Cl. 250-214.100.

Pearce, Terry V.: See—
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Pearson, Eric M.: See—
Shen, Xiao An; Bai, Yu Sheng; and Pearson, Eric M., 5,381,362, Cl. 364-825.000.

Peck, Leonard E., Jr.: See—
Ingle, Lloyd D.; Peck, Leonard E., Jr.; and Santana, Jose A., 5,379,512, Cl. 29-832.000.

Peck, Reinhard: See—
Barth, Hubert; Hartenstein, Johannes; Rudolph, Claus; Schachte, Christoph; Bette, Hans-Jürgen; Peck, Reinhard; and Osswald, Hartmut, 5,380,746, Cl. 514-414.000.

- Peleg, Alexander; and Weiser, Uri, to Intel Corporation. Dynamic flow instruction cache memory organized around trace segments independent of virtual address line. 5,381,533, Cl. 395-375.000.
- Pellosio, Turiddu A.: See—
Klemann, Lawrence P.; Roden, Allan D.; Pellosio, Turiddu A.; and Boldt, Gilbert L., 5,380,544, Cl. 426-607.000.
- Pena-Finol, Jesus S.; Chambers, Mark J.; and Phillips, James B., to Motorola, Inc. Continuous time common mode feedback amplifier. 5,381,114, Cl. 330-258.000.
- Pendleton, Robert C. Bicycle seat security ring. 5,380,061, Cl. 297-195.100.
- Pennsylvania Electric Company: See—
Leonard, Joseph W., III; and Stoessner, Robert D., 5,380,342, Cl. 44-280.000.
- Pepin, Regis: See—
Hutt, Jean; Mugnier, Jacques; Greiner, Alfred; and Pepin, Regis, 5,380,743, Cl. 514-399.000.
- Pepper, Timothy P., to Ashland Oil, Inc. Styrene soluble unsaturated polyester resin from polyethylene terephthalate. 5,380,793, Cl. 525-48.000.
- Per Gunnar Ronn AB: See—
Ronn, Per G.; and Svedberg, Leif, 5,379,977, Cl. 248-277.000.
- Perez, Alain M.; and Perez, Ignacio. Stake extractor device with a double-handed cross handle. 5,379,986, Cl. 254-19.000.
- Perez, Ignacio: See—
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- Perez, Rene D.: See—
Wickholm, David R.; Tingstad, James S.; Haek, Robert S.; and Perez, Rene D., 5,381,264, Cl. 359-419.000.
- Pergolizzi, James; and Pergolizzi, Marie D. Screen guard, and screen assembly provided therewith. 5,379,821, Cl. 160-371.000.
- Pergolizzi, Marie D.: See—
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- Peri GmbH: See—
Schworer, Artur, 5,379,566, Cl. 52-632.000.
- Perichon, Olivier; and Ponchet, Patrick, to NACAM. Security assembly for separable coupling device, particularly for motor vehicle steering columns. 5,380,040, Cl. 280-777.000.
- Perkins, David J.; Siekkinen, Bruce T.; and Winsor, Frederick J., to Chrysler Corporation. Vehicle rear suspension system. 5,380,036, Cl. 280-716.000.
- Perni, Robert B.: See—
Miller, Theodore C.; Collins, Joseph C.; Mattes, Kenneth C.; Wentland, Mark P.; Perni, Robert B.; Corbett, Thomas H.; and Guiles, Joseph W., 5,380,749, Cl. 514-437.000.
- Perreault, Jean M.; and Roussel, Bruno F., to Thomson Tubes and Displays, S.A. Low power consumption dynamic focusing circuit. 5,381,079, Cl. 315-382.000.
- Perrella, Guido; and Bigler, Nicolas, to DBM Industries Limited. Die casting machine. 5,379,827, Cl. 164-343.000.
- Perret, Robert J., Jr., to A. S. M. Company, Inc. Seal for airless spray gun. 5,379,938, Cl. 239-119.000.
- Perret, Robert J., Jr. Single piece spray tip. 5,379,939, Cl. 239-119.000.
- Perrignon de Troyes, Francois: See—
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- Perron, Robert: See—
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- Perryman, Michael A. C.; Peacock, Anthony; and Foden, Clare L., to Agence Spatiale Europeenne. Detection cell, a detector, a sensor, and a spectroscopy using a superconductive tunneling junction. 5,381,001, Cl. 250-214.100.
- Perrymore, Loyd: See—
Amick, Patricia J.; Perrymore, Loyd; and Auld, Michael D., 5,381,506, Cl. 385-129.000.
- Persson, Christer, to Procter & Gamble Hygien Aktiebolag. Windowed vein catheter dressing. 5,380,294, Cl. 604-180.000.
- Pesce, Sergio: See—
Malfatto, Pierfiore; Pesce, Sergio; and Cavallo, Elio, 5,380,636, Cl. 430-503.000.
- Peter, Andreas: See—
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- Peter, Josef; Meckler, Peter; Krasser, Fritz; and Endner, Gerhard, to Ellenberger & Poensgen GmbH. Remote controlled overload protective switch. 5,381,121, Cl. 335-20.000.
- Peterson, Erik W. Aspiration system having pressure-controlled and flow-controlled modes. 5,380,280, Cl. 604-65.000.
- Peterson, Mary K. System for supporting and watering plant pots. 5,379,548, Cl. 47-81.000.
- Peterson, Rudolph A., Jr.: See—
Haddick, Brian J.; and Peterson, Rudolph A., Jr., 5,379,733, Cl. 123-179.170.
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- Petroff, Lenin J.: See—
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- Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.
- Petrolite Corporation: See—
Martin, Richard L., 5,380,466, Cl. 252-389.220.
- Petrometrix Ltd.: See—
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- Petrusic, John F.: See—
Wedgwood, Janet E.; and Petrusic, John F., 5,381,357, Cl. 364-724.160.
- Petrucchi, Vincent E.: See—
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- Pfeifer, Thomas M.: See—
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- Pfizer Hospital Products Group, Inc.: See—
Makower, Joshua; Slec, Earl H.; Chesler, Naomi C.; Gorman, William J.; and Barber, Frank E., 5,380,290, Cl. 604-164.000.
- Pfizer Inc.: See—
Busch, Frank R.; Lehner, Richard S.; and O'Neill, Brian T., 5,380,860, Cl. 546-315.000.
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Marchall, Robert; and Eketorp, Rainer, 5,380,824, Cl. 530-385.000.
- Phelps, Andrew E.; Eckert, Roger E.; and Hessel, Richard E., to Cray Research, Inc. Method and apparatus for separate mark and wait instructions for processors having multiple memory ports. 5,381,536, Cl. 395-375.000.
- Pherigo, Douglas E.: See—
Schmitt, Karl R.; and Pherigo, Douglas E., 5,381,317, Cl. 362-66.000.
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Smith, Jerry W.; and Fields, Larry R., 5,380,230, Cl. 445-32.000.
- Phillips, Edward H. Tool for laparoscopic surgery. 5,380,277, Cl. 604-33.000.
- Phillips, James B.: See—
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- Phillips, Joseph R.: See—
Ryham, Rolf; Nykanen, Tuomo S.; Greenwood, Brian F.; Gulichsen, Johan; Kiiskila, Erkki; Mattelmaki, Esko; Phillips, Joseph R.; Richardsen, Jan; Soderman, Jarmo; and Wiklund, Karl G., 5,380,402, Cl. 162-30.100.
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- Stephens, Michael; Swanson, Billy L.; and Patel, Bharat B., 5,380,705, Cl. 507-121.000.
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- Piazza, Charles L.; and Therrien, Edward E., to Davidson Textron, Inc. Venting device for rotocase shell molds. 5,380,183, Cl. 425-434.000.
- Piccinino, Jr. Ralph L.; Rosenburgh, John H.; Patton, David L.; and Manico, Joseph A., to Eastman Kodak Company. Textured surface with canted channels for an automatic tray processor. 5,381,203, Cl. 354-324.000.
- Picker International, Inc.: See—
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- Picker Nordstar, Inc.: See—
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- Pickering, Timothy L.: See—
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- Piejak, Robert B.: See—
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- Pierce, Brian M.: See—
Dougherty, Thomas K.; Harris, Norman H.; Chow, James R.; and Pierce, Brian M., 5,381,149, Cl. 342-1.000.
- Pierce, Byron C.: See—
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- Pigman, Steven O. Adjustable roof scaffold support assembly. 5,379,859, Cl. 182-45.000.
- Pilecki, Michael J.; and Wood, Robert J., to Welch Allyn, Inc. Replaceable lens assembly for video laparoscope. 5,379,756, Cl. 128-6.000.
- Pillsbury, Dale G.: See—
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- Pilot, John F.: See—
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- Pina Vertriebs AG: See—
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- Ping, Cao: See—
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- Pino, Giovanni, to Bissell, Inc. Vacuum cleaner having a tool attached to the nozzle. 5,379,483, Cl. 15-323.000.
- Pinter, Janos: See—
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- Pioneer Electronic Corporation: See—
Hira, Osamu, 5,381,392, Cl. 369-54.000.
- Okada, Shinichi, 5,381,397, Cl. 369-124.000.
- Terai, Takashi; Yoshioka, Takayuki; and Yamamoto, Hideki, 5,381,189, Cl. 348-776.000.
- Yanagawa, Naoharu, 5,381,394, Cl. 369-100.000.
- Yanagisawa, Takuma; and Ohsawa, Seichi, 5,381,391, Cl. 369-14.000.
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- Pischke, Reiner; and Luther, Annette, to Audi AG. Method and apparatus for controlling the amount of exhaust gas recycled in an internal combustion engine. 5,379,744, Cl. 123-571.000.
- Pitkin, Kevin J.: See—
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- Pitner, J. Bruce; and Hoke, Randal A., to Becton, Dickinson and Company. Fluorescent pH indicators. 5,380,880, Cl. 549-394.000.
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- Pitts, Terry L.: See—
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- Pixar: See—
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- Podszun, Wolfgang: See—
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- Pohjonen, Jukka; Heikkila, Pekka; and Tolonen, Jouko, to Kone Oy. Load handling method and system. 5,380,139, Cl. 414-280.000.
- Pohl, Wolfgang: See—
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- Poirier, Robert V.: See—
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- Poole, Donald R.; and Kwong, Patrick C., to Automotive Systems Laboratory, Inc. Ignition compositions for inflator gas generators. 5,380,380, Cl. 149-22.000.
- Poorman, Richard M.; and Weeks, Jack L., to United States of America, National Aeronautics and Space Administration. Vacuum vapor deposition. 5,380,415, Cl. 204-192.380.
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- Portilla, Mario. Carrier for transporting goods. 5,380,029, Cl. 280-414.500.
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- Posly, Louis M. Water bottle lifting mechanism. 5,379,814, Cl. 141-351.000.
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- Powell, Jonathan S. Ventless transfer valve and method for using same. 5,379,793, Cl. 137-15.000.
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- Pratt & Whitney Canada, Inc.: See—
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- Premier Refractories and Chemicals Inc.: See—
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- Presley, James R.: See—
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- Prindle, Carl E.: See—
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- Pryor, Paul L. Bearing arrangement having magnetic attraction between sliders and clearance mechanism. 5,380,095, Cl. 384-8.000.
- Pryor, Timothy R. Method and apparatus for assembly of car bodies and other 3-dimensional objects. 5,380,978, Cl. 219-121.640.
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- Puschner, Georg; and Lott, Herbert, to Kaltenbach & Voigt GmbH & Co. Machining device for machining precision, in particular dental, workpieces in a machining chamber surrounded by a housing. 5,380,077, Cl. 312-1.000.
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- Quickie Manufacturing Corporation: See—
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- R. E. Mason Enterprises: See—
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- Rasmussen, Gary H., to Merck & Co., Inc. Aldehyde metabolite of 17 β -N-monosubstituted-carbamoyl-4-aza-5 α -androst-1-en-3-ones and related analogues. 5,380,728, Cl. 514-284.000.
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- Rattmann, James A.: See—
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- Redmon, Larry L.: See—
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- Reinhoudt, David N.; Engbersen, Johannes F. J.; Verboom, Willem; Rudkevich, Dimitri; and Stauthamer, Walter P. R. V., to Priva Agro Holding B.V. Anion-selective membrane and a sensor provided therewith. 5,380,423, Cl. 204-418.000.
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Barrett, Alan J.; Bittle, David J.; and Rich, Daniel H., 5,380,656, Cl. 435-219.000.
- Richard Wolf GmbH: See—
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- Richardsen, Jan: See—
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- Richardson-Vicks Inc.: See—
Alban, Noelle C.; and Deckner, George E., 5,380,528, Cl. 424-401.000.
- Richmond, Robert C., to Archive Corporation. Method for self-cleaning dat drive tape heads. 5,381,292, Cl. 360-128.000.
- Ricoh Company Ltd.: See—
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- Endo, Kenji, 5,379,995, Cl. 271-9.000.
- Goto, Hiroshi, 5,380,693, Cl. 503-200.000.
- Kanemoto, Akihiko; Iimura, Haruo; and Takiguchi, Yasuyuki, 5,380,459, Cl. 252-299.010.
- Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kagawa, Tsutomu, 5,380,550, Cl. 427-146.000.
- Ricoh Corporation: See—
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- Ricoh Seiki Company, Ltd.: See—
Kimura, Mitsuteru; and Suzuki, Noriaki, 5,380,373, Cl. 148-33.200.
- Riedel, Michael J.: See—
Bittel, Robert W.; and Riedel, Michael J., 5,380,971, Cl. 200-536.000.
- Rief, Dieter J.; and Frenzler, Herman E., to Sta-Rite Industries, Inc. Automatic swimming pool cleaner. 5,379,473, Cl. 15-1.700.
- Rieger, Franz. Bath for the pre-treatment of light metals. 5,380,451, Cl. 252-79.200.
- Rieke Corporation: See—
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- Rieke, Larry D.: See—
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- Rieke, Todd M.; and Rieke, David S., to Rieke Corporation. Flange extension for externally detachable drum liner. 5,379,913, Cl. 220-601.000.
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Flachmueller, Werner; and Weiss, Hans-Joach, 5,379,500, Cl. 28-220.000.

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O'Keefe, Julia A.; Riley, Douglas H.; and Shelhamer, Kenneth W., 5,381,464, Cl. 379-59.000.

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Robbins Scientific Corporation: See—
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Denz, Helmut; and Blumenstock, Andreas, 5,379,638, Cl. 73-291.000.

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Rausser, Ulrich, 5,379,848, Cl. 173-48.000.

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Vogel, Manfred; and Herden, Werner, 5,379,745, Cl. 123-655.000.

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Shames, Howard; Carswell, William; Roberts, Ronald; Shulman, Larry; and Smith, Gerald W., 5,379,875, Cl. 194-317.000.

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Beach, Steven F.; Latham, David W. S.; Roberts, Tony G.; and Sidgwick, Colin B., 5,380,922, Cl. 562-467.000.

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Robinder, Ronald C.: See—
Miller, David W.; Nelson, Larry A.; and Robinder, Ronald C., 5,381,182, Cl. 348-448.000.

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Jeromin, Lothar S.; and Robinson, George D., Jr., 5,381,014, Cl. 250-370.000.

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Morgan, Rodney A.; and Griffin, Kathy R., 5,379,462, Cl. 2-403.000.

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Adang, Michael J.; Rocheleau, Thomas A.; Merlo, Donald J.; and Murray, Elizabeth E., 5,380,831, Cl. 536-23.710.

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Ghouri, Ahmed F., 5,380,305, Cl. 604-263.000.

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Andrews, Angus P., 5,381,095, Cl. 324-326.000.

Standley, David L., 5,381,054, Cl. 327-82.000.

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Klemann, Lawrence P.; Roden, Allan D.; Pelloso, Turiddu A.; and Boldt, Gilbert L., 5,380,544, Cl. 426-607.000.

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Miskinis, Edward T.; Rodenberg, Orville C.; and Saha, Bijay S., 5,381,219, Cl. 355-305.000.

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Roehrs, Herbert C.: See—
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Smeenge, James G., Jr.; and Rogers, Paul L., 5,380,212, Cl. 439-86.000.

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Rogowski, Robert S.: See—
Egalon, Claudio O.; and Rogowski, Robert S., 5,381,493, Cl. 385-13.000.

Rohde, Jason A. Two-way gatherer. 5,379,878, Cl. 198-366.000.

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Joshi, Shankar R.; and Rohde, Meta, 5,381,084, Cl. 323-361.000.

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Hirai, Minoru, 5,381,316, Cl. 361-760.000.

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Fischer, Jens-Dieter; and Siol, Werner, 5,380,801, Cl. 525-132.000.

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Bogan, Leonard E., Jr., 5,380,782, Cl. 524-404.000.

Kirk, Thomas C.; Schwartz, Curtis; and Weinstein, Barry, 5,380,447, Cl. 252-8.600.

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Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,380,817, Cl. 528-328.000.

Rohrbaugh, John G.; Baker, Thomas H.; Bennett, Michael J.; Gil, Mercedes P.; and Proula, Robert W., to Hewlett-Packard Company. Apparatus and method for obtaining a list of numbers of wafers for integrated circuit testing. 5,381,344, Cl. 364-490.000.

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Prakash, Ravinder; and Rohrer, Gene D., 5,380,999, Cl. 250-216.000.

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Tomellini, Giorgio; and Rollandi, Gian A., 5,380,281, Cl. 604-85.000.

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Arney, Michel D.; Madore, Carl L.; and Malewicz, Andrzej M., 5,380,020, Cl. 280-11.220.

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Vermeulen, Arnoldus H. A., 5,380,120, Cl. 403-405.100.

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Mansfield, Philip A., 5,379,800, Cl. 137-875.000.

Romaine, Richard A. Mesh-type skin biopsy appliance. 5,380,337, Cl. 606-131.000.

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Sevrin, Mireille; Menin, Jacques; Mzloizel, Christian; Diaz Martin, Juan A.; Martin Escudero Perez, Ulpiano; Bedoya Zurita, Manuel; Del Sol Moreno, Gregorio; Jimenez Bargueno, Maria D.; and Romanach Ferrer, Magali, 5,380,742, Cl. 514-397.000.

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Rona, Robert: See—
Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statio-tis, Eraclis, 5,380,532, Cl. 424-451.000.

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Ronnett, Gabriele V.; Hester, Lynda; and Snyder, Solomon H., to Johns Hopkins University. The Method of determining odorant compounds and antagonists of odorants using a primary culture of olfactory neurons. 5,380,651, Cl. 435-29.000.

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Rosen, Hal J.: See—
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Rosenburgh, John H.: See—
Piccinino, Jr. Ralph L.; Rosenburgh, John H.; Patton, David L.; and Manico, Joseph A., 5,381,203, Cl. 354-324.000.

Roser, Joachim, to BASF Aktiengesellschaft. Production of negative relief copies. 5,380,622, Cl. 430-325.000.

Roshen, Waseem A., to General Electric Company. Multi-turn z-foldable secondary winding for a low-profile, conductive film transformer. 5,381,124, Cl. 336-200.000.

Rosinski, Richard R.; and Salimando, Steven C., to AT&T Corp. Telephone call billing system. 5,381,467, Cl. 379-121.000.

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Rothe, Charles E., 5,379,937, Cl. 239-14.200.

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Bowen, Larry; Brackmann, Warren A.; Cohen, Norman; Fazekas, George; Heffernan, Joseph; Kaczmarek, Peter P.; and Snaidr, Stanislaw M., 5,379,788, Cl. 131-331.000.

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Roussel, Bruno F.: See—
Perreaut, Jean M.; and Roussel, Bruno F., 5,381,079, Cl. 315-382.000.

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Benoit, Marc; Laugraud, Sylvain; and Brayer, Jean-Louis, 5,380,883, Cl. 549-438.000.

Blade, Robert J., 5,380,732, Cl. 514-351.000.

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Cockerill, George S.; Pulman, David A.; Blade, Robert J.; and Black, Malcolm H., 5,380,733, Cl. 514-352.000.

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Rowles, Howard C.: See—
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Fakult, William J., 5,379,503, Cl. 29-265.000.

Roy, Joy; Stanley, Douglas M.; Buehler, James D.; and Adams, Ronald L., to Tektronix, Inc. Method of operating an ink jet to reduce print quality degradation resulting from rectified diffusion. 5,381,162, Cl. 347-10.000.

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Elango, Shanmugam; Rajarathnam, Shantha; Ramachandran, Vasanthi; Roy, Raman K.; Sankaran, Krishnan; and Subrahmanyam, Yerramilli V. B., 5,380,648, Cl. 435-7.320.

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Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,381,401, Cl. 369-275.100.

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Rude, Marjorie A.: See—
Bock, Ditmar H.; Rude, Marjorie A.; and Kiefer, Frederick W., 5,381,156, Cl. 342-126.000.

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Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., to Whitaker Corporation. The Heat dissipating EMI/RFI protective function box. 5,381,314, Cl. 361-712.000.

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Ott, Gunther; Reiter, Udo; Jouck, Walter; Santure, David J.; and Ruhl, Dieter, 5,380,412, Cl. 204-181.700.

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Emery, Jerome W.; Medovsky, Alex G.; Ruhlman, Thomas L.; and Osentoski, Thomas, 5,380,039, Cl. 280-741.000.

Ruiz, Armando. Attache case housing laptop computer. 5,379,893, Cl. 206-320.000.

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Vogel, Kenneth E., 5,380,048, Cl. 285-22.000.

Russell, James B. Hydraulic ram assemblies. 5,379,849, Cl. 173-112.000.

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Ryham, Rolf; Nykanen, Tuomo S.; Greenwood, Brian F.; Gullichsen, Johan; Kiiskila, Erkki; Mattelmaki, Eero; Phillips, Joseph R.; Richardsen, Jan; Soderman, Jarmo; and Wiklund, Karl G., to Kamyr, Inc. Reducing pulp mill liquid discharge. 5,380,402, Cl. 162-30.100.

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Powers, Robert D.; and Ryterski, Harold L., 5,381,136, Cl. 340-539.000.

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Sadovskaya, Ecaterina M.: See—
Ivanov, Alexy A.; Mescheryakov, Vitaly D.; Stepanov, Sergey P.; Chaykovsky, Sergey P.; Yabrov, Alexandr A.; Gacvoy, Victor P.; Pokrovskaya, Svetlana A.; Sadovskaya, Ecaterina M.; Sheplev, Valentin S.; and Ermakov, Youry P., 5,380,497, Cl. 422-142.000.

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Saidi, Farrokh: See—
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Saiki, Akio: See—
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St. Laurent, Denis R.: See—
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- Saintier, Jack: See—
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- Saito, Hidetoshi; Inaba, Makoto; Tagawa, Motoyuki; and Nagase, Toru, to Olympus Optical Co., Ltd. Heat using therapeutic device. 5,380,319, Cl. 606-28.000.
- Saito, Koichi: See—
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- Saito, Makoto, to Kajima Corporation. External wall panel and mounting structure thereof. 5,379,561, Cl. 52-235.000.
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- Saito, Naoki: See—
Mihayashi, Keiji; Taniguchi, Masato; and Saito, Naoki, 5,380,625, Cl. 430-388.000.
- Saito, Takehiko: See—
Niita, Hajime; Takashima, Masatoshi; Saito, Takehiko; Nakagawa, Tomihiro; and Yamashita, Keitaro, 5,381,275, Cl. 360-48.000.
- Saito, Tamio; Ninomiya, Teruhisa; Ohashi, Yoji; Kawasaki, Yoshihiro; Okubo, Naofumi; Kurihara, Hiroshi; and Isaji, Osamu, to Fujitsu Limited; and Fujitsu Ten Limited. Portable FM-CW radar device with frequency conversion by first and second frequencies. 5,381,153, Cl. 342-70.000.
- Saitoh, Atsui: See—
Kotani, Terumitsu; Saitoh, Atsui; Yamada, Tomoya; Tachikawa, Kohei; Amano, Yasuyuki; and Ikeda, Takeshi, 5,380,572, Cl. 428-40.000.
- Sakagami, Seiji: See—
Nagaoka, Takashi; Ueda, Shinjiro; Sakagami, Seiji; Nishiuchi, Akira; and Sakurai, Hirofumi, 5,380,171, Cl. 417-423.400.
- Sakaguchi, Noboru: See—
Furomoto, Yoshiyuki; Noda, Hideo; Sakaguchi, Noboru; and Yoshioka, Osamu, 5,379,957, Cl. 242-230.000.
- Sakai Chemical Industry Co., Ltd.: See—
Nakatsui, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.
- Sakai, Hitoshi: See—
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- Sakai, Shinji: See—
Miyamoto, Ryosuke; and Sakai, Shinji, 5,381,178, Cl. 348-333.000.
- Sakaki, Takashi: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yui-chi, 5,379,515, Cl. 29-852.000.
- Sakamoto, Etsuro, to Sony Corporation. Cyclic digital filter. 5,381,358, Cl. 364-724.170.
- Sakata, Takeshi: See—
Kimura, Shin'ichiro; Sakata, Takeshi; and Itoh, Kiyoo, 5,380,674, Cl. 437-52.000.
- Sakuma, Hotoji, to Padico Co., Ltd. Paint resembling stained glass. 5,380,787, Cl. 524-591.000.
- Sakurai, Akira; Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao; and Sugawara, Toshihiro, to Ishikawajima-Harima Iukogyo Kabushiki Kaisha. Refractory element. 5,379,610, Cl. 62-316.000.
- Sakurai, Hirofumi: See—
Nagaoka, Takashi; Ueda, Shinjiro; Sakagami, Seiji; Nishiuchi, Akira; and Sakurai, Hirofumi, 5,380,171, Cl. 417-423.400.
- Salamon, Peter A.; and DeMarco, JoAnn, to Loctite Corporation. Lens blocking/deblocking method. 5,380,387, Cl. 156-154.000.
- Salazar, Mariano: See—
Ngoc, Hung D.; and Salazar, Mariano, 5,380,785, Cl. 524-504.000.
- Salecker, Roy W., to Spartan Tool Div. of Pettibone Corp. Skid assembly for conduit cleaner. 5,379,476, Cl. 15-104.310.
- Sales, Brian T.: See—
Elgar, Anthony D.; Sales, Brian T.; and Parkes, Adrian S., 5,379,803, Cl. 138-89.000.
- Salimando, Steven C.: See—
Rosinski, Richard R.; and Salimando, Steven C., 5,381,467, Cl. 379-121.000.
- Salmela, Markku: See—
Herrala, Juha; Hytonen, Jouko; Jarvinen, Jarmo; Salmela, Markku; and Vahatalo, Harri, 5,381,341, Cl. 364-471.000.
- Salomon SA: See—
Vitali, Herve; and Reynier, Jean-Pierre, 5,380,031, Cl. 280-611.000.
- Salomon S.A.: See—
Challande, Christian; and Desarmaux, Pierre, 5,380,032, Cl. 280-634.000.
- Samachisa, Gheorge: See—
Yuan, Jack H.; Samachisa, Gheorge; Guterman, Daniel C.; and Harari, Eliyahou, 5,380,672, Cl. 374-43.000.
- Samsung Electronics Co., Ltd.: See—
Bae, Sang-Chul, 5,379,616, Cl. 68-23.700.
- Choi, Kyung-hwan, 5,381,276, Cl. 360-51.000.
- Kim, Min-Tae; Lee, Dong-Jae; and Seo, Seung-Mo, 5,381,376, Cl. 365-230.030.
- Lee, Gi-seok, 5,381,186, Cl. 348-738.000.
- Lee, Min-su, 5,381,280, Cl. 360-75.000.
- Lee, Pil-hong, 5,381,283, Cl. 360-85.000.
- Limberg, Allen L., 5,381,106, Cl. 327-104.000.
- Park, Kyung-Ho, 5,379,506, Cl. 29-426.600.
- Shin, Jae-Sub, 5,381,490, Cl. 382-54.000.
- Yun, Young-Han, 5,381,132, Cl. 340-825.440.
- Sanchez, Robert A.; and Hendler, Sbdon S., to Vyrex Corporation. Methods for delipidation of skin and cerumen removal. 5,380,711, Cl. 514-58.000.
- Sand, Paul R.: See—
Balakrishnan, Annapurna; Lark, Stuart J.; and Sand, Paul R., 5,381,471, Cl. 379-269.000.
- Sand & Sea Corporation: See—
Cacossa, Frank G.; and Cacossa, Kenneth F., 5,380,124, Cl. 405-16.000.
- Sandell, Donald R.; and Lee, Wade P., to Intellect Products Company. Motion detector with two-sided PIR sensor in refractive arrangement. 5,381,011, Cl. 250-353.000.
- Sanden Corporation: See—
Kikuchi, Yasuo; Mabe, Atsushi; and Terauchi, Kiyoshi, 5,380,176, Cl. 418-55.100.
- Terauchi, Kiyoshi, 5,380,166, Cl. 417-269.000.
- Sander, Thomas W.; Lee, Daniel R.; and Gangnath, Robert, to United States Surgical Corporation. Orthopedic fastener. 5,380,330, Cl. 606-72.000.
- Sanders, John D.; Holden, Homer N.; and Foster, Randy C., to Dayco Products, Inc. Hose construction, coupling therefore and methods of making the same. 5,380,050, Cl. 285-258.000.
- Sanders, Nicholas A.: See—
Couch, Richard W., Jr.; Sanders, Nicholas A.; Lu, Zhipeng; Luo, Lifeng; and Stenfelt, Staffan C. O., 5,380,976, Cl. 219-121.440.
- Sandhu, Gurtej S.; and Fazan, Pierre C., to Micron Semiconductor, Inc. Capacitor compatible with high dielectric constant materials having a low contact resistance layer and the method for forming same. 5,381,302, Cl. 361-305.000.
- Sandia Corporation: See—
Rye, Robert R.; Ricco, Antonio J.; Hampden-Smith, M. J.; and Kodas, T. T., 5,380,474, Cl. 264-25.000.
- Sandia National Laboratories: See—
Chalmers, Scott A.; Killeen, Kevin P.; and Lear, Kevin L., 5,379,719, Cl. 117-89.000.
- Sandmann, Jurgen: See—
Barischer, Peter; Martini, Gerhard; Pohl, Wolfgang; and Sandmann, Jurgen, 5,380,073, Cl. 303-9.720.
- Sandoval, Alfredo R. Compact emergency descender system. 5,379,858, Cl. 182-7.000.
- Sandvik AB: See—
Svensson, Rolf, 5,380,408, Cl. 204-129.100.
- Saner, Kaspar, to K-Tron Technologies, Inc. Force measuring device. 5,379,653, Cl. 73-862.590.
- Sankaran, Krishnan: See—
Elango, Shanmugam; Rajarathnam, Shantha; Ramachandran, Vasanthi; Roy, Raman K.; Sankaran, Krishnan; and Subrahmanyam, Yerramilli V. B., 5,380,648, Cl. 435-7.320.
- Sankyo Company Limited: See—
Nishimura, Masatoshi; Takahashi, Masaaki; and Orihashi, Yasushi, 5,379,774, Cl. 128-666.000.
- Sanocki, Stephen M.: See—
Rogers, John J.; Erickson, John L.; and Sanocki, Stephen M., 5,380,580, Cl. 428-219.000.
- Sanshin Kogyo Kabushiki Kaisha: See—
Kawai, Takaji; and Ishida, Hitoshi, 5,380,228, Cl. 440-88.000.
- Santa Barbara Research Center: See—
Ingle, Lloyd D.; Peck, Leonard E., Jr.; and Santana, Jose A., 5,379,512, Cl. 29-832.000.
- Norton, Paul R., 5,380,669, Cl. 437-5.000.
- Santana, Jose A.: See—
Ingle, Lloyd D.; Peck, Leonard E., Jr.; and Santana, Jose A., 5,379,512, Cl. 29-832.000.
- Santel, Hans-Joachim: See—
Muller, Klaus-Helmut; Babczinski, Peter; Santel, Hans-Joachim; and Schmidt, Robert R., 5,380,863, Cl. 548-263.600.
- Muller, Klaus-Helmut; Babczinski, Peter; Santel, Hans-Joachim; and Schmidt, Robert R., 5,380,864, Cl. 548-263.800.
- Santoro, Mark R.: See—
Bewick, Gary W.; Santoro, Mark R.; and Tavrow, Lee S., 5,381,377, Cl. 365-230.060.
- Santure, David J.: See—
Ott, Gunther; Reiter, Udo; Jouck, Walter; Santure, David J.; and Ruhl, Dieter, 5,380,412, Cl. 204-181.700.
- Sanyo Chemical Industries, Ltd.: See—
Sumiya, Takashi; Date, Masashi; and Tanaka, Kenji, 5,380,808, Cl. 526-317.100.
- Sanyo Electric Co., Ltd.: See—
Itou, Tsukasa; Teraji, Kazuo; Yoshinaga, Noriyuki; Harada, Sunao; Negoro, Kouji; and Mori, Kazunari, 5,380,606, Cl. 429-194.000.
- Katsuki, Hikaru; Shimizu, Masayuki; Kato, Minoru; Inoue, Tetsuo; and Hosoya, Masakazu, 5,379,606, Cl. 62-126.000.
- Matsumoto, Kensuke; Akutu, Yasutomo; Koseki, Masao; Kurakami, Michio; Kitamura, Yoshiyuki; and Koyama, Kiyoshi, 5,379,609, Cl. 62-262.000.
- Matsumoto, Sadao; and Mannen, Hiroaki, 5,380,242, Cl. 453-3.000.
- Sappington, Donald R., to Toxcor Manufacturing, Inc. Device for mounting a sight on an archery bow. 5,379,746, Cl. 124-87.000.
- Sartori, Michael A.; and Clark, Joseph A., to United States of America, Navy. Far field acoustic radiation reduction. 5,381,381, Cl. 367-1.000.

- Sasabe, Junya: See—
Egi, Makoto; Otsuka, Masao; Morishita, Hiroki; Maeshima, Masanobu; Sasabe, Junya; and Taguchi, Kazuhiro, 5,379,996, Cl. 271-122.000.
- Sasaki, Masayoshi, to Amukon Kabushikikaisha. Solid-liquid separator. 5,380,436, Cl. 210-383.000.
- Sasaki, Motoi: See—
Nakatsui, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.
- Sasaki, Motoi: See—
Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoi, 5,380,555, Cl. 427-226.000.
- Sasaki, Ryoichi; and Furukawa, Akihiro, to Brother Kogyo Kabushiki Kaisha. Data processing apparatus. 5,381,161, Cl. 345-212.000.
- Sasaki, Takayuki, to Konica Corporation. Silver halide photographic light-sensitive material. 5,380,643, Cl. 430-575.000.
- Sasaki, Yoshizumi: See—
Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kuroawa, Jitsuo, 5,380,494, Cl. 422-131.000.
- Satake, Yoshikatsu; Ono, Toshihiko; Itoh, Yoshinobu; and Ichikawa, Yukio, to Kureha Kagaku Kogyo K.K. Poly(arylene sulfide) resin composition. 5,380,783, Cl. 524-406.000.
- Sato, Fumie; Arai, Kazutaka; and Miyaji, Katsuaki, to Nissan Chemical Industries, Limited. α -methylencyclopentanone derivative and process for producing the same. 5,380,900, Cl. 556-436.000.
- Sato, Haruo, to Nikon Corporation. Compact wide angle zoom lens. 5,381,268, Cl. 359-691.000.
- Sato, Jun, to Shimano Inc. Fishing reel having one-way brake. 5,379,959, Cl. 242-299.000.
- Sato, Kazuo: See—
Shikida, Mitsuhiro; Sato, Kazuo; Kawamura, Yoshio; Tanaka, Shinji; Horiuchi, Yasuaki; Koide, Akira; and Miyada, Toshimitsu, 5,380,396, Cl. 156-630.000.
- Sato, Kikumasa; Inoue, Seichi; Ishihara, Jun; and Machida, Katsutoshi, to Seimi Chemical Co., Ltd. Trans-dihalogenosulfone compounds and liquid crystal electro-optical devices using them. 5,380,461, Cl. 252-299.610.
- Sato, Kuniko, legal representative: See—
Sato, Toshiya, deceased; and Ishida, Kenya, 5,380,763, Cl. 514-724.000.
- Sato, Manabu: See—
Yamamura, Tetsuo; Murakami, Seichi; and Sato, Manabu, 5,380,984, Cl. 219-270.000.
- Sato, Osamu: See—
Umezawa, Kazuyoshi; and Sato, Osamu, 5,381,328, Cl. 363-41.000.
- Sato, Shinichi: See—
Kishita, Hirofumi; Sato, Shinichi; Koike, Noriyuki; and Matsuda, Takashi, 5,380,811, Cl. 528-15.000.
- Sato, Shuji: See—
Fukahori, Kenichi; Sato, Shuji; Shimohara, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, 5,380,108, Cl. 400-247.000.
- Sato, Taichi, to Japan Cash Machine Co., Ltd. Currency validator using a photocoupler for image recognition using cylindrical lens. 5,381,019, Cl. 250-556.000.
- Sato, Takehiro: See—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,380,887, Cl. 549-556.000.
- Sato, Tatsushi; and Imai, Yoshihito, to Mitsubishi Denki Kabushiki Kaisha. Electric discharge machining apparatus. 5,380,975, Cl. 219-69.180.
- Sato, Toshihiko: See—
Iwata, Yoichi; Iida, Naoki; Takizawa, Tsuyoshi; Seki, Yasunari; Sato, Toshihiko; and Nakayama, Takayoshi, 5,379,591, Cl. 60-276.000.
- Sato, Toshiya, deceased (by Sato, Kuniko, legal representative); and Ishida, Kenya, to Takasago International Corporation. Topical composition for treating acne vulgaris. 5,380,763, Cl. 514-724.000.
- Sato, Yoshiaki: See—
Fukuyama, Ryooji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Tori, Yoshimi; Kawaraya, Akira; and Sato, Yoshie, 5,380,397, Cl. 156-643.000.
- Sato, Yoshie: See—
Fukuyama, Ryooji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Tori, Yoshimi; Kawaraya, Akira; and Sato, Yoshie, 5,380,397, Cl. 156-643.000.
- Satoh, Hisao: See—
Fuji, Yojo; Miwa, Tadashi; Satoh, Hisao; Ogane, Atsushi; Matsuo, Isao; and Ikeda, Tadayoshi, 5,381,167, Cl. 346-157.000.
- Satouchi, Mitsuko: See—
Ohkuma, Kazuhiro; Wakabayashi, Shigeru; and Satouchi, Mitsuko, 5,380,717, Cl. 514-58.000.
- Saucedo, Ismael G.: See—
Blazek, Kenneth E.; Saucedo, Ismael G.; and Kelly, James E., 5,379,828, Cl. 164-459.000.
- Saunders, William M.: See—
Knight, Stanley W.; Saunders, William M.; and Joranlien, Ric, 5,379,940, Cl. 239-675.000.
- Savu, Patricia M.: See—
Yonkoski, Roger K.; and Savu, Patricia M., 5,380,644, Cl. 430-617.000.
- Sawada, Matsunori; and Ogiso, Minoru, to Tanaka Kikinzoku Kogyo K.K. Oxidation catalyst and process of preparing same. 5,380,696, Cl. 502-313.000.
- Sawaki, Ippei; Kurimura, Sunao; and Miura, Michio, to Fujitsu Limited. Process for fabricating an optical device for generating a second harmonic optical beam. 5,380,410, Cl. 204-130.000.
- Sawamura, Kazutomo: See—
Kuroda, Shigetaka; Sawamura, Kazutomo; Shimazaki, Yuuichi; Kanehiro, Masaki; Ishioka, Takaji; Maruyama, Shigeru; Nishimura, Yoichi; and Katoh, Akira, 5,379,634, Cl. 73-116.000.
- Sawhney, Amarpreet S.: See—
Hubbell, Jeffrey A.; and Sawhney, Amarpreet S., 5,380,536, Cl. 424-497.000.
- Sawyer, John F.; and Zengerle, Paul L., to Eastman Kodak Company. Method of preparing coupler dispersions. 5,380,628, Cl. 430-449.000.
- Saxton, Gregory J.; Thomas, Gareth R.; Hill, Charles C.; and Weselake, Kenneth L., to Gunderson, Inc. Railroad well car including spacer for supporting a trailer. 5,379,702, Cl. 105-355.000.
- Sayer, Christopher N. F., to Orbital Engine Company (Australia) Pty. Limited. Multicycylinder two stroke cycle engine. 5,379,731, Cl. 123-65.0PE.
- Sayles, David C., to United States of America, Army. Thermoplastic para-polyphenylene sulfide, high temperature-resistant rocket motor cases. 5,380,570, Cl. 428-36.400.
- Scalone, Michelangelo; and Vogt, Peter, to Hoffmann-La Roche Inc. Process for preparing pyridine 2-carboxamides. 5,380,861, Cl. 546-323.000.
- Scalzi, Casper A.: See—
Baum, Richard L.; Plambeck, Kenneth E.; Scalzi, Casper A.; Schmalz, Richard J.; and Sinha, Bhaskar, 5,381,537, Cl. 395-400.000.
- Schachtele, Christoph: See—
Barth, Hubert; Hartenstein, Johannes; Rudolph, Claus; Schachtele, Christoph; Bette, Hans-Jurgen; Peck, Reinhard; and Osswald, Hartmut, 5,380,746, Cl. 514-414.000.
- Schadeli, Ulrich, to Ciba-Geigy Corporation. Acid labile solution inhibitors and positive- and negative-acting photosensitive composition based thereon. 5,380,881, Cl. 549-415.000.
- Schadt, Martin: See—
Kelly, Stephen; and Schadt, Martin, 5,380,462, Cl. 252-299.630.
- Schaefer, Andreas; Seep-Feldhaus, Anna-Hildegard; Jaeger, Wolfgang; Kalinowski, Joern; Wohlleben, Wolfgang; and Puchler, Alfred, to Degussa Aktiengesellschaft. Method for isolation of insertion elements from coryneform bacteria. 5,380,657, Cl. 435-172.300.
- Schaefer, Richard E.; Renshaw, James T.; and Maino, Peter M., to Monsanto Company. Polyvinyl butyral tackifier for vinyl chloride polymer compositions. 5,380,794, Cl. 525-57.000.
- Schaeffler, E. H. Georg, to Ina Walzinger Schaeffler KG. Cup-shaped valve tappet. 5,379,730, Cl. 123-90.550.
- Schaffer, Ortwin: See—
Lamm, Gunther; Beichelt, Helmut; and Schaffer, Ortwin, 5,380,859, Cl. 546-296.000.
- Schakel, Eric G.: See—
Matthews, Kent R.; Schakel, Eric G.; and Gamboa, Ricardo R., 5,379,806, Cl. 138-149.000.
- Schaperkottler, to Elring Dichtungswerke GmbH. Cylinder head gasket. 5,380,014, Cl. 277-2.000.
- Scharmer, Andrew J.: See—
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- Scheibel, Jeffrey J.: See—
Connor, Daniel S.; Scheibel, Jeffrey J.; and Kao, Ju-Nan, 5,380,891, Cl. 554-69.000.
- Scheidweiler, Andreas: See—
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- Scherer, Hans-Georg: See—
Schicktan, Rudolf; and Scherer, Hans-Georg, 5,380,112, Cl. 403-28.000.
- Scherer Healthcare Ltd.: See—
Marshall, Lyman R., 5,379,703, Cl. 108-90.000.
- Scherger, David F.: See—
Brown, Douglas S.; Scherger, David F.; Heilman, George C.; and Brown, Robert B., 5,379,917, Cl. 222-4.000.
- Schering Aktiengesellschaft: See—
Schlief, Reinhard, 5,380,411, Cl. 204-157.150.
- Schicktan, Rudolf; and Scherer, Hans-Georg, to Feodor Burgmann Dichtungswerke GmbH & Co. Assembly for concentrically positioning a casing relative to a shaft. 5,380,112, Cl. 403-28.000.
- Schierling, Bernhard: See—
Kraus, Georg; and Schierling, Bernhard, 5,380,248, Cl. 464-66.000.
- Schimmer, Walter, to Emhart Inc. Drill bit of the twist drill type. 5,380,133, Cl. 408-199.000.
- Schlegel, Donald C.: See—
Johnson, Robert E.; Schlegel, Donald C.; and Ezrin, Alan M., 5,380,721, Cl. 514-183.000.
- Schleger, Linda; and Wittman, Mary, to Greenway, Hubert; and Pratt, Steven, a part interest to each. Facial shield, particularly for protection from the sun. 5,379,463, Cl. 2-431.000.
- Schleger, Linda; and Wittman, Mary. Facial shield, particularly for protection from the sun. 5,379,464, Cl. 2-431.000.
- Schlegl, William S.: See—
Cripe, David W.; and Schlegl, William S., 5,381,109, Cl. 330-10.000.
- Schlicht, Michael, to National Semiconductor Corporation. High-speed, fully-isolated current source/sink. 5,381,082, Cl. 323-280.000.
- Schliel, Reinhard, to Schering Aktiengesellschaft. Ultrasound or shock wave work process and preparation for carrying out same. 5,380,411, Cl. 204-157.150.

- Schlumberger Technology Corporation: See—
Freedman, Robert, 5,381,092, Cl. 324-303.000.
- Schluter, James C., to Contech Construction Products, Inc. Slotted drain, 5,380,121, Cl. 404-14.000.
- Schmalz, Richard J.: See—
Baum, Richard I.; Plambeck, Kenneth E.; Scalzi, Casper A.; Schmalz, Richard J.; and Sinha, Bhaskar, 5,381,537, Cl. 395-400.000.
- Schmelter, Wolfgang: See—
Mader, Heinrich-Christian; Mierbach, Albin; and Schmelter, Wolfgang, 5,380,018, Cl. 277-216.000.
- Schmid, Franz: See—
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- Schmidt, Adolf: See—
Heiliger, Ludger; Schmidt, Adolf; and Probst, Joachim, 5,380,924, Cl. 562-439.000.
- Schmidt, Barry; and Metzler, Larry. Quick change expandable oil pan, 5,379,862, Cl. 184-106.000.
- Schmidt, Conrad, to Upjohn Company. The. Animal vaccination gun, 5,380,279, Cl. 604-46.000.
- Schmidt, Edward H.; and Mercer, Joseph B., to Procter & Gamble Company. The. Easy open feature for polymeric package with contents under high compression, 5,380,094, Cl. 383-209.000.
- Schmidt, Karl-Gunter: See—
Isler, Herbert; and Schmidt, Karl-Gunter, 5,379,965, Cl. 242-586.600.
- Schmidt, Karl-Heinz, to Robert Bosch GmbH. Device with a current divider for controlling adjustment of signals from sensors, 5,381,102, Cl. 324-720.000.
- Schmidt-Radde, Martin: See—
Merger, Franz; and Schmidt-Radde, Martin, 5,380,919, Cl. 560-179.000.
- Schmidt, Robert R.: See—
Muller, Klaus-Helmut; Babczinski, Peter; Santel, Hans-Joachim; and Schmidt, Robert R., 5,380,863, Cl. 548-263.600.
- Muller, Klaus-Helmut; Babczinski, Peter; Santel, Hans-Joachim; and Schmidt, Robert R., 5,380,864, Cl. 548-263.800.
- Schmitt, Karl R.; and Pherigo, Douglas E., to Textron, Inc. Snap-fit right angle adjustor mechanism, 5,381,317, Cl. 362-66.000.
- Schmuck, Peter, to Karl Mayer Textilmaschinenfabrik GmbH. Spool holder for thread spools, 5,379,956, Cl. 242-130.000.
- Schneider, Bernd: See—
Paradies, Henrich H.; Hanna, Samir B.; and Schneider, Bernd, 5,380,927, Cl. 562-493.000.
- Schneider, Frederick C., III: See—
Casillas, Abel R.; Gutierrez, Jose R.; and Schneider, Frederick C., III, 5,380,239, Cl. 451-496.000.
- Schneider, Jurgen: See—
Gurtzen, Stefan; Schneider, Jurgen; and Schrader, Rolf, 5,380,898, Cl. 556-187.000.
- Schneider, Michel; Bichon, Daniel; Bussat, Philippe; Puginier, Jerome; and Hybl-Sutherland, Eva, to Bracco International B.V. Stable microbubbles suspensions injectable into living organisms, 5,380,519, Cl. 424-9.000.
- Schneider, Otto: See—
Hager, Rudolf; Schneider, Otto; and Schuster, Johann, 5,380,902, Cl. 556-462.000.
- Schneider, Reiner, to Siemens Aktiengesellschaft. Method and apparatus for manufacturing chamber members for accepting light waveguides, 5,380,472, Cl. 264-1.290.
- Schneider, Werner; Muller, Bernd-Henrik; and Rudolph, Gert, to B.A.T. Cigarettenfabriken GmbH. Coaxial filter cigarette, 5,379,789, Cl. 131-360.000.
- Schnell, Klaus; and Hahlgans, Gunther, to VDO Adolf Schindling AG. Control device, 5,381,080, Cl. 318-566.000.
- Schober, Michael: See—
Sikorski, Siegfried; Schober, Michael; and Schoenacher, Reinhold, 5,380,152, Cl. 415-160.000.
- Schoenacher, Reinhold: See—
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Sovitch, Linda A.: See—
Sovitch, John P.; and Sovitch, Linda A., 5,379,504, Cl. 29-270.000.

Spartan Tool Div. of Pettibone Corp.: See—
Salecker, Roy W., 5,379,476, Cl. 15-104.310.

Specialty Machine & Supply, Inc.: See—
Hisaw, Jack, 5,379,839, Cl. 166-250.000.

Spector, Donald. Variable-weight play pieces. 5,380,002, Cl. 273-58.00H.

Spector, Donald. Convertible jelly candy cup and stick assembly. 5,380,539, Cl. 426-115.000.

Spector, George: See—
Bradley, Joe A.; and Spector, George, 5,380,205, Cl. 434-236.000.

Spindelfabrik Suessen, Schurr, Stahlacker & Grill GmbH: See—
Stahlacker, Hans; and Fetzer, Gerhard, 5,380,118, Cl. 403-343.000.

Spinillo, Gary T.: See—
Dichiara, Robert R.; Lyons, Christopher F.; Sooriyakumaran, Ratnasabapathy; Spinillo, Gary T.; Welsh, Kevin M.; and Wood, Robert L., 5,380,621, Cl. 430-272.000.

Spintek International: See—
Mathis, Ricard M.; and Michaelson, Richard E., 5,380,008, Cl. 273-143.00R.

Spiro, Clifford L., to General Electric Company. Carbon fluoride compositions. 5,380,557, Cl. 427-249.000.

Sponsler, Karl G.; and Seibold, Kurt, to Hoover Universal, Inc. Vehicle seat assembly with folding seat back and integral child seat and interlock mechanism. 5,380,060, Cl. 297-238.000.

Squires, John P.: See—
Shrinkle, Louis J.; and Squires, John P., 5,381,281, Cl. 360-77.080.

SR Technos Ltd.: See—
Mutoh, Masayuki, 5,381,170, Cl. 347-74.000.

SRI International: See—
Shen, Xiao An; Bai, Yu Sheng; and Pearson, Eric M., 5,381,362, Cl. 364-825.000.

Sri-Jayantha, Muthuthamby: See—
Arai, Koichi; Ottesen, Hal H.; Sharma, Arun; Sri-Jayantha, Muthuthamby; and Stich, Michael C., 5,381,282, Cl. 360-78.090.

Srinivasan, Vijay: See—
Bitzer, Donald L.; Vouk, Mladen A.; Srinivasan, Vijay; Lo, Sunny K.; Dholakia, Ajay; Gonzalez, Elena M.; Lee, Tina M.; Wang, LiFeng; and Koorapaty, Havis, 5,381,425, Cl. 371-43.000.

Srivastava, Devendra K.; and Kgapola, Mashupye M., to NDSU Research Foundation. Oxidative cleavage of polyethylenically unsaturated compound to produce carboxylic acid. 5,380,931, Cl. 562-542.000.

Sta-Rite Industries, Inc.: See—
Rief, Dieter J.; and Frenzler, Herman E., 5,379,473, Cl. 15-1.700.

Stackhouse, Inc.: See—
Reiterman, Donald R.; Green, Martin J.; Nicolas, Ed F.; Greff, Richard J.; and Thomas, Ronald E., 5,380,245, Cl. 454-63.000.

Stahl, Daniel E.: See—
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 5,381,314, Cl. 361-712.000.

Stahl, Matthew, to United Technologies Corporation. Turbine shroud segment. 5,380,150, Cl. 415-139.000.

Stahl, Wayne L., to Technological Safety Designs, Inc. Method and apparatus for warning other boats in the proximity of a water craft for towing water skiers and other persons to be towed that the water skier is down or the person is inactive in the water. 5,381,141, Cl. 340-984.000.

Stahlacker, Fritz, to Hans Stahlacker, a part interest. Sliver guiding arrangement for drafting units of spinning machines. 5,379,488, Cl. 19-287.000.

Stahlacker, Hans; and Fetzer, Gerhard, to Spindelfabrik Suessen, Schurr, Stahlacker & Grill GmbH. Shaft coupling for bottom cylinders of drafting units on spinning machines. 5,380,118, Cl. 403-343.000.

Stair, Mark T.; and Ehmke, Edward L., to Motorola, Inc. Intelligent over-the-air programming. 5,381,138, Cl. 340-825.440.

Stairmaster Sports/Medical Products, Inc.: See—
Hawley, Peter J., Jr., 5,380,258, Cl. 482-37.000.

Stamler, Jonathan; Loscalzo, Joseph; Slivka, Adam; Simon, Daniel; Brown, Robert; and Drazen, Jeffrey, to Brigham and Women's Hospital. S-nitrosothiols as smooth muscle relaxants and therapeutic uses thereof. 5,380,758, Cl. 514-562.000.

Standing, Robert C., to Xerox Corporation. Trimmer blower and high capacity waste bin. 5,379,668, Cl. 83-99.000.

Standley, David L., to Rockwell International Corporation. Multiple input comparator circuit for a switched resistive network. 5,381,054, Cl. 327-82.000.

Stanley, Douglas M.: See—
Roy, Joy; Stanley, Douglas M.; Buehler, James D.; and Adams, Ronald L., 5,381,162, Cl. 347-10.000.

Stansbury, Jeffrey W.: See—
Antonucci, Joseph M.; Stansbury, Jeffrey W.; and Cheng, Guo-Wei, 5,380,901, Cl. 556-440.000.

Stant Corporation: See—
Snow, Gary L.; and Getzender, Michael L., 5,379,896, Cl. 206-470.000.

Starlight Networks: See—
Tobagi, Fouad A.; and Baird, Randall B., 5,381,413, Cl. 370-85.600.

Starting Industry Company Limited: See—
Tsunoda, Shuhei; and Iida, Yoshikazu, 5,379,734, Cl. 123-182.100.

State Industries, Inc.: See—
Lindahl, John R., 5,379,507, Cl. 29-460.000.

State of Israel Ministry of Defense Armament Development Authority Rafael: See—
Shachar, Zohar, 5,379,967, Cl. 244-3.160.

Statiotis, Eracilis: See—
Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statiotis, Eracilis, 5,380,532, Cl. 424-451.000.

Staubert, Hans-Ulrich, to Ferag A.G. Process and apparatus for changing, transferring and temporarily storing printed product rolls. 5,379,963, Cl. 242-533.800.

Staud, Norbert: See—
Lin, Tsann; Howard, James K.; Hwang, Chennye; Mauri, Daniele; and Staud, Norbert, 5,380,548, Cl. 427-130.000.

Staudenrausch, Georg, to Albert Handtmann Maschinenfabrik GmbH & Co. KG. Process and device for the subdivision of a pasty and compressible mass in portions, in particular of sausage meat by means of a vane cell pump. 5,380,240, Cl. 452-41.000.

Stauthamer, Walter P. R. V.: See—
Reinhoudt, David N.; Engbersen, Johannes F. J.; Verboom, Willem; Rudkevich, Dimitri; and Stauthamer, Walter P. R. V., 5,380,423, Cl. 204-418.000.

Steadfast Corporation: See—
Zagoroff, Dimitri S., 5,379,617, Cl. 70-18.000.

Steckler, Michael J.: See—
Snow, Barton H.; Leighton, David M.; and Steckler, Michael J., 5,379,585, Cl. 60-204.000.

Steen, Carson D.; and Steen, Robby W. Extension actuator for electrical wall switch. 5,380,967, Cl. 200-331.000.

Steen, Robby W.: See—
Steen, Carson D.; and Steen, Robby W., 5,380,967, Cl. 200-331.000.

Stein, Judith; and Davis, Mark W., to General Electric Company. Room temperature addition-curable silicone adhesive compositions and N-heterocyclic silane adhesion promoters. 5,380,788, Cl. 524-730.000.

Stein, Judith, to General Electric Company. Addition-curable silicone adhesive compositions and N-heterocyclic silane adhesion promoters. 5,380,846, Cl. 546-14.000.

Steinhauser, Pius; Bodenmiller, Anton; and Lott, Herbert, to Kaltenbach & Voigt GmbH & Co. Process for cleaning and/or disinfecting and/or maintaining medical or dental instruments. 5,380,369, Cl. 134-1.000.

Steinmann, Alfred, to Ciba-Geigy Corporation. Phenylacetates and the use thereof. 5,380,882, Cl. 549-420.000.

Steller, Timothy J., to Quick Plastics. Banded window sash. 5,379,560, Cl. 52-204.700.

Stenfelt, Staffan C. O.: See—
Couch, Richard W., Jr.; Sanders, Nicholas A.; Lu, Zhipeng; Luo, Lifeng; and Stenfelt, Staffan C. O., 5,380,976, Cl. 219-121.440.

Stenglein, Kenneth J.; and Murray, Dennis M., to Sigma Chemical Company. AZT immunoassays, derivatives, conjugates and antibodies. 5,380,825, Cl. 530-403.000.

Stepanov, Sergey P.: See—
Ivanov, Alexey A.; Mescheryakov, Vitaly D.; Stepanov, Sergey P.; Chaykovsky, Sergey P.; Yabrov, Alexander A.; Gaevoy, Victor P.; Pokrovskaya, Svetlana A.; Sadovskaya, Ecaterina M.; Sheplev, Valentin S.; and Ermakov, Youry P., 5,380,497, Cl. 422-142.000.

Stephens, Gregory W. Secured personal information packet. 5,380,046, Cl. 283-75.000.

Stephens, Michael; Swanson, Billy L.; and Patel, Bharat B., to Phillips Petroleum Company. Drilling mud comprising tetrapolymer consisting of n-vinyl-2-pyrrolidone, acrylamidopropanesulfonicacid, acrylamide, and acrylic acid. 5,380,705, Cl. 507-121.000.

Sterling Winthrop Inc.: See—
DeHaven-Hudkins, Diane L.; Earley, William G.; Kumar, Virendra; Mallamo, John P.; and Miller, Matthew S., 5,380,729, Cl. 514-284.000.

Dunlap, Richard P.; Mura, Albert A.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; and Subramanyam, Chakrapani, 5,380,737, Cl. 514-373.000.

Johnson, Robert E.; Schlegel, Donald C.; and Ezrin, Alan M., 5,380,721, Cl. 514-183.000.

Miller, Theodore C.; Collins, Joseph C.; Mattes, Kenneth C.; Wentland, Mark P.; Perni, Robert B.; Corbett, Thomas H.; and Guiles, Joseph W., 5,380,749, Cl. 514-437.000.

Niedospial, John J.; Vacek, Ronald B.; and DeJesus, Rafael, 5,379,907, Cl. 215-247.000.

Smedley, William H.; Haber, Terry M.; and Foster, Clark B., 5,380,296, Cl. 604-193.000.

Stern, Alfred G.: See—
Willer, Rodney; Stern, Alfred G.; and Day, Robert S., 5,380,777, Cl. 524-186.000.

Stern, Michael K.; and Cheng, Brian K. M., to Monsanto Company. Process for preparing p-nitroaromatic amides and products thereof. 5,380,946, Cl. 564-124.000.

Stevens, James C.: See—
Lai, Shih-Yaw; Wilson, John R.; Knight, George W.; Stevens, James C.; and Chum, Pak-Wing S., 5,380,810, Cl. 526-352.000.

Stevenson, Thomas M.: See—
Harrison, Charles R.; Lahm, George P.; and Stevenson, Thomas M., 5,380,718, Cl. 514-80.000.

Stich, Michael C.: See—
Arai, Koichi; Ottesen, Hal H.; Sharma, Arun; Sri-Jayantha, Muthu-thamby; and Stich, Michael C., 5,381,282, Cl. 360-78.090.

Stockl, Herbert: See—
Hoffmann, Eduard; Winterholler, Johann; Prem, Wolfgang; and Stockl, Herbert, 5,379,693, Cl. 101-375.000.

Stoessner, Robert D.: See—
Leonard, Joseph W., III; and Stoessner, Robert D., 5,380,342, Cl. 44-280.000.

Stokes, Barry O.; and Quirante, Carmelo G., to Wescor, Inc. Liquid absorption pad for cytocentrifugation device. 5,380,435, Cl. 210-361.000.

Stokes, John; and Lake, Timothy H., to Ricardo Consulting Engineers Limited. Spark ignited internal combustion engines. 5,379,743, Cl. 123-568.000.

Stoll, Thomas; Rempp, Wolfgang; and Schmid, Franz, to H. Stoll GmbH & Co. Method of producing voluminous knitted articles. 5,379,612, Cl. 66-64.000.

Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Boshagen, Horst; Bechem, Martin; Gross, Rainer; Heibisch, Siegfried; Hutter, Joachim; and Rounding, Howard-Paul, to Bayer Aktiengesellschaft. 2-amino-5-cyano-1,4-dihydropyridines, processes for their preparation. 5,380,851, Cl. 546-167.000.

Stone, James W.; Kish, Frederick A.; Wojcik, John; Van Erden, Donald L.; Fredericksen, David E.; and Vadhar, Parimal M., to Illinois Tool Works Inc. Method and apparatus for electrostatic coating of articles. 5,379,880, Cl. 198-396.000.

Stoneman, Robert C.: See—
Esterowitz, Leon; and Stoneman, Robert C., 5,381,433, Cl. 372-41.000.

McMahon, John M.; Stoneman, Robert C.; and Esterowitz, Leon, 5,381,428, Cl. 372-20.000.

Stout, James T.; and DeMaio, James B., to Mead Corporation, The. Heavy duty article carrier. 5,379,944, Cl. 229-117.130.

Straddeck, Matthew: See—
Martindale, Richard A.; Martindale, William A.; Straddeck, Matthew; and Osborne, Gregory J., 5,379,916, Cl. 222-1.000.

Strand, Timothy C.: See—
Best, Margaret E.; Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,381,401, Cl. 369-275.100.

Strange, William S., Jr. Core drill bit. 5,379,852, Cl. 175-403.000.

Strapack Corporation: See—
Koyama, Seichiro, 5,379,576, Cl. 53-589.000.

Straschil, Heinrich K.: See—
Abys, Joseph A.; Maisano, Joseph J., Jr.; and Straschil, Heinrich K., 5,380,400, Cl. 156-656.000.

Straub, Alexander: See—
Stoltefuss, Jürgen; Goldmann, Siegfried; Straub, Alexander; Boshagen, Horst; Bechem, Martin; Gross, Rainer; Heibisch, Siegfried; Hutter, Joachim; and Rounding, Howard-Paul, 5,380,851, Cl. 546-167.000.

Straub, Manfred: See—
Boehme, Andreas; Mayer, Peter; Gartner, Arno; Heinen, Jürgen; and Straub, Manfred, 5,379,696, Cl. 101-424.000.

Strecker, Günther. Rack bar for releasably holding plate-shaped parts. 5,380,418, Cl. 204-297.00W.

Streich, Steven G., to Halliburton Company. Casing cementing equipment. 5,379,835, Cl. 166-181.000.

Streiff, Felix: See—
Fleischli, Markus; and Streiff, Felix, 5,380,088, Cl. 366-174.000.

Strieb, Stephen F.; and McCall, Gerald W. Temporary drain cover. 5,379,555, Cl. 52-3.000.

Strike, Donald P.: See—
Fobare, William F.; and Strike, Donald P., 5,380,853, Cl. 546-207.000.

Stromberg, Hakon: See—
Syljeset, Jan E.; Stromberg, Hakon; and Berg, Torbjorn, 5,379,798, Cl. 137-614.040.

Stroncik, Peter: See—
Gundlach, Hans-Werner; and Stroncik, Peter, 5,380,356, Cl. 106-3.000.

Strong, Henry L., to American Cyanamid Company. Process for the manufacture of cyclopropyl nitrile. 5,380,911, Cl. 558-434.000.

Stroud, Norman S.: See—
Schurig, Gregory A.; Morton, Frank S. S.; and Stroud, Norman S., 5,380,534, Cl. 424-456.000.

Struckmeyer Corporation: See—
Delk, Robert E.; and Bowen, Michael L., 5,379,489, Cl. 24-30.50R.

Stults, Jerry F.: See—
Greene, George H.; Miller, Robert; Williams, James L.; Phillips, James C.; Stults, Jerry F.; and Tellings, Jan P. E., 5,380,890, Cl. 554-2.000.

Stuppi, Lawrence J.: See—
Pritchard, Robert W.; and Stuppi, Lawrence J., 5,380,300, Cl. 604-275.000.

Sturwald, Theresa: See—
Gage, Charles A.; and Sturwald, Theresa, 5,379,706, Cl. 111-175.000.

Su, Tao: See—
Seppala, Jukka; Selin, Johan-Fredrik; and Su, Tao, 5,380,813, Cl. 528-58.000.

Su, Yung S. Combined steaming and dehydrating apparatus. 5,379,527, Cl. 34-197.000.

Suarez, Roderick A. Sheet material puller. 5,380,055, Cl. 294-16.000.

Subrahmanyam, Yerramilli V. B.: See—
Elango, Shanmugam; Rajarathnam, Shantha; Ramachandran, Vasanthi; Roy, Raman K.; Sankaran, Krishnan; and Subrahmanyam, Yerramilli V. B., 5,380,648, Cl. 435-7.320.

Subramanyam, Chakrapani: See—
Dunlap, Richard P.; Mura, Albert A.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; and Subramanyam, Chakrapani, 5,380,737, Cl. 514-373.000.

Suda, Masato; Nakamura, Yoshikatu; and Takagi, Nobuaki, to Kabushiki Kaisha Toshiba. Character reading apparatus. 5,381,488, Cl. 382-9.000.

Suda, Yoshihisa: See—
Negishi, Akira; Kaneko, Hiroko; Kawakubo, Takamasa; and Suda, Yoshihisa, 5,380,422, Cl. 204-403.000.

Sudbury-Holtschlag, Joan: See—
Conway, Lori J.; Kadlec, Donald A.; and Sudbury-Holtschlag, Joan, 5,380,450, Cl. 252-75.000.

Sudo, Fumihiko; and Kihara, Taku, to Sony Corporation. Apparatus for correcting for defective pixels in an image sensor. 5,381,175, Cl. 348-246.000.

Sudo, Haruhiko: See—
Ishimaru, Keiichi; Itoh, Osamu; Nakatani, Tomoyoshi; Sudo, Haruhiko; and Kurita, Masaya, 5,379,608, Cl. 62-155.000.

Sugahara, Kazuyuki: See—
Eguchi, Koji; Ajika, Natsuo; and Sugahara, Kazuyuki, 5,381,029, Cl. 257-354.000.

Sugano, Masashi; Miyahara, Hideo; and Murata, Masayuki, to Mita Industrial Co., Ltd. Packet-switching communication network and method of design. 5,381,404, Cl. 370-13.000.

Suganuma, Fujio: See—
Nakatsuiji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsui; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.

Sugawara, Tomokatsu; and Jinno, Koji, to Daifuku Co., Ltd. Crane. 5,379,863, Cl. 187-233.000.

Sugawara, Toshihiro: See—
Sakurai, Akira; Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao; and Sugawara, Toshihiro, 5,379,610, Cl. 62-316.000.

Sugg, Elizabeth E.; Dezube, Milana; and Hirst, Gavin C., to Glaxo Inc. Modulators of cholecystokinin. 5,380,872, Cl. 548-495.000.

Sugimoto, Kenichi: See—
Itoh, Hisato; Karasawa, Akio; Sugimoto, Kenichi; Oguchi, Takahisa; and Aihara, Shin, 5,380,842, Cl. 540-128.000.

Sugita, Masanori: See—
Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.

Sugita, Minoru: See—
Yanagida, Hiroaki; Miyayama, Masaru; Muto, Norio; Sugita, Minoru; Nakatsuiji, Teruyuki; and Otsuka, Yasushi, 5,379,644, Cl. 73-787.000.

Sugita, Shuichi: See—
Ishige, Osamu; Katoh, Eisaku; Fujiwara, Hiroko; Hirabayashi, Shigetoshi; and Sugita, Shuichi, 5,380,639, Cl. 430-544.000.

Sugiyama, Kunitoshi; Kobori, Hideyuki; Hanai, Shuji; and Kagawa, Tsutomu, to Ricoh Company, Ltd. Method for producing a reversible thermosensitive recording material. 5,380,550, Cl. 427-146.000.

Sugiyama, Youichi: See—
Watanabe, Satoshi; Miura, Kenzo; Okaku, Toshinobu; Okamoto, Hitoshi; and Sugiyama, Youichi, 5,380,483, Cl. 420-73.000.

Suguro, Yoshihiro: See—
Aoki, Mitsuo; Suguro, Yoshihiro; Kondo, Tomio; Nakamura, Yasushi; and Miyamoto, Satoru, 5,380,616, Cl. 430-110.000.

Suh, Kyung W.; and Paquet, Andrew N., to Dow Chemical Company. The. Foamable gel with an aqueous blowing agent expandable to form a unimodal styrenic polymer foam structure and a process for making the foam structure. 5,380,767, Cl. 521-79.000.

Suhonen, Jouko. Matrix for dental medicine and a device for the fabrication of matrix bands. 5,380,198, Cl. 433-39.000.

Suizu, Shin: See—
Obata, Tokio; Ooka, Akira; Fujii, Katsutoshi; and Suizu, Shin, 5,380,744, Cl. 514-403.000.

Sullivan, Carl J. Linear polyester diols based on isophthalic acid and 2-methyl-1,3-propanediol for thermoset coating compositions. 5,380,816, Cl. 427-385.500.

Sulzer Brothers Limited: See—
Fleischli, Markus; and Streiff, Felix, 5,380,088, Cl. 366-174.000.

Sum, Phaik-Eng; Lee, Ving J.; and Testa, Raymond T., to American Cyanamid Company. 7-(substituted)-9-(substituted glycol)amido]-6-demethyl-6-deoxytetracyclines. 5,380,888, Cl. 552-205.000.

Sumer, Suleyman O.: See—
Osteen, Mitchell M.; Sumer, Suleyman O.; Dozier, Charles L.; and Singaray, Santiago, 5,381,323, Cl. 362-276.000.

Sumi, Minoru; Uchida, Minoru; Nozue, Kyozo; and Nakane, Masakatsu, to Toyota Jidosha Kabushiki Kaisha; Kyoho Machine Works, Ltd.; and Nakane Kogyo Yugenkaisha. Seat apparatus having movable seat used by worker in installing parts within automobile body. 5,379,701, Cl. 104-89.000.

Sumitomo Chemical Company, Limited: See—
Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kuroawa, Jitsuo, 5,380,494, Cl. 422-131.000.

Sumitomo Electric Industries, Ltd.: See—
Hirai, Shigeru; Ishiguro, Youichi; Hattori, Yasuji; Nishimura, Masayuki; Shigematsu, Masayuki; Watanabe, Minoru; and Nakazato, Kouji, 5,381,261, Cl. 359-282.000.

Kanamori, Hiroo; Nakazato, Koji; Nishimura, Masayuki; and Tomita, Shigeru, 5,381,503, Cl. 385-123.000.

Shiga, Nobuo, 5,381,157, Cl. 343-700.0MS.

Tanabe, Keiichi; Imai, Takahiro; and Fujimori, Naoki, 5,380,516, Cl. 423-446.000.

Ueba, Yoshinobu; Okuda, Nobuyuki; Ohkura, Kengo; and Kugai, Hirokazu, 5,380,595, Cl. 428-408.000.

Sumitomo Heavy Industries, Ltd.: See—
Hiraoka, Kazuo; and Taniguchi, Katsuhiko, 5,380,181, Cl. 425-145.000.

Sumitomo Metal Industries: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yuichi, 5,379,515, Cl. 29-852.000.

Sumitomo Metal Industries, Ltd.: See—
Arahori, Tadahisa; Hayashi, Shigetoshi; and Minagawa, Kazuhiro, 5,380,511, Cl. 423-345.000.

Sumitomo Rubber Industries, Ltd.: See—
Adachi, Yukishige, 5,379,819, Cl. 152-542.000.

Suzuki, Shigehiko; Yasui, Itsuo; and Naito, Sadaaki, 5,379,818, Cl. 152-531.000.

Sumiya, Takashi; Date, Masashi; and Tanaka, Kenji, to Sanyo Chemical Industries, Ltd. Process for producing water-absorbing resins. 5,380,808, Cl. 526-317.100.

Summit World Trade Corp.: See—
Kutolowski, Paul C., 5,381,012, Cl. 250-363.100.

Sun Chemical Corporation: See—
Husain, Syeda; Piechowski, Allan P.; and Pilot, John F., 5,380,942, Cl. 564-59.000.

Sun Microsystems, Inc.: See—
Bewick, Gary W.; Santoro, Mark R.; and Tavrow, Lee S., 5,381,377, Cl. 365-230.060.

Loo, Mike C.; and Vogel, Marlin R., 5,380,956, Cl. 174-252.000.

Sun, Shih W.; and Woo, Michael P., to Motorola, Inc. Small geometry contact. 5,381,040, Cl. 257-774.000.

Sunbeam Plastics Corporation: See—
Montgomery, Gary V., 5,379,910, Cl. 215-346.000.

SunDisk Corporation: See—
Yuan, Jack H.; Samachisa, Gheorghe; Guterman, Daniel C.; and Harari, Eliyahou, 5,380,672, Cl. 437-43.000.

Suominen, Matti: See—
Paasivaara, Jukka; Suominen, Matti; and Tiikkainen, Pekka, 5,379,641, Cl. 73-579.000.

Suprex Corporation: See—
Bruce, Mark L.; and Keebler, Douglas J., 5,379,790, Cl. 137-1.000.

Surgical Laser Technologies, Inc.: See—
Daikuzono, Norio, 5,380,318, Cl. 606-16.000.

Sutka, Klara: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eszter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.

Sutton, Richard C.; Ponticello, Ignazio S.; Cummins, Thomas J.; Zander, Dennis R.; and Donish, William H., to Eastman Kodak Company. Element and method for nucleic acid amplification and detection using adhered probes. 5,380,489, Cl. 422-68.100.

Suzuki, Chikako: See—
Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, 5,380,723, Cl. 514-235.800.

Suzuki, Hidetomo: See—
Fujii, Toshiaki; and Suzuki, Hidetomo, 5,380,503, Cl. 422-243.000.

Suzuki, Makoto: See—
Hanawa, Makoto; Nishimukai, Tadahiko; Suzuki, Makoto; and Shimohigashi, Katsuhiko, 5,381,531, Cl. 395-375.000.

Suzuki, Manabu; and Tatsuzawa, Hajime, to Mutoh Industries, Ltd. Image processing system for converting a full color image into a pseudo-color CMY dot representation. 5,381,246, Cl. 358-500.000.

Suzuki, Masaaki: See—
Ohnuma, Kenji; Suzuki, Masaaki; and Danjoh, Keishi, 5,381,255, Cl. 359-68.000.

Suzuki, Masato, to Shima Seiki Mfg., Ltd. Method of finishing edges of knitted fabric. 5,379,613, Cl. 66-69.000.

Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, to NKK Corporation. Apparatus for generating an underliquid shock pressure. 5,379,621, Cl. 72-56.000.

Suzuki Motor Corporation: See—
Toyoda, Katsuhiko, 5,379,587, Cl. 60-276.000.

Suzuki, Nariko, to NEC Corporation. Microprocessor having branch aligner between branch buffer and instruction decoder unit for enhancing initiation of data processing after execution of conditional branch instruction. 5,381,532, Cl. 395-375.000.

Suzuki, Noriaki: See—
Kimura, Mitsuteru; and Suzuki, Noriaki, 5,380,373, Cl. 148-33.200.

Suzuki, Ryoichi, to Agency of Industrial Science & Technology. Auger electron spectroscopy. 5,381,003, Cl. 250-305.000.

Suzuki, Shigehiko; Yasui, Itsuo; and Naito, Sadaaki, to Sumitomo Rubber Industries, Ltd. Belted radial tire for motorcycle. 5,379,818, Cl. 152-531.000.

Suzuki, Takao: See—
Takahara, Kenichi; Kawamoto, Atsuko; and Suzuki, Takao, 5,381,158, Cl. 345-156.000.

Suzuki, Tamotsu: See—
Namiki, Tomizo; Suzuki, Tamotsu; and Shinozaki, Fumiaki, 5,380,620, Cl. 430-257.000.

Suzuki, Tatsuo: See—
Isono, Keinosuke; and Suzuki, Tatsuo, 5,380,315, Cl. 604-416.000.

Suzuki, Tetsuji: See—
Konno, Toshio; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; and Maeno, Keichi, 5,381,188, Cl. 348-766.000.

Suzuki, Yasumichi: See—
Ikeda, Yoshinori; Ichikawa, Hiroyuki; Kurita, Mitsuru; Suzuki, Yasumichi; and Kitamura, Toshiyuki, 5,381,248, Cl. 358-538.000.

Svedberg, Leif: See—
Ronn, Per G.; and Svedberg, Leif, 5,379,977, Cl. 248-277.000.

Svensson, Rolf, to Sandvik AB. Etching process. 5,380,408, Cl. 204-129.100.

Swanson, Billy L.: See—
Stephens, Michael; Swanson, Billy L.; and Patel, Bharat B., 5,380,705, Cl. 507-121.000.

Swapp, Ronald L. Window shutter. 5,379,551, Cl. 49-82.100.

Swartz, Eric, to Converse Inc. Fluid filled amusement or attention attracting article for attachment to footwear. 5,379,533, Cl. 36-136.000.

Swift, Graham: See—
Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,380,817, Cl. 528-328.000.

Swil-Technik AG: See—
Isler, Herbert; and Schmidt, Karl-Gunter, 5,379,965, Cl. 242-586.600.

Swilik, Robert C., Jr.: See—
Larsen, Michael J.; and Swilik, Robert C., Jr., 5,379,750, Cl. 126-110.00R.

Swindal, James L.: See—
Provenzano, Paul L.; Swindal, James L.; Kuhlberg, Robert J.; Brahm, Charles B.; Meyer, Harold D.; Gobetz, Frank W.; Wiegand, Walter J.; and Bullis, Robert H., 5,381,299, Cl. 361-283.400.

Syljeset, Jan E.; Stromberg, Hakon; and Berg, Torbjorn, to Kvaerner Energy A.S. Hydraulic coupling. 5,379,798, Cl. 137-614.040.

Synaptics, Incorporated: See—
Platt, John C.; and Anderson, Janeen D. W., 5,381,515, Cl. 395-24.000.

Synergistics Industries, Inc.: See—
Malek, Abdul; Monasterios, Clevis J.; Brown, G. Ronald; and Gupta, Ved P., 5,380,928, Cl. 562-512.400.

Synergy Microwave Corporation: See—
Joshi, Shankar R.; and Rohde, Meta, 5,381,084, Cl. 323-361.000.

Synergy Semiconductor Corporation: See—
Kuroda, Tadahiro; and Gray, David A., 5,381,057, Cl. 326-126.000.

Syntex (U.S.A.) Inc.: See—
Clark, Robin D.; Clarke, David E.; Fisher, Lawrence E.; and Jahangir, Alam, 5,380,739, Cl. 514-381.000.

Sjogren, Eric B., 5,380,879, Cl. 549-310.000.

Synthelabo: See—
Bailey, Pierre, 5,380,311, Cl. 604-349.000.

Sevrin, Mireille; Menin, Jacques; Maloizel, Christian; Diaz Martin, Juan A.; Martin Escudero Perez, Ulpiano; Bedoya Zurita, Manuel; Del Sol Moreno, Gregorio; Jimenez Barguena, Maria D.; and Romanach Ferrer, Magali, 5,380,742, Cl. 514-397.000.

Synthetic Products Company: See—
Jennings, Thomas C.; and Tanno, David M., 5,380,593, Cl. 428-401.000.

Systems Research Laboratories, Inc.: See—
Burgess, James O., 5,381,337, Cl. 364-426.020.

Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamas; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmaros nee Kellner, Katalin, to Chino Gyogyszer-ES Vegyeszeti Termek Gyara RT. Transdermal compositions. 5,380,761, Cl. 514-655.000.

Szabo nee Ujhelyi, Gabriella: See—
Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamas; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmaros nee Kellner, Katalin, 5,380,761, Cl. 514-655.000.

Szafraniec, Bogdan: See—
Blake, James N.; Laskoskie, Clarence E.; and Szafraniec, Bogdan, 5,381,230, Cl. 356-345.000.

Szego, Andras: See—
Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamas; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmaros nee Kellner, Katalin, 5,380,761, Cl. 514-655.000.

Szekely, Anna: See—
Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamas; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmaros nee Kellner, Katalin, 5,380,761, Cl. 514-655.000.

Szewczyk, Richard S.: See—
Kuchta, Richard; Szewczyk, Richard S.; Vivirito, Joseph R.; King, Thomas; and Markowitz, Ivan, 5,379,882, Cl. 198-689.100.

Szilagy, Katalin: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eszter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki,

- Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.
- Sziraki, Istvan: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagy, Katalin; Andras, Ferenc; Hodula, Eszter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.
- Szuba, Stefan, to North American Philips Corporation. Control and communication processor potentiometer system for controlling fluorescent lamps. 5,381,078, Cl. 315-316.000.
- Szuts, Tamas: See—
Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamas; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmaros nee Kellner, Katalin, 5,380,761, Cl. 514-655.000.
- Tabata, Mitsunori: See—
Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsui; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintachi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.
- Tabata, Yoshiaki: See—
Osaka, Haruya; and Tabata, Yoshiaki, 5,381,216, Cl. 355-221.000.
- Tabb, Birdie B. Hair fashion accessory. 5,379,782, Cl. 132-275.000.
- Tacan Corporation: See—
Hu, Andog, 5,381,495, Cl. 385-51.000.
- Tachi, Takahiro: See—
Honji, Akio; Ogawa, Toshio; Kuroda, Osamu; Yamashita, Hisao; Tachi, Takahiro; Miyadera, Hiroshi; and Fujishita, Masakatsu, 5,379,586, Cl. 60-276.000.
- Tachibana, Tetsuo: See—
Ohno, Koichi; and Tachibana, Tetsuo, 5,381,411, Cl. 370-60.000.
- Tachikawa, Kohei: See—
Kotani, Terumitsu; Saitoh, Atsui; Yamada, Tomoya; Tachikawa, Kohei; Amano, Yasuyuki; and Ikeda, Takeshi, 5,380,572, Cl. 428-40.000.
- Tackett, Timothy N.: See—
Cardinal, James M.; Gladd, Joseph H.; Jennings, Kurt L.; and Tackett, Timothy N., 5,381,501, Cl. 385-54.000.
- Tadakoshi, Mitsuaki: See—
Hattori, Noriko; Torikai, Eiichi; Kawagishi, Shigemitsu; Tadakoshi, Mitsuaki; and Okuno, Kazuyoshi, 5,380,562, Cl. 427-437.000.
- Tagami, Ryo: See—
Matsumoto, Masaharu; Serikawa, Mitsuhiro; Kawamura, Akihisa; Numazu, Hiroko; Norimatsu, Takeshi; Tagami, Ryo; and Oda, Mikio, 5,381,482, Cl. 381-18.000.
- Tagawa, Motoyuki: See—
Saito, Hidetoshi; Inaba, Makoto; Tagawa, Motoyuki; and Nagase, Toru, 5,380,319, Cl. 606-28.000.
- Taguchi, Kazuhiro: See—
Egi, Makoto; Otsuka, Masao; Morishita, Hiroki; Maeshima, Masanobu; Sasabe, Junya; and Taguchi, Kazuhiro, 5,379,996, Cl. 271-122.000.
- Tajima, Masami, to Fujitsu Limited. Radio environment measuring system. 5,381,444, Cl. 375-1.000.
- Takada, Hirotoshi: See—
Hamaguchi, Akihiro; Osone, Hisao; Takada, Hirotoshi; and Ohta, Jun, 5,381,315, Cl. 361-727.000.
- Takada, Tomoki; Tsutsumi, Kazuo; Katahata, Tadashi; and Muraoka, Toshinori, to Kawasaki Jukogyo Kabushiki Kaisha. Fluidized-bed incinerator. 5,379,705, Cl. 110-245.000.
- Takagai, Junichi, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film unit. 5,381,200, Cl. 354-250.000.
- Takagi, Kazumasa: See—
Tarutani, Yoshinobu; Fukazawa, Tokumui; Kabasawa, Uki; Takagi, Kazumasa; Tsukamoto, Akira; Hiratani, Masahiko; and Nishino, Toshikazu, 5,380,704, Cl. 505-193.000.
- Takagi, Masayuki: See—
Uomoto, Katsuhito; Shomura, Tomoko; Matsumoto, Mitsuyo; Takagi, Masayuki; Shimizu, Takao; and Kiriya, Susumu, 5,380,745, Cl. 514-410.000.
- Takagi, Motoyoshi: See—
Furuhashi, Keizo; and Takagi, Motoyoshi, 5,380,654, Cl. 435-117.000.
- Takagi, Nobuaki: See—
Suda, Masato; Nakamura, Yoshikatu; and Takagi, Nobuaki, 5,381,488, Cl. 382-9.000.
- Takagi, Tadao, to Nikon Corporation. Automatic light adjustment device for camera. 5,381,208, Cl. 354-415.000.
- Takahara, Kenichi; Kawamoto, Atsuko; and Suzuki, Takao, to Kabushiki Kaisha Toshiba. Information retrieval apparatus. 5,381,158, Cl. 345-156.000.
- Takahashi, Koichi: See—
Miyashita, Naoto; Takahashi, Koichi; and Koyama, Mitsutoshi, 5,380,399, Cl. 156-646.000.
- Takahashi, Masaaki: See—
Nishimura, Masatoshi; Takahashi, Masaaki; and Orihashi, Yasushi, 5,379,774, Cl. 128-666.000.
- Takahashi, Masahiro: See—
Miyashita, Hiroyuki; Takahashi, Masahiro; and Mohri, Hiroshi, 5,380,608, Cl. 430-5.000.
- Takahashi, Ryusaku: See—
Konno, Toshio; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; and Maeno, Keiichi, 5,381,188, Cl. 348-766.000.
- Takahashi, Shizuo; and Kobayashi, Takao, to Todoroki Sangyo Kabushiki Kaisha. Apparatus for conducting and controlling chemical reactions. 5,380,485, Cl. 422-62.000.
- Takahashi, Susumu: See—
Usagawa, Toshiyuki; Hiruma, Kenji; Kawata, Masahiko; Goto, Shigeo; Mitani, Katsuhiko; Yamane, Masao; Takahashi, Susumu; Tanoue, Tomonori; and Imamura, Yoshinori, 5,381,027, Cl. 257-192.000.
- Takahashi, Tomonori: See—
Yoshida, Akihiko; Takahashi, Tomonori; and Murai, Makoto, 5,380,596, Cl. 428-432.000.
- Takahashi, Toshihiro; Inoue, Hitoshi; Horigome, Masato; Momose, Kenichi; Sugita, Masanori; Katsuyama, Kouichi; Suzuki, Chikako; Nagai, Shinji; Nagase, Masao; and Nakamaru, Koichi, to Nisshin Flour Milling Co., Ltd. Indole derivatives. 5,380,723, Cl. 514-235.800.
- Takahashi, Toshio: See—
Uematsu, Hiromi; Wakui, Masanori; Iden, Toshio; Takahashi, Toshio; and Uchiyama, Kensuke, 5,379,780, Cl. 131-291.000.
- Takahashi, Yousuke; Shimizu, Yukiharu; Hihara, Toshio; and Himeno, Kiyoshi, to Hoechst Mitsubishi Kasei Co., Ltd. Water-soluble monozodye containing a triazinyl or pyrimidinyl group and at least one vinyl sulfonyl type group in its structure. 5,380,827, Cl. 534-638.000.
- Takahashi, Yutaka, to NEC Corporation. Cascade digital filters for realizing a transfer function obtained by cascade-connecting moving average filters. 5,381,356, Cl. 364-724.170.
- Takamatsu, Toshiaki; Ogawa, Shinichi; Yoshikawa, Masao; Hamada, Hiroshi; Watanabe, Noriko; and Funada, Fumiaki, to Sharp Kabushiki Kaisha. Image display apparatus. 5,381,187, Cl. 348-759.000.
- Takao, Hideaki: See—
Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaoka, Masanobu; Mihara, Tadashi; Kodera, Yasuto; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.
- Takasago International Corporation: See—
Sato, Toshiya, deceased; and Ishida, Kenya, 5,380,763, Cl. 514-724.000.
- Yamanaka, Tohr; and Tsunoda, Katsumi, 5,380,540, Cl. 426-534.000.
- Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, to Shionogi & Co., Ltd. Process for producing methoxyminoacetamide compounds and intermediates. 5,380,913, Cl. 560-35.000.
- Takashima, Masatoshi: See—
Niita, Hajime; Takashima, Masatoshi; Saito, Takehiko; Nakagawa, Tomihiro; and Yamashita, Keitaro, 5,381,275, Cl. 360-48.000.
- Takatori, Sunao: See—
Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,381,352, Cl. 364-606.000.
- Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,381,375, Cl. 365-204.000.
- Takatori, Taizo; Ishihara, Akihiro; Masui, Tadaaki; Kawakami, Yoshinori; Okumura, Takahisa; and Ishizaka, Masuo, to Tatsuta Electric Wire & Cable Co., Ltd. Liquid leakage detector line. 5,381,097, Cl. 324-512.000.
- Takayama, Hidehito: See—
Hoshi, Hiroaki; Nishimura, Matsuomi; Tanaka, Kazumi; Miyazaki, Takeshi; Ohnishi, Toshikazu; and Takayama, Hidehito, 5,380,490, Cl. 422-73.000.
- Takeda, Makoto: See—
Mizoguchi, Yoshimi; Ishii, Hiroshi; Kimura, Kiyoshi; Fukuchi, Masakazu; and Takeda, Makoto, 5,381,221, Cl. 355-326.00R.
- Takeda, Tohru: See—
Iwasaki, Yoshihisa; Takeda, Tohru; and Ohta, Masao, 5,380,252, Cl. 474-77.000.
- Takeda, Toshihiko: See—
Kawagishi, Hideyuki; Miyazaki, Toshihiko; Kawade, Hisaaki; Kishi, Etsuro; Takimoto, Kiyoshi; and Takeda, Toshihiko, 5,381,400, Cl. 369-272.000.
- Takegami, Hiroshi; Morikawa, Makoto; and Fujiki, Hirokazu, to Rohm Co., Ltd. Logic-circuit layout pattern inspection method and logical simulation. 5,381,345, Cl. 364-491.000.
- Takehisa, Kiwamu: See—
Kuwabara, Kouji; Yano, Makoto; and Takehisa, Kiwamu, 5,381,437, Cl. 372-98.000.
- Takeichi, Toru: See—
Kimura, Kazuya; Mizutani, Hideki; Hidaka, Shigeyuki; and Takeichi, Toru, 5,380,168, Cl. 417-269.000.
- Takenaka, Kenji; Mizutani, Hideki; Hidaka, Shigeyuki; Hiramatsu, Osamu; Takeichi, Toru; and Kayukawa, Hiroaki, 5,380,161, Cl. 417-222.200.
- Takekoshi, Yoichi: See—
Honda, Shinkichi; Takekoshi, Yoichi; and Arai, Yoichi, 5,380,359, Cl. 106-414.000.
- Takemasa, Toshihiko: See—
Muto, Yoshiaki; Ichikawa, Hiromi; Ogura, Kuniyoshi; Chaki, Kyoji; Seiki, Masao; and Takemasa, Toshihiko, 5,380,748, Cl. 514-434.000.
- Takemura, Hideo: See—
Kawanaka, Seido; Ida, Shiro; Takemura, Hideo; and Kumetani, Kouji, 5,381,241, Cl. 358-462.000.
- Takemura, Kazutaka; Johdai, Akiyoshi; and Matsuo, Hirokazu, to Minolta Camera Kabushiki Kaisha. Automatic document feeder. 5,379,993, Cl. 271-3.000.
- Takenaka, Kenji; Mizutani, Hideki; Hidaka, Shigeyuki; Hiramatsu, Osamu; Takeichi, Toru; and Kayukawa, Hiroaki, to Kabushiki Kai-

- sha Toyoda Jidoshokki Seisakusho. Variable capacity swash-plate compressor with electromagnetic clutch. 5,380,161, Cl. 417-222.200.
- Takenaka, Naoki; and Matsui, Yasushi, to Matsushita Electric Industrial Co., Ltd. Light-emitting and light-receiving assembly and method of manufacture thereof. 5,381,499, Cl. 385-93.000.
- Takeuchi, Hirono: See—
Totsuka, Hiroki; and Takeuchi, Hirono, 5,380,614, Cl. 430-106.000.
- Takeuchi, Minami: See—
Shinohe, Takashi; Nakayama, Kazuya; Takeuchi, Minami; Yamaguchi, Masakazu; Kitagawa, Mitsuhiro; Omura, Ichiro; and Nakagawa, Akio, 5,381,026, Cl. 257-147.000.
- Takeuchi, Shinji, to Daiwa Seiko, Inc. Fishline guide mechanism in spinning reel for fishing. 5,379,958, Cl. 242-232.000.
- Takeuchi, Yoshihiro: See—
Kato, Minoru; Terunuma, Hiroshi; and Takeuchi, Yoshihiro, 5,381,272, Cl. 359-823.000.
- Takeya, Haruhiko; Shimizu, Toshio; and Ueki, Hiroyuki, to Cosmo Research Institute; and Cosmo Oil Co., Ltd. Process for preparing 5-aminolevulinic acid. 5,380,935, Cl. 562-567.000.
- Takiguchi, Yasuyuki: See—
Kanemoto, Akihiko; Iimura, Haruo; and Takiguchi, Yasuyuki, 5,380,459, Cl. 252-299.010.
- Takimoto, Kiyoshi: See—
Kawagishi, Hideyuki; Miyazaki, Toshihiko; Kawade, Hisaaki; Kishi, Etsuro; Takimoto, Kiyoshi; and Takeda, Toshihiko, 5,381,400, Cl. 369-272.000.
- Takizawa, Hiroo; Kobayashi, Hideotoshi; and Naito, Hideki, to Fuji Photo Film Co., Ltd. Cyan dye-forming coupler and a silver halide color photographic material containing the same. 5,380,638, Cl. 430-552.000.
- Takizawa, Tsuyoshi: See—
Iwata, Yoichi; Iida, Naoki; Takizawa, Tsuyoshi; Seki, Yasunari; Sato, Toshihiko; and Nakayama, Takayoshi, 5,379,591, Cl. 60-276.000.
- Tallent, Gary P.: See—
Torrie, Paul A.; and Tallent, Gary P., 5,380,334, Cl. 606-104.000.
- Talley, John J.: See—
McGhee, William D.; and Talley, John J., 5,380,855, Cl. 546-245.000.
- Norman, Bryan H.; Lee, Len F.; Masferrer, Jaime L.; and Talley, John J., 5,380,738, Cl. 514-374.000.
- Tam, Albert S.: See—
Okine, Richard K.; and Tam, Albert S., 5,380,480, Cl. 264-316.000.
- Tamai, Shigeru; Ikeda, Naomi; and Koyama, Kakuhei, to Seed Rubber Company, Ltd. Coating film transfer tool. 5,379,477, Cl. 15-104.940.
- Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsuaki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, to Mitsui Toatsu Chemicals, Inc. Polyimides, process for the preparation thereof and polyimide resin compositions. 5,380,805, Cl. 525-432.000.
- Tamari, Nobuyuki: See—
Kondou, Isao; Tamari, Nobuyuki; Tanaka, Takahiro; and Sodeoka, Satoshi, 5,380,686, Cl. 501-87.000.
- Tamaru, Ikuhiro: See—
Ogawa, Hiroyuki; Kusakabe, Hideo; Tamaru, Ikuhiro; Sasaki, Yoshizumi; and Kuroawa, Jitsuo, 5,380,494, Cl. 422-131.000.
- Tamura Electric Works, Ltd.: See—
Kobayashi, Kazuhiko; Ishii, Takehiko; and Kai, Osamu, 5,381,472, Cl. 379-387.000.
- Tamura, Katsuhiko: See—
Kokawa, Yoshiko; Koyama, Tohru; Kusakabe, Kenji; Tamura, Katsuhiko; and Nakamura, Yasuna, 5,381,032, Cl. 257-412.000.
- Tamura, Noboru, to Canon Kabushiki Kaisha. Information processing apparatus. 5,381,549, Cl. 395-700.000.
- Tamura, Yoichi: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terasawa, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yui-chi, 5,379,515, Cl. 29-852.000.
- Tan, Hong S.: See—
Damen, Jozef T. W.; and Tan, Hong S., 5,380,992, Cl. 235-462.000.
- Tan, Shiro: See—
Kokubo, Tadayoshi; Uenishi, Kazuya; Tan, Shiro; and Ishii, Wataru, 5,380,618, Cl. 430-190.000.
- Tanabe, Eiji, to Varian Associates, Inc. Linear accelerator with improved input cavity structure and including tapered drift tubes. 5,381,072, Cl. 315-5.410.
- Tanabe, Ikuo; Yoshida, Yoshinori; Seitoh, Kiyoshi; and Morioka, Masanobu, to Sony Corporation. Miniaturized video camera. 5,381,176, Cl. 348-273.000.
- Tanabe, Keiichiro; Imai, Takahiro; and Fujimori, Naoji, to Sumitomo Electric Industries, Ltd. Process for synthesizing diamond in a vapor phase. 5,380,516, Cl. 423-446.000.
- Tanaka, Kazuhiko, to Nippon Thompson Co., Ltd. Linear motion rolling guide unit with flow valve in communicating oil groove. 5,380,096, Cl. 384-13.000.
- Tanaka, Kazuhiko, to Nippon Thompson Co., Ltd. Linear motion rolling guide unit with open-close plugs in the branching oil grooves. 5,380,097, Cl. 384-13.000.
- Tanaka, Kazumi: See—
Hoshi, Hiroaki; Nishimura, Matsuomi; Tanaka, Kazumi; Miyazaki, Takeshi; Ohnishi, Toshikazu; and Takayama, Hidehito, 5,380,490, Cl. 422-73.000.
- Tanaka, Kenji: See—
Sumiya, Takashi; Date, Masashi; and Tanaka, Kenji, 5,380,808, Cl. 526-317.100.
- Tanaka Kikinzoku Kogyo K.K.: See—
Sawada, Matsunori; and Ogiso, Minoru, 5,380,696, Cl. 502-313.000.
- Tanaka, Masaru: See—
Namiki, Yasuomi; Tanaka, Masaru; and Tokuyama, Yoshio, 5,381,238, Cl. 358-320.000.
- Tanaka, Noriyuki: See—
Saito, Mitsuo; Umebayashi, Yoshihiro; Aoyagi, Shigetake; Isozumi, Shuzo; Tanaka, Noriyuki; and Kasa, Junichi, 5,379,622, Cl. 72-88.000.
- Tanaka, Shinji: See—
Shikida, Mitsuhiro; Sato, Kazuo; Kawamura, Yoshio; Tanaka, Shinji; Horiuchi, Yasuaki; Koide, Akira; and Miyada, Toshimitsu, 5,380,396, Cl. 156-630.000.
- Tanaka, Shuji: See—
Nishihira, Keigo; Tanaka, Shuji; Kodama, Kunioki; Kaneko, Takayoshi; Kawashita, Tetsuro; Nishida, Yuki; Matsuzaki, Tokuo; and Abe, Koji, 5,380,906, Cl. 558-210.000.
- Tanaka, Takahiro: See—
Kondou, Isao; Tamari, Nobuyuki; Tanaka, Takahiro; and Sodeoka, Satoshi, 5,380,686, Cl. 501-87.000.
- Tanaka, Tatsuo: See—
Noguchi, Teruhiko; Kinashi, Hiroshi; Masuda, Jitsuo; Inoue, Katsushi; Tanaka, Tatsuo; Otsuki, Kunio; and Adachi, Kazuya, 5,381,212, Cl. 355-211.000.
- Tanaka, Tsutomu; Shono, Keiji; Namba, Yoshiyuki; Matsumoto, Koji; and Maeda, Miyozo, to Fujitsu Limited. Magneto-optical recording method and apparatus for recording information on a magneto-optical recording media. 5,381,396, Cl. 369-116.000.
- Tanaka, Yasuji: See—
Uchida, Hiroshi; and Tanaka, Yasuji, 5,380,809, Cl. 526-318.430.
- Tang, I-Shya. Carrier for construction of buildings. 5,379,860, Cl. 182-145.000.
- Taniguchi, Katsuhiko: See—
Hiraoka, Kazuo; and Taniguchi, Katsuhiko, 5,380,181, Cl. 425-145.000.
- Taniguchi, Masato: See—
Mihayashi, Keiji; Taniguchi, Masato; and Saito, Naoki, 5,380,625, Cl. 430-388.000.
- Taniguchi, Osamu: See—
Hanyu, Yukio; Onuma, Kenji; Hotta, Yoshio; Taniguchi, Osamu; Takao, Hideaki; Asaoka, Masanobu; Mihara, Tadashi; Kodera, Yasuto; Kojima, Makoto; Nakamura, Katsutoshi; and Wada, Takatsugu, 5,381,256, Cl. 359-75.000.
- Taniguchi, Tetsuo: See—
Okamura, Hisatake; Kasahara, Masahiro; and Taniguchi, Tetsuo, 5,381,117, Cl. 333-175.000.
- Taniguchi, Yasushi; Hirabayashi, Keiji; Ikoma, Keiko; Kurihara, Noriko; Matsushima, Masaaki; and Yamamoto, Kiyoshi, to Canon Kabushiki Kaisha. Mold having a diamond layer, for molding optical elements. 5,380,349, Cl. 65-286.000.
- Tanimizu, Makoto: See—
Kato, Hirokazu; Tanimizu, Makoto; and Kita, Masakazu, 5,380,602, Cl. 429-123.000.
- Tanita, Takeo: See—
Kasai, Shozo; Tanita, Takeo; Yasuhara, Masateru; Azuma, Yusaku; Yamamoto, Toshihiro; Nikaide, Norio; Inaba, Ryohai; and Arai, Mitsuo, 5,380,138, Cl. 414-277.000.
- Tanner, Scott D.; Douglas, Donald J.; and Cousins, Lisa, to MDS Health Group Ltd. Method of plasma mass analysis with reduced space charge effects. 5,381,008, Cl. 250-288.000.
- Tanno, David M.: See—
Jennings, Thomas C.; and Tanno, David M., 5,380,593, Cl. 428-401.000.
- Tanoue, Tomonori: See—
Usagawa, Toshiyuki; Hiruma, Kenji; Kawata, Masahiko; Goto, Shigeo; Mitani, Katsuhiko; Yamane, Masao; Takahashi, Susumu; Tanoue, Tomonori; and Imamura, Yoshinori, 5,381,027, Cl. 257-192.000.
- Target Therapeutics, Inc.: See—
Chee, U. Hiram; and LeMoure, Edward R., 5,380,307, Cl. 604-264.000.
- Tarutani, Yoshinobu; Fukazawa, Tokumui; Kabasawa, Uki; Takagi, Kazumasa; Tsukamoto, Akira; Hiratani, Masahiko; and Nishino, Toshikazu, to Hitachi, Ltd. Superconducting field effect transistor with increased channel length. 5,380,704, Cl. 505-193.000.
- Tate & Lyle Public Limited Company: See—
Beyts, Pamela K.; Lillard, Donald W.; and Batterman, Cynthia K., 5,380,541, Cl. 426-548.000.
- Tateishi, Hideo: See—
Ohashi, Susumu; Tateishi, Hideo; and Fujikura, oshiaki, 5,381,460, Cl. 379-58.000.
- Tatekawa, Masaichiro: See—
Kumon, Akira; Ogawa, Katsutoshi; Tatekawa, Masaichiro; Hisada, Hitoshi; Nawama, Junichi; Katakabe, Noboru; and Aizawa, Masahiro, 5,381,214, Cl. 355-219.000.
- Tatsumi Corporation: See—
Kondoh, Toyoshi, 5,381,088, Cl. 324-158.100.
- Tatsumi, Fujiko: See—
Konno, Toshio; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; Takahashi, Ryusaku; and Maeno, Keiichi, 5,381,188, Cl. 348-766.000.
- Tatsuta Electric Wire & Cable Co., Ltd.: See—
Takatori, Taizo; Ishihara, Akihiro; Masui, Tadaaki; Kawakami, Yoshinori; Okumura, Takahisa; and Ishizaka, Masuo, 5,381,097, Cl. 324-512.000.

Tatsuzawa, Hajime: See—
Suzuki, Manabu; and Tatsuzawa, Hajime, 5,381,246, Cl. 358-500.000.

Tavrow, Lee S.: See—
Bewick, Gary W.; Santoro, Mark R.; and Tavrow, Lee S., 5,381,377, Cl. 365-230.060.

Taya, Nobuhisa: See—
Nakano, Joji; Taya, Nobuhisa; Chaki, Hisaaki; Yamafuji, Tetsuo; and Momono, Kaishu, 5,380,878, Cl. 549-60.000.

Taylor, Brent: Aerosol container cap and activator button assembly. 5,379,924, Cl. 222-402.110.

Taylor, Jack H., Jr.: Catalytic device for treatment of combustion gases and its method of use, and the catalytic material used in the catalytic device. 5,380,506, Cl. 423-213.200.

Taylor, James K., to IRD Mechanicals, Inc.: Mount assembly for use with vibration transducers. 5,379,643, Cl. 73-634.000.

Taylor, Robert W., to Cliff Electronic Components Limited: Electrical terminal. 5,380,227, Cl. 439-727.000.

TDK Corporation: See—
Kaneda, Hiroshi; and Hashizume, Kenji, 5,379,960, Cl. 242-345.200.

Techno Excel Kabushiki Kaisha: See—
Kobayashi, Takanori; Nagano, Yoshifumi; and Yamasawa, Kiyohito, 5,381,091, Cl. 324-207.170.

Technological Safety Designs, Inc.: See—
Stahl, Wayne L., 5,381,141, Cl. 340-984.000.

Technomarket, L.P.: See—
Beiswenger, John L.; and Schwimmer, Robert I., 5,381,388, Cl. 368-69.000.

Teckpac-Laffon GmbH: See—
Blachut, Longin, 5,379,901, Cl. 206-581.000.

Teijin Limited: See—
Hamano, Hisashi; Hosoi, Masahiro; Kobayashi, Ieyasu; and Saeki, Yasuhiro, 5,380,577, Cl. 428-143.000.

Matsuki, Toshitsugu; Saiki, Noritsugu; and Emi, Shingo, 5,380,658, Cl. 435-181.000.

Nakamura, Tomoki; Ichihashi, Tetsuo; and Fukuda, Masayuki, 5,380,590, Cl. 428-375.000.

Teitman, Gerald J.: See—
Johnson, David L.; Parsons, David H.; and Teitman, Gerald J., 5,380,426, Cl. 208-113.000.

Tektronix, Inc.: See—
Roy, Joy; Stanley, Douglas M.; Buehler, James D.; and Adams, Ronald L., 5,381,162, Cl. 347-10.000.

Titterton, Donald R.; Bui, Loc V.; Hirschy, Linda M.; and Jaeger, C. Wayne, 5,380,769, Cl. 523-161.000.

Teledyne Pacing Systems, Inc.: See—
Murphy, Anthony J.; Bassin, David; and Mason, David, 5,379,776, Cl. 128-705.000.

Teledyne Industries, Inc.: See—
Hamos, Robert E., 5,380,192, Cl. 431-7.000.

Teledyne MEC a division of Teledyne Industries, Inc.: See—
Kelley, Paul E., 5,381,007, Cl. 250-282.000.

Telefonaktiebolaget L M Ericsson: See—
Ekelund, Folke; and Hansson, Leif, 5,381,296, Cl. 361-106.000.

Teller, Daniel M.: See—
Hsu, Kuo-Hom L.; Teller, Daniel M.; Davis, Alan R.; Lubeck, Michael D.; Munson, Harry R., Jr.; Jagdmann, Gunnar E.; and Uwaydah, Ibrahim M., 5,380,734, Cl. 514-357.000.

Tellings, Jan P. E.: See—
Greene, George H.; Miller, Robert; Williams, James L.; Phillips, James C.; Stults, Jerry F.; and Tellings, Jan P. E., 5,380,890, Cl. 554-2.000.

Tema Systems, Inc.: See—
Paschedag, Thomas B., 5,380,434, Cl. 210-360.200.

Temple University of the Commonwealth System of Higher Education: See—
Knight, Linda C.; and Maurer, Alan H., 5,380,646, Cl. 424-1.690.

Shi, Yuan, 5,381,534, Cl. 395-200.000.

Ten Hoeve, Wolter: See—
Havinga, Edsko E.; Ten Hoeve, Wolter; and Wijnberg, Hans, 5,380,807, Cl. 526-257.000.

Tenne, Frank D.: See—
McCunn, Myron L.; Landphair, Donald K.; Neysinck, Richard M.; DePauw, Richard A.; Lundie, William R.; Brown, Douglas P.; Hoffman, Jeffrey A.; Tenne, Frank D.; Holverson, Patrick D.; and Woodruff, Keith, 5,379,812, Cl. 141-346.000.

Tepman, Avi, to Applied Materials, Inc.: Shield and collimator pasting deposition chamber with a wafer support periodically used as an acceptor. 5,380,414, Cl. 204-192.300.

Teppo, Maynard, to American Colloid Company: Method for milling clay without substantial generation of powder. 5,379,948, Cl. 241-24.000.

Tera, Takashi; Yoshioka, Takayuki; and Yamamoto, Hideki, to Pioneer Electronic Corporation: Projector in a projection television. 5,381,189, Cl. 348-776.000.

Teraji, Kazuo: See—
Itou, Tsukasa; Teraji, Kazuo; Yoshinaga, Noriyuki; Harada, Sunao; Negoro, Kouji; and Mori, Kazunari, 5,380,606, Cl. 429-194.000.

Teramachi, Hiroshi, to THK Co., Ltd.: Linear bearing and its production method. 5,380,099, Cl. 384-45.000.

Teramoto, Mitsutake; Okumoto, Takaharu; and Asabuki, Hideyo, to Yokohama Rubber Co., Ltd.: The iron-type golf club set. 5,380,004, Cl. 273-77.00A.

Terauchi, Kiyoshi, to Sanden Corporation: Piston type refrigerant compressor. 5,380,166, Cl. 417-269.000.

Terauchi, Kiyoshi: See—
Kikuchi, Yasuo; Mabe, Atsushi; and Terauchi, Kiyoshi, 5,380,176, Cl. 418-55.100.

Terayama, Yoshimi: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yui-chi, 5,379,515, Cl. 29-852.000.

Terbrack, Ulrich: See—
Siol, Werner; Fischer, Jens-Dieter; Terbrack, Ulrich; and Koralewski, Klaus, 5,380,797, Cl. 525-71.000.

Terjung, Herman F.; and Crum, David P.: Sleeving machine. 5,379,570, Cl. 53-399.000.

Termaten, Gerrit J.: See—
van den Brink, Breunis; Termaten, Gerrit J.; and de Gruijl, Johannes A., 5,380,322, Cl. 606-57.000.

Termine, Enrico J.; Atwell, Ray W.; Hodgen, Harry A.; and Favstrisky, Nicolai A., to Great Lakes Chemical Corporation: Fire retardant polyolefin fibers and fabrics. 5,380,802, Cl. 525-72.000.

Terry, Mel: Material-handling equipment. 5,379,842, Cl. 180-21.000.

Terunuma, Hiroshi: See—
Kato, Minoru; Terunuma, Hiroshi; and Takeuchi, Yoshihiro, 5,381,272, Cl. 359-823.000.

Testa, Raymond T.: See—
Sum, Phaik-Eng; Lee, Ving J.; and Testa, Raymond T., 5,380,888, Cl. 552-205.000.

Texaco Inc.: See—
Morrow, Lawrence R.; Martir, Wilson K.; and Aghazeynali, Hossein, 5,381,002, Cl. 250-301.000.

Texas Instruments Incorporated: See—
Ovens, Kevin; Bittlestone, Clive; and Helmick, Bob, 5,381,455, Cl. 377-67.000.

Textima AG: See—
Dorn, Michael, 5,380,561, Cl. 427-430.100.

Textron, Inc.: See—
Schmitt, Karl R.; and Pherigo, Douglas E., 5,381,317, Cl. 362-66.000.

Tezuka, Nobuo, to Canon Kabushiki Kaisha: Recording or reproducing apparatus including a disc cartridge loading mechanism. 5,381,286, Cl. 360-99.050.

Tezuka, Shinkichi: See—
Sekine, Akihiro; Kikuta, Yoshinori; Tezuka, Shinkichi; Okada, Kazuo; and Nakajima, Hiroshi, 5,380,715, Cl. 514-47.000.

Thayer, John S.; and McGraw, Montgomery C., to Compaq Computer Corporation: Programmable logic system for filtering commands to a microprocessor. 5,381,530, Cl. 395-275.000.

Theroux, Gil; Baca, Allen G.; and Hamp, Charles H., III, to Honeywell Inc.: Reworkable encapsulated electronic assembly and method of making same. 5,381,304, Cl. 361-706.000.

Therrien, Edward E.: See—
Piazza, Charles L.; and Therrien, Edward E., 5,380,183, Cl. 425-434.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H.: Two machine arrangement for track tamping in switches having track lifting units mounted only on first machine. 5,379,700, Cl. 104-7.200.

Thinking Machines Corporation: See—
Jourdenais, Karen C.; Frankel, James L.; Goldhaber, Steven N.; and Seamonson, Linda J., 5,381,550, Cl. 395-700.000.

Thiokol Corporation: See—
Willer, Rodney; Stern, Alfred G.; and Day, Robert S., 5,380,777, Cl. 524-186.000.

THK Co., Ltd.: See—
Teramachi, Hiroshi, 5,380,099, Cl. 384-45.000.

Thomas, Gareth R.: See—
Saxton, Gregory J.; Thomas, Gareth R.; Hill, Charles C.; and Weselake, Kenneth L., 5,379,702, Cl. 105-355.000.

Thomas, Isabelle; LeFort, Pierre O.; and Legoux, Christophe, to Sextant Avionique: Capacitive micro-sensor with a low stray capacity and manufacturing method. 5,381,300, Cl. 361-280.000.

Thomas, Milton L.: Saw blade with cutting wings. 5,379,672, Cl. 83-837.000.

Thomas Monahan Company, The: See—
Monahan, Thomas F., Jr., 5,379,579, Cl. 56-54.000.

Thomas, Raymond H. P.; Chen, Ruth H. H.; and Harris, Kenneth, to AlliedSignal Inc.: Stabilized dichlorotrifluoroethane refrigeration compositions. 5,380,449, Cl. 252-68.000.

Thomas, Ronald E.: See—
Reiterman, Donald R.; Green, Martin J.; Nicolas, Ed F.; Greff, Richard J.; and Thomas, Ronald E., 5,380,245, Cl. 454-63.000.

Thompson, Carl R.: See—
Easton, David J.; Thompson, Carl R.; and Klages, Corwin L., 5,380,964, Cl. 200-43.010.

Thompson, Kenneth R.: See—
Hertz, Allen D.; Tribbey, David A.; and Thompson, Kenneth R., 5,381,307, Cl. 361-767.000.

Thompson, Terrence L.; and Gresham, Jack W., to Viking Engineering & Development, Incorporated: Automated nailing device. 5,379,513, Cl. 29-772.000.

Thomson Consumer Electronics, Inc.: See—
Deiss, Michael S., 5,381,181, Cl. 348-423.000.

Simmons, Carlton J., Jr., 5,381,142, Cl. 341-26.000.

Thomson-CSF: See—
Chazelas, Jean; and Turpin, Marc, 5,381,005, Cl. 250-227.190.

Grenot, Thierry, 5,381,410, Cl. 370-60.100.

Thomson Tubes and Displays, S.A.: See—
Perreaut, Jean M.; and Roussel, Bruno F., 5,381,079, Cl. 315-382.000.

Thorland, Rodney H.: See—
Nelson, Joel D.; and Thorland, Rodney H., 5,381,436, Cl. 372-94.000.

Thorndike, Karl E.; and Vrba, Joseph A., to FuziWare, Inc.: Fuzzy spreadsheet data processing system. 5,381,517, Cl. 395-61.000.

Thornton, Roy F., to General Electric Company: Removal of chromium from solution using mechanically agitated iron particles. 5,380,441, Cl. 210-720.000.

Thorpe, Richard B.: Tilt steering mechanism for a recumbent bicycle. 5,380,025, Cl. 280-270.000.

Thrower, Mark L.; and Smith, Michael D., to Dallas Semiconductor Corporation: SCSI terminator. 5,381,034, Cl. 257-529.000.

Thuillard, Marc; Scheidweiler, Andreas; and Hess, Kurt, to Cerberus AG: Optical smoke detector with active self-monitoring. 5,381,130, Cl. 340-630.000.

Thurell, Peter, to Item Development AB: Dispenser for medical preparations including locking means. 5,379,899, Cl. 206-538.000.

Thurman, Dan L.; Gilham, Michael L.; and Lee, John C., to Caterpillar Inc.: Grinding and finishing worm. 5,379,534, Cl. 451-177.000.

Thurmes, William N.: See—
Wand, Michael D.; Thurmes, William N.; and Walbe, David M., 5,380,460, Cl. 252-299.600.

Tiefel, Thomas H.: See—
Chen, Li-Han; Jin, Sungho; and Tiefel, Thomas H., 5,381,125, Cl. 338-32.00R.

Tielemans, Leonardus P. M.: See—
Vetter, Axel; and Tielemans, Leonardus P. M., 5,381,456, Cl. 378-132.000.

Tiffin, Ronald C., to Sonoco Products Company: Method and apparatus for testing chew-out strength of paperboard core. 5,379,648, Cl. 73-847.000.

Tiikkainen, Pekka: See—
Paasivaara, Jukka; Suominen, Matti; and Tiikkainen, Pekka, 5,379,641, Cl. 73-579.000.

TiMesh, Inc.: See—
Morgan, Frank H., 5,380,328, Cl. 606-70.000.

Timmerman, Daniel M.; Claeys, Daniel A.; and Janssens, Wilhelmus, to Agfa-Gevaert, N.V.: Polymeric phosphonium mordant and photographic element containing the same. 5,380,619, Cl. 430-213.000.

Timmons, James V.; Jones, Bert C., III; and Manicke, Paul S., to General Electric Company: Composite repair press for manufacturing and repairing a workpiece made from a composite material. 5,379,689, Cl. 100-43.000.

Timmons, Richard P.; and Trinh, Lan H., to Hughes Aircraft Company: Method and apparatus for regulating output power of signal amplifier. 5,381,115, Cl. 330-279.000.

Tingstad, James S.: See—
Wickholm, David R.; Tingstad, James S.; Haek, Robert S.; and Perez, Rene D., 5,381,264, Cl. 359-419.000.

Tinsley, C. Roscoe, to Eastman Chemical Company: Anchoring assembly. 5,379,563, Cl. 52-295.000.

Tinus, Antonius M. C.: See—
van Heelsbergen, Teunis R.; and Tinus, Antonius M. C., 5,381,094, Cl. 324-318.000.

Tipton, Russell C., to Forma Scientific, Inc.: Safety cabinet. 5,380,244, Cl. 454-57.000.

Titterton, Donald R.; Bui, Loc V.; Hirschy, Linda M.; and Jaeger, C. Wayne, to Tektronix Inc.: Reactive ink compositions and systems. 5,380,769, Cl. 523-161.000.

Tobagi, Fouad A.; and Baird, Randall B., to Starlight Networks: Data throttling system for a communications network. 5,381,413, Cl. 370-85.600.

Tobin, Kenneth W.: See—
Dooley, Joseph B.; Muhs, Jeffrey D.; and Tobin, Kenneth W., 5,381,492, Cl. 385-12.000.

Tobler, Hans: See—
Massen, Robert; Hegelbach, Hugo; Zuber, Jurg; Tobler, Hans; Schoenenberger, Niklaus; Zapf, Helmut; and Gensjager, Helmut, 5,379,949, Cl. 241-30.000.

Tobler, Martin: Apparatus for reverse-threading a central yarn-spinning passage. 5,379,581, Cl. 57-280.000.

Todoroki Sangyo Kabushiki Kaisha: See—
Takahashi, Shizuo; and Kobayashi, Takao, 5,380,485, Cl. 422-62.000.

Togano, Norio: See—
Asano, Yasushi; Togano, Norio; and Ikushima, Shunsuke, 5,379,871, Cl. 192-4.00A.

Togo, Masamichi: See—
Wiseman, Dean H.; and Togo, Masamichi, 5,380,799, Cl. 525-111.000.

Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, to Nippon Soda Co., Ltd.: Diphenylsulfone derivatives and heat sensitive recording materials. 5,380,887, Cl. 549-556.000.

Tokunaga, Toshio; Soga, Naomichi; and Kawashima, Haruo, to Bridgestone Corporation: Method of forming green tire. 5,380,384, Cl. 156-111.000.

Tokuno, Toshiro, to Mita Industrial Co., Ltd.: Process for producing a toner for development of electrostatic charged image. 5,380,615, Cl. 430-109.000.

Tokutake, Shigeaki: See—
Ueda, Hideaki; Tokutake, Shigeaki; Inagaki, Keiichi; and Shimada, Yuki, 5,380,613, Cl. 430-58.000.

Tokutake, Toshinori, to Showa Aluminum Corporation: Heat exchanger. 5,379,834, Cl. 165-178.000.

Tokuyama, Akio: See—
Usuki, Kazuhiko; Nishimoto, Kazuhiko; Tokuyama, Akio; Saito, Koichi; and Yoshioka, Manabu, 5,380,784, Cl. 524-407.000.

Tokuyama, Yoshio: See—
Namiki, Yasuomi; Tanaka, Masaru; and Tokuyama, Yoshio, 5,381,238, Cl. 358-320.000.

Tokyo Electron Kyushu Limited: See—
Nishi, Mituo; Shindou, Naoki; and Yamaguchi, Kazuya, 5,379,784, Cl. 134-102.300.

Tokyo Electron Limited: See—
Niino, Reiji; Fujita, Yoshiyuki; Lee, Hideki; Imamura, Yasuo; Nishimura, Toshiharu; Mikata, Yuichi; Miyazaki, Shinji; Mori, Takahiko; and Okumura, Katsuya, 5,380,370, Cl. 134-22.110.

Nishi, Mituo; Shindou, Naoki; and Yamaguchi, Kazuya, 5,379,784, Cl. 134-102.300.

Tokyo Electron Sagami Ltd.: See—
Wada, Athushi, 5,380,137, Cl. 414-172.000.

Tokyo Kikai Seisakusho, Ltd.: See—
Ohno, Kunitiro, 5,380,000, Cl. 271-277.000.

Toland, David S.; McGuire, Michael F.; Farrell, Gary S.; Pitkin, Kevin J.; Beard, Michael S.; Emmons, David; Conroy, James W.; and Ziebol, Robert J., to ADC Telecommunications, Inc.: Fiber optic connector with vented ferrule holder. 5,381,497, Cl. 385-80.000.

Toldy, Lajos: See—
Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eazter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebesteny, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, 5,380,724, Cl. 514-252.000.

Tolonen, Jouko: See—
Pohjonen, Jukka; Heikkila, Pekka; and Tolonen, Jouko, 5,380,139, Cl. 414-280.000.

Tomat, Ferruccio: See—
Bordignon, Giuseppe; Paolone, Rolando; and Tomat, Ferruccio, 5,380,146, Cl. 414-791.400.

Tomellini, Giorgio; and Rollandi, Gian A., to BRACCO, S.p.A.: Device for the administration of drugs, particularly two-component drugs. 5,380,281, Cl. 604-85.000.

Tomer, John D., IV: See—
Shutske, Gregory M.; Kapples, Kevin J.; and Tomer, John D., IV, 5,380,847, Cl. 546-119.000.

Tomioka, Shinji: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shimura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.

Tomita, Shigeru: See—
Kanamori, Hiroo; Nakazato, Koji; Nishimura, Masayuki; and Tomita, Shigeru, 5,381,503, Cl. 385-123.000.

Tomita, Shinya: See—
Kondo, Norimasa; Matsuoka, Takao; Aino, Masayuki; Torii, Takuji; Hayashi, Kazunobu; Morio, Shuichi; and Tomita, Shinya, 5,381,168, Cl. 347-30.000.

Tomkins Industries, Inc.: See—
Van Becelaere, Robert M., 5,379,792, Cl. 137-12.000.

Tomlinson, Charles E., to Circle-Proscio, Inc.: Conversion coatings for metal surfaces. 5,380,374, Cl. 148-247.000.

Tomlinson, Leroy O.; and Smith, Raub W., to General Electric Company: Reheat steam cycle for a steam and gas turbine combined cycle system. 5,379,588, Cl. 60-39.182.

Tomoegawa Paper Co., Ltd.: See—
Totsuka, Hiroki; and Takeuchi, Hirono, 5,380,614, Cl. 430-106.000.

Tonge, Stephen R.: See—
Holly, Frank J.; and Tonge, Stephen R., 5,380,303, Cl. 604-290.000.

Topf, Martin: See—
Andrea, Douglas; and Topf, Martin, 5,381,473, Cl. 379-387.000.

Topliss, John G.: See—
Beylin, Vladimir; Chen, Huai G.; Goel, Om P.; Marlatt, Mark E.; and Topliss, John G., 5,380,925, Cl. 562-443.000.

Toray Industries, Inc.: See—
Hiroe, Nobutake; and Kato, Tetsuya, 5,380,107, Cl. 400-241.000.

Torii, Takuji: See—
Kondo, Norimasa; Matsuoka, Takao; Aino, Masayuki; Torii, Takuji; Hayashi, Kazunobu; Morio, Shuichi; and Tomita, Shinya, 5,381,168, Cl. 347-30.000.

Torii, Yoshi: See—
Fukuyama, Ryoji; Nawata, Makoto; Kakehi, Yutaka; Kawahara, Hironobu; Sato, Yoshiaki; Torii, Yoshi; and Kawayara, Akira; and Sato, Yoshie, 5,380,397, Cl. 156-643.000.

Torikai, Eiichi: See—
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Toriyabe, Keiji: See—
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Torrie, Paul A.; and Tallent, Gary P., to Smith & Nephew Dyonics, Inc.: Soft tissue anchors and systems for implantation. 5,380,334, Cl. 606-104.000.

- Toshiba Kikai Kabushiki Kaisha: See—
Yoko, Hiroyoshi; Mizutani, Takashi; Aiso, Nobuyuki; Mochizuki, Hiroto; and Honda, Hirohiko, 5,381,339, Cl. 364-468.000.
- Totani, Yoshiyuki; Hirao, Motokazu; Ito, Tomonori; Nakatsuka, Masakatsu; and Yamaguchi, Akihiro, to Mitsui Toatsu Chemicals, Inc. Aromatic polycarbonate and process for production thereof. 5,380,814, Cl. 528-199.000.
- Toth, Antal: See—
Szabo Anna Z.; Szabo nee Ujhelyi, Gabriella; Toth, Antal; Szuts, Tamás; Magyar, Kalman; Lengyel, Jozsef; Pinter, Janos; Szekely, Anna; Szego, Andras; and Marmarosi nee Kellner, Katalin, 5,380,761, Cl. 514-655.000.
- Totsuka, Hiroki; and Takeuchi, Hirono, to Tomoe-gawa Paper Co., Ltd. Positive chargeable color toner. 5,380,614, Cl. 430-106.000.
- Totten, Patty L.: See—
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- Touhsaent, Robert E.: See—
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- Tovey, H. Jonathan; Cuny, Douglas J.; and Ciccolella, Michael, to United States Surgical Corporation. Method using approximating apparatus for hernia repair. 5,379,734, Cl. 128-4.000.
- Town, Michael-Harold: See—
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- Toxcoris Manufacturing, Inc.: See—
Sappington, Donald R., 5,379,746, Cl. 124-87.000.
- Toya, Ichizo: See—
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- Toyama Chemical Co., Ltd.: See—
Nakano, Joji; Taya, Nobuhisa; Chaki, Hisaaki; Yamafuji, Tetsuo; and Mononoi, Kaisha, 5,380,878, Cl. 349-60.000.
- Toyo Chemical Co., Ltd.: See—
Uchida, Hiromichi, 5,380,395, Cl. 156-577.000.
- Toyoda, Katsuhiko, to Suzuki Motor Corporation. Apparatus for judging deterioration of catalyst of internal combustion engine. 5,379,587, Cl. 60-276.000.
- Toyoda, Masayoshi: See—
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- Toyota Jidosha Kabushiki Kaisha: See—
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Kurasako, Ryoichi; and Shimizu, Hidetoshi, 5,379,868, Cl. 188-72.200.
Sumi, Minoru; Uchida, Minoru; Nozue, Kyozi; and Nakane, Masakatsu, 5,379,701, Cl. 104-89.000.
- Trager, Michael; and Leven, Thomas, to Huels Aktiengesellschaft. Process for the preparation of prefoamed polyolefin particles. 5,380,766, Cl. 521-60.000.
- TransGlobal Technologies, Limited: See—
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- Travis, Christopher P.; and Travis, Richard C. Video lottery gaming device. 5,380,007, Cl. 273-138.00A.
- Travis, Richard C.: See—
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- Tremoulet, Olivier L., Jr.: See—
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- Treutlein, Gunter: See—
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- Tribbey, David A.: See—
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- Trigg, G. P.: See—
Rambo, Todd A.; and Trigg, G. P., 5,380,122, Cl. 404-47.000.
- Trimedyn Laser Systems, Inc.: See—
Everett, Royce B.; Acosta, George M.; and Hussein, Hany M. G., 5,380,317, Cl. 606-15.000.
- Trinh, Lanh T.: See—
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- Trion Corporation: See—
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- Truty, Thomas J.; French, Jule L.; and Newell, Kevin M., to Basix Technologies Ltd. Current pickup indexing apparatus. 5,380,973, Cl. 219-69.120.
- TRW Inc.: See—
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- TRW Vehicle Safety Systems Inc.: See—
Emery, Jerome W.; Meduvsky, Alex G.; Ruhlman, Thomas L.; and Osentoski, Thomas, 5,380,039, Cl. 280-741.000.
- Turvill, William W.; and McFalls, Bob L., 5,380,067, Cl. 297-484.000.
- Tsai, Kun-Lung: See—
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- Tsang, Kinling P., to Seagate Technology, Inc. Method and apparatus for fault-tolerant identification of the header field of a recording device. 5,381,424, Cl. 371-40.100.
- Tse, Fred M.: See—
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- Tselesin, Naum N., to Ultimate Abrasive Systems, Inc. Patterned abrasive material and method. 5,380,390, Cl. 156-230.000.
- Tsubaki, Kazuhisa; Uesugi, Mitsuru; and Honma, Kouichi, to Matsushita Electric Industrial Co., Ltd. Data receiving apparatus. 5,381,448, Cl. 375-14.000.
- Tsuboka, Eiichi, to Matsushita Electric Industrial Co., Ltd. Time series signal analyzer including neural network having path groups corresponding to states of Markov chains. 5,381,513, Cl. 395-2.410.
- Tsuchida, Hiroshi: See—
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- Tsuda, Hiroko; Shigeta, Akira; and Koyanagi, Hidenobu, to Kao Corporation. Detergent composition. 5,380,455, Cl. 252-174.230.
- Tsuji, Kunihiro, to Kabushiki Kaisha Kobe Seiko Sho. Arc ion plating system. 5,380,420, Cl. 204-298.410.
- Tsuji, Takeshi: See—
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- Tsukamoto, Akira: See—
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- Tsukamoto, Masamitsu: See—
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- Tsukui, Takashi: See—
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- Tsunoda, Katsumi: See—
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- Tsunoda, Shuhei; and Iida, Yoshikazu, to Starting Industry Company Limited; and Kioritz Corporation. Starter to operate a decompression mechanism on an internal combustion engine. 5,379,734, Cl. 123-182.100.
- Tsuruoka, Takao: See—
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- Tsutsumi, Kazuo: See—
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- Tu, Xiang-Zheng, to Ameron Technologies, Inc. One-piece silicon substrate having fiber optic stops and a reflective surface thereon and methods of manufacturing same. 5,381,231, Cl. 356-352.000.
- Tucker, Ernest L.; Dunderdale, Kevin; Hurren, David K.; and Everitt, Robert G., to Coal Industry (Patents) Limited. Ceramic welding. 5,380,563, Cl. 427-452.000.
- Tuliani, Vinod V.: See—
Geyer, Robert P.; and Tuliani, Vinod V., 5,380,535, Cl. 424-484.000.
- Tung, Wae-Hai, to Du Pont de Nemours, E. I., and Company. Trilobal and tetralobal cross-section filaments containing voids. 5,380,592, Cl. 428-397.000.
- Turco, Ermanno, to Italtel Societa Italiana Telecomunicazioni S.P.A. Process and device for the decoding of a shortened, cyclic binary code using error correction. 5,381,423, Cl. 371-39.100.
- Turner, Jeremy J.: See—
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- Turner, Michael R.: See—
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- Turpin, Marc: See—
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- Turvill, William W.; and McFalls, Bob L., to TRW Vehicle Safety Systems Inc. Chest harness for use in a child restraint system. 5,380,067, Cl. 297-484.000.
- Tuttle, Billy W.; Zhu, Huiling; and Dolan, Robert B., to Osram Sylvia Inc. Lamp base locking clip. 5,381,070, Cl. 313-318.000.
- Tuttle, Susan L.: See—
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Baals, Kimberly A.; Boakes, Edward W.; Chylinski, Kathleen J.; Kall, Darren A.; Smith, Gary C.; and Tuttle, Susan L., 5,381,463, Cl. 379-96.000.
- Tuzi, Masayuki: See—
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- Tyson, Scott M.; Kwor, Richard Y.; and Levenson, Leonard L., to United Technologies Corporation. Ionized cluster beam deposition of sapphire and silicon layers. 5,380,683, Cl. 437-236.000.
- UBE Industries, Ltd.: See—
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- Obata, Tokio; Ooka, Akira; Fujii, Katsutoshi; and Suizu, Shin, 5,380,744, Cl. 514-403.000.

- Yoshida, Hiroshi; Kakeya, Noboru; and Kashiwagi, Masanori, 5,380,912, Cl. 558-440.000.
- Uchida, Hiromichi, to Toyo Chemical Co., Ltd. Automatic adhesive transfer device. 5,380,395, Cl. 156-577.000.
- Uchida, Hiroshi; and Tanaka, Yasuji, to Showa Denko K.K. Composition for optical material. 5,380,809, Cl. 526-318.430.
- Uchida, Minoru: See—
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- Uchigane, Kiyotaka: See—
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- Uchikawa, Masaaki: See—
Tohyama, Takafumi; Sato, Takehiro; Morita, Kousaku; Uchikawa, Masaaki; and Hirai, Nobuyuki, 5,380,887, Cl. 549-556.000.
- Uchiyama, Kensuke: See—
Uematsu, Hiromi; Wakui, Masanori; Iden, Toshio; Takahashi, Toshio; and Uchiyama, Kensuke, 5,379,780, Cl. 131-291.000.
- Udagawa, Toshiaki: See—
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- Udd, Eric; and Clark, Timothy E., to McDonnell Douglas Corporation. Fiber optic grating sensor systems for sensing environmental effects. 5,380,995, Cl. 250-227.180.
- Ueda, Yoshinobu; Okuda, Nobuyuki; Ohkura, Kengo; and Kugai, Hirokazu, to Sumitomo Electric Industries, Ltd. Carbon cluster film having electrical conductivity and method of preparing the same. 5,380,595, Cl. 428-408.000.
- Ueda, Eiichi: See—
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- Ueda, Hideaki; Tokutake, Shigeki; Inagaki, Keiichi; and Shimada, Yuki, to Minolta Camera Kabushiki Kaisha. Photosensitive member comprising electronattracting compound and hindered phenol compound. 5,380,613, Cl. 430-58.000.
- Ueda, Hiroyuki: See—
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- Ueda, Mamoru, to Sony Corporation. Apparatus and method for recycling and reproducing a digital video signal. 5,381,274, Cl. 360-48.000.
- Ueda, Shinjiro: See—
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- Ueda, Yutaka; Ohori, Keizo; Shimizu, Tsuneco; and Mizutani, Shoji, to Murata Kikai Kabushiki Kaisha; and Kondo Cotton Spinning Co., Ltd. Quality control system in a spinning mill. 5,381,340, Cl. 364-470.000.
- Uehara, Tsukasa, to Canon Kabushiki Kaisha. Head shifting apparatus. 5,381,399, Cl. 369-215.000.
- Ueki, Hirofumi: See—
Yamaoka, Yukio; Hattori, Keiji; Kodama, Masaru; and Ueki, Hirofumi, 5,380,407, Cl. 205-122.000.
- Ueki, Hiroyuki: See—
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- Uematsu, Hiromi; Wakui, Masanori; Iden, Toshio; Takahashi, Toshio; and Uchiyama, Kensuke, to Japan Tobacco Inc. Method and system for expanding tobacco. 5,379,780, Cl. 131-291.000.
- Uenishi, Kazuya: See—
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- Ueno, Ryuzo: See—
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- Ueno, Ryuzo; Ueno, Ryuzi; Kato, Ichie; and Oda, Tomio, to K.K. Ueno Seiyaku Oyo Kenkyujo. Prostaglandins E and anti ulcers containing same. 5,380,709, Cl. 514-530.000.
- Uesugi, Mitsuru: See—
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- Ujita, Toshihiko; and Kozawa, Hirotaka, to Canon Kabushiki Kaisha. Ink jet head cartridge, ink tank cartridge using degradable plastic as part of construction or package thereof and ink jet apparatus having fitting part for the cartridges. 5,381,172, Cl. 347-86.000.
- Ulbing, Otmar. Peristaltic action precision pump filler. 5,380,172, Cl. 417-476.000.
- Ullisberger, Edmund. Needle shut-off nozzle for plastic injection moulding compounds. 5,380,188, Cl. 425-563.000.
- Ultimate Abrasive Systems, Inc.: See—
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- Umebayashi, Yoshihiro: See—
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- Umezawa, Kazuyoshi; and Sato, Osamu, to Fuji Electric Co., Ltd. PWM inverter control system and method. 5,381,328, Cl. 363-41.000.
- Under Sea Travel, Inc.: See—
Lewis, James E.; and Johnson, Jon R., 5,379,714, Cl. 114-315.000.
- Underwood, Mark R., to Agri-Technology. Grain transportation apparatus for a combine. 5,380,247, Cl. 460-114.000.
- Unger, Vernon E.; and Cowan, Kenneth M., to Shell Oil Company. Side-tracking cement plug. 5,379,843, Cl. 166-295.000.
- Unichema Chemie B.V.: See—
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- Uniden America Corp.: See—
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- Uniden Corporation: See—
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- Unilever Corp., U.S.A.: See—
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- Union Carbide Chemicals & Plastics Technology Corporation: See—
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- Unisurge, Inc.: See—
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- Unisyn: See—
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- Unisys Corporation: See—
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- United Kingdom Atomic Energy Authority: See—
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- United Microelectronics Corporation: See—
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- United States Borax & Chemical Corporation: See—
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- United States of America
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- Air Force: See—
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- Army: See—
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- Commerce: See—
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- Energy: See—
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- Health and Human Services: See—
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- Health and Human Services: See—
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- National Aeronautics and Space Administration: See—
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- Navy: See—
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- Izdebaki, Stanley J., 5,380,382, Cl. 156-91.000.
- Johnsen, Paul T.; Smith, Alfred O.; and Dillinger, Robert B., 5,379,699, Cl. 102-290.000.
- McGraw, Peter S., 5,379,955, Cl. 241-186.200.
- McMahon, John M.; Stoneman, Robert C.; and Esterowitz, Leon, 5,381,428, Cl. 372-20.000.
- Sartori, Michael A.; and Clark, Joseph A., 5,381,381, Cl. 367-1.000.
- Winje, Robert L., 5,381,384, Cl. 367-89.000.
- Zabetakis, Paul M.; Cotell, Catherine M.; and Chrisey, Douglas B., 5,380,298, Cl. 604-265.000.
- U.S. Philips Corporation: See—
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- de Groot, Gert J.; and Hamering, Hans, 5,381,174, Cl. 348-207.000.
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Vermeulen, Arnoldus H. A., to Rolloos Sorensen B.V. Greenhouse, provided with a profile frame for guiding a foil and also provided with a snap-on frame for the affixing thereof, as well as a profiled frame, a snap-on frame, a clamping construction and a profiled beam, 5,380,120, Cl. 403-405.100.
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- Wingert, Rudolf, to Arrow Fastener Co., Inc.: Tape lock mechanism. 5,379,523, Cl. 33-767.000.
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- Woods, William G., to United States Borax & Chemical Corporation: Stabilization of aqueous persalt solutions. 5,380,456, Cl. 252-186.270.
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- Wright, Bradford B.; Farooq, Omar; and DeVoe, Robert J., to Minnesota Mining and Manufacturing Company: Polymeric sulfonium salts and method of preparation thereof. 5,380,923, Cl. 562-113.000.
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- Wu, Ji-Won: Belt buckle with replaceable ornamental face plates. 5,379,493, Cl. 24-163.00K.
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- Wu, Tain-Lai: Vertical hydraulic hoist device. 5,380,056, Cl. 294-82.150.
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- tion, collision avoidance and decision support system. 5,381,338, Cl. 364-449.000.
- X-ray Scanner Corporation: See—
Johnston, Gregory E.; Wagner, Byron D.; and Hes, Lloyd, 5,381,245, Cl. 358-487.000.
- Xerox Corporation: See—
Acquaviva, Thomas; and Edmunds, Cyril G., 5,381,220, Cl. 355-308.000.
- Appel, James J., 5,381,259, Cl. 359-216.000.
- Godlove, Ronald E., 5,381,211, Cl. 355-211.000.
- Hains, Charles M., 5,381,247, Cl. 358-533.000.
- Lofthus, Robert M.; Nacman, Aron; and Schweid, Stuart A., 5,381,165, Cl. 346-108.000.
- Lundy, Douglas A., 5,381,218, Cl. 355-298.000.
- Mojaradi, Mohammad M.; and Vo, Tuan A., 5,381,018, Cl. 250-551.000.
- Standing, Robert C., 5,379,668, Cl. 83-99.000.
- Xiaoming, Yang: See—
Zhicheng, Shi; Wenyan, Shi; Yifang, Ye; Xingpin, Ge; Ping, Cao; Shunhua, Liu; Chaogang, Xie; Zaiting, Li; Xingtian, Shu; Xiaoming, Yang; Wei, Fu; Meng, Zhou; and Mingyuan, He, 5,380,690, Cl. 502-65.000.
- Xingpin, Ge: See—
Zhicheng, Shi; Wenyan, Shi; Yifang, Ye; Xingpin, Ge; Ping, Cao; Shunhua, Liu; Chaogang, Xie; Zaiting, Li; Xingtian, Shu; Xiaoming, Yang; Wei, Fu; Meng, Zhou; and Mingyuan, He, 5,380,690, Cl. 502-65.000.
- Xynatech, Inc.: See—
Kang, Pierson S., 5,379,671, Cl. 83-698.110.
- Yabrov, Alexandr A.: See—
Ivanov, Alexy A.; Mescheryakov, Vitaly D.; Stepanov, Sergey P.; Chaykovsky, Sergey P.; Yabrov, Alexandr A.; Gaevoy, Victor P.; Pokrovskaya, Svetlana A.; Sadovskaya, Ecaterina M.; Sheplev, Valentin S.; and Ermakov, Youry P., 5,380,497, Cl. 422-142.000.
- Yabuki, Yoshiharu: See—
Nakamura, Koichi; and Yabuki, Yoshiharu, 5,380,626, Cl. 430-393.000.
- Yacko, Michael: See—
Polomchak, Robert W.; and Yacko, Michael, 5,380,194, Cl. 431-183.000.
- Yagi, Sakai; and Jinno, Keishi, to Yazaki Corporation: Connector. 5,380,217, Cl. 439-358.000.
- Yagii, Keikichi: See—
Kimura, Kiyoshi; Haruta, Yuiti; and Yagii, Keikichi, 5,381,104, Cl. 324-758.000.
- Yagyu, Takehiko: See—
Hashiguchi, Yoshiyuki; Kishi, Masakiti; and Yagyu, Takehiko, 5,380,496, Cl. 422-131.000.
- Yam, Benny S.: See—
Winston, Anthony E.; Yam, Benny S.; and Jones, Keith A., 5,380,347, Cl. 51-293.000.
- Yamada, Tomoya: See—
Kotani, Terumitsu; Saitoh, Atsui; Yamada, Tomoya; Tachikawa, Kohei; Amano, Yasuyuki; and Ikeda, Takeshi, 5,380,572, Cl. 428-40.000.
- Yamada, Yoshiyuki: See—
Inoue, Kunimi; Yamada, Yoshiyuki; Amatsu, Kazumi; Mimura, Yukiteru; Nakaguchi, Yasunori; Shinmura, Hiroyuki; Ono, Yasuyuki; Osawa, Yutaka; Mizutaki, Shoichi; Kasai, Masaji; and Tomioka, Shinji, 5,380,934, Cl. 562-561.000.
- Yamafuji, Tetsuo: See—
Nakano, Joji; Taya, Nobuhisa; Chaki, Hisaaki; Yamafuji, Tetsuo; and Momonoi, Kaishu, 5,380,878, Cl. 549-60.000.
- Yamaguchi, Akihiro: See—
Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsumaki; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.
- Totani, Yoshiyuki; Hirao, Motokazu; Ito, Tomonori; Nakatsuka, Masakatsu; and Yamaguchi, Akihiro, 5,380,814, Cl. 528-199.000.
- Yamaguchi, Kazuya: See—
Nishi, Mitou; Shindou, Naoki; and Yamaguchi, Kazuya, 5,379,784, Cl. 134-102.300.
- Yamaguchi, Masahiro: See—
Niizawa, Akihiro; and Yamaguchi, Masahiro, 5,381,227, Cl. 356-243.000.
- Yamaguchi, Masakazu: See—
Shinohe, Takashi; Nakayama, Kazuya; Takeuchi, Minami; Yamaguchi, Masakazu; Kitagawa, Mitsuhiko; Omura, Ichiro; and Nakagawa, Akio, 5,381,026, Cl. 257-147.000.
- Yamaguchi, Noriyuki: See—
Ishizuka, Mitsuru; Yamaguchi, Noriyuki; Hasegawa, Hitoshi; Yao, Masaharu; Ohnishi, Hiroshi; Yamamoto, Yuuzi; and Tuzi, Masayuki, 5,381,183, Cl. 348-458.000.
- Yamaha Corporation: See—
Kunimoto, Toshifumi, 5,380,950, Cl. 84-661.000.
- Yamaha Hatsudoki Kabushiki Kaisha: See—
Yonezawa, Minoru; and Amano, Junkichi, 5,379,729, Cl. 123-41.82R.
- Yamamoto Chemicals, Incorporated: See—
Itoh, Hisato; Karasawa, Akio; Sugimoto, Kenichi; Oguchi, Takahisa; and Aihara, Shin, 5,380,842, Cl. 540-128.000.
- Yamamoto, Hideki: See—
Terai, Takashi; Yoshioka, Takayuki; and Yamamoto, Hideki, 5,381,189, Cl. 348-776.000.
- Yamamoto, Hiroshi; and Sakai, Hitoshi, to Yazaki Corporation: Pressure-contact terminal structure. 5,380,218, Cl. 439-397.000.
- Yamamoto, Kenji: See—
Kato, Kiyoshi; Yoneyama, Kenichi; Nagaoka, Haruo; Yamamoto, Kenji; Morimoto, Kazuyuki; and Kume, Masafumi, 5,380,781, Cl. 523-404.000.
- Yamamoto, Kiyoshi: See—
Taniguchi, Yasushi; Hirabayashi, Keiji; Ikoma, Keiko; Kurihara, Noriko; Matsushima, Masaaki; and Yamamoto, Kiyoshi, 5,380,349, Cl. 65-286.000.
- Yamamoto, Makoto: See—
Shou, Guoliang; Yang, Weikang; Takatori, Si var; and Yamamoto, Makoto, 5,381,352, Cl. 364-606.000.
- Shou, Guoliang; Yang, Weikang; Takatori, Sunar; and Yamamoto, Makoto, 5,381,375, Cl. 365-204.000.
- Yamamoto, Masahiro, to Mitsubishi Denki Kabushiki Kaisha: Semiconductor acceleration detecting apparatus. 5,379,640, Cl. 73-517.0AV.
- Yamamoto, Minoru: See—
Okuda, Osamu; Yamamoto, Minoru; Nakano, Tomoyuki; and Hirai, Wataru, 5,379,514, Cl. 29-833.000.
- Yamamoto, Toshihiro: See—
Kasai, Shozo; Tanita, Takeo; Yasuhara, Masateru; Azuma, Yusaku; Yamamoto, Toshihiro; Nikaido, Norio; Inaba, Ryohsei; and Arai, Mitsuo, 5,380,138, Cl. 414-277.000.
- Yamamoto, Yasuo: Baseball bat. 5,380,003, Cl. 273-72.00R.
- Yamamoto, Yasuo; Harushima, Yoshiaki; and Nagai, Akira, to Hitachi Chemical Company, Ltd.: Hydroxyproline derivatives and preparative process therefor. 5,380,875, Cl. 548-533.000.
- Yamamoto, Yuuzi: See—
Ishizuka, Mitsuru; Yamaguchi, Noriyuki; Hasegawa, Hitoshi; Yao, Masaharu; Ohnishi, Hiroshi; Yamamoto, Yuuzi; and Tuzi, Masayuki, 5,381,183, Cl. 348-458.000.
- Yamamura, Tetsuo; Murakami, Seichi; and Sato, Manabu, to Yumedia Co., Ltd.; and Ceramic Industrial Co., Ltd.: Heater device of cigarette lighter and method of manufacturing the same. 5,380,984, Cl. 219-270.000.
- Yamanaka, Tohr; and Tsunoda, Katsumi, to Takasago International Corporation: Method for improving flavor of drink or food. 5,380,540, Cl. 426-534.000.
- Yamane, Masao: See—
Usagawa, Toshiyuki; Hiruma, Kenji; Kawata, Masahiko; Goto, Shigeo; Mitani, Katsuhiko; Yamane, Masao; Takahashi, Susumu; Tanoue, Tomonori; and Imamura, Yoshinori, 5,381,027, Cl. 257-192.000.
- Yamano, Eiichi; Kondo, Toru; and Yonekura, Masami, to Ikeda Bussan Co., Ltd.: Rotatable seat. 5,380,064, Cl. 297-344.220.
- Yamaoka, Yukio; Hattori, Keiji; Kodama, Masaru; and Ueki, Hirofumi, to Shinko Kosen Kogyo Kabushiki Kaisha: Method for facilitating distinction between different steel products. 5,380,407, Cl. 205-122.000.
- Yamasawa, Kiyohito: See—
Kobayashi, Takanori; Nagano, Yoshifumi; and Yamasawa, Kiyohito, 5,381,091, Cl. 324-207.170.
- Yamashita, Hiroshi, to NEC Corporation: Time switching circuit. 5,381,406, Cl. 370-58.200.
- Yamashita, Hisao: See—
Honji, Akio; Ogawa, Toshio; Kuroda, Osamu; Yamashita, Hisao; Tachi, Takahiro; Miyadera, Hiroshi; and Fujishita, Masakatsu, 5,379,586, Cl. 60-276.000.
- Yamashita, Keitaro: See—
Niita, Hajime; Takashima, Masatoshi; Saito, Takehiko; Nakagawa, Tomihiro; and Yamashita, Keitaro, 5,381,275, Cl. 360-48.000.
- Yamashita, Seiji; Kawagoe, Jun; and Toya, Ichizo, to Fuji Photo Film Co., Ltd.: Silver halide photographic material. 5,380,637, Cl. 430-537.000.
- Yamauchi, Noriyoshi: See—
Miwa, Tomoyoshi; Ishida, Hitoshi; and Yamauchi, Noriyoshi, 5,379,826, Cl. 164-4.100.
- Yamauchi, Toshiyuki: See—
Saijara, Yasuhiro; Date, Haruyuki; Yamauchi, Toshiyuki; and Mizobuchi, Manabu, 5,380,521, Cl. 424-76.100.
- Yan, Cheng C., to Astec International, Ltd.: Electrical power inverter. 5,381,327, Cl. 363-24.000.
- Yan, Tsoung Y., to Mobil Oil Corporation: Regeneration of used strefford solution for recycle. 5,380,442, Cl. 210-721.000.
- Yanagawa, Naoharu, to Pioneer Electronic Corporation: Optical pickup for an optical disc player. 5,381,394, Cl. 369-100.000.
- Yanagi, Motonori: See—
Ban, Cozy; Yanagi, Motonori; Fukumoto, Takaaki; Manabe, Toshiki; and Yanome, Hiroshi, 5,380,471, Cl. 261-122.100.
- Yanagida, Hiroaki; Miyayama, Masaru; Muro, Norio; Sugita, Minoru; Nakatsuji, Teruyuki; and Otsuka, Yasushi, to Shimizu Construction Co., Ltd.; and Hiroaki Yanagida: Strain or stress gauge and method for detecting strain or stress of structure using the same, and plastic composite material for foreknowing progress of breakdown of structure and method using the same. 5,379,644, Cl. 73-787.000.
- Yanagisawa, Takuma; and Ohsawa, Seichi, to Pioneer Electronic Corporation: Optical recording medium having a third non-linear optical reflection film. 5,381,391, Cl. 369-14.000.

Yanai, Moshe; Vishlitzky, Natan; Alterescu, Bruno; and Castel, Daniel, to EMC Corporation. System and method for dynamically controlling cache management. 5,381,539, Cl. 395-425.000.

Yang, Ming-Tzong; Hsue, Chen-Chiu; and Chen, Anchor, to United Microelectronics Corporation. Dram capacitor structure. 5,380,673, Cl. 437-47.000.

Yang, Ming-Tzong: See—
Hsue, Chen-Chiu; Yang, Ming-Tzong; and Wu, Te-Sun, 5,380,676, Cl. 437-52.000.

Yang, Weikang: See—
Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,381,352, Cl. 364-606.000.

Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,381,375, Cl. 365-204.000.

Yang, Yung-Chyuan, to Wang, Sen-Cheng. Computer key. 5,380,969, Cl. 200-517.000.

Yano, Hitoshi, to Chisso Corporation. Ink composition comprising a polyurethane and a mixture of epoxides. 5,380,806, Cl. 525-481.000.

Yano, Makoto: See—
Kuwabara, Kouji; Yano, Makoto; and Takehisa, Kiwamu, 5,381,437, Cl. 372-98.000.

Yano, Masahiko: See—
Kawasaki, Shuichi; Yano, Masahiko; and Higuchi, Jiro, 5,379,771, Cl. 128-661.100.

Yano, Mitsuo: See—
Ishikawa, Kiyofumi; Fukami, Takehiro; Hayama, Takashi; Matsuyama, Kenji; Noguchi, Kazuhito; and Yano, Mitsuo, 5,380,921, Cl. 562-16.000.

Yano, Toshikazu: See—
Sakurai, Akira; Shiotsu, Masahiro; Yano, Toshikazu; Ochi, Masao; and Sugawara, Toshihiro, 5,379,610, Cl. 62-316.000.

Yanome, Hiroshi: See—
Ban, Cozy; Yanagi, Motonori; Fukumoto, Takaaki; Manabe, Toshiki; and Yanome, Hiroshi, 5,380,471, Cl. 261-122.100.

Yao, Masaharu: See—
Ishizuka, Mitsuru; Yamaguchi, Noriyuki; Hasegawa, Hitoshi; Yao, Masaharu; Ohnishi, Hiroshi; Yamamoto, Yuuzi; and Tuzi, Masayuki, 5,381,183, Cl. 348-458.000.

Yardley, John P.: See—
Abou-Gharbia, Magid A.; Yardley, John P.; and Childers, Wayne E., Jr., 5,380,725, Cl. 514-253.000.

Yasuda, Kouichi: See—
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ohta, Masumi; Ono, Masumi; and Yasuda, Kouichi, 5,380,573, Cl. 428-64.000.

Yasuda, Susumu, to NEC Corporation. Voltage comparator circuit capable of avoiding erroneous operation. 5,381,053, Cl. 327-65.000.

Yasuhara, Masateru: See—
Kasai, Shozo; Tanita, Takeo; Yasuhara, Masateru; Azuma, Yusaku; Yamamoto, Toshihiro; Nikaido, Norio; Inaba, Ryohei; and Arai, Mitsuo, 5,380,138, Cl. 414-277.000.

Yasui, Itsuo: See—
Suzuki, Shigehiko; Yasui, Itsuo; and Naito, Sadaaki, 5,379,818, Cl. 152-531.000.

Yasukawa, Ritsu: See—
Nakatsuji, Tadao; Shimizu, Hiromitsu; Yasukawa, Ritsu; Suganuma, Fujio; Kitazume, Akihiro; Tsuchida, Hiroshi; Ito, Takehiko; Hamada, Hideaki; Miyamoto, Katsumi; Kawatsuki, Masaaki; Kintaichi, Yoshiaki; Sasaki, Motoi; and Tabata, Mitsunori, 5,380,692, Cl. 502-303.000.

Yazaki Corporation: See—
Mizuno, Yoshiyuki; and Ogawa, Kikuo, 5,380,970, Cl. 200-523.000.

Okabe, Toshiaki, 5,380,220, Cl. 439-456.000.

Yagi, Sakai; and Jinno, Keishi, 5,380,217, Cl. 439-358.000.

Yamamoto, Hiroshi; and Sakai, Hitoshi, 5,380,218, Cl. 439-397.000.

Yeakle, William H., to Vestil Manufacturing Company. Obstruction sensing guard for vertically moving table. 5,379,655, Cl. 73-865.700.

Yeh, John. Floor lamp structure. 5,381,326, Cl. 362-414.000.

Yeo, Ho S.: See—
Jung, Bon Y.; Ra, Choon S.; Rew, Yo S.; Rhee, Young H.; Yeo, Ho S.; Yoon, Man Y.; and Choi, Woo B., 5,380,735, Cl. 514-367.000.

Yifang, Ye: See—
Zhicheng, Shi; Wenyan, Shi; Yifang, Ye; Xingpin, Ge; Ping, Cao; Shunhua, Liu; Chaogang, Xie; Zaiting, Li; Xingtian, Shu; Xiaoming, Yang; Wei, Fu; Meng, Zhou; and Mingyuan, He, 5,380,690, Cl. 502-65.000.

Ying, Lu C. Lamp socket mounting device. 5,380,208, Cl. 439-558.000.

Yoko, Hiroyoshi; Mizutani, Takashi; Aiso, Nobuyuki; Mochizuki, Hiroto; and Honda, Hirohiko, to Toshiba Kikai Kabushiki Kaisha. Operation control apparatus of working system. 5,381,339, Cl. 364-468.000.

Yokohama Rubber Co., Ltd., The: See—
Ozawa, Osamu; Miyake, Hiroyuki; and Kitami, Tetsu, 5,380,571, Cl. 428-36.900.

Teramoto, Mitsutake; Okumoto, Takaharu; and Asabuki, Hideyo, 5,380,004, Cl. 273-77.00A.

Yokoyama, Noboru, to Canon Kabushiki Kaisha. Image processing apparatus. 5,381,163, Cl. 345-126.000.

Yokoyama, Tsuneo: See—
Mizukawa, Shigeo; and Yokoyama, Tsuneo, 5,381,266, Cl. 359-466.000.

Yonekura, Masami: See—
Yamano, Eiichi; Kondo, Toru; and Yonekura, Masami, 5,380,064, Cl. 297-344.220.

Yoneyama, Kenichi: See—
Kato, Kiyoshi; Yoneyama, Kenichi; Nagaoka, Haruo; Yamamoto, Kenji; Morimoto, Kazuyuki; and Kume, Masafumi, 5,380,781, Cl. 523-404.000.

Yonezawa, Minoru; and Amano, Junkichi, to Yamaha Hatsudoki Kabushiki Kaisha. Cylinder head cooling structure for multi-valve engine. 5,379,729, Cl. 123-41.82R.

Yongyuth, Arms: See—
Maher, John W.; and Yongyuth, Arms, 5,381,403, Cl. 370-13.000.

Yonkoski, Roger K.; and Savu, Patricia M., to Minnesota Mining and Manufacturing Company. Additive for the reduction of mottle in photothermographic and thermographic elements. 5,380,644, Cl. 430-617.000.

Yoon, InBae. Shielded energy transmitting surgical instrument and methods therefor. 5,380,321, Cl. 606-41.000.

Yoon, Man Y.: See—
Jung, Bon Y.; Ra, Choon S.; Rew, Yo S.; Rhee, Young H.; Yeo, Ho S.; Yoon, Man Y.; and Choi, Woo B., 5,380,735, Cl. 514-367.000.

Yoshida, Akihiko; Takahashi, Tomonori; and Murai, Makoto, to NGK Insulators, Ltd. Glass joint body and method of manufacturing the same. 5,380,596, Cl. 428-432.000.

Yoshida, Akihiko; Imoto, Kiyooki; Nonaka, Seiji; and Aoki, Ichiro, to Matsushita Electric Industrial Co., Ltd. Electric double layer capacitor and method for manufacture thereof. 5,381,303, Cl. 361-502.000.

Yoshida, Hiroshi; Kakeya, Noboru; and Kashiwagi, Masanori, to Ube Industries, Ltd.; and Soda Aromatic Co., Ltd. ω -hydroxy-(ω -3)-ketonitrile. 5,380,912, Cl. 558-440.000.

Yoshida, Kazuaki; Ishikawa, Takatoshi; Fujita, Yoshihiro; and Furusawa, Genichi, to Fuji Photo Film Co., Ltd. Process for processing silver halide color photographic material. 5,380,624, Cl. 430-372.000.

Yoshida, Kazushi; and Ogawa, Ryota, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reflecting illumination projecting device. 5,381,197, Cl. 353-98.000.

Yoshida Kogyo K.K.: See—
Hashimoto, Koji; Habazaki, Hiroki; Mrowec, Stanislaw; and Danielewski, Marek, 5,380,375, Cl. 148-403.000.

Yoshida, Seikoh; Ozawa, Shoichi; and Kikuta, Toshio, to Furukawa Electric Co., Ltd. The Method of growing single crystal of compound semiconductors. 5,379,717, Cl. 117-14.000.

Yoshida, Shoji; Ogata, Kazumi; and Kawahira, Osamu, to Senju Pharmaceutical Co., Ltd. Bath agent. 5,380,753, Cl. 514-474.000.

Yoshida, Yoshinori: See—
Tanabe, Ikuo; Yoshida, Yoshinori; Seitoh, Kiyoshi; and Morioka, Masanobu, 5,381,176, Cl. 348-273.000.

Yoshida, Yukihiko, to Sharp Kabushiki Kaisha. Divide circuit having high-speed operating capability. 5,381,380, Cl. 364-767.000.

Yoshie, Yasunori; and Tsukui, Takashi, to NKK Corporation. Apparatus for manufacturing metal tube covered optical fiber cable and method therefor. 5,380,977, Cl. 219-121.630.

Yoshihara, Naotake: See—
Suzuki, Minoru; Ikusawa, Katsumi; Araki, Kenji; Yoshihara, Naotake; and Murayama, Yoshio, 5,379,621, Cl. 72-56.000.

Yoshikawa, Kazuhiro: See—
Koyomogi, Mutsunori; Minami, Yukio; Nakazawa, Masahiko; Yoshikawa, Kazuhiro; and Kojima, Tetsuya, 5,379,982, Cl. 251-77.000.

Yoshikawa, Masao: See—
Ohta, Masahiro; and Yoshikawa, Masao, 5,380,820, Cl. 528-353.000.

Takamatsu, Toshiaki; Ogawa, Shinichi; Yoshikawa, Masao; Hamada, Hiroshi; Watanabe, Noriko; and Funada, Fumiaki, 5,381,187, Cl. 348-759.000.

Tamai, Shoji; Ohta, Masahiro; Kawashima, Saburo; Iiyama, Katsumi; Oikawa, Hideaki; Yamaguchi, Akihiro; Ohkoshi, Kouji; and Yoshikawa, Masao, 5,380,805, Cl. 525-432.000.

Yoshikawa, Osamu: See—
Furomoto, Yoshiyuki; Noda, Hideo; Sakaguchi, Noboru; and Yoshikawa, Osamu, 5,379,957, Cl. 242-230.000.

Yoshimura, Hideto: See—
Moritsu, Kazuki; Matsumoto, Takahiro; Horikawa, Mitsuo; Nakagawa, Shuichi; Yoshimura, Hideto; Nagao, Masashi; and Inaguchi, Takashi, 5,379,600, Cl. 62-47.100.

Yoshimura, Shunji: See—
Fukumoto, Atsushi; Udagawa, Toshiki; Yoshimura, Shunji; Ohta, Masumi; Ono, Masumi; and Yasuda, Kouichi, 5,380,573, Cl. 428-64.000.

Yoshinaga, Noriyuki: See—
Itou, Tsukasa; Teraji, Kazuo; Yoshinaga, Noriyuki; Harada, Sunao; Negoro, Kouji; and Mori, Kazunari, 5,380,606, Cl. 429-194.000.

Yoshino, Kenji: See—
Nishimura, Kimihiro; and Yoshino, Kenji, 5,380,179, Cl. 419-36.000.

Yoshioka, Manabu: See—
Usuki, Kazuhiko; Nishimoto, Kazuhiko; Tokuyama, Akio; Saito, Koichi; and Yoshioka, Manabu, 5,380,784, Cl. 524-407.000.

Yoshioka, Takayuki: See—
Terai, Takashi; Yoshioka, Takayuki; and Yamamoto, Hideki, 5,381,189, Cl. 348-776.000.

Yoshizawa, Tetsuo: See—
Kondo, Hiroshi; Yoshizawa, Tetsuo; Miyazaki, Toyohide; Sakaki, Takashi; Terayama, Yoshimi; Tamura, Yoichi; Okabayashi, Takahiro; Kondo, Kazuo; Nakatsuka, Yasuo; and Ikegami, Yui-chi, 5,379,515, Cl. 29-852.000.

You, Young-Soo: See—
Lam, Si-Ty; Lin, An-Chung R.; and You, Young-Soo, 5,381,166, Cl. 346-140.100.

Young, Leonard. Anti-theft brake locking device for vehicles. 5,379,619, Cl. 70-202.000.

Young, Mark D.: See—
Muckenfuhs, Delmar R.; Berg, Charles J., Jr.; and Young, Mark D., 5,379,897, Cl. 206-494.000.

Young, Wayne P.: See—
Green, David T.; Bolanos, Henry; Geiste, Robert J.; Young, Wayne P.; Gerry, Stephen W.; and Rende, Frank M., III, 5,379,933, Cl. 227-176.000.

Yous, Said: See—
Lesieur, Daniel; Yous, Said; Depreux, Patrick; Andrieux, Jean; Adam, Gerard; Caignard, Daniel H.; and Guardiola, Beatrice, 5,380,750, Cl. 514-443.000.

Yozen, Inc.: See—
Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,381,352, Cl. 364-606.000.

Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,381,375, Cl. 365-204.000.

Yu, Chang; and Doan, Trung T. Bilayer barrier metal method for obtaining 100% step-coverage in contact vias without junction degradation. 5,380,678, Cl. 437-190.000.

Yu, Han J. Squeeze film damper covered by torus shells. 5,380,100, Cl. 384-99.000.

Yu, Stella S.: See—
Djuric, Stevan W.; Fretland, Donald J.; and Yu, Stella S., 5,380,740, Cl. 514-382.000.

Yuan, Jack H.; Samachisa, George; Guterman, Daniel C.; and Harari, Eliyahou, to SunDisk Corporation. Dense vertical programmable read only memory cell structures and processes for making them. 5,380,672, Cl. 437-43.000.

Yuge, Mitsuru: See—
Fujita, Kenjiro; Kondo, Akihiro; Ohnishi, Toyoji; Hasegawa, Yoshio; and Yuge, Mitsuru, 5,379,874, Cl. 192-85.00R.

Yumedia Co., Ltd.: See—
Yamamura, Tetsuo; Murakami, Seiichi; and Sato, Manabu, 5,380,984, Cl. 219-270.000.

Yumita, Takashi: See—
Ozaki, Masami; Honami, Reijiro; Yumita, Takashi; Ikeda, Atsuhiko; Minoguchi, Naokazu; Izawa, Norihiko; and Hirano, Tadayoshi, 5,380,944, Cl. 564-81.000.

Yun, Young-Han, to Samsung Electronics Co., Ltd. Method of displaying self-address data in a pager receiver. 5,381,132, Cl. 340-825.440.

Yurcovic, Evelyn C.: See—
Baczowski, Carole A.; Goldwater, Margaret A.; Ingram, Celia R.; McKenna, Douglas B.; and Yurcovic, Evelyn C., 5,380,078, Cl. 312-1.000.

Zabetakis, Paul M.; Cotell, Catherine M.; and Chrisey, Douglas B., to United States of America, Navy. Medical device with infection preventing feature. 5,380,298, Cl. 604-265.000.

Zagoroff, Dimitar S., to Steadfast Corporation. Automobile anti-theft device. 5,379,617, Cl. 70-18.000.

Zah, Chung-en: See—
Bhat, Rajaram; and Zah, Chung-en, 5,381,434, Cl. 372-45.000.

Zaiting, Li: See—
Zhicheng, Shi; Wenyan, Shi; Yifang, Ye; Xingpin, Ge; Ping, Cao; Shunhua, Liu; Chaogang, Xie; Zaiting, Li; Xingtian, Shu; Xiaoming, Yang; Wei, Fu; Meng, Zhou; and Mingyuan, He, 5,380,690, Cl. 502-65.000.

Zaklad, Haim: See—
Winchell, Harry S.; Klein, Joseph Y.; Simhon, Elliot D.; Cyjon, Rosa L.; Klein, Ofer; and Zaklad, Haim, 5,380,515, Cl. 424-9.000.

Zander, Dennis R.: See—
Sutton, Richard C.; Ponticello, Ignazio S.; Cummins, Thomas J.; Zander, Dennis R.; and Donish, William H., 5,380,489, Cl. 422-68.100.

Zapf, Helmut: See—
Massen, Robert; Hegelbach, Hugo; Zuber, Jurg; Tobler, Hans; Schoenenberger, Niklaus; Zapf, Helmut; and Gensjager, Helmut, 5,379,949, Cl. 241-30.000.

Zardi, Umberto: See—
Pagani, Giorgio; and Zardi, Umberto, 5,380,943, Cl. 564-67.000.

Zausner, Fredrick, to Resco Metal Products Corp.; and Renault Metal Products, Ltd. Telephone anti-theft device. 5,381,469, Cl. 379-143.000.

Zayhowski, John J., to Massachusetts Institute of Technology. Picosecond Q-switched microlasers. 5,381,431, Cl. 372-25.000.

Zeagler, Larry D.: See—
Bhattacharya, Apurba; Fritch, John R.; Murphy, Carl D.; Zeagler, Larry D.; and McAdams, Carina A., 5,380,867, Cl. 548-344.100.

Zeller, Martin: See—
Winternitz, Paul; and Zeller, Martin, 5,380,701, Cl. 504-243.000.

Zengerle, Paul L.: See—
Sawyer, John F.; and Zengerle, Paul L., 5,380,628, Cl. 430-449.000.

Zeria Pharmaceutical Co., Ltd.: See—
Muto, Yoshiaki; Ichikawa, Hiromi; Ogura, Kuniyoshi; Chaki, Kyoji; Seiki, Masao; and Takemasa, Toshihiko, 5,380,748, Cl. 514-434.000.

Zetter, Mark S.: See—
Fischietto, Frederick J.; Jones, Ralph E.; Wilcox, Steven W.; and Zetter, Mark S., 5,381,505, Cl. 385-128.000.

Zeza, Charles A.: See—
Lees, Robert G.; and Zeza, Charles A., 5,380,804, Cl. 525-327.300.

Zhicheng, Shi; Wenyan, Shi; Yifang, Ye; Xingpin, Ge; Ping, Cao; Shunhua, Liu; Chaogang, Xie; Zaiting, Li; Xingtian, Shu; Xiaoming, Yang; Wei, Fu; Meng, Zhou; and Mingyuan, He, to China Petrochemical Corporation. Cracking catalyst for the production of light olefins. 5,380,690, Cl. 502-65.000.

Zhu, Huiling, to Osram Sylvania Inc. Lamp base for a position dependent lamp utilizing a winged positioning pin. 5,381,071, Cl. 313-318.000.

Zhu, Huiling: See—
Tuttle, Billy W.; Zhu, Huiling; and Dolan, Robert B., 5,381,070, Cl. 313-318.000.

Zia, Ninev K.: See—
Virgil, Hall, Jr.; Zia, Ninev K.; and Dempsey, Daniel J., 5,379,752, Cl. 126-116.00A.

Zickwolf, Herbert C., Jr., to United Technologies Corporation. Closed loop stator vane control. 5,379,583, Cl. 60-39.290.

Ziebol, Robert J.: See—
Toland, David S.; McGuire, Michael F.; Farrell, Gary S.; Pitkin, Kevin J.; Beard, Michael S.; Emmons, David; Conroy, James W.; and Ziebol, Robert J., 5,381,497, Cl. 385-80.000.

Zielske, Alfred G., to Clorox Company, The. Acyloxynitrogen peracid precursors. 5,380,457, Cl. 252-186.380.

Ziemer, Frank: See—
Schutze, Rainer; Loher, Heinz-Josef; Ziemer, Frank; Bauer, Klaus; and Bieringer, Hermann, 5,380,852, Cl. 546-174.000.

Zilog, Inc.: See—
Chan, Stephen H., 5,381,453, Cl. 377-28.000.

Zisa, Michele; Belluso, Massimiliano; and Paparo, Mario, to Consorzio Per La Ricerca Sulla Microelettronica Nel Mezzogiorno; and SGS-Thomson Microelectronics s.r.l. Bootstrap circuit for driving a power MOS transistor. 5,381,044, Cl. 327-109.000.

Zommer, Nathan, to Ixys Corporation. Insulated gate thyristor with gate turn on and turn off. 5,381,025, Cl. 257-138.000.

Zorian, Yervant, to AT&T Corp. Method and apparatus for detecting retention faults in memories. 5,381,419, Cl. 371-21.300.

Zuber, Jurg: See—
Massen, Robert; Hegelbach, Hugo; Zuber, Jurg; Tobler, Hans; Schoenenberger, Niklaus; Zapf, Helmut; and Gensjager, Helmut, 5,379,949, Cl. 241-30.000.

Zubovics, Zoltan; Goldschmidt, Katalin; Szilagyi, Katalin; Andras, Ferenc; Hodula, Eszter; Toldy, Lajos; Sutka, Klara; Fittler, Zsuzsanna; Sebestyen, Laszlo; Gorgenyi, Katalin; Sziraki, Istvan; Gyimesi, Jozsef; and Vitkoczi, Valeria, to Gyogyszerkutato Intezet KFT. Piperazine and homopiperazine derivatives, pharmaceutical compositions containing them and process for preparing same. 5,380,724, Cl. 514-252.000.

Zuleta, Renee: See—
Erhart, Richard A.; Zuleta, Renee; and Hayes, David J., 5,381,133, Cl. 340-825.440.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1995

NOTE—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- Beaumont, David O.: See—
Morrison, David G.; Heron, Andrew P.; and Beaumont, David O., Re. 34,824, Cl. 348-419.000.
- British Telecommunications public limited company: See—
Morrison, David G.; Heron, Andrew P.; and Beaumont, David O., Re. 34,824, Cl. 348-419.000.
- Brother Kogyo Kabushiki Kaisha: See—
Sakaida, Atsuo; Chikaoka, Yasuji; Imoto, Yasuo; Iriguchi, Akira; and Ikezaki, Yoshiyuki, Re. 34,823, Cl. 310-328.000.
- Chikaoka, Yasuji: See—
Sakaida, Atsuo; Chikaoka, Yasuji; Imoto, Yasuo; Iriguchi, Akira; and Ikezaki, Yoshiyuki, Re. 34,823, Cl. 310-328.000.
- Floor Style Products, Inc.: See—
Mattson, Bryan, Re. 34,822, Cl. 180-11.000.
- Heron, Andrew P.: See—
Morrison, David G.; Heron, Andrew P.; and Beaumont, David O., Re. 34,824, Cl. 348-419.000.
- Ikezaki, Yoshiyuki: See—
Sakaida, Atsuo; Chikaoka, Yasuji; Imoto, Yasuo; Iriguchi, Akira; and Ikezaki, Yoshiyuki, Re. 34,823, Cl. 310-328.000.
- Imoto, Yasuo: See—
Sakaida, Atsuo; Chikaoka, Yasuji; Imoto, Yasuo; Iriguchi, Akira; and Ikezaki, Yoshiyuki, Re. 34,823, Cl. 310-328.000.
- Iriguchi, Akira: See—
Sakaida, Atsuo; Chikaoka, Yasuji; Imoto, Yasuo; Iriguchi, Akira; and Ikezaki, Yoshiyuki, Re. 34,823, Cl. 310-328.000.
- Mattson, Bryan, to Floor Style Products, Inc. Power riding trailer for an implement. Re. 34,822, Cl. 180-11.000.
- Minnesota Mining and Manufacturing Company: See—
Warren, James W., Re. 34,825, Cl. 428-101.000.
- Morrison, David G.; Heron, Andrew P.; and Beaumont, David O., to British Telecommunications public limited company. Video coder. Re. 34,824, Cl. 348-419.000.
- Sakaida, Atsuo; Chikaoka, Yasuji; Imoto, Yasuo; Iriguchi, Akira; and Ikezaki, Yoshiyuki, to Brother Kogyo Kabushiki Kaisha. Device for magnifying displacement of piezoelectric element or the like and method of producing same. Re. 34,823, Cl. 310-328.000.
- Warren, James W., to Minnesota Mining and Manufacturing Company. Composite article and method of making same. Re. 34,825, Cl. 428-101.000.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

- Actel Corporation: See—
El Gamal, Abbas A.; El-Ayat, Khaled A.; Greene, Jonathan W.; Guo, Ta-Pen R.; and Reyneri, Justin M., B1 4,873,459, Cl. 307-465.000.
- Cowan, David A., to Plastic Safety Systems, Inc. Traffic channeling devices. B1 5,234,280, 1-10-95, Cl. 404-6.000.
- El-Ayat, Khaled A.: See—
El Gamal, Abbas A.; El-Ayat, Khaled A.; Greene, Jonathan W.; Guo, Ta-Pen R.; and Reyneri, Justin M., B1 4,873,459, Cl. 307-465.000.
- El Gamal, Abbas A.; El-Ayat, Khaled A.; Greene, Jonathan W.; Guo, Ta-Pen R.; and Reyneri, Justin M., to Actel Corporation. Programmable interconnect architecture. B1 4,873,459, 1-10-95, Cl. 307-465.000.
- Greene, Jonathan W.: See—
El Gamal, Abbas A.; El-Ayat, Khaled A.; Greene, Jonathan W.; Guo, Ta-Pen R.; and Reyneri, Justin M., B1 4,873,459, Cl. 307-465.000.
- Guo, Ta-Pen R.: See—
El Gamal, Abbas A.; El-Ayat, Khaled A.; Greene, Jonathan W.; Guo, Ta-Pen R.; and Reyneri, Justin M., B1 4,873,459, Cl. 307-465.000.
- Plastic Safety Systems, Inc.: See—
Cowan, David A., B1 5,234,280, Cl. 404-6.000.
- Reyneri, Justin M.: See—
El Gamal, Abbas A.; El-Ayat, Khaled A.; Greene, Jonathan W.; Guo, Ta-Pen R.; and Reyneri, Justin M., B1 4,873,459, Cl. 307-465.000.

LIST OF DESIGN PATENTEEES

- Abraham, Leslie R.; and Kniefel, John H., to Wenger Corporation. Computer workstation. 354,182, 1-10-95, Cl. D6-426.000.
- Ace Medical Company: See—
Selman, Corey M., 354,352, Cl. D24-133.000.
- Adami, Arthur E.; Amberg, Christopher P.; and Pendergrass, William B., to Sweetheart Cup Company Inc. Beverage can-carrying device. 354,227, 1-10-95, Cl. D9-455.000.
- Adams, Karen T. Design for a babyteeth memorabilia display. 354,172, 1-10-95, Cl. D6-301.000.
- Aervoe-Pacific Company, Inc.: See—
Pena, Jesus J., 354,288, Cl. D15-13.000.
- Alcon Laboratories, Inc.: See—
Rhen, George W., Jr.; and Auchter, Gregory A., 354,283, Cl. D24-130.000.
- Amberg, Christopher P.: See—
Adami, Arthur E.; Amberg, Christopher P.; and Pendergrass, William B., 354,227, Cl. D9-455.000.
- Amoco Corporation: See—
Mahan, Donald E.; Kearney, Kevin R.; Shimei, Thomas M.; Bate, Ernest; Missing, Philip; and Robinson, David, 354,220, Cl. D9-341.000.
- Auchter, Gregory A.: See—
Rhen, George W., Jr.; and Auchter, Gregory A., 354,283, Cl. D24-130.000.
- Bate, Ernest: See—
Mahan, Donald E.; Kearney, Kevin R.; Shimei, Thomas M.; Bate, Ernest; Missing, Philip; and Robinson, David, 354,220, Cl. D9-341.000.
- Battaglia, Delores A. Combined lipstick blotter pad and lipstick container. 354,374, 1-10-95, Cl. D28-77.000.
- Battery Master Inc.: See—
Gibbons, Gerard P.; and Lynde, Vuford L., 354,244, Cl. D10-77.000.
- Benckiser Consumer Products, Inc.: See—
Hoyt, Earl, 354,230, Cl. D9-543.000.
- Better Blocks International Limited: See—
Wilson, Warren S., 354,319, Cl. D21-108.000.
- Binney & Smith Inc.: See—
Tarozzi, Richard A., 354,311, Cl. D19-82.000.
- Bloxwich Korea Co., Ltd.: See—
Lee, Sang I., 354,294, Cl. D15-143.000.
- Boisset, Jean-Claude, to Grands Vins Jean Claude Boisset. Bottle. 354,228, 1-10-95, Cl. D9-503.000.

LIST OF DESIGN PATENTEEES

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- Boykin, C. N.: See—
Fortenberry, Charles G.; and Boykin, C. N., 354,289, Cl. D15-19.000.
- Braun Aktiengesellschaft: See—
Hartwein, Peter, 354,168, Cl. D4-108.000.
- Brian, Andrew P.: See—
Wensley, Stephen; Merrick, Alan S.; and Brian, Andrew P., 354,205, Cl. D8-5.000.
- Brown, David B., Jr. Oil filter crusher assembly. 354,293, 1-10-95, Cl. D15-123.000.
- Brown Group, Inc.: See—
Dyer, Robert M.; Smotrycz, Zenon O.; and Norton, Edward J., 354,161, Cl. D2-953.000.
- Brown, Robert. Oral condom. 354,346, 1-10-95, Cl. D24-105.000.
- Bulgari, Paolo, to Bulgari Time (Switzerland) S.A. Wristwatch. 354,238, 1-10-95, Cl. D10-34.000.
- Bulgari Time (Switzerland) S.A.: See—
Bulgari, Paolo, 354,238, Cl. D10-34.000.
- Bunke, Danny D. Inflow water treatment fitting for chemical toilet. 354,331, 1-10-95, Cl. D23-207.000.
- Cadbury Beverages, Inc.: See—
Smith, Douglas W.; and Dawson, Robert E., 354,181, Cl. D6-408.000.
- Canon Kabushiki Kaisha: See—
Ishibashi, Masaaki; Komada, Takeshi; and Takahashi, Ryoichi, 354,304, Cl. D18-36.000.
- Shimizu, Hisakazu, 354,306, Cl. D18-48.000.
- Suzuki, Noriyuki, 354,305, Cl. D18-39.000.
- Yamamoto, Ei, 354,307, Cl. D18-49.000.
- Cari-All Inc.: See—
Trubiano, Antoine, 354,384, Cl. D34-27.000.
- Casio Computer Co., Ltd.: See—
Hanagata, Shigeru, 354,240, Cl. D10-39.000.
- Hanagata, Shigeru, 354,242, Cl. D10-39.000.
- Ishizaka, Shingo, 354,237, Cl. D10-31.000.
- Ishizaka, Shingo, 354,239, Cl. D10-38.000.
- Chalard, Michel: See—
Kohler, Herbert V., Jr.; Paulin, Pierre H.; Kergoet, Francois; and Chalard, Michel, 354,341, Cl. D23-300.000.
- Chen, Ming-Chang. Bicycle handlebar grip. 354,216, 1-10-95, Cl. D8-303.000.
- Chiang, Ming H.; Cho, Te-Cheng; and Hsu, Chiang T. Kettle. 354,198, 1-10-95, Cl. D7-510.000.
- Cho, Te-Cheng: See—
Chiang, Ming H.; Cho, Te-Cheng; and Hsu, Chiang T., 354,198, Cl. D7-510.000.
- Chodet, Jean-Pierre, to Ebel S.A. Combined wristwatch and band portions therefor. 354,241, 1-10-95, Cl. D10-39.000.
- Choi, Bong K.: See—
Koo, Kee S.; and Choi, Bong K., 354,282, Cl. D14-126.000.
- Chuang, Chao-Yueh. Combination tennis racket and chess board. 354,323, 1-10-95, Cl. D21-212.000.
- Ciccone, David C. Keyboard. 354,279, 1-10-95, Cl. D14-115.000.
- Cichoracki, Glenn E. Shock proof wall plug. 354,270, 1-10-95, Cl. D13-138.000.
- Clark, Kelly E.; and Clark, Mary. Extendable trailer hitch. 354,263, 1-10-95, Cl. D12-162.000.
- Clark, Mary: See—
Clark, Kelly E.; and Clark, Mary, 354,263, Cl. D12-162.000.
- Clem, William E., to Tunturi, Inc. Stairclimber exercise. 354,321, 1-10-95, Cl. D21-195.000.
- Cleveland, Roger, to Roger Cleveland Golf Company, Inc. Golf club head. 354,326, 1-10-95, Cl. D21-220.000.
- Clivio, Franco, to Gardena Kress + Kastner GmbH. Sprayer nozzle. 354,333, 1-10-95, Cl. D23-223.000.
- Club Car, Inc.: See—
McCoy, Paul A., 354,264, Cl. D12-167.000.
- Collins, Kyle R.; and Knuckles, Faliscia, to Collins, Kyle R. Shoe shaped seating device. 354,174, 1-10-95, Cl. D6-358.000.
- Contico International, Inc.: See—
Dickinson, Thomas; and Gale, Bradley D., 354,210, Cl. D8-71.000.
- Foster, Donald D.; and Zurcher, John A., 354,226, Cl. D9-448.000.
- Corella, Arthur P. Dispensing package with teardrop finger slot. 354,221, 1-10-95, Cl. D9-415.000.
- Cornwell, Douglas L.; and DeRose, Sue A., to Moore Business Forms, Inc. Safety paper. 354,308, 1-10-95, Cl. D19-5.000.
- Crist, Craig W.; and Russell, Robert, to Ring King Visibles, Inc. Desk drawer organizer. 354,310, 1-10-95, Cl. D19-75.000.
- Crook, Gregory M.: See—
Schwaegerle, Gary G.; and Crook, Gregory M., 354,176, Cl. D6-360.000.
- Schwaegerle, Gary G.; and Crook, Gregory M., 354,177, Cl. D6-360.000.
- D'Abarno, Teresa. Artificial tree. 354,253, 1-10-95, Cl. D11-118.000.
- Daukus, Patricia J.; Robinson, Joanne; and Daukus, Richard. Desk top panel. 354,187, 1-10-95, Cl. D6-511.000.
- Daukus, Richard: See—
Daukus, Patricia J.; Robinson, Joanne; and Daukus, Richard, 354,187, Cl. D6-511.000.
- Davidson, William G.; and Netz, Louis, to Harley-Davidson, Inc. Motorcycle chain guard cover. 354,260, 1-10-95, Cl. D12-127.000.
- Dawei, Zeng. Hand powered massager. 354,357, 1-10-95, Cl. D24-211.000.
- Dawson, Robert E.: See—
Smith, Douglas W.; and Dawson, Robert E., 354,181, Cl. D6-408.000.
- Dawson, Ronald A. Brake adjuster. 354,207, 1-10-95, Cl. D8-14.000.
- Deaust, Emile T. Universal clamp. 354,211, 1-10-95, Cl. D8-72.000.
- Delabie, Gerard; and Normand, Marcel, to Delabie (S.A.). Faucet. 354,336, 1-10-95, Cl. D23-238.000.
- Delabie (S.A.): See—
Delabie, Gerard; and Normand, Marcel, 354,336, Cl. D23-238.000.
- Delafon, Jacob: See—
Formgren, Anna-Pia K., 354,338, Cl. D23-241.000.
- Kohler, Herbert V., Jr.; Paulin, Pierre H.; Kergoet, Francois; and Chalard, Michel, 354,341, Cl. D23-300.000.
- DeRose, Sue A.: See—
Cornwell, Douglas L.; and DeRose, Sue A., 354,308, Cl. D19-5.000.
- Desgripes, Joel, to Diana De Silva, Cosmetics SpA. Combined perfume bottle and closure. 354,229, 1-10-95, Cl. D9-503.000.
- Devillez, Caroline S. Combined miniature horse and stand. 354,255, 1-10-95, Cl. D11-159.000.
- Diana De Silva Cosmetics SpA: See—
Desgripes, Joel, 354,229, Cl. D9-503.000.
- Dickinson, Thomas; and Gale, Bradley D., to Contico International, Inc. Two-step tool box. 354,210, 1-10-95, Cl. D8-71.000.
- Dyer, Robert M.; Smotrycz, Zenon O.; and Norton, Edward J., to Brown Group, Inc. Heel portion of a shoe sole. 354,161, 1-10-95, Cl. D2-953.000.
- Ebel S.A.: See—
Chodet, Jean-Pierre, 354,241, Cl. D10-39.000.
- Edwards, Gerald D. Tooth for a power digger. 354,291, 1-10-95, Cl. D15-29.000.
- Eger Products, Inc.: See—
Reed, Brian, 354,272, Cl. D13-156.000.
- Reed, Brian, 354,273, Cl. D13-156.000.
- Ellens, Daniel S.; Goryca, Robert A.; and Tylman, Theodore A., to Jervis B. Webb Company. Conveyor trolley pusher. 354,385, 1-10-95, Cl. D34-29.000.
- Ericsson Radio Systems, B.V.: See—
Van Wijnen, Gert, 354,286, Cl. D14-191.000.
- Escobal, Melinda J.: See—
Escobal, Raymond J.; and Escobal, Melinda J., 354,173, Cl. D6-335.000.
- Escobal, Raymond J.; and Escobal, Melinda J. Multi-purpose bench and table. 354,173, 1-10-95, Cl. D6-335.000.
- Fein, Peter B., to Grandaddy Design, Ltd. Chair. 354,175, 1-10-95, Cl. D6-358.000.
- Fenton, William E. Radio frequency packet modem. 354,280, 1-10-95, Cl. D14-107.000.
- Ferguson, Darrell C., to Lineage Home Furnishings, Inc. Chest. 354,183, 1-10-95, Cl. D6-446.000.
- Fiberalab Pty Limited: See—
Van de Peer, Christopher, 354,218, Cl. D8-354.000.
- Fish, Ronald P. Taco plate. 354,197, 1-10-95, Cl. D7-504.000.
- Fisher, A. LaMont. Banner pin. 354,251, 1-10-95, Cl. D11-44.000.
- Fiskars Oy Ab: See—
Ronnholm, Svante; and Wikstrom, Kenneth, 354,212, Cl. D8-76.000.
- Wensley, Stephen; Merrick, Alan S.; and Brian, Andrew P., 354,205, Cl. D8-5.000.
- Formgren, Anna-Pia K., to Jacob Delafon. Faucet. 354,337, 1-10-95, Cl. D23-241.000.
- Formgren, Anna-Pia K., to Delafon, Jacob. Faucet. 354,338, 1-10-95, Cl. D23-241.000.
- Fortenberry, Charles G.; and Boykin, C. N. Cement mixer. 354,289, 1-10-95, Cl. D15-19.000.
- Foster, Donald D.; and Zurcher, John A., to Contico International, Inc. Trigger sprayer. 354,226, 1-10-95, Cl. D9-448.000.
- French, Larry W. Combined case and seat belt cutting tool. 354,213, 1-10-95, Cl. D8-98.000.
- Fritz, John M.; and Reimer, Joseph E., to S. C. Johnson & Son, Inc. Vapor dispensing device. 354,344, 1-10-95, Cl. D23-366.000.
- Fuji Photo Film Co., Ltd.: See—
Ina, Takao; and Fukuda, Hiroshi, 354,300, Cl. D16-202.000.
- Fujita, Hiroyuki: See—
Ishizuka, Akihiko; Fujita, Hiroyuki; and Iwashita, Nobushi, 354,353, Cl. D24-160.000.
- Fujitsu Limited: See—
Ishizuka, Akihiko; Fujita, Hiroyuki; and Iwashita, Nobushi, 354,353, Cl. D24-160.000.
- Fukuda, Hiroshi: See—
Ina, Takao; and Fukuda, Hiroshi, 354,300, Cl. D16-202.000.
- Fuller, R. Morris. Sculpture. 354,254, 1-10-95, Cl. D11-131.000.
- Funai Electric Co., Ltd.: See—
Kaneko, Takuji, 354,195, Cl. D7-350.000.
- Gagnon, Claude: See—
Ross, Guy; and Gagnon, Claude, 354,190, Cl. D6-580.000.
- Ross, Guy; and Gagnon, Claude, 354,191, Cl. D6-580.000.
- Ross, Guy; and Gagnon, Claude, 354,192, Cl. D6-580.000.
- Gale, Bradley D.: See—
Dickinson, Thomas; and Gale, Bradley D., 354,210, Cl. D8-71.000.
- Gardena Kress + Kastner GmbH: See—
Clivio, Franco, 354,333, Cl. D23-223.000.
- Gaynor, Lawrence D., to Nailco, Inc. Manicurist utensil stand. 354,372, 1-10-95, Cl. D28-61.000.
- Gemini, Inc.: See—
Schmitt, David A., 354,313, Cl. D20-12.000.
- Gibbons, Gerard P.; and Lynde, Vuford L., to Battery Master Inc. Battery monitor. 354,244, 1-10-95, Cl. D10-77.000.
- Gifted Ltd.: See—
Hou, Jack, 354,256, Cl. D11-164.000.

Giroflex Entwicklungs AG: See—
Ochsner, Koni, 354,178, Cl. D6-366.000.
Goldstein, Andrew M., to Holmes Products Corp. Ceramic heater. 354,343, 1-10-95, Cl. D23-335.000.
Goodyear Tire & Rubber Company, The: See—
Graas, Maurice, 354,261, Cl. D12-147.000.
Goryca, Robert A.: See—
Ellens, Daniel S.; Goryca, Robert A.; and Tylman, Theodore A., 354,385, Cl. D34-29.000.
Graas, Maurice, to Goodyear Tire & Rubber Company, The. Tread for a tire. 354,261, 1-10-95, Cl. D12-147.000.
Granddaddy Design, Ltd.: See—
Fein, Peter B., 354,175, Cl. D6-358.000.
Grands Vins Jean Claude Boisset: See—
Boisset, Jean-Claude, 354,228, Cl. D9-503.000.
Grappolini, Giuseppe. Pot with hinged lid. 354,200, 1-10-95, Cl. D7-538.000.
Greene, Michael W., to Resinform. Chair. 354,179, 1-10-95, Cl. D6-379.000.
Grein, Virginia A. Medical pad. 354,349, 1-10-95, Cl. D24-125.000.
Grosfillex, Raymond, to Grosfillex S.A.R.L. Tea cart. 354,186, 1-10-95, Cl. D34-21.000.
Grosfillex S.A.R.L.: See—
Grosfillex, Raymond, 354,186, Cl. D34-21.000.
Groswith, Charles T., III: See—
Noonan, Daniel T.; Groswith, Charles T., III; Kockler, Barry C.; and Perry, Gerald D., 354,303, Cl. D18-15.000.
Haluska, Charles C. Stapler. 354,209, 1-10-95, Cl. D8-50.000.
Hamilton, Marshall. Smoke protective hood. 354,348, 1-10-95, Cl. D24-110.300.
Hanagata, Shigeru, to Casio Computer Co., Ltd. Wrist watch. 354,240, 1-10-95, Cl. D10-39.000.
Hanagata, Shigeru, to Casio Computer Co., Ltd. Wrist watch. 354,242, 1-10-95, Cl. D10-39.000.
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Harrington, Carrell R. Outdoor light fixture. 354,367, 1-10-95, Cl. D26-68.000.
Hartwein, Peter, to Braun Aktiengesellschaft. Combined charging unit and set of electric toothbrushes. 354,168, 1-10-95, Cl. D4-108.000.
Hatfield, Tinker L., to Nike, Inc. Shoe upper. 354,163, 1-10-95, Cl. D2-970.000.
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Hilgers, James J., to Ormco Corporation. Lingual orthodontic pendulum appliance. 354,355, 1-10-95, Cl. D24-180.000.
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Inora, Yasuo, to Seikosha Co., Ltd. Travel alarm clock. 354,232, 1-10-95, Cl. D10-18.000.
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Ishizaka, Shingo, to Casio Computer Co., Ltd. Wrist watch with electronic compass. 354,237, 1-10-95, Cl. D10-31.000.
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Kaneko, Ryoichi, to Seikosha Co., Ltd. Watch band. 354,249, 1-10-95, Cl. D11-3.000.
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King-Yuan, Wang. Flexible handle for a spray gun. 354,332, 1-10-95, Cl. D23-223.000.
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Ronnholm, Svante; and Wikstrom, Kenneth, to Fiskars Oy Ab. Splitting axe. 354,212, 1-10-95, Cl. D8-76.000.

Roos, Scott L.; and O'Rourke, John J., to Juno Lighting, Inc. Gimble ring light fixture for use on track. 354,365, 1-10-95, Cl. D26-63.000.

Ross, Guy; and Gagnon, Claude, to Vertico Industries Inc. Vertical blind slat. 354,190, 1-10-95, Cl. D6-580.000.

Ross, Guy; and Gagnon, Claude, to Vertico Industries, Inc. Vertical blind slat. 354,191, 1-10-95, Cl. D6-580.000.

Ross, Guy; and Gagnon, Claude, to Vertico Industries Inc. Vertical blind slat. 354,192, 1-10-95, Cl. D6-580.000.

Russell, Robert: See—
Crist, Craig W.; and Russell, Robert, 354,310, Cl. D19-75.000.

Ryaa, Jan; and Vorre, Birthe G., to Interlego A.G. Element for a toy building set. 354,318, 1-10-95, Cl. D21-108.000.

S. C. Johnson & Son, Inc.: See—
Fritz, John M.; and Reimer, Joseph E., 354,344, Cl. D23-366.000.

Sahlev, Efraim. Tambourine. 354,301, 1-10-95, Cl. D17-22.000.

Samsung Electronics Co., Ltd.: See—
Koo, Kee S.; and Choi, Bong K., 354,282, Cl. D14-126.000.

Lee, Hye C., 354,285, Cl. D14-168.000.

Sato, Stephens N.: See—
Knutte, Wallace L.; and Sato, Stephens N., 354,347, Cl. D24-108.000.

Schmidt, Eugene R. Display easel. 354,171, 1-10-95, Cl. D6-300.000.

Schmitt, David A., to Gemini, Inc. Blank for changeable alpha numeric characters. 354,313, 1-10-95, Cl. D20-12.000.

Schwaegerle, Gary G.; and Crook, Gregory M., to Reliance Medical Products, Inc. Medical lift chair. 354,176, 1-10-95, Cl. D6-360.000.

Schwaegerle, Gary G.; and Crook, Gregory M., to Reliance Medical Products, Inc. Medical lift chair. 354,177, 1-10-95, Cl. D6-360.000.

Scott Paper Company: See—
Norton, Susan M.; Olson, Susan J.; and Vogt, Cynthia A., 354,224, Cl. D9-447.000.

Norton, Susan M.; Olson-Cummins, Susan J.; and Vogt, Cynthia A., 354,225, Cl. D9-447.000.

Seals, Robert L. Combination bicycle component clamp and multi-purpose tool. 354,215, 1-10-95, Cl. D12-115.000.

Seikosha Co., Ltd.: See—
Inora, Yasuo, 354,232, Cl. D10-18.000.

Ishizaki, Ryuhei, 354,250, Cl. D11-3.000.

Kaneko, Ryoichi, 354,248, Cl. D10-126.000.

Kaneko, Ryoichi, 354,249, Cl. D11-3.000.

Sugano, Hisako, 354,233, Cl. D10-23.000.

Sugano, Hisako, 354,234, Cl. D10-25.000.

Sugano, Hisako, 354,236, Cl. D10-28.000.

Takashima, Asao, 354,235, Cl. D10-26.000.

Selman, Corey M., to Ace Medical Company. Torque wrench for skull pins. 354,352, 1-10-95, Cl. D24-133.000.

Severinsky, Alex J. Power supply. 354,267, 1-10-95, Cl. D13-110.000.

SGS - Thomson Microelectronics, Inc.: See—
Siegel, Harry M.; Lao, Tom Q.; Kelappan, Krishnan; and Hundt, Michael J., 354,274, Cl. D13-182.000.

Siegel, Harry M.; Lao, Tom Q.; Kelappan, Krishnan; and Hundt, Michael J., 354,275, Cl. D13-182.000.

Shaffer, Steven L. Disposable sweat band for a safety hard hat liner. 354,160, 1-10-95, Cl. D2-894.000.

Shifflett, Diana C. Therapeutic pillow for spacing legs. 354,356, 1-10-95, Cl. D24-183.000.

Shimajiri, Naohiro, to Nifco Inc. Board clamp. 354,219, 1-10-95, Cl. D6-382.000.

Shimei, Thomas M.: See—
Mahan, Donald E.; Kearney, Kevin R.; Shimei, Thomas M.; Bate, Ernest; Missing, Philip; and Robinson, David, 354,220, Cl. D9-341.000.

Shimizu, Hisakazu, to Canon Kabushiki Kaisha. Sorter for copying machine. 354,306, 1-10-95, Cl. D18-48.000.

Shinozaki, Isamu, to Matsushita Electric Industrial Co., Ltd. Electric vacuum cleaner. 354,379, 1-10-95, Cl. D32-22.000.

Siegel, Harry M.; Lao, Tom Q.; Kelappan, Krishnan; and Hundt, Michael J., to SGS - Thomson Microelectronics, Inc. Low-profile detachable integrated circuit module. 354,274, 1-10-95, Cl. D13-182.000.

Siegel, Harry M.; Lao, Tom Q.; Kelappan, Krishnan; and Hundt, Michael J., to SGS-Thomson Microelectronics, Inc. Low-profile detachable integrated circuit module. 354,275, 1-10-95, Cl. D13-182.000.

Siemon Company, The: See—
Siemon, John A.; and Reynolds, Howard, 354,268, Cl. D13-133.000.

Siemon, John A.; and Reynolds, Howard, to Siemon Company, The. Telecommunications terminal clip. 354,268, 1-10-95, Cl. D13-133.000.

Siposs, George G., to Quest Medical, Inc. Check valve. 354,335, 1-10-95, Cl. D23-237.000.

Sisco, Inc.: See—
Koenig, Jerome, 354,334, Cl. D23-223.000.

Slattery, James M. Pitcher. 354,194, 1-10-95, Cl. D7-319.000.

Smith, Chris L.: See—
Smith, Kenneth E.; and Smith, Chris L., 354,252, Cl. D11-118.000.

Smith, Douglas W.; and Dawson, Robert E., to Cadbury Beverages, Inc. Gravity feed rack for beverage cans. 354,181, 1-10-95, Cl. D6-408.000.

Smith, Kenneth E.; and Smith, Chris L., to Whimsey Pudding, Inc. Tree-shaped ornament. 354,252, 1-10-95, Cl. D11-118.000.

Smith, Phyllis L.; and Nunez, Maria R. Musical bottle holder. 354,202, 1-10-95, Cl. D7-619.000.

Smith, Robert D. Tire moving element. 354,383, 1-10-95, Cl. D34-23.000.

Smotrycz, Zenon O.: See—
Dyer, Robert M.; Smotrycz, Zenon O.; and Norton, Edward J., 354,161, Cl. D2-953.000.

Sneary, Michael R. Wall plate. 354,217, 1-10-95, Cl. D8-350.000.

Soares, Rogerio. Vehicle obstacle detector. 354,243, 1-10-95, Cl. D10-70.000.

Sony Corporation: See—
Kinoshita, Masayuki, 354,281, Cl. D14-121.000.

Speiser, Benjamin T.; and Oliver, Lloyd N., to 3 Com Corporation. Fiber optic interchangeable transceiver module. 354,271, 1-10-95, Cl. D13-146.000.

Stahl, Edward L., to Piper Industries of Texas, Inc. Bread tray. 354,167, 1-10-95, Cl. D3-304.000.

Steininger, George A. Dart bowling game. 354,314, 1-10-95, Cl. D21-6.000.

Steinke, Gustav J.; and Huffer, Starla D., to International Brake Industries, Inc. Disc brake shim. 354,265, 1-10-95, Cl. D12-180.000.

Stephens, Ronald J., to Hoover Company, The. Tank type vacuum cleaner tool storage shelf. 354,380, 1-10-95, Cl. D32-31.000.

Stites, John T., III, to Head Sports, Inc. Golf club head. 354,324, 1-10-95, Cl. D21-214.000.

Storsberg, Gunter, to Robert Krups GmbH & Co. KG. Electric espresso maker. 354,193, 1-10-95, Cl. D7-309.000.

Stromberg, John, to Holmes Products Corp. Table lamp. 354,370, 1-10-95, Cl. D26-109.000.

Sudhaus of America: See—
Rekuc, Richard J., 354,257, Cl. D11-216.000.

Sugano, Hisako, to Seikosha Co., Ltd. Clock. 354,233, 1-10-95, Cl. D10-23.000.

Sugano, Hisako, to Seikosha Co., Ltd. Clock. 354,234, 1-10-95, Cl. D10-25.000.

Sugano, Hisako, to Seikosha Co., Ltd. Clock. 354,236, 1-10-95, Cl. D10-28.000.

Sundberg, Henric. Composting toilet. 354,340, 1-10-95, Cl. D23-299.000.

Sutec (Hong Kong) Limited: See—
Lin, Chun C., 354,309, Cl. D19-36.000.

Suzuki, Noriyuki, to Canon Kabushiki Kaisha. Copying machine. 354,305, 1-10-95, Cl. D18-39.000.

Sweetheart Cup Company Inc.: See—
Adami, Arthur E.; Amberg, Christopher P.; and Pendergrass, William B., 354,227, Cl. D9-455.000.

Takahashi, Ryoichi: See—
Ishibashi, Masaaki; Komada, Takeshi; and Takahashi, Ryoichi, 354,304, Cl. D18-36.000.

Takashima, Asao, to Seikosha Co., Ltd. Clock. 354,235, 1-10-95, Cl. D10-26.000.

Tapinassi, Roberto: See—
Lipparini, Mauro; and Tapinassi, Roberto, 354,180, Cl. D6-381.000.

Tarozzi, Richard A., to Binney & Smith Inc. Writing instrument container. 354,311, 1-10-95, Cl. D19-82.000.

Taurus Impressions, Inc.: See—
Noonan, Daniel T.; Groszwith, Charles T., III; Kockler, Barry C.; and Perry, Gerald D., 354,303, Cl. D18-15.000.

3 Com Corporation: See—
Speiser, Benjamin T.; and Oliver, Lloyd N., 354,271, Cl. D13-146.000.

Tokai Corporation: See—
Inoue, Isao, 354,196, Cl. D7-416.000.

Tokiyama, Masaru, to Motorola, Inc. Telephone handset holder. 354,287, 1-10-95, Cl. D14-253.000.

Trubiano, Antoine, to Cari-All Inc. Shopping cart rear gate. 354,384, 1-10-95, Cl. D34-27.000.

Tsai, Wen-Tsung. Fog light. 354,362, 1-10-95, Cl. D26-28.000.

Tsai, Wen-Tsung. Fog light. 354,363, 1-10-95, Cl. D26-28.000.

Tunturi, Inc.: See—
Clem, William E., 354,321, Cl. D21-195.000.

Tylman, Theodore A.: See—
Ellens, Daniel S.; Goryca, Robert A.; and Tylman, Theodore A., 354,385, Cl. D34-29.000.

Udagawa, Masakazu: See—
Ikeda, Yutaka; Marek, David; Nishimura, Tsuyoshi; and Udagawa, Masakazu, 354,258, Cl. D12-91.000.

Underdahl, Russell H., to Pinecrest, Inc. Ornamental louver. 354,189, 1-10-95, Cl. D6-580.000.

van de Graaf, Pieter A., Jr. Party plate. 354,201, 1-10-95, Cl. D7-555.000.

Van de Peer, Christopher, to Fiberslab Pty Limited. Spacer for use in concrete construction. 354,218, 1-10-95, Cl. D8-354.000.

Van Wijnen, Gert, to Ericsson Radio Systems, B.V. Telecommunication receiver. 354,286, 1-10-95, Cl. D14-191.000.

Vega, Hector C. Hooked caulking gun. 354,208, 1-10-95, Cl. D8-14.100.

Vertico Industries Inc.: See—
Ross, Guy; and Gagnon, Claude, 354,190, Cl. D6-580.000.

Ross, Guy; and Gagnon, Claude, 354,191, Cl. D6-580.000.

Ross, Guy; and Gagnon, Claude, 354,192, Cl. D6-580.000.

Via Medical Corporation: See—
Knutte, Wallace L.; and Sato, Stephens N., 354,347, Cl. D24-108.000.

Vodhanel, Joseph J., Jr. Barbell weight. 354,322, 1-10-95, Cl. D21-196.000.

Vogt, Cynthia A.: See—
Norton, Susan M.; Olson, Susan J.; and Vogt, Cynthia A., 354,224, Cl. D9-447.000.

Norton, Susan M.; Olson-Cummins, Susan J.; and Vogt, Cynthia A., 354,225, Cl. D9-447.000.

Vorre, Birthe G.: See—
Ryaa, Jan; and Vorre, Birthe G., 354,318, Cl. D21-108.000.

Walsh, John T.; Hubbard, Timothy M.; and Osinaia, Taiwo T., to Nordson Corporation. Fluid dispensing module for dispensing heated fluids, such as hot melt adhesive. 354,295, 1-10-95, Cl. D15-144.200.

Walsh, John T., to Nordson Corporation. Fluid dispensing module for dispensing heated fluids, such as hot melt adhesive. 354,296, 1-10-95, Cl. D15-144.200.

Walther, Barry S. Letter weighing device. 354,245, 1-10-95, Cl. D10-90.000.

Wareham, Richard A.: See—
McKnight, Darwin T.; and Wareham, Richard A., 354,378, Cl. D32-15.000.

Weid, Karl. Rectangular highway reflector. 354,246, 1-10-95, Cl. D10-113.000.

Wells, Michael W. Pre-fabricated wall panel. 354,358, 1-10-95, Cl. D25-58.000.

Wenger Corporation: See—
Abraham, Leslie R.; and Kniefel, John H., 354,182, Cl. D6-426.000.

Wensley, Stephen; Merrick, Alan S.; and Brian, Andrew P., to Fiskars Oy Ab. Shears. 354,205, 1-10-95, Cl. D8-5.000.

Wenstrand, Thomas W. Stock watering tank. 354,377, 1-10-95, Cl. D30-131.000.

Werman, Jonathan H. Shoe upper. 354,164, 1-10-95, Cl. D2-970.000.

Werman, Jonathan H. Shoe upper. 354,165, 1-10-95, Cl. D2-970.000.

Whimsey Pudding, Inc.: See—
Smith, Kenneth E.; and Smith, Chris L., 354,252, Cl. D11-118.000.

White, Adam, to Nokia Mobile Phones Ltd. Portable telephone. 354,284, 1-10-95, Cl. D14-138.000.

Wikstrom, Kenneth: See—
Ronnholm, Svante; and Wikstrom, Kenneth, 354,212, Cl. D8-76.000.

Wilson, Martin B., to Netlink Transaction Systems Corp. Retail transaction terminal. 354,276, 1-10-95, Cl. D14-105.000.

Wilson, Warren S., to Better Blocks International Limited. Toy building block. 354,319, 1-10-95, Cl. D21-108.000.

Wilton Industries, Inc.: See—
Naccarato, Vincent A., 354,203, Cl. D7-673.000.

Wood, Barry M. Shaver handle. 354,371, 1-10-95, Cl. D28-48.000.

Yamaguchi, Motoharu: See—
Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; Yoshimoto, Takayuki; and Yamauchi, Kenichi, 354,277, Cl. D14-107.000.

Yamamoto, Ei, to Canon Kabushiki Kaisha. Automatic document feeder for copying machine. 354,307, 1-10-95, Cl. D18-49.000.

Yamashita, Shigeru; and Hattori, Yasuo, to Olympus Optical Co., Ltd. Automatic blood analyzer. 354,354, 1-10-95, Cl. D24-186.000.

Yamauchi, Kenichi: See—
Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; Yoshimoto, Takayuki; and Yamauchi, Kenichi, 354,277, Cl. D14-107.000.

Yonezawa Corporation: See—
Nakanishi, Yutaka, 354,315, Cl. D21-48.000.

Yoshimoto, Takayuki: See—
Kuzumoto, Hiroyuki; Odagiri, Masashi; Yamaguchi, Motoharu; Yoshimoto, Takayuki; and Yamauchi, Kenichi, 354,277, Cl. D14-107.000.

Yuen, John Se-Kit, to John Manufacturing Limited. Multi-purpose fluorescent lantern. 354,364, 1-10-95, Cl. D26-42.000.

Zebco Corporation: See—
Robbins, Richard J., 354,330, Cl. D22-141.000.

Zurcher, John A.: See—
Foster, Donald D.; and Zurcher, John A., 354,226, Cl. D9-448.000.

LIST OF PLANT PATENTEEES

Delbard, Georges, to Societe Civile Agricole Pepinieres et Roseraies Georges Delbard. Hybrid tea rose plant named Delstrobla. 9,037, 1-10-95, Cl. 11.000.

DeVor Nurseries, Inc.: See—
Marciel, Stanley G.; and Marciel, Jeanne A., 9,038, Cl. 18.000.

Larson, Drake. Table grape variety named Larson B-36. 9,039, 1-10-95, Cl. 47.100.

Larson, Drake. Table grape variety named Mariah. 9,040, 1-10-95, Cl. 47.100.

Marciel, Jeanne A.: See—
Marciel, Stanley G.; and Marciel, Jeanne A., 9,038, Cl. 18.000.

Marciel, Stanley G.; and Marciel, Jeanne A., to DeVor Nurseries, Inc. Hybrid tea rose plant named Devico. 9,038, 1-10-95, Cl. 18.000.

Societe Civile Agricole Pepinieres et Roseraies Georges Delbard: See—
Delbard, Georges, 9,037, Cl. 11.000.

Van Staaveren B.V.: See—
van Andel, Jacob, 9,041, Cl. 87.100.

van Andel, Jacob, to Van Staaveren B.V. Alstroemeria plant named Stabec. 9,041, 1-10-95, Cl. 87.100.

UM I

546	5,379,820	269	5,379,855	321.79	5,380,433	675	5,379,940	97	5,381,024	CLASS 281	
CLASS 156		393	5,379,864	360.2	5,380,434	CLASS 241		138	5,381,025	15.1	5,380,043
64	5,380,381	398	5,379,865	361	5,380,435	21	5,379,947	147	5,381,026	CLASS 283	
91	5,380,382	CLASS 188		383	5,380,436	24	5,379,948	192	5,381,027	67	5,380,044
96	5,380,383	2 F	5,379,866	416.1	5,380,437	30	5,379,949	316	5,381,028	70	5,380,045
111	5,380,384	71.9	5,379,867	605	5,380,438	60	5,379,950	354	5,381,029	75	5,380,046
149	5,380,385	72.2	5,379,868	615	5,380,439	65	5,379,951	390	5,381,030	86	5,380,047
150	5,380,386	218 XL	5,379,869	709	5,380,440	101.2	5,379,952	412	5,381,032	CLASS 285	
154	5,380,387	CLASS 190		720	5,380,441	186.2	5,379,953	488	5,381,031	22	5,380,048
179	5,380,388	18 A	5,379,870	721	5,380,442	130	5,379,954	499	5,381,033	169	5,380,049
188	5,380,389	CLASS 191		724	5,380,443	230	5,379,955	529	5,381,034	258	5,380,050
230	5,380,390	41	5,380,961	734	5,380,444	232	5,379,956	530	5,381,035	307	5,380,051
240	5,380,391	CLASS 192		748	5,380,445	299	5,379,957	666	5,381,036	364	5,380,052
257	5,380,392	4 A	5,379,871	805	5,380,446	230	5,379,958	689	5,381,037	CLASS 290	
358	5,380,393	43	5,379,872	CLASS 211		232	5,379,959	701	5,381,038	55	5,381,048
540	5,380,394	85 R	5,379,873	13	5,379,903	299	5,379,960	712	5,381,039	483.1	5,381,015
577	5,380,395	CLASS 194		41	5,379,904	345.2	5,379,961	718	5,381,042	CLASS 292	
630	5,380,396	317	5,379,875	43	5,379,872	525.7	5,379,962	760	5,381,046	144	5,380,053
643	5,380,397	319	5,379,876	85	5,379,874	527.7	5,379,963	774	5,381,040	CLASS 294	
646	5,380,399	CLASS 196		CLASS 215		533.8	5,379,964	777	5,381,047	1.4	5,380,054
656	5,380,400	317	5,379,875	247	5,379,907	571.2	5,379,965	CLASS 260		16	5,380,055
665	5,380,401	319	5,379,876	249	5,379,908	586.6	5,379,965	39.39	5,379,589	82.15	5,380,056
90	5,379,824	CLASS 198		329	5,379,909	CLASS 244		CLASS 261		CLASS 296	
107	5,379,825	330	5,379,877	346	5,379,910	3.11	5,379,966	16	5,380,470	97.11	5,380,057
271	5,379,823	366	5,379,878	CLASS 219		3.16	5,379,967	122.1	5,380,471	98	5,380,058
370.21	5,379,822	382	5,379,879	69.12	5,380,973	3.21	5,379,968	CLASS 264		184.15	5,380,059
371	5,379,821	396	5,379,880	129.5	5,380,974	49	5,379,969	11	5,380,472	195.1	5,380,061
CLASS 162		601	5,379,881	129.5	5,380,975	54	5,379,970	25	5,380,473	238	5,380,060
30.1	5,380,402	689.1	5,379,882	121.63	5,380,976	129.5	5,379,971	29.5	5,380,474	256.13	5,380,062
147	5,380,403	853	5,379,883	121.64	5,380,977	27.1	5,379,972	11	5,380,475	284.11	5,380,063
CLASS 164		CLASS 200		121.64	5,380,978	27.1	5,379,972	25	5,380,476	344.22	5,380,064
4.1	5,379,826	1 R	5,380,962	137.31	5,380,980	27.1	5,379,972	29.5	5,380,477	411.37	5,380,065
343	5,379,827	11 R	5,380,965	219	5,380,981	118.1	5,379,973	63	5,380,478	476	5,380,066
459	5,379,828	19 DR	5,380,963	230	5,380,982	161	5,379,974	103	5,380,479	484	5,380,067
476	5,379,829	43.01	5,380,964	250	5,380,983	188.8	5,379,975	225	5,380,480	CLASS 297	
CLASS 165		283	5,380,966	270	5,380,984	221.2	5,379,976	241	5,380,481	184.15	5,380,059
104.27	5,379,830	302.3	5,380,968	452	5,380,985	227	5,379,977	316	5,380,480	195.1	5,380,061
110	5,379,832	517	5,380,969	472	5,380,986	277	5,379,978	510	5,380,481	238	5,380,060
113	5,379,833	523	5,380,970	544	5,380,987	311.2	5,379,979	74	5,379,930	256.13	5,380,062
178	5,379,834	536	5,380,971	548	5,380,988	441.1	5,379,979	206	5,379,988	284.11	5,380,063
CLASS 166		562	5,380,972	667	5,380,989	550	5,379,981	229	5,379,989	411.37	5,380,065
181	5,379,835	CLASS 203		CLASS 220		214 VT	5,381,000	CLASS 266		476	5,380,066
208	5,379,837	57	5,380,405	214.1	5,381,001	214.1	5,381,001	74	5,379,930	484	5,380,067
241.6	5,379,836	CLASS 204		216	5,380,999	216	5,380,999	206	5,379,988	CLASS 299	
242	5,379,838	1.5	5,380,406	227.18	5,380,995	227.18	5,380,995	229	5,379,989	17	5,380,068
250	5,379,839	129.1	5,380,408	227.19	5,381,005	227.19	5,381,005	CLASS 267		21	5,380,069
292	5,379,840	130	5,380,409	282	5,381,006	282	5,381,006	CLASS 271		37.37	5,380,070
CLASS 221		172	5,379,915	288	5,381,007	2	5,379,992	CLASS 300		63.1	5,380,071
CLASS 222		301	5,381,002	301	5,381,008	3	5,379,993	CLASS 301		252	5,381,111
CLASS 223		CLASS 223		301	5,381,002	9	5,379,994	CLASS 303		253	5,381,112

361	5,381,084	70	5,381,153	329	5,381,239	424.03	5,381,334	22.3	5,381,420	546	5,380,104
CLASS 324		90	5,381,154	436	5,381,240	424.05	5,381,335	27	5,381,421	CLASS 305	
76.48	5,381,085	104	5,381,155	462	5,381,241		5,381,336	37.4	5,381,422	12	5,381,492
95	5,381,086	126	5,381,156	468	5,381,242	426.02	5,381,337	39.1	5,381,423	13	5,381,493
158.1	5,381,087	CLASS 343		471	5,381,243		5,381,338	40.1	5,381,424	49	5,381,494
174	5,381,089	700 MS	5,381,157	486	5,381,244		5,381,339	43	5,381,425	51	5,381,495
207.17	5,381,090	CLASS 345		487	5,381,245		5,381,340	CLASS 372		54	5,381,501
303	5,381,091	126	5,381,163	500	5,381,246		5,381,341	18	5,381,426	75	5,381,496
318	5,381,092	156	5,381,158	533	5,381,247	474.34	5,381,342	19	5,381,427	78	5,381,500
326	5,381,093	163	5,381,159	538	5,381,248		5,381,343	20	5,381,428	80	5,381,497
427	5,381,094	174	5,381,160	CLASS 359			5,381,345	21	5,381,429	83	5,381,498
512	5,381,095	212	5,381,161	32	5,381,249		5,381,346	25	5,381,430	93	5,381,499
536	5,381,096	CLASS 346		39	5,381,250		5,381,347	115	5,381,431	115	5,381,502
555	5,381,097	76 PH	5,381,164	48	5,381,251		5,381,348	123	5,381,432	123	5,381,503
601	5,381,098	108	5,381,165	53	5,381,252		5,381,349	128	5,381,433	128	5,381,504
676	5,381,099	140.1	5,381,166	54	5,381,253		5,381,350	129	5,381,434	129	5,381,506
720	5,381,101	157	5,381,167	68	5,381,254	571.04	5,381,351	141	5,381,435	141	5,381,507
753	5,381,102	CLASS 347		75	5,381,255		5,381,352	107	5,381,436	107	5,381,508
758	5,381,103	156	5,381,256	156	5,381,256	710.08	5,381,353	108	5,381,437	108	5,381,509
765	5,381,104	202	5,381,257	202	5,381,257	724.01	5,381,354	CLASS 373		376	5,381,509
CLASS 326		216	5,381,258	216	5,381,258		5,381,355	72	5,381,440	470	5,381,510
21	5,381,056	248	5,381,259	248	5,381,259	724.17	5,381,356	CLASS 374		472	5,381,511
27	5,381,055	256	5,381,260	256	5,381,260		5,381,357	CLASS 375		2.41	5,381,512
41	5,381,058	282	5,381,261	282	5,381,261	724.19	5,381,358	7	5,381,442	5,381,513	
57	5,381,061	341	5,381,262	341	5,381,262	746	5,381,359	16	5,381,380	5,381,514	
58	5,381,059	411	5,381,263	411	5,381,263	767	5,381,360	160	5,380,091	2.73	5,381,515
68	5,381,060	419	5,381,264	419	5,381,264	807	5,381,361	CLASS 376		24	5,381,516
126	5,381,062	422	5,381,265	422	5,381,265	825	5,381,362	1	5,381,443	27	5,381,517
CLASS 327		466	5,381,266	466	5,381,266		5,381,363	145	5,381,444	61	5,381,518
60	5,381,052	691	5,381,267	691	5,381,267		5,381,364	149	5,381,445	124	5,381,519
65	5,381,053	692	5,381,268	692	5,381,268		5,381,365	185	5,381,446	132	5,381,521
82	5,381,054	700	5,381,269	700	5,381,269		5,381,366	189.01	5,381,447	143	5,381,522
104	5,381,106	823	5,381,270	823	5,381,270		5,381,367	14	5,381,448	145	5,381,523
109	5,381,044	827	5,381,271	827	5,381,271		5,381,368	59	5,381,449	161	5,381,524
141	5,381,045	48	5,381,272	48	5,381,272		5,381,369	94	5,381,450	162	5,381,525
288	5,381,063	51	5,381,273	51	5,381,273		5,381,370	CLASS 377		164	5,381,526
306	5,381,107	62	5,381,274	62	5,381,274		5,381,371	20	5,381,451	200	5,381,527
390	5,381,051	70	5,381,275	70	5,381,275		5,381,372	26	5,381,452	250	5,381,528
CLASS 330		75	5,381,276	75	5,381,276		5,381,373	28	5,381,453	275	5,381,529
2	5,381,108	77.08	5,381,277	77.08	5,381,277		5,381,374	67	5,381,454	375	5,381,530
10	5,381,109	78.09	5,381,278	78.09	5,381,278		5,381,375	CLASS 378		132	5,381,456
149	5,381,110	85	5,381,279	85	5,381,279		5,381,376	166	5,381,457	207	5,381

157	5,380,128		691	5,380,599		5,380,675		CLASS 493		CLASS 523	
166	5,380,129					5,380,676					
195.1	5,380,130	1.49	CLASS 424	5,380,513	17	5,380,677		405	5,380,265	161	5,380,769
216	5,380,131	1.69		5,380,646	106	5,380,678				212	5,380,770
		9		5,380,647	190	5,380,679		CLASS 494		339	5,380,771
				5,380,648	192	5,380,680		53	5,380,266	404	5,380,781
113	5,380,132			5,380,649	195	5,380,681					
199	5,380,133			5,380,650	209	5,380,682		CLASS 501		CLASS 524	
		61		5,380,651	225	5,380,683		71	5,380,685	68	5,380,773
		76.1		5,380,652	236	5,380,684		87	5,380,686	102	5,380,774
235	5,380,134	78.08		5,380,653	250					109	5,380,775
		78.25		5,380,654				CLASS 502		145	5,380,776
		84		5,380,655				186	5,380,777	186	5,380,777
		93.4		5,380,656				247	5,380,778	272	5,380,779
38	5,380,135			5,380,657				311	5,380,780	404	5,380,782
183	5,380,136			5,380,658				406	5,380,783	504	5,380,785
				5,380,659				560	5,380,786	591	5,380,787
172	5,380,137			5,380,660				730	5,380,788	745	5,380,789
277	5,380,138			5,380,661				837	5,380,791	840	5,380,792
280	5,380,139			5,380,662							
421	5,380,140			5,380,663				CLASS 525			
462	5,380,141			5,380,664				48	5,380,793		
491	5,380,142			5,380,665				57	5,380,794		
495	5,380,143			5,380,666				67	5,380,795		
537	5,380,144			5,380,667				68	5,380,796		
				5,380,668				71	5,380,797		
791.4	5,380,145			5,380,669				72	5,380,802		
796	5,380,146			5,380,670				89	5,380,798		
798.2	5,380,148			5,380,671				111	5,380,799		
				5,380,672				132	5,380,801		
				5,380,673				133.5	5,380,800		
2.1	5,380,149			5,380,674				240	5,380,803		
139	5,380,150			5,380,675				327.3	5,380,804		
145	5,380,151			5,380,676				432	5,380,805		
160	5,380,152			5,380,677				481	5,380,806		
170.1	5,380,153			5,380,678							
209.2	5,380,154			5,380,679				CLASS 526			
209.3	5,380,155			5,380,680				257	5,380,807		
				5,380,681				317.1	5,380,808		
				5,380,682				318.43	5,380,809		
				5,380,683				352	5,380,810		
				5,380,684							
				5,380,685				CLASS 528			
				5,380,686				15	5,380,811		
				5,380,687				58	5,380,812		
				5,380,688				199	5,380,813		
				5,380,689				254	5,380,815		
				5,380,690				328	5,380,817		
				5,380,691				331	5,380,818		
				5,380,692				336	5,380,819		
				5,380,693				353	5,380,820		
				5,380,694				388	5,380,821		
				5,380,695				499	5,380,822		
				5,380,696							
				5,380,697				CLASS 530			
				5,380,698				385	5,380,824		
				5,380,699				403	5,380,825		
				5,380,700				422	5,380,826		
				5,380,701							
				5,380,702				CLASS 534			
				5,380,703				638	5,380,827		
				5,380,704				751	5,380,828		
				5,380,705							
				5,380,706				CLASS 536			
				5,380,707				4.1	5,380,829		
				5,380,708				7.1	5,380,834		
				5,380,709				17.9	5,380,838		
				5,380,710							
				5,380,711				18.5	5,380,835		
				5,380,712				22.1	5,380,833		
				5,380,713				23.1	5,380,830		
				5,380,714				23.5	5,380,836		
				5,380,715				23.71	5,380,831		
				5,380,716							
				5,380,717				CLASS 540			
				5,380,718				111	5,380,839		
				5,380,719							
				5,380,720							
				5,380,721							
				5,380,722							
				5,380,723							
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				5,380,731							
				5,380,732							
				5,380,733							
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				5,380,735							
				5,380,736							
				5,380,737							
				5,380,738							
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PATENTS

01 :	5,379,687	5,379,760	5,380,273	5,381,007	5,381,515	5,380,330
	5,379,747	5,379,761	5,380,274	5,381,011	5,381,518	5,380,387
	5,379,920	5,379,767	5,380,277	5,381,018	5,381,542	5,380,444
	5,380,415	5,379,772	5,380,278	5,381,025	5,381,543	5,380,491
	5,380,416	5,379,773	5,380,280	5,381,035	4,873,459	5,380,528
	5,380,570	5,379,793	5,380,284	5,381,037	5,379,492	5,380,713
	5,380,768	5,379,795	5,380,285	5,381,042	5,379,649	5,380,751
	5,380,994	5,379,802	5,380,296	5,381,054	5,379,806	5,380,780
02 :	5,379,845	5,379,822	5,380,302	5,381,059	5,379,973	5,380,804
04 :	5,379,551	5,379,824	5,380,307	5,381,067	5,380,023	5,380,854
	5,379,584	5,379,903	5,380,312	5,381,072	5,380,041	5,380,860
	5,379,909	5,379,909	5,380,316	5,381,077	5,380,203	5,380,983
	5,379,669	5,379,914	5,380,323	5,381,082	5,380,320	5,381,022
	5,379,815	5,379,916	5,380,326	5,381,095	5,380,443	5,381,120
	5,379,891	5,379,923	5,380,341	5,381,096	5,380,445	5,381,192
	5,380,039	5,379,928	5,380,345	5,381,101	5,380,460	5,381,257
	5,380,048	5,379,938	5,380,352	5,381,111	5,380,543	5,381,299
	5,380,144	5,379,939	5,380,381	5,381,127	5,380,623	5,380,433
	5,380,329	5,379,974	5,380,386	5,381,145	5,380,683	5,380,480
	5,380,752	5,379,980	5,380,406	5,381,149	5,380,895	5,380,481
	5,380,952	5,379,984	5,380,409	5,381,150	5,381,020	5,380,592
	5,381,055	5,379,987	5,380,414	5,381,166	5,381,182	5,380,718
	5,381,063	5,380,003	5,380,428	5,381,245	5,381,222	5,380,776
	5,381,085	5,380,019	5,380,430	5,381,247	5,381,250	5,380,777
	5,381,105	5,380,025	5,380,431	5,381,249	5,381,253	5,381,014
	5,381,133	5,380,026	5,380,456	5,381,267	5,381,279	5,381,135
	5,381,160	5,380,033	5,380,457	5,381,288	5,381,281	5,379,490
	5,381,264	5,380,045	5,380,478	5,381,290	5,381,344	5,379,535
	5,381,304	5,380,047	5,380,492	5,381,292	5,381,348	5,379,545
05 :	5,379,517	5,380,054	5,380,495	5,381,295	5,381,364	5,379,547
06 :	Re. 34,825	5,380,059	5,380,498	5,381,322	5,381,528	5,379,592
	5,379,469	5,380,070	5,380,515	5,381,326	5,379,521	5,379,632
	5,379,473	5,380,087	5,380,548	5,381,331	5,379,583	5,379,686
	5,379,481	5,380,093	5,380,566	5,381,343	5,379,682	5,379,709
	5,379,505	5,380,100	5,380,576	5,381,349	5,379,685	5,379,782
	5,379,512	5,380,106	5,380,662	5,381,359	5,379,690	5,379,786
	5,379,530	5,380,110	5,380,669	5,381,360	5,379,715	5,379,809
	5,379,538	5,380,115	5,380,672	5,381,361	5,379,737	5,379,893
	5,379,542	5,380,116	5,380,677	5,381,362	5,379,754	5,379,929
	5,379,549	5,380,119	5,380,702	5,381,370	5,379,777	5,379,986
	5,379,555	5,380,148	5,380,711	5,381,377	5,379,810	5,380,007
	5,379,556	5,380,153	5,380,716	5,381,385	5,379,864	5,380,021
	5,379,557	5,380,154	5,380,739	5,381,386	5,379,882	5,380,125
	5,379,589	5,380,189	5,380,833	5,381,401	5,379,894	5,380,157
	5,379,630	5,380,192	5,380,877	5,381,408	5,379,906	5,380,251
	5,379,642	5,380,196	5,380,879	5,381,413	5,379,927	5,380,261
	5,379,657	5,380,206	5,380,956	5,381,414	5,379,933	5,380,283
	5,379,691	5,380,212	5,380,981	5,381,439	5,380,109	5,380,502
	5,379,699	5,380,214	5,380,982	5,381,453	5,380,155	5,380,534
	5,379,704	5,380,239	5,380,995	5,381,489	5,380,213	5,380,664
	5,379,728	5,380,245	5,381,000	5,381,495	5,380,224	5,380,754
	5,379,732	5,380,262	5,381,004	5,381,505	5,380,226	5,380,799
	5,379,753	5,380,271	5,381,006	5,381,512	5,380,298	5,380,916

	5,381,013	5,379,936	5,381,226	5,380,050	5,379,502	5,379,703
	5,381,114	5,380,042	5,381,301	5,380,080	5,379,516	5,379,725
	5,381,128	5,380,066	5,381,305	5,380,295	5,379,519	5,379,811
	5,381,134	5,380,178	5,381,402	5,380,301	5,379,524	5,379,889
	5,381,138	5,380,193	5,381,431	5,380,466	5,379,525	5,380,046
	5,381,190	5,380,194	5,381,442	5,380,603	5,379,562	5,380,223
	5,381,307	5,380,299	5,381,454	5,380,699	5,379,588	5,380,234
	5,381,346	5,380,304	5,381,539	5,380,738	5,379,596	5,380,292
	5,381,382	5,380,374	5,381,546	5,380,825	5,379,601	5,380,330
	5,381,447	5,380,547	5,381,550	5,380,855	5,379,668	5,380,361
	5,381,538	5,380,661	Re. 34,822	5,380,946	5,379,675	5,380,426
	5,381,541	5,380,802	5,379,483	5,381,506	5,379,695	5,380,442
13 :	5,379,459	5,380,866	5,379,509	5,379,651	5,379,726	5,380,477
	5,379,672	5,380,940	5,379,560	5,380,030	5,379,756	5,380,582
	5,379,673	5,381,009	5,379,590	5,380,113	5,379,821	5,380,872
	5,379,791	5,381,089	5,379,635	5,380,405	5,379,870	5,380,880
	5,379,905	5,381,142	5,379,637	5,380,085	5,379,875	5,380,999
	5,379,943	5,381,181	5,379,646	5,380,145	5,379,888	5,381,103
	5,379,944	5,381,332	5,379,741	5,380,008	5,379,890	5,381,323
	5,380,055	5,381,336	5,379,748	5,380,012	5,379,937	5,381,554
	5,380,122	5,379,847	5,379,797	5,380,328	5,379,964	5,379,962
	5,380,241	5,380,111	5,379,832	5,380,506	5,379,999	5,380,931
	5,380,339	5,380,186	5,379,833	5,379,723	5,380,167	5,379,466
	5,380,351	5,380,235	5,379,856	5,380,183	5,380,172	5,379,503
	5,380,390	5,380,305	5,379,947	5,380,314	5,379,511	5,379,585
	5,380,402	5,380,377	5,380,015	5,380,976	5,379,594	5,379,934
	5,380,438	5,380,432	5,380,028	5,381,070	5,380,255	5,380,782
	5,380,517	5,380,964	5,380,034	5,381,071	5,380,290	5,379,643
	5,380,747	5,380,142	5,380,036	5,381,470	5,380,291	5,379,667
	5,381,050	5,380,158	5,380,051	5,379,478	5,380,362	5,379,706
	5,381,119	5,380,202	5,380,052	5,379,495	5,380,441	5,379,727
	5,381,446	5,380,247	5,380,060	5,379,523	5,380,449	5,379,764
	5,381,459	5,380,525	5,380,067	5,379,567	5,380,489	5,379,790
	5,381,477	5,379,473	5,380,071	5,379,598	5,380,518	5,379,816
15 :	5,381,075	5,379,759	5,380,072	5,379,599	5,380,545	5,379,859
16 :	5,380,009	5,380,230	5,380,114	5,379,758	5,380,557	5,379,887
	5,380,401	5,380,342	5,380,143	5,379,804	5,380,560	5,379,897
	5,380,678	5,380,522	5,380,180	5,379,817	5,380,568	5,379,917
	5,381,302	5,380,523	5,380,243	5,379,900	5,380,578	5,379,932
	5,381,368	5,380,774	5,380,348	5,379,907	5,380,584	5,379,970
17 :	5,379,476	5,380,948	5,380,446	5,379,976	5,380,586	5,380,037
	5,379,487	5,381,048	5,380,450	5,380,002	5,380,587	5,380,038
	5,379,536	5,379,522	5,380,464	5,380,611	5,380,621	5,380,094
	5,379,554	5,379,577	5,380,479	5,380,029	5,380,628	5,380,095
	5,379,564	5,379,578	5,380,527	5,380,044	5,380,629	5,380,103
	5,379,569	5,379,839	5,380,553	5,380,124	5,380,633	5,380,121
	5,379,579	5,379,843	5,380,564	5,380,229	5,380,642	5,380,170
	5,379,724	5,379,861	5,380,567	5,380,267	5,380,703	5,380,313
	5,379,801	5,380,022	5,380,688	5,380,309	5,380,721	5,380,331
	5,379,812	5,380,130	5,380,812	5,380,347	5,380,737	5,380,366
	5,379,857	5,380,209	5,380,839	5,380,400	5,380,749	5,380,378
	5,379,880	5,379,677	5,380,840	5,380,425	5,380,770	5,380,788
	5,379,884	5,381,061	5,380,841	5,380,454	5,380,788	5,380,796
	5,379,896	5,379,570	5,380,897	5,380,458	5,380,828	5,380,838
	5,380,016	5,379,711	5,380,909	5,380,530	5,380,838	5,380,846
	5,380,058	5,379,846	5,380,925	5,380,538	5,380,846	5,380,849
	5,380,173	5,379,892	5,381,074	5,380,593	5,380,888	5,380,899
	5,380,184	5,379,955	5,381,090	5,380,731	5,380,899	5,380,926
	5,380,254	5,379,992	5,381,099	5,380,767	5,380,926	5,380,955
	5,380,257	5,380,078	5,381,141	5,380,786	5,380,955	5,380,955
	5,380,357	5,380,132	5,381,213	5,380,793	5,381,060	5,380,958
	5,380,393	5,380,321	5,381,263	5,380,799	5,381,060	5,380,858
	5,380,448	5,380,429	5,381,324	5,380,581	5,381,081	5,380,891
	5,380,469	5,380,437	5,381,327	5,380,591	5,381,084	5,380,958
	5,380,740	5,380,645	5,379,513	5,380,646	5,381,086	5,380,971
	5,380,765	5,380,651	5,379,539	5,380,665	5,381,122	5,381,012
	5,380,794	5,380,830	5,379,775	5,380,682	5,381,124	5,381,076
	5,380,835	5,380,848	5,379,775	5,380,698	5,381,151	5,381,337
	5,380,836	5,380,901	5,379,886	5,380,707	5,381,154	5,381,355
	5,380,873	5,381,428	5,380,061	5,380,719	5,381,155	5,381,501
	5,380,945	5,381,458	5,380,083	5,380,728	5,381,156	5,381,509
	5,380,951	5,381,511	5,380,141	5,380,817	5,381,165	5,381,524
	5,380,959	5,381,511	5,380,279	5,380,847	5,381,191	5,379,835
	5,380,972	5,379,529	5,380,282	5,380,849	5,381,193	5,379,838
	5,380,973	5,379,533	5,380,338	5,380,853	5,381,196	5,380,289
	5,380,987	5,379,537	5,380,487	5,380,869	5,381,203	5,380,317
	5,381,065	5,379,544	5,380,580	5,380,876	5,381,204	5,380,482
	5,381,078	5,379,572	5,380,635	5,380,893	5,381,211	5,380,705
	5,381,109	5,379,617	5,380,644	5,380,911	5,381,218	5,380,706
	5,381,136	5,379,620	5,380,756	5,380,942	5,381,219	5,380,803
	5,381,137	5,379,698	5,380,771	5,380,947	5,381,220	5,379,702
	5,381,252	5,379,712	5,380,778	5,380,953	5,381,234	5,380,065
	5,381,317	5,379,779	5,380,905	5,380,968	5,381,259	5,380,336
	5,381,320	5,379,968	5,380,923	5,381,010	5,381,269	5,380,337
	5,381,325	5,380,020	5,381,284	5,381,106	5,381,308	5,380,769
	5,381,403	5,380,043	5,381,289	5,381,125	5,381,333	5,381,162
	5,381,425	5,380,258	5,381,291	5,381,231	5,381,357	5,381,180
	5,381,443	5,380,266	5,381,298	5,381,260	5,381,383	5,381,351
	5,381,449	5,380,269	5,381,309	5,381,387	5,381,384	5,379,467
	5,381,464	5,380,288	5,381,416	5,381,405	5,381,390	5,379,504
	5,381,471	5,380,333	5,381,424	5,381,407	5,381,421	5,379,518
	5,381,479	5,380,334	5,381,436	5,381,419	5,381,445	5,379,597
	5,381,508	5,380,343	5,381,462	5,381,434	5,381,457	5,379,671
	5,379,468	5,380,660	5,381,497	5,381,450	5,381,469	5,379,676
18 :	5,379,568	5,380,695	5,381,504	5,381,461	5,381,473	5,379,778
	5,379,571	5,380,758	5,381,552	5,381,463	5,381,480	5,379,814
	5,379,624	5,380,822	5,379,742	5,381,467	5,381,487	5,379,825
	5,379,655	5,380,826	5,379,808	5,381,475	5,381,502	5,379,829
	5,379,749	5,380,962	5,379,862	5,379,689	5,381,507	5,379,865
	5,379,750	5,380,991	5,379,636	5,379,719	5,381,526	5,379,881
	5,379,751	5,381,041	5,379,746	5,380,474	5,381,535	5,379,902
	5,379,752	5,381,052	5,379,783	5,381,420	5,381,537	5,379,904
	5,379,787	5,381,073	5,379,792	5,379,461	5,381,555	5,379,915
	5,379,828	5,381,110	5,379,794	5,379,463	5,379,497	5,380,128
	5,379,910	5,381,146	5,379,922	5,379,464	5,379,498	5,380,140
	5,379,913	5,381,148	5,379,924	5,379,485	5,379,543	5,380,207
		5,381,198	5,379,975	5,379,491	5,379,558	5,380,210

5,380,221		5,381,500		5,380,790		5,380,885	50 :	5,379,658		5,380,988
5,380,237		5,381,534		5,381,129		5,380,930		5,380,368		5,381,098
5,380,275	43 :	5,380,663		5,381,492		5,380,986	51 :	5,379,878		5,381,312
5,380,300		5,381,483		5,381,517		5,380,998		5,380,001		5,381,347
5,380,308	44 :	5,379,496	48 :	5,379,479		5,381,002		5,380,102		5,381,521
5,380,361		5,379,611		5,379,489		5,381,034		5,380,204		5,381,524
5,380,398		5,380,382		5,379,563		5,381,036		5,380,473	54 :	5,380,244
5,380,403	45 :	5,379,465		5,379,604		5,381,039		5,380,554		5,381,321
5,380,426		5,379,471		5,379,605		5,381,040		5,381,115	55 :	5,379,540
5,380,442		5,379,499		5,379,625		5,381,051		5,381,229		5,379,546
5,380,447		5,379,501		5,379,666		5,381,092		5,381,297		5,379,548
5,380,463		5,379,520		5,379,831		5,381,112		5,381,381		5,379,619
5,380,467		5,379,679		5,379,840		5,381,116		5,381,433		5,379,627
5,380,504		5,379,807		5,379,844		5,381,126		5,381,493		5,379,633
5,380,505		5,380,162		5,379,852		5,381,230		5,379,508	53 :	5,379,722
5,380,535		5,380,954		5,379,854		5,381,306		5,379,639		5,379,733
5,380,542		5,380,967		5,379,966		5,381,418		5,379,842		5,379,770
5,380,597		5,380,985		5,380,131		5,381,455		5,379,951		5,379,805
5,380,599	46 :	5,379,948		5,380,150		5,381,460		5,379,969		5,379,895
5,380,652	47 :	5,379,462		5,380,156		5,381,465		5,379,971		5,379,926
5,380,725		5,379,507		5,380,259		5,381,498		5,380,027		5,379,940
5,380,729		5,379,647		5,380,268		5,381,530		5,380,068		5,380,182
5,380,734		5,379,714		5,380,303	49 :	5,381,540		5,380,069		5,380,552
5,380,755		5,379,934		5,380,493		5,379,552		5,380,074		5,380,589
5,380,782		5,380,053		5,380,536		5,379,650		5,380,075		5,380,720
5,380,792		5,380,082		5,380,546		5,379,853		5,380,136		5,380,831
5,380,816		5,380,084		5,380,655		5,379,866		5,380,159		5,380,980
5,380,894		5,380,200		5,380,667		5,380,086		5,380,346		5,381,228
5,381,031		5,380,205		5,380,694		5,380,276		5,380,380		5,381,310
5,381,058		5,380,332		5,380,697		5,380,435		5,380,427		5,381,338
5,381,062		5,380,355		5,380,775		5,380,668		5,380,513		5,381,536
5,381,314		5,380,520		5,380,810		5,381,510		5,380,524	56 :	5,380,010
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